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INTERNATIONAL MONETARY FUND

Research Department

Primary Commodities: Market Developments and Outlook

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Summary

This paper analyzes commodity price movements in 1988, examines their outlook over the near term, and assesses the implications for export earnings of both industrial and developing countries.

The strong upturn in non-fuel primary commodities that began in the second half of 1987 continued in 1988. Measured by the Fund's price index for non-fuel primary commodities, prices rose in 1988 by 19 percent in terms of SDRs and by 23 percent in U.S. dollar terms. This sharp rise, which was not anticipated at the beginning of the year, primarily reflected the stronger-than-expected growth of demand in industrial countries and the effects of adverse weather conditions, in particular the North American drought.

The commodity composition of the price increases in 1988 differed importantly from that observed in 1987. Whereas the rise in the Fund's commodity price index during the second half of 1987 resulted from increases in prices of agricultural raw materials as well as metals, the continued rise in the index in the first half of 1988 resulted mainly from the steep price increases for metals, related to the robust growth of output in the industrial countries. Prices of food commodities, after climbing slowly during 1987 and in the first part of 1988, rose sharply in the second and third quarters of 1988 because of drought conditions in North America. The availability of large stocks of food commodities, however, restrained the extent of the upward price movements for these commodities. Prices of beverages, which fell in 1987, remained weak in 1988 owing mainly to supply factors, including the recovery of coffee production in Brazil, continued world cocoa production in excess of world consumption, and the maintenance of strong growth in tea production.

In 1988 global earnings from exports of non-fuel primary commodities increased substantially. Because many of the commodities registering large price increases are exported predominantly by industrial countries, the earnings of industrial countries increased much more than the earnings of developing countries.

On the assumption of marginally lower rates of growth in the world economy during 1989 than in 1988 and no major disruptions in the supply of major primary commodities, the prices of those foods and metals showing the sharpest price increases in 1988 are expected to begin to decline by mid-1989, while the prices of beverages and agricultural raw materials are estimated to remain largely unchanged throughout the year. The Fund's price index for non-fuel primary commodities is projected to remain roughly at the 1988 level in 1989. Nevertheless, the anticipated decline in the prices of foods and metals should have a significant impact on the overall price index in the following year; a decline in the index is projected for 1990.

I. Commodity Market Developments and Prospects

1. Introduction

The strong upturn in non-fuel primary commodity prices that began during 1987 continued throughout 1988. Measured by the Fund's world index, prices rose 19 percent in terms of SDRs and in U.S. dollars the increase was even larger--23 percent--reflecting the depreciation of the dollar (Table 1). These increases were far in excess of those forecast at the beginning of the year. 1/ In real terms (i.e., relative to export unit values for manufactures), non-fuel commodity prices rose by 17 percent in 1988, the largest increase since 1973 (Table 2).

The unanticipated sharp rise in prices of non-fuel primary commodities primarily reflected the stronger than expected growth of demand in industrial countries and the effects of adverse weather conditions, in particular the North American drought. In early 1988, real GNP growth in the seven major industrial countries (G-7) 2/ for the year was forecast at just below 3 percent. Realized GNP growth of these countries is now estimated to have been over 4 percent (Table 1).

On the assumption of marginally lower growth of real GNP in industrial countries in 1989 than in 1988, and no major disruptions in the supply of major primary commodities, it is expected that prices of those foods and metals showing the sharpest price increase in 1988 will begin to decline by mid-1989 while the prices for beverages and agricultural raw materials will remain largely unchanged throughout the year. The annual average of the overall price index for non-fuel primary commodities in 1989 is projected to remain roughly at the 1988 level--at about 1 percent lower in terms of SDRs and about 1 1/2 percent higher in dollars. For 1990 a decline of about 9 percent in SDRs (8 percent in dollars) is projected as a result of the lower prices anticipated for food and metals in that year. As a consequence, assuming that prices of manufactured goods continue to rise at a rate of about 2 percent per annum in terms of SDRs, most of the real price rise in 1988 for non-fuel primary commodities is likely to be eroded by the end of 1990. Over the medium term (1991-95), it is anticipated that a deceleration in the rate of growth of supply of these commodities will result in small real price advances.

1/ A projected increase for 1988 of 9.4 percent in dollar prices for non-fuel primary commodities, for example, was used in the medium term reference scenario for the IMF discussions in early 1988 (IMF, World Economic Outlook, April 1988, Table A53, p. 187). This projection was one of the higher projections of non-fuel primary commodity prices made by market analysts in early 1988.

2/ Canada, France, Federal Republic of Germany, Italy, Japan, United Kingdom, and the United States.

Table 1. Movements in Commodity Prices and Related Economic Indicators, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Non-fuel commodity prices ^{1/}							
In SDRs	-4.3	9.9	6.4	-12.0	-16.8	-1.8	18.9
In U.S. dollars	-10.4	6.2	2.2	-13.1	-3.9	8.6	23.4
Real ^{2/}	-8.5	9.4	5.2	-13.5	-18.5	-3.4	16.6
Petroleum prices ^{3/}							
In SDRs	1.7	-6.6	3.9	-3.6	-55.7	16.8	-23.5
In U.S. dollars	-8.0	-9.6	-0.4	-4.5	-48.8	28.7	-20.4
Real ^{2/}	-6.0	-7.0	2.7	-5.4	-56.5	14.9	-25.0
Unit value of manufactured exports							
In SDRs	4.5	0.4	1.2	1.9	1.9	1.6	2.0
In U.S. dollars	-2.1	-2.8	-3.0	1.0	17.7	12.0	6.0
Domestic prices in G-7 countries ^{4/}							
Consumer price index							
In SDRs	8.7	4.9	4.6	3.5	1.0	0.5	3.0
In U.S. dollars	-0.1	1.6	0.3	2.5	16.7	10.7	7.0
GNP deflator							
In SDRs	6.4	5.2	4.2	2.9	2.1	0.4	2.8
In U.S. dollars	-0.4	1.8	0.0	1.9	18.0	10.6	6.9
Economic activity in G-7 countries							
Real GNP	-0.4	2.9	5.1	3.4	2.7	3.4	4.2
Industrial production	-4.0	3.7	7.7	2.8	1.1	3.4	6.0
Domestic fixed investment	-5.2	4.0	9.7	4.6	1.9	4.3	8.1
World consumption of non-fuel commodities ^{5/}							
Index of consumption	1.4	1.3	3.5	1.5	5.2	1.9	0.7
World supply of non-fuel commodities ^{5/}							
Index of production	-0.7	-0.8	8.0	1.4	-0.2	3.5	0.2
Index of supply ^{6/}	1.3	1.2	5.3	2.5	1.8	1.2	-0.1
Index of closing stocks	9.8	-8.1	9.1	11.2	-7.2	-2.8	-11.8

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

^{1/} Refers to IMF world index of non-fuel primary commodities. These percentages differ from those reported in IMF World Economic Outlook, April 1988, which refer to the index of commodities exported by developing countries (given in Table 3).

^{2/} Index of dollar commodity prices deflated by the index of dollar unit values of manufactured exports.

^{3/} Average of spot prices for U.K. Brent, Dubai, and Alaska North Slope crude petroleum, equally weighted, reflecting world consumption of light, medium, and heavy crude.

^{4/} Canada, France, Federal Republic of Germany, Italy, Japan, United Kingdom, and the United States.

^{5/} Overall indices constructed using the same weights for the indices of individual commodities as in overall (world) price index. Crop year data for agricultural commodities are given under the earlier calendar year, e.g. crop year 1980/81 under 1980. The commodity coverage of the indices of consumption and stocks is less comprehensive than the coverage of the indices of production and supply.

^{6/} Supply is defined as production plus beginning-of-year stocks.

Table 2. Non-Fuel Primary Commodity Prices, 1970-88

(Indices: 1980-100)

Years	Nominal Prices						Real Prices 1/
	In SDRs	In U.S. dollars	In pounds sterling	In deutsche mark	In French francs	In Japanese yen	
1970	48	37	36	75	49	59	106
1971	47	36	35	69	47	56	99
1972	47	39	36	68	46	52	98
1973	69	63	60	92	66	75	136
1974	83	76	76	109	87	98	136
1975	69	64	67	86	65	84	101
1976	78	69	90	96	79	91	109
1977	86	77	102	98	89	91	111
1978	81	78	94	86	83	72	98
1979	95	95	103	95	95	92	104
1980	100	100	100	100	100	100	100
1981	99	90	104	112	115	87	94
1982	95	81	107	107	125	88	86
1983	104	86	131	120	155	90	94
1984	111	87	152	137	180	91	99
1985	97	76	138	123	162	80	85
1986	81	73	116	88	120	54	69
1987	80	79	112	78	113	50	67
1988	95	98	128	95	138	55	78
1987 I	74	72	108	73	104	48	62
II	76	76	107	75	108	48	65
III	82	80	115	81	116	52	68
IV	87	90	119	84	122	54	73
1988 I	88	92	120	85	124	52	74
II	95	100	126	94	136	55	79
III	98	98	134	101	146	58	80
IV	98	102	132	99	146	56	80

Source: Commodities Division, IMF Research Department. Data relate to a "world" index, that is, to a single basket of 34 non-fuel primary commodities and do not reflect differences in the composition of the basket of primary commodities exported or imported by different countries. See Appendix I of IMF, Primary Commodities Market Developments and Outlook, May 1986, for a description of this index.

1/ Non-fuel commodity prices adjusted by unit values of manufactured goods exports of "developed market economies" as reported by United Nations, Monthly Bulletin of Statistics (New York), various issues.

The underlying causes of these developments are reviewed in the remainder of this section. Sections II through V deal with individual commodities (food commodities in Section II, beverages in Section III, agricultural raw materials in Section IV, and minerals and metals in Section V). Developments with respect to petroleum are discussed in some detail in Supplementary Note IX of the 1988 World Economic Outlook paper (SM/89/42, 2/24/89).

2. Non-fuel primary commodity prices in 1987 and 1988

The upturn in the Fund's price index for non-fuel primary commodities began in the second quarter of 1987 and continued through 1988 (Chart 1). During 1987 the increase in the overall index can be attributed to price increases of raw materials used in manufacturing--both those derived from agricultural and forestry operations and from mining (Chart 2). During 1988 the prices of minerals and metals continued to rise, while those of agricultural raw materials fell somewhat from their end-1987 levels but were still high relative to levels attained earlier in the decade. Prices of food commodities increased slowly during 1987 and in the first part of 1988, then rose sharply in the second and third quarters of 1988 primarily on account of drought conditions in North America. However, the upward price movement of food commodities was dampened by the availability of large stocks accumulated in previous years. Beverage prices fell in the first quarter of 1987 and remained weak through 1988 mainly because of factors affecting supply: the near recovery of coffee production in Brazil following the drought-devastated 1986/87 crop; a series of years beginning 1984/85 during which world cocoa production exceeded world cocoa consumption; and strong growth in tea production in 1987 and 1988.

The upturn in prices beginning mid-1987 and lasting through 1988 was closely linked to a strengthening of world economic activity, which had been underestimated by most forecasters, particularly for 1988. The rates of growth of real GNP, industrial production, and domestic fixed investment in the G-7 countries in 1988 were the highest of any year during the post-1982 expansion period except for 1984. As a consequence, many suppliers of commodities found that demand for their products was greater than anticipated, with buyers having to restock sooner than planned to maintain their working inventories. High demand, especially in the United States, Japan, the newly industrializing economies of Asia, and in 1988 also in Western Europe, led to a reduction of world metals stocks and, to a lesser degree, stocks of agricultural raw materials. Stocks of metals were depleted, in part because much of the excess capacity that had overhung the metals market earlier in the decade had been idled. Furthermore, in view of their experience in the early 1980s with excess capacity and low prices, producers were reluctant to reactivate this capacity unless there were signs that strong demand would continue. With regard to agricultural raw materials, the improved world economic environment contributed to strong demand for fibers and leather; there was new demand for products made from natural rubber; and in 1987 (although not in 1988) a surge of housing starts, particularly in Japan, increased demand for a number of building materials, notably timber.

CHART 1

Prices in SDRs for Non-Fuel Primary Commodities, Petroleum and Manufactures, 1970-88

(Indices: 1980=100)

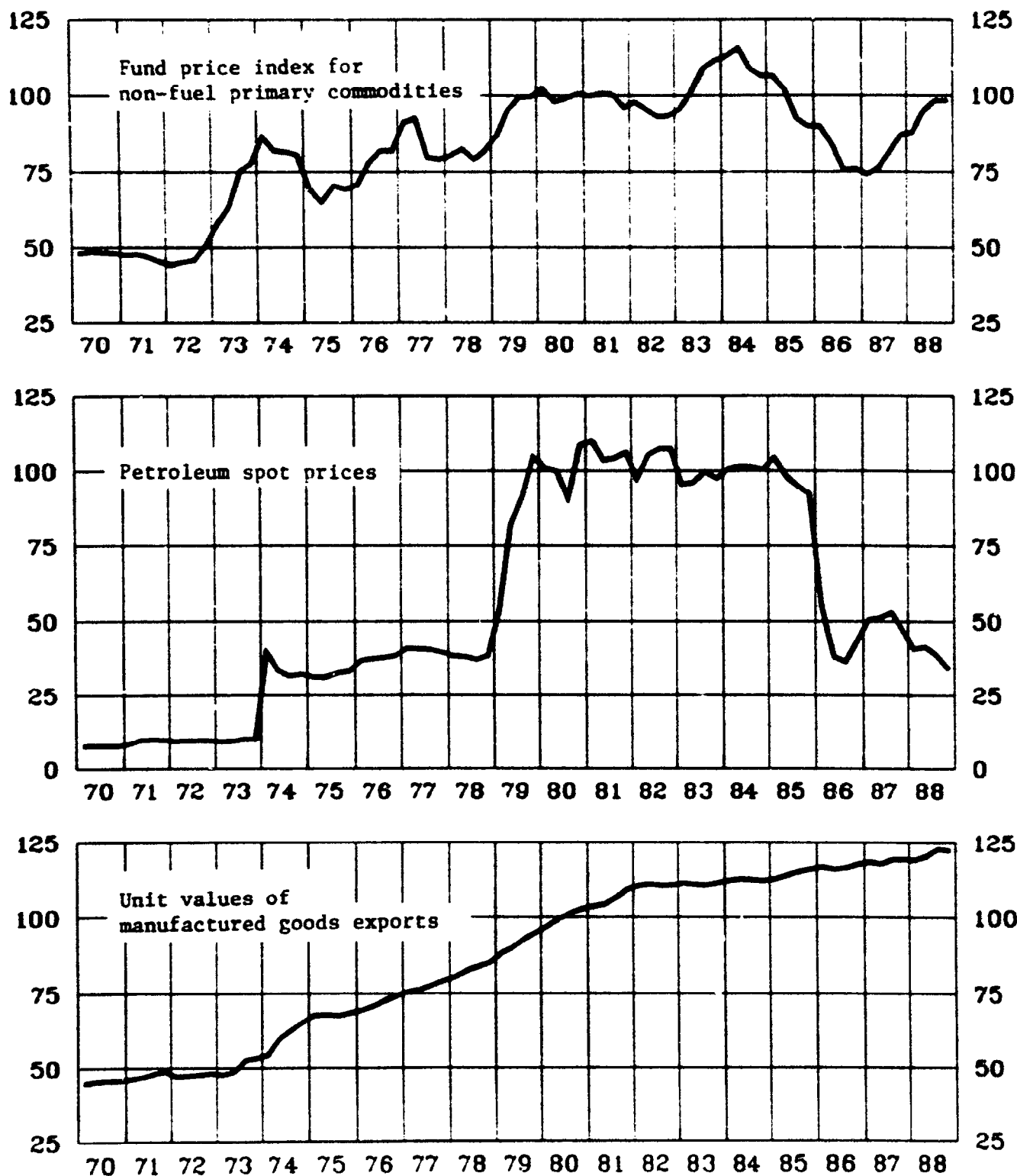
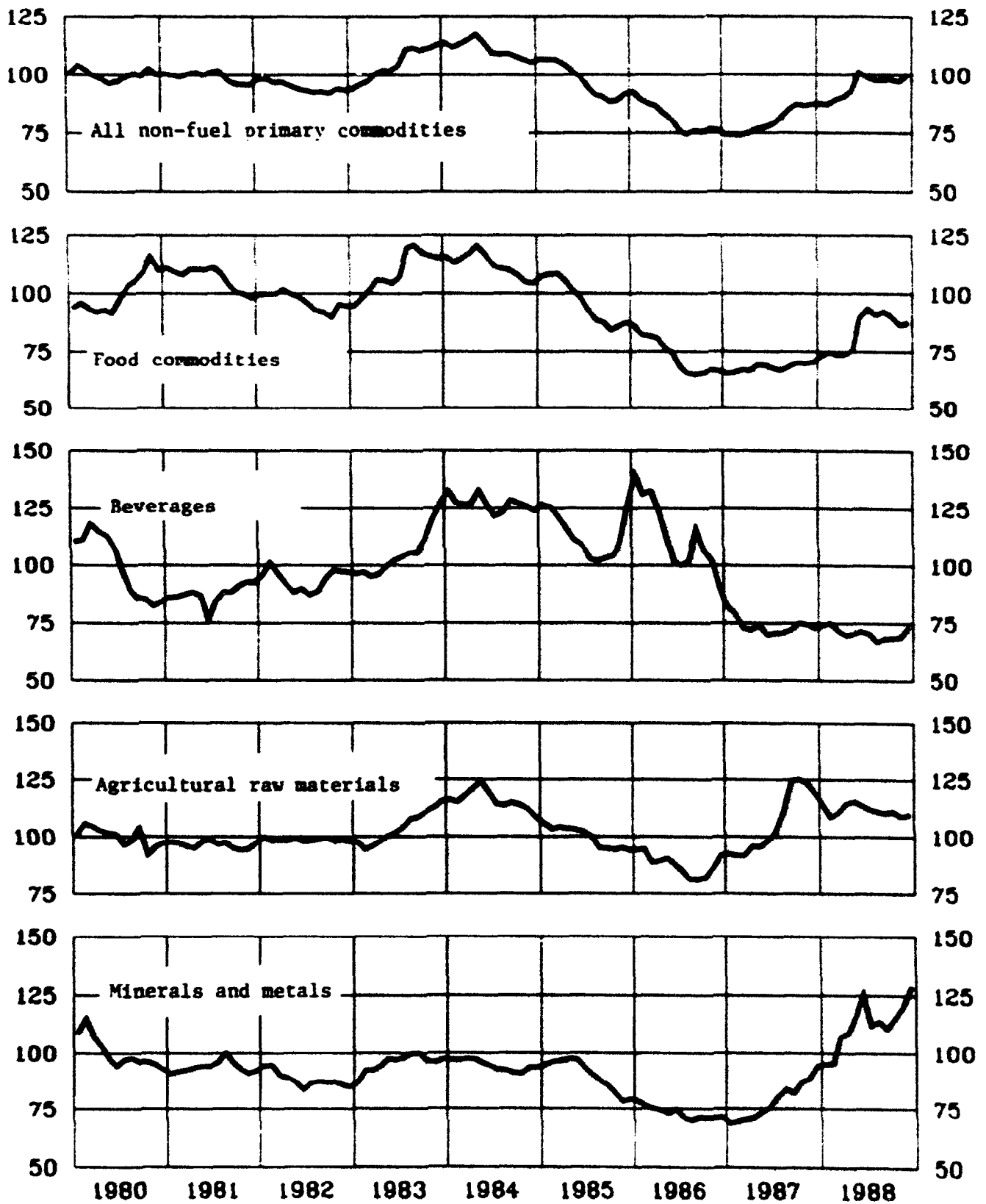


CHART 2

Prices in SDRs for Non-Fuel Primary Commodities 1980-88

(Indices: 1980=100)



In 1988 the upturn in the overall non-fuel commodity price index was reinforced by the effects of the severe drought in North America on supplies of wheat, maize and soybeans. The drought in the United States was the most severe the country had experienced since the 1930s: maize production fell by 34 percent; soybean production by 22 percent; and wheat production by 14 percent. The drought also affected much of Canada and parts of Mexico and Central America.

Movements in the overall price index and in price indices for the major groups of commodities have been mirrored by an inverse movement in stocks of commodities (Chart 3). Beginning of year stocks of "all non-fuel commodities"--measured in terms of months of consumption--increased during the early and mid-1980s, peaking in 1986. Stocks then declined to a level that at the beginning of 1989 was a little higher than at the start of 1980. The buildup and subsequent decline was most marked for stocks of minerals and metals. Movements in stocks of food commodities and agricultural raw materials generally have been similar to those of minerals and metals. Movement in the stocks of beverages has, however, followed a different pattern, reflecting the long-term cyclical movements in capacity as well as weather; this resulted in low stocks during the mid-1980s and was followed by a stock buildup in 1987 and 1988.

Low stock levels have been associated with greater variability in commodity prices in 1988. The average month-to-month change in prices in terms of SDRs for the 39 commodities included in the Fund's overall index was 3.3 percent compared with 2.2 percent for the period 1980-87. Prices for a number of individual metals were particularly volatile in 1988: the average month-to-month price change was 12 percent for nickel; 7 percent for aluminum; and nearly 5 percent for copper. The price of sugar in the free market also continued to be highly volatile with month-to-month changes averaging in excess of 7 percent during 1988.

3. Comparative prices for petroleum, manufactures and non-fuel primary commodities

a. Petroleum

In the final months of 1985 and through mid-1986 crude petroleum prices fell precipitously from the level prevailing in the first half of the decade. Approximately one half of the decline was reversed by mid-1987 but prices then drifted downward until late 1988. These developments mainly reflected changes in the flow of exports from major oil producing countries during the period. The Fund's indicator spot price--an average of U.K. Brent, Dubai and Alaska North Slope crudes, equally weighted, that is intended to reflect world consumption of light, medium and heavy crudes, respectively--averaged US\$14.15 in 1988 compared with \$27.00 in 1985 and \$35.45 in 1980. During 1988 production of petroleum in the countries belonging to the Organization of Petroleum

Exporting Countries (OPEC) ^{1/} rose from under 18 million barrels per day (mbd) early in the year to about 22 mbd near the end of the year. Petroleum prices began to recover in late November, however, following an OPEC agreement to reduce petroleum output in member countries to a level of 18.5 mbd beginning January 1, 1989. During the last week of December platform and loading system damages in the North Sea that led to a 10 percent decline in offshore U.K. output also put upward pressure on prices. Spot prices for crude petroleum in January 1989 averaged \$15.90 per barrel, a large increase over the average of \$11.75 per barrel in November 1988. (A more detailed explanation of 1988 oil market developments is provided in Supplementary Note No. IX of the World Economic Outlook (SK/89/42, 2/24/89)).

b. Manufactures

The trend in the export prices of manufactured goods in the 1980s, unlike the trend in prices of primary commodities, has been steadily upward, although the rate of increase has been much slower than in the 1970s. The rate of increase in the index of unit values of manufactured goods, measured in SDRs, fell from nearly 10 percent per annum in 1980 to about 1 percent in 1983-84. The index then rose steadily at about 2 percent per annum from 1985 to 1988. The rates of change in this index in terms of individual national currencies were more variable owing to large swings in exchange rates, in particular in the value of the U.S. dollar relative to other currencies. The unit value of manufactured exports in U.S. dollar terms fell each year from 1981 to 1984 but in 1986 increased by nearly 18 percent. In 1987 the rate of increase in this index declined to 12 percent in dollars and to 6 percent in 1988.

c. Real primary commodity prices

The persistent upward movement in prices of manufactured goods has meant that the purchasing power of exports of non-fuel primary commodities in terms of manufactured goods has been less than would be indicated by their nominal price movements. Nevertheless, the increase in the Fund's index of prices of non-fuel primary commodities in 1988 in real terms, that is adjusted to take account of the increase in the prices of manufactures, was 17 percent, the largest year-on-year rise since 1973. The rise in the index in real terms using industrial countries' export weights (as opposed to "world" export weights) was 20 percent, also the largest increase since 1973 (Table 3). The increase in the comparable index for developing countries was 12 percent, the largest rise since 1977. Most of the difference in the behavior of the series for industrial countries and the series for developing countries is attributable to developments relating to the prices of beverages, which have a large weight in the index for developing countries but an insignificant weight

^{1/} Thirteen member countries: Algeria, Ecuador, Gabon, Indonesia, Islamic Republic of Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela.

CHART 3

Non-Fuel Commodity Prices in Real Terms and Beginning Stocks Measured in Months of Consumption, 1980-89

(Indices: 1980=100)

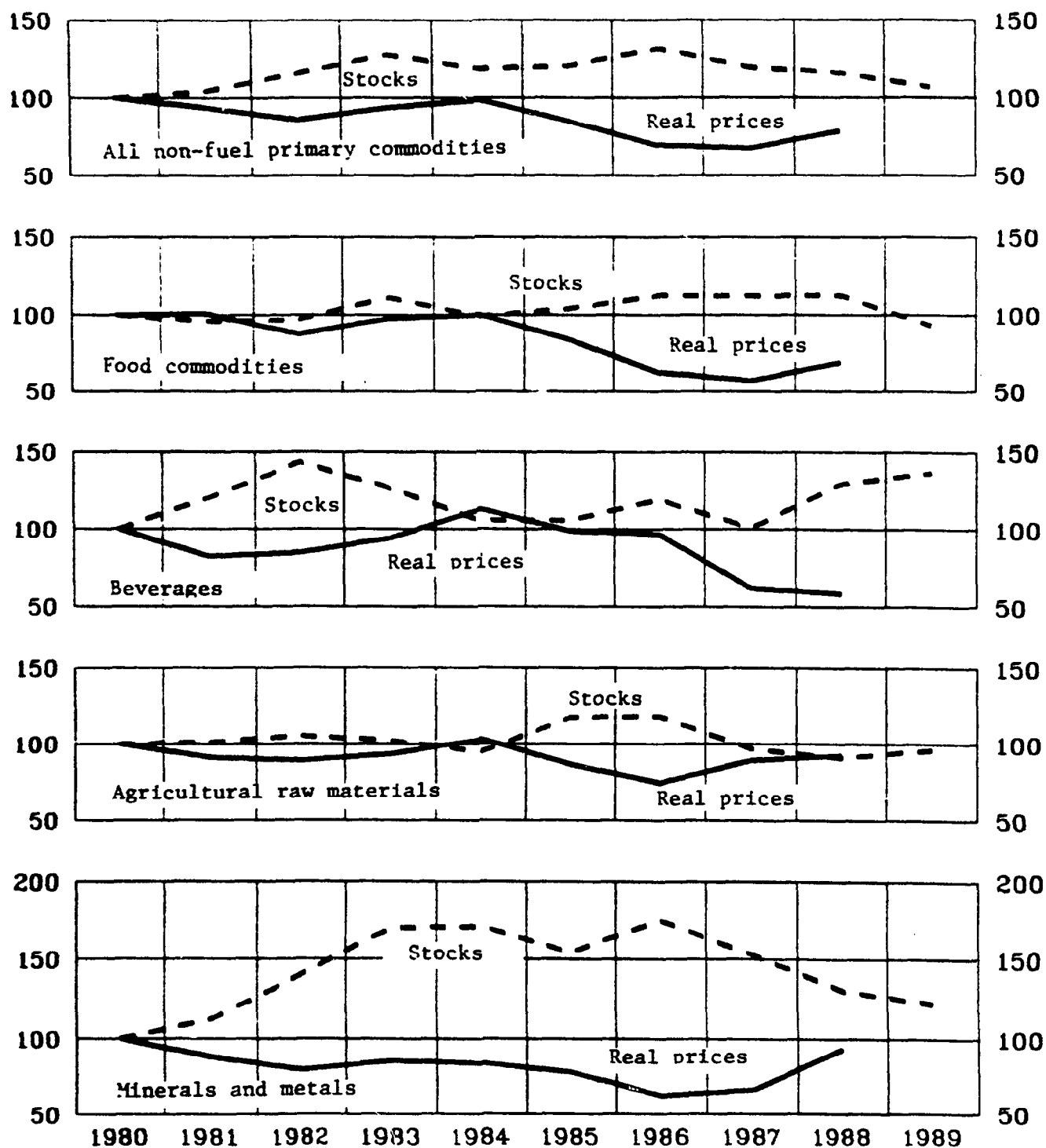


Table 3. Prices for Non-Fuel Primary Commodity Exports of Industrial Countries and of Developing Countries, 1970-88

(Indices: 1980-100)

Years	Nominal Prices 1/				Real	
	In SDRs		In U.S. dollars		Prices 1/2/	
	Industrial countries	Developing countries	Industrial countries	Developing countries	Industrial countries	Developing countries
1970	49	44	37	33	107	96
1971	49	41	38	32	103	87
1972	49	43	41	36	104	91
1973	76	60	70	55	150	119
1974	87	77	80	71	144	128
1975	73	63	68	59	107	93
1976	79	78	70	69	109	108
1977	78	75	70	85	101	123
1978	79	84	76	80	95	101
1979	95	95	94	95	104	105
1980	100	100	100	100	100	100
1981	102	95	93	87	97	90
1982	98	92	83	78	88	83
1983	107	102	88	83	96	91
1984	112	110	88	87	99	98
1985	98	97	76	76	86	85
1986	80	83	72	75	68	71
1987	82	78	81	77	69	65
1988	101	88	104	91	83	73
1987 I	75	73	72	71	63	62
II	79	74	78	73	67	62
III	84	79	83	77	71	66
IV	89	85	92	87	75	71
1988 I	91	84	96	89	77	71
II	101	88	106	93	83	73
III	106	90	105	89	86	73
IV	105	91	108	94	85	74

Source: Commodities Division, IMF Research Department.

1/ See Appendix I of IMF Primary Commodities Market Developments and Outlook (May, 1986) for commodity weights in these indices.

2/ Non-fuel commodity prices deflated by unit values of manufactured goods exports of "developed market economies" as reported by United Nations, Monthly Bulletin of Statistics (New York), various issues.

in the index for industrial countries. In contrast with the movement of real prices for non-fuel primary commodities, petroleum prices in 1988 fell by 25 percent in real terms.

4. Commodity prices and export earnings

In 1988 global earnings from exports of non-fuel primary commodities increased substantially. In terms of SDRs, estimated aggregate earnings from exports of the 19 leading non-fuel commodities increased by 17 percent compared with 1987; in terms of dollars, the increase was 21 percent (Table 4). Large increases are estimated in earnings from exports of aluminum (61 percent in terms of SDRs), palm oil (50 percent), copper (40 percent), soybean meal (30 percent), wheat (24 percent), and soybeans (23 percent); a large decrease (24 percent) is estimated for earnings from exports of cocoa. Many of the commodities registering large increases are primarily exported by industrial countries, rather than developing countries. For this reason, earnings of industrial countries from the exports of the 19 leading non-fuel primary commodities are estimated to have increased considerably more (23 percent) than those of developing countries (12 percent). The increased earnings from these commodities is attributable to rising prices; aggregate export volumes of the 19 commodities, for both industrial and developing countries, is estimated to have declined marginally in 1988 (Table 5).

In line with the 12 percent rise in 1988 in the export earnings of developing countries from the exports of major non-fuel primary commodities, a 10 percent increase in total export earnings in terms of SDRs accrued to those Fund members with non-fuel primary commodities accounting for at least half of their export earnings (in a reference period 1984-86). This was the first increase in the aggregate export earnings for this group of 53 countries since 1985 (Table 6). For the subgroup of 13 countries exporting predominantly minerals and metals (not including fuel), the increase was entirely the result of price increases; the aggregate volume of exports fell by nearly 2 percent for these countries. The subgroup of 40 countries with predominantly agricultural exports showed volume increases were more important than unit value increases, reflecting largely weak prices for exports of coffee, cocoa, and tea. In this result.

Although export earnings for most developing countries exporting mainly non-fuel primary commodities increased in 1988, the export performance of this group of countries continued to be less favorable than for developing countries exporting mainly manufactures. In 1988 the Fund members classified as developing countries exporting mainly manufactures (17 countries) increased their export earnings by nearly 16 percent, following a rise of the same magnitude in 1987; these increases were derived largely from rising export volumes.

Table 4. Export Earnings from 19 Major Commodities, 1985-88

	1985	1986	1987	1988	1985	1986	1987	1988
	(In billions of SDRs)				(In billions of U.S. dollars)			
Total 19 commodities	102	87	82	94	104	102	106	128
Industrial countries 1/	43	35	35	42	44	41	45	57
Developing countries	55	48	43	47	56	56	56	64
U.S.S.R. and Eastern European countries	4	4	4	5	4	5	5	7
Cereals								
Wheat	15.1	11.1	9.8	12.0	15.3	13.0	12.6	16.1
Maize	8.5	5.6	5.1	5.6	8.6	6.6	6.6	7.6
Rice	3.1	2.6	2.5	2.9	3.1	3.1	3.2	3.9
Vegetable oils and protein meals								
Soybeans	5.4	4.7	4.4	5.3	5.5	5.5	5.7	7.2
Soybean meal	3.4	3.7	3.7	4.8	3.5	4.3	4.8	6.5
Soybean oil	2.3	1.0	1.1	1.3	2.3	1.2	1.4	1.8
Palm oil	2.5	1.4	1.4	2.1	2.5	1.7	1.8	2.8
Sugar	8.8	8.0	7.8	7.9	8.9	9.4	10.0	10.6
Beverages								
Coffee	10.3	11.8	7.1	7.1	10.5	13.8	9.2	9.6
Tea	2.0	1.5	1.4	1.5	2.1	1.7	1.8	2.0
Cocoa 2/	3.7	3.4	2.9	2.2	3.7	3.9	3.7	3.0
Agricultural raw materials								
Hardwood	4.4	4.1	4.4	4.3	4.3	4.9	5.8	5.8
Tobacco	4.0	3.3	3.0	3.0	4.0	3.9	3.9	4.1
Natural rubber	2.7	2.5	2.8	3.1	2.7	2.9	3.6	4.1
Cotton	6.0	4.5	5.2	4.5	6.1	5.3	6.7	6.1
Metals								
Copper	4.4	3.8	4.5	6.3	4.5	4.5	5.8	8.5
Aluminium	7.4	7.2	9.0	14.5	7.5	8.4	11.7	19.5
Iron ore	6.9	5.9	5.3	5.1	7.0	6.9	6.8	6.9
Tin	1.9	0.9	0.9	1.0	1.9	1.0	1.2	1.3

Sources: 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.

Table 5. Aggregate Earnings, Volumes and Unit Values for 19 Major
Commodity Exports of Industrial Countries
and of Developing Countries, 1982-88

(Indices: 1980=100)

	1982	1983	1984	1985	1986	1987	1988
Earnings							
(In terms of SDRs)							
World 1/	97	104	112	101	86	81	94
Industrial countries	100	104	111	92	74	75	91
Developing countries	94	104	115	111	97	87	95
(In terms of U.S. dollars)							
World 1/	83	86	89	79	78	81	97
Industrial countries	85	85	88	72	67	74	94
Developing countries	80	86	91	86	87	86	98
Volumes							
World 1/	100	102	103	103	101	108	107
Industrial countries	97	97	98	91	88	99	98
Developing countries	102	107	108	115	113	117	115
Unit values							
(In terms of SDRs)							
World 1/	98	102	109	98	85	75	88
Industrial countries	103	107	113	102	85	76	93
Developing countries	93	97	106	96	85	74	83
(In terms of U.S. dollars)							
World 1/	83	84	86	77	77	75	90
Industrial countries	87	88	89	79	76	75	96
Developing countries	78	80	84	75	77	74	85
(In real terms)							
World 1/	88	92	97	86	73	63	73
Industrial countries	93	96	101	89	72	64	77
Developing countries	83	88	94	84	73	62	69
Market prices							
(In terms of SDRs)							
World 1/	93	103	108	95	78	74	86
Industrial countries	97	109	111	97	75	72	91
Developing countries	89	97	105	93	82	75	81
(In terms of U.S. dollars)							
World 1/	79	85	85	74	71	73	89
Industrial countries	82	90	87	75	68	71	94
Developing countries	75	80	83	72	74	74	84
(In real terms)							
World 1/	84	93	96	82	67	62	72
Industrial countries	87	98	99	84	64	61	75
Developing countries	80	87	93	81	70	63	67

Sources: See tables on individual commodities in Sections II to V.
Indices for individual commodities aggregated in accordance with
earnings share in total for 19 commodities in 1980 for world,
industrial countries, and developing countries.

1/ Includes U.S.R.R. and Eastern European countries.

Table 6. Developing Countries: Annual Changes in Export Earnings
by Volume and Unit Value, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Values (in terms of SDRs)	-5.1	-2.1	11.0	-3.4	-19.1	11.1	8.2
Fuel exporters	-12.3	-12.8	3.1	-9.4	-42.6	10.6	-8.6
Non-fuel primary product exporters	-2.4	3.1	10.6	-0.1	-10.2	-5.7	9.9
Agricultural exporters	-4.0	2.8	13.5	0.3	-8.3	-9.6	8.5
Mineral exporters	1.1	3.8	4.8	-0.9	-14.2	3.4	12.7
Exporters of manufactures	4.5	7.7	18.4	1.8	-4.3	15.2	15.9
Service and remittance countries	-2.8	-2.3	8.1	-3.7	-9.9	-3.3	12.1
Diversified export base	-3.9	7.9	9.4	-6.2	-13.2	8.4	4.0
Values (in terms of U.S. dollars)	-11.1	-5.2	6.4	-4.3	-6.6	22.4	12.5
Fuel exporters	-17.8	-15.5	-1.2	-10.2	-33.7	21.8	-5.0
Non-fuel primary product exporters	-8.6	-0.1	6.0	-1.0	3.8	3.9	14.3
Agricultural exporters	-10.1	-0.5	8.8	-0.6	6.0	-0.4	12.9
Mineral exporters	-5.4	0.5	0.5	-1.9	-0.9	13.9	17.2
Exporters of manufactures	-2.1	4.3	14.5	0.9	10.6	26.9	20.6
Service and remittance countries	-9.0	-5.4	3.7	-4.6	4.2	6.5	16.6
Diversified export base	-10.0	4.5	4.9	-7.1	0.3	19.5	8.2
Volumes	-6.6	1.9	7.1	0.9	9.2	10.6	11.1
Fuel exporters	-14.8	-6.7	2.0	-4.5	13.1	0.8	11.7
Non-fuel primary product exporters	1.4	1.5	2.2	5.5	4.4	2.2	4.1
Agricultural exporters	-0.7	2.5	2.4	6.3	4.0	1.8	7.3
Mineral exporters	6.0	-0.4	2.0	3.6	5.4	3.0	-1.6
Exporters of manufactures	1.9	10.3	14.5	4.1	8.7	18.1	12.7
Service and remittance countries	-1.4	-0.3	3.2	-1.1	12.2	2.1	6.7
Diversified export base	0.5	2.4	8.1	4.5	6.3	6.0	5.3
Unit values (in terms of SDRs)	1.6	-3.9	3.6	-4.2	-26.0	0.5	-2.6
Fuel exporters	2.8	-7.8	2.5	-5.1	-49.2	9.7	-18.2
Non-fuel primary product exporters	-3.7	1.6	8.2	-5.2	-14.0	-7.8	5.6
Agricultural exporters	-3.3	0.3	10.9	-5.6	-11.8	-11.2	1.1
Mineral exporters	-4.7	4.2	2.8	-4.4	-18.7	0.3	14.6
Exporters of manufactures	2.6	-2.4	4.2	-2.2	-11.9	-2.5	2.6
Service and remittance countries	-1.4	-2.0	4.7	-2.6	-19.6	-5.3	3.1
Diversified export base	-4.3	5.4	1.1	-10.2	-18.4	2.3	-1.2
Unit values (in terms of U.S. dollars)	-4.8	-7.0	-0.7	-5.1	-14.5	10.7	1.3
Fuel exporters	-3.7	-10.8	-1.7	-6.0	-41.4	21.0	-15.0
Non-fuel primary product exporters	-9.9	-1.6	3.7	-6.1	-0.6	1.6	9.8
Agricultural exporters	-9.4	-2.9	6.3	-6.5	1.9	-2.2	5.2
Mineral exporters	-10.8	0.9	-1.4	-5.3	-6.0	10.6	19.2
Exporters of manufactures	-4.0	-5.5	-0.1	-3.1	1.7	7.5	6.9
Service and remittance countries	-7.7	-5.1	0.4	-3.5	-7.1	4.3	7.3
Diversified export base	-10.4	2.0	-3.0	-11.1	-5.7	12.7	2.8

Source: International Monetary Fund, World Economic Outlook (forthcoming), Tables A23, A24, and A25, and Introduction to Statistical Appendix (for classification of countries).

5. Commodity prices and aggregate inflation

Movements in primary commodity prices convey important information in several ways: they signal changes in the major source of export earnings for most developing countries; they indicate changes in a significant component of the cost of producing many manufactured goods; and they may be a helpful leading indicator of changes in inflation in industrial countries. This last relationship would arise because of the use of primary commodities as inputs in the production of manufactured goods and services and because most primary commodities are traded in "auction" markets where prices tend to adjust to expected changes in supply and demand conditions more quickly than is the case in markets for manufactured goods.

An examination of the experience of the period since 1960 suggests that turning points in commodity price inflation--using a price index covering a broad basket of commodities--frequently have preceded turning points in consumer price inflation for major industrial countries as a group. 1/ In 1988 the broad index of commodity prices showed relatively little change as decreases in petroleum prices, until December, tended to largely offset increases in prices of metals and food. The index of consumer prices in the G-7 countries continued to rise at a rate of about 3 percent per annum.

6. Commodity trade and international cooperation

During 1988 a number of important issues were raised in discussions and negotiations on international trade matters. Of particular relevance are the issues under consideration in the Uruguay Round of the GATT. In addition, there could be important implications for international commodity trade as a result of the steady progress in the implementation of measures towards unification by 1992 of the internal markets of the European Community and of the completion of the legislative procedures related to the Free Trade Agreement between Canada and the United States.

Several negotiating groups established for the Uruguay Round met on a number of occasions throughout the year to discuss a wide range of issues. Negotiations on non-fuel primary commodities covered "natural resource-based products," "tropical products" and, for the first time in the forty-year history of the GATT negotiations, "agriculture" was included. The negotiations culminated in the "Mid-Year Review of the Round," convened at the ministerial level in Montreal, on December 5-9. Agreement on a complete set of proposals to guide future negotiations was not reached, however, because of the inability of the European Community (EC)

1/ James M. Boughton and William H. Branson, "Commodity Prices as a Leading Indicator of Inflation," National Bureau of Economic Research Working Paper No. 2750 (October 1988); forthcoming in Kajal Lahiri and Geoffrey Moore (Editors), Leading Economic Indicators (Cambridge University Press).

and the United States to reach a consensus on the future course of negotiations on agriculture. The EC favored introduction of gradual adjustment measures that would safeguard certain aspects of current policies, whereas the United States was pressing for agreement on the long-term objective of freeing agriculture from the effects of a wide range of policies that tend to distort trade. Nevertheless, important progress was reported in other areas of the multilateral trade negotiations, including the area of "services". Commitments were made on the liberalization of trade on natural resource-based products, including products in processed and semi-processed forms. With regard to trade in tropical products, the major industrial countries and several developing countries announced concessions on tariff and nontariff measures and on improvements that could be implemented in the existing Generalized System of Preferences (CSP) before the scheduled conclusion of the Uruguay Round in 1990.

Ratification of the agreements announced at the Montreal meeting and progress in the next stages of the Uruguay Round will depend largely on the ability of the industrial countries to reach a consensus on the issues related to agriculture. The Director General of GATT is to hold consultations with the parties concerned in preparation for a meeting in Geneva in April 1989. The ultimate success of the Uruguay Round will also hinge on progress in other important areas of the negotiations, especially textiles and apparel trade. Significant progress has not yet been reported in the discussions on liberalizing the Multifiber Arrangement, which sets administered limits on exports of textile and apparel from Japan and the developing countries to the United States and other major industrial countries.

The arrangements for the unification of markets within the European Community also have implications for international commodity trade. A number of banana exporting countries have already expressed concerns about maintaining their competitive market positions in member countries of the Community (see Section II). The free trade agreement between Canada and the United States is likely to have important implications for trade in forestry products and fruit and vegetables in particular.

With reference to individual commodity markets, a sufficient number of countries ratified the International Natural Rubber Agreement to enable it to enter into force in January 1989. Also, international exporter-importer agreements with respect to coffee and cocoa continued to be operative. These developments are discussed in Sections III and IV of this report. Other commodity markets continued to be affected by agreements between producer countries--notably the petroleum market by the members of OPEC (see above) and the tin market by the members of the Association of Tin Exporting Countries (see Section V).

The International Monetary Fund in 1988 continued to provide compensatory financing of export shortfalls while the EC continued to make disbursements under its STABEX scheme. Drawings by 9 developing countries totaling SDR 730 million were made under the Fund's compensatory

financing facility (CCF). In 1988 STABEX transfers to the African, Caribbean, and Pacific (ACP) countries associated with the EC under the Lomé Conventions made in 1988 with respect to application year 1987 were SDR 331 million, more than 50 percent higher than in the previous year; transfers under the STABEX scheme for the least developed countries amounted to SDR 5 million in 1988.

In August 1988 the Fund established a new facility, the compensatory and contingency financing facility (CCFF). This facility retains the essential features of the CFF, and also provides for contingency financing in conjunction with Fund supported adjustment programs. Underlying the creation of the CCFF was the objective of assisting members to maintain the momentum of their adjustment efforts when faced with adverse exogenous shocks. Contingency financing will be triggered when agreed key variables deviate from their projected paths. The key variables may include export prices, import prices, tourist receipts, workers' remittances and interest rates. In January 1989 the first arrangement to incorporate a contingency element under the new facility was approved.

7. Outlook for commodity prices in 1989-90 and for the medium term

The forecasting of prices for non-fuel commodities is particularly difficult in periods of low stocks when small changes in expectations with respect to supply--and, less frequently, demand--can trigger large price movements. By the end of 1988 stocks of metals and food commodities had fallen to low levels. In both cases the supply outlook is uncertain. Metals producers have been slow to increase capacity because of the history of the early 1980s when large excess stocks overhung the market and prices were low, and in view of their doubts about the sustainability of the current world expansion. For many months, more distant positions on metals futures markets have traded at a considerable price discount to closer positions. In the case of food commodities it is assumed that normal weather conditions in North America will return following the severe drought in 1988; however, the coming crop will be particularly vulnerable to any deficiencies in rainfall owing to dry subsoil conditions in the wake of the drought. Furthermore, parts of Argentina and Brazil are suffering from drought and there is still uncertainty as to the effects of various largely weather-related problems in 1988 on agricultural production in China and the U.S.S.R. Realized and potential shortfalls become especially important at a time when world stocks for cereals, oilseeds, and sugar are low. Because of these uncertainties, the projections presented in this section are subject to an exceptionally wide margin of error.

The projections are based on the usual assumptions of fixed real exchange rates (at the levels prevailing in the second half of February of 1989), and no major changes in existing government policies. It is also assumed that petroleum prices would average \$15.60 per barrel in 1989 and would remain unchanged in real terms during 1990 and over the medium term (1991-94). The growth of output in the G-7 countries is projected to slow from 4 1/4 percent in 1988 to about 3 1/4 percent in 1989 and to

approximately 3 percent in the period 1990-94. Export prices for manufactured goods are projected to increase by 4 1/2 percent in dollar terms in 1989 and by 3.8 percent in 1990-94.

Taking into account available information on supply and demand for specific commodities, and the assumptions specified above, the world index of prices of non-fuel primary commodities is projected to remain roughly at its 1988 level during 1989--an increase of 1 1/2 percent in dollars. The eventual decline in the prices of metals and food commodities is projected to have an important impact on the average for the overall index in 1990, which is projected to decline by about 8 percent in dollars.

Over the medium term, it is anticipated that a slowing of the rate of growth in the supply of non-fuel commodities will result in increases in the overall index, rising to about 4 percent per annum. This increase would be marginally in excess of the price rise of manufactured goods exports assumed at 3.8 percent, and hence result in a small rise in prices for non-fuel commodities in real terms. However, this rise is unlikely to be sufficient to improve in any appreciable way the terms of trade of those countries primarily dependent on exports of non-fuel primary commodities for their earnings of foreign exchange. There will, of course, continue to be periods when prices for individual commodities or groups of commodities will rise sharply because of unexpected production shortfalls or because of demand in excess of expectations. These periods, however, are likely to be brief and followed by offsetting price decreases.

II. Food Commodities

Increases in the prices of most food commodities in 1988 were substantial (Chart 4). The largest--over 30 percent on average, in terms of SDRs--occurred in vegetable oils and protein meals, but price rises for cereals and for "free market" sugar were almost as great. Despite these advances, however, the aggregate price index for food commodities in 1988 remained substantially below the level of the index observed during the early to mid-1980s.

A number of factors contributed to the rising food prices in 1988. Although the strong growth of world output in general and output in the G-7 countries in particular was of importance, the principal factor was the decline in production of most food commodities (Table 7). After three consecutive years of robust growth, world production of foods declined by about 1 percent in 1987 and by over 2 percent in 1988. Unfavorable weather conditions, especially the severe droughts in North America, Central America and major cereal producing areas of South America, were largely responsible for this decline. However, the continuing adjustment of production, through administered and voluntary acreage reductions in many countries, in response to high inventories of food commodities and decade low prices also played a role.

Table 7. Movements in the Prices of Food Commodities
and Related Economic Indicators, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Prices of food commodities 1/							
In SDRs	-9.4	12.5	3.3	-14.3	-24.0	-7.4	23.2
In U.S. dollars	-15.2	8.7	-0.7	-15.5	-12.2	2.4	27.7
Real 2/	-13.4	12.0	2.1	-15.8	-25.6	-8.8	20.5
Domestic prices in G-7 countries							
Consumer price index							
In SDRs	6.7	4.9	4.6	3.5	1.0	0.5	3.0
In U.S. dollars	-0.1	1.6	0.3	2.5	16.7	10.7	7.0
GNP deflator							
In SDRs	6.4	5.2	4.2	2.9	2.1	0.4	2.8
In U.S. dollars	-0.4	1.8	0.0	1.9	18.0	10.6	6.9
Real GNP in G-7 countries	-0.4	2.9	5.1	3.4	2.7	3.4	4.2
World consumption of food commodities 3/							
Index of consumption	3.2	0.3	2.7	2.1	6.9	1.0	-0.5
World supply of food commodities 3/							
Index of production	5.0	-3.8	8.1	1.6	3.5	-0.9	-2.4
Index of supply 4/	5.1	-1.3	5.1	3.8	5.4	-0.8	-3.3
Index of closing stocks	14.9	-12.9	18.3	17.8	-1.9	-6.6	-25.0

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

1/ Refers to IMF world index of food commodities. These percentages differ from those reported in the World Economic Outlook, April 1988, which refer to the index of commodities exported by developing countries.

2/ Index of dollar prices of food commodities deflated by the index of dollar unit values of manufactured exports.

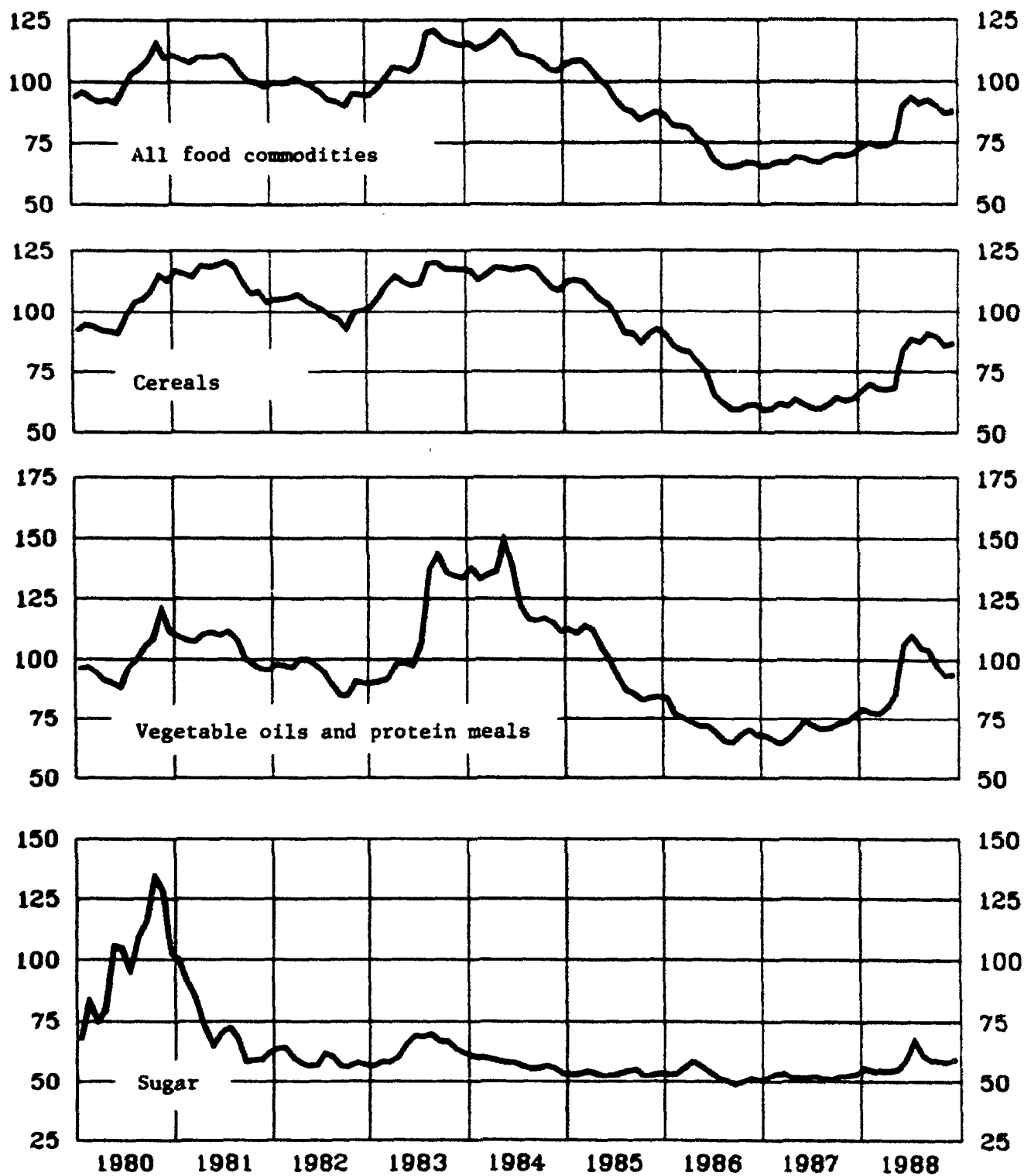
3/ Overall indices constructed using the same weights for the indices of individual commodities as in overall (world) price index. Crop year data for agricultural commodities are given under the earlier calendar year, e.g. crop year 1980/81 under 1980. The commodity coverage of the indices of consumption and stocks is less comprehensive than the coverage of indices of production and supply.

