Distr.
GENERAL
E/ESCWA/AGR/1994/12
20 November 1994
ORIGINAL: ENGLISH

UNITED NATIONS
ECONOMIC AND SOCIAL COMMISSION
FOR WESTERN ASIA

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

THE IMPACT OF THE STRUCTURAL ADJUSTMENT PROGRAMME ON FOOD PRODUCTION, SUPPLY AND CONSUMPTION IN JORDAN

UN ESCWA
FOR WESTERN ASIA
10 MAY 1995
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UNITED NATIONS
New York, 1995

The present study examines the impact of the Structural Adjustment Programme on food production and consumption in Jordan. It consists of six chapters. The first chapter deals with the salient features of the macro- and microeconomic reform programme in Jordan. The second, third and fourth chapters evaluate the impact of structural adjustment on food production and consumption, taking into account the subsidies, taxes and pricing policy reforms in the agricultural sector. The last chapter analyses the food consumption pattern and the impact of reform on the poor in both rural and urban areas.

At the initiative of the Regional Food and Nutrition Officer, FAO Regional Office for the Near East (RNEA) and the Resource Planning Economist, Joint ESCWA/FAO Agriculture Division, the study was undertaken as a joint activity between the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Economic and Social Commission for Western Asia (ESCWA) and was prepared by Messrs. Suleiman Arabiat, Mohammad Samir El-Habbab and Mohammed Rafiqu Hamdan. The Resource Planning Economist of the Joint ESCWA/FAO Agriculture Division assisted the team in setting the model on calculation of the effect of price intervention on agricultural output and food consumption.

The study was reviewed by FAO and ESCWA. The opinions expressed in the study are those of the authors and do not necessarily represent the views of FAO or ESCWA.

It is hoped that this publication will enable decision makers and senior officials engaged in structural adjustment programmes in the food and agriculture sectors to take into consideration the implications of such policies and programmes for food consumption and the nutritional status of low-income groups.

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I. MAIN FEATURES OF THE JORDANIAN ECONOMY

A. AGRICULTURAL REGIONS OF JORDAN

Jordan covers an area of 89,200 square kilometres. Rainfall is typically Mediterranean: rain usually begins in October and ends by the end of March. The rainy season is characterized by high variation in quantity from year to year and from month to month during the same rainy season. Rain variation is the main factor affecting the cultivated area, the cropping pattern and the yield in the rain-fed regions. Jordan's topography affects its weather and the availability of surface and underground water. According to this topography, three agro-climatical zones are found in Jordan.

The Jordan Valley extends from the Yarmouk river in the north to the Gulf of Aqaba in the south. Its elevation starts at 225 metres below sea level and drops to 396 metres below sea level. It is characterized by its semi-tropical climate, which allows the production of summer crops during winter and tropical crops during the summer season.

The highlands and plains are located east of the Jordan Valley and extend from the north to the south, with elevation up to 1,500 metres above sea level. The plains are located to the east of the highlands, where the majority of field crops are produced.

The desert regions extend to the east and the south of the plains. Rainfall in this region is less than 50 millimetres (mm) annually, making agricultural production impossible except for a marginal strip close to the plains where some shrubs and grasses are found that are suitable for grazing during the spring.

1. *Role of the agricultural sector*

The importance of the agricultural sector stems from its position as the main source of income for about 20 per cent of the population. The agricultural sector provides employment for 12 per cent of the labour force, contributes to the improvement of the balance of trade and is instrumental in achieving food security. In 1992, the contribution of the agricultural sector to the gross domestic product (GDP) reached 5.83 per cent, whereas during the 1960s the contribution of this sector to GDP exceeded 20 per cent. Table 1 shows the importance of the agricultural sector in comparison with other major sectors.

Although there has been remarkable growth in the output of fruits, vegetables and livestock products, the agricultural sector has not been able to meet the increasing demand, especially for meat and dairy products, resulting from population growth and increased purchasing power (higher incomes).

The relative importance of the agricultural sector decreased from an average share of 12.1 per cent during 1972-1974 to 7.1 per cent during 1979-1981. Despite the increase in the value of products resulting from the application of modern technology and the expansion of irrigated land, the contribution of the industrial and construction sectors was relatively higher than the contribution of agriculture to GDP.

Table 2 shows that the contribution of both plant and animal production increased from 59 million Jordanian dinars (JD) in 1987 to JD 165 million in 1989. The agricultural contribution to GDP fluctuated during 1985-1989. In 1985, the contribution was 6.3 per cent; it decreased to 5.8 per cent in 1986, then increased to 6.7 per cent in 1989 and reached 8.8 per cent in 1989. The phenomenon indicates more risk and uncertainty of generating income from agriculture.

The study is divided into two periods. The first is during 1981-1989, before the Structural Adjustment Programme (SAP) went into effect. The second continues from 1990 to 1991 or 1992, after the SAP went into effect.

Table 2. VALUE OF ANIMAL AND PLANT PRODUCTION AND ITS CONTRIBUTION TO TOTAL AGRICULTURAL PRODUCTION (1978-1989)

Year	Total Agri. Prod. JD (M)	Plant production		Animal Production	
		Total JD (M)	% of Agri. Production	Total JD (M)	% of Agri. Production
1978	59	40	67.5%	19	32.2%
1979	44	29	65.9%	15	34.1%
1980	69	51	73.9%	18	26.1%
1981	75	51	68.0%	24	32.0%
1982	82	57	69.0%	25	30.5%
1983	110	75	68.2%	35	31.8%
1984	99	62	62.6%	38	38.4%
1985	119	70	58.8%	31	26.1%
1986	111	66	59.5%	34	30.6%
1987	127	75	59.1%	25	19.7%
1988	149	92	61.7%	57	38.3%
1989	165	99	60.0%	66	40.0%

Source: Department of Statistics, "Statistical Yearbook", several years.

1. *Wheat*

Wheat is produced in three distinct farming systems throughout Jordan: the first is rain-fed agriculture in the uplands; the second is partially irrigated agriculture, primarily in the Jordan Valley; and the third is a newly developed area with a deep well and pivot irrigation system in the southern desert areas (al-Disi basin).

The average total area cultivated with wheat during 1981-1992 was about 849,000 dunums (1 dunum equals 0.1 ha), producing about 78,000 tons. The average area cultivated with wheat during 1990-1992 was 686,000 dunums while the average area cultivated during 1981-1989 was 904,000 dunums. The cultivated area is more responsive to early rains than to economic incentives such as price and input subsidies.

Production of wheat in 1989 was higher than that of the previous year. This was due to the production of wheat in the southern desert area. The productivity increased from 80 kilograms (kg) per dunum to 130 kg per dunum.

The area of barley has been half that of wheat, with the exception of 1992, when they were equal. The average production reached about 32,000 tons during the period 1981-1992; the average before 1989 was 24,000 tons but rose to 56,000 tons during 1990-1992.

The SSR during the study period was about 19 per cent. On the other hand, the SSR during 1990-1992 was 22 per cent.

