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February 25, 1987

To: Members of the Committee of the Whole
for the Development Committee

From: The Secretary

Subject: Non-Fuel Primary Commodity Markets in the 1980s

The attached material on non-fuel primary commodity markets in the 1980s is one part of a document to be submitted to the Development Committee and is for consideration at the meeting of the Committee of the Whole scheduled for Wednesday, March 11, 1987. It has been prepared as part of the material requested by the Development Committee for its meeting on April 10, 1987. The material is intended for consideration by the Development Committee under item 1c of the draft agenda. The staff of the World Bank, with the collaboration of the staff of the Fund, is preparing more comprehensive material that focuses mainly on long-term developments and implications for Bank policy. It is envisaged that the two parts would be transmitted as a single document to the Development Committee with a joint covering memorandum. It is the intention to circulate to members of the Committee of the Whole the Bank's material together with a draft of the covering memorandum within a few days as soon as this documentation has been completed. Similarly, the Bank Committee of the Whole would have before it both parts of the document.

Mr. Kaibni (ext. 7721) is available to answer technical or factual questions relating to the attached material.

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Non-Fuel Primary Commodity Markets in the 1980s

Prepared by the Research Department

Approved by Jacob A. Frenkel

February 24, 1987

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I. Introduction

Developments in non-fuel primary commodity markets are especially important for the developing countries. Despite diversification into manufactured exports, these countries remain, for the most part, highly dependent on primary commodities for export earnings. Concern about the consequences of this dependence has traditionally focused on two aspects of the problem. First, fluctuations in the prices of primary commodities, which are wider than those of manufactured goods, are believed to cause serious disruptions to economic development. Second, countries that are heavily dependent on exports of primary commodities are perceived to be at a disadvantage in the pursuit of economic growth because of a secular tendency for real commodity prices to decline. These concerns were temporarily eased during the 1970s when commodity prices, although highly unstable, increased sharply in both nominal and real terms. The turnaround in the market situation since 1980, however, has revived them.

This report analyzes developments in primary commodity markets in the 1980s. Section II outlines developments with respect to commodity prices in the early and mid-1980s. Section III examines the reasons for the weakness in commodity prices in this period. Section IV discusses the implications for commodity prices and export earnings in the late 1980s.

This report is intended to supplement a major study on commodities prepared by the staff of the World Bank with contributions by the Fund staff. The World Bank study focuses on the longer-term outlook and on policy implications.

II. Commodity Prices in the Early and Mid-1980s

Over the period 1980-86, both U.S. dollar commodity prices and real commodity prices have fluctuated around a declining trend (Chart 1). This period has been characterized by relatively low rates of growth in world economic activity, wide fluctuations in the value of the U.S. dollar, decreasing rates of inflation, and relatively high real rates of interest. In addition, petroleum prices have tended to decline since 1981 and fell very sharply in the first half of 1986. While the price declines in commodity prices associated with the 1981-82 recession were largely offset by increases in 1983 and early 1984, the declining trend resumed in mid-1984 and has lasted through 1986 (Table 1). Despite the depreciation of the U.S. dollar in 1985-86, the dollar price of commodities fell in 1986 to a level 14 percent below the 1981-82 recession level and was at its lowest mark since the recession of the mid-1970s. The depreciation of the U.S. dollar has meant that commodity price declines, when measured in terms of the currencies of most other industrial countries and in SDRs, have been much greater than those measured in terms of dollars (Chart 2). In 1985-86 the decline of commodity prices has been greater when measured in real terms than in U.S. dollar terms because of the upward trend in the dollar unit values of manufactured exports associated with the depreciation of the U.S. dollar. Indeed, real commodity prices in 1986 were at their lowest level since the depression of the 1930s.

Table 1. Non-Fuel Primary Commodity Prices in Relation to Export Unit Values of Petroleum and Manufactures, 1960-86

(Indices: 1980=100)

	Nominal Prices in U.S. Dollars					Real Commodity Prices 4/		
	Commodities 1/		Export unit values			World	Industrial countries	Developing countries
	World	Industrial countries	Developing countries	Petroleum 2/	Manufactures 3/			
1960-69	33.2	33.9	30.5	5.4	31.0	107.2	109.5	98.5
1970-79	63.4	64.4	61.6	28.3	58.0	109.8	112.4	105.0
1980-86	84.6	85.6	83.5	90.2	93.9	90.4	91.4	89.2
1970	37.1	37.4	33.5	5.4	34.8	106.6	107.4	96.1
1971	36.2	37.6	31.9	6.4	36.6	98.8	102.9	87.1
1972	38.8	41.1	36.1	7.5	39.6	98.0	103.8	91.1
1973	63.1	69.7	55.4	10.5	46.5	135.8	150.0	119.2
1974	76.3	80.3	71.4	34.2	56.0	136.3	143.5	127.5
1975	63.9	67.7	59.2	35.9	63.5	100.7	106.7	93.3
1976	69.3	69.8	68.8	38.2	63.7	108.9	109.6	108.1
1977	76.7	69.9	84.9	41.7	69.2	110.8	100.9	122.6
1978	77.8	75.7	80.4	41.9	79.8	97.5	94.8	100.7
1979	94.5	94.3	94.8	61.1	90.6	104.3	104.1	104.6
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	89.9	92.7	86.5	109.8	95.3	94.4	97.3	90.8
1982	80.6	82.7	77.9	105.1	93.1	86.6	88.9	83.7
1983	85.6	87.6	83.3	93.1	90.2	94.9	97.1	92.3
1984	87.4	88.1	86.7	90.8	87.2	100.3	101.0	99.4
1985	76.0	76.4	75.6	86.9	88.1	86.3	86.7	85.8
1986	72.9	71.4	74.5	45.6	103.5	70.4	69.0	72.0
1984 I	91.0	91.3	90.6	91.3	89.2	102.0	102.4	101.6
II	92.7	93.7	91.6	91.2	89.4	103.7	104.8	102.4
III	84.8	85.6	83.8	90.8	86.0	98.6	99.6	97.5
IV	81.3	81.6	80.9	90.1	84.3	99.4	96.8	95.9
1985 I	79.1	79.5	78.5	88.8	82.2	96.3	96.8	95.6
II	77.7	78.0	77.2	86.7	85.7	90.6	91.0	90.1
III	73.0	73.5	72.4	85.9	89.6	81.5	82.0	80.8
IV	74.4	74.5	74.3	86.2	94.9	78.4	78.5	78.2
1986 I	77.7	75.7	79.9	61.1	100.5	77.3	75.4	79.5
II	74.5	73.8	75.1	40.3	104.0	71.6	71.0	72.2
III	69.8	68.1	71.8	36.5	104.5	66.8	65.2	68.7
IV	69.5	68.0	71.3	43.0	105.0	66.2	64.8	68.0

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

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

2/ Unit value for petroleum exports of major fuel exporting countries.