4/ Supply is defined as production plus beginning-of-year stocks.

CHART 4

Food Commodity Prices in SDRs, 1980-88

(Indices: 1980=100)



The main question relating to the outlook for 1989 concerns the extent to which production in a number of major producing countries will rebound from the drought reduced levels of the 1988/89 crop year. Given the demonstrated productivity and past responsiveness to higher prices of food producers worldwide, it is likely that world production of food commodities will increase appreciably in 1989 with the result that most food prices will begin to fall in the latter part of the year.

1. Cereals

The rapidly changing nature of the world cereals market has been clearly demonstrated over the last five years. In the 1983/84 crop year, drought in a number of countries and acreage reductions in the United States were key contributing factors to a 4 percent drop in global cereals output and a sharp decline in cereal stocks to a level equivalent to 20 percent of annual utilization, compared with 24 percent a year earlier (Table 8). Largely reflecting the changed supply situation, cereals prices, as measured by an index of the weighted average price of wheat, maize, and rice, increased in 1983 by 11 percent in terms of SDRs and by 8 percent in U.S. dollar terms (Table 9). In each of the following three years, world grain output exceeded utilization by a substantial margin, resulting in a buildup of stocks at end of crop year 1986/87 to the equivalent of 28 percent of annual utilization, a ratio not previously attained. This accumulation of stocks was associated with a collapse of prices; the index of cereals prices in SDR terms fell by nearly one half between 1983 and 1987. The rebound in production in these years reflected mainly a rise in yields to record levels as a consequence of favorable weather conditions, combined with increased use of high-yielding seeds, irrigation, fertilizer, and pesticides.

Nevertheless, in only two years the record cereal stocks available at the end of crop year 1986/87 were seriously depleted. In crop year 1987/88, world cereal production fell by 5 percent, mainly because of lower area harvested in the United States, where acreage reduction programs designed to reduce the cost of holding inventories were intensified, in Australia and Argentina, where low prices led to land being diverted to other uses, and in the U.S.S.R., where marginal land continued to be taken out of production. Wet weather in Europe and the failure of the summer monsoon in South and Southeast Asia also lowered yields. In crop year 1988/89, overall cereal production is estimated to fall by a further 4 percent, as a 2 percent increase in rice production is likely to be more than offset by an 10 percent drop in coarse grains output. The production of wheat may be roughly unchanged from crop year 1987/88 because a sharp decrease in North American output should be offset by higher output in other countries. The main cause of the decline in aggregate cereal output was severe drought in North America, Central America, and the major cereal producing areas of South America during the second and third quarters of 1988. In the United States, the drought was the most severe on record since the 1930s in terms of precipitation deficiency combined with protracted periods of high temperature.

Table 8. Cereals: World Supply and Utilization, 1980/81-88/89

Crop Years	Area Harvested	Yield	Production	Utilization 1/	Closing Stocks 2/	Stocks/ Utilization Ratio 3/
	(In millions of hectares)	(In tons a hectare)	----- (In millions of tons) -----			(In percent)
1980/81	724	2.00	1,446	1,475	286	19
1981/82	734	2.04	1,497	1,476	307	21
1982/83	717	2.16	1,548	1,499	355	24
1983/84	708	2.10	1,485	1,538	303	20
1984/85	710	2.32	1,647	1,586	363	23
1985/86	716	2.32	1,663	1,596	430	27
1986/87	710	2.37	1,685	1,657	457	28
1987/88	686	2.34	1,605	1,664	398	24
1988/89 4/	692	2.24	1,550	1,661	287	17

Source: U.S. Department of Agriculture, World Grain Situation and Outlook, January 1989.

1/ For countries where stocks data are not available, utilization estimates represent "apparent" utilization, that is, they 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 the 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 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/ U.S. Department of Agriculture estimate.

Table 9. Prices of Cereals, 1979-88

Years	Index of Prices of Cereals <u>1/</u>	Wheat <u>2/</u>	Maize <u>3/</u>	Rice <u>4/</u>
	(1980=100)	----- (In SDRs a ton) -----		
1979	90.7	124	89	259
1980	100.0	133	97	333
1981	114.4	148	111	409
1982	101.8	145	98	266
1983	113.4	147	127	259
1984	115.1	149	133	246
1985	100.4	134	111	214
1986	72.0	98	75	179
1987	61.9	87	58	177
1988	79.8	108	80	225
1987 I	60.4	89	55	162
II	62.3	88	61	164
III	60.6	85	58	178
IV	64.1	88	61	204
1988 I	68.5	94	64	220
II	73.7	99	73	220
III	89.2	118	94	235
IV	87.6	122	87	225
	(1980=100)	----- (In U.S. dollars a ton) -----		
1979	90.1	160	116	334
1980	100.0	173	126	434
1981	103.8	175	131	483
1982	86.5	160	108	293
1983	93.1	157	136	277
1984	90.7	152	136	252
1985	78.1	136	112	217
1986	64.9	115	88	210
1987	61.5	113	76	230
1988	82.2	145	107	302
1987 I	58.5	112	69	205
II	62.0	114	78	213
III	59.5	108	73	228
IV	66.1	118	81	274
1988 I	72.0	128	88	301
II	77.4	135	100	301
III	88.9	153	122	305
IV	90.5	164	117	302

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: wheat, 48 percent; maize, 36 percent; rice, 16 percent.

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

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

4/ Thai white milled rice, 5 percent broken, f.o.b. Bangkok; Board of Trade posted price.

With cereal utilization rising at an annual average rate of 1.5 percent a year during the past five years, global cereal stocks are projected to decline to the equivalent of 17 percent of annual utilization by mid-1989, the level regarded by the Food and Agriculture Organization of the United Nations (FAO) as the minimum necessary to ensure world food security. Nonetheless, although some countries have experienced severe famine related to civil disturbances, there has been no occurrence of widespread food shortages because the shortfall in production in 1988/89 has occurred mainly in food exporting countries. Cereal production in the low-income food deficit countries, as defined by the FAO, was generally above normal, and in some cases at record levels in 1988.

Cereal prices rose sharply in 1988 in response to the anticipated loss of production of wheat and coarse grains, and strong demand for rice for stock replenishment by countries experiencing a production shortfall in 1987. The index of cereal prices in SDRs increased by 29 percent in 1988 and the U.S. dollar index rose by 34 percent; a sharp increase in rice prices occurred in the first quarter of the year, and wheat and coarse grains prices rose sharply in the third quarter.

A recovery in global cereal output is projected for 1989/90 in response to higher area planted in North America and an expected improvement in yields. The extent of the recovery in yields, however, is uncertain because the subsoil moisture in the major cereal producing regions of the United States and Canada had not been restored to normal by the end of 1988.

a. Wheat

Despite fluctuations caused mainly by variations in yield, global wheat output exceeded utilization each crop year from 1981/82 through 1986/87 (years ended June). The ratio of end of period stocks to annual utilization reached 34 percent in 1985/86, the highest level since the late 1960s, and remained unchanged in 1986/87 when global output peaked at 530 million tons (Table 10). A complete turnaround in the market situation for wheat, however, has occurred in crop years 1987/88 and 1988/89. In 1987/88 excessive rainfall in Europe and the U.S.S.R. and lower planted area in North America, Australia and Argentina contributed to a 5 percent fall in production to 504 million tons, while world utilization rose by 2 percent to 534 million tons. The ratio of stocks to utilization fell to 27 percent. In crop year 1988/89, utilization is again estimated to exceed production by about 30 million tons owing to drought-related output losses in a number of countries, and the ratio of stocks to utilization is expected to decline to 22 percent, which would be the lowest level recorded since the early 1970s. Reflecting these developments, wheat export prices in the United States declined from an average of \$173 a ton in 1980 to \$113 a ton in 1987, but then recovered to \$164 a ton in the final quarter of 1988.

Table 10. Wheat: World Commodity Balance, 1982/83-88/89

(In millions of tons, unless otherwise indicated)

	July/June Crop Year						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 1/
Production	<u>477</u>	<u>489</u>	<u>512</u>	<u>500</u>	<u>530</u>	<u>504</u>	<u>503</u>
China	68	81	88	86	90	88	88
European Community	65	64	83	72	72	72	76
India	38	43	45	44	47	46	45
United States	75	66	71	66	57	57	49
U.S.S.R.	84	77	69	78	92	83	88
Other countries	147	158	156	154	172	158	159
Utilization	<u>460</u>	<u>474</u>	<u>493</u>	<u>496</u>	<u>523</u>	<u>534</u>	<u>534</u>
China	79	83	92	100	102	106	106
United States	25	30	31	29	33	30	29
U.S.S.R.	101	93	91	92	103	102	100
Other countries	255	268	279	275	285	296	299
Closing Stocks	<u>130</u>	<u>145</u>	<u>164</u>	<u>168</u>	<u>175</u>	<u>146</u>	<u>115</u>
United States	41	38	39	52	50	34	15
Other countries	89	107	125	116	125	112	100
Stocks/utilization ratio (in percent)	28	31	33	34	34	27	22

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: World Grain Situation and Outlook (Washington), January 1989.

1/ Estimate.

The price quotations for wheat in this section are U.S. export prices and refer to No. 2 hard red winter wheat, ordinary protein, f.o.b. at Gulf of Mexico ports. During 1988 these prices exceeded spot prices on the Kansas City Board of Trade (KCBT) by about \$10 a ton, the differential relating mainly to transportation costs. The spot prices are determined by auction in association with an active futures market and futures options market on the KCBT. Other futures markets for different classes of wheat operate on the Chicago Board of Trade (for seven types, primarily soft red wheat), the Minneapolis Grain Exchange (for durum and northern spring wheat), the Winnipeg Commodity Exchange (for Canadian feed wheat), and the London Grain Futures Exchange (for EC wheat).

During the first half of 1987, U.S. export prices for wheat rose significantly owing to fears of frost damage to the winter crop and strong export demand, including the sale of 4 million tons of subsidized wheat to the U.S.S.R. under the U.S. Export Enhancement Program (EEP). From an average of \$113 a ton in the first half of 1987, the export price fell to \$105 a ton in July following beneficial rains in the U.S. midwest which ensured a good spring harvest. In addition, the government reduced the prices at which wheat could be redeemed by "generic certificates," ^{1/} and set the loan rate for the crop for following season (1988) at the statutory minimum of \$79.74 a ton. ^{2/} Large sales by wheat farmers from the 1987 winter crop also contributed to the decline in prices.

In August 1987, however, a major turnaround in prices began as U.S. farmers slowed their sales of the spring crop, and there was a growing realization that the global carryover of wheat for crop year 1987/88 would be lower than expected. Global production in 1987/88 fell 5 percent from the peak of 530 million tons in 1986/87 due to a combination of lower area planted and harvested in all major producing countries except the EC, and adverse weather in Europe, South Asia, and the U.S.S.R. The area harvested in the United States fell by 8 percent reflecting the acreage reduction provisions of the 1985 Farm Bill; for the 1987 crop, the required reduction was set at 27.5 percent of base acreage, an increase from 22.5 percent. ^{3/} Nevertheless, with improved weather in the spring of 1987 compared with 1986, the yield rose by 9 percent and output increased slightly to a little over 57 million tons. A 15 percent reduction in initial price support payments in Canada contributed to a 5 percent decline in area harvested, and with yield returning to a more unusual level after reaching a record level in 1986, a 17 percent fall in

^{1/} The use of generic certificates is described in the discussion below on maize.

^{2/} The loan rate for the 1988 crop was raised to \$81.20 a ton in December 1987.

^{3/} Base acreage is the average of individual acreage planted in the previous five seasons, including land set aside under mandatory acreage reduction. Land set aside under the voluntary Conservation Reserve Program, under which producers bid on the compensation they would receive to put land to conservation use for 10 years, is deducted from base acreage.

production to 26 million tons was recorded. 1/ A 24 percent drop in output occurred in Australia mainly as a consequence of low world prices in preceding years which led to a reduction of 20 percent in the area harvested, although the yield of the Australian crop also declined due to hot and dry weather in the last quarter of 1987. 2/ Despite the elimination of a 5 percent export tax on wheat in July 1987, low prices also led to a 6 percent decline in harvested area in Argentina. However, with improved weather conditions, higher yields enabled output in Argentina to increase by 2 percent to 9 million tons. Wet weather reduced the yield of the U.S.S.R. crop by 6 percent, and with marginal lands being taken out of production, output declined by 10 percent to 83 million tons. The area harvested in China fell by 3 percent as relative official procurement prices were adjusted in favor of other export crops, but with good weather conditions output declined by only 2 percent to 88 million tons. In India, the failure of the monsoon reduced yields sharply and output declined by 2 percent to 46 million tons. In the EC, intervention prices for crop year 1987/88 were unchanged in ECU terms, but intervention purchases were only made at prices equal to 94 percent of the intervention price. Also, the monthly increment to intervention prices was lowered from ECU 2.45 to ECU 2 per ton. Devaluation of the green currency rates, however, raised national currency intervention prices in two major producing countries--France and the U.K.--so that planted area for the EC as a whole rose by 1 percent. Wet weather at harvest reduced the quality and yield of the crop so that output declined by 1 percent to under 72 million tons.

Following a 5 percent increase in crop year 1986/87, global utilization of wheat rose by a further 2 percent in crop year 1987/88 to 534 million tons. Utilization fell, however, in both the U.S.S.R. and the United States. Utilization and use in the U.S.S.R. fell by 1 million tons (1 percent) reflecting lower output of feed quality wheat; utilization of

1/ Initial payments for Canadian western red spring wheat under the Western Grains Stabilization Act (WGSA) for 1987/88 were Can\$ 20 a ton lower than in 1986/87. The WGSA guarantees producers' net returns to at least equal the average realized over the last five years. In April 1988 (well after the 1987 harvest), payments were revised upward by Can\$ 10 a ton in view of the higher than expected prices.

2/ Planting decisions in Australia are also influenced by the Guaranteed Minimum Price (GMP) which is the level of government price support. It is determined as 95 percent of the estimated average of net returns to farmers in the current crop year and the two lowest returns of the previous three years. The initial GMP for crop year 1987/88 announced in September 1987, at the time planting decisions could be affected, was A\$ 4.73 a ton below the final GMP for 1986/87. Subsequently, the final GMP for crop year 1987/88 was raised by \$A 9.19 a ton to reflect the upswing in international prices. Due to the sharp drop in actual below estimated prices in 1986/87, the government was required to subsidize farmers for the first time since the early 1970s, but no subsidy was required for 1987/88.

food quality wheat remained unchanged only with the assistance of large-scale imports. Utilization in the United States declined by 3 million tons (10 percent) because relative prices favored the substitution of corn for wheat in feed use. By contrast, utilization in China rose by 4 million tons (4 percent), and in other countries by 11 million tons (4 percent), mainly reflecting higher food use.

Despite a temporary weakness in prices associated with a reduction of speculative activity after the stock market crash in October, wheat prices continued to rise from August 1987 through late February 1988, averaging \$132 a ton in February. In addition to the changed global wheat market situation, the U.S. market was also influenced in August and September by EEP sales to China, the Philippines, and Poland, the extension of EEP eligibility to Brazil and Colombia, traditionally customers of Argentina, and the prospect of export sales to Asian countries affected by a shortfall in rice production and a steep rise in rice prices. The market was strengthened in November by a number of new export agreements under the EEP including one with the U.S.S.R. of 2.4 million tons, another with the U.S.S.R. for 2.35 million tons, and one with Morocco of 1.5 million tons. 1/ In these agreements, prices ranged from \$29 to \$42 a ton below the U.S. export price with the subsidy paid for in government-owned stocks through the use of generic certificates. The net price paid by importers rose during the year from about \$80 a ton in May to \$99 a ton in December, reflecting the reduced availability of global supply. To ensure that export sales did not tighten the domestic market excessively and thereby raise the rate of EEP subsidy, a weekly auction of government-owned wheat of up to 25 million bushels (0.68 million tons) commenced in November. Prices were strengthened in early 1988 on news of another U.S. export agreement with the U.S.S.R. for 2 million tons and the entry of India into the import market for the first time since 1984 to replenish stocks drawn down in 1987.

In late February, the U.S. government expanded its auction program to three per week for up to 10 million bushels each, signaling its determination to avoid a tighter market until the harvest of the winter wheat crop around mid-year. With favorable reports concerning the condition of the winter wheat crop, prices retreated in March to an average of \$125 a ton, but then moved up a little in April and May as a result of a new export agreements with the U.S.S.R. for 1 million tons, with India for 1.2 million tons, and with China for 2 million tons.

Limiting any upward movement of prices in the early months of 1988 was the anticipated heavy selling of wheat from the winter crop by farmers, as farm gate prices were well above the loan rate. Consequently, the first indications in April that extremely dry weather would affect the sowing and yield of the spring wheat crop in the United States and Canada had little immediate price impact. By late May, however, the continued

1/ Other major EEP agreements in the last quarter of 1987 were two with China and one with Iraq, Egypt, and Poland, each for 1 million tons.

absence of adequate rainfall throughout much of North America led to concerns that the U.S. winter crop would also suffer yield losses, and prices rose sharply. The U.S. export price increased by 16 percent in June to an average of \$150 a ton and fluctuated around that level during July and August as intermittent rainfall led to temporary price weakness but failed to break the drought. Prices rose further to an average of \$159 a ton in September because of strong export sales under the EEP and reduced estimates of the harvest in the U.S.S.R. and in Argentina, where severe drought delayed the planting of wheat in favor of corn and soybeans. Despite official projections that the U.S. carryover at the end of the 1988/89 crop year would be the lowest since the early 1970s, the EEP program remained in force to protect the United States' market share, albeit at a reduced rate of subsidy ranging from \$12 to \$22 a ton. A number of tendered export agreements were rejected by the government on the grounds that the proposed rate of subsidy was too high.

Widespread heavy rainfall in mid-September in the aftermath of Hurricane Gilbert provided substantial relief from drought in the United States and subsequent rainfall assisted the planting of the 1989 U.S. winter crop. Overall precipitation, however, was not sufficient to restore subsoil moisture to normal levels. Prices were supported at this time by dry weather in Australia which reduced estimates of the Australian 1988/89 crop, and by heavy rain in Canada at harvest time which lowered the quality of the crop, already decimated by drought. Despite negative influences, such as the mid-October announcement of the release of 1.5 million tons from the U.S. Food Security Reserve for P.L.480 programs in 1989, and the absence of new export sales following the extension to the end of 1990 of the long-term grain agreement between the United States and the U.S.S.R., prices continued to rise, averaging \$164 a ton in the final quarter of 1988. The underlying strength in prices reflected the tightest supply situation, particularly in high quality milling wheat, in many years.

In the United States, the mandatory acreage reduction requirement for participation in the support program in crop year 1988/89 was unchanged at 27.5 percent of base acreage, and the area planted to wheat remained at about the same level as in 1987/88. 1/ However, the drought caused a

1/ Other features of the 1988 crop program for wheat included a 3 percent reduction in both the target price and loan rate to \$155.43 a ton and \$81.20 a ton, respectively. Both wheat and feed grains were also eligible for an optional "0/92" program, whereby producers could place all or part of their permitted acreage (after the mandatory reduction) in the conservation reserve--a 10-year set-aside--and receive deficiency payments on up to 92 percent of their permitted acreage. Deficiency payments are the difference between the target price and the loan rate or average market price. Estimated wheat deficiency payments for wheat harvested in 1988 were \$56.22 a ton, of which, 40 percent was received in advance. The participation rate in the wheat price support program with its mandatory set-aside declined in 1988 under the influence of high wheat prices, but the impact on total area planted was almost exactly offset by increased participation by other producers in the Conservation Reserve Program.

4 percent fall in harvested area and a 10 percent fall in yield. Although the winter wheat crop was almost fully grown before the onset of the drought, but the spring crop was reduced by more than half 1/ production fell by 14 percent to 49 million tons, the lowest level since 1978/79. Drought reduced the area harvested and yield of the Canadian crop even more sharply; with spring wheat predominant in total output, the average yield fell by 38 percent and production declined by 40 percent to 16 million tons. 2/ Severe drought in Argentina through mid-September delayed the planting of the 1988/89 wheat crop and induced producers to switch to maize and oilseeds, which are planted later in the year. The wheat area harvested declined by 6 percent, and with the yield impaired by dry weather, output is expected to fall by 17 percent to 7 million tons.

Notwithstanding these large reductions in the United States, Canada, and Argentina, global wheat production in the 1988/89 crop year is expected to remain at about the same level as in 1987/88 because of offsetting output increases in other countries.

A bumper crop of 76 million tons (an increase of 6 percent) was harvested in the EC as increased average yields resulting from improved weather conditions more than offset a 3 percent decline in area harvested. 3/ Production in the U.S.S.R. in 1988/89 increased by 6 percent to 88 million tons, albeit well below targeted output, partly reflecting the substitution of wheat for coarse grains in area planted to cereals. Although the yield of the spring wheat crop was affected by dry weather, growing conditions for the winter wheat crop were more favorable than in 1987/88. A higher area cultivated under "intensive technology" may also

1/ Farm incomes in the United States were supported in 1988 by official drought relief; if yield fell by 35 percent or more, the farmer was subsidized at a rate equal to 65 percent of the target price.

2/ Area planted was positively influenced by the announcement in April 1988 of initial payments under the WGSA for crop year 1988/89 of Can \$10 a ton higher than those set a year earlier. With the further strengthening of world prices and the onset of drought, these payments were raised by another \$30 a ton in July.

3/ Lower planted area in the EC partly reflected the introduction of a "guaranteed minimum quantity" or threshold level of production for all grains combined of 160 million tons, which, if exceeded, would trigger a 3 percent reduction in intervention prices for the next season. Although initial intervention prices for crop year 1988/89 remained unchanged, the monthly increment to intervention prices was reduced--by 25 percent compared with the 1987/88 level. In addition, a set-aside scheme was introduced. This scheme is compulsory for member states but voluntary for producers, who have the option to idle at least 20 percent of arable land for five years for an annual payment of between ECU 100 and ECU 600 a hectare, depending on the quality of the land. The impact of this scheme was limited in 1988, as four member states failed to implement the scheme by year-end, and as less than 240 thousand hectares was set aside in other states.

have contributed to a 2 percent increase in overall yield. 1/ The upswing in world prices induced Australian producers to increase the area planted to wheat by 4 percent, 2/ but excessively wet weather in the later stages of crop development prevented an expected increase in yields and is expected to limit the increase in production to 5 percent. Although dry conditions in the spring affected the development of China's winter wheat crop, and heavy rainfall and flooding in summer reduced the yield of the spring crop, output remained unchanged from 1987/88 because of higher planted area in response to a 7 percent increase in official procurement prices.

Global utilization of wheat is expected to remain unchanged at 534 million tons in crop year 1988/89. The growing food needs of the world's population is likely to be balanced by a reduction in purchasing power of importing countries caused by higher wheat prices, and the lower availability of good quality wheat. In the U.S.S.R. modestly higher domestic production is expected to be allocated to food use while feed use declines sharply. Utilization in the United States may decline slightly as higher food and seed use will be more than offset by lower feed use. However, utilization for feed use in other producing countries is expected to increase.

The excess of global utilization over global production in crop year 1988/89 is expected to lead to a fall in global wheat stocks of about 33 million tons, bringing the ratio of stocks to utilization at the end of June 1989 to 22 percent. This would represent only 2 1/2 months' utilization, compared with 4 months' utilization two years earlier at the end of 1986/87 crop year.

Largely reflecting sharply higher unit values, global export earnings from wheat in 1988 rose by an estimated 22 percent in terms of SDRs to \$12 billion, or by 28 percent in U.S. dollars to \$16 billion (Table 11). The volume of global trade in wheat increased by only 1 percent although this increase was on top of a 14 percent increase in 1987. Among exporting countries, lower output in Australia and Canada constrained their export volumes, while higher output enabled the EC to increase its exports. A marked increase in the U.S. export volume was made possible by running down stocks. In 1989, imports by the U.S.S.R. may fall substantially because of higher domestic output in the 1988/89 crop year. Imports by China and Korea may also be lower than in 1988, as relative prices for feed grains will favor maize imports. Thus, the volume of global trade is likely to decline but the value of trade should be supported by a further rise in average unit values.

1/ "Intensive technology" is defined as the application of better farm management techniques, permitting more decision making at farm level, and providing incentives for improved performance.

2/ The initial GMP for Australian white standard wheat for crop year 1988/89 was raised to A\$147.60 a ton which is A\$3.31 a ton above the GMP for 1987/88.

Table 11. Wheat: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (billions)	<u>15.1</u>	<u>11.1</u>	<u>9.8</u>	<u>12.0</u>	<u>15.3</u>	<u>13.0</u>	<u>12.6</u>	<u>16.1</u>
Industrial countries	12.9	10.1	9.0	10.9	13.1	11.9	11.6	14.6
Developing countries	1.5	0.6	0.5	0.6	1.5	0.7	0.6	0.8
U.S.S.R. and Eastern European countries	0.7	0.4	0.3	0.5	0.7	0.4	0.4	0.7
Volumes (in millions of tons)	<u>105.2</u>	<u>95.9</u>	<u>109.7</u>	<u>111.2</u>	<u>105.2</u>	<u>95.9</u>	<u>109.7</u>	<u>111.2</u>
Industrial countries	88.5	86.4	99.5	100.0	88.5	86.4	99.5	100.0
Australia	15.8	16.2	14.9	12.2	15.8	16.2	14.9	12.2
Canada	17.4	16.4	22.6	17.9	17.4	16.4	22.6	17.9
France	19.0	15.4	16.5	17.6	19.0	15.4	16.5	17.6
United States	26.1	26.5	32.6	37.8	26.1	26.5	32.6	37.8
Other	10.2	11.9	12.9	14.5	10.2	11.9	12.9	14.5
Developing countries	11.9	5.8	6.7	6.0	11.9	5.8	6.7	6.0
Argentina	9.7	4.1	4.3	3.7	9.7	4.1	4.3	3.7
Other	2.2	1.7	2.4	2.3	2.2	1.7	2.4	2.3
U.S.S.R. and Eastern European countries	4.8	3.7	3.5	5.2	4.8	3.7	3.5	5.2
Unit values (a ton)	<u>143</u>	<u>116</u>	<u>89</u>	<u>108</u>	<u>145</u>	<u>136</u>	<u>115</u>	<u>145</u>
Industrial countries	145	117	90	109	147	137	116	146
Developing countries	126	105	81	101	127	123	105	136
U.S.S.R. and Eastern European countries	142	102	82	98	144	119	106	132
Market prices (a ton) 2/	<u>134</u>	<u>98</u>	<u>87</u>	<u>108</u>	<u>136</u>	<u>115</u>	<u>113</u>	<u>145</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

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

The outlook for wheat prices in 1989 depends largely on the extent of the recovery in North American output in the 1989/90 crop year. The response in other countries to the higher prices now prevailing is likely to be restrained; there may not be much increase in area planted to wheat in Australia and Argentina because of more profitable alternatives such as wool, beef and soybeans, and production of wheat in the EC may also be constrained by a 3 percent cut in intervention prices for 1989, triggered by total grain output in 1988 exceeding the support ceiling of 160 million tons. 1/ Changes in government programs in both the United States and Canada should result in large increases in areas planted; 2/ however, yield may not return to normal because of subsoil moisture deficiency. Although the International Wheat Council has suggested that global output may increase by up to 50 million tons to a new record level in 1989/90, it is possible that not even the previous peak of 530 million tons in 1986/87 will be attained. In this event, since food use of wheat may increase at about the long-term annual average rate of 2 percent so that total utilization should exceed 530 million tons, a further reduction in global stocks could occur during the year. Prices are expected to continue to rise during the first half of 1989 until it is fairly certain that weather conditions favor the development of the U.S. winter wheat crop. If good weather continues for the spring crops in the United States and Canada, prices should decline in the second half of 1989. If weather conditions do not return to normal, rising prices throughout 1989 may be anticipated.

b. Maize

The impact of the 1988 drought on world market conditions was much greater for maize than for wheat because of dominant position of the United States in world maize production and trade. 3/ Except for 1983/84 (crop years ended September), global maize production exceeded global utilization each year in the 1980s up to 1986/87 when the ratio of closing stocks to utilization rose to a record 35 percent (Table 12). This ratio

1/ Total EC grain output in 1988/89 is estimated at 162.5 million tons, or 1.6 percent above the ceiling. In addition to the mandatory cut in intervention prices, only 1.4 percent (as opposed to 3 percent) of supplementary co-responsibility levy for 1988/89 will be reimbursed to farmers.

2/ The U.S. Government has set the acreage reduction requirement for the 1989 crop at 10 percent of base acreage, the midpoint of the statutory range, down from 27.5 percent for 1988. As a result, area planted may increase by about 15 percent, and with a return to normal yield, production may rise by one third to about 65 million tons. The loan rate and target price for the 1989 crop have also been reduced to the statutory minima, by 7 percent and 3 percent, respectively. The Canadian Government is expected to provide strong incentives for the 1989 crop, since initial payments for the 1988 crop were raised by another Can \$20 a ton in November 1988 to Can \$170 a ton, or Can \$50 a ton higher than the rate of payment set a year earlier.

3/ In 1987, the United States accounted for 40 percent of world maize production and about 60 percent of world exports.

Table 12. Maize: World Commodity Balance, 1982/83-88/89

(In millions of tons, unless otherwise indicated)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 1/
Production	<u>440</u>	<u>347</u>	<u>459</u>	<u>480</u>	<u>477</u>	<u>446</u>	<u>393</u>
China	60	68	73	64	71	80	75
United States	209	106	195	225	210	180	125
Other countries	171	173	191	191	196	186	193
Utilization	<u>419</u>	<u>414</u>	<u>435</u>	<u>425</u>	<u>459</u>	<u>462</u>	<u>462</u>
China	63	68	66	66	73	74	74
United States	138	122	131	133	150	152	140
Other countries	218	224	238	226	236	236	248
Closing stocks	<u>132</u>	<u>65</u>	<u>89</u>	<u>144</u>	<u>162</u>	<u>146</u>	<u>77</u>
United States	90	26	42	103	124	108	44
Other countries	42	39	47	41	38	38	33
Stocks/utilization ratio (in percent)	32	16	21	34	35	32	17

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: World Grain Situation and Outlook (Washington), January 1989.

1/ Estimate.

declined to 32 percent in 1987/88, and is expected to drop to 17 percent in 1988/89, mainly because of the drought. By comparison, the ratio of wheat stocks to utilization is expected to be reduced only from 27 percent in 1987/88 to 22 percent in 1988/89. Maize prices have also rose more sharply than wheat prices in response to these developments. After declining from \$136 a ton in 1984 to \$76 a ton in 1987, U.S. export prices for maize rose by 41 percent to \$107 a ton in 1988, whereas wheat prices increased by only 28 percent from 1987 to 1988.

The quotations for U.S. export prices in this section refer to U.S. No. 2 yellow maize, f.o.b. at Gulf of Mexico ports. During 1988, these prices exceeded spot prices on the Chicago Board of Trade (CBT) by about \$8 a ton, the differential reflecting mainly transportation costs. Spot prices and futures prices are interdependent, and in this case maize spot prices are influenced by the futures market in No. 2 yellow maize on the CBT, the only maize futures market in the world. Beginning in 1986 an important determinant of maize market supply and prices has been actions by the U.S. Government to influence the use of "generic certificates" by producers to redeem maize placed previously under loan and held in government storage. 1/ By lowering the price at which loans could be redeemed (the posted county price) the government was able to make redemption more attractive, and thereby channel additional maize into the market.

Although the average maize price of \$76 a ton in 1987 was the lowest since the early 1970s; prices rose during the year from \$69 a ton in the first quarter of 1987 to \$78 a ton in the second quarter as production shortfalls in Argentina and South Africa led to increased demand for U.S. exports, and imports by the U.S.S.R. were higher than expected. Forecasts of hot, dry weather in the United States also helped to raise prices. However, summer growing conditions proved to be almost ideal, and, influenced by government action to promote the use of generic certificates, prices declined to an average of \$73 a ton in the third quarter of 1987. 2/

1/ Commodity certificates have been issued by the U.S. Government since April 1986 as part of deficiency payments and paid land diversion payments to producers. They are generic since they can be exchanged for any commodity the individual farmer has placed in government storage. Since their face value is fixed in terms of dollars, their greatest value is in respect of the commodity whose price is at the greatest discount to the loan rate. In 1986-87, this commodity was maize; producers could repay their loans at less than face value, and also avoid the interest charges which would accrue if a loan was repaid in cash. If the maize so acquired was immediately sold, storage charges would also be avoided.

2/ Farm gate prices in the summer of 1987 ranged between \$63 and \$67 a ton, well below the loan rate for the 1987 crop of \$71.65 a ton. In these circumstances, the government adjusted posted county prices to encourage producers to use generic certificates to redeem old-crop loans and replace them with new-crop loans--a procedure known as "PIK and roll"--or to place the new crop under loan and redeem it immediately--a "quick PIK".

The global area planted to maize for the 1987/88 crop declined by 4 percent under the influence of more restrictive government support programs for maize in some countries, and more profitable alternative crops, and world production of maize in crop year 1987/88 declined by 31 million tons (6 percent) to 446 million tons. Production in the United States fell by 30 million tons (14 percent) as a record yield was unable to offset a sharp reduction in area planted. Production in China, the world's second largest producer, increased by 9 million tons (13 percent) on account of both higher area planted and yield, but this increase was offset by a combined reduction in output of 9 million tons in other countries. Of these countries, lower output was recorded in Brazil and Argentina in response to the greater profitability of soybeans, and in Thailand and India where the failure of the monsoon caused a sharp fall in yield. By contrast, improved yield in the EC, the world's third largest producing group, enabled output to increase by almost 1 million tons, ^{1/} and higher area planted in the U.S.S.R. resulted in an output increase of almost 2 million tons.

After rising by 8 percent in 1986/87, global utilization of maize increased by a further 1 percent to 462 million tons in crop year 1987/88. To promote the development of their livestock industries, maize consumption rose by nearly 2 million tons in both China and the U.S.S.R., and by under 2 million tons in Japan. Utilization in the United States increased by about 2 million tons as the relative prices of maize and wheat favored maize consumption.

In the final quarter of 1987 (the first quarter of the 1987/88 crop year), prices rose to \$81 a ton, reflecting the expectation that market conditions would tighten somewhat by the end of the crop year as well as large scale imports by the U.S.S.R. to upgrade the domestic livestock industry. Export prices in the first quarter of 1988 averaged \$88 a ton, being buoyed by the U.S. Government's announcement that it would not hold a weekly auction for maize similar to that for wheat, and by strong demand for U.S. exports, including sales of 2.3 million tons to the U.S.S.R. in March. Although producer prices moved above the loan rate in January, the use of generic certificates for maize redemption continued, as variations in posted county prices provided producers with opportunities to profit from redemptions. The pace of U.S. exports slackened off in the second quarter of 1988, as new Southern Hemisphere crops became available. Also exerting a downward influence on prices were surveys indicating a 3 percent increase in the area intended to be planted

^{1/} EC intervention prices were effectively reduced by 6 percent in ECUs for the 1987/88 crop. Although green rate adjustments meant that the reductions were moderated significantly in some countries, the overall area planted in the EC fell by 5 percent.

to maize in the United States in 1988, reflecting producers' optimism on market prices and a less attractive price support program. 1/

Beginning in May there were fears--increasingly realized--that persistent dry weather would seriously affect the U.S. maize crop. In June, when the dry weather affected the crop in the critical ear formation stage, maize prices rose by one third to an average of \$120 a ton. Also contributing to the strong upturn at this time were large purchases of U.S. maize by Japanese buyers. In July the continuing drought affected the maize crop in the next critical production stage--kernel formation--and prices rose by \$127 a ton.

Prices were therefore not only well above the U.S. Government loan rate of \$71.65 a ton for 1987 crop maize in storage but also above the "target price" of \$119.29 a ton for release of 1987 crop maize from the "farmer-owned reserve." 2/ However, because they anticipated even higher prices, farmers were slow to redeem loans with cash or certifications to make sales of 1987 crop maize.

Crop prospects, however, improved somewhat with intermittent rainfall in August in parts of the corn belt and heavy rainfall in mid-September associated with Hurricane Gilbert, and export prices remained near \$120 a ton through the end of 1988. The high level of prices in the second half of the year was by a number of factors other than the weather damage to the U.S. maize crop. Important amongst these factors were purchases of U.S. and Argentine maize by the U.S.S.R. and higher estimates of domestic U.S. feed use caused by shortages of other feed grains, especially oats. At the end of November, the long-term grain agreement between the United

1/ Although the loan rate for the 1988 crop was raised in December 1987 from the level originally announced in September 1987 by \$1.18 a ton to \$69.68 a ton, this represented a 3 percent decline from the 1987 loan rate. In addition, the target price for 1988 also was reduced by 3 percent to \$115.35 a ton, and deficiency payments were lowered by 9 percent to \$43.31 a ton. The acreage reduction requirement of 20 percent of base acreage remained in effect, but the optional paid land diversion (at \$78.74 a ton) was reduced from 15 percent to 10 percent. Finally, a "0/92" provision replaced the "50/92" provision in effect in 1987 whereby diversion payments are made even if no land is planted; this provision applied also to wheat and other feed grains.

2/ Producers may place grain in the farmer-owned reserve (FOR) under a 3-year loan at the expiration of the regular 9-month loan without incurring storage payments. If the producer price reaches the trigger price (equivalent to the target price), grain in the FOR is placed in release status for the following month, and the producers incur the storage charges which otherwise are covered by the government.

States and the U.S.S.R. was extended to end-1990. 1/ In addition, there were fears that part of the U.S. crop had been contaminated with aflatoxin--a carcinogen produced by a fungus in hot and dry weather.

Under the influence of higher price expectations, the global area planted to maize is estimated to be marginally higher in the 1988/89 crop year, but global production is estimated to fall by about 53 million tons (12 percent) because of drought. Output in the United States is estimated to have fallen by 55 million tons (31 percent), in response to a decline in yield. Drought is also mainly responsible for expected output reductions in China (by 5 million tons), and Brazil (estimated at 2 million tons). Partly offsetting these losses are increases in production estimated for Thailand and the U.S.S.R., mainly in response to better yields, and in Argentina and the EC, entirely reflecting higher area planted. In the EC, planted area increased by 8 percent as effective intervention prices were not reduced from those prevailing in the 1987/88 crop year. 2/ The transfer of acreage from wheat to maize production in Argentina should more than offset the impact of the 1988 drought on the early development and ultimate yield of the Argentine crop, although dry conditions which prevailed early in 1989 may also lower the yield. Global utilization in crop year 1988/89 is expected to remain unchanged at 462 million tons, reflecting expanded demand in the U.S.S.R. and some other countries offsetting lower utilization in the United States as a result mainly of lower livestock numbers.

The development of maize prices in 1989 will depend partly on the development of 1988/89 crop in the main exporting countries of the Southern Hemisphere--Argentina and South Africa, but mainly on the extent of the rebound in the United States crop in 1989. There will be a significant increase in area planted in the United States for harvesting

1/ The agreement calls for the U.S.S.R. to purchase a minimum of 9 million tons of wheat and maize annually, including 4 million tons each of wheat and maize and another 1 million tons of either. The final 1 million tons may also be satisfied by a purchase of 520 thousand tons of soybeans or soybean meal. Purchases of up to 12 million tons annually are permitted without further consultation.

2/ Other features of the EC support program for 1988/89, which apply to all grains, were the reduction in monthly increments to the intervention price by 25 percent, the introduction of an optional set-aside program, and the introduction of a supplementary 3 percent co-responsibility levy which is reimbursed if total EC grain output does not exceed 160 million tons, and reimbursed in part if this limit is not exceeded by more than 3 percent. These measures, however, were insufficient to prevent a rise in planted area.

in the last quarter of 1989. 1/ However, as a full assessment of the condition of the U.S. crop cannot be made until July at the earliest, prices should continue to rise through the first half of 1989, even if good weather conditions prevail for the maturation of the Southern Hemisphere crops. Assuming that there is a return to normal weather conditions in the second and third quarters of 1989 in the United States, maize prices should decline somewhat in the second half year.

Following a large increase of 12 percent in the volume of world trade in maize in 1987 on account of increased imports by the Republic of Korea, Japan, and the U.S.S.R., in 1988 the volume of world trade is estimated to have fallen by 1 percent (Table 13). Imports in 1988 by China continued to fall as a consequence of a bumper crop in 1987/88 while imports by Japan and the U.S.S.R. continued to increase. By contrast with 1987, sharply higher unit values will enable global export earnings to increase to an estimated SDR 5.7 billion (an increase of 10 percent). With the tightening of wheat availability in 1989, relative prices for feed grains will favor maize, and the global volume of trade in maize may rebound by about 5 percent, assuming a continuation in the recent trends in demand for feed grains from the Republic of Korea, Japan, Taiwan Province of China, and the U.S.S.R. In addition, earnings in 1989 are likely to increase substantially on the strength of the higher unit values received on shipments made at least in the early part of the year compared with shipments in corresponding months of 1988.

c. Rice

Rice production is concentrated in Asia and is highly dependent on the timeliness and duration of monsoon rains, particularly in countries where the share of irrigated area in total rice acreage is relatively low. Since rice is mostly consumed in the countries where it is produced, only about 4 percent of world production is traded, compared with 20 percent for wheat and 12 percent for maize. Therefore, production shortfalls in a few countries can cause an immediate and significant rise in international prices. The delayed arrival of the summer monsoon in 1987 was mainly responsible for the surge in rice prices in the second half of 1987, but also influential in the timing of the upswing was severe flooding in Bangladesh, a major importing country, in July-August 1987.

1/ The mandatory acreage reduction for participation in the 1989 maize program has been set at 10 percent of base acreage, down from 20 percent for 1988, and the optional paid land diversion has been eliminated. Moreover, the incentive to participate in the program has been reduced somewhat by lowering the target price by 4 percent to \$111.80 a ton, and the loan rate by 7 percent to \$64.96 a ton, both prices being the statutory minima. As a result, the area planted may increase by about 14 percent, and with favorable weather, the area harvested may increase by 22 percent.

Table 13. Maize: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>8.5</u>	<u>5.6</u>	<u>5.1</u>	<u>5.6</u>	<u>8.6</u>	<u>6.6</u>	<u>6.6</u>	<u>7.6</u>
Industrial countries	6.4	3.7	4.1	4.9	6.5	4.4	5.3	6.6
Developing countries	2.1	1.9	1.0	0.7	2.1	2.2	1.3	1.0
Volumes (in millions of tons)	<u>68.7</u>	<u>56.6</u>	<u>63.5</u>	<u>63.0</u>	<u>68.7</u>	<u>56.6</u>	<u>63.5</u>	<u>63.0</u>
Industrial countries	50.4	34.5	49.2	53.0	50.4	34.5	49.2	53.0
United States	44.0	27.1	40.9	46.1	44.0	27.1	40.9	46.1
Other	6.4	7.4	8.3	6.9	6.4	7.4	8.3	6.9
Developing countries	18.3	22.1	14.3	10.0	18.3	22.1	14.3	10.0
Unit values (a ton)	<u>124</u>	<u>100</u>	<u>80</u>	<u>90</u>	<u>125</u>	<u>117</u>	<u>104</u>	<u>121</u>
Industrial countries	127	108	83	93	129	127	107	125
Developing countries	113	86	68	74	115	101	88	100
Market prices (a ton) 2/	<u>111</u>	<u>75</u>	<u>58</u>	<u>80</u>	<u>112</u>	<u>88</u>	<u>76</u>	<u>107</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

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

The international rice market is less transparent than the markets for wheat and maize. Approximately half the transactions are government-to-government contracts at prices believed to be well below market prices. The market is also more segmented, with significant differences in the price movements of rice of various types and quality. Thailand is the world's largest rice exporter, accounting for about 35 percent of global export volume, followed by the United States (19 percent) and Pakistan (9 percent). The price quotations reported in this section refer mainly to Thai milled white rice, 5 percent broken, f.o.b. Bangkok. Reference is made to two price series for this type of rice--the price "posted" by the Thai Board of Trade, and the average of nominal market quotations by millers, as collected by United States officials in Bangkok. The latter series is more variable and may be more representative of actual prices in world trade. Reference is also made to U.S. export prices at California and Gulf of Mexico ports, which are influenced by the futures market prices for unmilled (rough) rice on the Chicago Board of Trade.

An important determinant of world prices since 1986 has been the support provided to producers in the United States under the 1985 Farm Bill. The key feature of the rice support program is the "marketing loan" whereby producers can repay their loans at a level below the loan rate determined as the higher of the world market price (as set by the government) or a specified percentage of the loan rate. This percentage was 50 percent in 1986 and 1987, 60 percent in 1988 and will be 70 percent in 1989 and 1990. The marketing loan allowed U.S. export prices to fall below the loan rate in 1986 and 1987 to the extent necessary to maintain the U.S. share of the world export market. 1/

Low rice prices in 1985 and 1986 came in the wake of the large world crop in 1984/85. This crop was considerably in excess of annual utilization, and was followed by near balance between production and utilization in 1985/86 (Table 14). 2/ Because of the accumulation of rice stocks, the increase in price as a consequence of the lower 1986/87 crop was small until August 1987, when deteriorating prospects for the main harvests for the 1987/88 crops in Thailand and India due to weak monsoon rainfall coincided with severe flooding at the transplanting stage for rice in Bangladesh. Flooding accompanying the eventual arrival of the monsoon in September further reduced the prospective harvest in Thailand, which gave additional impetus to the upsurge in prices. The posted Bangkok price averaged \$251 a ton in the second half of 1987, an increase of 20 percent over the first half year. Export prices for U.S. rice increased even faster over the same period, by 48 percent, reflecting, in addition to the global situation, low initial U.S. stocks and a 4 percent reduction in U.S. output. The United States was the main source for high

1/ The United States has also used EEP sales to a limited extent to counter subsidized EC exports to Jordan and Turkey.

2/ Crop years refer to rice harvested over a 9 month period beginning in the Northern Hemisphere with the U.S. harvest in August and ending in April with the last Southern Hemisphere harvest.

Table 14. Rice: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	Crop Years 1/						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 2/
Production (unmilled basis)	<u>420</u>	<u>453</u>	<u>469</u>	<u>470</u>	<u>468</u>	<u>454</u>	<u>475</u>
China	161	169	178	169	172	174	171
India	71	90	88	96	91	80	98
Indonesia	34	35	38	39	39	39	40
Bangladesh	21	22	22	23	23	23	22
Thailand	17	20	20	20	19	18	21
United States	7	5	6	6	5	6	7
Other countries	109	112	117	117	119	114	116
Production (milled basis)	<u>286</u>	<u>308</u>	<u>319</u>	<u>320</u>	<u>319</u>	<u>309</u>	<u>323</u>
Utilization (milled basis)	<u>286</u>	<u>304</u>	<u>311</u>	<u>321</u>	<u>323</u>	<u>317</u>	<u>323</u>
China	108	113	121	122	123	123	123
India	49	58	57	62	60	57	62
Indonesia	24	25	25	26	27	27	27
Bangladesh	15	15	15	15	16	16	15
Other countries	90	93	93	96	97	94	96
Closing stocks (milled basis)	<u>43</u>	<u>47</u>	<u>55</u>	<u>54</u>	<u>50</u>	<u>42</u>	<u>42</u>
China	22	26	30	26	24	23	20
India	3	6	7	9	9	6	9
Indonesia	2	2	3	3	2	2	2
United States	2	1	2	2	2	1	1
Other countries	14	12	13	14	13	10	10
Stocks/utilization ratio (in percent)	15	15	18	17	16	13	13

Source: U.S. Department of Agriculture, World Grain Situation and Outlook (Washington, D.C.), January 1989.

1/ Rice is harvested over a 9-month period; thus crop year 1982/83 represents crops harvested in late 1982 and early 1983 in the Northern Hemisphere and in early 1983 in the Southern Hemisphere.

2/ U.S. Department of Agriculture estimates.

quality rice in the period between the U.S. harvest in August and the Asian harvests at the end of the year. World prices peaked in February 1988 following the completion of the Asian harvests when the posted Bangkok price reached \$310 a ton. This peak was, however, well below the previous peak of \$535 a ton in mid-1981 that was associated with production shortfalls in India in 1980 and Korea in 1981.

World paddy production of 454 million tons in 1987/88 was 14 million tons (3 percent) lower than production in the previous year. Production in India declined by 11 million tons (12 percent) mainly as a result of a 10 percent reduction in yield because of drought. The yield in Thailand declined by 7 percent and output fell by 5 percent (1 million tons). Drought also lowered production in the Republic of Korea, Laos, the Philippines, and Vietnam, while reductions in planted area were responsible for reduced output in Burma, Indonesia, Japan, Pakistan, and the United States. 1/ Favorable weather conditions, however, enabled output to increase by 2 million tons in China, and by a combined total of 1 million tons in Brazil and Australia. The harvest in Bangladesh proved to be unaffected by the floods of August 1987 because most of the crop was replanted successfully.

Global utilization of milled rice fell by 6 million tons (2 percent) in 1987/88 to 317 million tons, reflecting in part the substitution of wheat for human consumption and maize for animal feed.

Large carryover stocks in importing countries and a shift in import demand from rice to much lower priced wheat and maize by Asian and African consuming countries helped contain the upward movement in the price of rice that began mid-1987. Market conditions eased considerably by the second quarter of 1988, largely in response to a bumper secondary rice crop in Thailand and the availability of an exportable surplus in Brazil. Also, it was anticipated that high prices would induce a sharp increase in global area planted for the main 1988/89 crops. Although the posted Bangkok price declined modestly to \$301 a ton, the nominal market quotations in Bangkok fell from \$305 a ton in February to an average of \$270 a ton in the second quarter. The market tightened a little between July and November 1988 with the posted price and nominal market quotations averaging \$305 a ton and \$272 a ton, respectively. There were larger than expected imports by India to replenish stocks and severe flooding in Bangladesh, Pakistan and Thailand in August and September.

World paddy production in 1988/89 is projected to recover by about 21 million tons (5 percent) to set a new record at 475 million tons. With higher planted area and exceptionally good monsoon rainfall, production is expected to rebound by 18 million tons in India, 3 million

1/ Under the U.S. support program for rice in 1987, the loan rate (average of all types, unmilled) was reduced by 5 percent to \$150.80 a ton and the target price was lowered by 2 percent to \$257.02 a ton. The acreage reduction requirement remained at 35 percent of base acreage.

tons in Thailand, 1.5 million tons in Burma, and by 0.5 million tons in the Philippines. Higher producer prices and a lower acreage reduction requirement contributed to an increase of 1.3 million tons in U.S. output in 1988. 1/ In China, however, a reduction in output estimated at 3.5 million tons occurred because of summer flooding in the Yangtze Valley, the main rice growing region. The relatively higher price of rice compared to other cereals is expected to limit the increase of global utilization in 1988/89 to about 323 million tons. This amount is equal to the milled equivalent of estimated world paddy production.

In December 1988 the prospect of sharply increased supply in 1989 contributed to a fall in posted price to \$289 a ton while the nominal market quotations declined to even lower levels. During 1989 further reductions in price are projected although market conditions are expected to remain fairly tight as importers continue to replenish depleted stocks. 2/

The volume of global trade is estimated to have declined in 1988 by 1.1 million tons to 11.4 million tons (Table 15), reflecting mainly lower exports by China, Pakistan, and the United States. An increase in imports of 0.6 million tons by India and 0.2 million tons by the Philippines for stock replenishment was more than offset by reduced import demand by other countries due to high prices or improved domestic output. Despite the fall in trade volume, a sharp increase in average unit values is estimated to have enabled the value of global trade in rice to rise from SDR 2.5 billion in 1987 to SDR 2.9 billion in 1988.