Figure I. MARKETING CHANNELS FOR LOCAL WHEAT

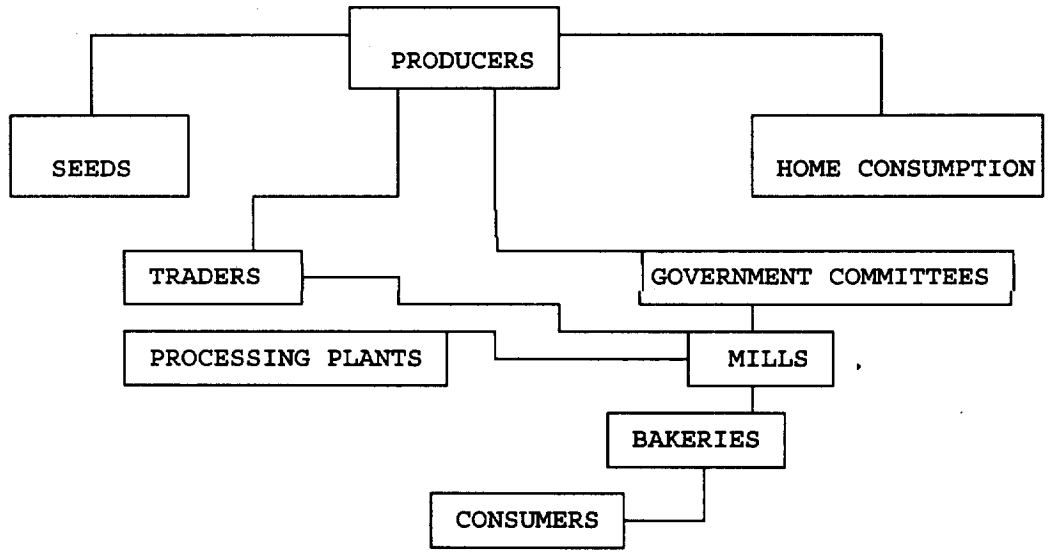


Figure II shows the marketing channels for barley. The Ministry of Supply plays a major role in barley marketing. It pays a higher price than market and import prices to the producer and sells at a lower price to livestock owners.

3. *Broilers, eggs, milk and red meat*

The SSRs for broilers, milk and red meat during 1987-1991 were 23 per cent, 83 per cent and 112.4 per cent respectively.

The SSRs for broilers, eggs, milk and red meat before the introduction of the SAP were 90.6 per cent, 121.22 per cent, 84.6 per cent and 27.3 per cent respectively. After the introduction of the SAP, the SSRs for broilers and eggs during 1990-1992 decreased to 75 per cent and 106.4 per cent while the SSRs for milk and red meat during 1990-1991 rose to 90.5 per cent and 29.5 per cent, respectively.

The results indicate that the SSRs for broilers decreased after the implementation of the SAP since the prices of feed had more than doubled owing to the readjustment of the exchange rates. On the other hand, the SSRs for milk and red meat increased slightly, since the Government continued to subsidize milk (imported powdered milk), and consumers shifted to low-cost imported frozen meats.

II. THE STRUCTURAL ADJUSTMENT PROGRAMME (SAP) IN JORDAN

A. ECONOMIC ADJUSTMENT PROGRAMME

The Government of Jordan signed an agreement with the International Monetary Fund (IMF) in 1989 to overcome the economic problems that had prevailed during 1988. The agreement was to be implemented to cover the relief and rescheduling needed to avoid defaults and to correct the negative influences and distortions in the economy. The main objectives to be accomplished over the succeeding 10 years are:

(a) Induce positive growth of gross domestic product (GDP) calculated in real terms at an accelerating rate rising from less than 1 per cent in 1991 to 4.3 per cent in 1998;

(b) Reduce inflation rate (deflator of GDP) gradually from 8.2 per cent in 1991 to 4.5 per cent in 1998;

(c) Reduce relative consumption from over 100 per cent of GDP in 1991 to 79.5 per cent in 1998;

(d) Change the pattern of investment by decreasing the public sector's share from 8.5 per cent of GDP in 1991, and increase the private sector's share from 10.8 per cent in 1991 to 16.1 per cent in 1998;

(e) Increase domestic savings from -0.9 per cent of GDP in 1991 to 20.5 per cent in 1998;

(f) Increase domestic revenue at a rate faster than the rate of growth of the GDP;

(g) Curb public expenditure so that it will continue to increase but at a rate lower than the rate of growth of the economy;

(h) Reduce the deficit of the budget from 17.9 per cent of GDP before grants and 10.6 per cent after grants in 1991 to 5 per cent and 3.6 per cent of GDP respectively in 1998;

(i) Reduce the budget need for external and internal borrowing as a percentage of GDP from 10.6 per cent in 1991 to 3.5 per cent in 1998;

(j) Reduce the annual growth rate of bank credit extended to the Government from 2.2 per cent in 1991 to 0.5 per cent in 1998;

(k) Increase the annual growth rate of bank credit facilities extended to the private sector from 4.8 per cent in 1991 to 8.2 per cent in 1998;

(l) Increase the volume of GDP in current prices from JD 2,879 million in 1991 to JD 5,633 million in 1998;

(m) Reduce the deficit in the balance of payments current account before grants from 17.3 per cent of GDP in 1991 to zero in 1998;

(n) Increase exports from 26.6 per cent of GDP in 1991 to 30.5 per cent in 1998;

B. Agricultural Sector Adjustment Loan (ASAL)

To implement the national agricultural strategy that concentrates on expanding the production base using modern technology, expanding pasture lands and boosting agricultural exports by opening new markets abroad, the World Bank granted an agricultural sector adjustment loan (ASAL). Accordingly, the World Bank recommended specific policies to be adopted and measures to be taken in this sector. The World Bank allowed a step-by-step implementation of ASAL to be completed within a period of three to five years.

The provisions of the ASAL are carried out according to a suggested agenda covering the following points:

(a) Market-led modernization:

(i) A plan to remove import monopolies on agricultural commodities and a review of the present system of agricultural trade (bans, licenses, tariffs) should be carried out by the Ministry of Agriculture;

(ii) Action is needed to remove the support price for tomatoes and to pursue the privatization of the Agricultural Marketing and Processing Company (AMPCO). A study should be conducted to evaluate options for privatization, and a detailed implementation plan for privatization should be prepared;

(iii) Reviewing land tenure regulations in the Jordan Valley;

(iv) Deregulating retail price margins on fresh products and removing controls on output prices of agro-industrial products;

(v) Deregulating air and road freight transport, and possibly removing disincentives to modernization of the truck fleet;

(vi) Removing the remaining products and input subsidies;

(b) Efficient use of resources:

(i) Adopting a national water resource policy to form the basis for development of an agricultural strategy;

(ii) Adopting a plan for fitting and managing the well-meter system and managing the pressurized system and metering network in the Jordan Valley;

(iii) Introducing a schedule of irrigation water charges based on block tariffs and seasonally adjusted rates, and preparation of a programme to move towards full recovery of operation and maintenance costs as well as a long-term proposal for possible sales of water;

(iv) Establishing new mandates for water sector institutions.