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

4/ Commodity prices deflated by unit values of manufactures.

CHART 1

NON-FUEL PRIMARY COMMODITY PRICES, 1980-86

(Indices: 1980 = 100)





CHART 2

NON-FUEL PRIMARY COMMODITY PRICES IN TERMS OF SDRs AND FIVE MAJOR CURRENCIES, 1980-86

(Indices: 1980 = 100)

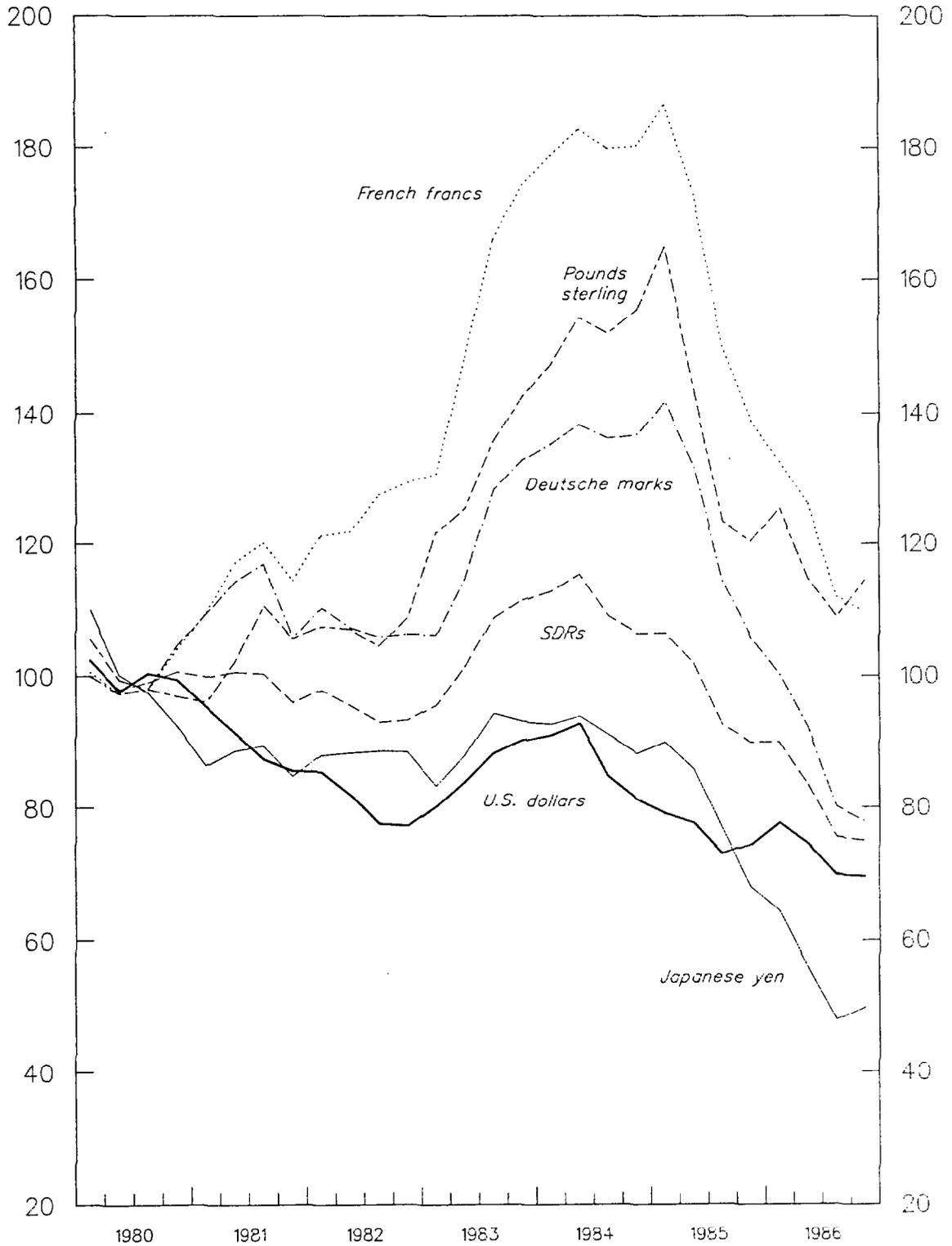
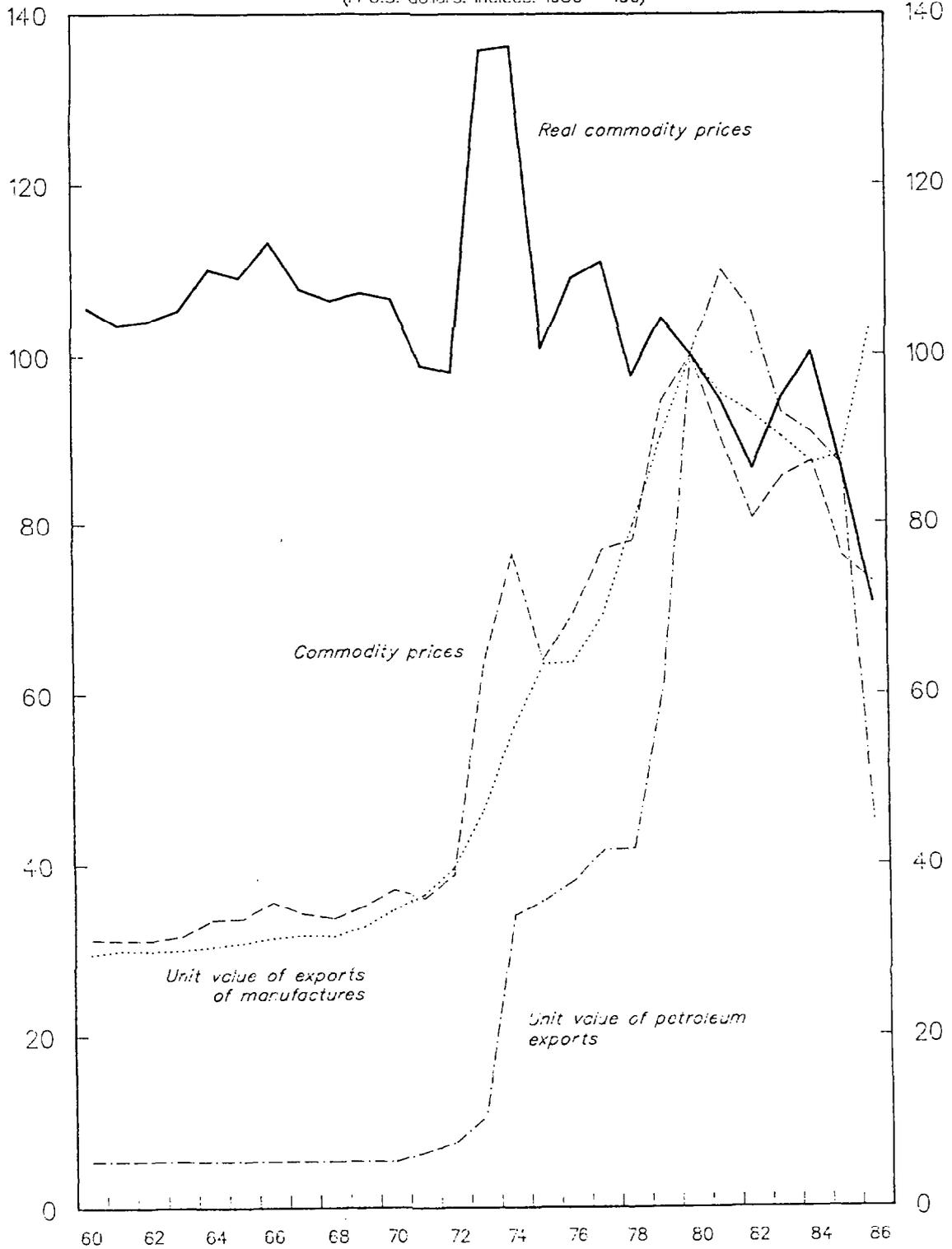