2. Vegetable oils and protein meals

The steep rise in prices of vegetable oils and protein meals in 1988 (Table 16) is mainly attributable to drought-related damage to the U.S. soybean crop following substantial reductions in its soybean stocks over the past two years. Prices in 1989, however, are not expected to rise significantly above the average levels recorded in 1988. Most of the sharp decline in U.S. soybean production is expected to be offset by increased output of soybeans and other oilseeds in other major producing countries. Vegetable oil stocks at the end of September 1988 (1987-88 crop year) were at record level.

Vegetable oils and protein meals are mainly derived from oilseeds. Most oilseeds are processed to expel their oil content and to produce meal rather than consumed directly. As meals are mainly used to produce

1/ The acreage reduction requirement for the 1988 crop was reduced to 25 percent of base acreage; the target price (average, all types) was lowered by 4 percent to \$245.82 a ton and the loan rate was lowered by 3 percent to \$146.17 a ton.

2/ In the United States, the acreage reduction requirement for the 1989 crop will remain unchanged from 1988 at 25 percent, but the target price has been reduced by 3 percent to \$328.10 a ton and the loan rate by 2 percent to \$143 a ton; these reductions are smaller than in 1988.

Table 15. Rice: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 2/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>3.1</u>	<u>2.6</u>	<u>2.5</u>	<u>2.9</u>	<u>3.1</u>	<u>3.1</u>	<u>3.2</u>	<u>3.9</u>
Industrial countries	1.3	1.1	1.0	1.2	1.3	1.3	1.3	1.6
Developing countries	1.8	1.5	1.5	1.7	1.8	1.8	1.9	2.3
Volumes (in millions of tons)	<u>11.1</u>	<u>12.5</u>	<u>12.5</u>	<u>11.4</u>	<u>11.1</u>	<u>12.5</u>	<u>12.5</u>	<u>11.4</u>
Industrial countries	3.5	3.7	3.8	3.6	3.5	3.7	3.8	3.6
United States	1.9	2.4	2.5	2.2	1.9	2.4	2.5	2.2
Other	1.6	1.3	1.3	1.4	1.6	1.3	1.3	1.4
Developing countries	7.6	8.8	8.7	7.8	7.6	8.8	8.7	7.8
Thailand	4.1	4.5	4.4	4.6	4.1	4.5	4.4	4.6
Other	3.5	4.3	4.3	3.2	3.5	4.3	4.3	3.2
Unit values (a ton)	<u>282</u>	<u>211</u>	<u>200</u>	<u>255</u>	<u>286</u>	<u>247</u>	<u>258</u>	<u>342</u>
Industrial countries	374	291	267	331	380	341	345	444
Developing countries	239	176	170	219	243	207	220	295
Market prices (a ton) 2/	<u>214</u>	<u>179</u>	<u>177</u>	<u>225</u>	<u>217</u>	<u>210</u>	<u>230</u>	<u>302</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

2/ Thai milled white rice, 5 percent broken, f.o.b. Bangkok; Board of Trade posted price.

Table 16. Prices of Vegetable Oils and Protein Meals, 1979-88

Years	Index of Prices of Vegetable Oils and Protein Meals 1/	Soybean Oil 2/	Palm Oil 3/	Sunflower- seed Oil 4/	Rapeseed Oil 5/	Coconut Oil 6/	Groundnut Oil 7/	Soybean Meal 8/	Groundnut Meal 9/	Fish Meal 10/
	(1980=100)	----- (In SDRs a ton) -----								
1979	103.6	512	506	590	492	762	688	188	184	306
1980	100.0	480	448	486	438	517	660	199	209	388
1981	105.5	430	483	542	410	483	624	214	228	396
1982	83.8	405	402	479	378	422	530	197	189	320
1983	113.2	483	471	522	467	686	668	222	215	423
1984	127.2	707	709	748	870	1,128	990	192	183	364
1985	97.5	567	498	593	532	588	894	155	144	276
1986	71.6	282	220	312	282	253	487	157	142	273
1987	70.5	258	284	279	236	341	387	157	125	296
1988	92.4	346	326	358	319	421	441	199	156	406
1987 I	86.1	245	263	264	234	310	398	143	126	257
II	70.4	267	263	304	240	321	398	155	131	280
III	71.1	253	246	274	223	366	375	158	106	318
IV	74.4	268	286	272	247	370	376	172	137	329
1988 I	78.1	301	309	304	284	393	376	183	130	349
II	90.8	358	340	335	305	427	436	209	157	430
III	106.3	414	364	440	382	472	552	228	181	461
IV	94.7	328	313	353	305	422	430	214	168	413
	(1980=100)	----- (In U.S. dollars a ton) -----								
1979	102.8	662	654	762	636	965	889	243	238	395
1980	100.0	598	583	633	571	673	859	259	272	504
1981	85.8	507	571	639	483	570	1,043	253	269	468
1982	79.6	447	445	529	417	467	585	218	208	354
1983	82.8	527	501	558	499	730	711	238	229	453
1984	100.4	725	729	767	687	1,155	1,017	197	188	373
1985	75.7	576	501	602	540	590	905	157	146	280
1986	64.4	342	257	366	307	296	569	185	166	321
1987	70.2	334	343	360	365	442	500	203	162	383
1988	95.3	463	437	480	427	565	591	268	209	544
1987 I	64.0	309	331	333	295	391	501	180	159	324
II	70.0	345	341	393	310	415	515	200	170	363
III	69.8	323	314	350	284	467	478	202	135	405
IV	76.8	360	384	365	331	496	504	231	184	442
1988 I	82.0	412	423	416	388	537	515	223	178	478
II	85.3	463	440	458	416	552	564	270	203	556
III	105.9	537	465	472	496	603	705	291	231	589
IV	97.7	441	420	473	409	567	578	287	225	556

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: soybeans, 41 percent; soybean meal, 24 percent; soybean oil, 11 percent; palm oil, 10 percent; coconut oil, 6 percent; fish meal, 5 percent; groundnut oil, 2 percent; groundnut meal, 1 percent; sunflowerseed oil and rapeseed oil are not included in the index.

2/ Dutch, f.o.b. ex-mill Rotterdam.

3/ Sumatra/Malaysian oil, c.i.f. Northwest European ports.

4/ Any origin, ex-tank Rotterdam.

5/ Dutch, f.o.b. ex-mill.

6/ Philippine/Indonesian oil, in bulk, c.i.f. Rotterdam.

7/ Any origin, c.i.f. Rotterdam.

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

9/ Argentine meal, in bulk, c.i.f. Rotterdam.

10/ Any origin, c.i.f. Hamburg.

animal feed, the demand for meals is derived from the demand for livestock products. Vegetable oil demand is derived primarily from the food and soap or detergent manufacturing industries. Products are highly substitutable in both the oil and meal markets. While some products may be preferred over others in particular end uses, either for technical reasons or because of consumer preferences, technological improvements in processing have increased the interchangeability of vegetable oils. As a result, price has become a more important criterion in the choice of oil by consumers. Price is also an important determinant in the choice of animal feedstuffs; these can be manufactured from a wide variety of materials, including oilseed meals, grains, grain by-products, cassava, and citrus and beet pulp.

The market is considerably more heterogeneous and complex on the supply side. While some oilseeds are produced as annual crops (mainly soybeans, sunflowerseed, cottonseed, groundnuts, and rapeseed), others are produced as perennial tree crops (mainly coconut, oil palm, and olives). While most producers of annual oilseed crops can adjust supply rapidly (generally within a year), to changes in market prospects, producers of tree crops have considerably less flexibility to vary supply in the short-term; tree crops have long gestation periods, lengthy economic life spans, and relatively low variable costs of cultivation and harvest. 1/

Different market forces govern the demand for oils and the demand for meals, but most oils are produced as a joint product with meal in the processing of oilseeds. The relative importance of these components varies considerably among oilseeds; for example, while soybeans are 80 percent meal and 18 percent oil by weight, rapeseeds are 60 percent meal and 37 percent oil by weight.

Soybeans are crushed mainly in response to meal demand. 2/ Thus, the demand for meal, rather than the direct demand for soybean oil, tends to determine the supply of soybean oil. As a result, strong demand for meal can lead to increased soybean oil supplies. Conversely, weak demand for meal can act to reduce the volume of beans crushed and, consequently, the volume of soybean oil produced, with little reference to the prevailing market prices for soybean oil. The soybean complex dominates prices in both the oil and meal markets. Soybean meal comprises over 60 percent of world meal production, while its oil provides over 30 percent of world vegetable oil production. The United States alone accounts for over 50 percent of world soybean production. Soybean oil is the most important

1/ The economic life span of an oil palm tree, for example, is about 30 years; the first crop is produced in about the third year after planting and peak output is achieved between the eighth and tenth years.

2/ In recent years soybean meal has accounted for over two thirds of the value of the soybean. Furthermore, soybean meal is relatively perishable, with an average storage time of only about 6 months; however, soybean oil may be stored over a considerably longer period of time of 1-2 years.

vegetable oil produced, strongly influencing the prices of other oils, and the commodity's supply structure has contributed to making prices of vegetable oil highly unstable. Protein meal prices have been relatively stable, however, because of substitution with alternative feedstuffs.

World oilseed production expanded rapidly in the 1970s in response to strong demand for oilseed meals used in animal feeds and for vegetable oils, and production has continued to grow rapidly in the 1980s, despite relatively low prices for these commodities. In the 1987/88 crop year world oilseed production, in terms of oil equivalent, increased by 7 percent to a record level of 57.8 million tons and is expected to remain at about that level during 1988/89 (Table 17). Production of soybeans and rapeseed increased by 6 percent and 17 percent, respectively, in 1987/88 and together accounted for 64 percent of the increase in total output for that year. In 1988/89, however, production of soybeans is expected to decline by 7 percent and production of rapeseed by 8 percent. The combined increase in palm oil and groundnut oil production, however, is expected to offset much of the decline in output of soybeans and rapeseed. Output of cottonseed, sunflowerseed, and copra also are expected to increase sufficiently to offset nearly all the remaining production shortfalls.

In 1988/89, world consumption of protein meals is expected to increase slightly above the previous year's level resulting in a drawdown in world stocks of oilseeds (Table 18). World consumption of vegetable oils is expected to increase by 4 percent, or at a slightly faster rate than in 1987/88. About three fourths of the growth in consumption would be attributable to palm oil, sunflowerseed oil, and groundnut oil. Vegetable oil stocks are expected to decline to slightly below the high end-1986/87 level. Vegetable oil stocks, which increased from the equivalent of 7 percent of consumption in 1982/83 to over 11 percent in 1987/88, are forecast at about 10 percent of consumption in 1988/89.

The increase in the index of vegetable oils and protein meals in 1988 was 31 percent in terms of SDRs and 36 percent in terms of dollars, reflecting higher average prices for all commodities in the group. Reflecting the higher export unit values which resulted from these price increases, export earnings from major oilseeds and their products (soybeans, soybean oil, soybean meal, and palm oil) rose by 26 percent from SDR 10.6 billion in 1987 to SDR 13.5 billion in 1988 (Tables 4 and 19-22). Volumes are estimated to have remained virtually unchanged from 1987 levels, with increases from developing countries being offset by decreases from industrial countries. With substantially higher export volumes and unit values, export earnings of developing countries increased by 40 percent, raising their share in total earnings from 45 percent in 1987 to 50 percent in 1988.

a. Soybeans and soybean products

Soybeans are the single most important oilseed and in recent years, the United States has accounted for over half of world production

Table 17. Major Oilseeds (Oil Equivalent): World
Commodity Balance, 1982/83-88/89

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
(In millions of tons: oil equivalent) 3/							
Production	47.3	45.2	51.5	54.7	54.2	57.8	57.9
Soybeans	16.7	15.0	16.8	17.4	17.4	18.4	17.1
Palm oil	5.9	6.3	6.9	8.2	8.1	8.6	9.3
Sunflowerseed	6.6	6.2	7.0	7.8	7.7	8.4	8.6
Rapeseed	5.3	5.2	6.2	6.8	7.2	8.4	7.7
Groundnuts	5.2	5.4	5.7	5.6	5.8	5.6	6.3
Cottonseed	3.9	3.8	5.0	4.4	3.9	4.5	4.7
Copra	2.9	2.4	2.9	3.3	3.0	2.7	2.9
Palm kernels	0.8	0.9	1.0	1.2	1.1	1.2	1.3
Noncrush use	7.3	7.6	7.7	8.1	8.1	9.1	9.0
Soybeans	2.6	2.9	2.7	2.6	2.9	3.4	3.1
Groundnuts	2.3	2.5	2.6	2.8	2.7	2.7	2.9
Other	2.4	2.2	2.4	2.7	2.4	3.0	3.0
Crushings/oil							
production	39.8	38.5	42.5	45.7	46.8	48.5	49.7
Soybean oil	13.6	12.8	13.3	13.8	15.1	15.0	15.0
Palm oil	5.9	6.3	6.9	8.2	8.1	8.6	9.1
Sunflowerseed oil	5.7	5.5	6.2	6.7	6.6	7.2	7.6
Rapeseed oil	5.0	4.9	5.6	6.2	6.8	7.6	7.0
Groundnut oil	2.9	2.9	3.0	2.9	3.1	2.9	3.4
Cottonseed oil	3.1	3.0	3.9	3.5	3.0	3.4	3.6
Coconut oil	2.8	2.3	2.6	3.3	3.0	2.6	2.8
Palm kernel oil	0.8	0.8	1.0	1.1	1.1	1.2	1.2
Oil consumption	39.6	38.5	41.9	44.5	46.6	48.2	50.0
Soybean oil	13.5	13.0	13.2	13.5	14.8	15.0	15.1
Palm oil	6.2	6.0	6.7	7.7	8.2	8.5	9.1
Sunflowerseed oil	5.4	5.6	6.0	6.6	6.6	7.1	7.7
Rapeseed oil	4.9	4.9	5.6	6.1	6.7	7.5	7.0
Groundnut oil	2.9	2.9	3.0	2.9	3.1	2.9	3.5
Cottonseed oil	3.1	3.1	3.8	3.5	3.1	3.4	3.6
Coconut oil	2.8	2.2	2.7	3.1	3.0	2.7	2.8
Palm kernel oil	0.8	0.8	0.9	1.1	1.1	1.1	1.2
Closing stocks	6.9	6.0	7.9	10.0	9.5	10.0	8.7
As oilseeds 4/	4.0	3.1	4.4	5.3	4.5	4.7	3.7
Soybeans	3.1	2.4	3.2	4.2	3.5	3.6	2.6
Other	0.9	0.7	1.2	1.1	1.1	1.1	1.2
As oil 5/	2.9	2.9	3.5	4.7	4.9	5.2	4.9
Soybean oil	1.5	1.3	1.4	1.7	2.0	2.0	1.9
Palm oil	0.5	0.8	1.0	1.5	1.4	1.5	1.5
Other	0.9	0.9	1.2	1.6	1.7	1.9	1.5

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 non-crush use less crushings.

5/ Change in oil stocks equals oil production less oil consumption.

Table 18. Major Oilseeds (Meal Equivalent): World
Commodity Balance, 1982/83-88/89

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
(In millions of tons: meal equivalent) 3/							
Production	113.0	102.7	119.2	122.3	121.6	130.4	124.5
Soybeans	74.2	64.9	73.4	76.5	77.0	81.5	75.0
Cottonseed	12.2	11.8	16.1	14.2	12.6	14.5	15.0
Rapeseed	9.0	8.7	10.4	11.2	11.8	13.9	12.5
Sunflowerseed	7.9	7.2	8.4	9.0	8.8	9.4	9.8
Groundnuts	7.1	7.7	8.1	8.1	8.3	8.0	8.9
Copra	1.6	1.3	1.6	1.9	1.7	1.6	1.7
Palm kernels	1.0	1.1	1.2	1.4	1.4	1.5	1.6
Noncrush use	19.7	20.6	20.6	20.6	21.6	24.8	23.6
Crushings/meal							
production	91.8	85.7	94.5	97.3	102.9	106.1	104.9
Soybean meal	60.5	55.3	58.2	60.9	66.9	67.2	65.4
Cottonseed meal	9.9	9.6	12.6	11.1	9.8	11.2	11.5
Rapeseed meal	8.4	8.1	9.4	10.2	11.1	12.5	11.3
Sunflowerseed meal	6.7	6.4	7.3	7.7	7.6	8.2	8.7
Groundnut meal	3.9	4.1	4.3	4.2	4.4	4.1	4.9
Copra meal	1.5	1.3	1.5	1.9	1.8	1.5	1.6
Palm kernel meal	0.9	0.9	1.2	1.3	1.3	1.4	1.5
Meal consumption	91.5	84.8	94.6	97.2	102.7	106.0	105.1
Soybean meal	59.8	54.8	58.5	60.8	66.7	67.1	65.5
Cottonseed meal	10.1	9.6	12.4	11.1	10.0	11.2	11.5
Rapeseed meal	8.4	8.0	9.4	10.1	11.0	12.5	11.4
Sunflowerseed meal	6.8	6.4	7.2	7.7	7.5	8.2	8.7
Groundnut meal	3.9	4.1	4.3	4.3	4.4	4.1	4.9
Copra meal	1.5	1.1	1.6	1.9	1.8	1.5	1.6
Palm kernel meal	1.0	0.8	1.2	1.3	1.3	1.4	1.5
Closing stocks	18.1	15.4	19.4	23.9	21.2	20.8	16.6
As oilseeds 4/	15.0	11.4	15.5	19.9	17.0	16.5	12.5
Soybeans	13.7	10.4	13.8	18.3	15.5	15.8	11.5
Rapeseeds	0.5	0.4	0.7	0.8	0.6	0.7	0.7
Other	0.8	0.6	1.0	0.8	0.9	0.0	0.3
As meal 5/	3.1	4.0	3.9	4.0	4.2	4.3	4.1
Soybean meal	2.6	3.1	2.8	2.9	3.1	3.2	3.1
Other	0.5	0.9	1.1	1.1	1.1	1.1	1.0

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.

Table 18. Major Oilseeds (Meal Equivalent): World
Commodity Balance, 1982/83-88/89

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
(In millions of tons; meal equivalent) 3/							
Production	<u>113.0</u>	<u>102.7</u>	<u>119.2</u>	<u>122.3</u>	<u>121.6</u>	<u>130.4</u>	<u>124.5</u>
Soybeans	74.2	64.9	73.4	76.5	77.0	81.5	75.0
Cottonseed	12.2	11.8	16.1	14.2	12.6	14.5	15.0
Rapeseed	9.0	8.7	10.4	11.2	11.8	13.9	12.5
Sunflowerseed	7.9	7.2	8.4	9.0	8.8	9.4	9.8
Groundnuts	7.1	7.7	8.1	8.1	8.3	8.0	8.9
Copra	1.6	1.3	1.6	1.9	1.7	1.6	1.7
Palm kernels	1.0	1.1	1.2	1.4	1.4	1.5	1.6
Noncrush use	<u>19.7</u>	<u>20.6</u>	<u>20.6</u>	<u>20.6</u>	<u>21.6</u>	<u>24.8</u>	<u>23.6</u>
Crushings/meal							
production	<u>91.8</u>	<u>85.7</u>	<u>94.5</u>	<u>97.3</u>	<u>102.9</u>	<u>106.1</u>	<u>104.9</u>
Soybean meal	60.5	55.3	58.2	60.9	66.9	67.2	65.4
Cottonseed meal	9.9	9.6	12.6	11.1	9.8	11.2	11.5
Rapeseed meal	8.4	8.1	9.4	10.2	11.1	12.5	11.3
Sunflowerseed meal	6.7	6.4	7.3	7.7	7.6	8.2	8.7
Groundnut meal	3.9	4.1	4.3	4.2	4.4	4.1	4.9
Copra meal	1.5	1.3	1.5	1.9	1.8	1.5	1.6
Palm kernel meal	0.9	0.9	1.2	1.3	1.3	1.4	1.5
Meal consumption	<u>91.5</u>	<u>84.8</u>	<u>94.6</u>	<u>97.2</u>	<u>102.7</u>	<u>106.0</u>	<u>105.1</u>
Soybean meal	59.8	54.8	58.5	60.8	66.7	67.1	65.5
Cottonseed meal	10.1	9.6	12.4	11.1	10.0	11.2	11.5
Rapeseed meal	8.4	8.0	9.4	10.1	11.0	12.5	11.4
Sunflowerseed meal	6.8	6.4	7.2	7.7	7.5	8.2	8.7
Groundnut meal	3.9	4.1	4.3	4.3	4.4	4.1	4.9
Copra meal	1.5	1.1	1.6	1.9	1.8	1.5	1.6
Palm kernel meal	1.0	0.8	1.2	1.3	1.3	1.4	1.5
Closing stocks	<u>18.1</u>	<u>15.4</u>	<u>19.4</u>	<u>23.9</u>	<u>21.2</u>	<u>20.8</u>	<u>16.6</u>
As oilseeds 4/	15.0	11.4	15.5	19.9	17.0	16.5	12.5
Soybeans	13.7	10.4	13.8	18.3	15.5	15.8	11.5
Rapeseeds	0.5	0.4	0.7	0.8	0.6	0.7	0.7
Other	0.8	0.6	1.0	0.8	0.9	0.0	0.3
As meal 5/	3.1	4.0	3.9	4.0	4.2	4.3	4.1
Soybean meal	2.6	3.1	2.8	2.9	3.1	3.2	3.1
Other	0.5	0.9	1.1	1.1	1.1	1.1	1.0

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.

Table 19. Soybeans: Export Earnings, 1985-88

	1985	1986	1987	1988 ^{1/}	1985	1986	1987	1988 ^{1/}
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>5.4</u>	<u>4.7</u>	<u>4.4</u>	<u>5.3</u>	<u>5.5</u>	<u>5.5</u>	<u>5.7</u>	<u>7.2</u>
Industrial countries	3.7	3.8	3.4	3.9	3.8	4.4	4.4	5.3
Developing countries	1.7	0.9	1.0	1.4	1.7	1.1	1.3	1.9
Volumes (in millions of tons)	<u>25.5</u>	<u>27.6</u>	<u>28.8</u>	<u>26.0</u>	<u>25.5</u>	<u>27.6</u>	<u>28.8</u>	<u>26.0</u>
Industrial countries	17.1	21.7	21.8	18.6	17.1	21.7	21.8	18.6
United States	16.9	21.4	21.3	18.1	16.9	21.4	21.3	18.1
Other	0.2	0.3	0.5	0.5	0.2	0.3	0.5	0.5
Developing countries	8.4	5.9	7.0	7.4	8.4	5.9	7.0	7.4
Argentina	3.0	2.6	1.3	2.1	3.0	2.6	1.3	2.1
Brazil	3.5	1.2	3.0	2.6	3.5	1.2	3.0	2.6
Other	1.9	2.1	2.7	2.7	1.9	2.1	2.7	2.7
Unit values (a ton)	<u>214</u>	<u>170</u>	<u>154</u>	<u>206</u>	<u>217</u>	<u>200</u>	<u>199</u>	<u>277</u>
Industrial countries	218	173	158	214	222	203	204	287
Developing countries	205	159	139	188	208	186	180	253
Market prices (a ton) ^{2/}	<u>221</u>	<u>178</u>	<u>167</u>	<u>227</u>	<u>224</u>	<u>208</u>	<u>216</u>	<u>304</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

^{2/} U.S. origin, c.i.f. Rotterdam.

Table 20. Soybean Oil: Export Earnings, 1985-88

	1985	1986	1987	1988 ^{1/}	1985	1986	1987	1988 ^{1/}
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>2.3</u>	<u>1.0</u>	<u>1.1</u>	<u>1.3</u>	<u>2.3</u>	<u>1.2</u>	<u>1.4</u>	<u>1.8</u>
Industrial countries	1.2	0.7	0.6	0.7	1.2	0.8	0.8	1.0
Developing countries	1.1	0.3	0.5	0.6	1.1	0.4	0.6	0.8
Volumes (in millions of tons)	<u>3.5</u>	<u>3.0</u>	<u>4.0</u>	<u>3.7</u>	<u>3.5</u>	<u>3.0</u>	<u>4.0</u>	<u>3.7</u>
Industrial countries	1.8	1.7	2.0	1.9	1.8	1.7	2.0	1.9
United States	0.6	0.5	0.6	0.7	0.6	0.5	0.5	0.7
Netherlands	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3
Spain	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3
Other	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Developing countries	1.7	1.3	2.0	1.8	1.7	1.3	2.0	1.8
Argentina	0.5	0.7	0.7	0.9	0.5	0.7	0.7	0.9
Brazil	1.0	0.4	1.0	0.7	1.0	0.4	1.0	0.7
Other	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2
Unit values (a ton)	<u>634</u>	<u>351</u>	<u>266</u>	<u>361</u>	<u>644</u>	<u>411</u>	<u>344</u>	<u>486</u>
Industrial countries	665	395	298	398	675	464	386	535
Developing countries	602	292	234	313	611	342	303	420
Market prices (a ton) ^{2/}	<u>567</u>	<u>292</u>	<u>258</u>	<u>346</u>	<u>576</u>	<u>342</u>	<u>334</u>	<u>463</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

^{2/} Dutch, f.o.b. ex-mill Rotterdam.

Table 21. Soybean Meal: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>3.5</u>	<u>3.7</u>	<u>3.7</u>	<u>4.8</u>	<u>3.5</u>	<u>4.3</u>	<u>4.8</u>	<u>6.5</u>
Industrial countries	1.7	1.8	1.8	2.2	1.7	2.1	2.3	3.0
Developing countries	1.8	1.9	1.9	2.6	1.8	2.2	2.5	3.5
Volumes (in millions of tons)	<u>22.1</u>	<u>22.4</u>	<u>24.4</u>	<u>25.0</u>	<u>22.1</u>	<u>22.4</u>	<u>24.4</u>	<u>25.0</u>
Industrial countries	9.3	9.8	10.6	10.5	9.3	9.8	10.6	10.5
United States	4.7	6.0	5.9	6.2	4.7	6.0	5.9	6.2
Netherlands	1.7	1.4	1.7	1.6	1.7	1.4	1.7	1.6
Other	2.9	2.4	3.0	2.7	2.9	2.4	3.0	2.7
Developing countries	12.8	12.6	13.8	14.5	12.8	12.6	13.8	14.5
Brazil	8.6	7.0	7.8	7.9	8.6	7.0	7.8	7.9
Other	4.2	5.6	6.0	6.6	4.2	5.6	6.0	6.6
Unit values (a ton)	<u>157</u>	<u>164</u>	<u>154</u>	<u>193</u>	<u>159</u>	<u>192</u>	<u>199</u>	<u>260</u>
Industrial countries	183	181	167	212	186	213	216	285
Developing countries	138	150	143	182	140	176	185	244
Market prices (a ton) 2/	<u>155</u>	<u>157</u>	<u>157</u>	<u>199</u>	<u>157</u>	<u>185</u>	<u>203</u>	<u>268</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

2/ U.S. origin, 44 percent protein, c.i.f. Rotterdam.

Table 22. Palm Oil: Export Earnings, 1985-88

	1985	1986	1987	1988 ^{1/}	1985	1986	1987	1988 ^{1/}
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>2.5</u>	<u>1.4</u>	<u>1.4</u>	<u>2.1</u>	<u>2.5</u>	<u>1.7</u>	<u>1.8</u>	<u>2.8</u>
Developing countries	2.5	1.4	1.4	2.1	2.5	1.7	1.8	2.8
Volumes (in millions of tons)	<u>5.1</u>	<u>6.1</u>	<u>5.6</u>	<u>6.6</u>	<u>5.1</u>	<u>6.1</u>	<u>5.6</u>	<u>6.6</u>
Developing countries	5.1	6.1	5.6	6.6	5.1	6.1	5.6	6.6
Malaysia	3.2	4.3	4.0	4.5	3.2	4.3	4.0	4.5
Other	1.9	1.8	1.6	2.1	1.9	1.8	1.6	2.1
Unit values (a ton)	<u>489</u>	<u>239</u>	<u>247</u>	<u>310</u>	<u>497</u>	<u>281</u>	<u>320</u>	<u>417</u>
Market prices (a ton) ^{2/}	<u>493</u>	<u>219</u>	<u>265</u>	<u>325</u>	<u>501</u>	<u>257</u>	<u>343</u>	<u>437</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; export data include only exports from palm oil producing countries; Commodities Division, IMF Research Department for market prices.

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

^{2/} Sumatra/Malaysia oil, c.i.f. Northwest European ports.

(Table 23). However, both the level of U.S. production and its share in world production have tended to decline. Whereas in the 1982/83 (October/September crop year) the United States produced 60 million tons or 64 percent of world soybean outputs, in 1987/88 production amounted to only 52 million tons or 51 percent of world output. The decline in production is attributable to reductions in area under soybean cultivation from 28 1/2 million hectares in 1979/80 to slightly less than 23 million hectares during the 1988/89 marketing year. Other factors, including farmer expectations about soybean prices, have contributed to this downward trend, most importantly the policies contained in U.S. commodity programs. For example, under the Food Security Act of 1985, known as the Farm Bill, farmers who sign up and comply with acreage reduction ^{1/} requirements for program crops are eligible to receive a per bushel deficiency payment which is calculated as the difference between market prices and the announced target price for program crops. Although cash prices for soybeans have improved substantially in relation to maize prices since the 1985/86 marketing year, soybean acreage has continued to decline in the United States. The ratio of cash prices for soybeans to target prices for maize, on the other hand, has been considerably less favorable to soybeans in recent years. With the uncertain financial situation of most of the agricultural sector, a high percentage of producers has been encouraged to sign up for government programs that guarantee attractive target prices for program crops, rather than engage in the much riskier cultivation of soybeans.

In contrast, the combined production of Brazil and Argentina has increased from about 19 million tons in 1982/83 to about 28 million tons in 1987/88 or by nearly two thirds, mainly reflecting increased plantings of soybeans. In 1987/88, production in Brazil and Argentina rose by 14 percent. Argentina accounted for much of the increase, which in turn was attributable to a 23 percent expansion in area harvested and a 15 percent increase in average yield per hectare.

In 1987/88, world soybean crushings remained only slightly below the high level recorded in 1986/87. Soybean crushings declined by 13 percent in Brazil, owing to drought in March in Grande do Sul, a major producing area, and delayed soybean crop marketing in anticipation of higher prices; lower demand in the EC related to competition from other feedstuffs, especially grains, lower hog and cattle inventories, and declining poultry production; unfavorable crushing margins which led crushers to slow processing or temporarily close down their operations; and increased crushings of rapeseed and sunflowerseed produced in the EC. This decline was offset by increased crushings in other countries, notably

^{1/} For example, after harvesting the winter wheat crop, producers in some regions have planted soybeans in the summer as a second crop. However, acreage that has been enrolled in the wheat program and idled under annual program provisions cannot be planted with soybeans. Only the portion of acreage that is enrolled in the wheat program and permitted to be planted with wheat can be planted with soybeans as a second crop.

Table 23. Soybeans: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>93.6</u>	<u>83.2</u>	<u>93.1</u>	<u>97.0</u>	<u>97.9</u>	<u>102.9</u>	<u>95.0</u>
Argentina	4.2	7.0	6.8	7.3	7.0	9.9	11.0
Brazil	14.8	15.5	18.3	14.1	17.3	17.8	20.0
China	9.0	9.8	9.7	10.5	11.6	12.2	11.0
United States	59.6	44.5	50.6	57.1	52.8	52.3	42.0
Other countries	6.0	6.4	7.7	8.0	9.2	10.7	11.0
Crushings	<u>76.2</u>	<u>70.9</u>	<u>73.9</u>	<u>77.3</u>	<u>84.9</u>	<u>83.6</u>	<u>83.3</u>
Brazil	13.7	12.5	13.1	12.5	14.5	12.6	15.0
European Community	14.7	12.7	12.3	12.8	13.5	13.0	11.6
United States	30.2	26.8	28.0	28.7	32.1	32.0	28.3
Other countries	17.6	18.9	20.5	23.3	24.8	26.0	28.4
Noncrush use	<u>15.1</u>	<u>16.2</u>	<u>14.9</u>	<u>14.1</u>	<u>16.5</u>	<u>19.1</u>	<u>17.1</u>
Closing stocks	<u>17.2</u>	<u>13.3</u>	<u>17.6</u>	<u>23.2</u>	<u>19.7</u>	<u>19.9</u>	<u>14.5</u>
United States	9.4	4.8	8.6	14.6	11.9	8.2	3.8
Other countries	7.8	8.5	9.0	8.6	7.8	11.7	10.7

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

a 15 percent rise in Argentina and a 16 percent increase in the U.S.S.R. Despite the continued high level of crushing and a 16 percent increase in noncrush use, world soybean stocks grew by 1 percent in 1987/88.

Reflecting the continuous buildup in end-of-period stocks since 1984/85, average soybean oil prices declined from \$725 a ton in 1984 to \$334 a ton in 1987. Although prices moved sharply higher in mid-1988 on account of anticipated weather-related damage to the U.S. soybean crop, average monthly prices have declined substantially since July, as increased availability of other oilseeds with higher oil extraction rates than soybeans caused world stocks of vegetable oils to increase further. The average monthly price of soybean oil has declined from \$600 a ton in July 1988 to about \$444 a ton in November, or by 26 percent. Meanwhile, strong meal demand and, in 1988, concern about supply availability has strengthened meal prices; average annual prices increased from \$157 a ton in 1985 to \$203 a ton in 1987 and to \$268 a ton in 1988.

In 1988/89, world soybean output is expected to fall by 8 percent. U.S. soybean production is forecast to fall by 20 percent to 42 million tons, predominantly reflecting a decline in average yield per hectare and a further slight decline in area under soybean cultivation. Soybean production in China also is expected to decline by 10 percent because of drought and flooding in soybean growing areas. Over one fourth of the production declines in the U.S. and China is expected to be offset by increased output in Argentina and Brazil, where further expansion of area planted to soybeans could lead to record crops.

World consumption of soybean meal is expected to decline by a modest 2 percent in 1988/89 (Table 24), resulting mainly from lower consumption in the United States and the EC, whereas world consumption of soybean oil is expected to remain virtually unchanged (Table 25). Despite the sharp reduction in soybean output and high prices, soybean meal consumption in the United States is expected to remain relatively robust on account of continued strong growth in poultry and especially in hog production. Soybean meal consumption in the EC is expected to decline as a result of greater availability of sunflowerseed meal and dry pulses and increased grain usage for feed because of the steep rise in the price ratio of soybean meal to feed grain. World soybean crushings are forecast to decline slightly with reduced crushings in the United States, the EC, the U.S.S.R., and other countries more than offsetting the projected increase in crushings in Brazil and Argentina. In 1988/89, closing stocks of soybeans are expected to drop sharply by 27 percent to about 14.5 million tons and world stocks of soybean oil are expected to fall by 5 percent. Soybean stocks held by the United States are projected to decline to only about 4 million tons at the end of September 1989, compared to a level of approximately 15 million tons at the end of September 1986.

In 1988, the world export volume of soybean oil declined by 8 percent while that for soybean meal is estimated to have increased by 2 percent. U.S. exports of soybean oil have climbed sharply in recent years as an increasing share of these exports have been assisted through various

Table 24. Soybean Meal: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>60.5</u>	<u>55.3</u>	<u>58.2</u>	<u>60.9</u>	<u>66.9</u>	<u>67.2</u>	<u>65.4</u>
Brazil	10.6	9.7	10.2	9.7	11.3	10.1	12.1
European Community	11.7	10.1	9.8	10.2	10.8	10.5	8.8
United States	24.2	20.7	22.3	22.6	25.2	25.5	22.0
Other countries	14.0	14.8	15.9	18.4	19.6	21.1	22.5
Consumption	<u>59.8</u>	<u>54.8</u>	<u>58.5</u>	<u>60.8</u>	<u>66.7</u>	<u>67.1</u>	<u>65.5</u>
European Community	18.1	17.3	18.0	18.7	19.2	18.1	16.8
United States	17.5	16.0	17.7	17.3	18.5	19.3	18.1
Other countries	24.2	21.5	22.8	24.8	29.0	29.7	30.6
Closing stocks	<u>2.6</u>	<u>3.1</u>	<u>2.8</u>	<u>2.9</u>	<u>3.1</u>	<u>3.2</u>	<u>3.1</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 25. Soybean Oil: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>13.6</u>	<u>12.8</u>	<u>13.3</u>	<u>13.8</u>	<u>15.1</u>	<u>15.0</u>	<u>15.0</u>
Brazil	2.6	2.4	2.5	2.4	2.7	2.4	2.8
European Community	2.6	2.3	2.2	2.3	2.4	2.3	2.0
United States	5.5	4.9	5.2	5.3	5.8	5.9	5.2
Other countries	2.9	3.2	3.4	3.8	4.2	4.4	5.0
Consumption	<u>13.5</u>	<u>13.0</u>	<u>13.2</u>	<u>13.5</u>	<u>14.8</u>	<u>15.0</u>	<u>15.1</u>
Brazil	1.6	1.5	1.6	1.9	1.9	1.9	2.0
European Community	1.5	1.4	1.4	1.4	1.5	1.4	1.4
United States	4.5	4.4	4.5	4.6	4.9	5.0	5.0
Other countries	5.9	5.7	5.7	5.6	6.5	6.7	6.7
Closing stocks	<u>1.5</u>	<u>1.3</u>	<u>1.4</u>	<u>1.7</u>	<u>2.0</u>	<u>2.0</u>	<u>1.9</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.

export credit programs and the Export Enhancement Program (EEP). 1/ Partly reflecting sales under the EEP and other government programs, the volume of U.S. soybean oil exports is estimated to have increased by 17 percent in 1988 to 0.7 million tons (Table 21). On the other hand, the volume of U.S. soybean meal exports, grew by 5 percent in 1988.

One of the objectives of the U.S. Food Security Act of 1985 was to improve the competitiveness of U.S. exports of soybeans and soybean products through a gradual lowering of the price support level. The price support program for soybeans allows a farmer to obtain a non-recourse 2/ loan for a period of nine months from the Commodity Credit Corporation (CCC) at the announced loan rate with soybeans used as collateral. The farmer may repay the loan with interest at the end of the nine-month period and sell the crop at market prices, or he may forfeit the crop to the government. Participants in the soybean program, in contrast to those in price support programs for other crops, cannot receive cash deficiency payments and are not required to reduce acreage planted to soybeans. However, farmers have forfeited large quantities of soybeans to the CCC in years when market prices have fallen below the loan rate plus interest charges and these stocks have, in turn, been sold by the CCC at given resale prices plus carrying charges.

Initially, the loan rate for soybeans was set at \$5.02 a bushel for 1986 and 1987 in the 1985 Farm Bill. However, the Secretary of Agriculture was authorized to lower the loan rate by up to 5 percent to \$4.77 a bushel, and effective September 12, 1986, the loan rate for 1986 was set at \$4.77 a bushel. Subsequently, the effective loan rate was reduced further to \$4.56 a bushel as a result of the implementation of the Gramm-Rudman law. For the 1987 soybean crop, the initial loan rate was again reduced from \$5.02 a bushel to \$4.77 a bushel, but no further reduction was required on account of the Gramm-Rudman law. The U.S. soybean loan level for the 1988 crop remained unchanged from the 1987 level, at \$4.77 a bushel. With the 1988 target price for maize set at \$2.84 a bushel, and a ratio of maize to soybeans of only 1.68:1, it is expected that high soybean prices will be required to encourage producers to plant soybeans rather than opt for the guaranteed returns for maize and other crops under the U.S. feed grain program.

1/ Under the EEP, up to \$15 billion was to be used to subsidize U.S. exports, mainly to markets in which the United States has lost market shares to leading competitors. The EEP was mandated by the U.S. Congress through fiscal 1988, but the program was extended by the Congress for an additional two years, that is, through fiscal 1990, and funding was raised to a maximum of \$2.5 billion. The EEP has helped lower U.S. export prices for soybean oil and other commodities through payment of a bonus, comprised of commodities from CCC inventories, to the exporter, which enables a reduction in export prices.

2/ A loan issued with only the commodity as security.

Some increase in soybean acreage may result from the provisions of the Disaster Assistance Act of 1988, under which the Secretary of Agriculture may permit farmers participating in price support programs and in compliance with the terms of these programs, including acreage reduction requirements and price support programs, to plant soybeans and sunflowerseed on 10-20 percent of their program acreage base without affecting the size of the acreage base. However, the Secretary of Agriculture may limit or prohibit such an expansion of soybean acreage onto program base if he determines that the season average producer price will fall below 115 percent of the previous year's loan rate or \$5.49 a bushel. Farmers would have to be convinced at the time the crop is planted that high soybean prices would offset the risk of planting soybeans over program crops, especially maize. Some expansion in soybean area is currently expected in 1989 in the maize growing areas.

World production of soybeans and other oilseeds is expected to stagnate during 1988/89. With consumption expected to remain strong, world stocks of oilseeds and vegetable oils are expected to fall from the equivalent of 21 percent of consumption in 1987/88, to less than 18 percent in 1988/89. Demand for U.S. soybean supplies has been weak since the mid-year surge in prices, as consumers have shifted to relatively cheaper competing commodities, such as rapeseed from the EC and China and soybeans from Argentina and Brazil; however, available competing supplies are reportedly being rapidly exhausted. The drawdown of stocks is reflected in the narrowing discount of rapeseed oil to soybean oil, and the demand for U.S. soybeans is expected to strengthen in late-1988 and early 1989. The large soybean supplies forecast from South America are not expected to become available in significant quantities until after the first quarter of 1989. Supplies of rapeseed and rapeseed products and palm oil are in shortest supply, seasonally, during the period January-June.

As a consequence, prospects for some strengthening of average world soybean and soybean meal prices during 1989 are not unfavorable, although upward movement in soybean oil prices may be dampened by the availability of large carry-over stocks from 1987/88.

An important factor that could adversely affect the development of prices in 1989 is the expected recovery in the U.S. soybean crop. At end-March 1989, farmer intentions regarding the area to be planted to soybeans will be reported by the Government, although soybeans from that crop will not begin to become available until September 1989. A recovery in U.S. soybean production, combined with continuing expansion of soybean production levels in Brazil and Argentina could lead to weaker average prices in 1990.

b. Palm oil

Palm oil production increased by 6 percent in 1987/88 and is expected to rise by 6 percent in 1988/89 to a new record level of 9.1 million tons (Table 26). In recent years palm oil has generally been second only to

Table 26. Palm Oil: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>5.9</u>	<u>6.3</u>	<u>6.9</u>	<u>8.2</u>	<u>8.1</u>	<u>8.6</u>	<u>9.1</u>
Indonesia	1.0	1.2	1.2	1.4	1.4	1.5	1.7
Malaysia	3.2	3.3	3.8	4.8	4.9	4.9	5.2
Other countries	1.7	1.8	1.9	2.0	1.8	2.2	2.2
Consumption	<u>6.2</u>	<u>6.0</u>	<u>6.7</u>	<u>7.7</u>	<u>8.2</u>	<u>8.5</u>	<u>9.1</u>
European Community	0.7	0.6	0.7	0.9	0.9	0.9	1.0
India	0.6	0.5	0.7	0.9	0.9	1.2	0.9
Indonesia	0.6	0.9	0.6	0.6	0.7	0.8	0.9
Nigeria	0.7	0.6	0.6	0.5	0.5	0.5	0.5
Pakistan	0.3	0.3	0.5	0.5	0.5	0.4	0.5
Other countries	3.3	3.1	3.6	4.3	4.7	4.7	5.3
Closing stocks	<u>0.5</u>	<u>0.8</u>	<u>1.0</u>	<u>1.5</u>	<u>1.4</u>	<u>1.5</u>	<u>1.5</u>

Source: Based on statistics of U.S. Department of Agriculture. Foreign Agriculture Survey: Oilseeds and Products (Washington), various issues; and Oil World: Statistics Update (Hamburg), October 28, 1988.

1/ Preliminary.

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

soybeans in production. In terms of oil equivalent, soybeans represented 32 percent of world oilseed production in 1987/88; palm oil and rapeseed each accounted for 15 percent.

Palm oil and soybean oil prices tend to move together over the long run, though wide differentials may be observed from time to time. Palm oil traded at a discount of \$26 a ton, on average, to soybean oil during the period 1982-83 and at a small premium of \$4 a ton, on average, to soybean oil in 1984; however, with the strong recovery in world palm oil production and a sharp buildup in stocks, palm oil traded at a widening discount to soybean oil of \$75 a ton and \$85 a ton in 1985 and 1986, respectively. In 1987, declining palm oil production, abundant soybean oil supplies, and major palm oil purchases by India pushed palm oil prices sharply up, resulting in a slight premium of \$9 a ton, on average, over soybean oil. Palm oil continued to trade at a small premium of \$11 a ton to soybean oil during the first quarter of 1988, but this price relationship was sharply reversed again in the second and third quarters when crop damage resulting from the drought in the mid-western part of the United States caused soybean and soybean product prices to rise sharply. Consequently, palm oil traded at an average discount of \$23 a ton to soybean oil, in the second quarter and at \$72 a ton in the third quarter. However, the average monthly discount has narrowed considerably, to \$21 a ton in the fourth quarter, reflecting mainly the steep decline in soybean oil prices.

World production of palm oil increased by over 6 percent in 1987/88 to 8.6 million tons following a 1 percent decline in 1986/87. Nearly 60 percent of the production increase in 1987/88 is attributable to Malaysia, the world's leading producer, and reflected an improvement in average yields owing to generally normal weather, increased fertilizer usage, and an expansion in mature area. Production in Indonesia also expanded in 1987/88, as mature acreage increased by an estimated 15 percent, despite a sharp reduction in average yield resulting partly from drought in 1985 and reduced fertilizer usage in 1986. Although world palm oil consumption increased by about 4 percent in 1987/88, mainly because of increased consumption in India, it was exceeded by production, raising the level of accumulated stocks. Specifically, palm oil stocks, which had decreased from the equivalent 19 percent of world consumption in 1985/86 to 17 percent in 1986/87, increased to 18 percent in 1987/88.

In 1988/89, world palm oil production is expected to increase further to a record level of 9.1 million tons. Malaysian production is forecast to increase by over 6 percent as a result of higher crude palm oil yields, owing partly to above normal rainfall in major producing areas during 1988 and because of further expansion in mature area. In Indonesia production is expected to rise by 13 percent in 1988/89, reflecting a recovery in average yield with the return of nearly normal weather conditions and increased fertilizer usage in 1987 and 1988. The combined production of Malaysia and Indonesia is estimated to represent 76 percent of world output of palm oil in 1988/89.

World consumption of palm oil in 1988/89 is expected to increase by 7 percent, or twice as rapidly as in the preceding year. Palm oil consumption in India is expected to decline by 25 percent, because of large carryover stocks and the expected sharp increase in domestically produced groundnut and other vegetable oils. However, with the anticipated tightening of soybean oil supplies and abundant palm oil supplies in 1988/89, palm oil is likely to continue to be traded at a discount to soybean and other competing oils, despite a forecast decline in the ratio of palm oil stocks to consumption. Reflecting this, palm oil consumption is expected to rise substantially, especially in China, the EC, Indonesia, Pakistan, the U.S.S.R., and the United States. Excluding India, where a large groundnut, cottonseed, and rapeseed crops forecast during 1988/89 is forecast to sharply reduce vegetable oil imports, palm oil is expected to displace soybean oil in world vegetable oil consumption, although it may also displace rapeseed, sunflowerseed, coconut and cottonseed oils in some countries. World palm oil stocks are expected to remain at end-1987/88 levels. They may, however, fall to less than 16 percent of annual world consumption, which is the lowest level since 1984/85, when stocks reached the equivalent of 15 percent of world consumption. Despite the forecast decline in the stocks/consumption ratio, prospects for an increase in average palm oil prices in 1989 may be limited by abundant palm oil supplies, the high end-1987/88 level of world vegetable oils stocks and an expected recovery of U.S. soybean production in late 1989.

c. Coconut oil

Coconut oil prices increased sharply in 1983 and 1984, when the average annual price reached \$1,155 a ton, but subsequently dropped to \$296 a ton in 1985 and 1986, the lowest level since 1972. These price movements reflected typhoon and drought-related damage in 1983/84 to copra production in the Philippines, the world's leading producer, and the country's subsequent recovery in production over the following two years. Coconut oil prices began increasing in the fourth quarter of 1986 and continued to rise during 1987 to an average of \$442 a ton, reflecting the demand response of the industrial soap and detergent producers ^{1/} to a decline in world copra and coconut oil production in 1987/88. In 1988, prices continued to climb through the third quarter, despite the expected improvement in world production of coconut oil, reflecting the expected adverse effects on world supply of vegetable oils caused by the U.S. drought. In the last quarter, prices dropped in view of less pessimistic assessments of the drought's impact.

On average, coconut oil traded at a premium over soybean oil from 1978 to 1985, but was quoted at a discount to soybean oil in 1986. The average premium increased from \$20 a ton in 1982 to \$430 a ton by 1984; however, it fell to \$14 a ton in 1985 and, in 1986, coconut oil traded at

^{1/} Coconut oil is high in lauric and myristic acids; they impart good lathering properties when used in soap, shampoo, and shaving cream.

an average discount of \$46 a ton to soybean oil. In 1987 and 1988 coconut oil has again traded at an average premium over soybean oil of \$108 a ton and \$102 a ton, respectively. On a quarterly basis, the average premium declined from \$125 a ton in the first quarter of 1988 to \$89 a ton and \$66 a ton in the second and third quarters, respectively. In the fourth quarter, however, coconut oil again traded at an average premium of \$126 a ton, partly in response to an anticipated reduction in estimated coconut production in the Philippines during 1988/89 resulting from typhoon damage to coconut areas in October and November 1988. Coconut oil has, on average, traded at a premium to palm kernel oil, a by-product of the palm oil industry and its nearest substitute among the lauric oils; the premium declined sharply from an average of \$39 a ton in 1985 to \$9 a ton in 1986 but increased in 1987 and in 1988 to an average of \$26 a ton. The volume of palm kernel oil exports is equivalent to about 60 percent of the volume of coconut oil exports; in recent years, palm kernel oil's share of the market for lauric oils has been growing and is currently approaching 38 percent.

In 1987/88 world copra production declined by over 8 percent to 4.4 million tons. The reduction is mainly attributable to a 17 percent decline in output in the Philippines as a result of serious drought in the first half of 1987 which reduced copra production in the second half of 1987 and throughout most of 1988. Drought in both 1986 and 1987 and typhoon-related damage to coconut trees helped reduce copra production in Sri Lanka by 48 percent in 1986/87, and by an additional 20 percent in 1987/88. Reflecting these developments, world production of coconut oil declined by 10 percent in 1987/88 to 2.7 million tons. Although world consumption also fell, world stocks of coconut oil declined by 8 percent by the end of 1987/88.

Prospects are for world copra production to increase by 8 percent in 1988/89, mainly in anticipation of an expected recovery in coconut production in the Philippines. Rainfall in the Philippines returned to near normal levels in the second half of the 1987 and in 1988, and this is expected to be reflected in some recovery in copra production in 1988/89. Increased world copra production is expected to be reflected in increases of about 4 percent each in world production and consumption of coconut oil. World stocks of coconut oil are expected to decline by 8 percent or from the equivalent of 13 percent of consumption to 12 percent. Nevertheless, world stocks at the end of 1988/89 are forecast to remain 43 percent higher than at the end of 1984/85, when the stock/consumption ratio was 9 percent.

While price premiums of coconut oil over soybean oil, rapeseed oil, and sunflowerseed oil have narrowed during 1988, its premiums over palm oil and palm kernel oil have widened. With the expanding production of copra, especially in the Philippines, coconut oil prices are projected to weaken in 1989.

d. Groundnuts and groundnut oil

In recent years, groundnuts have represented about 11 percent of world oilseed production in terms of oil equivalent. Over half of world groundnut output is crushed to produce groundnut oil and meal, and the remainder is consumed directly as nuts. Groundnuts are 42 percent oil and 55 percent meal by weight. Groundnut oil represents 6 percent of world output of vegetable oils, and groundnut meal accounts for 4 percent of world production of protein meals.

Only about 6 percent of world groundnut production and about 12 percent of groundnut oil production have entered international trade in recent years. Because of market structure and weather-related fluctuations in output, prices of groundnut products have been particularly volatile. Fluctuations in the volume of exports are related to changes in production in a relatively small number of important exporting countries. Fluctuations in groundnut production in other large producing countries appear to have a relatively greater impact on domestic consumption levels and on the volume of substitutable oilseed and oilseed product imports.

The world's three main producers of groundnuts, India, China, and the United States, together account for about two-thirds of world production. China and the United States are the main exporters of groundnuts for confectionery use. The main exporter of groundnut oil in recent years has been Senegal, followed by China and Argentina; the combined export volumes of these three producers represent 70 percent of world exports but only 9 percent of world production of groundnut oil. India and Senegal are the world's leading exporters of groundnut meal.

The average annual price of groundnut oil rose sharply in line with the general upturn in vegetable oil prices during the period 1982-84. The price subsequently declined sharply, however, with the recovery in world vegetable oil production and the substantial buildup in world stocks. The average annual price of groundnut oil declined by over 51 percent between 1984 and 1987, but increased substantially in 1988 in response to the expected drought-related damage to the U.S. soybean crop. On a quarterly basis, the average price of groundnut oil increased from \$515 a ton in the first quarter of 1988 to \$705 a ton in the third, but prices fell sharply in the fourth quarter reflecting the high level of vegetable oil stocks at the end of 1987/88, the expected large increase in oilseed supplies emanating from South American producers in 1988/89, and the seasonal upturn in Malaysian palm oil production.