III. AGRICULTURAL POLICIES RELATED TO THE FOOD SECTOR

Agricultural policies and the methods of their implementation are major determinants of agricultural performance. These policies are directly related to the agricultural-sector, macroeconomic, foreign trade and exchange rate policies.

A. EXCHANGE RATE POLICIES

During the period 1970 to 1984, the exchange rate policy remained essentially unchanged. Several modifications, however, were carried out. The first was made in 1975, when the Jordanian dinar was stabilized against the Special Drawing Right (SDR) at a rate of SDR 1 = JD 0.387754, but was allowed to fluctuate within a range of plus or minus 2.25 per cent. The CBJ monitored the exchange rates daily using the United States dollar as the intervention currency. If the US$/SDR rate moved so that the SDR was greater than JD 0.39648 or less than JD 0.37903, the CBJ would adjust the JD/US$ rate to keep the JD/SDR rate within the range. The exchange rates of the dinar with respect to other currencies in the SDR basket would then be adjusted using the appropriate cross rates in the international financial markets.

Another adjustment was effected in 1984, when the reserve position of the CBJ began to deteriorate. In accordance with CBJ regulations, the Jordanian dinar was allowed to fluctuate within a wider range, and in 1986 the financial institutions were allowed to quote their own exchange rates using the CBJ rate as a guide. However, in June of the same year, the CBJ required all financial institutions to quote the CBJ rate. Afterwards, the CBJ allowed the dinar to float as a result of the disengagement from the West Bank and a decrease in remittance flows. A unification of the commercial banks with a declared exchange rate of US$ 1 = JD 0.54 closed down the exchange houses.

The CBJ introduced a two-tier exchange rate market in the middle of 1989. Banks were free to transact at market rates with the stipulation that they were to use the official rate for imports of subsidized food, medicine and fees for Jordanian students studying abroad. At the end of 1989, the CBJ unified the two-tier system and continued to monitor the relation between the JD and the SDR at intervals.

Regulations regarding access to foreign currency have been liberalized; however, the foreign exchange regime in Jordan remains restrictive by the international standards and even in comparison with regional financial markets. Exporting companies (local and foreign) are permitted to retain their export earnings in a foreign currency. Although the exchange rate regime is controlled by the CBJ, these controls do not appear to have led to serious overvaluation of the dinar.

B. TRADE POLICIES

The trade regime in agriculture is subject to widespread quantitative restrictions, high tariffs for certain commodities and State monopoly in trade marketing. Import bans are still in effect on some commodities.

The above-mentioned policies were implemented in an attempt to balance the interests of producers and consumers. The implementation of this system of trade instrument (primary import quotas) and domestic price controls has led to increased government intervention.

The importation and exportation of agricultural products are regulated by the Ministry of Industry and Trade after the approval of the Ministry of Agriculture in consultation with the Ministry of Supply. Import

Staple commodities such as cereals (wheat, flour, barley, maize and sorghum), live animals (sheep, goats, poultry) and crude vegetable oils are exempt from import duties. Onions, garlic and potatoes are not dutiable but are protected through import controls. Capital goods such as tractors and harvesters are also exempt. Furthermore, agricultural inputs such as fertilizers and agro-chemicals are not subject to tariffs, but they are subject to import fees of 6 per cent of their value.

Distortions in agriculture, including quantitative restrictions and subsidies have led to high effective rates of protection (ERP) for tradeable commodities (table 4). In the Jordan Valley, bananas are the most highly protected crop (0.93 ERP). In the highlands, the ERP for potatoes is 0.36 and for wheat it is 0.32. Apples have the lowest ERP (0.23).

Table 4. EFFECTIVE RATE OF PROTECTION (ERP) IN AGRICULTURE, 1992

Jordan Valley	EPR	Highlands	EPR
Tomatoes	0.63	Tomatoes	0.28
Potatoes	0.66	Potatoes	0.36
Onions	0.29	Apples	0.23
Bananas	0.93	Wheat	0.32

Source: World Bank. "Jordan: Agricultural Sector Adjustment Loan", Washington, May 1993.

In general, quantitative restrictions are less efficient instruments of protection than tariffs. Bans and quotas lack flexibility as the level of imports is predetermined regardless of international prices. With tariffs, the level of protection for any activity relative to another is transparent and not subject to administrative fiat, whereas quantitative restrictions do not provide this transparency. Moreover, unlike tariffs, quantitative restrictions do not generate government revenue.

C. PRICING POLICIES

Price intervention for agricultural products is widespread in Jordan, the object being to ensure that all citizens can afford to buy food. Price intervention, in general, aims to perform one or all of the following:

(a) To safeguard consumers from loss of purchasing power;

(b) To safeguard producers from a decline in prices;

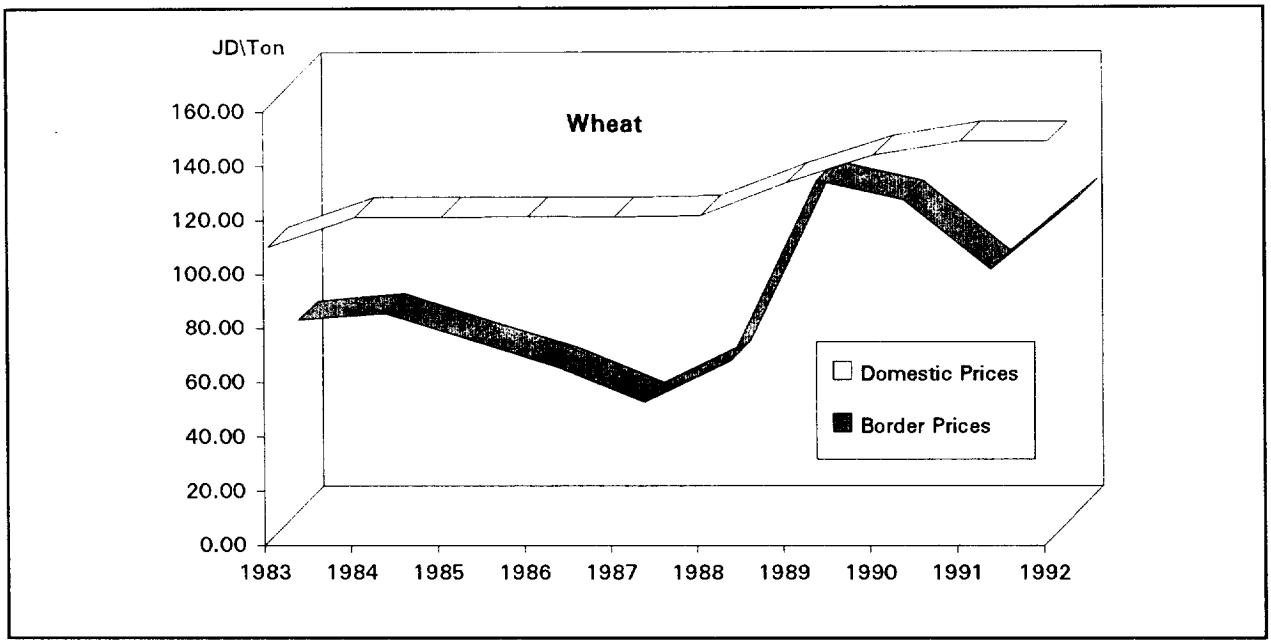
(e) To allocate available resources efficiently;

(f) To achieve self-sufficiency and food security for the country.