CHART 3

NON-FUEL PRIMARY COMMODITY PRICES AND UNIT VALUES OF PETROLEUM AND MANUFACTURES, 1960-86

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





The weakness of commodity prices during the 1980s is in marked contrast with the buoyancy of prices in the 1970s (Chart 3). After nearly two decades of relative stability, commodity prices in terms of dollars nearly doubled from 1972 to 1974, and in real terms they rose by 39 percent. Several factors coincided to bring about this sharp rise. Important among them were a high rate of economic growth in industrial countries, rapidly rising petroleum prices, and slow growth of agricultural production. The sharp increase in both dollar and real commodity prices was reversed during the short, but severe, recession of 1975. In that year, dollar prices declined by 16 percent and real prices fell by 26 percent. The resumption of economic growth in 1976 and a sharp supply related increase in beverage prices provided conditions that caused dollar commodity prices to increase by 20 percent and real commodity prices by 10 percent from 1975 to 1977. Although dollar commodity prices continued to increase thereafter, real prices declined, and by 1980 they had nearly returned to their 1971-72 levels.

III. Factors Underlying Commodity Price Movements

The complexity of factors that influence commodity prices often render broad generalizations concerning the underlying causes inadequate, except when events of overriding importance occur, such as the sharp drop in economic activity in industrial countries during the world recessions of 1975 and 1981-82. In periods of moderate change in aggregate demand, such as in 1985-86, other factors may assume greater importance. Nevertheless, there is a general consensus that the weakness of commodity prices throughout the early and mid-1980s can be ascribed mainly to relatively low rates of growth in economic activity in the industrial countries (the major markets for primary commodities), a reduction in the intensity of use of commodities and, perhaps most significantly, abundant supplies of commodities. In the case of some agricultural markets, changes in commodity-specific policies of industrial countries have also had the effect of increasing supplies and competition for markets. Other factors, including rates of inflation, exchange rate changes, and interest rates, have also influenced commodity prices, at least when measured in nominal dollar terms.

1. Economic activity and trends in consumption of commodities

Industrial countries account for approximately 80 percent of world imports of non-oil primary commodities (Table 2), and economic activity in these countries is the variable most consistently confirmed by economic studies as having a major influence on commodity prices. ^{1/} A deceleration in the rate of growth of economic activity in the 1980s compared with the 1970s has contributed to the weakness of commodity

^{1/} Industrial countries also account for a high proportion of world exports of non-fuel primary commodities (nearly 70 percent).

Table 2. Trade in Non-Oil Primary Commodities and Manufactures
(In percent)

	Non-Oil Primary Commodities		Manufactures	
	Imports	Exports	Imports	Exports
Industrial countries	79	68	74	87
United States	12	19	14	14
Europe	51	33	53	58
Japan	14	1	3	12
Other	2	15	4	3
Developing countries	21	32	26	13
Non-oil developing countries	16	29	19	12
Oil exporting countries	5	3	7	1

Source: IMF, Staff Studies for the World Economic Outlook (April 1986), p. 150. Averages for years 1979-81 based on the United Nations, International Trade Statistics, Series D. Does not include the U.S.S.R. and some Eastern European countries. Some semi-processed primary commodities, such as copper, tin, and aluminum concentrates, are regarded as primary commodities, while all the other processed or semiprocessed goods are regarded as manufactures.

prices, particularly with reference to commodities used as industrial raw materials. Growth in real GNP in the seven major industrial countries over the period 1980-86 averaged 2.2 percent per annum compared with an average of 3.3 percent in the 1970s, while growth in industrial production averaged 1.8 percent per annum compared with 3.4 percent, and growth in gross domestic investment averaged 2.1 percent per annum compared with 3.5 percent (Table 3). Furthermore, the recession of the early 1980s was more prolonged than the recession of the mid-1970s and the recovery was weaker. In 1983-86, growth in real GNP in the seven major industrial countries averaged 3.4 percent per annum compared with 4.7 percent in 1971-73 and 4.3 percent in 1976-79.