Groundnut oil traded at an average premium 1/ of \$429 a ton over soybean oil in 1984 but the premiums narrowed in each of the following three years to \$128 a ton during 1988. Groundnut oil also traded at a

1/ Groundnut oil enjoys a technical advantage to other vegetable oils in culinary use.

narrowing average premium over sunflowerseed oil and rapeseed oil during these years.

In 1987/88, world production of groundnuts and groundnut oil declined by 3 percent and 6 percent, respectively. Groundnut production in India fell by 21 percent in 1987/88 because of severe drought conditions in major groundnut producing areas during June-August 1987. However, this decline was partly offset by increased production in other countries, including China, Senegal, and South Africa. Mainly reflecting the higher level of supplies in exporting countries, exports of groundnuts and groundnut oil rose in 1987/88; the EC, by far the world's leading importer of groundnuts and groundnut oil, accounted for over 80 percent of world imports in 1987/88. Groundnut meal production and exports declined by 7 percent and 3 percent, respectively, in 1987/88, on account of the decline in world groundnut production, especially in India.

World production of groundnuts, in terms of oil equivalent, is forecast to increase by 13 percent to a record level of 6.3 million tons in 1988/89. India's groundnut harvest is expected to recover substantially from the drought-reduced level of the previous year, and the U.S. groundnut crop is expected to be the second largest on record as a result of improved average yield and an expansion in area planted to groundnuts. However, production in China is expected to decline by 6 percent owing to the effects on average yield of adverse weather conditions, and production in Senegal is forecast to fall by 17 percent because of reductions in average yield and area planted to groundnuts. World exports of groundnuts and groundnut oil, in terms of oil equivalent, are expected to increase slightly in 1988/89.

Reflecting the recovery in groundnut output, especially in India, groundnut meal production is estimated to expand by 13 percent; nevertheless, world exports of groundnut meal are expected to decline by 5 percent, as increased exports from India are expected to be more than offset by reduced exports from Senegal. On average, the price of groundnut meal has moved broadly in line with and at a discount to soybean meal. In recent years, the discount of groundnut meal to soybean meal has widened from \$9 a ton in 1984 to \$41 a ton in 1987 and an average of \$59 a ton during 1988, reflecting the steep rise in soybean meal prices on account of anticipated drought-related damage to the U.S. soybean crop.

e. Rapeseed oil

Throughout 1987 and the first half of 1988 rapeseed oil was the most competitive of the leading vegetable oils, trading at a discount to both palm oil and soybean oil at Rotterdam.

World production of rapeseed has increased rapidly in recent years (Tables 27-29); consequently, the share of rapeseed in world oilseed production, in terms of oil equivalent, has risen from 11 percent in 1982/83 to 15 percent in 1987/88. China, the EC, Canada, and India are the world's four leading producers, with a combined output representing

Table 27. Rapeseed: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>14.8</u>	<u>14.3</u>	<u>16.9</u>	<u>18.6</u>	<u>19.5</u>	<u>23.1</u>	<u>21.8</u>
Canada	2.2	2.6	3.4	3.5	3.8	3.8	4.0
China	5.7	4.3	4.2	5.6	5.9	6.7	5.7
European Community	2.7	2.4	3.4	3.7	3.7	6.0	5.3
India	2.2	2.6	3.1	2.7	2.6	2.9	2.9
Other countries	2.0	2.4	2.8	3.1	3.5	3.7	3.9
Crushings	<u>13.8</u>	<u>13.2</u>	<u>15.4</u>	<u>16.9</u>	<u>18.4</u>	<u>20.5</u>	<u>19.6</u>
Canada	0.9	1.2	0.5	1.2	1.6	1.6	1.6
China	5.1	3.8	1.2	5.0	5.3	6.0	5.1
European Community	2.7	2.9	0.8	3.9	4.1	5.2	5.2
India	2.0	2.1	1.2	2.6	2.4	2.6	2.6
Japan	1.2	1.3	0.6	1.4	1.6	1.6	1.7
Other countries	1.9	1.9	1.8	2.8	3.4	3.5	3.4
Noncrush use	<u>1.1</u>	<u>1.2</u>	<u>1.2</u>	<u>1.4</u>	<u>1.4</u>	<u>2.4</u>	<u>2.2</u>
Closing stocks	<u>0.8</u>	<u>0.7</u>	<u>1.0</u>	<u>1.3</u>	<u>1.0</u>	<u>1.2</u>	<u>1.2</u>
European Community	0.1	0.1	0.2	0.1	0.2	0.4	0.2
Canada	0.5	0.1	0.5	1.0	0.6	0.7	0.7
Other countries	0.2	0.5	0.3	0.2	0.2	0.1	0.3

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

Table 28. Rapeseed Oil: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>5.0</u>	<u>4.9</u>	<u>5.6</u>	<u>6.2</u>	<u>6.8</u>	<u>7.6</u>	<u>7.0</u>
Canada	0.4	0.5	0.5	0.5	0.6	0.6	0.7
China	1.7	1.3	1.2	1.7	1.7	2.0	1.4
European Community	1.0	1.1	1.4	1.5	1.6	2.1	2.0
India	0.7	0.7	1.0	0.9	0.8	0.9	0.9
Other countries	1.2	1.3	1.5	1.6	2.0	2.0	2.0
Consumption	<u>4.9</u>	<u>4.9</u>	<u>5.6</u>	<u>6.1</u>	<u>6.7</u>	<u>7.5</u>	<u>7.0</u>
China	1.7	1.2	1.2	1.7	1.8	2.1	1.6
European Community	0.8	0.8	0.8	0.9	1.0	1.2	1.2
India	0.8	0.9	1.2	1.0	1.0	1.1	1.1
Japan	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Other countries	1.1	1.5	1.8	1.9	2.3	2.4	2.4
Closing stocks	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	<u>0.4</u>	<u>0.5</u>	<u>0.5</u>

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

Table 29. Rapeseed Meal: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>8.4</u>	<u>8.1</u>	<u>9.4</u>	<u>10.2</u>	<u>11.1</u>	<u>12.5</u>	<u>11.3</u>
Canada	0.5	0.7	0.8	0.7	0.9	0.9	0.9
China	3.2	2.4	2.3	3.1	3.3	3.7	2.6
European Community	1.6	1.7	2.1	2.3	2.5	3.2	3.1
India	1.3	1.4	1.9	1.8	1.6	1.8	1.8
Japan	0.7	0.7	0.8	0.8	0.9	0.9	1.0
Other countries	1.1	1.2	1.5	1.5	1.9	2.0	1.9
Consumption	<u>8.4</u>	<u>8.1</u>	<u>9.4</u>	<u>10.1</u>	<u>11.0</u>	<u>12.5</u>	<u>11.4</u>
Canada	0.4	0.4	0.4	0.4	0.5	0.5	0.5
China	3.0	2.1	2.1	2.5	2.8	3.2	2.4
European Community	1.8	2.1	2.4	2.7	3.2	3.5	3.4
India	1.2	1.3	1.8	1.6	1.6	1.7	1.7
Japan	0.7	0.8	1.0	1.0	1.1	1.2	1.2
Other countries	1.3	1.4	1.7	1.9	1.8	2.4	2.2
Closing stocks	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	<u>0.4</u>	<u>0.4</u>	<u>0.3</u>

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

over 80 percent of world rapeseed production. The EC and Canada are relatively important net exporters of rapeseed oil; Canada is the leading net exporter of rapeseed; and China and Canada are the leading net exporters of rapeseed meal.

In 1987/88, world rapeseed production increased by 18 percent to a record level of 23.1 million tons. The EC and China accounted for 64 percent and 22 percent, respectively, of the growth in world production. The area planted to rapeseed in the EC increased by 47 percent or from 1.27 million hectares in 1986/87 to 1.87 million hectares in 1987/88, and the average yield per ton increased by 10 percent or from 2.91 tons per hectare to 3.21 tons per hectare. As a result, production in the EC increased by 62 percent to a record level of 6 million tons, and the EC's share in world rapeseed production increased from 19 percent in 1986/87 to 26 percent in 1987/88. Production in China rose by 14 percent on account of an 8 percent increase in area under rapeseed cultivation and a 6 percent rise in average yield per ton.

The steep upward trend in world production of rapeseed and rapeseed products is expected to be interrupted in 1988/89, when world rapeseed production is forecast to decline by 6 percent. Rapeseed output in China is forecast to decline by 1 million tons, or 15 percent, resulting from a reduction in yields because of dry spring weather and a smaller area planted to rapeseed because of substitution of soft winter wheat for rapeseed during fall planting. In the EC, a reduction in average yield to historical levels is expected to reduce rapeseed production by 0.7 million tons or by 12 percent in 1988/89 compared to the previous year's level. However, the shortfall in the EC's production is expected to be cushioned by record-high stocks at the end of 1987/88 emanating from that year's bumper crop.

In response to incentives offered under the EC's oilseeds policy, oilseed production, mainly rapeseed and sunflowerseed and to a lesser extent soybeans, has expanded rapidly and, until this year, has generated escalating costs for the EC's budget. The system for supporting the oilseed sector, unlike the regimes for other commodities such as grains and dairy products, does not rely on heavy import tariffs to protect domestic producers but rather on deficiency payments that compensate for the differences between world market prices and the EC target price, which is negotiated annually. 1/ The deficiency payments are made to oilseed crushers in the EC, thereby enabling them to pay oilseed growers more favorable prices and encouraging the crushers to use supplies grown in the EC rather than imports.

In February 1988, at the summit meeting in Brussels, it was agreed to set annual production thresholds or a maximum guaranteed quantity (MGQ)

1/ The budgeting costs of the deficiency payments have increased from ECU 268 million in 1977 to ECU 1.7 billion in 1984 and well over ECU 4 billion in 1987.

of 4.5 million tons for rapeseed; 3.4 million tons for sunflowerseed, 1/ and 1.3 million tons for soybeans for the years 1988/89-90/91. A "stabilizer" was adopted that provided for an automatic 0.45 percent reduction in the EC target price for every 1 percent of production above the MCQ in 1988/89 and an 0.5 percent reduction in the EC target price for every 1 percent of production above the MCQ in subsequent marketing years. The stabilizer has no upper limit and is directly proportional to overproduction. This mechanism was activated in 1988 and resulted in price reductions of 7.65 percent for rapeseed, based on production of 5.3 million tons or 0.8 million tons over the MCQ. In the case of sunflowerseed, Spain and Portugal did not exceed their MCQ's of 1.3 million tons and 0.06 million tons, respectively, but production in the remaining (10) member countries of the EC is estimated at 2.9 million tons; this resulted in a substantial price reduction of about 20 percent for sunflowerseed. As soybean production is estimated at 1.6 million tons or 0.3 million tons above the MCQ, the institutional support price was reduced by 10.35 percent. Because of these sharp cuts in the EC's target prices and, more importantly, the rise in world prices of oilseeds on account of drought in the United States, the cost of the oilseeds regime reportedly remained well within budgetary limits in 1988.

The reductions in target prices which are automatically triggered by this mechanism are expected to limit future overproduction in the EC and could result in a reduction in areas planted to oilseeds in 1989/90. Producers in France and the U.K. have reportedly been reducing their rapeseed plantings sharply this autumn.

The average annual price of rapeseed oil declined steeply during 1985-87; however, in 1988, prices strengthened sharply in line with other vegetable oil prices on account of the supply shortage that was expected to result from the U.S. drought. After reaching \$687 a ton in 1984, the average annual price of rapeseed oil declined to \$305 a ton in 1987 and an average of \$427 a ton in 1988. In 1987, rapeseed oil traded at an average discount of \$38 a ton and \$29 a ton to palm oil and soybean oil, respectively, and continued to trade at an average discount to these oils during the first half of 1988. With the expected tightening of world rapeseed supplies in 1988/89, the price of rapeseed oil is projected to strengthen relative to competing vegetable oils.

f. Sunflowerseed oil

Despite a 42 percent decline in U.S. production, world production of sunflowerseed is expected to increase by over 3 percent to a record level of 21.3 million tons in 1988/89 (Tables 30-32). The world's three main producers of sunflowerseed and their shares world production in 1987/88 are the U.S.S.R. (30 percent), the EC (19 percent, of which France and Spain are the main producers) and Argentina (14 percent). The world's leading exporter of sunflowerseed oil and meal is Argentina; until

1/ Excluding Spain and Portugal, the MCQ is 2.0 million tons.

Table 30. Sunflowerseed: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>16.7</u>	<u>15.5</u>	<u>18.0</u>	<u>19.6</u>	<u>19.3</u>	<u>20.6</u>	<u>21.3</u>
Argentina	2.3	2.2	3.4	4.1	2.5	2.8	3.1
China	1.3	1.3	1.7	1.7	1.5	1.2	1.5
European Community	1.5	1.8	2.3	2.8	3.3	3.9	4.1
Turkey	0.6	0.7	0.7	0.7	0.9	1.0	1.1
U.S.S.R.	5.3	5.1	4.5	5.3	5.3	6.1	6.3
United States	2.4	1.5	1.7	1.4	1.2	1.2	0.7
Other countries	3.3	2.9	3.7	3.6	4.6	4.4	4.5
Consumption	<u>14.2</u>	<u>13.7</u>	<u>15.8</u>	<u>16.7</u>	<u>16.5</u>	<u>17.9</u>	<u>18.9</u>
Argentina	2.3	2.1	3.1	3.5	2.3	2.6	3.0
China	0.9	0.9	1.2	1.2	1.1	0.9	1.0
European Community	2.3	2.4	2.9	3.0	3.3	3.7	4.0
Turkey	0.6	0.7	0.7	0.7	0.9	1.0	1.1
U.S.S.R.	4.0	3.8	3.4	4.0	4.0	4.6	4.8
United States	0.8	0.6	0.6	0.7	0.6	0.9	0.6
Other countries	3.3	3.2	3.9	3.6	4.3	4.2	4.4
Noncrush use	<u>2.5</u>	<u>2.1</u>	<u>2.3</u>	<u>2.7</u>	<u>2.5</u>	<u>2.6</u>	<u>2.6</u>
Closing stocks	<u>0.7</u>	<u>0.4</u>	<u>0.3</u>	<u>0.5</u>	<u>0.8</u>	<u>0.9</u>	<u>0.7</u>
Argentina	0.1	0.2	0.0	0.1	0.2	0.3	0.3
European Community	0.1	0.0	0.1	0.1	0.2	0.3	0.2
Other countries	0.5	0.2	0.2	0.3	0.4	0.3	0.2

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

Table 31. Sunflowerseed Oil: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>5.7</u>	<u>5.5</u>	<u>6.2</u>	<u>6.7</u>	<u>6.6</u>	<u>7.2</u>	<u>7.6</u>
Argentina	0.9	0.8	1.3	1.4	0.9	1.1	1.2
European Community	0.9	1.0	1.2	1.2	1.4	1.6	1.7
U.S.S.R.	1.8	1.7	1.5	1.7	1.7	2.0	2.1
Other countries	2.1	2.0	2.2	2.4	2.6	2.5	2.6
Consumption	<u>5.4</u>	<u>5.6</u>	<u>6.0</u>	<u>6.6</u>	<u>6.6</u>	<u>7.1</u>	<u>7.7</u>
European Community	1.0	1.1	1.2	1.2	1.2	1.4	1.4
U.S.S.R.	1.8	1.8	1.7	1.8	1.9	2.1	2.2
Other countries	2.6	2.7	3.1	3.6	3.5	3.6	4.1
Closing stocks	<u>0.3</u>	<u>0.2</u>	<u>0.4</u>	<u>0.5</u>	<u>0.5</u>	<u>0.6</u>	<u>0.5</u>

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

Table 32. Sunflowerseed Meal: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>6.7</u>	<u>6.4</u>	<u>7.3</u>	<u>7.7</u>	<u>7.6</u>	<u>8.2</u>	<u>8.7</u>
Argentina	1.0	0.9	1.4	1.5	1.0	1.1	1.3
European Community	1.2	1.3	1.6	1.5	1.7	1.9	2.1
U.S.S.R.	1.9	1.8	1.6	1.8	1.8	2.1	2.1
Other countries	2.6	2.4	2.7	2.9	3.1	3.1	3.2
Consumption	<u>6.8</u>	<u>6.4</u>	<u>7.2</u>	<u>7.7</u>	<u>7.6</u>	<u>8.2</u>	<u>8.7</u>
European Community	2.2	2.0	2.6	2.8	2.8	2.9	3.2
U.S.S.R.	1.9	1.8	1.6	1.8	1.8	2.1	2.1
Other countries	2.7	2.6	3.0	3.1	3.0	3.2	3.4
Closing stocks	<u>0.1</u>	<u>0.1</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>

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

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

1988/89, when it is expected to be displaced by Argentina, the United States has been the leading net exporter of sunflowerseed. The EC is a large net importer of sunflowerseed meal and imports a small quantity of sunflowerseed, but is a net exporter of sunflowerseed oil.

World output of sunflowerseed has expanded rapidly from 15.5 million tons in 1983/84 to a average of 19.5 million tons in 1985/86 and 1986/87. In 1987/88 world production increased by over 7 percent to 20.6 million tons. Production increases in the U.S.S.R. (15 percent), the EC (18 percent), Argentina (12 percent), and other countries more than offset production declines in the United States, China, Romania, and other countries. In the EC, average yield increased from 1.53 tons per hectare in 1986/87 to 1.70 tons per hectare in 1987/88, and area harvested increased from 2.13 million hectares in 1986/87 to 2.32 million hectares in 1987/88. Between 1983/84 and 1987/88, the EC's production of sunflowerseed has increased by 116 percent or from 1.8 million tons to 3.9 million tons and has accounted over 40 percent of the expansion in world sunflowerseed output. In the U.S.S.R., the substantial production increase in 1987/88 is attributable to a 9 percent rise in average yield per hectare and a 6 percent rise in area harvested.

Meanwhile, there has been a declining trend in U.S. sunflowerseed production in recent years mainly on account of the steep reduction in area harvested--from 1.5 million hectares in 1984/85 to 0.72 million hectares in 1987/88. As U.S. Government programs have provided more attractive returns for alternative crops, such as wheat and barley, and as government set aside acreage requirements have increased, sunflowerseed acreage has declined. In addition to competition from crops in the United States benefiting from government programs, competition from expanding world oilseed supplies has also increased. Various government programs assist U.S. exports of sunflowerseed oil. In addition to sunflowerseed oil exports under the ZEP, the U.S. Government enacted in 1987 an export assistance program for sunflowerseed oil exporters called the Sunflower Oil Assistance Program (SOAP). Up to \$10 million of sunflowerseed oil is to be purchased by the USDA under SOAP, which is to be awarded as bonuses to exporters. Implementation of the SOAP program is to begin in the fall of 1988, and the program is scheduled to remain available through fiscal 1989. An additional \$20 million has been provided to assist exports of sunflowerseed oil and cottonseed oil under the Agricultural Appropriation Act of 1989.

In 1988/89, world production of sunflowerseed is forecast to increase by over 3 percent to a new record level of 21.3 million tons. Over 70 percent of the projected increase in output is attributable to Argentina, where production is expected to increase by 11 percent; nevertheless, output is expected to fall slightly below the country's previous record level of 3.4 million tons, which was achieved in 1984/85. In the EC, sunflowerseed production is expected to increase by 5 percent in 1988/89, compared to 18 percent in the previous year, as area planted to sunflowerseeds is forecast to decline by 8 percent. As EC production at 4.1 million tons in 1988/89 is expected to sharply exceed the combined

MGQ of 3.4 million tons, the intervention price has been substantially reduced by 20 percent or 11.6 ECU per 100 kilos from the indicative price. The U.S. sunflowerseed crop is forecast to decline to the lowest level since 1976, as a result of drought in the main sunflowerseed growing areas of Minnesota and North and South Dakota.

g. Fish meal

Fish meal is an additive to feeds for poultry, swine, and other animals; it is also used as feed in aquaculture. The price of fish meal in recent years has recorded steady increases, in line with the recent trend of prices for other protein meals; in 1986 and 1987 the price increased by 15 and 19 percent, respectively. In 1988, it rose by 42 percent, to an average price for the year of US\$544 a ton which is the highest price for the commodity since 1973.

After increasing by nearly 7 percent to a record level of 6.4 million tons in 1985/86 (October/September year), world production of fish meal declined in two consecutive years: by 1 percent to 6.4 million tons in 1986/87 and by 3 percent to 6.2 million tons in 1987/88. The 1987/88 decline in production is largely attributable to lower output in Peru; Peruvian production declined by an estimated 18 percent to 0.9 million tons, reflecting a continuation of supply problems in that country.

Reflecting the sharp increase of prices, world consumption of fish meal declined by 2 percent, from 6.4 million tons in 1986/87 to 6.3 million tons in 1987/88. The decline in consumption was most apparent among the European countries and in the United States. Among other major consuming countries, China and Japan both increased their level of consumption. Nevertheless, total exports of fish meal declined during the production season by 6 percent from 3.4 million tons in 1986/87 to 3.2 million tons in 1987/88.

In 1988/89 fish meal production in the world economy is expected to rise. Estimates are that growth of output will be restored in a number of producing countries, including Peru, with the level of world production rising to about 6.3 million tons and world exports to about 3.3 million tons. The increased availability of fish meal, at unchanged levels of global stocks (0.9 million tons at the end of 1987/88), is expected to result in some weakening of the world price for fish meal. At end-1988, the European market price had fallen to \$535 a ton from the July 1988 high of \$610 a ton. The average price for the commodity is projected to fall about 10 percent in 1989.

3. Meat

a. Beef

A shift in demand toward lighter meats, especially poultry and pork, because of consumer health concerns in industrial countries, has been an important influence on beef prices in recent years. The trend away from

beef, however, may have weakened in 1987-88, as evidenced by unexpectedly strong retail demand for beef in the face of rising prices in some industrial countries. In the United States, per capita consumption of beef fell by 7 percent in 1987 to 73.4 pounds (retail weight) but declined by just 1 percent in 1988 to 72.4 pounds. Per capita consumption of poultry is expected to continue to increase in 1989, but at the expense of pork, rather than beef consumption. In Australia, per capita consumption of beef rose by 1 percent in 1987/88 to 87.5 pounds, while poultry consumption fell 3 percent to 50 pounds.

Strict health regulations are applied to imports of livestock and uncooked meat by Canada, the United States, some northern European countries, Australia, New Zealand, Japan, Korea, Taiwan Province of China, and some Central American countries. Trade within this group of countries generally commands higher prices than in the rest of the world. The EC permits some imports of boneless uncooked beef only from specified packing plants in countries where disease is still endemic. With effect from January 1, 1989, the EC has also banned the import of beef raised with growth hormones, a measure having an impact mainly on U.S. exports. Price quotations in this section refer to frozen boneless beef, 85 percent lean, imported into the United States from Australia and New Zealand, and f.o.b. at U.S. ports. This is manufacturing grade beef generally used in hamburgers and sausages.

Under the influence of the Dairy Termination Program (DTP) in the United States, 1/ the price of beef fell from 98 cents a pound in 1985 to 95 cents a pound in 1986 (Table 33). Prices, however, rose strongly in 1987 on account of lower domestic supplies, especially of manufacturing grade beef due to the winding down of the DTP. Adding to the upward price pressure were a temporary ban in August/September 1987 on imports of processed beef from Australia because of high pesticide residues and the announcement in August of a 21 percent rise in the Japanese import quota for 1987/88 (year ending March) indicating improved export opportunities in that market. In the final quarter of 1987, strong retail demand and the limitation of exports to the United States from Australia and New Zealand under voluntary export restraint agreements boosted prices to 115 cents a pound. 2/

1/ The DTP was in effect from April 1986 through September 1987. With the objective of eliminating excess milk production capacity, the government purchased whole dairy herds, of which 95 percent were slaughtered and 5 percent exported as live animals. In order to avoid disruption of the domestic market, half of the 180 thousand tons of meat produced from the animals slaughtered was exported to Brazil at a price approximately one-third of the U.S. import price, and the remainder was used for domestic food aid or consumed by the U.S. military forces in Europe.

2/ The United States sets a country-specific import quota for meat at the beginning of each year, and if it appears that a trigger level of 110 percent of quota will be exceeded, a voluntary export restraint agreement is negotiated to limit U.S. imports to the trigger level.

Table 33. Prices of Beef and Lamb, 1979-88

Year	Beef 1/	Lamb 2/	Beef 1/	Lamb 2/
	(In SDRs a pound)		(In U.S. dollars a pound)	
1979	1.01	0.84	1.31	1.09
1980	0.96	1.01	1.25	1.31
1981	0.95	1.06	1.12	1.25
1982	0.98	0.98	1.08	1.09
1983	1.04	0.82	1.11	0.88
1984	1.01	0.86	1.03	0.88
1985	0.96	0.82	0.98	0.84
1986	0.81	0.79	0.95	0.93
1987	0.84	0.76	1.08	0.98
1988	0.85	0.81	1.14	1.09
1987 I	0.81	0.77	1.03	0.97
II	0.83	0.77	1.08	1.00
III	0.84	0.75	1.08	0.95
IV	0.85	0.76	1.15	1.02
1988 I	0.85	0.82	1.16	1.13
II	0.81	0.84	1.11	1.14
III	0.87	0.80	1.13	1.03
IV	0.87	0.80	1.16	1.08

Source: Commodities Division, IMF Research Department.

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

2/ Frozen New Zealand lamb, grade PL, Smithfield market, London.

With the seasonal increase in the slaughter rate in the second quarter of 1988, augmented by herd reduction in response to drought in most U.S. beef producing areas, prices for imported beef fell to an average of 111 cents a pound. 1/ Also contributing to this price weakness were record supplies of competing meats, and large supplies of imported beef. The drop in world prices, however, was not reflected in consumer prices in the United States since retailers took advantage of strong demand to widen profit margins. Lower world prices and the appreciation of the Australian dollar against the U.S. dollar slowed the rate of beef imports from Australia in July and August; in August, the United States moved to further limit imports by imposing import quotas on exports from Australia and New Zealand. 2/ A ban by Mexico in July on exports of feeder cattle and the reduced profitability of U.S. feedlot operations due to high feedgrain prices also strengthened the expectation of tighter beef supplies through the remainder of 1988. Market liberalization by a number of importing countries also strengthened demand for beef imports. At the end of June, Japan announced that the beef import quota would be raised from a base of 214 thousand tons by 60 thousand tons each year for the three years ending March 1991. 3/ In July 1988, Korea lifted a three-year ban on beef imports, permitting 14,500 tons to be imported in 1988 to assure supplies for the Olympic games. Prices in the third quarter rose to 113 cents a pound, and, with sufficient rainfall for good pasture development in the United States, restocking led prices to increase further to 116 cents a pound in the last quarter of the year, which was the highest price recorded since early 1981.

World production of beef and veal increased by 1 percent in 1987 but is estimated to have declined by nearly the same amount in 1988 (Table 34). The increase in production in 1987 stemmed mainly from a reduction in the cattle inventory in India caused by drought, and a return of Brazilian production to normal levels after the lifting of price controls imposed in 1986. Higher production was also recorded in the EC in 1987, despite a cut of 10-15 percent in intervention prices, as tighter controls on milk output led to increased slaughter. Lower cattle numbers and a slower rate of slaughter of dairy cattle were associated with an

1/ Although the number of cattle slaughtered in the United States in the first nine months of 1988 was smaller than in the corresponding period of 1987 when the DTP had been in effect, meat production was higher than in 1987 because of heavier carcass weights.

2/ In September, Australia and New Zealand agreed to voluntarily restrain their exports to the United States in 1988 to 363 thousand tons and 202 thousand tons, respectively.

3/ Tariffs on Japan's beef imports will also be adjusted. The current rate of 25 percent will remain unchanged in 1989-90, but will temporarily be increased to 70 percent in 1991-92, and then reduced by 10 percentage points in each of the two succeeding years to 50 percent. An additional 25 percent tariff may also be imposed if imports reach 120 percent of the previous year's level. The 50 percent rate of tariff will be subject to negotiation in the Uruguay Round of the GATT.

Table 34. Beef and Veal: World Production, 1985-89

(In millions of tons carcass weight equivalent)

	1985	1986	1987	1988 1/	1989 2/
Total	<u>44.6</u>	<u>44.4</u>	<u>44.9</u>	<u>44.5</u>	<u>44.1</u>
Argentina	2.7	2.9	2.7	2.6	2.5
Australia	1.3	1.5	1.5	1.6	1.6
Brazil	2.4	2.0	2.3	2.4	2.5
European Community	7.8	8.0	8.1	7.7	7.6
Eastern Europe	2.7	2.6	2.6	2.5	2.5
India	0.3	0.4	0.7	0.6	0.7
U.S.S.R.	7.4	7.8	8.3	8.4	8.6
United States	11.0	11.3	10.9	10.8	10.1
Other countries	9.0	7.9	7.8	7.9	8.0

Source: U.S. Department of Agriculture, World Agricultural Production, October 1988, and Australian Meat and Livestock Corporation Australian Cattle and Sheep Industry Projections, December 1988.

1/ Estimate.

2/ Forecast.

estimated 5 percent reduction in EC beef production in 1988. ^{1/} Increased investment in the livestock sector in the U.S.S.R. improved carcass weights to some extent. A higher rate of slaughter and some reduction in livestock numbers also contributed to increases in beef output, of 1 percent in 1987 and 1 1/2 percent in 1988. Under the waning influence of the DTP, the rate of reduction of the cattle inventory in the United States decelerated in 1987, and beef output fell by over 3 percent. Despite the drought-induced increase in slaughter and higher carcass weights, U.S. production declined marginally in 1988 because of low herd size.

After rising sharply in 1986 because of drought, Australian beef production increased further in 1987, as producers took advantage of strong export demand and higher prices; in 1988, herd rebuilding began and production is estimated at about the same level as in 1987. In Argentina, the liquidation phase of the cattle cycle, which began in 1984, continued at a slower rate in 1987 so that beef output in that year declined by 5 percent. Some herd rebuilding is estimated to have occurred in 1988, and beef output is estimated to have fallen by a further 5 percent. Additional impetus for herd rebuilding in 1989 will be provided by the planned resumption of limited exports of Argentine beef to the U.S.S.R. for the first time since 1984.

World beef production is projected to fall by a further 1 percent in 1989. The rebuilding phase of the cattle cycle and lower carcass weights (reflecting higher feed costs) is likely to result in a sharp decline in output in the United States (projected at 6 percent) and a smaller decline in Argentine output. Beef production in the EC is also expected to decline (by 1.5 percent) reflecting a slower rate of liquidation of the dairy herd and the implementation of additional measures to limit the cost of intervention purchases. These declines are expected to be partly offset by higher output in the U.S.S.R., reflecting both increased carcass weights and higher rates of slaughter, and in Brazil where slaughtering may increase because profitability in cattle raising has been reduced by high interest rates. Production in Australia is likely to increase by 1 percent, consistently with a slow rate of herd rebuilding at about 2-3 percent a year into the early 1990s.

Assuming that economic growth in the industrial countries remains reasonably strong, consumer demand together with the small reduction in world supplies should support a further modest rise in beef prices in

^{1/} Although purchases of beef into intervention stores declined from 578 thousand tons in 1986 to about 450 thousand tons in 1988, EC beef stocks at end-1988 were still about 500 thousand tons. In 1989 a notional intervention ceiling of 200 thousand tons has been established, but intervention may still take place if market prices in at least three member states fall below 80 percent of the intervention price. Also, effective intervention prices on purchases within the ceiling will be cut by 3 percent, and per head premiums will be modified.

1989, mainly during the first half year. Global production of pork and poultry is projected to increase by 1 percent and 3 percent, respectively, compared to 1988 levels, and consumer demand is likely to switch at least partly to these cheaper meats.

b. Lamb

In the mid-1980s, the world market for lamb and mutton was depressed by a number of factors, including increased production in the EC following the implementation of a sheepmeat regime under the Common Agricultural Policy in 1980, higher output in New Zealand supported, until 1985, by government subsidies, and competition from other meats, especially poultry and manufacturing grade beef. Demand for frozen lamb by Middle East countries also weakened but this was offset to some extent by higher imports of live sheep. Although remaining below the level reached in 1980-81, an upward trend in the price of lamb was reestablished beginning in 1986. The quotations for the price of lamb in this section refer to frozen New Zealand lamb, grade PL, at the Smithfield market, London. Prices for frozen meat are lower than for chilled or fresh meat, but frozen meat is still the major component of world trade.

Australia and New Zealand together supply about 85 percent of world exports. Reduced supply from these two countries contributed to the upward trend of prices beginning in 1986. In New Zealand, the number of sheep fell by 4 percent, partly reflecting a low lambing rate due to adverse weather, and meat production declined by 5 percent in 1987 (year ended June). In 1988, sheep numbers and meat production declined by a further 1 percent and 2 percent, respectively. Underlying these developments were the ongoing adjustment of the industry to the removal of protection, and reduced profitability arising from the appreciation of the New Zealand dollar. The rate of slaughter in 1988 was also reduced by some withholding of stock to take advantage of high wool prices. The reduced availability of lamb for export meant that New Zealand supplied only about 80 percent of its permitted level of exports to the United Kingdom. 1/ In Australia, the surge in fine wool prices in 1987-88 led to an increase of 4 percent per year in sheep numbers to a record 171 thousand head. Meat production rose by 1 percent in 1987 but declined slightly in 1988, as withholding from slaughter increased.

Other factors influencing prices in 1987-88 were higher consumption in the United Kingdom, reflecting improved packaging and marketing of boneless lamb, and increased imports by Middle Eastern countries as a result of stricter adherence by suppliers to religious requirements in

1/ Under voluntary export restraint (VER) agreements, Australia and New Zealand have agreed to limit exports to the United Kingdom to 245 thousand tons (carcass weight) and 17,500 tons, respectively, in 1988. These imports attract a discretionary rate of duty of 10 percent compared with the normal 20 percent in the EC. The United Kingdom is the EC's largest producer, consumer, importer and exporter of sheepmeat.

slaughtering. Sheepmeat consumption per capita in the United States also increased from 1.3 pounds in 1987 to 1.4 pounds in 1988, in response to growing consumer demand for premium cuts, which could be supplied by Australia and New Zealand at a lower cost than domestic lamb.

Prices in 1989 are expected to be the same on average as in 1988, with a seasonal peak around the second quarter. Two largely offsetting influences are likely to occur. The availability of imported lamb is expected to decline further. As recent trends in the New Zealand sheep industry continue, meat output in New Zealand is projected to fall by 6 percent. This decrease would offset a projected 6 percent rise in meat production in Australia resulting from a higher rate of slaughter as the maximum carrying capacity of pastures is approached. The domestic production of lamb in the United Kingdom and the United States, however, is expected to increase on account of the growth in flock size in recent years.

Over the longer term, prospective changes in the common policy for sheepmeat are likely to lead to a lower volume of imports by the EC. At present, U.K. producers receive a variable premium (a deficiency payment) paid weekly on lamb ready for slaughter if the market price falls below a specified guide price. The guide price, and therefore the variable premium, is reduced when sheep numbers exceed a specified ceiling in order to limit the budgetary cost of the support scheme. 1/ U.K. exports to other EC members are subject, however, to a countervailing tax, or "clawback." The EC Commission has proposed phasing out the variable premium by 1993 and replacing it with an annual premium on ewes (as is currently applicable in the rest of the EC). Although the guide price would continue to be reduced if sheep numbers exceed a "guarantee threshold," and a limit on the number of ewes eligible for the premium is proposed, these actions may not constrain the growth of the U.K. flock because the clawback would also be phased out, thereby leaving the United Kingdom as the lowest cost producer within the EC. The competitiveness of U.K. exports to other EC members would be improved, which would tend to accelerate the growth of U.K. sheep numbers and lower the U.K. import requirement. The EC Commission has proposed reducing New Zealand's quota under the voluntary export restraint agreement to 205 thousand tons in 1989.

4. Sugar

World sugar trade takes place in two markets, the free market and the controlled market, where trade is regulated by special arrangements and bilateral transactions between governments of the trading countries.

1/ The guide, or minimum support, price is reduced by one percent for every one percent increase in the breeding flock. This resulted in a 3 percent cut in the UK guide price and a 2 percent cut for other EC members in 1988. For 1989, the cuts will be 7 percent and 3 percent, respectively.

These special arrangements provide a guaranteed market for fixed quantities of sugar, often at specified prices which may or may not fluctuate with free market prices. Examples of exports under special arrangements are exports by Cuba to the U.S.S.R. and other centrally planned countries in Eastern Europe, and exports under the Sugar Protocol of the Lomé Convention.

The principal international prices for sugar are the New York Coffee, Sugar and Cocoa Exchange contract No. 11 spot price, and the London Sugar Market daily price for f.o.b. raw sugar. While South American producers trade raw sugar mainly on the New York exchange, African and Far Eastern suppliers trade raw sugar mainly on the London exchange. The New York spot price is established, on each trading day, on the basis of the opinions of five experts in the United States in world raw sugar trading; each expert provides a figure representing his opinion of the prevailing price differential (discount or premium) to futures quotations for the nearest delivery month for immediate delivery, that is, within 60 days. To establish the spot price, an average differential is computed by arithmetic formula and added to (or deducted from) the average weighted price of all transactions of the world sugar futures contract for the nearest delivery month on that trading day. In London, the spot price is also determined by five experts who are knowledgeable of world trade in raw sugar. The price is published in the morning of each trading day.

In forecasting the level of free market prices, an important variable is the ratio of end-of-period world stocks to world consumption. This variable indicates the degree of tightness of supply in a given period or how long sugar consumption is assured on the basis of stocks. Over the long term, there has been an inverse relationship between this ratio and prices. However, substantial movements in prices have been observed, even though end-of-period stock/consumption ratios were only moderately different. 1/ In 1974 and in 1980, in particular, the magnitude of price increases exceeded the amount that would have been expected on the basis of changes in the stock/consumption ratio. This overshooting was the result of such factors as including inventory accumulation by buyers at high prices because of increased supply concerns, hoarding by consumers, and speculative transactions.

After a lengthy period when sugar prices on the free market were low, strong demand and deteriorating supply prospects boosted prices in mid-1988 to the highest level in over six years (Table 35). The long

1/ Published forecasting models for the free market price of sugar also have incorporated a variety of other independent variables in the price equation, including world production, consumption in the United States, and a time trend variable. See for example, Joachim Frohn, An Econometric Model for the World Market Price of Sugar (Frankfurt: Haag and Herchen Verlag, 1984); and John D. Schwager, A Complete Guide to the Futures Markets (New York: John Wiley and Sons, 1984).

Table 35. Prices of Sugar, 1979-88

Year	Index of Prices of Sugar 1/	Free Market 2/	European Community 3/	United States 4/	Index of Prices of Sugar 1/	Free Market 2/	European Community 3/	United States 4/
	(In SDR 0.01 a pound)				(In U.S. cents a pound)			
1979	48.6	7.5	14.9	12.0	48.3	9.7	19.3	15.5
1980	100.0	22.0	17.0	23.1	100.0	28.7	22.1	30.0
1981	71.8	14.3	16.1	16.7	65.4	16.9	18.9	19.7
1982	59.2	7.6	16.4	18.0	50.3	8.4	18.1	19.9
1983	63.9	7.8	16.4	20.6	52.4	8.5	17.6	22.0
1984	57.5	5.1	15.6	21.2	45.3	5.2	16.0	21.7
1985	53.5	4.0	15.9	20.0	41.8	4.1	16.1	20.4
1986	52.9	5.2	15.9	17.9	47.7	6.1	18.6	21.0
1987	52.2	5.1	16.6	16.9	51.9	6.8	21.4	21.8
1988	58.1	7.6	17.7	16.5	59.9	10.2	23.8	22.1
1987 I	52.8	5.7	15.6	17.2	51.2	7.1	19.7	21.7
II	51.8	5.1	16.2	17.0	51.5	6.6	21.0	22.0
III	51.6	4.6	16.9	17.2	50.6	5.8	21.6	21.9
IV	52.7	5.5	17.5	16.2	54.4	7.4	23.5	21.7
1988 I	54.9	6.5	17.6	16.1	57.7	8.9	24.0	22.0
II	56.3	6.8	18.0	16.3	59.2	9.3	24.6	22.3
III	62.4	9.1	17.5	17.2	62.2	11.8	22.7	22.4
IV	58.6	8.0	17.8	16.2	60.7	10.8	23.9	21.8

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: Free Market, 50 percent; European Community, 16 percent; United States, 34 percent.

2/ 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.

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

4/ U.S. future import price contract No. 14. Prior to June 1985, New York contract No. 12 spot price, c.i.f. Atlantic and Gulf of Mexico ports.

period of depressed prices reflected continued high levels of world production and the sharp buildup in stocks early in the decade. Despite low prices, world sugar production followed a rising trend, from 101 million tons in 1982/83 to a record 104 million tons in 1987/88 (Table 36). World sugar consumption, however, has expanded more rapidly than production, increasing from an average of 94 million tons in 1982/83 to 105 million tons in 1987/88--about 2.6 percent a year on average, compared to an annual growth rate of less than 1 percent for production. Reflecting this disparity, the level of end-of-period stocks, which peaked at 32 million tons (equivalent to 34 percent of world consumption) in 1982/83, declined to 21 million tons in 1987/88 (equivalent to slightly over 21 percent of world consumption).

World production increased slightly in 1987/88. In China, production declined by 17 percent, or 1 million tons, because prices for sugar were relatively less favorable than those for alternative crops. However, this was almost offset by a 10 percent increase in production in the U.S.S.R., the world's largest producer, where favorable growing conditions helped raise the average yield per hectare by 14 percent. Production in the United States increased by 8 percent to a record level of 6.6 million tons in 1987/88, the highest level since 1975/76, as a result of increases in area harvested and in yield. Production in India has been rising rapidly since 1985/86, and in 1987/88 output rose by 5 percent to a record level of 10 million tons, as the adverse effect on production of a drought-related decline in average yield was more than offset by an increase in area harvested.

In 1988/89, world production is forecast to increase by over 3 percent to a record level of 107 million tons, partly reflecting favorable growing conditions in major producing countries, including the EC, India, and the U.S.S.R. World sugar stocks are expected to decline slightly, as production again is forecast to fall short of consumption, which is estimated to increase by 2 percent. As a result, the stock/consumption ratio is expected to decline further, and a modest strengthening of prices is anticipated.

World sugar output has responded little to the steep reductions in free market prices since 1980-81, mainly because of support prices in most major industrial producing countries, and, to a lesser extent, developing producing countries. Domestic sugar production is generally supported through government-administered prices, direct government financial assistance and other production incentives, and by preferential trade arrangements. The margin of sugar prices in the United States and the EC over free market prices indicates the degree of protection provided to domestic producers. In 1988, the free market price averaged about 10 cents a pound, while domestic prices averaged 22 cents a pound in the United States and 24 cents a pound in the EC.

In the United States, domestic prices have been supported through nonrecourse loans and restrictive import quotas. The Food Security Act of 1985 mandates that the price of domestically grown raw sugar be supported

Table 36. Sugar: World Commodity Balance, 1982/83-88/89

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

	September/August Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Production	<u>101.3</u>	<u>96.5</u>	<u>100.3</u>	<u>98.9</u>	<u>103.4</u>	<u>103.5</u>	<u>106.8</u>
Australia	3.5	3.4	3.5	3.4	3.5	3.5	3.7
Brazil	9.3	9.4	9.3	8.1	8.5	8.5	8.7
China	4.1	3.8	4.6	5.5	5.8	4.8	5.8
Cuba	7.2	8.3	8.1	7.2	7.2	7.3	7.8
European Community	16.0	13.3	14.4	14.5	15.0	14.0	15.2
India	9.5	7.0	7.1	8.0	9.5	10.0	10.7
U.S.S.R.	7.4	8.7	8.6	8.3	8.7	9.6	10.0
United States	5.4	5.3	5.3	5.5	6.1	6.6	6.1
Other countries	38.9	37.3	39.4	38.4	39.1	39.2	38.8
Consumption	<u>93.8</u>	<u>95.9</u>	<u>96.5</u>	<u>99.8</u>	<u>103.9</u>	<u>105.1</u>	<u>107.0</u>
Brazil	6.2	6.3	6.3	6.3	6.7	6.4	6.6
China	4.9	5.0	5.6	6.1	7.0	7.3	7.5
European Community	11.7	11.5	11.6	11.7	11.8	11.7	11.8
India	7.6	8.9	9.1	9.3	9.7	10.2	10.5
U.S.S.R.	13.0	13.3	13.3	13.5	14.2	14.3	14.5
United States	8.0	7.9	7.2	7.1	7.3	7.4	7.5
Other countries	42.4	43.0	43.4	45.8	47.2	47.8	48.6
Losses, discrepancy	<u>-1.9</u>	<u>-3.4</u>	<u>-2.7</u>	<u>-3.7</u>	<u>-0.9</u>	<u>-0.9</u>	<u>0.0</u>
Reported closing stocks	<u>31.6</u>	<u>28.8</u>	<u>29.9</u>	<u>25.3</u>	<u>23.9</u>	<u>21.4</u>	<u>21.2</u>
Change from previous year (in percent)	21.5	-8.9	3.8	-15.4	-5.5	-10.5	-0.9
Stocks/consumption ratio (in percent)	33.7	30.0	31.0	25.4	23.0	20.4	19.8

Sources: Commodity 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 and U.S. Department of Agriculture, Sugar and Sweetener: Situation and Outlook Report, various issues.

1/ U.S. Department of Agriculture revised estimates.

2/ U.S. Department of Agriculture forecasts for production and consumption and Commodities Division, IMF Research Department forecasts for stocks.

at not less than 18 cents a pound for the 1986-90 crop years and that sugarbeets be supported at a fair and reasonable price level in relation to sugarcane. Under the Act, the U.S. Department of Agriculture's Commodity Credit Corporation (CCC) makes nonrecourse commodity loans available to sugar processors. Processors can pledge sugar as collateral for loans and, if market prices are not high enough to recover the loan principal, accrued interest charges and miscellaneous costs such as insurance and transportation, processors can forfeit the sugar pledged as collateral to the CCC without penalty. 1/

The relatively high price of sugar in the United States has resulted in a long period of increased substitution in favor of high fructose corn syrup (HFCS) for sugar in processed foods. U.S. sugar consumption has fallen from 10 million tons in 1977 to 7 million tons in 1986, reflecting the displacement of sugar by HFCS and also by other caloric and non-calories sweeteners. In 1986, sugar represented 47 percent of U.S. consumption of caloric sweeteners, down from 74 percent in 1977. The long period of declining sugar consumption was arrested in 1987, when consumption showed a slight increase. Partly because of a projected further increase in 1988, U.S. import quotas for raw sugar were raised by 272 thousand tons in July (Table 37). Reflecting the relatively greater profitability of sugar production over production of alternative crops, the recent growth in consumption has been accompanied by a much more rapid expansion in U.S. sugar production. Consequently, U.S. imports have contracted in recent years; however, this trend was interrupted in 1988 because of a drought-related reduction in production and a further increase in consumption.

In the EC sugar market, domestic prices have been supported through a system of mechanisms, including national quotas on domestic production and quotas on imports. In addition to guaranteed prices, expressed in terms of ECUs, there are intervention purchases of domestic sugar, variable import levies that effectively eliminate imports (with the exception of imports free of levies from the African, Caribbean, and Pacific (ACP)

1/ The loan rate for the 1988/89 crop has been set at 18 cents a pound for raw cane sugar. The market stabilization price (MSP), which represents the price at or above which producers would market their sugar rather than forfeit it to the CCC, was set at 21.80 cents a pound for 1988/89, compared to 21.76 cents a pound for 1987/88. To maintain spot market prices at, or near, the MSP in order to prevent forfeitures, the supply of sugar has been limited, and since the United States is a net sugar importer, this has been achieved by limiting imports with quotas. The U.S. sugar import quota for calendar year 1989 has been set at 1.125 million tons, or over 17 percent higher than in 1988. In December 1987, the U.S. Government enacted legislation creating a special additional import quota and subsidized re-export programs for fiscal year 1988 for the Caribbean countries (263 thousand tons) and the Philippines (110 thousand short tons), but the program was not implemented because of funding difficulties.

Table 37. U.S. Sugar Quota Allocations by Country, 1982/83-89 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)	1987	1988 4/	1989
Argentina	189.2	118.7	99.1	68.0	35.5	38.2	45.3
Australia	210.8	239.0	191.3	129.2	68.5	75.6	87.4
Barbados	17.8	19.3	18.1	11.3	6.8	7.4	7.4
Belize	27.9	30.4	25.3	17.1	9.1	10.0	11.6
Bolivia	20.3	22.1	18.4	12.5	6.8	7.5	8.4
Brazil	368.3	400.1	334.1	225.7	119.7	132.1	152.7
Canada	27.9	30.4	25.3	17.1	9.1	10.0	11.6
Colombia	60.9	66.2	55.3	37.4	19.8	21.9	25.3
Congo	0.0	15.2	11.3	11.3	6.8	7.3	7.3
Costa Rica	38.1	56.6	47.4	31.5	15.9	17.8	20.8
Côte d'Ivoire	15.0	15.2	11.3	11.3	6.8	7.3	7.3
Dominican Republic	447.1	485.7	405.5	274.0	145.3	160.3	185.3
Ecuador	27.9	30.4	25.3	17.1	9.1	10.0	11.6
El Salvador	68.0	80.9	67.6	45.4	23.6	28.1	30.4
Fiji	17.8	19.3	16.1	11.3	22.6	8.2	9.5
Gabon	0.0	0.0	11.3	11.3	6.8	7.3	7.3
Guatemala	121.9	132.5	110.6	74.7	39.6	43.7	50.5
Guyana	30.5	33.1	27.7	18.7	9.9	10.9	12.6
Haiti	15.0	15.2	11.3	11.3	6.8	7.3	7.3
Honduras	25.4	54.0	45.4	29.7	14.4	16.2	18.2
India	20.3	22.1	18.4	11.5	6.8	7.5	8.4
Jamaica	27.9	30.4	25.3	17.1	9.1	10.0	11.6
Madagascar	15.0	15.2	11.3	11.3	6.8	7.5	7.3
Malawi	17.8	28.6	32.1	15.6	8.3	9.1	10.5
Mauritania	27.9	30.4	25.3	27.7	9.9	10.9	12.6
Mexico	15.0	15.2	11.3	11.3	6.8	7.3	7.3
Mozambique	33.0	35.9	30.0	20.2	10.7	11.8	13.7
Nicaragua	53.3	5.4	5.4	0.0	0.0	0.0	0.0
Panama	73.7	80.0	66.6	45.1	23.9	0.0	30.5 5/
Papua New Guinea	0.0	0.0	11.3	11.3	6.8	7.3	7.3
Paraguay	15.0	15.2	11.3	11.3	6.8	7.3	7.3
Peru	104.1	113.1	94.5	63.8	33.8	37.3	43.2
Philippines	342.9	372.6	311.1	210.1	130.4	143.9	166.4
St. Kitts and Nevis	15.0	15.2	11.3	11.1	6.8	7.3	7.3
South Africa	58.4	63.5	53.0	35.6	0.0	0.0	0.0
Swaziland	40.6	44.2	36.9	24.9	13.2	14.6	16.9
Taiwan, Province of China	30.5	33.1	27.7	18.7	9.9	10.9	12.6
Thailand	35.6	38.6	32.2	21.8	11.6	12.7	14.7
Trinidad and Tobago	17.8	19.3	16.1	11.3	6.8	7.3	7.4
Uruguay	0.0	15.2	11.3	11.3	6.8	7.3	7.3
Zimbabwe	30.5	33.1	27.7	18.7	9.9	10.9	12.6
Total	2,622	2,878	2,426	1,675	908	957	1,123
Total prorated to 12 months (percentage change)	2,622	2,879 (9.8)	2,079 (-27.8)	1,546 (-25.6)	908 (-41.3)	957 (5.4)	1,123 (17.7)

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 include global reallocation of shortfalls (to Ecuador and Trinidad and Tobago) of a combined 45.7 thousand tons.

3/ Includes global allocation of 90.7 thousand ton increase enacted on April 5, 1984.

4/ Includes global allocation of 272.1 thousand ton increase enacted on July 22, 1986.

5/ Quota allocation not to be shipped at this time.

countries at a guaranteed price), and a system of export refunds or restitutions. The system of export refunds provides for refunds to be paid to exporters whenever export prices for quota sugar are lower than the guaranteed domestic prices. 1/ As a result of the expansion in production stimulated by the sugar regime, the EC has been transformed from a net sugar importer in the 1970s to the second largest net exporter of sugar in the world, after Cuba, in the late 1980s.

The EC sugar regime's arrangements for sugar exports are largely self financing. Export refunds, known as "restitutions," on the 1.4 million tons of ACP sugar (Table 38) are the main direct cost to the EC budget. Restitutions paid on EC exports of sugar produced within production quotas are financed by levies on production. 2/ In recent years, these levies have been insufficient to reimburse the heavy cost of restitutions attributable to the large gap between domestic and low world prices; however, additional levies were introduced in 1985 and in 1987 in order to render the system self-financing.