1. *Producer prices*

Prices for a number of locally produced commodities have been set by the Government to achieve food security and increase self-sufficiency, as in wheat, barley and milk, and to stabilize prices, as in broilers and bananas.

Figure III. DOMESTIC AND BORDER PRICES FOR WHEAT AND BARLEY



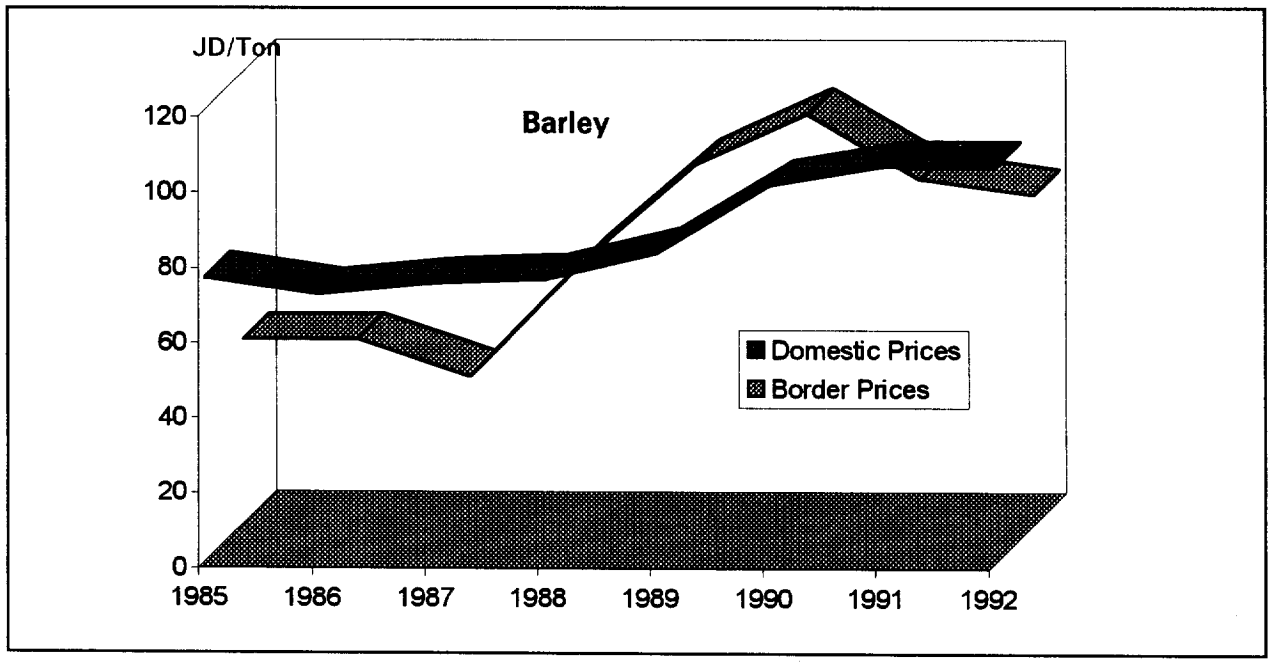
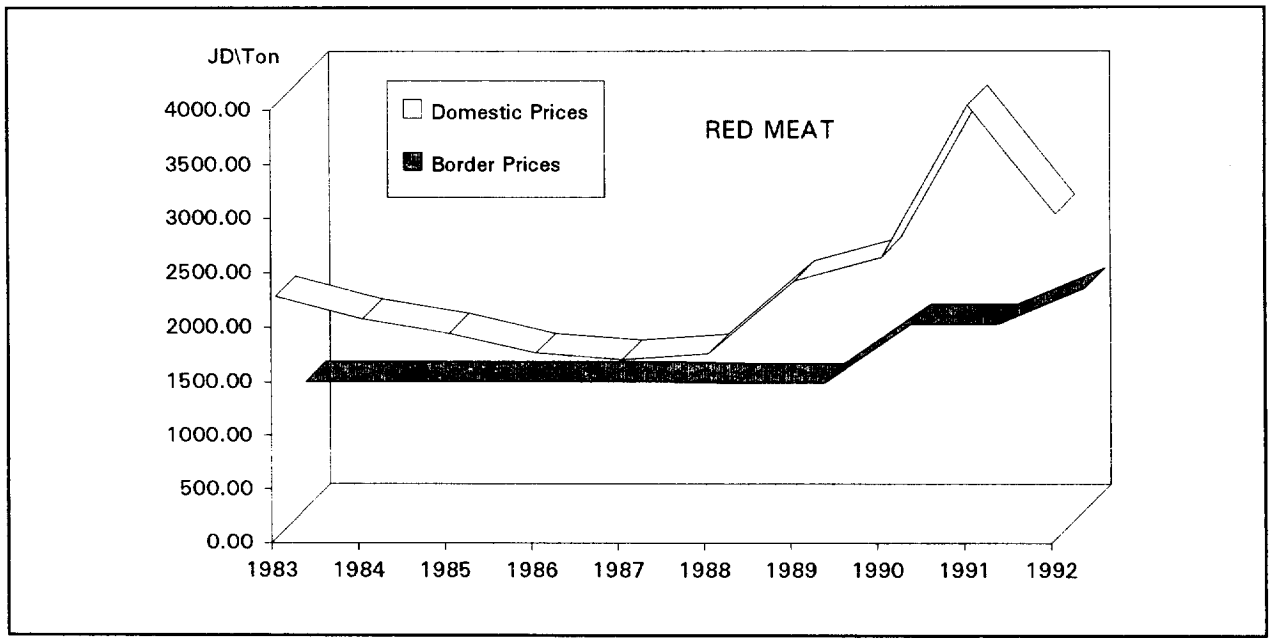


Figure V. DOMESTIC AND BORDER PRICES FOR RED MEAT



consumption point is the world price of wheat and flour (c.i.f.) converted to domestic currency at the official exchange rate. The cost of transporting the wheat to the mills is negligible.

Table 5 shows the consumer prices for selected commodities. Most of these prices are almost constant for groups of years, except for mutton prices, which increased during the period under review until they reached their peak in 1991 (JD 5,000 per ton), after which they dropped to JD 3,750 per ton in 1992. The analysis also traces the extent of policy interaction before and after the implementation of the SAP. A reduction in intervention will be reflected in the size of the protection coefficient.

A. EFFECTS OF PRICING POLICIES ON RELATIVE PRICES

In order to determine the impact of taxation, subsidization and pricing policies on the incentives to invest in various agricultural activities, it is necessary to estimate the prices that would have existed if there had been no direct price intervention. Annexes 3 and 4 show the direct, indirect and total effects of pricing policies.