By 1985-86 the recovery in world economic activity following the 1981-82 recession had weakened considerably. Annual growth in industrial production in the seven leading industrial countries fell from 8.5 percent in 1984 to 2.8 percent in 1985 and 1.0 percent in 1986. Most of this slowdown is attributable to reductions in the growth of industrial production in the United States and Japan, with growth rates in European

Table 3. World Economic Activity, Commodity Consumption, and Commodity Prices, 1970-86

(Annual percentage changes)

	Economic Activity in Seven Industrial Countries			Consumption of Commodities Index <u>1/</u>	Commodity Prices	
	Real GNP	Industrial production	Domestic fixed investment		Nominal (In U.S. dollars)	Real
1970	2.2	0.9	1.4	2.5	5.3	-0.7
1971	3.2	1.8	5.8	3.7	-2.6	-7.3
1972	5.2	7.5	8.2	4.0	7.4	-0.8
1973	5.8	9.0	7.7	6.0	62.5	38.5
1974	0.1	-1.0	-5.5	-3.2	20.9	0.4
1975	-0.5	-8.3	-7.2	0.0	-16.2	-26.1
1976	5.0	8.9	5.8	5.1	8.5	8.1
1977	4.0	5.3	7.5	2.0	10.7	1.7
1978	4.6	4.9	6.9	7.4	1.4	-12.0
1979	3.4	4.9	4.7	3.1	21.4	7.0
1980	1.1	-0.1	-2.2	-1.6	5.8	-4.1
1981	1.6	0.5	0.1	1.7	-10.1	-5.6
1982	-0.6	-4.0	-5.0	2.1	-10.4	-8.3
1983	2.8	3.8	4.0	1.4	6.2	9.6
1984	5.0	8.5	9.5	3.4	2.2	5.7
1985	3.0	2.8	5.7	0.6	-13.0	-13.9
1986	2.6	1.0	2.9	2.5	-4.2	-18.6

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

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

countries having remained sluggish through the mid-1980s. European countries and Japan are more dependent on imported raw materials than is the United States; European countries account for approximately one half of world imports of non-fuel primary commodities, and Japan accounts for nearly 15 percent. The uneven expansion of demand among industrial countries after the 1981-82 recession was different from the pattern observed in the previous decade, when expansions and contractions among industrial countries were more synchronous. The relatively sluggish recovery of Western European countries since 1982 may help to explain the low growth in world consumption of commodities.

The evolution of economic activity in the industrial countries is most relevant in explaining movements in prices of metals and other raw materials used in industry, while movements in prices of food and beverages are better explained by supply factors. Demand for metals and other raw materials tends to be closely related to movements in the business cycle of industrial countries, whereas the demand for food and beverages responds less readily to changes in economic activity. On the other hand, supplies of agricultural commodities, which are susceptible to the vagaries of weather, are more unstable than supplies of metals. Nevertheless, although supplies of metals may have been held in check in the 1980s to a greater extent than those for agricultural commodities, the decline in the price of metals since 1980 has matched that in the price of food commodities. A dominant factor behind the 35 percent decline in prices of metals has been the sluggish performance of metals consumption under conditions of excess capacity for the industry as a whole. Consumption of metals was no higher in 1986 than in 1979 despite a 13 percent increase in industrial production in industrial countries, as any increase deriving from the growth in economic activity has been just sufficient to offset savings in the intensity of use of metals brought about by changes in technology and in consumer preferences. Year-to-year movements in consumption of metals, however, have continued to show the historic sensitivity to industrial activity (Table 4).

The increasing importance of services in economic activity has contributed to observed declines in the use of raw materials in relation to GNP. However, even within the industrial sector the development of improved, lighter-weight products from new materials and of synthetic substitutes has reduced the relative importance of raw materials in the final product. Two major events have led to expanded research and development spending with the aim of devising ways to conserve resources and to develop substitutes. First, there was the general concern over the depletion of natural resources in the 1970s that was associated with the high real prices of that period. Second, there was the sharp increase in petroleum prices. In addition, the miniaturization of electronic components that developed with space technology may also have contributed to a shift to smaller and lighter consumer products. The influence of these developments on the demand for raw materials is important from a long-term prospective with effects spread over a number of years and thus cannot be seen as a major factor in the recent sharp decline in commodity prices. With the prices of the 1970s no longer being seen as a useful yardstick for future investment, the motivation for natural resource conservation is likely to be weaker in the years to come than it has been recently.

2. Supply of commodities

Supply factors have generally tended to reinforce demand factors during the two commodity price cycles surrounding the 1975 and 1981-82 recessions. Record agricultural crops and peak capacity for metals reinforced the impact of the 1981-82 recession on commodity prices. Acreage reduction programs, combined with drought in the United States and adverse weather elsewhere, reinforced the influence of economic

Table 4. Movements in Commodity Prices and Related Economic Indicators, 1980-86

(Annual percentage changes)

	1980	1981	1982	1983	1984	1985	1986
Non-fuel primary commodity prices:							
In U.S. dollars	5.8	-10.1	-10.4	6.2	2.2	-13.0	-4.2
Food commodities	(8.6)	(-3.2)	(-15.2)	(8.8)	(-0.8)	(-15.5)	(-12.0)
Beverages	(-12.6)	(-20.7)	(0.4)	(8.2)	(16.1)	(-11.7)	(15.3)
Raw materials	(8.7)	(-12.5)	(-4.3)	(1.8)	(7.3)	(-14.9)	(0.3)
Metals	(9.5)	(-15.2)	(-11.8)	(4.9)	(-5.5)	(-6.1)	(-6.0)
In SDRs	5.0	-0.7	-4.3	9.7	6.5	-12.2	-17.1
Real 1/	-4.1	-5.6	-8.3	9.6	5.4	-13.9	-18.6
Unit value of petroleum exports (in U.S. dollars)	63.6	9.8	-4.3	-11.4	-2.4	-4.3	-47.6
Unit value of manufactured exports (in U.S. dollars)	10.4	-4.7	-2.3	-3.1	-3.3	1.0	17.5
Domestic prices in seven industrial countries:							
Consumer price index (unadjusted)	12.0	9.9	7.0	4.4	4.4	3.8	2.0
GNP deflator (unadjusted)	9.3	8.7	6.9	4.5	3.9	3.5	3.1
Consumer price index (in U.S. dollars)	12.1	2.7	0.0	1.6	0.4	2.5	16.5
GNP deflator (in U.S. dollars)	9.4	1.5	-0.1	1.8	-0.1	2.3	17.9
Economic activity in seven industrial countries:							
Real GNP	1.1	1.6	-0.6	2.8	5.0	3.0	2.6
Industrial production	-0.1	0.5	-4.0	3.8	8.5	2.8	1.0
Domestic fixed investment	-2.2	0.1	-5.0	4.0	9.5	5.7	2.9
World consumption of commodities: 2/							
Index of consumption	-1.6	1.7	2.1	1.4	3.4	0.6	2.5
Food commodities	(-2.2)	(3.5)	(4.1)	(0.8)	(2.1)	(0.7)	(4.2)
Beverages	(1.7)	(2.4)	(2.0)	(0.6)	(3.1)	(-0.8)	(-0.2)
Raw materials	(0.7)	(0.2)	(2.8)	(2.3)	(4.6)	(4.1)	(1.9)
Metals	(-3.6)	(-1.9)	(-3.3)	(3.2)	(6.2)	(-1.1)	(0.7)
World supply of commodities: 2/							
Index of production	0.2	3.0	-0.8	-0.5	7.6	1.2	-0.3
Food commodities	(-1.0)	(4.1)	(5.0)	(-3.8)	(7.9)	(1.7)	(2.8)
Beverages	(3.8)	(9.4)	(-13.3)	(5.6)	(10.1)	(3.1)	(-8.7)
Raw materials	(-0.7)	(1.6)	(0.3)	(2.1)	(7.5)	(-0.4)	(-0.7)
Metals	(1.5)	(-0.9)	(-6.6)	(1.1)	(5.2)	(0.9)	(-1.3)
Index of supply 3/	-0.4	3.1	1.6	1.5	4.8	2.3	2.0
Food commodities	(-0.9)	(3.8)	(5.6)	(-1.0)	(4.7)	(4.0)	(5.2)
Beverages	(5.5)	(12.2)	(-2.0)	(1.0)	(4.9)	(1.7)	(-1.9)
Raw materials	(-1.0)	(0.4)	(0.6)	(3.7)	(5.5)	(2.7)	(1.0)
Metals	(-1.6)	(-0.2)	(-3.6)	(5.0)	(4.6)	(-1.1)	(-1.8)
Index of closing stocks	5.8	15.6	10.9	-9.4	10.3	13.9	3.0
Food commodities	(1.8)	(9.8)	(17.0)	(-16.0)	(21.9)	(23.1)	(13.1)
Beverages	(24.1)	(33.8)	(-8.7)	(-7.4)	(-3.3)	(19.6)	(-13.4)
Raw materials	(1.9)	(10.3)	(5.3)	(-0.5)	(32.5)	(6.7)	(-4.2)
Metals	(5.0)	(16.6)	(19.4)	(-1.2)	(-12.5)	(-7.6)	(-8.6)