In Japan, the world's second largest importer of sugar, import and excise duties and a system of variable sugar import charges have raised the price of sugar substantially above the free market price. Reflecting these relatively high prices, sugar production has been rising in Japan, and this has been accompanied by generally declining consumption, partly because of the displacement of sugar by the more competitive corn syrup industry, and reduced imports. The volume of sugar imports into Japan has

1/ Every five years, the EC sugar regime is subject to review. Production quotas, which have remained effectively unchanged since 1981, consist of two types. The A quota extends full price guarantees and is roughly equivalent to the EC's sugar consumption. The B quota provides a lower level of support; the latter quota amounts to 21 percent of A quota sugar and is largely exported. Sugar also is produced in excess of quotas (known as C sugar) and this sugar is not entitled to support and must either be exported or stored to become the first tranche of A quota sugar in the following year. The sugar regime, which has been in operation since 1981/82, was extended in December 1985 for two-years through 1987/88; production quotas were left unchanged.

2/ All sugar produced under quotas is subject to a levy of 2 percent of the intervention price. Sugar produced under the B quota is also subject to a levy of up to 37.5 percent of the intervention price. Between 1981/82 and 1985/86, however, the EC incurred a deficit of about ECU 400 million because these levies were insufficient to cover the cost of export refunds. In order to reduce the existing deficit over the next five years, an additional levy, known as the "elimination levy," was introduced in December 1985; the levy, which uses about ECU 80 million a year, varies from country to country to reflect the magnitude of production levies paid by producers over the 5-year period ending 1985/86. In 1986/87, export refunds rose substantially and a special levy, known as the "special elimination" levy, was introduced to eliminate additional financing gaps as they occurred.

Table 38. European Community: Sugar Quota Allocations by Country, 1982/83-88/89

(In thousands of tons: raw value) 1/

Country	July/June Quota Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
Barbados	53.6	53.6	54.4	54.4	54.7	54.7	54.7
Belize	42.8	42.8	43.6	43.6	43.8	43.8	43.8
Congo	5.4	8.7	10.9	10.9	11.1	11.1	11.1
Côte d'Ivoire	0.0	2.2	10.9	10.9	11.1	11.1	11.1
Fiji	177.8	177.8	179.2	179.2	179.7	179.7	179.7
Guyana	171.4	171.4	172.8	172.8	173.3	173.3	173.3
India 2/	0.0	10.9	10.9	10.9	10.9	10.9	10.9
Jamaica	128.6	128.6	128.6	128.6	129.0	129.0	129.0
Kenya	4.3	4.3	5.4	5.4	0.0	0.0	0.0
Madagascar	10.9	10.9	11.5	11.5	11.7	11.7	11.7
Malawi	21.7	21.7	22.4	22.4	22.6	22.6	22.6
Mauritius	529.6	529.6	532.5	532.5	533.7	533.7	533.7
St. Kitts and Nevis	16.1	16.1	16.7	16.7	16.9	16.9	16.9
Swaziland	126.5	126.5	127.7	127.7	128.0	128.0	128.0
Tanzania	10.9	10.9	10.9	10.9	11.1	11.1	11.1
Trinidad and Tobago	75.0	75.0	47.3	47.3	47.6	47.6	47.6
Zimbabwe	27.2	27.2	32.6	32.6	32.8	32.8	32.8
Total	<u>1.401</u>	<u>1.418</u>	<u>1.418</u>	<u>1.418</u>	<u>1.418</u>	<u>1.418</u>	<u>1.418</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 and Kenya's shortfall by Commission Decisions.

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

2/ 10,000 tons.

declined from 2.3 million tons in 1980 to less than 1.8 million tons in 1987.

As a consequence of the policies pursued in many countries, the volume of internationally traded sugar has generally contracted during the 1980s. Reflecting the insulation of producers and consumers from free market prices, the volume of net exports at competitive free market prices declined from 21.7 million tons in 1982 to 18.2 million tons in 1986, but rose slightly above that level to 18.5 million tons in 1987. In 1987, only 27 percent of world sugar production entered international trade, compared to over 31 percent in 1980-81; the free market accounted for less than 18 percent of world production in 1987.

As about one third of world sugar trade is conducted under special long-term bilateral and multilateral arrangements on terms typically providing for higher prices than those quoted on the free market, the average unit value of sugar exports has substantially exceeded prices on the free market. In U.S. dollar terms, the value of sugar exports, which has fallen from \$14.8 billion in 1980 to \$14.3 billion in 1985, has been recovering in recent years, and this is almost entirely attributable to the rise in average unit values (Table 39). In 1987, export volume is estimated to have increased slightly, reflecting higher exports from industrial countries, especially Australia and the EC, and also increased exports from developing countries, including the Dominican Republic, Mauritius, Mexico, and the Republic of South Africa. On the import side, a large increase in the volume of sugar imported by China more than offset a large decline in U.S. imports. In 1988, despite a 2 percent decline in export volume, sharply rising prices are estimated to have further boosted export earnings from sugar.

Although free market prices are expected to strengthen further in 1989, prospects for a sustained rise in prices are small. The average response time of producers to higher prices has been reduced since the mid-1970s. Since then, the EC has emerged as a major producer of beet sugar, the output of which can be increased substantially in less than a year. Brazil also has sharply increased cane production, and if only a small share of the large volume (60 percent of cane production) currently used to produce ethanol were shifted to sugar production, this could importantly augment world sugar supply. Furthermore, other producing countries, which have reduced production in recent years in response to low world prices could respond by re-expanding output.

Whereas industrial countries accounted for the major share of import demand in the mid-1970s, import demand subsequently has shifted toward developing countries, with relatively higher price and income elasticities of demand. Higher world prices could reduce demand growth in developing countries as well as stimulate further displacement of sugar by more competitively priced alternative sweeteners in industrial countries. Furthermore, much of the forecasted rise in production in 1988/89 is expected to be in sugar importing countries, including China, India, and

Table 39. Sugar: World Trade, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Exports								
Earnings (in billions)	8.8	8.0	7.8	7.9	8.8	9.4	10.0	10.6
Industrial countries	1.7	1.7	1.8	1.8	1.7	2.0	2.3	2.5
Developing countries	6.9	6.0	5.8	5.8	7.0	7.1	7.5	7.8
U.S.S.R and Eastern European countries	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.3
Volumes (in millions of tons)	28.3	28.2	28.3	27.8	28.3	28.2	28.3	27.8
Industrial countries	8.1	8.8	9.0	9.0	8.1	8.8	9.0	9.0
France	2.4	2.2	2.0	2.3	2.4	2.2	2.0	2.3
Australia	2.5	2.8	2.8	2.7	2.5	2.8	2.8	2.7
Other	3.2	3.8	4.2	4.0	3.2	3.8	4.2	4.0
Developing countries	19.2	17.9	18.3	17.4	19.2	17.9	18.3	17.4
Brazil	2.7	2.4	2.4	2.0	2.7	2.4	2.4	2.0
Cuba	6.9	6.7	6.5	6.5	6.9	6.7	6.5	6.5
Other	9.6	8.8	9.4	8.9	9.6	8.8	9.4	8.9
U.S.S.R and Eastern European countries	1.0	1.5	1.0	1.4	1.0	1.5	1.0	1.4
Unit values (a ton)	310	285	273	284	315	335	353	381
Industrial countries	213	198	200	206	216	232	258	277
Developing countries	359	339	318	333	365	397	412	448
Excluding Cuba	(182)	(184)	(179)	(200)	(185)	(216)	(231)	(270)
U.S.S.R and Eastern European countries	167	188	170	164	170	220	220	220
Imports								
Values (in billions)	9.1	8.6	8.1	8.3	9.2	10.1	10.5	11.2
Industrial countries	2.2	2.0	1.8	2.0	2.2	2.4	2.3	2.7
Developing countries	2.5	2.3	2.4	2.7	2.5	2.7	3.2	3.7
U.S.S.R and Eastern European countries	4.4	4.3	3.9	3.6	4.5	5.0	5.0	4.8
Volumes (in millions of tons)	27.4	26.8	27.5	22.4	27.4	26.8	27.2	27.4
Industrial countries	8.5	8.0	7.2	7.3	8.5	8.0	6.9	7.3
United States	2.6	1.9	1.2	1.2	2.6	1.9	1.2	1.2
Japan	1.9	1.8	1.8	1.8	1.9	1.8	1.8	1.8
United Kingdom	1.1	1.3	1.4	1.3	1.1	1.3	1.4	1.3
Other	2.9	3.0	2.8	3.0	2.9	3.0	2.5	3.0
Developing countries	13.1	12.4	14.0	14.0	13.1	12.4	14.0	14.0
U.S.S.R. and Eastern European countries	5.8	6.4	6.3	6.1	5.8	6.4	6.3	6.1
U.S.S.R.	4.5	5.2	5.1	4.8	4.5	5.2	5.1	4.8
Other	1.3	1.2	1.2	1.2	1.3	1.2	1.2	1.2
Unit values (a ton)	330	322	299	304	335	378	386	409
Industrial countries	260	251	256	275	264	295	331	370
Developing countries	187	183	174	195	190	215	225	262
U.S.S.R and Eastern European countries	768	665	615	592	779	780	795	795
Market prices (a ton)								
Free market 2/	88	114	115	167	89	133	149	225
European Community 3/	350	350	366	391	355	410	473	525
United States 4/	442	394	372	363	449	462	481	488

Sources: UN Food and Agriculture Organization, 1986 FAO Trade Yearbook (Rome), for exports and imports; Commodities Division, IMF Research Department for market prices.

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

^{2/} 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.

^{3/} Unpacked sugar, c.i.f. European ports.

^{4/} U.S. future import price contract No. 14. Prior to June 1985, New York contract No. 12 spot price, c.i.f. Atlantic and Gulf of Mexico ports.

the U.S.S.R., and this is expected to lead to a further shrinkage in the volume of internationally traded sugar.

5. Bananas

World supplies of bananas available for export in 1988 continued to rise despite a deterioration of export prospects for the Caribbean countries on account of hurricane Gilbert which brought shipments from Jamaica to the United Kingdom to a complete halt. World trade in bananas expanded for the fifth consecutive year. In 1987 trade had grown by 2.8 percent reaching a volume of 7.5 million tons. Substantial increases in export volume were registered in some of the member countries of the Union de Paises Exportadores de Banano (UPEB) and by Ecuador, which had its best export performance in 10 years. Among the Asian banana producers, exports from the Philippines in 1987 declined by 9 percent. Import volume increased by nearly 4 percent in the EC. Per capita imports of the Federal Republic of Germany rose to 11.1 kg, the highest level in the EC and only 0.3 kg below that of the United States.

The export/import matrix for trade in bananas for 1987 confirms the traditional close links of certain exporting regions with certain importing regions: Central and South America are the predominant suppliers for North America; Africa and the Caribbean countries mainly provide the supply for Europe; and the Philippines is the main supplier to Japan. Trade within the EC has increased following the entry of Portugal and Spain.

The divergences in movements in banana prices in different parts of the world in 1988 mainly reflected developments limited to individual markets (Table 40); compared to previous years, exchange rate movements were of less importance. Prices in the United States surged considerably in early spring when weather damaged production in Costa Rica and Panama and rejection of a shipment from Central America caused some tightening of supply. Prices remained above the 1987 level for the rest of the year due to supply problems in a number of producing countries as a result of adverse weather and labor disputes. Prices in German ports in 1988 on average were 8 percent lower than 1987; due to an inadequate supply of competing fruit, prices for bananas firmed in the first half of 1988, but in the second half of the year dropped well below the previous year's level. French import prices, in contrast, were above the 1987 level by nearly 3 percent, but as with the case of Germany, there was also a decline in the second half of the year. In Japan, prices were on average 8 percent higher than in 1987 owing to a slow recovery of production and exports of the Philippines.

The Intergovernmental Group on Bananas of the FAO projects an average yearly growth of 0.6 percent to 0.9 percent for the worldwide export volume and of 0.9 percent for import volume for the period 1990-91. Within this global framework, the largest growth in the supply of bananas for export is projected for Costa Rica, Honduras, and Panama among the UPEB countries; among Caribbean countries, in St. Lucia and Jamaica; and

Table 40. Bananas: Prices in Selected Markets, 1985-88

(A ton)

	Year	Average	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York (In U.S. dollars)	1985	<u>378</u>	378	443	454	484	457	380	321	422	362	278	275	285
	1986	<u>382</u>	329	388	500	578	387	345	331	321	424	375	294	311
	1987	<u>382</u>	357	402	420	373	402	355	410	304	323	247	381	356
	1988	<u>1/ 444</u>	394	463	430	453	501	588	483	331	428	417	417	446
Hamburg (In deutsche mark)	1985	<u>1,340</u>	1,287	1,494	1,877	2,011	1,803	1,509	1,188	1,100	1,223	822	937	848
	1986	<u>1,210</u>	1,185	1,323	1,447	1,685	1,323	1,340	879	1,068	1,054	1,002	855	847
	1987	<u>1,180</u>	775	1,197	1,410	1,282	1,288	1,521	1,323	1,264	1,129	1,020	909	811
	1988	<u>1,089</u>	828	1,314	1,388	1,438	1,308	1,333	840	898	747	998	840	700
(In U.S. dollars)	1985	<u>455</u>	408	454	567	652	579	483	400	394	431	311	361	377
	1986	<u>557</u>	485	567	639	741	684	689	408	517	517	500	422	475
	1987	<u>632</u>	396	655	789	708	721	836	716	632	583	568	505	497
	1988	<u>614</u>	560	775	827	858	772	759	455	475	400	547	537	386
French ports (In French francs)	1985	<u>4,970</u>	4,500	4,890	5,750	5,790	5,490	4,940	4,610	4,610	4,760	4,920	4,710	4,660
	1986	<u>5,080</u>	4,760	5,080	5,600	5,490	5,210	5,300	4,710	4,820	5,020	5,020	4,870	4,820
	1987	<u>5,210</u>	4,700	4,840	5,620	5,420	5,330	5,550	5,540	5,520	5,450	5,360	4,970	4,220
	1988	<u>5,340</u>	4,760	5,500	5,780	5,840	5,600	5,450	5,100	5,160	5,290	5,350	5,150	5,140
(In U.S. dollars)	1985	<u>553</u>	484	488	569	615	580	529	519	541	550	610	597	605
	1986	<u>731</u>	635	709	804	783	732	743	680	717	752	767	735	737
	1987	<u>864</u>	759	795	821	899	893	914	901	883	882	895	871	763
	1988	<u>889</u>	853	958	1,015	1,028	976	920	820	807	833	862	863	858
Japanese ports (In thousands of Japanese yen)	1985	<u>105</u>	88	89	95	122	131	133	116	107	118	107	79	73
	1986	<u>84</u>	73	80	87	96	89	114	108	84	77	84	61	65
	1987	<u>89</u>	58	62	74	85	79	76	68	65	72	72	58	61
	1988	<u>73</u>	51	59	70	93	90	85	73	72	80	82	78	76
(In U.S. dollars)	1985	<u>439</u>	346	342	367	486	519	536	480	450	500	497	388	358
	1986	<u>498</u>	366	433	484	548	592	676	683	544	500	412	375	401
	1987	<u>498</u>	375	404	488	594	562	526	453	441	503	503	540	570
	1988	<u>444</u>	399	456	550	744	721	669	548	539	595	636

Sources: UN Food and Agriculture Organization, FAO Monthly Bulletin of Statistics (Rome), and Commodities Division IMF Research Department.

1/ Commodities Division, IMF Research Department, estimates based on the average wholesale prices at New York City and Chicago.

in Africa, for Cameroon and Somalia. Exports from the Philippines are projected to remain unchanged. The projections with respect to demand growth may prove optimistic. They were made in the wake of a period of especially favorable conditions for banana exports on account of a severe winter in Europe which reduced supplies of competing fruit and led to increased demand for bananas both in Western European countries and the U.S.S.R. Indeed, some analysts believe that per capita imports in the main importing countries have reached an upper level, and the growth of total imports may therefore be limited. This pattern would reflect not only a decreasing and then negative income elasticity of demand, but also the increasing availability of competing fruits at competitive prices. It would require substantial increases of demand in other import areas where volumes are comparatively small to compensate for these developments in the major markets. With reference to supply, it should be noted that supply shortfalls from individual countries can easily occur because of adverse weather, labor disputes, transportation difficulties, and other problems. As a result of these shortfalls, large short-term price swings may occur in particular markets for bananas.

Prospects for the world banana market depend not only on these supply and demand developments, but also on national and international trade policies. Japan's lowering of applicable rates in its generalized system of preferences helped to increase import volumes during 1986-87. The international bananas market will be influenced by the outcome of the negotiations on tropical products within the Uruguay Round of the GATT. It may also be affected by the planned unification of the EC market in 1992. In the EC, a common external tariff of 20 percent is applied, but no duties exist for imports from ACP (African, Caribbean, and Pacific) countries under Protocol 4 of the Lomé Convention. Imports into France, Italy, and the United Kingdom are limited by licence to an amount assessed as required to satisfy demand, after account has been taken of ACP imports. The Federal Republic of Germany has a duty-free quota that has so far been large enough to cover all its imports which originate mainly in the UPEB countries and Ecuador. In addition, preferential arrangements apply to the EC's own banana growers.

III. Beverages

Market developments relating to coffee, tea, and cocoa are discussed in this section. Although the beverage use of cocoa is secondary to its use in chocolate confectionery, cocoa is included in this group of commodities because of its traditional association with coffee and tea as a beverage and because it shares with them certain characteristics with respect to supply. Of the three commodities, coffee, which in terms of value is one of the most important commodities in international trade, has a much greater weight in the various composite indices used in the discussion than do tea and cocoa.

The demand for these commodities, which is largely determined by taste and tradition, tends to be stable and price inelastic over the short

run. Except in periods of very large price changes, there is little substitution in consumption between these commodities. Variations in prices are mainly associated with weather-related short-run fluctuations and longer cyclical changes in supply in lagged response to prices for these commodities.

Owing to the dominant role of supply factors, beverage prices (Chart 5) have tended to move independently of the prices for other commodities over the last several years (see Chart 2). This pattern was repeated in both 1987 and 1988. In 1987, a large increase in production contributed to a 36 percent decline in terms of SDRs in the overall index of beverage prices (Tables 41 and 42). Although the beverage production index declined somewhat in 1988--crop year 1988/89 is the "off"-year in the two-year Brazilian coffee production cycle--very large carryover stocks augmented available supplies and the price index fell by a further 4 percent.

1. Coffee

A drought in the coffee producing areas of Brazil which reduced the 1986/87 (April-March) Brazilian crop caused world coffee prices to rise sharply in late 1985 and early 1986. 1/ As a result of the rise in prices, export quotas under the 1983 International Coffee Agreement were increased in November and December 1985 and completely suspended in February 1986. The drought reduced the 1986/87 Brazilian coffee crop by about 40 percent to 15 million 60 kilogram bags as compared to a crop of about 25 million bags that might have been expected with normal weather in an "off-year" of the two-year arabica coffee production cycle. The period of high prices was quite transient, however. Prices weakened beginning in April 1986 and continued to fall in subsequent months because of a large rise in exports following the suspension of export quotas and on account of indications that the drought would have little or no long-term effect on coffee production in Brazil. Prices recovered briefly in September 1986 due to another spell of dry weather in Brazil but declined during the final quarter of 1986 and in most of 1987. The fall in prices is attributable to a failure by the members of the International Coffee Organization (ICO) to agree on the reintroduction of quotas and the prospect of a recovery in the 1987/88 Brazilian coffee crop. In fact, the 1987/88 Brazilian crop was a record 43 million bags.

After protracted negotiations, in October 1987 the International Coffee Council agreed to reintroduce export quotas for the 1987/88 coffee year. The initial global quota was set at 58 million 60 kilogram bags--the same level as at the beginning of the 1985/86 coffee year. The range between which prices are to be stabilized was also left unchanged at

1/ The Brazilian crop year is April/March and therefore differs from the international (October/September) coffee year on which most of the discussion in this section and the data in Table 40 are based.

CHART 5

Prices of Beverages in SDRs, 1980-88

(Indices: 1980=100)

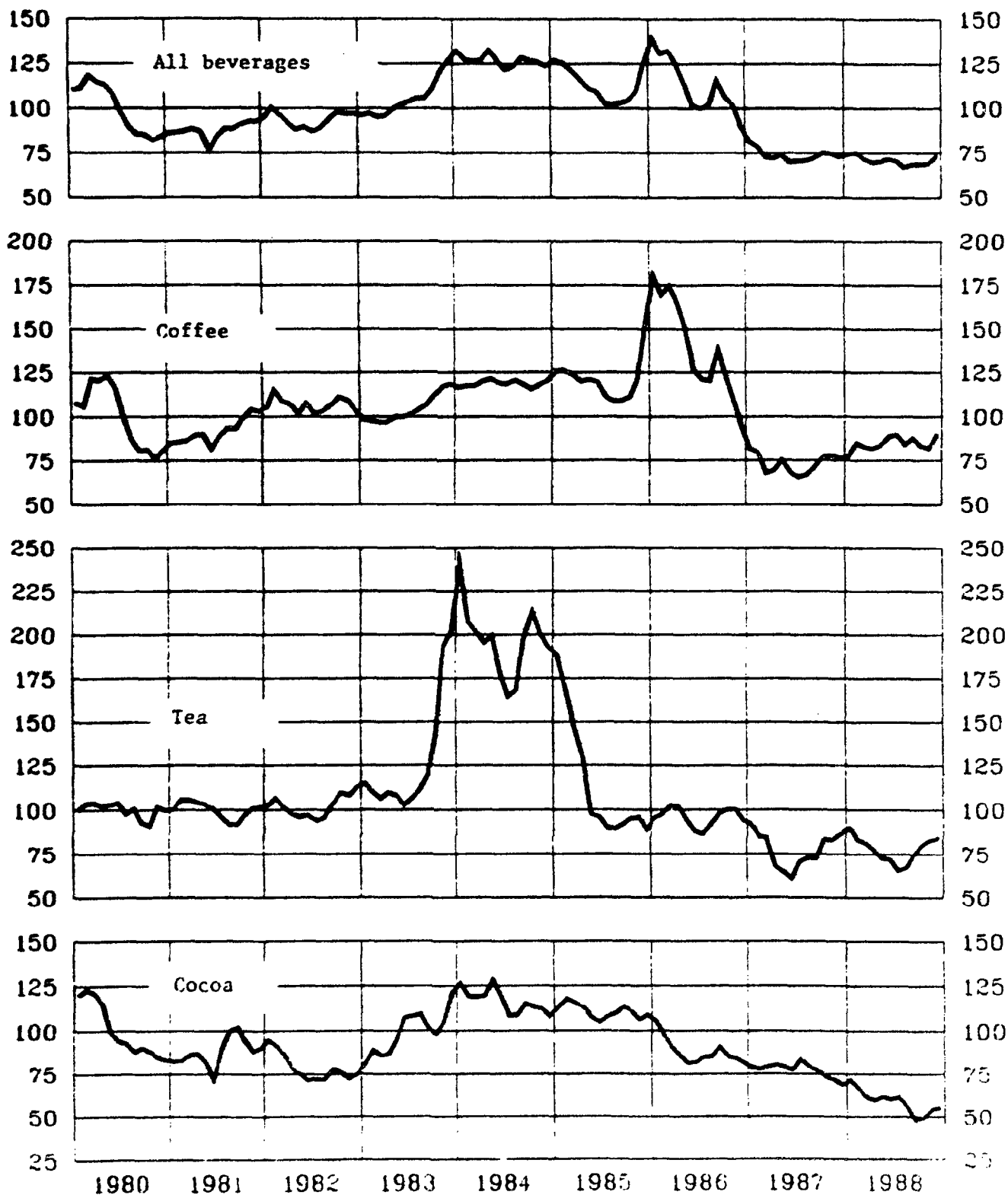


Table 41. Prices of Beverages, 1979-88

Years	Index of Prices of Beverages 1/	Coffee			Cocoa Beans 5/ (Ton)
		"Other mild" arabica 2/ (Pound)	Robusta 3/ (Pound)	Tea 4/ (Kilogram)	
<hr/>					
	(1980=100)	----- (In SDRs) -----			
1979	115.3	1.34	1.28	1.67	2,549
1980	100.0	1.18	1.13	1.71	2,000
1981	87.4	1.09	0.87	1.71	1,763
1982	83.8	1.27	1.01	1.75	1,574
1983	105.0	1.23	1.16	2.17	1,985
1984	126.9	1.41	1.35	3.37	2,335
1985	113.2	1.43	1.19	1.97	2,220
1986	113.3	1.65	1.27	1.64	1,765
1987	73.8	0.87	0.79	1.32	1,546
1988	70.8	1.01	0.71	1.33	1,177
1987 I	78.0	0.91	0.85	1.49	1,573
II	71.9	0.84	0.79	1.10	1,580
III	71.2	0.81	0.75	1.23	1,603
IV	74.1	0.91	0.78	1.45	1,428
1988 I	73.7	0.97	0.75	1.46	1,330
II	70.6	1.01	0.70	1.27	1,211
III	68.5	1.04	0.66	1.18	1,104
IV	70.3	1.01	0.72	1.41	1,061
	(1980=100)	----- (In U.S. dollars a ton) -----			
1979	114.4	1.74	1.65	2.16	3,293
1980	100.0	1.54	1.47	2.23	2,603
1981	79.2	1.28	1.03	2.02	2,077
1982	79.6	1.40	1.11	1.93	1,742
1983	86.1	1.32	1.24	2.32	2,119
1984	100.0	1.44	1.38	3.46	2,396
1985	88.3	1.46	1.21	1.96	2,255
1986	101.8	1.93	1.48	1.93	2,068
1987	73.3	1.12	1.02	1.71	1,998
1988	73.2	1.35	0.95	1.79	1,584
1987 I	75.6	1.14	1.08	1.88	1,984
II	71.5	1.09	1.02	1.43	2,046
III	69.8	1.03	0.96	1.57	2,046
IV	76.4	1.23	1.05	1.95	1,916
1988 I	77.4	1.33	1.02	1.99	1,819
II	74.2	1.38	0.95	1.74	1,657
III	68.3	1.34	0.86	1.53	1,432
IV	72.7	1.36	0.97	1.90	1,427

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: coffee, 63 percent; tea, 11 percent; and cocoa beans, 26 percent.

2/ Central American and Mexican origin, average of prices ex-dock New York and ex-dock Bremen/Hamburg.

3/ African origin, average of prices of ex-dock New York and ex-dock Le Havre/Marseille.

4/ Any origin, average London auction prices.

5/ International Cocoa Organization daily prices, averages of three nearest trading months on New York Cocoa Exchange and London Cocoa Terminal Market, c.i.f. U.S. and European ports.

Table 42. Movements in the Prices of Beverages
and Related Economic Indicators, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Prices of beverages 1/							
In SDRs	7.3	11.9	20.9	-10.8	0.0	-34.9	-4.1
In U.S. dollars	0.4	8.2	16.1	-11.7	15.3	-28.0	-0.1
Real 2/	2.6	11.4	19.6	-12.3	-2.0	-35.9	-5.8
Consumer price index in G-7 countries							
In SDRs	6.7	4.9	4.6	3.5	1.0	0.5	3.0
In U.S. dollars	-0.1	1.6	0.3	2.5	16.7	10.7	7.0
Real GNP in G-7 countries	-0.4	2.9	5.1	3.4	2.7	3.4	4.2
World consumption of beverages 3/							
Index of consumption 4/	2.1	0.0	3.4	-0.7	2.7	1.9	2.2
World supply of beverages 3/							
Index of production	-13.1	5.1	9.3	4.0	-9.9	20.0	-4.1
Index of supply 5/	-2.2	0.6	4.3	2.0	-4.1	10.5	4.9
Index of closing stocks	-9.1	-7.6	-4.8	14.3	-13.2	36.0	5.2

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

1/ Refers to IMF world index of prices of beverages. These percentages differ from those reported in the World Economic Outlook which refer to the price index of beverages exported by developing countries.

2/ Index of dollar prices of beverages deflated by the index of dollar unit values of manufactured exports.

3/ Overall indices constructed using the same weights for the indices of individual commodities as in overall (world) price index. Crop year data for agricultural commodities are allocated under the earlier calendar year, e.g., crop year 1980/81 under 1980. Commodity coverage of indices of consumption and stocks is less comprehensive than coverage of indices of production and supply.

4/ Data on consumption include some working inventories for coffee in importing countries and movements in these inventories contribute to the variability of this series, particularly in the period 1983-85.

5/ Production plus beginning-of-year stocks.

\$1.20 and \$1.40 a pound. 1/ As the composite indicator price (CIP) was well below the floor price of the stabilization range, the Council also agreed on supplementary measures permitting quota cuts of up to 4 million bags during the October to December 1987 quarter. The impact on prices of the reintroduction of quotas and an immediate quota cut of 1.5 million bags in early October was quite muted because of weak import demand reflecting a high level of coffee stocks in consuming countries and large shipments at the end of the 1986/87 coffee year. The transitional arrangements for the first quarter of the coffee year were not implemented during the rest of the quarter because the CIP remained just above \$1.15 a pound.

The price differential between robusta and other mild arabica coffees, which historically has been at about 10 percent, widened considerably during the course of the 1987/88 coffee year due to a shortage of quality Colombian and other mild arabica coffees and a surfeit of robusta and low quality arabica coffees. In the period between February 1986 and the end of September 1987, when quotas were not in effect and real prices of coffee were quite low, processors in North America and Western Europe increased the proportion of high quality arabicas in their blends. It appears that there may be a distinct consumer preference for this type of coffee, which had been masked by the application of ICO export quotas. During the 1986/87 coffee year, when export quotas were not in effect, exports of other mild and Colombian mild coffees accounted for 51.5 percent of exports by ICO members to importing members. When quotas were reintroduced at the beginning of the 1987/88 coffee year, the share of other milds and Colombian milds was reduced to 43 percent of the total quota. The impact of the discrepancy between the quota allocated for other mild arabica coffees and the underlying market demand for these types of coffee was not evident in the price differential between robusta and mild arabica coffees during the last quarter of 1987 because of large stocks in consuming countries and shipments in transit. The differential widened substantially, however, during 1988.

Two quota cuts of one million bags each were triggered in January 1988 because the composite indicator price continued to remain below \$1.20 per pound. Prices recovered in February and moved above the \$1.20 per pound level for a brief period on account of a sharp increase in

1/ The ICO's composite indicator is an average of the ICO indicator prices for robusta and "other milds." Both are physical prices for specific grades of coffee. The robusta indicator is an average of prices ex-dock New York (Angola Ambriz 2BB, Côte d'Ivoire Grade II, and Uganda Standard) and ex-dock Le Havre/Marseille (Côte d'Ivoire Superior Grade II, Cameroon Superior Grade I, Central African Superior, and Madagascar Superior Grade II). The "other milds" indicator is an average of prices of arabica coffee ex-dock New York (El Salvador Central Standard, Guatemala Prime Washed, Mexico Prime Washed), and ex-dock Bremen/Hamburg (El Salvador High Grown, Guatemala Hard Bean, and Nicaragua Strict High Grown).

the price of other milds coffee. This increase was caused by high seasonal roaster demand, undershipment of quotas during the fourth quarter of 1987 and speculative purchases on futures markets. Weak robusta prices caused the indicator price to fall below the \$1.20 per pound level in March 1988, and despite two more quota cuts of 1.5 million bags each in July, the indicator price continued to remain below the \$1.20 per pound level until the end of September 1988. Thus, in spite of five quota cuts amounting to a total reduction of 6.5 million bags in the quota for the 1987/88 coffee year, coffee prices remained below the lower level of the price stabilization range during 11 months of the year. Despite the quota cuts, supplies of robusta coffee continued to be plentiful throughout the 1987/88 coffee year and robusta prices remained weak. The main impact of the prorata quota cuts was to further reduce the availability of the mild arabica coffees for which demand was relatively strong. This led to a strengthening in prices for arabica coffee and to a widening of the price differential between robusta and other mild (arabica) coffees. The price differential for other milds coffee over robusta coffee, which increased from 11 percent in September 1987 to 20 percent in December 1987, widened further to 63 percent in July 1988 before narrowing to 50 percent in September 1988.

After declining to 83 million bags in the 1985/86 international coffee year (October/September) on account of the severe drought in Brazil, world coffee production recovered to 96 million bags in 1986/87 and to nearly 97 million bags in 1987/88 largely as a result of a recovery in Brazilian coffee production (Table 43). In addition, coffee production in Colombia increased from 10.8 million bags in 1986/87 to 13.2 million bags in 1987/88, while coffee production in India declined from 3.7 million bags to 2 million bags during the same period. The recovery in Brazilian production, which is mainly unwashed arabica coffee, caused the share of arabica coffee in total world production to rise from 75 percent in 1985/86 to 79 percent in 1987/88. Lower production in member countries of the Organisation Africaine et Malgache du Café (OAMCAF) reduced world robusta production from 21.4 million bags in 1986/87 to 19.7 million bags in 1987/88.

World coffee consumption has increased at an annual rate of about 1.3 percent in 1986/87 and 1987/88. Consumption in importing countries accounts for about 77 percent of total world coffee consumption; the remainder--about 19-20 million bags each year--is consumed in the exporting countries. High coffee prices led to a decline in consumption in the importing countries, to 65.6 million bags in 1985/86. As prices fell in 1986/87 and 1987/88, consumption recovered to 66.6 million bags and 68.5 million bags, respectively. Despite the low price level during these two crop years, coffee consumption in the principal importing countries in Western Europe and North America grew at a relatively slow rate because demand for coffee in these well established and mature markets is inelastic with respect to both price and income. Growth in coffee consumption has also been hampered by the fact that a large drop in green coffee prices has not been reflected by a corresponding percentage drop in retail prices for roasted and soluble coffee, largely because

Table 43. Coffee: World Commodity Balance, 1982/83-88/89

(In millions of 60 kilogram bags)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 ^{1/}
Production	<u>90.7</u>	<u>85.9</u>	<u>88.6</u>	<u>82.9</u>	<u>95.0</u>	<u>96.7</u>	<u>93.4</u>
Brazil	23.4	24.7	25.9	22.8	29.2	31.8	25.3
Colombia	12.3	13.0	11.0	11.8	10.8	13.2	12.2
Other countries ^{2/}	55.0	48.2	51.7	48.3	55.0	51.7	55.9
Consumption	<u>86.2</u>	<u>85.3</u>	<u>85.6</u>	<u>84.8</u>	<u>86.4</u>	<u>87.3</u>	<u>88.5</u>
Exporting countries	20.1	18.6	19.3	19.2	19.8	19.2	19.7
Brazil	7.7	7.3	7.0	7.0	7.0	7.5	8.0
Colombia	1.9	1.6	1.8	2.0	1.7	1.8	1.8
Other countries ^{2/}	10.5	9.7	10.5	10.2	11.1	9.9	9.9
Importing countries	<u>66.1</u>	<u>66.7</u>	<u>66.3</u>	<u>65.6</u>	<u>66.6</u>	<u>68.1</u>	<u>68.8</u>
ICO members ^{3/}	56.6	56.1	55.8	57.1	59.0	60.0	60.0
Nonmembers ^{4/}	9.5	10.6	10.5	8.5	7.6	8.1	8.8
Losses ^{5/}	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>	<u>1.4</u>	<u>1.4</u>	<u>1.6</u>	<u>1.6</u>
Closing stocks	<u>64.9</u>	<u>64.1</u>	<u>65.7</u>	<u>62.4</u>	<u>70.6</u>	<u>78.4</u>	<u>81.7</u>
In exporting countries	54.3	51.1	51.0	44.8	47.6	60.0	65.6
Brazil	15.4	12.8	13.4	16.3	20.3	27.0	28.3
Colombia	11.3	12.7	12.3	10.6	7.6	9.5	11.5
Other countries ^{2/}	27.6	25.6	25.3	17.9	19.7	23.5	25.8
Other stocks	10.6	13.0	14.7	17.6	23.0	18.4	16.1
Inventories in							
importing countries	4.4	5.0	5.4	7.3	6.7	6.8	6.7
Stocks in free ports	1.9	2.6	2.8	3.7	4.9	3.8	3.6
Afloat, etc. ^{6/}	4.3	5.4	6.5	6.6	11.4	7.8	5.8
Stocks/consumption ratio (in percent)	75	75	77	74	82	90	92

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 nonmembers.

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

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

processing and marketing margins tend to be relatively stable over time. In addition, the growth in coffee consumption in these markets has been restrained by competition from soft drinks and other beverages.

ICO data indicates that household purchases of coffee in the United States declined from 9.27 million bags in 1984/85 to 9.11 million bags in 1985/86 when coffee prices rose sharply. Thereafter, falling prices contributed to a rise in household purchases, to recover to 9.25 million bags in 1986/87 but in 1987/88 despite a continuing drop in prices, consumption declined to 8.60 million bags. These results are corroborated by another ICO study which shows that after increasing slightly in 1987, per capita consumption in the United States appears to have resumed its downward trend. Household purchases in ten European importing members held relatively steady during this period, at between 16.3 and 16.5 million bags, respectively. Coffee consumption in Japan, on the other hand, has increased at annual rate of about 3.8 percent during the last five years because coffee is a relatively new product with a high income elasticity of demand. Coffee is promoted as a young person's drink in Japan and competes more directly with soft drinks than in many other countries.

The excess of world coffee consumption over production in 1985/86 led to declines in world coffee stocks from 66 million bags by the end of 1984/85 coffee year to little more than 62 million bags by end- 1985/86. With the recovery in world coffee production and slow growth in consumption, closing stocks rose to over 70 million bags in 1986/87 and to an estimated level of 78 million bags in 1987/88. The level of stocks afloat and in free ports increased at the end of the 1986/87 on account of large shipments made prior to the reintroduction of quotas in October 1987. The reimposition of export quotas contributed to the sharp increase in stocks in exporting countries by the end of 1987/88.

Earnings from coffee exports rose from \$10.5 billion in 1985 to \$13.8 billion in 1986 owing to sharply higher world coffee prices (Table 44). Despite the suspension of quotas in February 1986, export volume declined by 400 thousand tons because high prices curtailed import demand. In 1987, low market prices and an absence of quotas during 9 months of the year, led to a recovery in exports to 4.2 million tons. Earnings, however, declined to \$9.2 billion because of low market prices and export unit values. Although the volume of exports was constrained by export quotas, earnings are estimated to have increased to \$9.6 billion in 1988, on account of some recovery in world market prices.

In the period between March 1986 and October 1987, when quotas were not in effect, the differential in export unit values of sales to quota and nonquota markets narrowed considerably. Discount sales to non-members of the ICO became a cause of major concern to the Executive Board of the ICO during 1987/88. The International Coffee Agreement contains control measures and penalties to prevent sales to nonquota markets at discounted prices and to prevent coffee leaking from nonquota markets into quota

Table 44. Coffee: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>10.4</u>	<u>11.8</u>	<u>7.1</u>	<u>7.1</u>	<u>10.5</u>	<u>13.8</u>	<u>9.2</u>	<u>9.6</u>
Developing countries	10.4	11.8	7.1	7.1	10.5	13.8	9.2	9.5
To ICO members 2/	9.2	10.7	6.3	6.3	9.3	12.5	8.2	8.5
To nonmembers of ICO	1.2	1.1	0.8	0.7	1.2	1.3	1.0	1.0
Volumes (in millions of tons)	<u>4.2</u>	<u>3.8</u>	<u>4.2</u>	<u>3.9</u>	<u>4.2</u>	<u>3.8</u>	<u>4.2</u>	<u>3.9</u>
Developing countries	4.2	3.8	4.2	3.9	4.2	3.8	4.2	3.9
To ICO members 2/	3.6	3.4	3.6	3.3	3.6	3.4	3.6	3.3
To nonmembers of ICO	0.6	0.4	0.6	0.6	0.6	0.4	0.6	0.6
Unit values (a ton)	<u>2,480</u>	<u>3,140</u>	<u>1,710</u>	<u>1,830</u>	<u>2,510</u>	<u>3,680</u>	<u>2,220</u>	<u>2,460</u>
To ICO countries	2,540	3,130	1,760	1,920	2,580	3,680	2,280	2,580
To nonmembers of ICO	1,970	2,770	1,290	1,360	2,000	3,250	1,670	1,830
Market prices								
ICO daily composite indicator (a ton)	2,900	3,200	1,830	1,890	2,940	3,760	2,370	2,540
Other milds 3/	3,160	3,620	1,920	2,220	3,210	4,250	2,480	2,980
Robusta 4/	2,630	2,790	1,740	1,560	2,670	3,270	2,260	2,100

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

- 1/ Data on exports are estimates of Commodities Division, IMF Research Department.
- 2/ Includes exports of an estimated 0.1 million bags a year from nonmembers of ICO.
- 3/ Ex-dock New York and Bremen/Hamburg.
- 4/ Ex-dock New York and Le Havre/Marseilles.

markets. In practice, however, sales to nonquota markets have been difficult to monitor.

In early October 1988, the ICO agreed on an effective global annual quota of 56.0 million bags for the 1988/89 coffee year. Under the transitional provisions for the first quarter of the coffee year, two quota increases of 1.0 million bags each could be distributed if the 15-day moving average of the CIP exceeded \$1.14 cents per pound. No quota cuts were permitted during the first quarter. The quota distribution was determined by means of a formula which took account of exportable production, previous exports and the level of stocks. Despite an apparent shortage of Colombian and other mild coffees, the application of the formula resulted in a reduction in the share of Colombian milds in the total quota and left the share of arabica coffee unchanged. The apparent shortage of mild arabica coffees was partly addressed by the rules governing the manner in which quota increases and quota cuts are distributed between producers of arabica and robusta coffees. Under the transitional provisions for the first quarter of 1988/89, increases were to be apportioned between exporters of arabica and robusta coffees according to the differential between the 15-day moving averages of the other milds and robusta indicator prices. Owing to a large differential between the indicator prices for other mild arabica coffee and robusta coffee, two quota increases of 1.0 million bags each during the first quarter of the coffee year were both distributed, in their entirety, among arabica producing members of the ICO. From January 1, 1989 onwards, the floor and ceiling prices of the \$1.20 to \$1.40 target range would serve as the triggers for prorata quota cuts and increases. However, the distribution of quota cuts and increases between the arabica and robusta group of members entitled to basic quota will continue to be determined by the 15-day moving averages of the other milds and robusta prices respectively. ^{1/}

World coffee production is expected to decline by about 3.3 million bags in the 1988/89 international coffee year largely because of a drop in production in Brazil which, however, is likely to be partly offset by increased production in other countries. Production in the 1988/89 Brazilian crop year (April/March) will be affected by the "off-year" of the two-year arabica production cycle, frosts in July 1988 and very dry weather during the fourth quarter of 1988. On an international crop year basis, Brazilian production is expected to decline from 32 million bags in 1987/88 to 25 million bags in 1988/89. Production in India, on the other

^{1/} For example, if the 15-day moving average of the composite indicator price is at or below \$1.20 per pound, export quotas shall be reduced prorata by 1 million bags but if the 15-day average of the other milds indicator price is at or above \$1.30 per pound, exporters of arabica would be exempted from the quota cut. Similarly exporters of robusta would be exempt from the quota cut, if the 15-day average of the robusta indicator price is at or above \$1.30 per pound. Similar provisions are applicable for quota increases.

hand, is expected to increase by more than 60 percent, from 2.0 million bags to 3.3 million bags, because of the "on-year" in India of the biannual arabica production cycle. Robusta production is projected to rise by 2.2 million bags largely on account of an anticipated production increase in OAMCAF member countries. World coffee consumption will continue to lag behind world production owing to the slow rate of growth in consumption in the main coffee importing countries, supply constraints stemming from the ICO quotas, and a relative scarcity of higher quality mild arabica coffees. As a result of these developments, closing stocks are expected to rise by 4 million bags to 82 million bags. The ICO composite indicator price is expected to remain near the mid-point of the target price range and the differential between prices for other mild and robusta coffees is expected to continue to remain large.

The current coffee agreement will expire at the end of September 1989 unless it is extended. Devising a means of eliminating discount sales to nonmembers and introducing greater selectivity into the quota allocation process to ensure consumers adequate supplies of high quality mild arabica coffees are likely to be two particularly contentious issues in the negotiations on a new coffee agreement. Coffee price movements beyond the end of the 1988/89 coffee year will be crucially dependent on the outcome of these negotiations. Failure to conclude a new agreement, or to extend the current agreement, will most likely result in a sharp drop in coffee prices.

2. Tea

Tea prices rose substantially in 1983 and 1984 but declined sharply in each of the following three years. The average annual price of tea increased from \$1.93 per kilogram in 1982 to \$2.32 per kilogram in 1983, peaking at \$4.29 cents per kilogram in January 1984. Prices, which averaged \$3.46 per kilogram in 1984, fell to an average of \$1.98 per kilogram in 1985 and continued to drop to \$1.93 per kilogram and \$1.71 per kilogram in 1986 and 1987, respectively. 1/ Prices remained low at \$1.79 per kilogram in 1988.

The boom in tea prices, which lasted from the fourth quarter of 1983 to the first quarter of 1985, resulted from a drought in 1983 in India and Sri Lanka and a partial ban on tea exports imposed by India to protect the supply of tea in the domestic market. In 1984, world tea supplies increased by 6 percent and by a further 5 percent in 1985 as production rose in response to the high prices (Table 45). Although tea is a perennial crop with a long gestation period, the supply of tea is fairly elastic with respect to price because output can be increased significantly in the short run by "coarse plucking" of more than the usual number of leaves. World tea production in 1986 was virtually unchanged from 1985 on account of weather-related production declines in India and

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

Table 45. Tea: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 ^{1/}
Production	<u>1.930</u>	<u>2.030</u>	<u>2.160</u>	<u>2.260</u>	<u>2.240</u>	<u>2.340</u>	<u>2.460</u>
Green tea	420	430	420	420	440	490	510
China	250	240	240	240	260	300	320
Other countries	170	190	180	180	180	190	190
Black tea	1,510	1,600	1,740	1,840	1,800	1,850	1,950
India	560	580	640	660	620	670	710
Kenya	100	120	120	150	140	160	160
Sri Lanka	190	180	210	210	210	210	240
Other countries	660	720	770	820	830	810	840
Consumption (black and green)	<u>1.920</u>	<u>2.000</u>	<u>2.130</u>	<u>2.220</u>	<u>2.190</u>	<u>2.320</u>	<u>2.410</u>
Tea producing countries ^{2/}	<u>1.110</u>	<u>1.160</u>	<u>1.220</u>	<u>1.310</u>	<u>1.270</u>	<u>1.370</u>	<u>1.430</u>
China	180	280	270	300	290	230	260
India	370	370	420	440	420	470	480
Japan	100	100	90	90	90	100	100
U.S.S.R.	140	150	150	150	150	140	150
Other countries	320	260	290	330	320	430	440
Tea importing countries ^{3/}	<u>800</u>	<u>840</u>	<u>910</u>	<u>910</u>	<u>920</u>	<u>950</u>	<u>980</u>
Asian countries	200	230	260	250	250	270	280
United Kingdom	170	170	180	160	160	160	170
Other countries	430	440	470	500	510	520	530
Implied change in total stocks	10	30	30	40	60	20	50
Closing stocks in the United Kingdom	49	39	47	47	50	37	50

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.

Kenya which were largely offset by an increase in green tea production in China. Prices remained relatively stable during 1986.

In 1987, world tea production reached a record 2.3 million tons owing to an increase in production in most of the major tea producing countries. Production in India increased by 8 percent mainly because of favorable weather conditions throughout the year. China also harvested a record crop of 508 thousand tons, of which about 60 percent was green tea. Although production in Sri Lanka was affected by dry weather during the first half of the year, a recovery in output during the second half caused output for the year to remain unchanged. In Kenya, ideal weather conditions in 1987 contributed to a record harvest of 160 thousand tons. Weather conditions were favorable in most of the major tea producing countries in 1988 and, despite the very low level of real tea prices, world tea production is estimated to have increased to a record level of 2.5 million tons. Substantial production increases are estimated for India, Sri Lanka, and a number of smaller tea producing countries. In recent years, partly because of the low level of tea prices, much of the increase in production in the major tea producing countries has been principally due to improved yields as opposed to an increase in the area under tea cultivation.

The pattern of world tea consumption has changed significantly during the last two decades. Competition from soft drinks and other beverages and a change in the beverage consumption habits of younger-age groups has caused tea consumption in the developed market economy countries to stagnate or in some cases even decline. Apparent per capita tea consumption in the United Kingdom, the world's largest tea consuming country, declined from a peak of 4.50 kilograms in 1961 to 2.77 kilograms in 1984-86. Similarly, imports into the United Kingdom declined from a peak of 240 thousand tons in 1961 to 160 thousand tons in 1987. On the other hand, population and income growth has contributed to a rapid increase in tea consumption in the Middle East, North Africa, South Asia, and the U.S.S.R. Between 1970 and 1986, tea consumption in India grew at an annual rate of 4.5 percent while consumption in Pakistan increased at 6.5 percent. During the same period, consumption in the U.S.S.R. increased by 6.3 percent and in Iran and Iraq it rose at annual average rates of 4.4 percent and 5.6 percent respectively. Consumption in Africa increased at 4.2 percent in the same period, mainly on account of increased consumption in Egypt, Morocco, and Tunisia. More recently the growth in tea consumption in the petroleum exporting countries has slowed perhaps on account of declining revenues associated with the fall in petroleum prices.

The sharp price decline since 1984 lowered earnings from tea exports from \$2.5 billion in 1984 to \$1.7 billion in 1986 (Table 46). In 1987, a small increase in export volume more than offset a continuing fall in export unit values and earnings rose slightly to \$1.8 billion. Earnings are estimated to have recovered to \$2.0 billion in 1988 because of a small increase in both export volume and export unit value. Earnings in terms of SDRs fell steeply during the period between 1984 and 1987 on account of

Table 46. Tea: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>2.0</u>	<u>1.5</u>	<u>1.4</u>	<u>1.5</u>	<u>2.1</u>	<u>1.7</u>	<u>1.8</u>	<u>2.0</u>
Developing countries	2.0	1.5	1.4	1.5	2.1	1.7	1.8	2.0
Volumes (in thousands of tons)	<u>1.009</u>	<u>1.018</u>	<u>1.018</u>	<u>1.065</u>	<u>1.009</u>	<u>1.018</u>	<u>1.018</u>	<u>1.065</u>
Developing countries	1,009	1,018	1,018	1,065	1,009	1,018	1,018	1,065
India	222	203	204	220	222	203	204	220
Kenya	139	133	150	156	139	133	150	156
Sri Lanka	198	208	201	213	198	208	201	213
Other	450	474	463	476	450	474	463	476
Unit values (a ton)	<u>2.020</u>	<u>1.470</u>	<u>1.400</u>	<u>1.410</u>	<u>2.050</u>	<u>1.720</u>	<u>1.810</u>	<u>1.890</u>
Market prices (a ton) 2/	<u>1.950</u>	<u>1.640</u>	<u>1.320</u>	<u>1.330</u>	<u>1.980</u>	<u>1.930</u>	<u>1.710</u>	<u>1.790</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

2/ London auction price, average all teas.

a depreciation in the value of the U.S. dollar. In SDR terms, earnings from tea exports declined from SDR 2.5 billion in 1984 to SDR 1.4 billion in 1987 before rising slightly to SDR 1.5 billion in 1988.

Over the next several years production in high-cost countries is likely to stagnate on account of declining profitability, but because of cost reductions through higher yields, production in other countries, such as India and Kenya, will continue to expand. A large part of the rise in production in these two countries is likely to be absorbed by increased domestic consumption. Growth of consumption in the developing countries and the U.S.S.R. is expected to continue to grow owing to the low level of prices and population growth although import demand for tea in the U.S.S.R. may be constrained by the availability of foreign exchange. Similarly, developments in oil prices will be an important determinant of tea import demand in the oil exporting countries. As tea production and tea consumption move into better balance, prices can be expected to recover from their current low levels.

3. Cocoa

Cocoa prices, which have been declining for a number of years, fell sharply during 1988 because of excess supplies carried over from the previous four crop years and the prospect of another surplus in the 1988/89 (October/September) crop year. Monthly averages of the International Cocoa Organization (ICCO) daily prices, which are the averages of futures market prices on the London Cocoa Terminal Market and the New York Cocoa, Coffee and Sugar Exchange, fell from \$2,255 per ton in 1985 to \$2,068 per ton in 1986 and \$1,998 per ton in 1987. Prices declined sharply during most of 1988 when it became apparent that production would exceed consumption for the fourth consecutive year. Despite purchases by the buffer stock of the International Cocoa Organization (ICCO) and a "no sales policy" by Côte d'Ivoire--the world's largest cocoa producer--prices had declined to little more than \$1,200 per ton by September 1988. Prices increased to over \$1,500 in December, however, mainly on account of news reports of an arrangement between Côte d'Ivoire and a French trading company to purchase and store a large amount of Ivoirien cocoa in Europe.

Because of the long gestation period and perennial nature of the crop, cocoa producers have adjusted to price changes only after relatively long time lags. The possibilities for changing the level of production in the short run, by varying the level of inputs or the intensity of harvesting, are quite limited. Consequently, the short-run elasticity of supply tends to be quite low. The longer-term price elasticity of supply, however, tends to be higher because of the level by which production can be adjusted by varying the area under cultivation or adopting new production technologies. Longer-run supply changes have imparted a cyclical pattern to cocoa production and prices; low production and high prices tend to encourage increased plantings which, after a lag of several years, are followed by a period of much higher production and lower

prices. The short-term effects of adverse weather patterns is superimposed on this underlying long-term cyclical pattern.