1. *Direct effect of pricing policies (NPR_D)*

The direct effect of pricing policy on relative prices is measured by the direct nominal protection rate (NPR_D), which is defined as follows:

$$NPR_D = \frac{P_A/P_{NA} - P'_A/P_{NA}}{P'_A/P_{NA}} = \frac{P_A - P'_A}{P'_A}$$

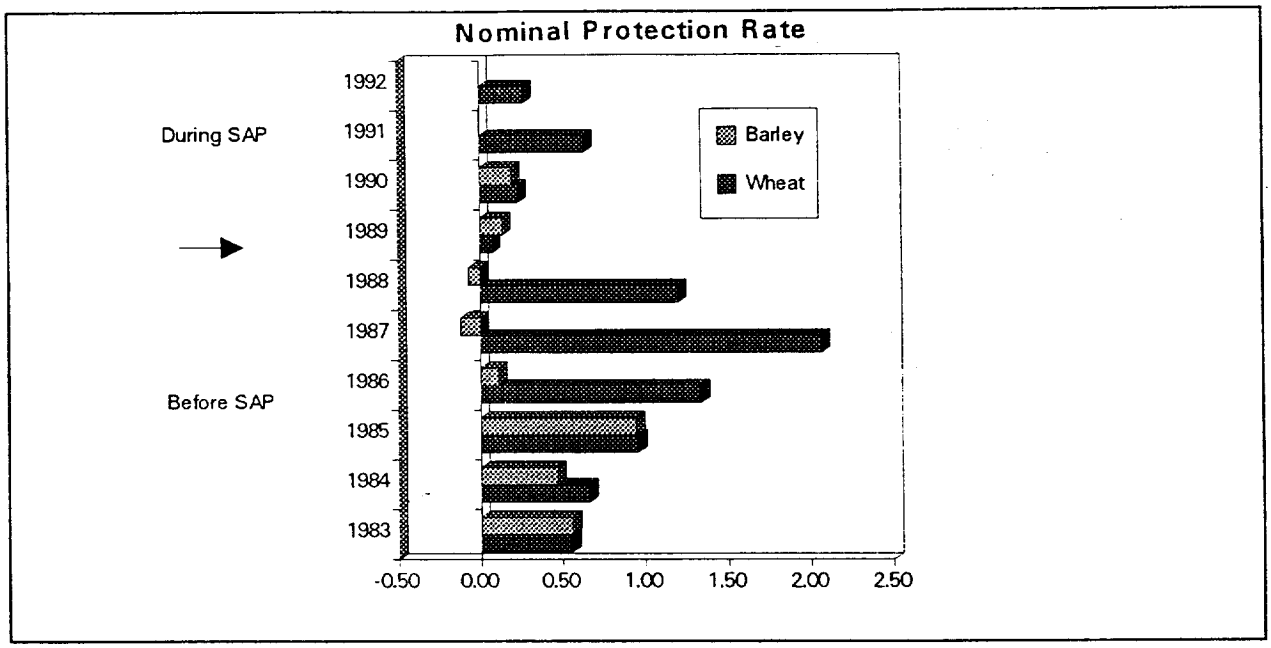
Where: P_A = the local wholesale prices of crop A
P'_A = the border price equivalent (import cost) of crop A
P_{NA} = the non-agricultural price index.

A negative NPR_D indicates that the crop is taxed on the producer side and subsidized on the consumer side as a result of government intervention. A positive NPR_D indicates that the crop is protected on the producer side and taxed on the consumer side. Furthermore, the higher the value (in absolute terms), the more profound the intervention effect. Wheat, mutton and broiler producers were protected consistently during the period 1983-1992. The highest level of protection for wheat was in 1987 (when the NPR_D was about 1.99) and the lowest was in 1989 (when the NPR_D was about 0.08). The NPR_D values show that wheat was less protected after the implementation of the SAP than before (see figures VI and VII and annex 3.A).

The rate of protection (according to NPR_D) for mutton fluctuated during the period under review. The lowest was 0.4 in 1987 and the highest was 1.34 in 1991. From these results it can be argued that the adjusted pricing policies did not affect mutton producers in Jordan (annex 3.E). The protection rate for broilers was the lowest of the products selected. The NPR_D was zero in 1991, and the highest rate was 0.23 from 1983 to 1987 (annex 3.C).

Barley was protected during the whole period under review except in 1989 and 1990, when the NPR_D was -0.12 and -0.08, respectively. The level of protection for barley after the implementation of SAP was better than before (annex 3.B).

Figure VI. NOMINAL PROTECTION RATE FOR BARLEY AND WHEAT



2. *Indirect effects of pricing policies (NPR_I)*

In addition to the direct effects of the prevailing pricing policies, there are indirect effects that consist of two elements:

(a) First, the change in the exchange rate that would be necessary to eliminate any current account imbalance and any impact of trade policies on the exchange rate;

(b) Second, the change in the prices of non-agricultural goods and services caused by tariffs on imported goods competitive with the non-agricultural products.

The following equation can be used to determine the indirect effects of pricing policies:

$$NPR_I = \frac{P_A/P_{NA} - (E^*/E_O)\ P_A/P^*_{NA}}{(E^*/E_O)\ P^*_A/P^*_{NA}}$$

Where: P_A = the producer (or consumer) price of crop A
P^*_A = the border price equivalent of crop A, evaluated at the equilibrium exchange rate
P_{NA} = the non-agricultural (NA) price index
P^*_{NA} = the NA price index adjusted for exchange rate and trade policies
E^* = the equilibrium exchange rate
E_O = the official exchange rate.

Annexes 3 and 4 show that the sums of NPR_D and NPR_I do not equal the NPR_T because of the accuracy level of the data collected, especially the information concerning exchange rates, transportation and handling. Furthermore, the amounts received by farmers would be higher if the price of the by-products were taken into account, especially in the case of wheat and barley straw.

B. Effects of government policies on crop prices and agricultural inputs

Two measures will be utilized to evaluate the effects of government policy on outputs and inputs: the effective rate of protection (ERP) and the domestic resource cost (DRC). ERP is the ratio between the value added in private prices and the value added in social prices. In other words, it is the ratio of the difference between revenues and tradeable inputs costs in private prices to the same difference in social prices. DRC measures the efficiency of the allocation of domestic resources (land, capital and labour) for the production of a certain crop. This measure is used to identify the comparative advantage of producing the crop in the country. Table 6 summarizes the ERP and DRC values for wheat and barley in 1988 and 1991 (that is, before and after the implementation of the SAP).

The ERP values for wheat in both years were close to 1.0, which means that the value added in both years was the same as that would have existed without intervention policies. Hence, the policies had little effect on the value added by the production of wheat. For barley, the ERP was less than 1 in both years and indicates that this crop was taxed about 12 per cent in 1988 and 14 per cent in 1991.

The DRC values for wheat more than doubled between 1988 and 1991 (0.23 in 1988 and 0.58 in 1991), indicating a decrease in the comparative advantage in wheat production in Jordan. The DRC for barley in 1988 was just under 1.0, while in 1991 it dropped to 0.72, which indicates an increase in the comparative advantage in producing barley in the intervening period.