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

1/ Index of dollar commodity prices deflated by the index of dollar unit values of manufactured exports.

2/ Overall indices constructed using the same weights for the indices of individual commodities as in the overall price index. Commodity coverage of index of consumption is less comprehensive than coverage of indices relating to supply.

3/ Production plus beginning-of-year stocks.

recovery on commodity prices in 1983 and early 1984. This pattern was broken after mid-1984, a period characterized worldwide by consecutive years of exceptionally large agricultural crops coinciding with decelerating economic growth in industrial countries.

As noted above, supply has a dominant influence on prices of food and beverages because supply is subject to erratic variations caused chiefly by changing weather patterns while demand is relatively stable. The growth in production for food commodities in 1984 was of the order of 8 percent, and modest increases were posted in 1985 and 1986 (Table 4). 1/ This pattern followed a 4 percent drop in production in 1983, when adverse weather in many regions of the world, in part linked to a major weather disturbance ("El Niño"), coincided with the payment-in-kind (PIK) agricultural program in the United States, to effectively reduce supplies and put upward pressure on prices of agricultural commodities.

The large increase in food production in 1984 was accompanied by substantial increases in production of beverages (10 percent) and agricultural raw materials (7.5 percent). With regard to prices of agricultural raw materials, which respond more than food commodities to changes in economic activity, supply had an especially large impact during 1984-86, particularly because of the large increase in cotton production. 2/

Although these production figures are indicative of the sources of the supply increases that occurred in 1984-86, an examination of the behavior of stocks shows more clearly the extent to which excess

1/ For most agricultural crops, data on production, stocks, and consumption is collected on the basis of crop years beginning during the year specified in the text; for example, crop year 1984/85 is referred to as 1984 in the text. The crop year has been associated with the earlier calendar year for analytical purposes because in most cases the bulk of the crop is harvested early in the crop year and market prices in preceding months are very much influenced by expectations regarding the size of the crop.

2/ In 1986, there were two major exceptions to the general increase in agricultural production: coffee and cotton. A severe drought in Brazil in late 1985 reduced the 1986 Brazilian coffee harvest to about 40 percent of its usual level. The anticipation of this low crop led to rapidly rising coffee prices in the last quarter of 1985 and the first quarter of 1986. Coffee prices in U.S. dollars in the first quarter of 1986 were 67 percent above the level in mid-1985. However, with normal weather returning to Brazil in 1986 and the removal of the export quotas of the International Coffee Organization, coffee prices by the end of 1986 fell to the level existing prior to the Brazilian drought. Cotton prices fell with the record 1984 world crop, followed by a further large crop in 1985. However, in 1986 the U.S. crop was much reduced by adverse weather, and China by this time had succeeded in directing some of its productive capacity away from cotton. Prices of cotton in December 1986 were 45 percent above the low level of August 1986.

supplies were generated during that period. The index of closing stocks for all commodities increased by nearly 30 percent in the three-year period from 1983 to 1986. Contributing to this increase, was the very large buildup of stocks of food commodities, which are estimated to have increased by nearly 70 percent. Stocks of agricultural raw materials increased by 33 percent in 1984 alone, largely because of increases in stocks of cotton. Following a further increase of 7 percent in 1985, however, stocks of agricultural raw materials fell about 4 percent in 1986. If stocks are added to production in order to derive a total supply indicator, total supplies of food commodities rose by a cumulative 14 1/2 percent from 1983 to 1986, the largest three-year increase since at least 1960, the earliest period for which this indicator is available.

The unusually large increase in supplies across a broad range of agricultural commodities suggests the possibility of some common causes. Although generally favorable growing conditions have prevailed during the years 1984-86, several other factors may have contributed to the general increase in agricultural supplies. First, prices of fertilizer declined in real terms by about 30 percent from 1980 to 1985-86. Second, in industrial countries, domestic producer prices were generally maintained well above world market prices, while in many developing countries producer prices were increased, albeit from low levels, in a movement towards pricing policies that are more in line with market fundamentals. Third, agricultural production in recent years responded with a lag to the high prices prevailing in earlier periods; in particular, large increases in annual crops of such commodities as grains, soybeans, and cotton are likely to have been in response to the high prices of 1983-84, as well as to larger production capacity generated by the high prices prevailing in 1979-80.