A sharp increase in world cocoa production in lagged response to the high real prices of the mid-1970s is largely responsible for the excess supply situation that has characterized the world cocoa market in eight of the last ten years. Mainly as a result of large-scale new plantings with high-yielding hybrid varieties and the rehabilitation of older areas, world cocoa production increased by 40 percent in the period from 1977/87 to 1987/88. The total area under cultivation expanded from 4.17 million hectares to 4.50 million hectares during this period. Particularly large production increases were recorded in Côte d'Ivoire where cocoa is mainly a smallholder crop; officially-sponsored new planting and rehabilitation schemes contributed to the growth in the area under cultivation--from 0.95 million hectares in 1976/77 to 1.35 million hectares in 1986/87. The area under high yielding hybrid varieties increased from 80 thousand hectares to 210 thousand hectares during the same period. Similarly, the area under cocoa cultivation in Brazil increased from 486 thousand hectares to 708 thousand hectares over the same period, while the area under high-yielding varieties more than quadrupled, from 80 thousand hectares to 345 thousand hectares. In Malaysia, which has a long tradition of tree crop agriculture, cocoa cultivation has been rapidly adopted by smallholders and large estates. There has been a more than sixfold increase in the area under cultivation from 49 thousand hectares in 1976/77 to 315 thousand hectares in 1986/87. All of the areas under cultivation in Malaysia are planted with high-yielding hybrid varieties. On the other hand, in Ghana which was the largest cocoa producing country in the world as recently as 1976/77, the area under cocoa cultivation has declined from 1.23 million hectares in 1976/77 to 0.91 million hectares in 1986/87 primarily because of low real producer prices for cocoa. Similarly, the area under cultivation in Nigeria declined from 625 thousand hectares to 470 thousand hectares during the same period.

The above changes in the total area under cocoa cultivation and the increase in the area under high-yielding varieties has had a major impact on both total world cocoa production and its geographical distribution. During the last decade, world cocoa production increased from 1,513 thousand tons to 2,104 thousand tons (3.3 percent annually, on average). Production in Côte d'Ivoire more than doubled--from 300 thousand tons in 1977/87 to 660 thousand tons in 1987/88. During the same period, production in Brazil increased from 280 thousand tons to 400 thousand tons while Malaysian production increased from 170 thousand tons to 230 thousand tons. Malaysia currently accounts for about 11 percent of total world cocoa production. Efforts to rehabilitate and modernize the industry appear to have arrested a long-term decline in cocoa production in Ghana, where production reached a nadir of 160 thousand tons in 1983/84 before recovering to 230 thousand tons in 1986/87. Dry weather caused production to decline to 190 thousand tons in 1987/88. With the increase of cocoa production in Asia, world production has become geographically more dispersed. This development, which is expected to continue, is likely to increase the stability of world cocoa

supplies because total world cocoa production would be less susceptible to adverse weather conditions in any one of the major cocoa producing regions.

The demand for cocoa is derived from the demand for chocolate and other cocoa-based products. The price and income elasticities of demand for cocoa are quite low because two thirds of world cocoa is consumed in long established and relatively mature markets in North America and Western Europe. Japan and the U.S.S.R. are other important cocoa consuming countries. Price and income elasticities of demand for cocoa tend to be high in developing countries. After stagnating for most of the 1970s, world cocoa consumption has grown at an average annual rate of about 3 percent during the 1980s mainly because of a fall in real cocoa prices and a rise in real GDP in the traditional cocoa markets in North America and Western Europe. An increase in the level of vertical integration and concentration in the cocoa processing and manufacturing industries in the main consuming countries has resulted in a concomitant fall in competition through price. This has probably attenuated the effect that falling cocoa prices have on consumption because low cocoa prices are often not reflected in the price movements for chocolates and other cocoa-based confectionery products. More recently, the effect of falling cocoa prices has to some extent been offset by a rise in the price of sugar, which is one of the main ingredients of chocolate and other confectionery products.

As a result of the differential rates of growth in world cocoa production and consumption there has been a large buildup of world cocoa stocks. The ratio of end of season stocks to total consumption, as measured by grindings, rose from 27 percent in 1983/84 to 45 percent in 1987/88, when the level of stocks was equivalent to more than five months of world cocoa consumption in 1987/88 (Table 47). Of this amount 250 thousand tons are held in the buffer stock of the ICCO. These buffer stock holdings consist of 100 thousand tons purchased by the 1980 Agreement and transferred to the 1986 Agreement, 75 thousand tons purchased during May/June 1987 and a further 75 thousand tons purchased during January/February 1988. Buffer stock purchases ceased at the end of February 1988 when the buffer stock had reached its maximum capacity of 250 thousand tons. A lack of agreement in the ICCO on a further revision of the intervention prices and large arrears in the payment of export levies collected by producing members has effectively precluded any agreement on the modalities for the implementation of the withholding scheme.

The price depressing effect of this stock buildup was particularly pronounced because the buildup occurred during a period when the requirement for stocks relative to consumption was falling because of improvements in transportation and shipping in producing countries as well as changes in inventory management techniques in consuming countries. The increase in concentration in the cocoa bean processing and manufacturing industries has also tended to reduce the need for cocoa stocks.

Table 47. Cocoa Beans: World Commodity Balance, 1982/83-88/89

(In thousands of tons)

	October/September Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 1/
Gross production	<u>1.530</u>	<u>1.500</u>	<u>1.960</u>	<u>1.960</u>	<u>2.020</u>	<u>2.160</u>	<u>2.270</u>
Brazil	330	300	410	370	360	400	380
Cameroon	110	110	120	120	120	130	130
Côte d'Ivoire	360	410	570	580	620	660	680
Ecuador	40	40	130	110	90	80	80
Ghana	180	160	180	220	230	190	250
Malaysia	70	80	100	120	170	230	250
Nigeria	160	120	160	110	100	150	140
Other countries	280	280	290	330	330	320	360
Production adjusted for loss in weights	<u>1.510</u>	<u>1.490</u>	<u>1.940</u>	<u>1.940</u>	<u>2.000</u>	<u>2.140</u>	<u>2.240</u>
Grindings (consumption)	<u>1.630</u>	<u>1.700</u>	<u>1.850</u>	<u>1.840</u>	<u>1.910</u>	<u>1.990</u>	<u>2.090</u>
Cocoa bean producing countries	480	510	600	640	600	630	650
European Community	580	610	640	630	650	720	740
U.S.S.R.	150	140	160	140	160	150	160
United States	190	210	200	190	230	240	260
Other countries	230	230	250	240	270	250	280
Closing stocks	<u>670</u>	<u>460</u>	<u>550</u>	<u>650</u>	<u>740</u>	<u>890</u>	<u>1.040</u>
Commercial stocks	570	360	450	550	560	640	790
ICCO stocks	100	100	100	100	175	250	250
Stocks/grindings ratio (in percent)	41	27	30	35	39	45	50

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

1/ Projected by Commodities Division, IMF Research Department.

With the ICCO effectively out of the market and the prospect of a sharp increase in world stocks, monthly prices to fall to \$1,239 a ton in September 1988. A shortage of West African cocoa in the physical market owing to the sales policy of Côte d'Ivoire caused the premium for this type of cocoa to rise sharply during the second and especially the third quarter of the year. News reports of a scheme by Côte d'Ivoire to remove up to 400 thousand tons of its cocoa from the world market by selling it to a French trading company which would then store it in Europe, caused prices to recover during the final quarter of the year. By December the average monthly price had recovered to \$1,503 a ton.

Between 1985 and 1987, earnings of developing countries from cocoa beans and cocoa product exports remained relatively stable at between \$3.7 billion and \$3.9 billion per year because the effect of a gradual fall in prices was largely offset by an increase in export volume (Table 48). In 1988, however, earnings of developing countries from cocoa bean and cocoa product exports are estimated to have declined sharply to \$3.0 billion because market prices fell by 21 percent while total cocoa export volume is estimated to have increased by only 5 percent. Owing to the depreciation of the U.S. dollar, total earnings of developing countries from exports of cocoa beans and cocoa products declined steadily from SDR 3.7 billion in 1985 to SDR 2.9 billion in 1987 and an estimated level of SDR 2.2 billion in 1988.

It appears that world cocoa production in the 1988/89 cocoa season will once again record a substantial increase and exceed world cocoa consumption for the fourth consecutive season. Despite the sharp fall in world cocoa prices, production is expected to continue to increase as new plantings come into production and young trees reach their optimum bearing age. Favorable growing conditions in Côte d'Ivoire and a relatively high producer price are expected to contribute to another record crop in that country. Similarly production in Malaysia is also expected to increase substantially. In Brazil production is expected to stabilize around a level of 400 thousand tons because low cocoa prices and a high domestic rate of inflation have reduced the profitability of cocoa cultivation. Relatively high world market prices for West African cocoa and the continuing rehabilitation and development of the industry in Ghana and Nigeria are expected to contribute to a continued recovery in output in these countries. In Ghana, increasing output from new plantings in the western part of the country is expected to more than compensate for the declining productivity of trees in the Ashanti region. Higher returns to producers following the abolition of the Marketing Board are expected to contribute to a continued recovery in cocoa production in Nigeria.

The growth in cocoa consumption that has taken place because of the steep fall in real cocoa prices is expected to continue. Competition through reductions in the nominal prices of chocolate and other chocolate products is likely to be reduced on account of growing concentration in the cocoa manufacturing industry although increased nonprice competition through product differentiation and larger promotional expenditures will likely result in increased cocoa consumption. The structural imbalance

Table 48. Cocoa: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)								
Beans	<u>2.7</u>	<u>2.5</u>	<u>2.2</u>	<u>1.6</u>	<u>2.7</u>	<u>2.9</u>	<u>2.8</u>	<u>2.2</u>
Developing countries	2.7	2.5	2.2	1.6	2.7	2.9	2.8	2.2
Products 2/	<u>2.0</u>	<u>1.8</u>	<u>1.5</u>	<u>1.3</u>	<u>2.0</u>	<u>2.0</u>	<u>1.9</u>	<u>1.7</u>
Developing countries	1.0	0.9	0.7	0.6	1.0	1.0	0.9	0.8
Industrial countries	1.0	0.9	0.8	0.7	1.0	1.0	1.0	0.9
Volumes (in thousand of tons)								
Beans	<u>1,304</u>	<u>1,410</u>	<u>1,429</u>	<u>1,485</u>	<u>1,304</u>	<u>1,410</u>	<u>1,429</u>	<u>1,485</u>
Developing countries	1,304	1,410	1,429	1,485	1,304	1,410	1,429	1,485
Products 2/	<u>649</u>	<u>659</u>	<u>662</u>	<u>710</u>	<u>649</u>	<u>659</u>	<u>662</u>	<u>710</u>
Developing countries	367	389	371	400	367	389	371	400
Industrial countries	282	270	291	310	282	270	291	310
Unit values (a ton)								
Beans	<u>2,020</u>	<u>1,760</u>	<u>1,490</u>	<u>1,100</u>	<u>2,050</u>	<u>2,060</u>	<u>1,930</u>	<u>1,480</u>
Developing countries	2,020	1,760	1,490	1,100	2,050	2,060	1,930	1,480
Products 2/	<u>3,030</u>	<u>2,580</u>	<u>2,220</u>	<u>1,780</u>	<u>3,080</u>	<u>3,030</u>	<u>2,870</u>	<u>2,390</u>
Developing countries	2,790	2,170	1,950	1,490	2,830	2,540	2,520	2,000
Industrial countries	3,450	3,240	2,760	2,160	3,500	3,800	3,570	2,900
Market prices of cocoa beans (a ton) 3/								
	<u>2,230</u>	<u>1,760</u>	<u>1,550</u>	<u>1,180</u>	<u>2,260</u>	<u>2,070</u>	<u>2,000</u>	<u>1,580</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; for cocoa beans, export data include only exports from cocoa bean producing countries; Commodities Division, IMF Research Department for market prices.

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

^{2/} 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

^{3/} Averages of ICCO daily prices.

between world cocoa production and consumption is expected to continue for several more years.

With world stocks already at record levels, and a projected surplus of production over consumption for the 1988/89 season, the outlook for cocoa prices in 1989 is quite bearish. The substantial quantity of Ivoirien cocoa reportedly destined for longer-term storage in Europe is likely to overhang the market and inhibit any significant recovery in prices. Lack of agreement in the ICCO on the modalities for the implementation of the withholding scheme and mounting arrears in the payment of export levies, appear likely to preclude any intervention by the organization to support market prices. Indeed, a lack of funds may necessitate premature liquidation of a small part of the ICCO buffer stock to pay operating expenses.

IV. Agricultural Raw Materials

After rising substantially in 1987, the overall price index for agricultural raw materials increased only modestly in 1988 (Table 49 and Chart 6). Price increases were recorded for logs, natural rubber, hides, and especially wool and jute, while prices for other agricultural raw materials declined. In the cases of tobacco and sisal these declines were slight, but the price of cotton fell by nearly 20 percent (measured in SDRs).

The weakening trend of prices for agricultural raw materials would appear to be related predominantly to the gradual decline in growth of world consumption of agricultural raw materials since 1987. The growth in the index of world consumption for these commodities fell from an average of about 5 percent per annum during 1984-86 to 2.3 percent in 1987 and 1.9 percent in 1988 (Table 50). Although the growth of world production also fell in 1988, from over 5 percent in the previous year to under 4 percent, the adjustment was insufficient to sustain the sharp rise in agricultural raw material prices observed in 1987.

As with most other non-fuel primary commodities, price developments in 1989 will be influenced greatly by the growth in the world economy. Against the background of the price adjustments in 1988, if economic growth remains strong, the rate of growth of consumption of agricultural raw materials could match the rates of the mid-1980s. Other factors, however, will continue to be important. These include the increasing productivity of agricultural producers in industrial as well as developing countries, and technological factors that may be adversely influencing the world demand for some agricultural raw materials.

1. Hardwood

The average annual price of hardwood logs, in terms of U.S. dollars, has increased steadily from \$136 per cubic meter in 1985 to \$233 per

Table 49. Prices of Agricultural Raw Materials, 1979-88

Years	Index of Prices of Agricultural Raw Materials 1/	Logs 2/ (Cubic meter)	Tobacco 3/ (Pound)	Natural Rubber 4/ (Pound)	Medium- Staple Cotton 5/ (Pound)	Fine Wool 6/ (Kilogram)	Jute 7/ (Ton)	Sisal 8/ (Ton)	Hides 9/ (Pound)
(1980=100)		(In SDRs)							
1979	92.6	132	1.04	0.44	0.60	4.06	298	551	0.57
1980	100.0	150	1.10	0.50	0.72	4.59	241	588	0.35
1981	96.5	132	1.36	0.43	0.71	5.20	236	547	0.35
1982	98.6	141	1.66	0.35	0.66	5.19	256	539	0.35
1983	103.8	136	1.74	0.45	0.79	5.05	279	534	0.42
1984	118.0	163	1.81	0.42	0.79	5.45	518	570	0.57
1985	98.6	134	1.82	0.34	0.59	4.88	574	517	0.50
1986	87.6	129	1.40	0.31	0.41	3.97	232	439	0.55
1987	105.8	171	1.22	0.35	0.58	5.50	248	386	0.62
1988	111.6	173	1.21	0.40	0.47	8.67	275	392	0.65
1987 I	91.9	141	1.23	0.32	0.51	4.25	225	404	0.52
II	96.6	141	1.20	0.33	0.57	5.45	237	394	0.64
III	112.6	179	1.22	0.37	0.66	6.18	266	399	0.67
IV	122.3	220	1.21	0.36	0.56	6.13	263	385	0.64
1988 I	110.9	179	1.18	0.37	0.50	7.66	271	380	0.65
II	114.5	177	1.14	0.44	0.49	9.42	271	384	0.70
III	111.1	164	1.23	0.44	0.46	9.29	285	409	0.68
IV	109.7	174	1.30	0.36	0.44	8.34	275	395	0.58
(1980=100)		(In U.S. dollars)							
1979	92.0	170	1.35	0.57	0.77	5.25	385	713	0.73
1980	100.0	196	1.43	0.65	0.94	5.97	314	765	0.46
1981	87.5	156	1.61	0.51	0.84	6.13	278	645	0.42
1982	83.7	156	1.83	0.39	0.73	5.73	283	595	0.39
1983	85.2	145	1.86	0.48	0.84	5.40	298	571	0.45
1984	91.4	167	1.86	0.43	0.81	5.59	531	584	0.59
1985	77.7	136	1.84	0.34	0.60	4.95	583	525	0.51
1986	78.9	151	1.64	0.37	0.48	4.65	272	515	0.64
1987	105.4	221	1.57	0.45	0.75	7.13	321	512	0.80
1988	119.3	233	1.63	0.54	0.64	11.65	370	526	0.88
1987 I	89.0	178	1.56	0.41	0.65	5.36	283	510	0.65
II	96.1	183	1.55	0.43	0.74	7.05	307	510	0.83
III	110.5	229	1.56	0.47	0.85	7.90	339	510	0.85
IV	126.1	296	1.62	0.48	0.76	8.22	353	517	0.86
1988 I	116.6	245	1.61	0.50	0.69	10.48	370	520	0.89
II	120.4	242	1.56	0.60	0.67	12.88	370	525	0.96
III	110.7	213	1.59	0.57	0.60	12.04	370	530	0.88
IV	113.3	233	1.75	0.48	0.59	11.20	370	530	0.78

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: logs, 45 percent; cotton, 17 percent; wool, 10 percent; natural rubber, 11 percent; tobacco, 11 percent; hides, 5 percent; jute and sisal, less than 1 percent.

2/ Malaysian meranti logs, average wholesale price, Japan.

3/ United States, average, estimated prices received by producers.

4/ Malaysian RSSI, f.o.b. Malaysia/Singapore ports.

5/ Liverpool Index A, c.i.f. Liverpool.

6/ U.K. Dominion, 64's clean, dry combed basis.

7/ Bangladesh BWD, f.o.b. Chittagong/Chalna.

8/ East African origin, upgraded, c.i.f. European ports.

9/ U.S. wholesale price, f.o.b. shipping point, Chicago.

CHART 6

Prices of Agricultural Raw Materials in SDRs, 1980-88

(Indices: 1980=100)

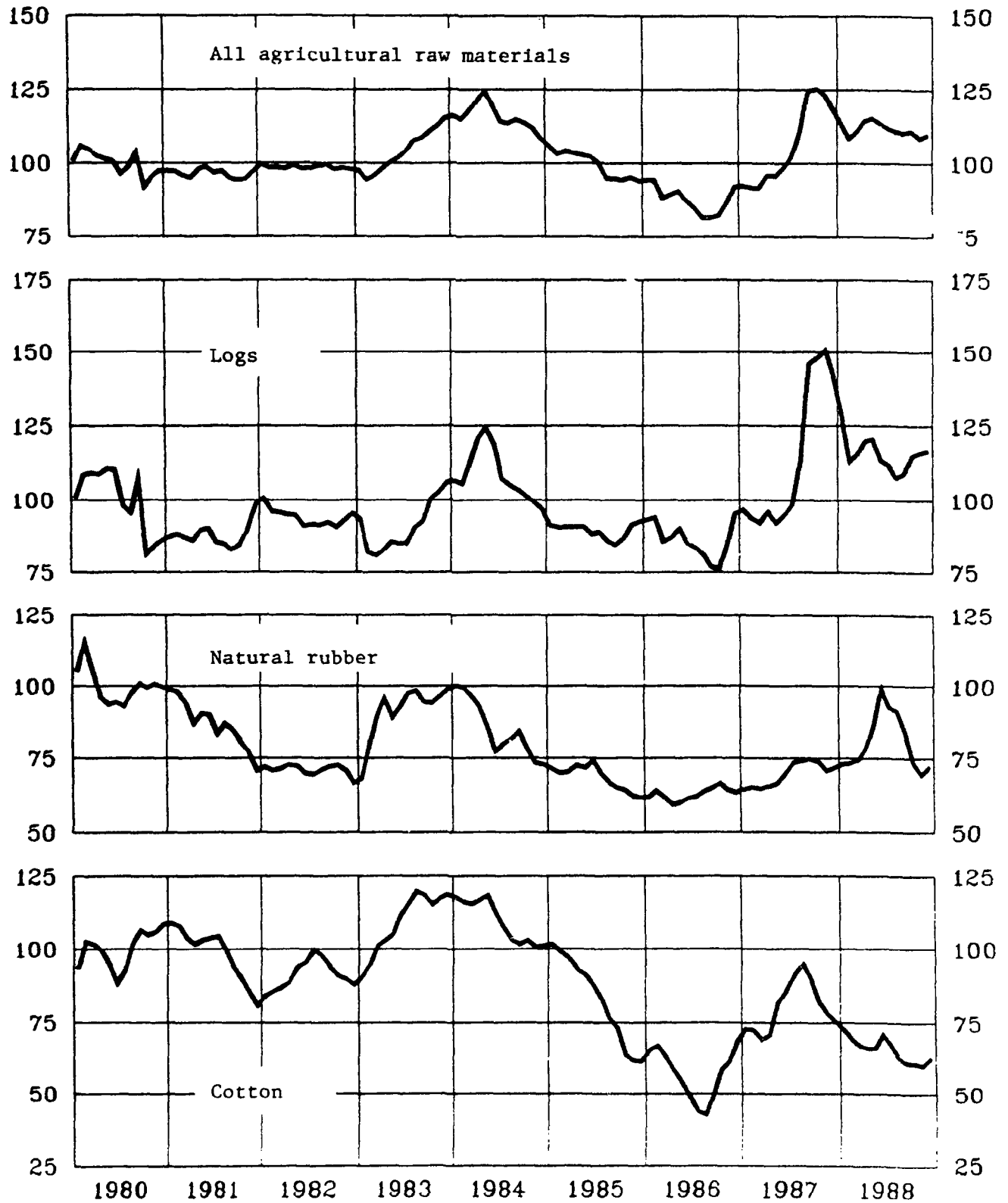


Table 50. Movements in Prices of Agricultural Raw Materials and Related Economic Indicators, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Prices of agricultural raw materials 1/							
In SDRs	2.2	5.3	11.6	-14.0	-12.0	20.8	5.5
In U.S. dollars	-4.3	1.9	7.2	-15.0	-1.6	33.6	9.3
Real 2/	-2.2	4.9	10.3	-15.5	-13.8	18.8	3.4
Petroleum prices 3/							
In SDRs	1.7	-8.8	3.9	-3.6	-55.7	18.8	-23.5
In U.S. dollars	-8.0	-9.6	-0.4	-4.5	-48.8	28.7	-20.4
Real 2/	-6.0	-7.0	2.7	-5.4	-56.5	14.9	-25.0
Unit value of manufactured exports							
In SDRs	4.5	0.4	1.2	1.9	1.9	1.6	2.0
In U.S. dollars	-2.1	-2.8	-3.0	1.0	17.7	12.0	6.0
Domestic prices in G-7 countries							
Consumer price index							
In SDRs	6.7	4.9	4.6	3.5	1.0	0.5	3.0
In U.S. dollars	-0.1	1.6	0.3	2.5	16.7	10.7	7.0
GNP deflator							
In SDRs	6.5	5.2	4.2	2.9	2.1	0.7	2.8
In U.S. dollars	-0.4	1.8	0.0	1.9	18.0	10.6	6.9
Economic activity in G-7 countries							
Real GNP	-0.4	2.9	5.1	3.4	2.7	3.4	4.2
Industrial production	-4.0	3.7	7.7	2.8	1.1	3.4	6.0
Domestic fixed investment	-5.2	4.0	9.7	4.6	1.9	4.3	8.1
World consumption of agricultural raw materials 4/							
Index of consumption	2.6	2.7	4.0	5.2	5.2	2.3	1.9
World supply of agricultural raw materials 4/							
Index of production	0.2	1.4	8.8	0.0	-2.3	5.2	3.7
Index of supply 5/	0.1	2.9	6.4	3.3	0.4	1.1	2.2
Index of closing stocks	4.1	-3.6	36.8	9.0	-18.4	-5.4	4.2

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

1/ Refers to IMF world index of prices of agricultural raw materials. These percentages differ from those reported in the World Economic Outlook which refer to the index of commodities exported by developing countries.

2/ Index of dollar prices of agricultural raw materials deflated by the index of dollar unit values of manufactured exports.

3/ Simple average of spot prices for U.K. Brent, Dubai, and Alaska North Slope crude petroleum, reflecting world consumption of light, medium, and heavy crude.

4/ Overall indices constructed using the same weights for the indices of individual commodities as in overall (world) price index. Crop year data for agricultural commodities are given under the earlier calendar year, e.g., crop year 1980/81 under 1980. The commodity coverage of the indices of consumption and stocks is less comprehensive than the coverage of the indices of production and supply.

5/ Supply is defined as production plus beginning-of-year stocks.

cubic meter in 1988. 1/ The rate of increase of hardwood log prices increased from 11 percent in 1986 to 46 percent in 1987, but decelerated to 5 percent in 1988. The major factors contributing to the deceleration were the sharp slowdown in housing starts in Japan from the second quarter of the year and a buildup in log inventories. The U.S. dollar price of sawn hardwood 2/, which rose by 4 percent in 1987, increased by about 9 percent in 1988. Sawnwood prices tend to be relatively more stable than log prices because they mainly reflect average long-term contract prices.

In 1988, world production of hardwood logs is estimated to have decreased moderately, while production of sawn hardwood increased slightly (Table 51). These developments reflected the adverse effects of intermittent bad weather on logging operations of tropical hardwood log producers in Asia and the maintenance of restraints on log exports by the Philippines and Indonesia. In North America, forest fires and the summer drought hindered logging operations. In addition, groups of loggers in Canada and the United States were on strike during part of the second half of the year.

On the demand side, the housing boom in Japan, which started in mid-1986 in response to the expansion of concessional housing loans, had tapered off by April 1988. For 1988 as a whole, Japanese housing starts increased by about 1 percent, compared with 23 percent in the previous year, thereby slowing demand for hardwood logs to be processed into sawnwood in Japan. In the United States, housing starts, which had declined by 10 percent in 1987, declined further by about 11 percent in 1988, primarily because of rising interest rates. The resulting adverse impact on the demand for sawn hardwood in the United States was not as strong as the decline in housing starts indicated. The incidence of the decline in housing starts involved mainly multifamily dwellings, which are less wood-intensive than single family dwellings. Moreover, demand for sawnwood was buoyed by furniture industry needs and the increased rehabilitation of existing dwellings in the face of escalating new housing prices. Demand for hardwood in the European Community appears to have declined, although demand was supported by the prolongation of the construction season because of a mild winter. Imports of tropical logs, which declined by about 8 percent in 1987, declined further by 4 percent in 1988. Imports of tropical sawnwood, which rose by 19 percent in 1987, declined by an estimated 2 percent in 1988.

The volume of hardwood log exports is estimated to have declined by 6 percent in 1988, reflecting mainly reduced exports by Malaysia (Table 52). Nevertheless, because of the increase in international prices, world export earnings are estimated to have declined only slightly

1/ Owing to the many species of hardwood logs traded, no one price series is fully representative of trade in hardwood. The price series used in this discussion is the price of a major species of hardwood logs, Malaysian meranti, in the largest importing country, Japan.

2/ Malaysian meranti, select and better quality, c.i.f. French ports.

Table 51. Hardwood Logs and Sawwood: World Production, 1982-88

(In millions of cubic meters)

	1982	1983	1984	1985	1986	1987 1/	1988 1/
Logs	<u>242</u>	<u>252</u>	<u>260</u>	<u>255</u>	<u>264</u>	<u>274</u>	<u>273</u>
Industrial countries	56	61	63	63	68	69	69
Developing countries	153	158	163	158	161	170	168
Brazil	17	17	18	18	19	19	19
China	17	18	21	21	21	22	22
Indonesia	22	25	27	24	25	26	26
Malaysia	33	33	31	29	29	36	34
Other	64	65	66	66	67	67	67
U.S.S.R. and Eastern European countries	33	33	34	34	35	35	36
Sawwood	<u>108</u>	<u>111</u>	<u>114</u>	<u>116</u>	<u>116</u>	<u>119</u>	<u>120</u>
Industrial countries	29	30	31	30	31	31	31
Developing countries	61	63	65	67	67	69	70
Brazil	9	9	9	9	10	10	10
China	9	9	9	9	9	9	9
Indonesia	7	6	7	7	7	7	7
Malaysia	6	7	6	5	5	6	6
Other	30	32	34	37	36	37	38
U.S.S.R. and Eastern European countries	18	18	18	18	18	19	19

Source: UN Food and Agriculture Organization, 1986 Yearbook of Forest Products (Rome).

1/ Estimated by Commodities Division, IMF Research Department.

Table 52. Hardwood Logs and Sawwood: Export Earnings, 1985-88

	1985	1986	1987 <u>1/</u>	1988 <u>1/</u>	1985	1986	1987 <u>1/</u>	1988 <u>1/</u>
	<u>(Values in SDRs)</u>				<u>(Values in U.S. dollars)</u>			
Logs								
Earnings (in billions) <u>2/</u>	<u>2.1</u>	<u>1.8</u>	<u>2.2</u>	<u>2.1</u>	<u>2.1</u>	<u>2.2</u>	<u>2.9</u>	<u>2.8</u>
Industrial countries	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Developing countries	1.8	1.5	1.9	1.8	1.8	1.8	2.5	2.4
Volumes (in millions of cubic meters) <u>2/</u>	<u>30.0</u>	<u>28.9</u>	<u>32.6</u>	<u>30.6</u>	<u>30.0</u>	<u>28.9</u>	<u>32.6</u>	<u>30.6</u>
Industrial countries	2.8	3.1	3.1	3.1	2.8	3.1	3.1	3.1
Developing countries	26.9	25.6	29.2	27.3	26.9	25.6	29.2	27.3
Malaysia	19.8	19.0	22.9	21.0	19.8	19.0	22.9	21.0
Other	7.1	6.6	6.3	6.3	7.1	6.6	6.3	6.3
Unit values (a cubic meter) <u>2/</u>	<u>69</u>	<u>63</u>	<u>69</u>	<u>68</u>	<u>70</u>	<u>74</u>	<u>89</u>	<u>92</u>
Industrial countries	102	100	102	104	104	117	133	140
Developing countries	66	59	65	66	67	69	85	89
Market prices (a cubic meter) <u>3/</u>	<u>134</u>	<u>129</u>	<u>171</u>	<u>173</u>	<u>136</u>	<u>151</u>	<u>221</u>	<u>233</u>
Sawnwood								
Earnings (in billions) <u>2/</u>	<u>2.3</u>	<u>2.3</u>	<u>2.2</u>	<u>2.2</u>	<u>2.3</u>	<u>2.7</u>	<u>2.9</u>	<u>3.0</u>
Industrial countries	0.7	0.8	0.8	0.7	0.7	0.9	1.0	1.0
Developing countries	1.5	1.4	1.5	1.5	1.5	1.7	1.9	2.0
Volumes (in millions of cubic meters) <u>2/</u>	<u>11.9</u>	<u>12.5</u>	<u>13.2</u>	<u>13.3</u>	<u>11.9</u>	<u>12.5</u>	<u>13.2</u>	<u>13.3</u>
Industrial countries	2.8	3.1	3.2	3.2	2.8	3.1	3.2	3.2
Developing countries	8.7	9.0	9.8	9.9	8.7	9.0	9.8	9.9
Malaysia	2.7	3.0	3.8	3.9	2.7	3.0	3.8	3.9
Other	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Unit values (a cubic meter) <u>2/</u>	<u>192</u>	<u>181</u>	<u>169</u>	<u>168</u>	<u>195</u>	<u>213</u>	<u>220</u>	<u>226</u>
Industrial countries	243	250	241	244	247	284	312	328
Developing countries	175	157	151	149	177	184	195	200
Market prices (a cubic meter) <u>4/</u>	<u>272</u>	<u>227</u>	<u>213</u>	<u>225</u>	<u>276</u>	<u>266</u>	<u>276</u>	<u>302</u>

Sources: UN Food and Agriculture Organization, 1986 Yearbook of Forest Products (Rome);
Commodities Division, IMF Research Department.

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

^{2/} Includes U.S.S.R. and Eastern European countries.

^{3/} Malaysian meranti logs, average wholesale price in Japan.

^{4/} Malaysian meranti, select and better quality, c.i.f. French ports.

in terms of both U.S. dollars and SDRs. The volume of exports of sawn hardwood is estimated to have risen slightly in 1988, reflecting continued efforts by developing country producers to export sawnwood rather than logs and sustained demand for sawnwood in major markets. As a result, world export earnings from sawnwood are estimated to have grown slightly in terms of U.S. dollars.

The volume of trade in hardwood logs and sawnwood in 1989 is expected to remain close to 1988 levels. Housing starts in Japan are also expected to remain at about the previous year's level. In the United States, some further decline in housing starts is anticipated if interest rates do not ease. In the absence of renewed demand pressures from major consuming countries, increases in the prices of logs and sawnwood are likely to be moderate during 1989. Market pressures are expected to be generated mainly from the supply side, as a result of weather related difficulties in producing countries and the maintenance of restrictions on log exports by Southeast Asian countries.

2. Tobacco

World consumption of unmanufactured tobacco is estimated to have grown marginally to 6.1 million tons dry weight in 1988. Lower demand in Europe, Japan, and North America due to rising prices, enhanced smoking restrictions and anti-smoking campaigns was offset by rising consumption in developing countries, notably in China, the world's largest cigarette manufacturer and consumer. World leaf production in 1988 is estimated at about 6.5 million tons farm sales weight or 5.7 million tons dry weight, up 5 percent from 1987, with most of the expansion attributed to China, the United States, and Brazil (Table 53). The estimated increase of production in China, by 18 percent to 2.3 million tons, may, however, be overstated because heavy rains in major growing areas may have led to a lower than expected harvest. In any event, a 12 percent increase in hectareage led to a sizable increase in Chinese production. In the United States both improved yields and extended areas of production contributed to an 11 percent increase in production. Despite a reduction in the cultivated area, record yields occasioned by favorable weather conditions and improved farm management practices are estimated to have resulted in a record production level of 420 thousand tons in Brazil. The 30 percent lower production estimated for India compared with 1987 is attributable mainly to a 23 percent reduction in planted area.

World exports of unmanufactured tobacco are estimated to have risen to around 1.36 million tons in 1988, following levels of 1.32 million tons and 1.34 million tons in 1986 and 1987, respectively. Seven countries (United States, Brazil, Italy, Turkey, Greece, Zimbabwe, and Malawi--in that order) account for about two thirds of world exports. U.S. exports increased to 220 thousand tons from 200 thousand tons in 1987, partly due however, to some delayed shipments from the previous year. Brazilian exports were projected to rise to 180 thousand tons, up 6 percent from the previous year. Both Malawi and Zimbabwe, where tobacco currently

Table 53. Tobacco: World Leaf Production, 1982-88

(In thousands of tons: farm sales weight)

	1982	1983	1984	1985	1986	1987	1988 1/
World	6,890	6,000	6,460	7,020	6,000	6,200	6,490
Industrial countries	1,350	1,160	1,370	1,280	1,110	1,130	1,200
United States	900	650	780	690	530	540	600
Other	450	510	590	590	580	590	600
Developing countries	4,900	4,160	4,430	5,050	4,230	4,440	4,680
China	2,200	1,400	1,820	2,450	1,710	1,950	2,310
Brazil	420	390	410	410	390	410	420
Greece	120	120	140	150	150	140	140
India	520	580	490	490	440	460	320
Malawi	60	70	70	70	60	80	70
Turkey	210	230	180	170	160	180	170
Zimbabwe	90	100	120	110	120	130	110
Other	1,280	1,270	1,200	1,200	1,200	1,090	1,140
U.S.S.R. and Eastern							
European countries	640	680	660	690	660	630	610
U.S.S.R.	310	390	370	390	320	300	300
Other	330	290	290	300	340	330	310

Source: U.S. Department of Agriculture, World Tobacco Situation, years 1984-88.

1/ U.S. Department of Agriculture estimate.

represents the most important export crop, as well as Greece increased their export volumes, whereas shipments from Turkey declined sharply.

World stocks, down 3-5 percent at the beginning of the year from 1987 levels, were estimated to have been reduced further to about 5.4 million tons by the end of December 1988, representing slightly less than 11 months of world tobacco industry production. In the United States the overall level of raw tobacco stocks as of July 1988 amounted to 1.7 million tons, or 15 percent lower than at the beginning of the year and 10 percent less than in April 1988.

Prices for leaf tobacco on the major auction markets increased in 1988 but the increases varied greatly from place to place. In Zimbabwe and Malawi, prices in terms of U.S. dollars were significantly above 1987 levels--68 percent and 19 percent, respectively--due to improved qualities and shortages in some grades. In the United States auction prices for flue-cured tobacco were averaging only 2 percent higher than in 1987. The higher prices together with larger export volumes contributed to increasing earnings for almost all tobacco exporting countries (Table 54).

Cigarette manufacture accounts for some 90 percent of world tobacco usage. Global output of cigarettes increased by around 3 percent in 1987, to 5,120 billion pieces and has been estimated to have reached about 5,200 billion pieces in 1988. The expansion in both years was largely the result of significant increases in Chinese and U.S. production. In China, which accounts for about 28 percent of world cigarette production, growth of output reflects expanding domestic consumption. By contrast, in the United States, which accounts for about 14 percent of world cigarette production, domestic consumption decreased in 1988 while exports increased by 15 percent, particularly to Japan, the Republic of Korea, and Taiwan Province of China. U.S. domestic consumption is estimated to have fallen to some 568 billion pieces. In Japan domestic cigarette production decreased by 10 percent in 1987 and is estimated to have fallen by another 4 percent in 1988, reflecting in part the effects of import liberalization. In 1988 the share of imported cigarettes in the Japanese market was about 12 percent, of which 95 percent originated in the United States. After a reduction in cigarette consumption in Brazil in 1987, an increase in the range of 3-4 percent is estimated for 1988.

With regard to 1989, a further expansion of tobacco production seems likely. In the United States, the flue-cured tobacco program for 1989 includes an 18 percent rise in the basic national marketing quota, a 12 percent increase in the national acreage allotment and a price support level 2 percent above the 1988 level. In Zimbabwe, rising production costs could affect profitability of tobacco production limiting further growth. Global consumption is not expected to change appreciably, as falling demand in industrialized countries will once again be offset by expanding consumption in developing countries on account of rising incomes and improving living standards. Small price increases seem likely in 1989. When the 1988/89 burley marketing season in the United States opened on November 21, 1988, prices were 6 cents per kilo above the

Table 54. Tobacco: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	<u>4.0</u>	<u>3.3</u>	<u>3.0</u>	<u>3.0</u>	<u>4.0</u>	<u>3.9</u>	<u>3.9</u>	<u>4.0</u>
Industrial countries	<u>1.9</u>	<u>1.4</u>	<u>1.2</u>	<u>1.2</u>	<u>1.9</u>	<u>1.7</u>	<u>1.6</u>	<u>1.6</u>
Developing countries	<u>1.9</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.9</u>	<u>1.9</u>	<u>2.0</u>	<u>2.1</u>
U.S.S.R. and Eastern European countries	<u>0.2</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>	<u>0.3</u>
Volumes (in thousands of tons, dry weight)	<u>1,390</u>	<u>1,320</u>	<u>1,340</u>	<u>1,360</u>	<u>1,390</u>	<u>1,320</u>	<u>1,340</u>	<u>1,360</u>
Industrial countries	<u>420</u>	<u>400</u>	<u>430</u>	<u>430</u>	<u>420</u>	<u>400</u>	<u>430</u>	<u>430</u>
United States	<u>250</u>	<u>220</u>	<u>200</u>	<u>220</u>	<u>250</u>	<u>220</u>	<u>200</u>	<u>220</u>
Other	<u>170</u>	<u>180</u>	<u>230</u>	<u>210</u>	<u>170</u>	<u>180</u>	<u>230</u>	<u>210</u>
Developing countries	<u>890</u>	<u>830</u>	<u>840</u>	<u>860</u>	<u>890</u>	<u>830</u>	<u>840</u>	<u>860</u>
Brazil	<u>200</u>	<u>180</u>	<u>170</u>	<u>180</u>	<u>200</u>	<u>180</u>	<u>170</u>	<u>180</u>
Malawi	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>
Zimbabwe	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Other	<u>530</u>	<u>490</u>	<u>510</u>	<u>520</u>	<u>530</u>	<u>490</u>	<u>510</u>	<u>520</u>
U.S.S.R. and Eastern European countries	<u>80</u>	<u>90</u>	<u>70</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>70</u>	<u>70</u>
Unit values (a ton)	<u>2,860</u>	<u>2,510</u>	<u>2,280</u>	<u>2,210</u>	<u>2,910</u>	<u>2,940</u>	<u>2,940</u>	<u>2,970</u>
Industrial countries	<u>4,380</u>	<u>3,500</u>	<u>2,910</u>	<u>2,780</u>	<u>4,440</u>	<u>4,110</u>	<u>3,760</u>	<u>3,740</u>
Developing countries	<u>2,180</u>	<u>2,000</u>	<u>1,910</u>	<u>1,880</u>	<u>2,210</u>	<u>2,340</u>	<u>2,460</u>	<u>2,520</u>
U.S.S.R. and Eastern European countries	<u>2,580</u>	<u>2,790</u>	<u>2,840</u>	<u>2,750</u>	<u>2,620</u>	<u>3,280</u>	<u>3,670</u>	<u>3,700</u>
Market prices (a ton) 2/	<u>3.990</u>	<u>3.080</u>	<u>2.680</u>	<u>2.660</u>	<u>4.060</u>	<u>3.610</u>	<u>3.470</u>	<u>3.580</u>

Sources: UN Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; Commodities Division, IMF Research Department for market prices.

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

2/ United States, average estimated prices received by producers.

opening values for the previous year. Strong demand and good leaf quality pushed these auction prices further upward during the marketing season.

3. Natural rubber

Natural rubber prices weakened in the mid-1980s because of rapid growth in the output of natural rubber, low synthetic rubber prices, and in 1985 and 1986, a slowdown in the rate of economic growth in industrial countries. 1/ In 1985, the fall in prices was checked by substantial purchases by the buffer stock of the 1979 International Natural Rubber Agreement (INRA). These purchases were made to defend the floor price in the agreement. Prices rose sharply during 1987 and the first half of 1988 because of rising consumption, weather-related supply shortages, sharply higher demand for latex concentrates, and a rise in synthetic rubber prices stemming from advancing crude oil prices. In terms of U.S. dollars, natural rubber prices increased by 22 percent in 1987 and by a further 22 percent during the first half of 1988. Prices remained firm during the third quarter of the year before declining by 16 percent during the fourth quarter.

The demand for rubber, which is derived from the demand for tires and other rubber manufactures, is closely related to the level of industrial production in the main rubber consuming countries. The demand for natural rubber is also influenced by prices for synthetic rubber, which is a substitute for natural rubber in many end uses. Movements in the price of crude oil have a major impact on synthetic rubber prices because synthetic rubber is made from petrochemical feedstocks.

In 1987, demand for natural rubber increased because of a rising level of economic activity in the industrialized countries and a recovery in crude oil prices which contributed to an increase in the price of synthetic rubber relative to natural rubber. As the supply of natural rubber is highly inelastic with respect to short-term prices, strong demand for natural rubber led to sharp price increases in 1987. Demand for natural rubber latex remained strong throughout the year because of increased awareness about AIDS and a related sharp rise in demand for medical examination gloves and condoms. Diversion of latex into the production of latex concentrates reduced supplies of sheet rubber and contributed to the rise in prices for first quality ribbed smoked sheets (RSS1). The INRA market indicator price (MIP) 2/, which rose, in line with the overall rise in prices, breached the agreement's upper intervention price of 233 Malaysia/Singapore (M/S) cents per kilogram in

1/ Price quotations for first quality ribbed smoked sheets (RSS1), in bales, spot, f.o.b. Malaysia.

2/ The MIP is defined in the 1979 International Natural Rubber Agreement (INRA) as the average official price for RSS1, RSS3, and TSR20 quality rubber on the Kuala Lumpur, London, New York, and Singapore markets, expressed in equally weighted Malaysian and Singapore cents a kilogram.

late August 1987. 1/ In September 1987, this triggered the first sales from the 360 thousand ton INRA buffer stock, which had been accumulated since the agreement entered into force in October 1980. Despite buffer stock sales of 100 thousand tons during the last four months of 1987, prices remained buoyant.

Prices increased much more rapidly during the first six months of 1988 because of continued strong import demand and a tightening in the supply situation. Rubber production tends to be seasonally low in the period between February and May because of wintering. 2/ In 1988, the period of low production was prolonged by late wintering in Thailand. Demand for natural rubber, on the other hand, rose because of strong growth in industrial production in the G-7 countries and unusually large purchases by China of both latex and dry rubber. The annualized rate of growth of industrial production in the G-7 countries increased from 1.7 percent in the first quarter of 1987 to 4.9 percent in the second quarter, 7.9 percent in the third quarter, and 8.0 percent in the fourth quarter. The rate of increase, which decelerated to 5.7 percent during the first quarter of 1988, slowed down further to 2.7 percent in the second quarter before recovering to 7.7 percent in the third quarter of the year.

The price of latex concentrates rose much more sharply than for dry rubber during the first half of 1988. Strong demand for natural rubber liquid latex concentrates used in the production of medical examination gloves and condoms, tight latex concentrate supplies, and large latex concentrate purchases by China accounted for the increases. Diversion of latex into the production of liquid latex reduced supplies of premium grades of dry rubber such as RSS1. Initially, however, the diversion of latex was constrained by the installed capacity of the centrifuges used to produce latex concentrates. With a sharp rise in latex prices, the price premium for 60 percent Malaysian centrifuged latex over RSS1 in London rose from 9 percent in December 1987 to 154 percent in July 1988. Sales from the INRA buffer stock, which increased the supply of dry rubber grades available to the market, contributed to the widening of the price differential between latex concentrates and dry rubber grades. The underlying strength of the market was so great, that despite sales of more than 200 thousand tons from the INRA buffer stock during the first half of 1988, the MIP breached the upper trigger action price of 242 M/S cents per kilogram in January 1988 and broke through the upper indicative or ceiling price of 270 M/S cents per kilogram in late May. In June 1988, the MIP peaked at 291 M/S cents per kilogram.

With the seasonal decline in demand associated with lower factory output during the summer holiday period in the United States and Europe,

1/ See IMF Survey, December 10, 1984, pp. 370-71 for an outline of the operation of the INRA.

2/ A seasonal reduction in the latex output of rubber trees which normally occurs in the second quarter of the year.

which coincides with a recovery in production following the end of the wintering season in Southeast Asia, prices began to decline in July. Prices continued to fall during the remainder of the year because of a leveling off in the growth of import demand and a limited increase in production in response to the high prices during the first half of the year. From a peak of 66.3 U.S. cents per pound in June 1988, the price of RSS1 fell to 48.6 cents per pound in December 1988. By December 1988 the MIP had declined to 234 M/S cents per kilogram. Buffer stock sales, which continued at a much slower rate during the second half of 1988, are estimated to have reduced the INRO buffer stock to about 20 thousand tons by the end of 1988. Latex production capacity and latex supplies rose in response to the very high premia for latex concentrates, which coincided with a deceleration in the rate of increase in latex consumption causing latex prices to fall sharply. By the end of the year the price differentials between the various grades were moving toward the levels of previous years.

World production of natural rubber grew by 7.2 percent in 1987, largely as a result of production increases in Thailand and Indonesia (Table 55). Production in Thailand rose by 18 percent while Indonesian production expanded by 14 percent mainly on account of increasing production from new plantings and from trees reaching their most productive age. A devaluation in the Indonesian rupiah in late 1986 may also have contributed to the rise in Indonesian output. World production is estimated to have increased by a further 2.9 percent in 1988 primarily because of continued production increases in Thailand and Indonesia. The high level of prices in late 1987 and early 1988 induced a limited production response through more intensive tapping and exploitation of previously abandoned older areas. Production in Malaysia, the largest producer, has slowed because of rising labor costs and the substitution of palm oil and cocoa for rubber. These substantial increases in world production fell short of the growth in world natural rubber consumption which increased by 8.8 percent in 1987 and by an estimated further 5.8 percent in 1988. The deficit between production and consumption, of 50 thousand tons in 1987 and an estimated 190 thousand tons in 1988, was met by sales from the INRO buffer stock. Commercial stocks are estimated to have risen by 50 thousand tons in each year.

A rise in export volume and unit value resulting from the growth in production and prices in 1987 caused earnings from natural rubber exports to increase from \$2.9 billion in 1986 to \$3.6 billion (Table 56). Earnings are estimated to have risen further, to \$4.1 billion in 1988, because of the substantial rise in natural rubber prices during the first half of the year and an increase in export volume. Despite the sharp fall in prices during the second half of year, the average level of prices and export unit values in 1988 was substantially higher than in 1987.

As production and consumption move into better balance in 1989, natural rubber prices are expected to remain firm, at around end-1988 levels. Natural rubber demand and consumption are likely to grow more slowly due to a moderation in the rate of output growth in the major

Table 55. Natural Rubber: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 1/
Production	<u>3,750</u>	<u>4,030</u>	<u>4,260</u>	<u>4,330</u>	<u>4,440</u>	<u>4,760</u>	<u>4,900</u>
Indonesia	880	1,000	1,120	1,130	1,040	1,190	1,240
Malaysia	1,490	1,560	1,530	1,470	1,540	1,580	1,600
Thailand	550	590	630	730	780	920	990
Other countries	830	880	980	1,000	1,080	1,070	1,070
Consumption	<u>3,660</u>	<u>3,990</u>	<u>4,240</u>	<u>4,350</u>	<u>4,420</u>	<u>4,810</u>	<u>5,090</u>
European Community	730	740	760	790	810	840	890
Japan	440	500	520	540	540	570	590
United States	540	660	750	760	740	790	820
Other countries	1,910	2,090	2,210	2,260	2,330	2,610	2,790
Closing stocks	<u>1,720</u>	<u>1,760</u>	<u>1,780</u>	<u>1,760</u>	<u>1,770</u>	<u>1,720</u>	<u>1,530</u>
Commercial stocks 2/	1,490	1,490	1,510	1,400	1,410	1,460	1,510
INRA buffer stock	230	270	270	360	360	260	20

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

1/ Estimates by Commodity Division, IMF Research Department.

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

Table 56. Natural Rubber: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987 1/	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	2.7	2.5	2.8	3.1	2.7	2.9	3.6	4.1
Developing countries	2.7	2.5	2.8	3.1	2.7	2.9	3.6	4.1
Volumes (in millions of tons)	3.6	3.7	3.9	4.0	3.6	3.7	3.9	4.0
Developing countries	3.6	3.7	3.9	4.0	3.6	3.7	3.9	4.0
Indonesia	1.0	1.0	1.1	1.1	1.0	1.0	1.1	1.1
Malaysia	1.5	1.5	1.6	1.6	1.5	1.5	1.6	1.6
Thailand	0.7	0.8	0.9	0.9	0.7	0.8	0.9	0.9
Other	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4
Unit values (a ton)	740	660	710	770	750	780	920	1,030
Market prices (a ton) 2/	750	690	760	880	760	810	980	1,180

Sources: Data on exports from UN Food and Agricultural Organization, 1986 FAO Trade Yearbook (Rome), and include only exports of rubber producing countries; Commodities Division, IMF Research Department for market prices.

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

2/ Malaysian RSS1, f.o.b. Malaysian/Singapore ports.

industrial countries. The fall in prices in the second half of 1988, however, is likely to make natural rubber more competitive with synthetic rubber. The strength of import demand from China, which was a major factor in the price rise during the first half of 1988, remains a key unknown factor. Production is expected to continue to grow mainly because of increased output from Indonesia and Thailand. The 1987 International Natural Rubber Agreement entered into force provisionally in January 1989 and the first session of the Council of the 1987 INRA (scheduled for late March-early April 1989), is expected to review the range over which prices are to be stabilized. Should the need arise, the buffer stock manager of the 1987 INRA has ample resources to intervene in the market to support the floor price. Since most of the buffer stocks acquired under the 1979 INRA have been sold, however, the agreement will not be able to exert a moderating influence on upward movements in natural rubber prices.

4. Natural fibers

The recent history of fibers production and trade has been marked by challenges and opportunities. For individual countries the natural fibers sector, as with other commodity sectors, is vulnerable to the effects of nature and to economic and political developments that can disrupt patterns and trends. From a global perspective, producers of natural fibers have had to meet competition from producers of synthetic fabrics and the new technologies used in materials handling. They have also had to operate within the context of the Multifiber Arrangement (MFA), which since 1975 has established limits, sanctioned by the General Agreement on Tariffs and Trade (GATT), on the annual growth in the volume of exports of a broad range of textiles and apparel from Japan and the developing countries to the EC, the United States, and other major industrial countries.