C. Effects of price intervention on agricultural output

The effects of direct and indirect price intervention on levels of agricultural outputs depend on the response of agricultural supply. The short-run effect of intervention could be estimated by using the following equation:

$$dX_{i,t} = a\ (v_i\ \ b_i\ \ ERP_{i,t-1} + SUM_j\ v_j\ \ c_j\ ERP_{j,t-1})$$

where:
- $dX_{i,t}$ = change in output for crop *i* in period *t*
- a = coefficient of adjustment
- v_i = share of value added in price of crop *i* at domestic values
- b_i = long-run own price elasticity
- v_j = share of value added in price of competing crop *j* at domestic values
- c_j = long-run cross-price elasticity
- $ERP_{i,t-1}$ = effective rate of protection for crop *i* in period *t-1*.

This equation was used for wheat only (on the basis of data from 1988 and 1991) owing to lack of information on other commodities. The elasticity of output for Egypt was used owing to the non-availability of the elasticity of output for wheat in Jordan. Since the prices of wheat were announced before the planting dates, the ERP for the same year was used. It is also assumed that there is no lagged effect on output; thus, the coefficient of adjustment (a) is equal to one. In addition, it is known that there is no substitute crop for wheat that could use the same production zones.

The percentage change in the consumption ($dC_{i,t}$) of wheat fluctuated from year to year. The highest was 36.74 per cent in 1991, followed by 31.08 per cent in 1992; in contrast, it was 33 per cent in 1990 and 8.08 per cent—the lowest—in 1987. The rates in absolute values for wheat were generally higher than those for the other two commodities owing to the higher level of consumption of wheat.

In general, subsidization policies regarding wheat have resulted in consumption gains ranging from 37,200 tons to 168,000 tons in 1991. However, consumer loss owing to implicit taxation on sugar, rice, mutton, broilers and milk is indicated by the negative sign and the size of the coefficient.

E. Effects of price intervention on the government budget

In this section, the budgetary effects of price intervention (subsidy and/or tax) have been evaluated for wheat and barley at the producer level, and for wheat (flour), barley, sugar and rice at the consumer level.

1. *Producer subsidies*

(a) *Cereals*

Wheat, barley, chick-peas and lentils have been provided with price support since 1980. However, it has been more effective with wheat and barley. In certain years, when chick-pea prices were low in Turkey, some cases were reported of farmers buying chick-peas in Turkey and selling them to the Jordanian Government at higher support prices. Lentil support prices were sometimes lower than market prices. The extent of price support and its implications are explained below.

(b) *Wheat*

The Ministry of Supply declares the prices of wheat at the sowing dates (in autumn). It makes purchases mostly during the two months (June/July) after the harvest. Table 7 shows the quantities procured and their prices, the quantities and prices of imports and the value of subsidy paid to the Ministry of Supply from 1988 to 1992. The following facts emerge:

(a) The procured quantities averaged 52 per cent of production during the period under review;

(b) The proportion of procurement was as low as 43 per cent in 1988, although production was at its highest, and it was at its highest (75.3 per cent) when production was at its lowest;

(c) The support price was about JD 120 per ton in 1988 and reached a peak of JD 147 per ton in 1991 and 1992;

(d) The difference between support price and import cost fluctuated from 1988 to 1992. The highest was JD 65 per ton in 1988 when production was low, and the lowest was JD 10 per ton in 1989;

(e) The difference between support price and import cost is not a major factor affecting the procured quantities;

(f) The difference between the support price and import cost has increased, not because of an increase in the support price but because of declining international prices;

costs are included in the wheat subsidies. Bran and barley, however, represent substantial implicit and explicit transfers to those livestock producers who have access to these feeds. It should be noted that importation of wheat bran is not allowed.

Table 8. BARLEY PRODUCTION, IMPORTS, GOVERNMENT PROCUREMENT AND SUBSIDIES PAID TO FARMERS

Year	Prod. (1,000 tons)	Procur. (1,000 tons)	Pro. Price (JD/ton)	Imports (1,000 tons)	Import cost (JD/ton)	Unit subsidy (JD/ton)	Total subsidy (1,000 JD)
1988	50	27	75	101	70	5	135
1989	29	1	82	201	95	-13	-13
1990	36	7	100	200	109	-9	-63
1991	27	9	105	293	92	13	117
1992	103	53	105	230	87	18	954

Source: Ministry of Supply.

In general, from the producer side, the SAP was not implemented for barley or livestock feed.

In addition to a subsidy on barley produce, an input subsidy is also offered to livestock owners on both imported and locally procured barley. Table 9 shows the total subsidies from imported and domestic production of barley, and the following may be observed:

(a) A negative subsidy (gain by the Ministry of Supply) from 1986 to 1987 owing to the low price of imported barley;

(b) The highest subsidy occurred in 1990, when about 200,000 tons of barley were imported, and the difference between the import costs and the procurement price was JD 61 per ton.

2. *Consumer subsidy*

(a) *Wheat*

The consumer subsidy for imports, domestic production and total subsidy are displayed in table 10. The important features are shown below:

(a) The selling price to mills was JD 37 per ton from 1981 to 1984; it then dropped to JD 34 in 1985 and to JD 31 in 1986, 1987 and 1988. Subsequently, it increased to JD 35;

(b) The highest unit subsidy for imported wheat was JD 87 in 1989, and the lowest was JD 9 in 1987;

(c) The highest unit subsidy for local wheat was JD 112 in 1991 and 1992;

Based on the above, it can be seen that wheat, sugar (from 1989 to 1990) and rice (from 1988 to 1990) continued to be subsidized.