Changes in production capacity resulting from investment decisions made in earlier years can have an important influence on commodity prices. However, while medium-term cycles of interaction between prices and production capacity exist in many commodity markets, they are sometimes obscured by the influence of short-term factors. The length of the cycles varies depending on the gestation lag between investment decisions and the generation of new capacity. For food commodities, capacity has been observed to respond to prices in earlier years with a mean lag of about four years; for agricultural raw materials, a lag of five years; and for both beverages and metals, a lag of seven years. ^{1/} These lags may partially explain the large increase in agricultural supplies in 1984 as the previous peak in real prices for food commodities was 1980; for agricultural raw materials, the peak was 1979; and for beverages, 1977. For metals, high consumption growth in the early 1960s and the related

^{1/} K. Chu and T. Morrison "World Non-Oil Primary Commodity Markets: A Medium-Term Framework of Analysis," International Monetary Fund (Washington), Staff Papers, Vol. 33 (March 1986), pp. 139-184.

high prices in the late 1960s and early 1970s stimulated investments in production with the result that additional capacity was coming on stream just about the beginning of the 1981-82 recession. Even though metal capacity appears to have reached a peak in the early 1980s and thereafter has leveled off or has grown very slowly, existing capacity is in excess of low consumption requirements associated with stagnant demand. This factor has exerted the dominant depressing effect on the metals markets in the 1980s.

With the coming on stream of additional capacity, large stocks of metals accumulated during the 1981-82 recession as consumption fell by roughly 5 percent and prices of metals dropped by 25 percent. Against a basically weak demand situation, production has subsequently been maintained at levels significantly below capacity. In 1982, there was a sharp decrease in production, resulting in idling of capacity, particularly in North America, and the lower level of production was maintained in 1983. Much of the decrease in output was reversed in 1984 when industrial production, and consequently demand for metals, increased rapidly, notably in the United States and Japan. However, no increase in metals production was recorded in 1985, and a small reduction is estimated for 1986.

Beginning in 1983, stocks of metals have decreased in each successive year. Nevertheless, the existence of substantial excess capacity, which could be brought into operation if demand and prices increased, has been an important depressing factor in the market for metals in the 1980s. The announcement of new mining projects and the expansion of existing projects despite the prevailing low prices, has partly offset the effects of the idling or abandoning capacity. In addition, many metal producing companies have introduced cost saving practices. In 1986, for example, the U.S. copper industry obtained a new labor contract that provides for a temporary reduction in nominal wages of about 20-25 percent and much lower benefits for workers. This adaptation by metal producing companies has meant a higher level of production than would otherwise have been forthcoming.

The gestation lag of new capacity in response to an increase in prices is probably different from the timing of the response of capacity to a price decrease. In general, reductions in capacity can take place more quickly than additions of new capacity, e.g., by taking land out of production or by closing mines. The more common response, however, appears to be a leveling off of capacity in response to lower prices, which eventually leads to upward pressure on prices as demand increases over time. For metals, this leveling off phase began in the early 1980s, but for many agricultural commodities the effects of recent price declines on supply capacity are not yet clearly visible.

The accumulation of large stocks of agricultural commodities, particularly cereals, since the bumper crop of 1984 has led governments in industrial countries to re-examine their agricultural policies. In

particular, the 1985 U.S. farm bill attempts to make U.S. farm policy more market-oriented and to reverse some of the effects of previous policy that had tended to make U.S. agricultural products less competitive in world markets. Because of the importance of the United States in the world markets for a number of agricultural commodities, its price support programs have tended to provide floors for world market prices. The lowering of the price supporting "loan rates" (the prices used by the Commodity Credit Corporation to determine the value of stocks of crops held as collateral against loans to farmers) for cereals, soybeans, and cotton during 1986 had an important effect on world market prices for these commodities. The accumulation of surpluses of agricultural commodities in the European Communities also contributed to the intensification of competition for markets.

3. Other factors

Inflation in industrial countries influences nominal commodity prices by affecting both production costs and the prices of substitutes. There has been a marked deceleration in the rates of inflation in industrial countries in the 1980s. The rate of increase in consumer prices in the seven major industrial countries declined from 12 percent in 1980 to 2 percent in 1986. A similar movement occurred in the rate of increase in the GNP deflator for the seven countries, which declined from over 9 percent in 1980 to 3 percent in 1986. When these measures of inflation are converted to U.S. dollar terms to take account of the depreciation of the U.S. dollar in the 1970s and the appreciation of the U.S. dollar in the early 1980s, they show an even greater deceleration of inflation. The average annual increase of the GNP deflator for the seven countries, measured in U.S. dollar terms, was 1 percent in the period 1981-85, whereas it averaged 10 percent in the period 1972-80. However, this measure of inflation increased to nearly 18 percent in 1986, on account of the large depreciation of the U.S. dollar in 1986.

While the sharp decline of 48 percent in petroleum prices in 1986 has had a marked influence on inflation generally, it also has affected commodity prices more directly through its effects on production and transport costs as well as on the prices of petroleum-based synthetic substitutes for primary commodities, in particular for cotton, jute, and natural rubber.

The low inflation environment in the 1980s and the outlook for low commodity prices, combined with historically high real rates of interest, have weakened the speculative demand for primary commodities. This is in marked contrast with the situation in the 1970s, when high inflation, negative real rates of interest, and generally increasing commodity prices resulted in a sharp rise in speculative demand not only for precious metals--a traditional hedge against inflation--but also for a number of other commodities.

The large appreciation of the U.S. dollar in the years 1981-82 was a factor contributing to the sharp decline in nominal dollar commodity prices during those two recession years. ^{1/} During subsequent years, however, commodity prices have moved in directions opposite to what would be expected from dollar exchange rate movements alone. In 1983-84, the dollar continued to appreciate as dollar commodity prices increased, and since March 1985 the dollar has depreciated substantially while dollar commodity prices have dropped sharply. The influence of other factors has more than offset the influence of exchange rate movements on commodity prices in terms of U.S. dollars. This means, in particular, that in the absence of the depreciation of the dollar in 1985-86, these other factors would have caused an even sharper decline in dollar commodity prices.

Interest rates influence commodity prices through the cost of holding stocks as well as more indirectly through their effects on economic activity. Both stockholding and economic activity are, of course, affected by a range of other factors, thereby obscuring the separate influence of interest rates. It is not too surprising, therefore, that empirical studies have generally not obtained a strong relationship between interest rates and commodity prices.

Historically high real interest rates during the 1980s have been advanced as a cause for commodity prices being weaker than during the 1970s, when low or negative real interest rates prevailed. This inverse relationship seemed apparent in the early 1980s, when a sharp increase in interest rates, which peaked in 1981-82, coincided with a large decline in commodity prices. The relationship also held in the subsequent year as the recovery in commodity prices in 1983 was accompanied by a fall in interest rates in that year. However, the decline in interest rates in the period 1984-86 coincided with a further weakening of commodity prices.