These developments adversely affected the growth of demand for natural fibers but they are not irreversible. The Uruguay Round of multilateral trade negotiations offers an important opportunity for the developing and industrial countries to reach an agreement on a phased elimination of the Multifiber Arrangement. Also, in recent years the widespread use of synthetic fabrics in clothing has been accompanied by a renewed interest in cotton and wool because of the greater insulating qualities and comfort of natural fibers. Finally, lower relative prices of natural fibers, including jute and allied fibers, may be expected to induce innovative, new uses for these fibers, improving their longer-term prospects to accommodate stronger world demand.

a. Cotton

Raw cotton is traded on a number of commodity exchanges located principally in the major market-oriented, cotton producing and consuming countries. The largest of these are the New York Cotton Exchange and the Liverpool Cotton Association. The exchanges trade in a variety of cotton staples and frequently have facilities for trading in cotton futures with delivery terms as long as one year ahead.

Short-term price movements in the exchanges are influenced by production and consumption prospects throughout the world over the course of a crop year (August/July). Thus, the exchange prices of cotton are heavily influenced by day-to-day forecasts of global cotton production, reports of storms threatening cotton growing regions, and periodic announcements of the administrative details surrounding national policies affecting cotton production and trade.

Among the most prominent national policies impinging on world cotton market conditions is the U.S. cotton program which involves strict import quotas and a complex system of crop loans and export marketing incentives. Despite the export incentives and acreage limitations under the program, in recent years the program has resulted in growing U.S. government stockpiles of the commodity, which when budget limits for the program are reached must be reduced by "placing" excess stocks on the world market. The combination of import controls and periodic disposal of excess stocks tend to depress cotton prices on exchange markets worldwide.

In other cotton producing countries, particularly countries that have a strong comparative advantage in the production and export of raw cotton such as Egypt and Pakistan, policies are sometimes enforced to restrict the volume of cotton exports and minimum export prices are prescribed by the government. These policies, whether undertaken to safeguard supplies of cotton for domestic textile mills or to deliberately affect world supplies, contribute, ceteris paribus, to higher world prices for cotton.

World production of cotton in the 1980s reached a peak of nearly 19 million tons in the 1984/85 crop year, when China, the United States and a number of smaller producers increased their volume of production in response to the high price for cotton in the 1983/84 crop year--the highest recorded in the 1980s (Table 57). Since 1984/85, world output has declined to a level of about 17 million tons per annum, while world prices have declined somewhat more sharply, finally attaining at the end of 1987/88 a level about 20 percent below the high price reached in 1983/84.

In 1987/88, world production of cotton increased over 13 percent, achieving a level of 17.5 million tons. Producers in most cotton growing regions increased production over the year. Despite the drought in the United States and damage to crops from major storms in the Gulf of Mexico regions of North and Central America, production in the United States, Mexico, and the Central American countries increased appreciably. In Asia, production levels were also threatened by floods in the Punjab region of Pakistan and other adverse natural conditions in the cotton growing regions of China. Nevertheless, recorded production in these countries and other parts of Asia also increased appreciably. Only in the U.S.S.R. did production decline, albeit modestly, from 2.7 million tons in 1986/87 to 2.5 million tons in 1987/88. Among smaller producers, Sudan experienced somewhat lower production levels owing to severe floods in some areas of the country.

Table 57. Raw Cotton: World Commodity Balance, 1982/83-88/89

(In millions of tons)

	August/July Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87 1/	1987/88 2/	1988/89 2/
Production	<u>14.9</u>	<u>14.6</u>	<u>19.1</u>	<u>17.4</u>	<u>15.4</u>	<u>17.5</u>	<u>18.8</u>
China	3.6	4.6	6.3	4.1	3.5	4.2	4.5
U.S.S.R.	2.7	2.5	2.5	2.8	2.7	2.5	2.7
United States	2.6	1.7	2.8	2.9	2.1	3.2	3.3
Other countries	6.0	5.8	7.5	7.6	7.1	7.6	8.3
Consumption	<u>14.8</u>	<u>15.2</u>	<u>15.5</u>	<u>16.6</u>	<u>18.2</u>	<u>18.1</u>	<u>18.2</u>
China	3.6	3.6	3.7	4.0	4.5	4.2	4.4
U.S.S.R.	2.0	2.0	2.0	2.0	2.1	2.0	2.0
United States	1.2	1.3	1.2	1.4	1.6	1.7	1.5
Other countries	8.0	8.3	8.6	9.2	10.0	10.2	10.3
Closing stocks 3/	<u>5.8</u>	<u>5.4</u>	<u>9.2</u>	<u>10.4</u>	<u>7.6</u>	<u>7.0</u>	<u>7.7</u>
China	0.6	1.5	3.9	3.8	2.2	1.8	1.7
U.S.S.R.	0.6	0.5	0.5	0.6	0.5	0.4	0.5
United States	1.7	0.6	0.9	2.0	1.1	1.2	1.7
Other countries	2.9	2.8	3.9	4.0	3.8	3.6	3.8

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

Note: The commodity balance statistics refer to all staples.

1/ International Cotton Advisory Committee estimate.

2/ International Cotton Advisory Committee projection.

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

Reflecting the recent increase of demand in industrial countries for apparel of natural fibers, consumption of cotton remained at record levels in 1987/88. No appreciable growth of demand occurred, however. Moreover, growth of intermediate demand for cotton yarns and fabrics among textile producers worldwide was reported especially weak throughout the year, prompting one increasingly important textile producer--China--to reduce its planned investment in additional production facilities. In part, demand for cotton may have been constrained by tighter administration of MFA quotas and by uncertainties engendered by the highly protectionist U.S. textile bill that was debated during 1988 in the U.S. Congress but vetoed by the President in September 1988. It is also possible, however, that the recent growth of popularity of cotton goods in retail markets could not be sustained, especially against the background of the nearly 40 percent price rise for raw cotton over the 1986/87 and 1987/88 crops.

World stocks of cotton declined slightly in 1987/88. In comparison to world consumption, however, they remained at a very high level, about 40 percent. The largest stock declines occurred in China, owing in part to minor crop damage in some regions of the country. In the United States stocks increased slightly, mainly because the U.S. cotton program, on balance, continued to encourage producers to withhold a substantial part of their output from the market. One consequence of this was the announcement in October 1988 that U.S. farmers must set aside from cotton production 25 percent of their acreage, up from the previous requirement of 12.5 percent, in order to qualify for the 1988/89 program of crop loans and export marketing incentives.

During 1988 the Liverpool price of medium staple cotton--the most widely produced grade of cotton--fell steadily, from about 72 U.S. cents per pound in January 1988 to about 61 cents per pound in December 1988. Prices of one-year cotton futures generally led this trend. In early 1988, weak futures prices generally reflected market sentiment that production would outpace the growth of demand during the 1987/88 crop year. In mid-1988, futures prices rose substantially on the strength of market concerns about the U.S. drought. As these fears subsided, however, the downward trend of prices was reestablished with continued news of weak textile mill demand for cotton yarn and estimates of only small reductions in worldwide cotton stocks. In September 1988, new concerns about the level of world production arose in connection with reports of adverse weather developments in Asia. At year-end, futures contracts for distant positions continued to sell at a discount to near positions, but spot prices demonstrated some strengthening on the basis of increasing mill demand and an emerging shortfall in the production of long-staple cotton in 1988/89 owing to adverse crop yields in Egypt.

Following their substantial rise in 1987, both the value and volume of world exports of cotton are estimated to have declined in 1988 (Table 58). Export earnings are estimated to have declined about 15 percent, from SDR 5.2 billion in 1987 to SDR 4.5 billion in 1988, while the volume of world exports is estimated to have declined about 7 percent, from 5.5 million tons in 1987 to 5.1 million tons in 1988. Reduced export

Table 58. Cotton: Export Earnings, 1985-88

	1985	1986	1987	1988 1/	1985	1986	1987	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Earnings (in billions)	6.0	4.5	5.2	4.5	6.1	5.3	6.7	6.1
Industrial countries	1.9	0.9	1.5	1.3	1.9	1.1	2.0	1.8
Developing countries	3.1	2.6	2.6	2.2	3.1	3.0	3.3	3.0
U.S.S.R. and Eastern European countries	1.0	1.0	1.1	1.0	1.1	1.2	1.4	1.3
Volumes (in millions of tons)	4.3	4.6	5.4	5.1	4.3	4.6	5.4	5.1
Industrial countries	1.3	0.9	1.5	1.4	1.3	0.9	1.5	1.4
United States	1.1	0.7	1.2	1.2	1.1	0.7	1.2	1.2
Other	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2
Developing countries	2.3	3.0	3.1	2.9	2.3	3.0	3.1	2.9
China	0.4	0.6	0.8	0.7	0.4	0.6	0.8	0.7
Egypt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other	1.8	2.3	2.2	2.1	1.8	2.3	2.2	2.1
U.S.S.R. and Eastern European countries	0.7	0.7	0.8	0.8	0.7	0.7	0.8	0.8
Unit values (a ton)	1,400	960	940	890	1,420	1,130	1,220	1,200
Industrial countries	1,460	1,000	1,000	950	1,480	1,170	1,290	1,270
Developing countries	1,320	850	820	770	1,340	1,000	1,060	1,040
U.S.S.R. and Eastern European countries	1,500	1,360	1,340	1,250	1,520	1,590	1,730	1,680
Market prices (a ton)								
Medium 2/	1,300	900	1,280	1,040	1,320	1,060	1,650	1,400
Long staple 3/	3,560	2,960	2,780	3,590	3,610	3,470	3,590	4,820

Sources: United Nations, Food and Agriculture Organization, 1987 FAO Trade Yearbook (Rome) for exports; and Commodities Division, IMF Research Department for market prices.

- 1/ Data on exports are estimates of Commodities Division, IMF Research Department.
 2/ Liverpool Index A, c.i.f. Liverpool.
 3/ Egyptian, c.i.f. Liverpool.

earnings and volumes were experienced widely among both industrial and developing countries, including the United States and China. The U.S.S.R., however, did not reduce its cotton export volumes appreciably. Across exporting countries, the reduced volume of exports predominantly mirrors the weakness in 1988 of growth in intermediate demands for yarns and other primary textile products and possibly the indirect effects of increasingly binding MFA quota limits on textile and apparel exports to the major industrial countries.

The outlook for 1988/89 cotton prices hinges on several perennial factors, including the strength of final demand for cotton apparel and related goods, national policies influencing the decisions of farmers to cultivate cotton, and uncertainties surrounding climatic conditions in the major cotton producing regions of the world.

Assuming continued uncertainty about the fundamental strength of final demand for cotton products, the prospects for increased cotton consumption in the next crop year are limited. One possibility is that the decline of prices for cotton in 1987/88 may, however, induce some modest increase in demand.

In 1988/89 there is likely to be considerable focus on the prospects for reduced growth of cotton production, which would enable cotton stocks to return to more traditional levels in relation to consumption and would enable prices in the commodity exchanges to firm if not reverse their recent declines. In this regard, the reduction of acreage allotments and the lowering of forecast market prices for cotton in conjunction with crop loans under the U.S. cotton program might promote lower production in the United States. Moreover, the lower cotton prices faced by producers worldwide at the end of the 1987/88 crop year may result in some voluntary reduction of world cotton production in the 1988/89 crop year.

Despite these considerations, end-1988 futures prices suggest that cotton prices will continue to be weak. Although futures prices can change suddenly, the discount of more distant futures prices may be indicative of considerable market sentiment that the recent revealed preference of consumers for cotton fabrics will not be sustained or that the current high level of world cotton stocks will not be appreciably reduced through lower production levels.

b. Wool

The most active of the wool markets is the Sydney Futures Exchange which provides spot trading and futures contracts for delivery up to 18 months ahead. Exchanges in the United Kingdom, United States, and other countries also provide markets for wool traders and brokers, but wool futures trading is generally limited in volume.

Although the exchanges for raw wool are highly integrated owing to ready communications between countries, national markets are segmented to a degree by controls imposed by some countries on wool imports. For

instance, the United States imposes duties on some grades of wool to protect local producers. World trade in wool is also influenced by production control schemes in both exporting and importing countries. The marketing boards of Australia, New Zealand, and South Africa, seek to regulate export prices to some degree, while in some importing countries, such as the United States, wool production is subsidized through direct cash payments following price-parity and other income maintenance schemes. Finally, like those of cotton, wool textile and apparel items are generally covered by import quotas enforced by the major industrial countries under the Multifiber Arrangement. This inhibits the growth of world demand for raw wool and tends to constrain its price.

The production of raw wool grew at an average annual rate of 2 percent between 1982/83 and 1986/87 (July/June crop years), with world stocks maintained by producers and marketing boards in the principal wool producing countries--Australia, New Zealand, and South Africa--remaining relatively steady in the range of 150-200 thousand tons (Table 59). World prices for fine and coarse grades of wool changed little over this period, as world consumption of wool grew at almost exactly the same average annual rate as wool production.

Since the 1986/87 season the economic circumstances of wool producers have improved remarkably, with prices rising sharply for most grades of the fiber. Strong demand, particularly for finer wool apparel and blended wool fabrics, has been the principal factor. However, favorable weather in most producing regions have also contributed importantly to the higher levels of production and producer earnings, especially in Australia. The sharp increase of world demand for raw wool in 1987/88 is reflected in the decline by nearly 50 percent of stocks held predominantly by the marketing boards of the major producing countries. Indeed, 1987/88 stocks fell to their lowest level in over a decade, making concerted efforts to resist the upward movement of prices impractical. At the end of 1987/88, stocks maintained by the Australian Wool Corporation and other Australian interests had fallen to about 50 thousand tons, or less than half of the level recorded in 1985/86.

In 1987/88 mill demand for raw wool in the principal countries producing wool manufactures--China, Italy, Japan, the United Kingdom, the U.S.S.R., and the United States--was especially strong for the finer grades of wool, which are produced mainly in Australia. Consumption of coarser grades of wool, produced in New Zealand, South Africa, and other countries increased at a slower rate. Thus, for example, in 1987 U.S. producers of worsted apparel increased their demands for fine wool by more than 25 percent while reducing their demands for coarse wool by about 20 percent.

Over the 1987/88 season, prices of fine wool rose about 80 percent, from \$2.44 per pound to \$4.49 per pound. Reflecting slower growth of demand over the same period, prices of coarser grades of wool rose about 30 percent. Throughout the period, wool futures were sold at a premium on

Table 59. Raw Wool: World Commodity Balance and World Exports,
1982/83-88/89

(In thousand tons, clean basis)

	July/June Crop Years						
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89 1/
Production	<u>1.632</u>	<u>1.655</u>	<u>1.722</u>	<u>1.717</u>	<u>1.764</u>	<u>1.797</u>	<u>1.842</u>
Australia	438	460	523	534	571	595	618
New Zealand	273	271	277	266	261	260	252
South Africa	65	61	60	56	52	54	55
Other countries	856	863	862	861	880	888	917
Consumption 2/	<u>1.587</u>	<u>1.615</u>	<u>1.722</u>	<u>1.749</u>	<u>1.762</u>	<u>1.878</u>	<u>1.866</u>
Closing stocks 3/	<u>167</u>	<u>207</u>	<u>207</u>	<u>175</u>	<u>177</u>	<u>96</u>	<u>72</u>
Australia	67	99	137	115	114	51	18
New Zealand	50	34	14	6	17	6	14
South Africa	10	25	9	2	2	1	2
Other countries	40	49	47	52	44	36	38
Exports	<u>711</u>	<u>731</u>	<u>762</u>	<u>785</u>	<u>854</u>	<u>811</u>	...
Australia	339	356	397	443	497	489	...
New Zealand	269	259	268	240	259	236	...
South Africa	27	37	36	27	23	19	...
Other countries	76	79	61	75	75	67	...

Sources: Commonwealth Secretariat, Wool Quarterly, No. III, 1988; and Fund staff estimates.

1/ Commonwealth Secretariat forecasts.

2/ Fund staff estimates of apparent consumption based on reported production, exports, and closing stocks. 1982/83 estimates assume 1981/82 closing stocks of 122 thousand tons.

3/ Stocks held predominantly by national marketing boards in the major wool producing countries.

the Sydney exchange, apparently reflecting the expected continuation of strong textile mill demand for of all grades of raw wool.

The outlook for raw wool in 1989 must be tempered by uncertainty about the prospects for continued strong growth of world demand for wool and wool products. The current high prices for raw wool may be expected to moderate the growth of demand in some measure and to stimulate new competition from synthetic fabrics. At end-1988, the Liverpool price of fine wool was \$4.79 per pound, substantially below the May 1988 high of \$5.93. The price of coarse wool was substantially the same as the 1987/88 average price, about \$2.00 per pound. If final demand for wool apparel remains unchanged in 1989 and the marketing boards of the major producing countries seek to rebuild their stock levels, prices for raw wool may increase from their end-1988 levels. Should production continue to grow strongly, however, prices are likely to decline in 1989.

c. Jute

Jute is not traded extensively on commodity exchanges. Reported prices are principally contract prices for exports negotiated by international brokers with jute producers in Asia and other producing regions. Few controls are imposed on imports of raw jute by industrial countries. In these countries, jute continues to have important uses, but durable and more competitively priced synthetic packaging materials and fabrics, predominantly of polypropylene, have gradually grown to have the largest market share. Also, innovations in bulk handling of many agricultural and other commodities have reduced the general demand for imports of packaging materials.

Similar considerations factor into the declining growth of demand for jute products in developing countries. However, in some developing countries various controls have been placed on imports of raw jute and jute products in order to promote local production of synthetic fabrics for commodity and materials handling. Considerable economic costs often arise in such cases, both in terms of the capital required to establish local production facilities for synthetic fabrics and the direct costs to consumers of substituting domestic goods for imports of lower priced jute or synthetic materials.

Finally, international prices of raw jute are influenced to some extent by the efforts of exporting countries to enforce minimum prices for jute exports. Enforcement of these controls varies, but the controls tend to reduce the level of world exports for raw jute and thereby to raise world prices of the commodity. The International Jute Organization, founded in 1982 by both jute consuming and producing countries, is expected to renegotiate its Charter in 1989. The agreement, however, is expected to place continued emphasis on the development of information and marketing services to benefit jute growers and manufacturers, and not to incorporate proposals by the producing countries to establish a price stabilization scheme.

The price of raw jute exports in the 1980s reached a peak during the 1984/85 crop year (July/June) when, owing to severe floods, sizable crop losses occurred in Bangladesh and India--the two major jute producing countries--and exports, particularly from Bangladesh which traditionally supply about three fourths of world jute exports, were appreciably reduced (Table 60). In the crop years 1985/86 and 1986/87 world production expanded sharply above the levels recorded in 1983/84 and 1984/85, and world exports regained their previous levels. In 1986/87 jute stocks rose nearly threefold, from 490 thousand tons to just over 1.5 million tons, in response to declining demand for jute products. As a consequence, jute export prices fell to their lowest level of the decade--about \$270 per ton (see Table 49).

In 1987/88 the price of raw jute exports rose more than 30 percent, to about \$370 per ton. Reflecting continued weak world demand for jute and jute products, total consumption fell nearly 10 percent to about 3.3 million tons. The price increase, however, reflected the onset of new declines in the level of production in Bangladesh, again owing to floods. As in 1984/85, total exports fell sharply, from over 500 thousand tons in 1986/87 to about 350 thousand tons.

The outlook is for continued higher prices for raw jute in 1988/89, owing in part to the continuing effects of the severe floods in Bangladesh in mid-1988. Additionally, expected increases in the prices of alternative crops in Asia, such as rice, may contribute to further reductions in jute production and thereby strengthen jute prices. Over the longer term, however, production is expected to be restored to higher, more normal levels. At the same time, in the absence of innovative or new uses for jute, world demand for the commodity is expected to continue to decline. Thus, the medium-term outlook for jute prices remains less than favorable for jute producers.

d. Sisal

The price of sisal, a hard fiber used primarily for rope and cordage, increased by about 3 percent in 1988, following a decline of 2 percent in 1986 and little change in 1987. 1/ Beginning especially in the later part of 1988, purchases of the commodity began to demonstrate considerable strength, reportedly in anticipation of substantially higher demands for sisal in 1989 in the major industrial countries. Increased demand was strongest for sisal produced by estates in the East African countries of Tanzania and Kenya. In Madagascar, the third major sisal producing country in Africa, drought conditions continued throughout the year, limiting the country's ability to meet the increase of overseas interest in purchasing the commodity.

1/ The price refers to East African sisal, ungraded, c.i.f. European ports.

Table 60. Jute: World Commodity Balance and World Exports,
1983/84-88/89

(In thousands of tons)

	July/June Crop Year					
	1983/84	1984/85	1985/86	1986/87	1987/88 1/	1988/89 2/
Opening stocks	530	480	490	1,620	1,680	1,380
Bangladesh	240	180	270	720	700	640
India	180	170	120	770	770	620
Thailand	50	100	50	30	90	30
Other countries	60	30	50	100	120	90
Production	3,160	3,290	5,100	3,700	2,960	2,910
Bangladesh	960	890	1,550	900	780	720
India	1,190	1,310	2,210	1,260	1,120	1,140
Thailand	250	200	260	240	170	180
Other countries	765	890	1,080	1,300	890	870
Consumption 3/	3,210	3,280	3,970	3,650	3,260	3,090
Bangladesh	670	550	680	500	600	430
India	1,200	1,360	1,560	1,270	1,260	1,360
Thailand	160	220	280	170	220	180
Other countries	1,180	1,150	1,450	1,710	1,180	1,120
Exports	455	342	518	553	346	424
Bangladesh	344	254	414	414	242	330
India	10	18	7	9
Thailand	48	21	5	5	6	9
Other countries	63	67	89	116	91	80

Sources: UN Food and Agriculture Organization (FAO), Jute, Kenaf, and Allied Fibers, and Fund staff estimates.

1/ FAO estimate.

2/ FAO projection.

3/ Fund staff estimates of apparent consumption based on reported opening stocks, production, and exports. 1988/89 estimates assume 1989/90 opening stocks of 1.2 million tons.

Demand for Brazilian sisal also increased in late 1988. However, increases in foreign orders were not as large as those reported for East African sisal. As a consequence, official export prices for Brazilian sisal remained largely unchanged in the latter half of 1988. Notably, however, the Brazilian authorities had already established somewhat higher prices for the country's exports of the commodity early in the year.

In 1989 export prices for sisal are likely to increase by a small amount. Higher export earnings are likely to be earned by the East African countries, especially Tanzania where recently adopted economic reforms should promote improvements in the supply of sisal for export. In Brazil, the outlook for substantial gains in export earnings is more uncertain given the interests of local manufacturers of sisal products in limiting growth of raw sisal exports in order to safeguard adequate supplies of the commodity for domestic uses at relatively low prices.

5. Hides

Over the past two decades there has been a major change in the structure of the world tanning industry. The developing countries have changed from net exporters of hides and skins in the 1960s to net importers in the 1980s, while the share of the industrial countries in the value of global exports of hides and skins has increased from two thirds to nearly 90 percent over the same period. The most rapid growth of tanning capacity and leather goods output among the developing countries has occurred in East Asia, particularly in the Republic of Korea and Taiwan Province of China, and to a lesser extent, in Latin America. Italy still remains the world's largest importer, followed by Korea and Japan. The price of hides quoted in this section is a U.S. wholesale price--the price for hides of heavy native steers, over 53 lbs, f.o.b. Chicago. While the supply conditions on this market relate primarily to the United States, the world's largest beef producer, demand reflects developments both in the United States, and abroad, particularly in East Asia.

Assisted by buoyant world economic growth and growing demand for footwear and leather goods, the dollar price of hides increased steadily each year to more than double over the period 1982-87. In 1987, there was a modest increase in the global supply of hides and skins, reflecting higher slaughter in the U.S.S.R., due to a shortage of feed grains, and in the EC and Australia. 1/ In the United States, however, cattle slaughter declined by 3 percent, and with strong demand from both domestic and East Asian buyers the price of hides continued to rise. The depreciation of the U.S. dollar gave stimulus to the tanning industry in the United States by improving its export competitiveness. In Europe, by contrast, the tanning industry was relatively stagnant reflecting the competitiveness of East Asian footwear and leather goods; demand for European upholstery leather, however, remained buoyant.

1/ See the discussion on beef in Section II above.

Continued strong East Asian demand for U.S. hides resulted in a sharp price rise in the first four months of 1988 to a peak of 100 cents a pound in April. However, buyer resistance to high prices, particularly for sports footwear and garments, set in and, combined with an increase in supply resulting from the drought-induced slaughter of the U.S. dairy herd, the market eased considerably in subsequent months with prices falling to 84 cents a pound in July. A recovery to 93 cents a pound occurred in August, as it became apparent that the drought had not raised the slaughter of beef cattle appreciably, and that lower supplies were likely for the remainder of the year. Nonetheless, weaker retail demand for leather goods and the stabilization of the U.S. dollar moderated East Asian demand for hides during the following months, and prices declined to 77 cents a pound by year-end. The price of hides in Europe followed fairly closely the pattern of development of the U.S. price during the course of 1988.

The weakness of retail demand for leather goods observed in the second half of 1988 may continue to influence market conditions in the first quarter of 1989, and a further modest price reduction is anticipated in this period. However, prices should move upward during the remainder of 1989 on account of a significant reduction in the global supply of hides. Herd rebuilding is expected in Argentina, Australia, Canada, and the United States, and a lower rate of slaughter is projected for the EC in response to the imposition of limits on intervention purchases.

V. Minerals and Metals

In 1988 the prices of a number of metals rose to record levels (Chart 7 and Table 61). In terms of SDRs the average annual price of nickel increased by 172 percent, that of aluminum by 57 percent, zinc by 50 percent, and copper by 40 percent. Prices rose even more sharply when measured in terms of U.S. dollars. Notwithstanding the strong upward trend, wide fluctuations were recorded in the prices for nickel, aluminum, and copper over the course of the year. The dollar price of nickel increased by 123 percent from January to April, fell by 36 percent over the following six months, and recovered by 46 percent during the remaining two months of the year. While the price of copper fell by 17 percent from January to August, it rose 59 percent over the following four months. After a steep rise in the price of aluminum (by 79 percent) during the first half of the year, the price weakened during subsequent months, and in December it was 31 percent below the peak June level. Zinc prices moved steadily upwards during the year. Relatively small increases were recorded in prices of lead, tin, and phosphate rock, while the SDR price of iron ore in 1988 remained unchanged at the 1987 level.

The large price rises for most metals were associated with the effects on consumption of a sharp acceleration in the growth of industrial production and domestic fixed investment in industrial countries, exceptionally low stock levels and the absence of substantial excess productive capacity. Industrial production in the G-7 countries grew at

CHART 7

Prices of Minerals and Metals in SDRs, 1980-88

(Indices: 1980=100)

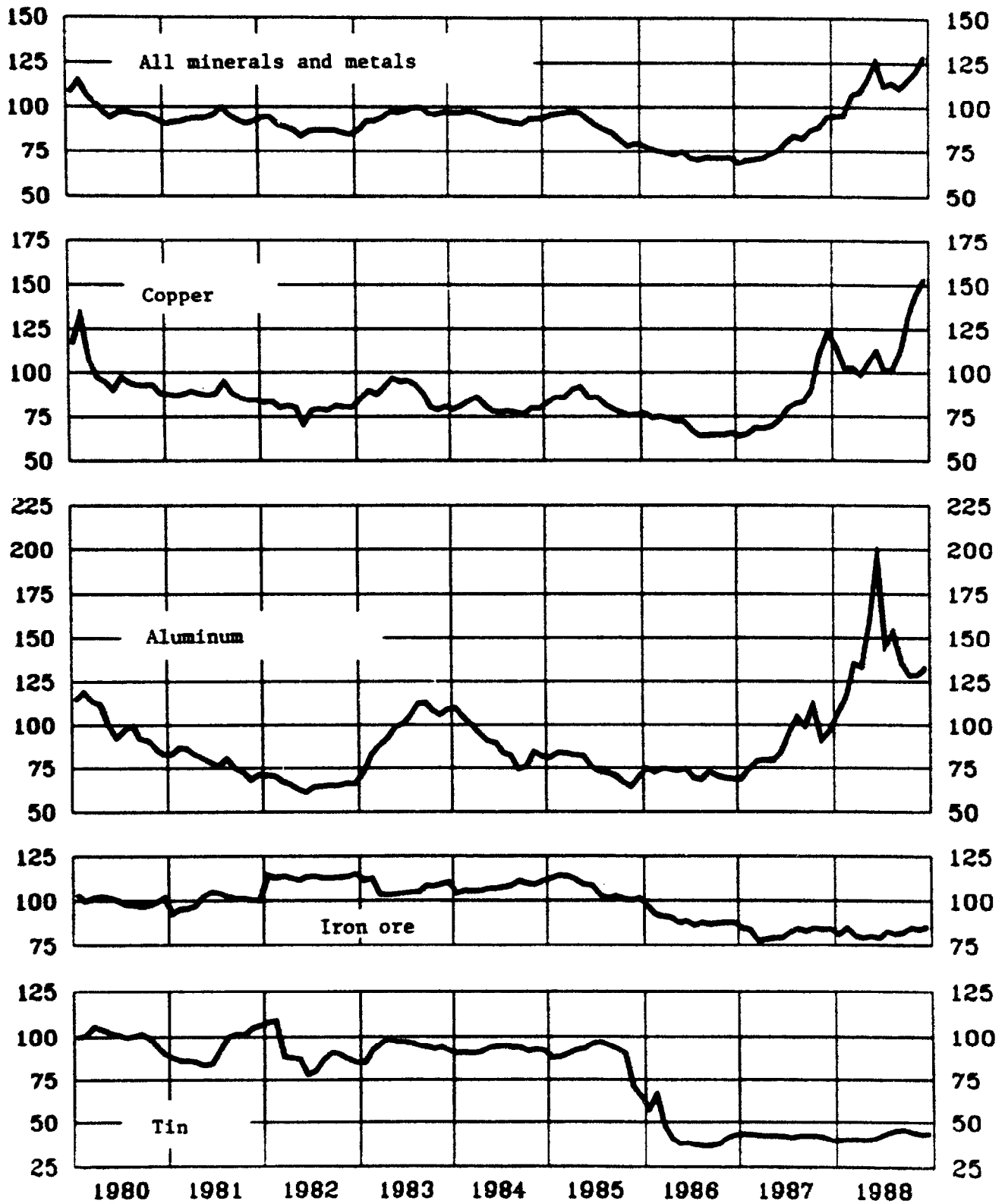


Table 61. Prices of Minerals and Metals, 1970-88

Index of Prices of Minerals and Metals 1/		Copper 2/	Tin 2/	Aluminum 2/	Nickel 2/	Zinc 2/	Lead 2/	Iron Ore 3/	Steel 4/	Phosphate Rock 5/
(1980=100)		(In SDR 0.01 a pound)			(In SDRs a ton)					
1979	92.0	69.3	542	1,241	4,624	573	831	18.1	285	25.5
1980	100.0	78.2	585	1,364	5,008	585	898	20.8	295	35.9
1981	83.8	67.0	545	1,071	5,048	717	616	20.8	304	42.0
1982	88.1	60.8	527	898	4,382	675	494	23.7	320	38.4
1983	85.6	67.6	551	1,348	4,371	715	398	22.4	294	34.5
1984	94.4	60.9	541	1,221	4,636	898	431	22.5	307	37.3
1985	89.9	63.3	515	1,025	4,825	772	385	22.3	273	33.4
1986	73.1	53.0	251	980	3,315	643	346	18.7	265	29.2
1987	78.7	62.5	244	1,210	3,768	617	461	17.2	289	24.0
1988	112.5	67.7	246	1,885	10,252	823	488	17.2	380	26.8
1987 I	69.5	50.2	250	1,011	2,912	590	373	17.2	251	24.6
II	73.2	53.4	245	1,103	3,289	638	483	18.5	270	24.0
III	82.2	62.3	243	1,360	4,019	623	514	17.4	313	24.3
IV	90.0	62.8	238	1,357	4,791	617	472	17.7	320	23.1
1988 I	89.1	61.2	232	1,624	7,855	666	480	17.2	336	26.3
II	116.9	60.3	237	2,211	12,335	879	486	16.6	383	26.3
III	112.3	78.8	283	1,971	10,450	998	470	17.2	405	27.8
IV	121.7	109.2	253	1,773	10,373	1,158	515	17.7	399	28.7
(1980=100)		(In U.S. cents a pound)			(In US\$ a ton)					
1979	91.3	88.5	701	1,603	5,975	741	1,203	23.4	388	33.0
1980	100.0	99.1	781	1,775	6,519	781	905	27.2	384	46.7
1981	84.8	78.1	643	1,283	5,953	846	728	24.6	358	49.5
1982	74.8	67.2	582	982	4,838	745	546	26.2	354	42.4
1983	78.5	72.2	589	1,438	4,673	784	425	24.0	315	36.9
1984	74.4	62.5	555	1,252	4,752	922	442	23.1	314	38.3
1985	70.0	64.3	523	1,041	4,899	783	391	22.7	277	33.9
1986	85.8	62.1	294	1,150	3,888	754	406	21.8	310	34.3
1987	78.4	60.8	316	1,585	4,872	798	506	22.2	379	31.0
1988	116.4	117.9	331	2,547	13,778	1,240	656	23.1	512	36.0
1987 I	67.3	63.3	316	1,274	3,671	744	470	21.6	317	31.0
II	72.8	69.2	317	1,428	4,258	825	625	21.4	350	31.0
III	80.6	79.5	310	1,737	5,131	796	656	22.2	400	31.0
IV	92.9	111.2	320	1,822	6,430	827	633	23.7	430	31.0
1988 I	104.2	111.1	318	2,222	10,745	911	656	23.5	480	36.0
II	122.8	109.9	324	3,025	16,875	1,203	664	22.8	523	36.0
III	112.0	103.5	341	2,557	13,553	1,291	610	22.3	525	36.0
IV	125.7	147.2	341	2,382	13,840	1,556	682	23.8	538	36.0

Source: Commodities Division, IMF Research Department.

1/ The weights in the index are as follows: copper, 26 percent; aluminum, 20 percent; iron ore, 19 percent; tin, 10 percent; nickel, 8 percent; zinc, 6 percent; lead, 5 percent; phosphate rock, 6 percent.

2/ London Metal Exchange (LME) price, c.i.f. European ports.

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

4/ Cold rolled coil, price for export, f.o.b. European Coal and Steel Community mills.

5/ Moroccan rock, f.a.s. Casablanca.

an annual rate of 1 percent in 1986, 3 percent in 1987, and 6 percent in 1988 (Table 62). Fixed investment showed a similar development, with an increase of 2 percent in 1986, 4 percent in 1987, and 8 percent in 1988. Much of the excess production capacity that had overhung the market for metals earlier in the decade was closed during 1983-87, as the prolonged period of low prices forced producers to shut down high-cost, unprofitable facilities and sharply cut production costs at others through reductions in the labor force and in wages. Despite the upturn in prices, producers have been reluctant to reactivate previously closed facilities or to undertake substantial expansions of existing capacity because of uncertainty over how long the world economic expansion would continue. The large stock overhang of metals that had accumulated during 1980-82 was steadily reduced and by the end of 1987 stocks had fallen to very low levels. In 1988, stronger than expected demand, accompanied by supply disruptions in important producing countries, led to an even further depletion of stocks.

The combined value of export earnings from four major metals--copper (refined), aluminum (unwrought), iron ore, and tin (metal)--increased from an average of SDR 19.4 billion in 1985-87 to SDR 26.9 billion in 1988 (see Table 4). The growth of earnings in 1988 is mainly attributable to the sharp increases in average unit values, as the combined volumes of these exports was only 5 percent above the 1985-87 average. Of the increase in exports receipts from these four metals from 1985-87 to 1988, about two thirds is attributable to aluminum, one third to copper, while earnings from iron ore and tin exports declined. Over one half of the increase in export earnings accrued to industrial countries, somewhat more than one third to developing countries, and the remainder to the U.S.S.R. and Eastern European countries. As a result, the share of developing countries in export receipts from the four metals declined from 49 percent in 1985 to 43 percent in 1988, while the share of industrial countries rose from 43 percent to 47 percent. This shift in trade shares is mainly attributable to the rapid expansion in aluminum earnings, a metal predominantly exported by industrial countries.

The somewhat slower world economic growth projected for 1989 and 1990 combined with increased metals production is expected to lead to price declines for a number of metals during 1989 and 1990 from their average 1988 levels. Near-term supplies, are, however, expected to remain tight for some time, until stocks are gradually restored to more normal levels. Hence, even minor supply disruptions could lead to large price increases.

1. Copper

After a prolonged period of low prices from 1982 to 1986, during 1987 and 1988 the price of copper rose substantially. In 1988, for the first time, the average annual price of copper exceeded \$1.00 a pound. The price of copper declined from an average of \$1.11 a pound in the first quarter of 1988 to \$1.04 a pound in the third quarter, but increased dramatically by 42 percent to \$1.47 a pound in the fourth quarter. On account of stronger than expected consumption, during 1988 world copper

Table 62. Movements in Prices of Minerals and Metals and Related Economic Indicators, 1982-88

(Annual percentage change)

	1982	1983	1984	1985	1986	1987	1988
Prices of minerals and metals 1/							
In SDRs	-5.9	8.5	-1.3	-4.8	-18.7	7.7	42.9
In U.S. dollars	-11.8	4.9	-5.2	-5.9	-5.9	19.0	48.2
Real 2/	-10.0	8.1	-2.4	-6.4	-20.3	5.9	40.2
Unit value of manufactured exports							
In SDRs	4.5	0.4	1.2	1.9	1.9	1.6	2.0
In U.S. dollars	-2.1	-2.8	-3.0	1.0	17.7	12.0	6.0
GNP deflator in G-7 countries							
In SDRs	6.8	4.7	3.9	3.4	3.1	2.7	2.8
In U.S. dollars	-0.3	1.8	-0.2	2.1	18.0	10.6	5.9
Economic activity in G-7 countries							
Real GNP	-0.4	2.9	5.2	3.4	2.7	3.4	4.2
Industrial production	-3.8	3.7	8.1	2.6	1.0	3.3	6.0
Domestic fixed investment	-5.1	4.0	9.6	4.5	1.8	4.2	8.1
Housing starts 3/	-5.1	26.0	-0.3	2.3	6.5	5.0	-1.8
Automobile production 3/	-4.3	12.0	1.8	5.2	0.8	-0.4	2.9
World consumption of metals 4/							
Index of consumption	-4.2	3.6	5.5	-0.7	2.7	3.7	2.0
World supply of minerals and metals 4/							
Index of production	-6.2	0.9	5.9	1.0	-0.2	2.7	4.5
Index of supply 5/	-3.3	5.0	5.0	-0.6	-0.8	0.8	1.1
Index of closing stocks	19.9	-1.0	-10.2	-4.7	-7.8	-20.2	-2.0

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

1/ Refers to IMF world index of prices of minerals and metals. These percentages differ from those reported in the World Economic Outlook which refer to the index of commodities exported by developing countries.

2/ Index of dollar prices of minerals and metals deflated by the index of dollar unit values of manufactured exports.

3/ Updated series with revised definition. Data on housing starts cover only five countries: Canada, France, Japan, United Kingdom, and United States.

4/ Overall indices constructed using the same weights for the indices of individual commodities as in overall (world) price index. The commodity coverage of the indices of consumption and stocks is less comprehensive (includes only metals) than the coverage of the indices of production and supply (includes iron ore and phosphate rock).

5/ Supply is defined as production plus beginning-of-year stocks.

stocks continued to decline from already very low levels; this tight supply situation was aggravated by production shortfalls in Zaire and Zambia, by production levels in Chile and the United States that fell short of expectations and, in the fourth quarter, by a 52-day miners' strike in Peru.

The copper quotations in this sections refer to Grade A cathodes, c.i.f. European ports, as traded in contracts of 25 metric tons at the London Metal Exchange (LME); the LME provides contracts for high grade cathodes for all business days up to 3 months and a monthly contract for up to 15 months forward. The LME discontinued its standard copper contract in January 1989. Both standard and high grade copper are traded at the Commodity Exchange (COMEX) in New York in contracts of 25,000 pounds covering the current calendar month, the two succeeding months, and selected months falling within a 23-month period beginning with the current month.

World consumption of refined copper, which is used mainly in construction, electrical and electronic products, and transportation equipment, is estimated to have increased by just 1 percent in 1988, following increases of 4 percent and 3 percent in 1986 and 1987, respectively (Table 63). The small increase was, however, in contrast with a forecast early in the year of a small decrease for 1988. Japanese consumption is estimated to have expanded by more than 5 percent on account of a surge in capital spending and a high level of construction activity. Consumption in the Federal Republic of Germany is estimated to have increased by 4 percent, reflecting the accelerated growth in industrial production and business investment, and the strong export performance of the economy. Although the growth in industrial production in the United States rose from 3.8 percent in 1987 to 5.8 percent in 1988 and business investment from under 3 percent to 10 percent, copper consumption rose by only 1 percent.

After a period of slow growth, from 1982 to 1986, world mine production increased by 3 percent in 1987. The growth rate turned negative in 1988--to an estimated -1 percent--despite an increase in capacity. Growth of production in Mexico, Papua New-Guinea, and the United States is estimated to have been largely offset by steep reductions in the output of Peru, Zaire, and Zambia. In Peru, the number of work stoppages in the course of 1988, including the national miners' strike from mid-October to mid-December, reduced mine output to about three quarters of the 1987 level.

World production of refined copper increased by an estimated 4 percent in 1988, a higher rate of increase than that recorded for mine production which was made possible by some reduction in copper ore stocks and an increase in scrap recovery. A 21 percent increase in refined production in the United States, the largest producer of refined copper, together with a 9 percent increase in Chile and a 10 percent increase in Canada outweighed production shortfalls in Peru, Zaire, and Zambia. Production in Peru fell by about 23 percent largely on account of the

Table 63. Copper: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 1/
Mine production 2/	8,040	8,110	8,270	8,380	8,400	8,670	8,610
Canada	810	850	720	740	700	740	760
Chile	1,240	1,280	1,290	1,360	1,400	1,420	1,350
China	190	190	190	200	220	270	270
Peru	360	320	360	380	390	390	300
United States	1,150	1,040	1,100	1,100	1,150	1,260	1,340
U.S.S.R.	1,010	1,020	1,020	1,030	1,030	1,010	1,020
Zaire	500	500	500	500	500	500	450
Zambia	530	580	580	510	510	530	420
Other countries	2,450	2,540	2,510	2,560	2,500	2,550	2,700
Refined production 2/	9,430	9,670	9,540	9,700	9,840	10,170	10,580
Canada	340	480	500	500	480	480	540
Chile	850	830	880	880	940	970	1,080
China	330	340	360	360	360	440	480
Japan	1,080	1,080	940	940	940	980	950
Peru	220	190	220	230	230	220	170
United States	1,680	1,580	1,480	1,440	1,480	1,580	1,880
U.S.S.R.	1,350	1,400	1,380	1,400	1,400	1,430	1,430
Zaire	170	230	230	230	220	220	190
Zambia	590	570	520	510	480	510	430
Other countries	2,810	2,980	3,030	3,220	3,290	3,350	3,420
Refined consumption 2/	9,030	9,100	9,830	9,700	10,080	10,410	10,510
China	400	400	410	420	450	480	520
Germany, Fed. Rep. of	730	740	780	750	770	800	830
Japan	1,240	1,220	1,370	1,230	1,220	1,280	1,350
United States	1,660	1,800	2,120	1,980	2,100	2,140	2,160
U.S.S.R.	1,320	1,300	1,280	1,300	1,300	1,290	1,300
Other Asia	360	460	540	560	720	810	850
Other countries	3,320	3,180	3,420	3,460	3,500	3,600	3,530
Market balance 3/	400	570	-390	0	-220	-240	40
Closing stocks of refined copper 2/4/	1,640	1,710	1,200	1,030	870	480	380
United States	760	710	600	370	300	120	80
COMEX	250	370	250	110	80	10	--
Other U.S. stocks	510	340	340	280	220	110	80
Other countries	880	1,000	600	660	570	350	300
London Metal Exchange	250	440	120	190	170	40	70
Other country stocks	630	560	470	480	400	310	230
Stocks/consumption ratio (number of weeks) 5/	9.4	9.7	6.3	5.5	4.5	2.4	1.9

Sources: World Metal Statistics (London: World Bureau of Metal Statistics), various issues in 1988, and CRU Metal Monitor: Copper (London: Commodities Research Unit Ltd.), December 1988.

1/ Estimated by Commodities Division, IMF Research Department.

2/ Includes China and Council for Mutual Economic Assistance (CMEA) countries.

3/ World production minus world consumption.

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

5/ Total commercial stocks reported in terms of weeks of world consumption.

strikes, while production in Zaire and Zambia both fell by about 15 percent on account of reduced mine output and refining equipment shortages.

As consumption of refined copper exceeded refined production from 1984 through 1987, world copper stocks were reduced from nearly 10 weeks of consumption at the end of 1983 to little more than 2 weeks at the end of 1987. Stocks increased in 1988, but deteriorated again towards the end of the year, mainly due to the Peruvian strike and lower than expected output in Chile--owing to production problems at CODELCO, the main copper company in Chile and the world's largest producer. CODELCO lowered its output forecasts several times during the year, revising the total output figure for 1988 again in December to less than 1.1 million tons, or 5 percent below the projections at the beginning of the year. By the end of 1988, commercial stocks were once again estimated to have fallen to the equivalent of about 2 weeks of consumption.

Export earnings of both copper ore and refined copper in 1988 are estimated to have risen substantially almost entirely because of a rise of nearly 50 percent in the average unit value (Table 64). Largely reflecting the production problems in Peru, Zaire, and Zambia, the export volumes of refined copper are estimated to have declined although that of copper ore is estimated to have increased.

Over the near term, some relaxation in the tight market conditions is expected. Production is projected to expand at the Ok Tedi mine in Papua New Guinea, at the Neves Corvo project in Portugal, and also in Chile, where despite continuing problems with a new flash furnace at the Chuquibambilla mine, CODELCO's output is forecast to rise from about 1.08 million tons in 1988 to 1.25 million in 1989. In Peru, a gradual return to normal production levels is anticipated. With world copper consumption expected to remain at about, or slightly below, the 1988 level during 1989, a weakening in the average price level of copper is not unlikely. Quotations on the New York futures market for copper indicate substantial easing of prices during the course of the year. However, until stocks are rebuilt, from the historically low levels prevailing at the end of 1988, any supply disruption or unexpected strength in consumption could cause prices to rise substantially. In addition, uncertainty concerning the outcome of labor negotiations in North America, which are anticipated in the spring of 1989, could provide the impetus for some renewed price volatility in the first half of the year.

2. Aluminum

The average price for aluminum rose by 63 percent to a record level of \$2,547 a ton in 1988. This sharp increase followed increases of 10 percent in 1986 and 36 percent in 1987, with the result that by 1988 the aluminum price was, on average, nearly 150 percent above the average of three years earlier. During 1988, however, the price of aluminum fluctuated widely. It rose from about \$2,000 a ton in January to a high

Table 64. Copper: Export Earnings, 1985-88

	1985	1986	1987 1/	1988 1/	1985	1986	1987 1/	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Copper Ore								
Earnings (billions)	1.8	1.5	1.9	2.7	1.8	1.8	2.4	3.6
Industrial countries	0.6	0.6	0.6	1.0	0.6	0.7	0.8	1.4
Developing countries	1.2	0.9	1.2	1.6	1.2	1.1	1.6	2.2
Volumes (in thousands of tons) 2/	1,560	1,620	1,660	1,710	1,560	1,620	1,660	1,710
Industrial countries	580	660	620	730	580	660	620	730
Developing countries	980	960	1,040	980	980	960	1,040	980
Unit values (a ton)	1,140	950	1,120	1,570	1,150	1,110	1,450	2,110
Industrial countries	1,020	900	1,000	1,430	1,030	1,060	1,290	1,920
Developing countries	1,210	980	1,190	1,670	1,220	1,150	1,540	2,250
Refined Copper								
Earnings (billions)	4.4	3.8	4.5	6.3	4.5	4.5	5.8	8.5
Industrial countries	1.3	1.2	1.4	1.9	1.3	1.4	1.8	2.6
Developing countries	2.8	2.3	2.7	3.8	2.8	2.7	3.5	5.1
U.S.S.R. and Eastern European countries	0.4	0.3	0.4	0.6	0.4	0.4	0.5	0.8
Volumes (in thousands of tons)	3,270	3,290	3,370	3,340	3,270	3,290	3,370	3,340
Industrial countries	940	980	1,000	1,000	940	980	1,000	1,000
Developing countries	2,030	2,020	2,070	2,050	2,030	2,020	2,070	2,050
Chile	890	900	940	1,000	890	900	940	1,000
Peru	180	190	180	170	180	190	180	170
Zaire	230	220	200	190	230	220	200	190
Zambia	510	470	500	440	510	470	500	440
Other	220	240	250	250	220	240	250	250
U.S.S.R. and Eastern European countries	300	290	300	290	300	290	300	290
Unit values (a ton)	1,360	1,170	1,330	1,890	1,380	1,370	1,720	2,550
Industrial countries	1,360	1,220	1,390	1,940	1,380	1,430	1,800	2,600
Developing countries	1,360	1,140	1,310	1,850	1,380	1,340	1,690	2,490
U.S.S.R. and Eastern European countries	1,310	1,180	1,290	2,050	1,330	1,380	1,670	2,760
Market prices (a ton) 3/	1,400	1,170	1,380	1,930	1,420	1,370	1,780	2,600

Sources: UN Conference on Trade and Development (UNCTAD), Yearbook of International Commodity Statistics, 1987 for exports; Commodities Division, IMF Research Department for market prices. World Metal Statistics (London: World Bureau of Metal Statistics), various issues 1988.

- 1/ Data on exports are estimates of Commodities Division, IMF Research Department.
- 2/ Copper content.
- 3/ London Metal Exchange, spot delivery, higher grade cathodes, c.i.f. U.K. ports.

of over \$4,200 in mid-June, with most of the increase occurring in late May and early June. By late June, the price fell sharply and then drifted down to an average of \$2,300 in October before leveling off at about \$2,450 at the end of the year. The major factors underlying these price movements during 1988 were strong demand for aluminum, particularly from the automotive industry, low inventories of the metal, a strike at a large Canadian smelter, and concerns about possible work disruptions elsewhere.

Prices used in this section are the cash quotations at the LME for standard grade metal with a minimum 99.5 percent aluminum content, c.i.f., European ports. These contracts were, however, terminated at the end of 1988 and all trading in line with market requirements was based on existing contracts for high grade aluminum. LME transactions on aluminum are in contracts of 25 metric tons and cover all business days up to 3 months and monthly contracts for up to 15 months forward. Aluminum is also traded at the COMEX, but this market has not an important position in international price formation on account of very thin trading volumes.

World consumption of primary aluminum, which is widely used in building and construction, transportation, consumer durables, and packaging is estimated to have risen by about 3 percent in 1988, down from a growth rate of 6 percent in 1987 (Table 65). The growth of consumption in Japan accelerated from 3 percent in 1987 to 10 percent in 1988, with the increase being attributable mainly to increased use in the automotive manufacturing sector. In the United States, consumption was only slightly above the previous year's level, despite considerable growth in the beverage can market and an increase of about 6 percent in automobile production. With strong investment expenditure, construction output, and a boom in car sales, the United Kingdom registered a strong increase of 6 percent in consumption, Italy an increase of 4 percent, and the Federal Republic of Germany an increase of 3 percent. Only marginal increases are estimated for the other European countries which are also major markets for aluminum.

World output of bauxite, the mineral used in aluminum production, grew by an estimated 5 percent in 1988 to about 100 million tons. The expansion is mainly attributable to increased production in Australia and Jamaica, a recovery of production in the U.S.S.R. from the low 1987 level to more typical levels of preceding years, and a partial recovery of production in Suriname.