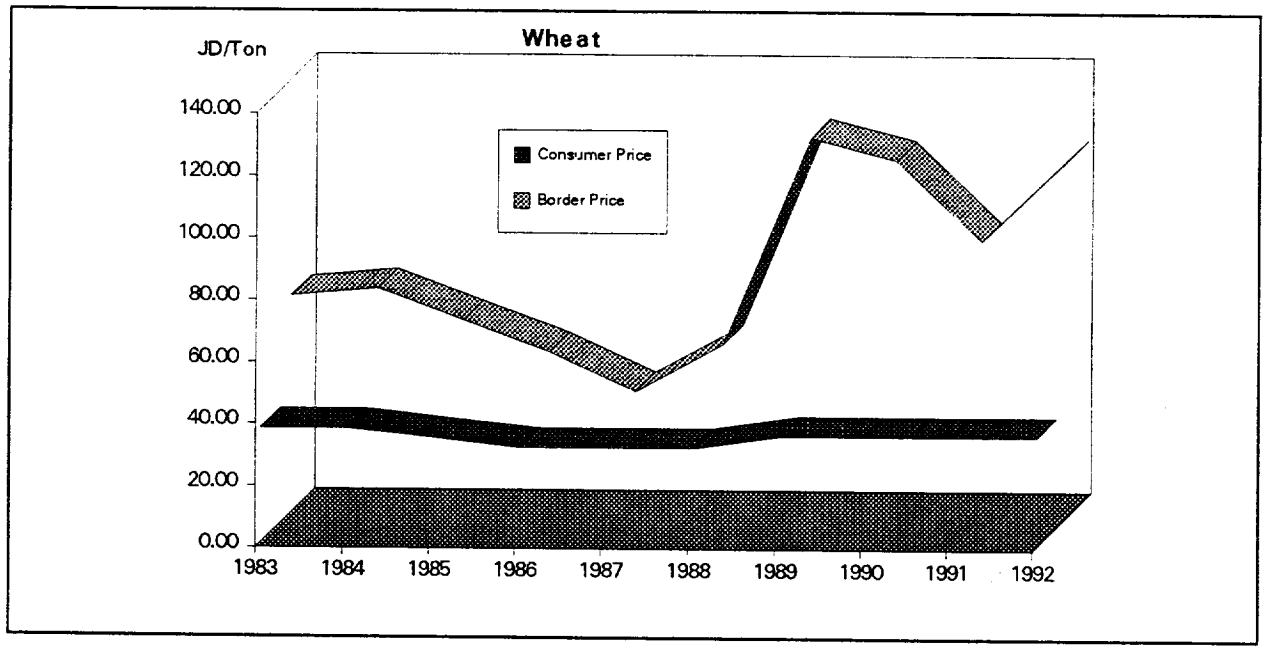
Table 10. WHEAT CONSUMER SUBSIDIES

	Quantities	Sold to Mills	Purchasing Price		Selling Price	Unit subsidy		Total subsidy		
Year	Local *(1,000 tons)*	Imported *(1,000 tons)*	Local *(JD/ton)*	Imported *(JD/ton)*	*(JD/ton)*	Local *(JD/ton)*	Imported *(JD/ton)*	Local *(1,000 JD)*	Imported *(1,000 JD)*	Total *(1,000 JD)*
1981	20.19	348.1	104.1	59	37	67.1	22	1 355	7 658	9 013
1982	3.1	209.2	108.5	99	37	71.1	62	222	12 970	13 192
1983	35.0	318.7	108.5	70	37	71.5	33	2 503	10 517	13 020
1984	1.3	450.5	119.5	73	37	82.5	36	107	16 218	16 325
1985	38.6	376.9	119.4	63	34	85.4	29	3 296	10 930	14 226
1986	16.5	270.9	119.6	53	31	88.6	22	1 462	5 560	7 422
1987	63.5	542.4	119.5	40	31	88.5	9	5 620	4 882	10 502
1988	59.0	360.0	120.0	55	31	89.0	24	5 251	8 640	13 891
1989	43.0	406.0	132.0	122	35	97.0	87	4 171	30 730	30 901
1990	55.0	458.0	142.0	115	35	107.0	80	5 885	36 640	42 525
1991	36.0	515.0	147.0	89	35	112.0	54	4 032	27 810	31 842
1992	60.0	452.0	147.0	115	35	112.0	80	6 720	36 160	42 880

Table 11. SUGAR CONSUMER SUBSIDIES

Year	Imports (1,000 tons)	Import costs (JD/ton)	Wholesale selling Price (JD/ton)	Unit subsidy (JD/ton)	Total (1,000 JD)
1981	90.8	264	198	66	5993
1982	90.8	219	198	21	1907
1983	61.1	114	168	-54	-3299
1984	45.0	122	168	-46	-2070
1985	40.3	98	148	-50	-2015
1986	122.6	78	148	-70	-8582
1987	128.2	81	128	-47	-6025
1988	76.3	116	128	-12	-916
1989	86.8	147	128	19	1649
1990	187.3	299	130	164	31654

Figure VIII. DOMESTIC AND BORDER CONSUMER PRICES FOR WHEAT AND BARLEY



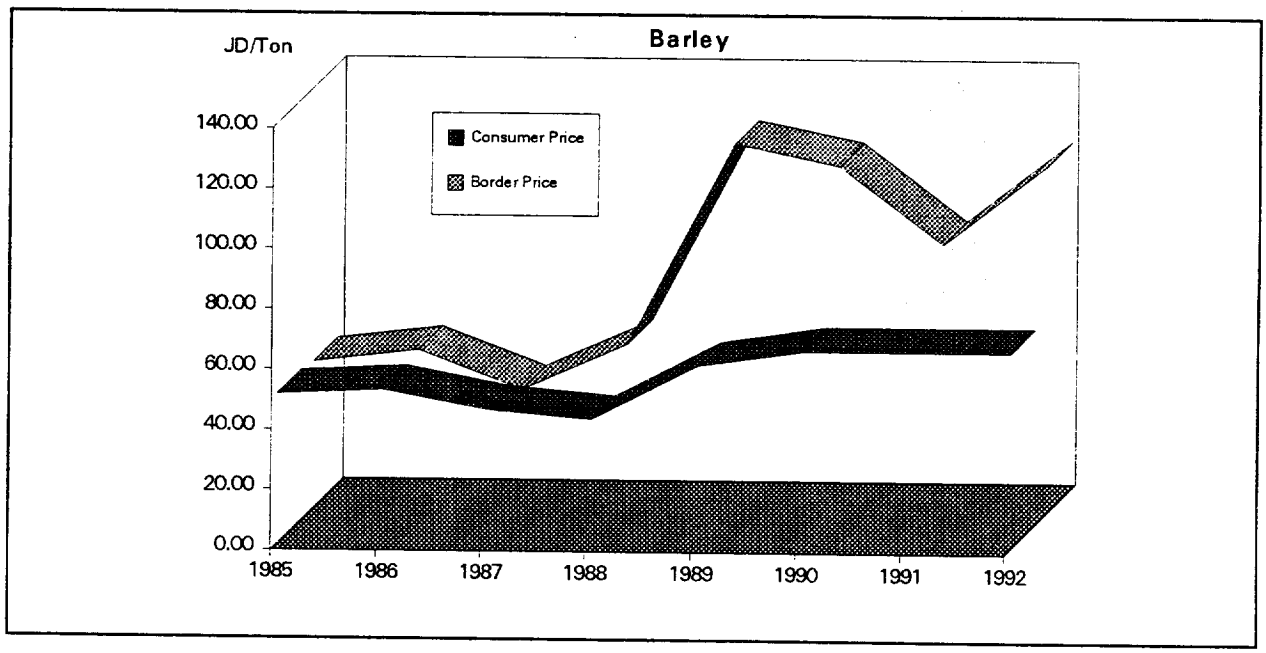
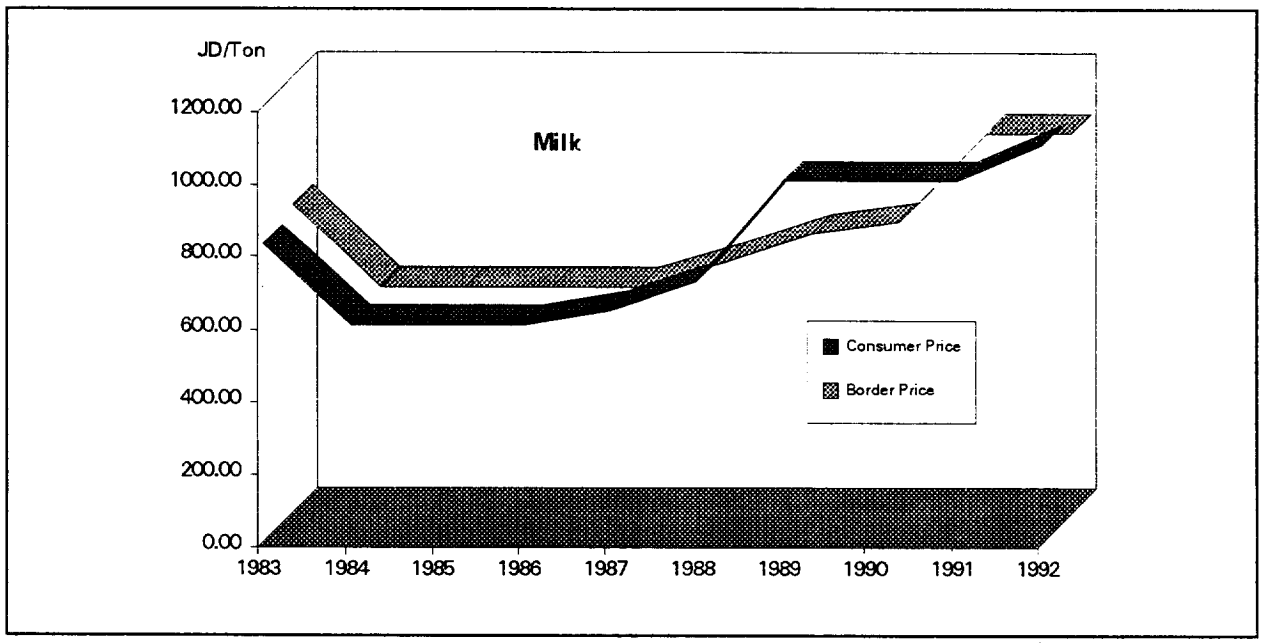