4. Overview

The mid-1970s saw a re-emergence of the theme of classical economics that the long-run trend of raw material prices is rising because of limited supplies of natural resources, in the face of growth in population and capital. However, in the wake of the decline in prices in the 1980s, along with productivity growth and increasing use of synthetic materials, there has been renewed emphasis on the hypothesis of declining commodity prices in real terms over the long term. The evidence on this question is conflicting. While there clearly have been extended periods during which the real commodity prices have moved persistently either downwards and upwards, the evidence in favor of a persistent long-run downward trend is less convincing.

^{1/} Various analyses have suggested, however, that any impact on real commodity prices resulting from a change in the U.S. dollar exchange rate is likely to be weak. See IMF World Economic Outlook (April 1985), "Supplementary Note 3, Primary Commodity Prices and Prospects," pp. 134-138.

It would appear that the sharp declines in non-fuel primary commodity prices in the early and mid-1980s can be accounted for by mainly short-term and medium-term factors. These include the unusually sharp increases in the real prices of both non-fuel primary commodities and petroleum in the 1970s, which resulted in increased production capacity. Although this type of cycle is not new, the amplitude of the price and supply movements in the 1970s and 1980s appears to be especially large in comparison with the rest of the post-war period. In the context of the last 30 years, real commodity prices in the early 1970s were historically high, leading to large investment in primary commodity production. The adjustment to lower prices in the 1980s represents a correction of existing market imbalances. Over the medium-term there should be some recovery in prices as the imbalances resulting from sluggish economic growth and excess supplies are corrected.

IV. Implications and Outlook

1. Commodity prices in the late 1980s

Although some recovery in commodity prices is expected over the medium term, the demand and supply factors tending to have a short-term influence on commodity prices are not expected to provide any impetus to price increases in 1987. Industrial production is projected to be only marginally higher than in 1986 and supplies of most commodities to remain high. Growth in real GNP in 1987 in the seven major industrial countries is projected at 2.7 percent, only marginally above the 2.6 percent estimated for 1986 and not enough to result in an upturn in the prices of agricultural raw materials and metals. Because of the continued existence of large stocks and active competition for export markets, prices of food commodities are expected to remain weak, while the recovery of coffee production is expected to further weaken coffee prices, the most important component of the price index for beverages. As a result of these factors, in 1987 the overall index of commodity prices measured in terms of U.S. dollars is expected to remain near the low level prevailing at the end of 1986, that is, about 2 percent below the 1986 average.

There is expected to be, however, considerable disparity in the movement of prices for different commodities and of price indices for groups of commodities. Prices of agricultural raw materials as a group are projected to be 7 percent higher than the average for 1986; prices of metals, 4 percent higher, prices of food commodities, 6 percent lower; and prices of beverages, 15 percent lower. These projections are made on the assumption that the U.S. dollar exchange rates remain unchanged from the rates prevailing in mid-February 1987.

Projections of year-to-year movements in commodity prices are subject to a considerable margin of error. At the present time, with reference to projections for 1987, four areas of uncertainty merit special attention. First, should competition for export markets intensify further, food

prices, particularly prices for cereals, could fall more sharply in 1987 than suggested above. Second, if the members of the International Coffee Organization continue to have difficulty establishing quotas on exports of coffee and if weather conditions remain favorable in Brazil, coffee prices could fall further than presently indicated. Third, the generally low level of metal stocks indicate a short-term market vulnerability to supply disruption that could temporarily increase prices. Fourth, any changes in the exchange rates of the U.S. dollar in terms of other currencies from those assumed in the current projections would be expected to affect the dollar prices of commodities inversely, although probably proportionately less than the changes in the exchange rates of the dollar.

Over the period 1988-89 modest increases of about 5 1/2 percent per annum are projected in the overall non-fuel commodity price index in terms of U.S. dollars. However, for non-oil developing countries the projected increases are only around 4 1/2 percent because of the commodity mix of exports (beverages are important, whereas cereals are relatively unimportant). Given that these rates of increase are larger than the projected rates of increase for unit values of manufactured exports (about 3 percent), some increase in real commodity prices is indicated. These projections are made by aggregating price projections for 34 individual commodities; the price projections for the individual commodities are made on the basis of an assessment of relevant supply and demand factors affecting each commodity. The expected rise in the overall commodity price index is largely attributable to a recovery in the prices for food commodities. This is expected to be the consequence of the gradual working down of the exceptionally large stocks of these commodities as world production dips below world consumption in this period. Such a result depends, to a considerable degree, on the success of governments in the industrial countries in carrying out announced intentions to cut back on programs that encourage the production of food commodities, in particular cereals, oilseeds, and sugar. Slow growth in demand, continued cost reduction in production, and the persistence of under-utilized capacity are likely to constrain the recovery of dollar prices of most metals and agricultural materials, so that only small increases can be expected in prices for these commodities in real terms. Real prices of beverages, with the exception of tea, are projected to fall because of supply pressures.

2. Export earnings of developing countries

For the purpose of analyzing trends in export earnings, developing countries may be divided into two broad groups, fuel exporting countries and non-fuel exporting countries; the latter group may be conveniently sub-divided into countries exporting predominantly primary products and those exporting mainly manufactures. On average, for the period 1980-86, fuel exporting countries accounted for 43 percent, and non-fuel exporters for 57 percent, of the exports of developing countries. Among the non-fuel exporters, countries exporting predominantly primary products accounted for 24 percent and those exporting predominantly manufactures for 33 percent. Although exporters of primary products thus account for

a smaller proportion of the exports of developing countries than either exporters of fuels or manufactures, their importance is especially significant because of the large number of countries in this group. 1/

Over the period 1980-86, total export earnings of developing countries exporting mainly primary products generally fluctuated in line with economic activity in the major industrial countries. After rising sharply in 1979 (28 percent) and 1980 (23 percent), earnings fell, in the wake of the global recession, by 4.5 percent in 1981 and by 8.5 percent, in 1982 (Table 5). With the pickup in industrial activity in 1983, export receipts rose by 3.4 percent, followed by a sharp increase of nearly 11 percent in 1984. As the growth of economic activity slowed in 1985 and 1986, export earnings fell by 3 percent in 1985 and by a further 1 percent in 1986. Because of the depreciation of the U.S. dollar, the magnitude of the 1985-86 decline is significantly greater when values are expressed in terms of SDRs: export earnings declined by 16 percent over this two-year period.