World production of primary aluminum is estimated to have grown by 6 percent in 1988 following a 5 percent rise in 1987. The expansion of output was facilitated by an increase in utilization rates to almost full capacity as well as by the opening of new capacity. In the United States, the world's major aluminum producer, production in 1987-88 recovered from the sharp 1985-86 decline owing to the much higher prices and a weaker U.S. dollar which enabled U.S. producers to recapture market shares. U.S. production grew by 18 percent in 1988 to nearly 4 million tons, with almost all of the available capacity fully utilized. This gain in output

Table 65. Aluminum: World Commodity Balance, 1982-88

(In millions of tons)

	1982	1983	1984	1985	1986	1987	1988 1/
Bauxite production	<u>77.9</u>	<u>78.6</u>	<u>92.3</u>	<u>89.6</u>	<u>92.6</u>	<u>94.9</u>	<u>100.0</u>
Australia	23.6	24.4	31.5	31.8	32.4	34.2	35.8
Brazil	4.2	5.2	6.4	5.8	6.4	6.6	6.6
Guinea	11.8	13.0	14.7	14.0	14.8	16.3	16.3
Jamaica	8.2	7.7	8.7	6.2	7.0	7.7	8.5
Suriname	3.1	2.8	3.4	3.7	3.7	2.6	3.4
U.S.S.R.	6.4	6.3	6.2	6.4	6.3	4.9	6.3
Yugoslavia	3.7	3.5	3.3	3.5	3.5	3.4	3.5
Other countries	16.9	15.7	18.1	18.2	18.5	19.2	19.6
Alumina production	<u>22.2</u>	<u>23.3</u>	<u>27.1</u>	<u>25.5</u>	<u>26.1</u>	<u>28.1</u>	<u>28.8</u>
Aluminum							
Primary production	<u>14.0</u>	<u>14.3</u>	<u>15.9</u>	<u>15.5</u>	<u>15.5</u>	<u>16.3</u>	<u>17.3</u>
Australia	0.4	0.5	0.8	0.9	0.9	1.0	1.1
Brazil	0.3	0.4	0.5	0.5	0.8	0.8	0.9
Canada	1.1	1.1	1.2	1.3	1.4	1.5	1.5
Germany, Fed. Rep. of	0.7	0.7	0.8	0.7	0.8	0.7	0.7
Norway	0.6	0.7	0.8	0.7	0.7	0.8	0.8
U.S.S.R.	2.4	2.4	2.3	2.3	2.4	2.4	2.4
United States	3.3	3.4	4.1	3.5	3.0	3.3	3.9
Other countries	5.2	5.1	5.4	5.6	5.5	5.8	5.9
Primary consumption	<u>14.1</u>	<u>15.4</u>	<u>15.6</u>	<u>15.9</u>	<u>16.1</u>	<u>17.1</u>	<u>17.6</u>
China	0.6	0.6	0.6	0.7	0.8	0.8	0.9
France	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Germany, Fed. Rep. of	1.0	1.1	1.2	1.2	1.2	1.2	1.2
Japan	1.6	1.8	1.6	1.7	1.6	1.7	1.9
U.S.S.R.	1.9	1.9	1.8	1.8	1.7	1.8	1.8
United States	3.6	4.2	4.5	4.3	4.3	4.5	4.6
Other countries	4.8	5.2	5.3	5.6	5.9	6.5	6.6
Market balance 2/	<u>-0.1</u>	<u>-1.1</u>	<u>0.3</u>	<u>-0.4</u>	<u>-0.6</u>	<u>-0.8</u>	<u>-0.3</u>
Ending stocks 3/	<u>3.2</u>	<u>2.2</u>	<u>2.8</u>	<u>2.5</u>	<u>2.0</u>	<u>1.5</u>	<u>1.6</u>
Metal exchanges	0.3	0.2	0.2	0.3	0.1	0.1	0.1
Producers	2.9	2.0	2.6	2.2	1.9	1.4	1.5
Stocks/consumption ratio (number of weeks) 4/	11.7	7.6	9.3	8.0	6.4	4.5	4.8

Source: World Metal Statistics (London: World Bureau of Metal Statistics), various issues in 1988.

1/ Estimated by Commodities Division, IMF Research Department.

2/ World production minus world consumption.

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

4/ Reported commercial stocks expressed as weeks of world consumption.

accounted for more than 60 percent of the world's increases in production. Comparatively small production increases were registered in Australia, Brazil, India, and Venezuela.

The scrap aluminum market has gained importance in the current tight market conditions. Scrap is widely used for cansheet and castings. Particularly in Europe, more emphasis is being placed on the recycling of aluminum container products, such as beverage cans. The secondary industry provides above one third the volume of primary aluminum consumed in Europe.

World primary consumption of aluminum outpaced world primary production by a considerable margin in the first half of 1988 but production outpaced consumption during the second half of the year. Commercial stocks at the end of 1988 are estimated to have been the equivalent of close to 5 weeks of world aluminum consumption--slightly higher than at the end of 1987 but only about half the amount four years earlier. Stocks on the London Metal Exchange (LME) at the end of 1988 were well above the exceptionally low levels that prevailed throughout the first half of 1988. Prospects for continued easing of the tight market situation in the near future are not unfavorable. Production is expected to register further growth owing to capacity expansions in late 1988 and others envisaged for 1989-91. In October 1988, a major U.S. refinery (Burnside), closed in 1985, was recommissioned to come on stream at the end of 1988 with a yearly capacity of 500 thousand tons. Roughly 1 million tons could be added between 1989-91, from Venezuela, Jamaica, Australia, and other countries. Venezuela is planning to expand its primary aluminum production capacity from 420 thousand tons in 1988 to 860 thousand tons by 1990 in line with bauxite mine developments; bauxite output, which was only 240 thousand tons in 1987, is forecast to reach 1 million tons in 1989. In Jamaica, restarts of refineries are expected to increase aluminum production by 200 thousand tons in 1989 and 500 thousand tons in 1990. Australia's output of aluminum is forecast to rise by 15 percent to 1.23 million tons due to a new smelter in Victoria, which reached its capacity in September 1988 and is scheduled to increase its output rate by 10 percent during 1989. The construction of a 200 thousand ton aluminum smelter in France to start production in 1991 was announced in November 1988 and there are also plans for a new smelter in Saudi Arabia and an increase in the Brazilian production.

Aluminum consumption is expected to grow moderately in 1989, supported mainly by the beverage container and transportation markets. One factor that will influence demand growth is the development of the competitive position of aluminum over other materials, especially copper and plastics. Although high aluminum prices during the first part of the year temporarily reversed this relationship, in the second half copper prices rose while those of aluminum declined, thereby supporting the competitiveness of aluminum in spite of its high price.

In the absence of important supply disruptions, these developments are likely to lead to a weakening of the aluminum price from the average

level of 1988. To the extent that inventories are rebuilt, the tendency towards price volatility should also be reduced. The signing of new three-year labor contracts by U.S. aluminum producers, six months ahead of schedule, has removed one potentially major disruptive element to supply.

The large price rises of aluminum in 1987 and 1988 were reflected in the increases in export earnings of aluminum (Table 66). Global earnings from the export of unwrought aluminum in 1988 are estimated at SDR 14.5 million. This amount is roughly double that of 1985-86 and is greater than the export earnings in 1988 for any other non-fuel primary commodity, including wheat, the traditional leader. Over 60 percent of the earnings from exports of unwrought aluminum were obtained by industrial countries, over 25 percent by developing countries and 10 percent by the U.S.S.R. and Eastern European countries. Less than 10 percent of the rise in earnings from 1986 to 1988 was attributed to volume increases. Over the same period earnings from exports of bauxite changed little; the large price rise of aluminum was only weakly reflected in the price of bauxite and the increases in the volume of bauxite were also relatively small.

3. Iron ore

Throughout much of the 1980s demand for iron ore has been weak, reflecting developments in the steel industry, and overall excess capacity in ore production that has co-existed with increasing production of high quality, low cost ore from new projects. While c.i.f. dollar prices in European ports increased by 4 percent in 1988, much of the change is attributable to rising costs of transportation which account for about 25 percent of c.i.f. prices. Thus, despite an increase in 1988 of over 6 percent in world output of steel, the main determinant of the demand for iron ore, and a 35 percent increase in the dollar price of steel (31 percent in SDRs), on a f.o.b. basis the price for iron ore continued to weaken. Even c.i.f. prices in 1988 were below the levels of the 1980-83 period.

The international marketing of iron ore is mainly conducted within the framework of long-term contracts with annual renegotiations of prices. Over the years, typical market patterns have developed; Australian exporters negotiate with Japanese steel mills, Brazilian and Swedish exporters with German buyers, and Canadian iron ore producers with U.S. steel mills. Even the timing for the settlements seemed to follow a pattern where the negotiated price between the Brazilians and the Germans set the path for other negotiations; in the last three years, however, the Japanese have led the annual price rounds.

The increase in steel production in 1988 was the largest since 1984 (Table 67). Reflecting the robust growth in industrial production and business investment, crude steel output in industrial countries increased by 9 percent. As a group, industrial countries accounted for two thirds of the global expansion in output. Crude steel output in the EC is estimated to have risen to 136 thousand tons, about 17 percent of world

Table 66. Aluminum: Export Earnings, 1985-88

	1985	1986	1987 1/	1988 1/	1985	1986	1987 1/	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Reexport								
Earnings (billions)	<u>0.9</u>	<u>0.8</u>	<u>0.7</u>	<u>0.8</u>	<u>0.9</u>	<u>0.9</u>	<u>0.9</u>	<u>1.0</u>
Industrial countries	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Developing countries	0.8	0.7	0.6	0.7	0.8	0.8	0.8	0.9
Volumes (in millions of tons) 2/	<u>32.8</u>	<u>31.0</u>	<u>31.7</u>	<u>33.5</u>	<u>32.8</u>	<u>31.0</u>	<u>31.7</u>	<u>33.5</u>
Industrial countries	5.8	5.7	5.6	6.3	5.8	5.7	5.6	6.3
Developing countries	27.0	25.3	26.1	27.2	27.0	25.3	26.1	27.2
Guinea	13.0	13.2	14.0	14.1	13.0	13.2	14.0	14.1
Jamaica	2.6	2.9	3.4	3.3	2.6	2.9	3.4	3.3
Other	11.4	9.2	8.7	9.8	11.4	9.2	8.7	9.8
Unit values (a ton)	<u>27.0</u>	<u>24.7</u>	<u>22.0</u>	<u>22.2</u>	<u>27.4</u>	<u>29.0</u>	<u>28.4</u>	<u>29.9</u>
Industrial countries	17.0	15.0	13.8	11.8	17.2	17.5	17.9	15.9
Developing countries	29.2	27.0	23.7	24.6	29.6	31.6	30.7	33.1
Unwrought aluminum								
Earnings (billions)	<u>7.4</u>	<u>7.2</u>	<u>9.0</u>	<u>14.5</u>	<u>7.5</u>	<u>8.4</u>	<u>11.7</u>	<u>19.5</u>
Industrial countries	4.8	4.5	5.6	9.1	4.9	5.3	7.3	12.2
Developing countries	1.8	1.9	2.5	3.9	1.8	2.2	3.2	5.3
U.S.S.R. and Eastern European countries	0.8	0.8	0.9	1.5	0.8	0.9	1.2	2.0
Volumes (in millions of tons)	<u>6.6</u>	<u>6.6</u>	<u>6.9</u>	<u>7.1</u>	<u>6.6</u>	<u>6.6</u>	<u>6.9</u>	<u>7.1</u>
Industrial countries	4.2	4.1	4.2	4.3	4.2	4.1	4.2	4.3
Developing countries	1.6	1.7	1.8	1.9	1.6	1.7	1.8	1.9
U.S.S.R. and Eastern European countries	0.8	0.8	0.9	0.9	0.8	0.8	0.9	0.9
Unit values (a ton)	<u>1.120</u>	<u>1.080</u>	<u>1.310</u>	<u>2.050</u>	<u>1.140</u>	<u>1.270</u>	<u>1.700</u>	<u>2.750</u>
Industrial countries	1,150	1,100	1,350	2,110	1,170	1,290	1,740	2,840
Developing countries	1,110	1,100	1,380	2,080	1,130	1,290	1,780	2,790
U.S.S.R. and Eastern European countries	980	960	1,030	1,650	1,000	1,130	1,330	2,220
Market prices (a ton) 3/	<u>1.020</u>	<u>980</u>	<u>1.210</u>	<u>1.890</u>	<u>1.040</u>	<u>1.150</u>	<u>1.570</u>	<u>2.540</u>

Sources: UN Conference on Trade and Development (UNCTAD), Yearbook of International Commodity Statistics, 1987 and World Metal Statistics (London: World Bureau of Metal Statistics), various issues 1988, for exports; Commodities Division, IMF Research Department for market prices.

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

2/ Actual weight.

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

Table 67. Iron Ore: World Commodity Balance Together
with Production of Pig Iron and Steel, 1982-88

(In millions of tons)

	1982	1983	1984	1985	1986	1987	1988 1/
Commodity balance							
Production of iron ore	<u>813</u>	<u>776</u>	<u>876</u>	<u>904</u>	<u>917</u>	<u>948</u>	<u>990</u>
Australia	88	71	94	93	92	104	118
Brazil	93	92	112	128	129	136	150
China	107	114	122	132	150	157	162
U.S.S.R.	244	245	247	248	250	251	253
United States	37	39	52	50	39	48	51
Other countries	244	215	249	253	257	252	256
Apparent consumption							
of iron ore 2/	<u>823</u>	<u>777</u>	<u>871</u>	<u>905</u>	<u>911</u>	<u>939</u>	<u>995</u>
Brazil	20	22	24	36	37	39	43
China	109	118	128	142	164	168	170
Germany, Fed. Rep. of	40	37	44	46	42	40	44
Japan	122	110	126	125	116	112	120
U.S.S.R.	201	202	201	204	203	206	208
United States	49	48	64	60	51	60	67
Other countries	280	240	284	292	298	314	343
Production of pig iron of	<u>473</u>	<u>462</u>	<u>491</u>	<u>500</u>	<u>492</u>	<u>500</u>	<u>525</u>
which: industrial							
countries	221	220	240	241	222	225	242
Production of crude steel	<u>646</u>	<u>662</u>	<u>710</u>	<u>719</u>	<u>714</u>	<u>734</u>	<u>780</u>
Of which: industrial							
countries	323	328	358	355	330	337	368

Source: Statistics on Iron Ore, UN Conference on Trade and Development (UNCTAD), and preliminary UNCTAD data.

1/ Estimated by Commodities Division, IMF Research Department.

2/ Production minus exports plus imports.

production, with Belgium, the Federal Republic of Germany, and the United Kingdom accounting for most of the increase. In Japan, crude steel production grew by over 7 percent to 105 thousand tons. In both the EC and Japan the increases in production are associated with substantially higher production of capital goods and automobiles. Output of crude steel in the United States in 1988 rose by over 12 percent to 90 thousand tons. Demand for steel for use in the machinery and equipment sectors was strong, although this was partly offset by a slowdown in private and public construction activities and a depressed petroleum and gas sector. Production in the newly industrializing economies of Asia and in Brazil also expanded rapidly. Output is estimated to have increased by 44 percent in Taiwan Province of China, by 14 percent in the Republic of Korea, and by 11 percent in Brazil. Only a small increase of about 1 percent, however, is estimated for the U.S.S.R., the world's largest steel producer. Voluntary restraint agreements and import regulations continued to restrict international steel trade in 1988.

In line with the increases in steel production and in response to steadily rising prices for crude steel and scrap, world pig iron production is estimated to have increased in 1988 by about 6 percent. About two thirds of pig iron production was provided by industrial countries. World production of direct reduced iron is also estimated to have expanded, due particularly to a 34 percent rise in Brazilian production.

In response to the rise in steel production, iron ore production rose by 3 percent in 1987 and is estimated to have increased by a further 4 percent in 1988. Most of the increase in output in 1988 is attributable to Brazil (33 percent), Australia (33 percent), and China (12 percent). Since 1983 Brazilian iron ore production has increased by 63 percent, mainly on account of expanded production at the Carajas project, where low-cost high quality ore is produced.

About 39 percent of world production of iron ore is traded internationally. After stagnating at an average level of about 367 million tons during the period 1985-87, the volume of exports increased by 5 percent in 1988 (Table 68). The volume of exports from industrialized countries, which have been on a declining trend, grew by 7 percent in 1988. Mainly because of increased shipments from Brazil, the volume of exports from developing countries rose by 4 percent in 1988. Owing to lower export unit values, only a negligible increase in earnings from iron ore exports in terms of dollars was recorded while in terms of SDRs earnings declined.

Although it is unlikely that the growth in world steel production that occurred in 1988 will be sustained in 1989, stronger demand for iron ore in 1988 has reduced iron ore stocks and created more favorable conditions for iron ore producers in their price negotiations with consumers. Price negotiations for 1989 shipments of iron ore started in November 1988 in both Europe and Japan following the usual bilateral pattern. Repeating the course of events in 1988, the first settlement was

Table 68. Iron Ore: Export Earnings, 1985-88

	1985	1986	1987	1988 ^{1/}		1985	1986	1987	1988 ^{1/}
	(Values in SDRs)					(Values in U.S. dollars)			
Earnings (billions)	<u>6.9</u>	<u>5.9</u>	<u>5.3</u>	<u>5.1</u>		<u>7.0</u>	<u>6.9</u>	<u>6.8</u>	<u>6.9</u>
Industrial countries	3.0	2.3	2.0	1.9		3.0	2.7	2.6	2.6
Developing countries	3.0	2.7	2.4	2.3		3.1	3.1	3.0	3.1
U.S.S.R. and Eastern European countries	0.9	0.9	0.9	0.9		0.9	1.1	1.2	1.2
Volumes (in millions of tons)	<u>371</u>	<u>365</u>	<u>367</u>	<u>385</u>		<u>371</u>	<u>365</u>	<u>367</u>	<u>385</u>
Industrial countries	153	143	142	152		153	143	142	152
Australia	85	80	80	91		85	80	80	91
Canada	32	31	30	33		32	31	30	33
Other	36	32	32	28		36	32	32	28
Developing countries	175	175	180	186		175	175	180	186
Brazil	92	92	97	107		92	92	97	107
India	29	32	29	30		29	32	29	30
Other	54	51	54	49		54	51	54	49
U.S.S.R. and Eastern European countries	43	47	45	47		43	47	45	47
Unit values (a ton)	<u>19</u>	<u>16</u>	<u>14</u>	<u>13</u>		<u>19</u>	<u>19</u>	<u>18</u>	<u>18</u>
Industrial countries	20	16	14	13		20	19	18	17
Developing countries	18	15	13	13		18	18	17	17
U.S.S.R. and Eastern European countries	21	20	21	19		21	23	27	26
Brazilian ore prices (a ton)									
C.i.f. German ports ^{2/}	<u>22.4</u>	<u>18.7</u>	<u>17.2</u>	<u>17.2</u>		<u>22.7</u>	<u>21.9</u>	<u>22.2</u>	<u>23.1</u>
F.o.b. ^{3/}	<u>26.2</u>	<u>22.4</u>	<u>18.9</u>	<u>17.5</u>		<u>26.6</u>	<u>26.3</u>	<u>24.5</u>	<u>23.5</u>

Sources: UN Conference on Trade and Development (UNCTAD), Yearbook of International Commodity Statistics, 1986 for exports; Commodities Division, IMF Research Department for market prices.

- ^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.
^{2/} 61.5 percent iron ore content.
^{3/} 64.5 percent iron ore content.

reached between an Australian mine and Japanese steel producers; an increase in dollar prices of 15 percent on average was agreed, including a 13 percent rise in prices for fine grades of ore and a 17 percent rise in prices for lump ore. This settlement largely determined the outcome of negotiations between Companhia Vale do Rio Doce (CVRD), a Brazilian producer, and German buyers who concluded a similar agreement in December; it is also expected to set the trend for other iron ore price negotiations.

4. Tin

In 1988, prices for tin continued to recover from the 1986 low that followed the collapse of market stabilization operations under the International Tin Agreements. 1/ Trade in contracts for tin on the LME was suspended in October 1985 in the wake of the collapse of the market stabilization operations. Trade at the Kuala Lumpur Tin Market (KLTM) was also suspended but resumed three months later in February 1986. In January 1987 the KLTM extended coverage to include Indonesian and Thai tin, in addition to Malaysian tin. In October 1987 a tin futures contract was introduced on the Kuala Lumpur Commodity Exchange (KLCE); the trading volume, however, has remained low. Tin prices in this section for the period since 1985 refer to the quotations for transactions for tin metal by New York tin dealers, the leading import "market" since the suspension of tin trading on the LME.

The gradually rising prices--tin prices on average were about 5 percent higher in 1988 compared to 1987--reflect a moderately expanding demand for tin and the successful management of supply, particularly by the members of the Association of Tin Producing Countries (ATPC). 2/ In the aftermath of the 1985 breakdown of the operations by the International Tin Council, the ATPC established an export quota agreement with the objective of gradually reducing the overhang in world stocks which stood at about 100 thousand tons at the end of 1985. The export quota scheme constrained total exports of ATPC member countries to 96 thousand tons in the 1987/88 marketing year (March/February) and to 101.9 thousand tons in 1988/89. National export quota allocations were made for the major nonmember exporters of tin: 26.5 thousand tons for Brazil and 10.0 thousand tons for China. With world consumption at 227 thousand tons in 1987 and an estimated 234 thousand tons in 1988, the export restraints resulted in a considerable reduction of commercial stocks

1/ In September 1988, the ITC terminated its remaining activities. A new international body to provide statistical information and market studies for the industry is currently being discussed under the auspices of UNCTAD. A general agreement to establish a Tin Study Group was announced in December 1988 and a final decision is expected at the third Negotiating Conference to be held in the spring of 1989.

2/ ATPC member countries are Australia, Bolivia, Indonesia, Malaysia, Nigeria, Thailand, and Zaire. Brazil and China participate as observers in the meetings of this Association.

within a relatively short period--to about 25 thousand tons at the end of 1988. At their meeting in October 1988, the ATPC member countries agreed to continue the scheme for a third year, but postponed the decision on the size of new total and individual export quotas to January 1989.

World mine production of tin is estimated to have risen in 1988 by 11 percent (Table 69). A large part of the increase occurred in Brazil where mine output was raised by over 50 percent to 44 thousand tons. As a consequence, Brazil accounted for over 20 percent of world mine production in 1988 compared with less than 4 percent in 1982. The increase in 1988 came largely from the Amazon State of Rondonia where production from a new low-cost mine began in September 1987. Although Bolivian production increased by 25 percent in 1988, the level of production remained less than half that obtained in the early 1980s. With the mine rehabilitation program of COMIBOL suffering from delays, most of the increase in Bolivia's production came from small mines and cooperatives.

Production of refined tin grew by 10 percent in 1988, in line with the expanding mine activity. Refined production in Brazil increased by 45 percent with the result that Brazil's share of world production rose to 19 percent. World consumption of refined tin, mainly for tinsplate, alloy, and solder, is estimated to have grown by 3 percent in 1988. The largest advances were registered by China and the United States with increases in the order of 15 percent in both countries.

In 1988 exports of tin metal were estimated to have registered an 8 percent increase, mainly because of rising exports from Brazil of 10 thousand tons--nearly 50 percent (Table 70). Exports of tin-in-concentrates are estimated to have registered a small decline. With minor increases in unit values, export earnings for tin-in-concentrates are estimated to have remained at the previous year's level while earnings for tin metal are estimated to have risen by about 10 percent.

Market developments in 1989 will be largely determined by the extent to which the ATPC, in cooperation with Brazil and China, can successfully continue to reduce existing stocks by limiting exports. The new production and export quota scheme for 1989/90 agreed in early 1989, takes account of the demand for larger export quotas by some countries due to their fast expanding tin production and production problems in other countries. The ATPC decided to raise total exports for member countries to 106.4 thousand tons from 101.9 thousand tons in the previous marketing year, the extra 4,500 tons will be allocated mainly to Bolivia (1,500 tons) and Indonesia (2,500 tons). Brazil accepted an export limit of 31,500 tons and China agreed to maintain its 10,000 ton limit. Swapping of quotas among members and nonmembers is prohibited. There is, however, the possibility of sales from the American strategic stockpile which at the end of 1988 had stocks of tin equivalent to 9 months of world consumption. A U.S. Government decision in 1987 entitled the strategic stockpile to dispose of another 5,000 tons raising to 14,500 tons the

Table 59. Tin: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 1/
Mine production	<u>225</u>	<u>210</u>	<u>205</u>	<u>197</u>	<u>184</u>	<u>185</u>	<u>205</u>
Bolivia	27	25	20	18	11	8	10
Brazil	8	13	20	27	25	28	44
China	16	17	18	20	25	28	30
Indonesia	34	27	23	22	25	26	30
Malaysia	52	41	41	37	29	30	29
Thailand	26	20	22	17	17	15	15
U.S.S.R.	18	17	17	18	16	15	16
Other countries	46	50	44	42	36	34	31
Refined production	<u>229</u>	<u>208</u>	<u>212</u>	<u>210</u>	<u>200</u>	<u>202</u>	<u>223</u>
Bolivia	19	14	16	12	8	3	5
Brazil	9	13	19	25	25	29	42
China	17	17	17	19	20	25	28
Indonesia	30	28	23	20	22	24	28
Malaysia	63	53	43	46	44	44	46
Thailand	26	19	20	18	22	16	15
U.S.S.R.	17	18	19	18	18	17	17
Other countries	48	46	55	52	41	44	42
Consumption	<u>204</u>	<u>206</u>	<u>222</u>	<u>216</u>	<u>223</u>	<u>227</u>	<u>234</u>
China	13	13	14	11	12	12	14
Germany, Fed. Rep. of	14	14	16	16	17	17	17
Japan	29	30	33	32	32	33	32
United States	34	36	39	38	34	37	42
U.S.S.R.	27	29	30	30	26	26	26
Other countries	87	84	90	89	102	102	103
Market balance 2/	<u>25</u>	<u>2</u>	<u>-10</u>	<u>-6</u>	<u>-23</u>	<u>-25</u>	<u>-11</u>
Commercial stocks 3/	<u>57</u>	<u>63</u>	<u>49</u>	<u>73 4/</u>	<u>57</u>	<u>35</u>	<u>25</u>
Stocks/consumption ratio (number of weeks) 5/	14.5	15.8	11.5	17.5	13.3	8.0	5.6
ITC stocks	<u>53</u>	<u>55</u>	<u>62</u>	<u>0 6/</u>	<u>0</u>	<u>0</u>	<u>0</u>
U.S. strategic stocks	<u>194</u>	<u>191</u>	<u>193</u>	<u>188</u>	<u>180</u>	<u>176</u>	<u>175</u>

Sources: World Metal Statistics (London: World Bureau of Metal Statistics), various issues in 1988, and CRU Metal Monitor: Tin (London: Commodities Research Unit Ltd.), December 1988.

1/ Estimates of Commodities Division, IMF Research Department.

2/ World production minus world consumption.

3/ Total commercial stocks reported at end of period.

4/ Some of the stocks held by ITC prior to the collapse of its market operations in October 1985 may not be included at the end of 1985 in the series of commercial stocks.

5/ Commercial stocks measured as weeks of consumption.

6/ ITC creditors acquired the ITC stocks following collapse of ITC market operations.

Table 70. Tin: Export Earnings, 1985-88

	1985	1986	1987 1/	1988 1/	1985	1986	1987 1/	1988 1/
	(Values in SDRs)				(Values in U.S. dollars)			
Tin-in-concentrates								
Earnings (in billions)	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	<u>0.2</u>	<u>0.3</u>	<u>0.3</u>
Industrial countries	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Developing countries	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2
Volumes (in thousands of tons)								
	<u>31</u>	<u>42</u>	<u>49</u>	<u>47</u>	<u>31</u>	<u>42</u>	<u>49</u>	<u>47</u>
Industrial countries	7	10	8	7	7	10	8	7
Developing countries	24	32	41	40	24	32	41	40
Unit values (a ton)	<u>8.950</u>	<u>4.360</u>	<u>4.250</u>	<u>4.280</u>	<u>9.090</u>	<u>5.110</u>	<u>5.490</u>	<u>5.750</u>
Industrial countries	10,740	5,230	5,090	5,130	10,900	6,130	6,580	6,900
Developing countries	8,430	4,100	3,990	4,030	8,560	4,810	5,160	5,420
Tin metal								
Earnings (in billions)	<u>1.9</u>	<u>0.9</u>	<u>0.9</u>	<u>1.0</u>	<u>1.9</u>	<u>1.0</u>	<u>1.2</u>	<u>1.3</u>
Industrial countries	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2
Developing countries	1.7	0.7	0.8	0.8	1.7	0.8	1.0	1.1
Volumes (in thousands of tons)								
	<u>172</u>	<u>168</u>	<u>175</u>	<u>189</u>	<u>172</u>	<u>168</u>	<u>175</u>	<u>189</u>
Industrial countries	16	24	22	24	16	24	22	24
Developing countries	156	144	155	165	156	144	155	165
Unit values (a ton)	<u>10.840</u>	<u>5.280</u>	<u>5.140</u>	<u>5.190</u>	<u>11.010</u>	<u>6.200</u>	<u>6.650</u>	<u>6.970</u>
Industrial countries	13,730	6,680	6,500	6,560	13,940	7,840	8,410	8,820
Developing countries	10,550	4,740	5,000	5,040	10,710	5,560	6,460	6,780
Market prices (a ton) 2/	<u>11.360</u>	<u>5.530</u>	<u>5.380</u>	<u>5.430</u>	<u>11.530</u>	<u>6.490</u>	<u>6.960</u>	<u>7.300</u>

Sources: UN Conference on Trade and Development (UNCTAD), Yearbook of International Commodity Statistics, 1987, for exports; Commodities Division, IMF Research Department for market prices.

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

2/ LME standard grade, spot delivery, c.i.f. European ports through December 1988; Metals Week, New York dealer price thereafter.

total tin that could be made available to the market. The entry into operation of new capacity could also influence prices. In Brazil, the development of a newly discovered deposit in Roraima could boost tin production. The Neves Corvo copper mine in Portugal commissioned in October 1988 is expected to become a large producer of tin-in-concentrates. With full capacity being reached by mid-1991, the Portuguese mine is expected to produce 5 thousand tons of tin-in-concentrates in addition to 135 thousand tons of copper. Consequently, there is ample potential for growth of tin supply, whereas consumption is expected to continue to expand only at a moderate rate.

5. Nickel

In 1988, widely fluctuating nickel prices set new record highs. The first peak--\$21,000 a ton for nickel traded on the LME, c.i.f. European ports--was reached in April. ^{1/} After retreating rapidly to a level still well above prices in 1987, prices regained upward momentum towards the end of 1988 and once again broke through the \$20,000 level in December. On average, nickel prices in 1988 were \$13,780 a ton, nearly three times the average in 1987.

The demand for nickel is mainly determined by stainless steel production. After growing at an annual rate of 3 percent between 1970 and 1986, world stainless steel production started to increase sharply in 1987. In 1988 stainless steel production continued to expand at the higher rate of more than 10 percent owing to strong demand in areas of traditional use and new uses for stainless steel in areas such as kitchen equipment and building façades. In Japan, the world's largest producer of stainless steel, production reached an all-time high in the fourth quarter of 1988, contributing to a 16 percent annual increase in output over the 1987 level.

The tight market supply conditions already apparent at the beginning of 1988 for nickel were reinforced by temporary production problems in the Dominican Republic and, to a lesser extent, at mines in Europe and North America, leading to the sudden, although short, upsurge in prices in the spring of 1988. The supply problems were alleviated by the expansion of nickel production in Cuba to about 44 thousand tons in 1988 compared with 35 thousand tons in 1987, as well as increasing amounts of stainless steel scrap coming on to the market. Nevertheless, late in the year when it became evident that capital goods sectors, the main force driving special steel markets, were continuing to expand at rates in excess of expectations in Asia, Europe, and the United States, nickel quotations began to rise. Prices increased rapidly in December, when it also became apparent that the increase of 7 percent in world nickel production expected earlier in the year for 1988 was too optimistic on account of

^{1/} Nickel is traded on the LME on the same basis as aluminum except that the contracts are for 6 metric tons.

renewed production problems, particularly in Indonesia, but also in Brazil and other producing countries.

World primary nickel consumption in 1988 is estimated at 880 thousand tons, about 4 percent higher than in 1987 (Table 71). In line with the emergence of new stainless steel capacities, primary nickel consumption expanded in the newly industrialized economies. China, an exporter of 10 thousand tons in 1987, became an importer of nickel in 1988 owing to strong domestic demand for all major metals. Consumption in the United States and Japan was maintained at the 1987 level; for both countries, however, this represented a high level of consumption, about 20 percent above the 1986 level. Consumption in the U.S.S.R. and most European countries continued to stagnate.

With consumption substantially outpacing production again in 1988, world nickel stocks fell from the already low level at the beginning of the year. Commercial stocks at the end of the year were estimated to be sufficient to cover less than five weeks of consumption.

In 1989, nickel demand is expected to continue to be strong. In the first months of 1989 demand for stainless steel was particularly strong in Western Europe for use in the manufacture of catalytic converters for automobiles, in North America for all-stainless automobile exhaust systems and worldwide for use in both electric and non-electric machinery, as well as in consumer goods and petrochemical industries. Stainless steel production in 1989 is likely to continue growing in the newly industrialized economies and to be maintained in the industrial countries at 1988 levels. Any slowdown should occur only in the second half of 1989. Nickel production is projected to expand in the near term owing to capacity additions already underway, in particular in Australia, Brazil, and Canada (Nameg Lake Mine). Cuba is planning to increase its nickel production by another 10 thousand tons in 1989.

LME stocks of nickel were reported to be 2,500 tons at the end of December 1988 compared to about 7 thousand tons in the mid-1980s. Given the exceptionally low stocks of nickel on the LME and elsewhere, and continuing strong demand, prices for nickel could be higher on average in 1989 than in 1988. On the other hand, production costs are reported to be about \$5,000 a ton and long-term contracts for nickel incorporate prices that are considerably below early 1989 market levels. In some 3-year contracts negotiated in early 1989 between nickel producers and steelmakers, prices are set at the quarterly average LME cash price as long as that average falls within a range of \$5,500 to \$1,000 a ton; in cases of LME prices overshooting that range a pricing schedule is envisaged that basically consists of a mixture of actual LME prices and the upper or lower price range, respectively.

Should the price of nickel decline in 1989 or 1990, there is a strong possibility of an abrupt downward movement. Stainless steel mills sell only 50 percent of their production directly to end users. Service centers represent the other major portion of the distribution network, and

Table 71. Nickel: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 ^{1/}
Mine production	<u>629</u>	<u>663</u>	<u>753</u>	<u>795</u>	<u>770</u>	<u>790</u>	<u>810</u>
Australia	88	77	77	86	77	72	65
Canada	93	125	174	170	164	195	200
U.S.S.R.	170	172	178	172	166	173	175
Other countries	278	289	324	367	363	350	370
Refined production	<u>629</u>	<u>679</u>	<u>737</u>	<u>759</u>	<u>746</u>	<u>780</u>	<u>815</u>
Australia	46	42	39	41	42	45	51
Canada	74	96	112	108	111	142	140
Japan	87	82	89	95	92	94	100
Norway	26	29	36	38	38	45	52
U.S.S.R.	190	192	193	190	188	191	190
Other countries	206	238	268	287	275	263	296
Consumption	<u>649</u>	<u>687</u>	<u>782</u>	<u>775</u>	<u>778</u>	<u>847</u>	<u>878</u>
Germany, Fed. Rep. of	58	63	78	75	77	81	80
Japan	107	115	146	136	127	154	152
U.S.S.R.	138	145	140	138	137	138	140
United States	125	137	141	143	125	148	148
Other countries	221	227	277	283	312	326	358
Market balance ^{2/}	<u>-20</u>	<u>-8</u>	<u>-45</u>	<u>-16</u>	<u>-32</u>	<u>-67</u>	<u>-63</u>
Closing stocks ^{3/4/}	<u>201</u>	<u>182</u>	<u>147</u>	<u>129</u>	<u>123</u>	<u>89</u>	<u>80</u>
Stocks/consumption ratio (number of weeks) ^{5/}	16.1	13.8	9.8	8.6	8.2	5.4	4.9

Sources: World Metal Statistics (London: World Bureau of Metal Statistics), various issues in 1988, and CRU Metal Monitor: Nickel/Chrome/Molybdenum (London: Commodities Research Unit Ltd.), December 1988.

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

^{2/} World production minus world consumption.

^{3/} Total commercial stocks measured at end of period.

^{4/} May not agree with production and consumption data because of differences in coverage; cautious interpretation of these data is also required owing to the fact that 90 percent of stocks are held by a small number of producers.

^{5/} Commercial stocks measured as weeks of consumption.

in case of slackening demand for stainless steel, these centers can be expected to stop buying in order to prevent their inventories from rising. Stainless steelmakers would then be forced to make sharp adjustments in their production schedules.

6. Zinc

From a 1987 average of \$800 a ton, the price of zinc advanced throughout 1988 with only a brief interruption in the third quarter. Record high prices of over \$2,000 a ton were set in the LME in February 1989. Both high grade and special high grade zinc contracts are traded on the LME and cover delivery periods in the future on a daily basis for up to 3 months and on a monthly basis for up to 15 months. The zinc prices in this section refer to the high grade (98 percent pure metal) cash contract, c.i.f. European ports. In support of the special high grade contract, which was introduced in September 1988, European custom smelters decided to abandon, as of January 1, 1988, their practice of announcing a reference good ordinary brand (GOB) European produce price and to rely to a greater extent in the LME quotations as a basis for pricing.

Growth of refined zinc consumption is estimated to have accelerated to about 4 percent in 1988 from 2.7 percent the previous year (Table 72). This increase results mainly from the high level of capital expenditure in many countries and continued growth in the use of galvanized sheet in the construction and automotive industries. The increases in zinc consumption were exceptionally large in North America--about 7 percent in the United States and about 11 percent in Canada. In Japan consumption is estimated to have grown by 4 percent. In Europe, France registered a 16 percent surge in zinc consumption in line with a boom in investment and rising car production; although in the Federal Republic of Germany and Italy there was little change in zinc consumption.

Labor disputes and technical problems in a number of countries contributed to the reduction of world mine output in 1988 by an estimated 4 percent--to the lowest level since 1984. The strikes and production problems in Peru throughout the year reduced mine production by a level nearly 120 thousand tons (19 percent) below the output in 1987; in Canada there was a decrease in mine production of about 8 percent in 1988 following a 20 percent surge in the previous year.

Notwithstanding the decrease in world zinc mine production, world slab zinc output is estimated to have increased by 2 percent in 1988 to a record 7.2 million tons. Canadian output is estimated to be up 15 percent from 1987 level, reinforcing the country's position among the leading producers, whereas little change occurred in zinc slab production in Japan and the U.S.S.R. Australian production is estimated to have fallen 3 percent from the previous year.

Strong demand, coupled with the small increase in slab production, led to a considerable reduction in stocks in 1988. Stocks at the end of

Table 72. Zinc: World Commodity Balance, 1982-88

(In thousands of metric tons)

	1982	1983	1984	1985	1986	1987	1988 ^{1/}
Mine production	<u>6,480</u>	<u>6,630</u>	<u>6,870</u>	<u>7,040</u>	<u>7,030</u>	<u>7,230</u>	<u>6,970</u>
Australia	670	700	660	730	710	780	730
Canada	1,190	1,070	1,210	1,170	1,260	1,500	1,380
U.S.S.R.	1,020	1,030	980	1,000	970	950	970
Other countries	3,590	3,830	4,020	4,140	4,090	4,000	3,890
Slab production ^{2/}	<u>5,980</u>	<u>6,340</u>	<u>6,650</u>	<u>6,840</u>	<u>6,800</u>	<u>7,020</u>	<u>7,180</u>
Australia	300	300	310	290	310	320	310
Canada	510	620	680	690	570	610	700
France	240	250	260	250	260	250	280
Germany, Fed. Rep. of	330	360	360	370	370	380	360
Italy	160	160	170	210	230	250	250
Japan	660	700	750	740	710	670	680
U.S.S.R.	1,050	1,060	1,050	1,050	1,070	1,050	1,050
United States	300	310	330	310	320	340	350
Other countries	2,430	2,580	2,740	2,930	2,960	3,150	3,200
Consumption ^{2/}	<u>5,930</u>	<u>6,270</u>	<u>6,470</u>	<u>6,540</u>	<u>6,710</u>	<u>6,890</u>	<u>7,170</u>
China	260	290	330	350	380	360	380
France	260	270	280	250	260	250	290
Germany, Fed. Rep. of	370	410	430	410	430	450	460
Italy	200	210	210	220	230	250	250
Japan	700	770	780	780	750	730	750
U.S.S.R.	1,050	1,050	1,050	1,000	990	1,010	1,130
United States	800	930	980	960	1,000	1,050	1,120
Other countries	2,290	2,340	2,410	2,570	2,670	2,790	2,890
Stocks ^{3/4/}	<u>760</u>	<u>620</u>	<u>600</u>	<u>570</u>	<u>590</u>	<u>510</u>	<u>440</u>
Stocks/consumption ratio (number of weeks) ^{5/}	6.6	5.1	4.8	4.5	4.6	3.8	3.2

Sources: World Metal Statistics (London, World Bureau of Metal Statistics), various issues in 1988; CRU Metal Monitor: Zinc (London, Commodities Research Unit Ltd.), December 1988; and Lead and Zinc (London, International Lead and Zinc Study Group), various issues, Vol. 28/29, 1988/89.

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

^{2/} The persistent excess of world slab production over consumption suggests an underestimation of consumption (or possibly an overestimation of production).

^{3/} Total commercial stocks measured at end of period.

^{4/} Does not agree with production and consumption data because of differences in coverage.

^{5/} Commercial stocks measured as weeks of consumption.

1988 were estimated to have been sufficient to cover only 3 weeks of consumption compared to traditional coverage of about 5 weeks.

A recovery of mine production largely because of new capacity coming on stream over the next three years in Australia, Brazil, Canada and the United States is projected. Accordingly, a gradual increase in slab production is expected. Consumption in 1989 is not projected to rise much above the level of 1988 as moderate growth in the investment and capital goods sectors is expected to be largely offset by less demand in the automotive and construction sectors. Given the traditional strong demand in the first half of the year, prices will remain particularly sensitive to supply problems and are likely to ease only in the second part of 1989.

7. Lead

Unlike the prices for many other metals, the LME price of lead remained relatively stable--at about \$650 a ton--during 1988 and the early months of 1989. ^{1/} This was close to the end-1987 level although about 10 percent above the average for 1987 and 60 percent higher than the average 1986 price.

Lead consumption, on a rising trend for recent years, is estimated to have grown by 2 percent in 1988 (Table 73). The growth was mainly fueled by strong demand for batteries. Batteries account for 77 percent of end use of lead in the United States, 50 percent in Europe, and 60 percent worldwide. Pigments and compounds make up the second largest use of lead worldwide, accounting for about 14 percent. The gasoline market for lead is declining in most industrial countries and has virtually disappeared in the United States following the introduction of lead-free petrol. New materials have largely eliminated the use of lead for cable sheathing, once its largest single application.

Total U. S. consumption of lead in 1988 remained unchanged from 1987. Consumption was only maintained because the severe winter and summer heat wave in 1988 contributed to a 5 percent rise in shipments of replacement batteries and on account of strong auto sales especially in the second and third quarters of 1988. In Japan, consumption rose by nearly 8 percent not only on account of an increase in shipments of car batteries but also because of the increasing need for batteries in appliances; the construction sector also contributed to the demand expansion in Japan. In Europe new car sales of 13 million units set another record for the fourth year in a row, up more than 4 percent over the previous year. In the United Kingdom demand for lead in the automotive industry was augmented by substantially increased use of lead pipes and sheets. In the Federal Republic of Germany, although battery demand remained nearly unchanged, growth in other lead uses resulted in an overall increase of about 6 percent.

^{1/} Lead is traded on the LME roughly the same basis as copper, aluminum, and zinc. The contract is for 25 metric tons.

Table 73. Lead: World Commodity Balance, 1982-88

(In thousands of tons)

	1982	1983	1984	1985	1986	1987	1988 ^{1/}
Mine production	<u>3.560</u>	<u>3.510</u>	<u>3.440</u>	<u>3.610</u>	<u>3.390</u>	<u>3.420</u>	<u>3.400</u>
Refined production	<u>5.290</u>	<u>5.290</u>	<u>5.450</u>	<u>5.700</u>	<u>5.480</u>	<u>5.630</u>	<u>5.700</u>
Canada	240	240	250	240	260	230	270
China	180	200	200	220	240	240	240
France	210	200	210	220	230	240	250
Germany, Fed. Rep. of	350	350	360	360	370	340	350
Japan	300	320	360	370	360	340	340
United Kingdom	310	320	340	330	330	350	360
U.S.S.R.	800	800	800	810	790	780	800
United States	1,030	960	970	1,050	930	1,030	1,040
Other countries	1,870	1,900	1,960	2,100	1,970	2,080	2,050
Consumption	<u>5.250</u>	<u>5.250</u>	<u>5.500</u>	<u>5.440</u>	<u>5.510</u>	<u>5.580</u>	<u>5.690</u>
China	220	220	220	230	250	240	250
France	200	200	210	210	210	210	220
Germany, Fed. Rep. of	330	320	360	350	360	350	370
Italy	240	230	240	240	240	240	240
Japan	350	360	390	400	390	380	410
United Kingdom	270	290	300	270	280	290	310
U.S.S.R.	810	810	790	800	760	780	790
United States	1,110	1,140	1,190	1,120	1,120	1,210	1,210
Other countries	1,720	1,680	1,800	1,820	1,900	1,880	1,890
Market balance ^{2/}	<u>40</u>	<u>40</u>	<u>-50</u>	<u>260</u>	<u>-30</u>	<u>50</u>	<u>10</u>
Commercial stocks ^{3/4/}	<u>540</u>	<u>512</u>	<u>407</u>	<u>453</u>	<u>402</u>	<u>383</u>	<u>380</u>
Stocks/consumption ratio (number of weeks) ^{5/}	5.3	5.1	3.8	4.3	3.8	3.6	3.5

Sources: World Metals Statistics (London, World Bureau of Metal Statistics), various issues in 1988; CRU Metal Monitor: Lead (London, Commodities Research Unit Ltd.), December 1988; and Lead and Zinc (London, International Lead and Zinc Study Group), various issues, Vol. 28/29, 1988/89.

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

^{2/} World production minus world consumption.

^{3/} Total commercial stocks measured at end-of-period.

^{4/} May not agree with production and consumption data because of differences in coverage.

^{5/} Commercial stocks measured as weeks of consumption.

World mine production, constrained by production problems in Peru and some other countries, is estimated to have fallen marginally in 1988. Peruvian production of lead-in-concentrates fell in 1988 by 37 thousand tons, or more than 18 percent from 1987, largely as a result of a series of labor disputes. Despite a 17 percent jump in Canadian output, world primary production of refined lead increased by only 1 percent. In the United States, the world's largest producer, refined lead output was forecast to have risen by only 1 percent against 11 percent in 1987; little change occurred in the production of refined lead in the other major producing countries. Secondary production of lead, accounting for about 35 percent of total refined production, increased again in 1988. Much of the capacity for secondary lead production is located in the Federal Republic of Germany, the United Kingdom, and the United States. With world production almost matching world consumption, there was little change in world stocks of lead in 1988.

For 1989 a somewhat larger growth of supply is estimated. World automobile sales rose to 34.3 million units in 1988 and are projected to fall to about 33 million in 1989. Mild weather at the beginning of the year in Europe has already exerted pressure on demand and prices. With respect to supply of lead, substantial additions to capacity for primary lead production are not expected even over the medium term, since the low prices of many years have discouraged exploration and development of lead mines and production. In the 1970s, it took 3-5 years to bring a mine on stream, and the need to take environmental concerns into account has increased with time. As a consequence, recycling of lead is likely to become more important for supply over the medium term as has been demonstrated by increases in secondary lead smelters capacity, for example in Canada. However, some rise in lead output might occur in the context of rapid growth anticipated in mine production of zinc with lead as a by-product. Although stocks of lead are low compared with levels of the mid-1980s, the lead market is expected to move toward a growing surplus and prices are expected to weaken during the course of 1989-90.

8. Phosphate rock

Sharply higher food prices in 1988 stimulated demand for and prices of phosphate rock and finished fertilizers. The world index of food prices in U.S. dollars rose by 28 percent compared to 1987, although it remained at only 86 percent of its peak level of 1980 (Table 74). The improvement in food prices was largely the result of the drought in the United States and a resulting decline in world grain stocks. World production of phosphate rock rose by 6 percent in 1988 to an estimated 155 million tons, due to greater domestic use of phosphate fertilizers in the largest consuming nation, the United States, and increased world exports of fertilizers. Increased demand for fertilizers led to a

Table 74. Phosphate Rock and Products: World Production, Exports and Market Prices, 1982-88

	1982	1983	1984	1985	1986	1987	1988
Production of rock (In millions of tons)	<u>128.0</u>	<u>138.9</u>	<u>153.8</u>	<u>149.6</u>	<u>144.5</u>	<u>146.3</u>	<u>155.2</u>
Morocco	17.8	20.1	21.2	20.7	21.2	21.0	24.6
United States	37.4	42.6	48.2	50.8	40.3	41.0	46.0
Other countries	72.8	76.2	83.4	78.1	83.0	84.3	84.6
Exports							
Rock (in million of tons)	<u>43.7</u>	<u>46.4</u>	<u>48.1</u>	<u>46.4</u>	<u>43.5</u>	<u>44.7</u>	<u>45.0</u>
Morocco	14.0	14.7	15.0	14.8	13.7	13.1	13.8
United States	9.2	11.3	10.5	10.3	7.8	8.5	8.2
Other countries	20.5	20.4	22.6	21.3	22.0	23.1	23.0
Phosphate products ^{1/} (In million of tons of P ₂ O ₅)	<u>7.2</u>	<u>8.0</u>	<u>10.1</u>	<u>10.1</u>	<u>9.4</u>	<u>10.8</u>	<u>12.3</u>
Morocco	0.9	1.2	1.3	1.3	1.4	1.7	2.5
United States	3.3	3.5	4.8	4.9	3.8	4.5	5.0
Other countries	3.0	3.3	4.0	3.9	4.2	4.6	4.8
Market prices (in SDRs)							
Phosphate rock (per ton, f.o.b.)							
Morocco	36.4	34.5	37.4	33.4	29.2	24.0	26.6
United States ^{2/}	...	25.5	27.5	28.4	23.0	17.8	18.8
World fertilizer price index ^{3/} (1980=100)	99.1	96.3	103.7	94.0	79.4	72.0	81.3
World food price index ^{4/} (1980=100)	96.8	108.7	112.5	96.0	73.0	67.8	83.4
Market prices (in US\$)							
Phosphate rock (per ton, f.o.b.)							
Morocco	42.4	36.9	38.3	33.9	34.2	31.0	36.0
United States ^{2/}	...	27.3	28.2	28.9	27.0	23.0	25.2
World fertilizer price index ^{3/} (1980=100)	84.1	79.1	81.7	73.3	71.6	71.5	84.0
World food price index ^{4/} (1980=100)	82.1	89.3	88.6	74.9	65.8	67.4	86.1

Sources: U.S. Bureau of Mines for U.S. production; International Fertilizer Industry Associated Ltd. for other production; Fertilizer Economic Studies Limited (FERTECON) for exports; Commodities Division, IMF Research Department for market prices.

^{1/} Phosphoric acid, TSP, MAP and DAP.

^{2/} Average export unit value.

^{3/} Weighted by relative values from 1983-85, based on export volumes and spot prices: phosphate rock, 35.6; phosphoric acid, 20.5; DAP, 33.5; and TSP, 10.4 percent.

^{4/} IMF index of prices of food commodities.

recovery in fertilizer prices, of 17 percent from 1987-88, to a level equal to 84 percent of prices in 1980. 1/

Production of phosphate rock in the United States rose by 12 percent, from 41 million tons in 1987 to an estimated 46 million tons in 1988. Although exports of rock remained level at about 8 million tons, use of the rock by U.S. manufacturers rose about 12 percent to 40 million tons, largely on account of a sharp increase in domestic applications in the first quarter of the year. Despite a 23 percent reduction in acreage planted since 1986--the year when world food prices were at their most recent low--and the mid-1988 drought, use of rock in domestically-applied fertilizers rose from 14 million tons to nearly 19 million tons. As a result of this increase and a continued consolidation of the industry, capacity utilization in U.S. rock mines rose from 63 percent to 79 percent over the 1986-88 period.

Production of phosphate rock in Morocco also recovered, by 17 percent in 1988 to 25 million tons, largely on account of a 47 percent increase in the export of intermediate and finished fertilizers to 2.5 million tons of nutrient (P_2O_5). Sales of phosphoric acid rose 28 percent to 1.8 million tons P_2O_5 , raising utilization of recently expanded plant capacity to 96 percent. Diammonium phosphate (DAP) sales roughly doubled, to 0.3 million tons P_2O_5 . As a result of the improved downstream demand, Morocco raised its contract price for phosphate rock in calendar 1988 to \$36 per ton, from \$31 per ton in the previous year. 2/

World demand for traded phosphates continued to grow in 1988, with a faster rate of growth in exports of products (14 percent, to 12.3 million tons P_2O_5) than in exports of rock (1 percent, to 45 million tons). Product imports by the two largest importing countries, China and India, rose by nearly 50 percent to 2.8 million tons P_2O_5 , in response to increased demand and, in the case of India, a resumption of imports of DAP that followed significant destocking and a cessation of imports in 1987. Increased imports in Asia were offset somewhat by a 5 percent decline in imports to Western Europe, to 3.1 million tons; the decline followed a surge in European imports in 1987 when the SDR prices of fertilizers were at their lowest. There was a sharp displacement of DAP imports from the United States by those from Morocco; U.S. products were less competitive on account of a higher f.o.b. price coupled with a 6.6 percent duty disadvantage in EC countries.

The outlook for phosphate fertilizers is for a continued short-term improvement in demand and prices. Fertilizer applications in the United

1/ An index of phosphate fertilizer prices, weighted by share of fertilizers in world trade: phosphate rock, 35.6; phosphoric acid, 20.5; diammonium phosphate (DAP), 33.5; and triple superphosphate (TSP), 10.4 percent.

2/ Moroccan rock, 70 percent bone phosphate of lime (BPL), f.a.s. Casablanca.

States are expected to rise sharply in 1989, in response to higher food prices and a planned policy to increase acreage for feedgrains. Lower availability of fertilizers for export and a continued steady demand from Asian countries are expected to contribute to real growth in the prices of rock and finished fertilizers. Some reduction in real prices could occur by the early 1990s, however, if there is a large buildup in world grain stocks leading to a cutback in fertilizer demand, or a shortfall in demand by a major importer (caused for example by a monsoon failure or a successful program of fertilizer import substitution).