These movements were dominated by fluctuations in international primary product prices. From 1980 through 1986 the cumulative decline in the unit values of exports of developing countries relying mainly on exports of primary products was 25 percent in terms of U.S. dollars (15 percent in terms of SDRs). The decline in export unit values of countries relying mainly on exports of food and beverages was 21 percent, and the decline for countries relying mainly on exports of agricultural raw materials and metals was 30 percent. Prices fell sharply in the recession of 1981-82 and again in 1985. By contrast, the developing countries exporting predominantly primary commodities were able to increase the aggregate volume of exports every year except in 1986. Exporters of food and beverages increased their export volumes on average by 7 percent per annum. The overall export volumes of countries exporting agricultural raw materials and metals were less buoyant owing to production cutbacks in response to low prices; the volume increase was less than 1 percent on average per annum.

In addition to the fluctuations in primary commodity prices experienced by developing countries over the present decade, there have been significant changes in import prices, which have had serious implications for the purchasing power of exports for members of this group. The terms of trade of primary product exporters declined in four out of the seven years 1980-86, and by 1986 the terms of trade of these countries was some 20 percent lower than at the beginning of the decade--an annual decline of over 3 percent. This reduction in purchasing power and the reduced availability of external finance meant that there was little scope for increasing imports; indeed, the volume of imports fell on average by 1 percent per annum over the period.

1/ The World Economic Outlook (April 1986), p. 172, identifies 73 Fund members as being primary product exporters; that is, countries with exports of agricultural and mineral primary products, other than fuel, accounting for over 50 percent of their total exports in 1980.

Table 5. Developing Countries: Annual Changes in Export Earnings
by Volume and Unit Value, 1969-1986

(Annual percentage changes)

	Average 1969-78	1979	1980	1981	1982	1983	1984	1985	1986	Average 1981-86
Value (in U.S. dollar terms)	<u>19.7</u>	<u>34.6</u>	<u>31.7</u>	<u>-1.7</u>	<u>-11.8</u>	<u>-4.6</u>	<u>6.6</u>	<u>-3.8</u>	<u>-6.3</u>	<u>-3.6</u>
Fuel exporters	26.1	47.1	41.2	-5.3	-19.1	-14.4	-0.8	-9.4	-33.4	-13.7
Non-fuel exporters	16.3	24.6	22.7	2.2	-4.6	3.8	11.8	-0.3	9.1	3.6
Primary product exporters	13.6	27.6	23.4	-4.5	-8.5	3.4	10.7	-3.0	-0.8	-0.4
Exporters of food and beverages	(15.0)	(23.5)	(18.0)	(3.0)	(-7.0)	(3.4)	(16.0)	(-2.9)	(-1.9)	(1.8)
Exporters of agricultural raw materials and metals	(11.2)	(37.4)	(32.)	(-17.2)	(-11.6)	(2.3)	(-3.1)	(-3.2)	(5.1)	(-4.6)
Exporters of manufactures Service and remittance countries	16.1	21.1	22.3	8.2	-1.5	4.8	13.4	1.4	15.4	7.0
Service and remittance countries	11.9	34.2	24.8	1.5	-5.5	-1.0	7.0	2.0	7.9	2.0
Volume	<u>4.1</u>	<u>3.8</u>	<u>-4.2</u>	<u>-6.0</u>	<u>-7.6</u>	<u>3.2</u>	<u>7.1</u>	<u>1.0</u>	<u>8.3</u>	<u>1.0</u>
Fuel exporters	3.2	1.9	-13.5	-15.1	-16.2	-3.2	0.5	-5.5	9.6	-5.0
Non-fuel exporters	5.1	5.6	8.5	5.2	1.2	8.2	11.6	5.1	7.8	6.5
Primary product exporters	4.6	7.1	7.1	3.2	1.2	5.8	9.0	5.8	-2.0	3.8
Exporters of food and beverages	(4.9)	(5.4)	(6.1)	(9.4)	(2.3)	(6.8)	(11.8)	(5.4)	(-2.6)	(5.5)
Exporters of agricultural raw materials and metals	(4.2)	(10.7)	(9.1)	(-8.4)	(-1.1)	(3.3)	(1.6)	(7.1)	(-0.2)	(0.4)
Exporters of manufactures Service and remittance countries	5.8	3.0	10.4	7.2	1.1	10.1	13.8	4.4	14.6	8.5
Service and remittance countries	3.4	16.3	3.7	2.5	0.9	7.1	9.1	8.2	6.4	5.7
Unit Value (in U.S. dollar terms)	<u>14.9</u>	<u>29.7</u>	<u>37.4</u>	<u>4.6</u>	<u>-4.5</u>	<u>-7.6</u>	<u>-0.4</u>	<u>-4.7</u>	<u>-13.4</u>	<u>-4.3</u>
Fuel exporters	22.3	44.3	63.1	11.5	-3.4	-11.6	-1.4	-4.1	-39.2	-8.0
Non-fuel exporters	10.7	18.0	13.1	-2.9	-5.7	-4.1	0.2	-5.1	1.2	-2.7
Primary product exporters	10.3	19.0	14.7	-7.3	-9.5	-2.6	1.3	-8.3	2.0	-4.1
Exporters of food and beverages	(11.5)	(17.0)	(11.4)	(-5.9)	(-9.0)	(-3.2)	(3.8)	(-7.8)	(0.8)	(-3.6)
Exporters of agricultural raw materials and metals	(7.9)	(23.5)	(21.6)	(-9.8)	(-10.4)	(-1.1)	(-4.5)	(-9.7)	(5.3)	(-5.0)
Exporters of manufactures Service and remittance countries	11.4	17.6	10.8	0.9	-2.6	-4.8	-0.4	-2.8	0.7	-1.5
Service and remittance countries	9.0	15.2	19.9	-0.9	-6.3	-7.4	-2.0	-5.8	1.2	-3.5

Source: World Economic Outlook (forthcoming).

The trend in commodity prices, both in terms of U.S. dollars and in real terms, is expected to bottom out in 1987. On the basis of the staff projections noted above, prices of non-fuel commodities exported by developing countries are expected to rise in 1988-89 by around 4 1/2 percent per annum in U.S. dollar terms and 1 1/2 percent per annum in real terms. The volume of primary product exports is also expected to continue to improve during this period. As a consequence, over the medium term, the outlook for export receipts for primary producers indicates some improvement relative to the depressed situation prevailing in 1985-87.