Figure X. DOMESTIC AND BORDER CONSUMER PRICES FOR MILK



V. THE IMPACT OF THE STRUCTURAL ADJUSTMENT PROGRAMME ON FOOD CONSUMPTION IN JORDAN

A. INTRODUCTION

The recent socio-economic and political changes in the region in general and in Jordan particularly have induced a crisis for the Jordanian economy. Among the factors contributing to the crisis were inflation, unemployment, a floating exchange rate for the Jordanian dinar and a deficit in the balance of trade and the balance of payments.

In the previous chapters, the impact of the Structural Adjustment Programme on macroeconomic policies and on the agricultural sector was explained. The main objective of the SAP is to improve the economic conditions. The programme aims at reformulating economic policies regarding taxation, subsidies, pricing and trading with the goal of reducing the deficit in the national budget.

The population group most affected by the SAP is the poor. The purpose of this chapter is to determine the effect of the programme on this group. Poverty is divided into two types in Jordanian official studies: abject poverty and absolute poverty. The abject poverty line is defined as the income level necessary to cover the cost of nutritional needs of individuals or families. The absolute poverty line is the income level required to cover the basic human needs such as food, housing, education, health services and transportation.

The abject poverty line for an average family of 6.8 persons is estimated to be JD 61.00 per month per family. About 5.3 per cent of Jordanian families live below this abject poverty line.

The estimated absolute poverty line is JD 119.00 per month per family. Currently, about 18.3 per cent of Jordanian families live below the absolute poverty line. In 1993, about 5.3 per cent of the total population lived below the abject poverty line, compared with 1.5 per cent in 1987. The relative proportion of absolute poor dropped from 18.7 per cent of the total population in 1987 to 18.3 per cent in 1993.[5]

The Ministry of Social Affairs has estimated the lag of abject poverty (the amount of money required to raise the income of poor people to the abject poverty line) at about JD 10.4 million per year. However, the lag of absolute poverty was about JD 61 million (2.2 per cent of the GNP).[6]

In 1993, the Ministry of Social Affairs estimated the average income of families living below the absolute poverty line to be JD 92.9 per month, while the average income of the non-poor families was JD 406.5 per month.[7] The Ministry also found that Jordanian households spent, on average, 51.2 per cent of their income on food, 25.5 per cent on housing, 9.5 per cent on clothing, 1.7 per cent on education, 3.1 per cent on health and 9.4 per cent on transportation. Families that owned their homes spent 63 per cent of their income on food, while families that rented their homes spent 51.2 per cent of their income on food.[8]

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[5] Jordan, Ministry of Social Affairs, *Study of Poverty, Reality and Characteristics* (Amman, 1993), pp. 11 and 29.

[6] Ibid., p. 30.

[7] Ibid., p. 59.

[8] Jordan, Department of Statistics, "Study of Internal Migration, Remigration and Labour Force 1986" (Amman, 1989), p. 101.

3.4 per cent and 6.7 per cent, respectively. In 1992, the per capita consumption of nutrients was 76 grams of protein, 65 grams of fat and 455 grams of carbohydrates. The total energy intake was 2,699 Kcal.

Table 13. DISTRIBUTION OF POOR HOUSEHOLDS IN JORDANIAN GOVERNORATES, 1993

Governorate	Abject poverty	Absolute poverty
Amman	3.81	4.5
Zarqa	4.61	7.6
Irbid	6.72	2.0
Mafraq	7.42	3.8
Balqa	7.72	3.2
Karak	8.22	3.6
Tafilah	5.82	0.3
Ma'an	5.41	9.3

Source: Jordan, Ministry of Social Affairs, *Study of Poverty, Reality and Characteristics*, Amman 1993, p. 32.

Total consumption of protein and oils and fat decreased by 5.4 per cent and 20.2 per cent, respectively. However, consumption of carbohydrates increased by 4.3 per cent. The total energy intake also decreased by about 2.6 per cent. This change was mainly due to a reduction in the consumption of meats, oils, fruits and vegetables.

Table 15 includes the relative changes for the 12 food groups from 1987 to 1992. The consumption of red meat, poultry meat, fruits and sugar decreased by 55.4 per cent, 23.9 per cent, 41.0 per cent and 19.6 per cent, respectively. This change in food consumption has resulted mainly from the general economic conditions in Jordan: the cost of living index for food items was 103.9 in 1988 but rose to 173 in 1992 (1986 = 100); the wholesale price index in Amman also increased from 152.8 in 1988 to 257.7 in 1992 (1979 = 100).

In 1992, 11.3 per cent of the energy intake came from protein, 21.6 per cent from fats, 67.5 per cent from carbohydrates and 13.7 per cent from animal sources. The animal protein presented 33.4 per cent of the total protein intake. Wheat products and sugar constituted 48.4 per cent and 13.3 per cent, respectively, of the total energy intake. Rice represented 7.2 per cent and fat 12.2 per cent of the total energy intake.

Compared with 1992, the food consumption pattern in 1987 showed higher consumption rates for protein (5.4 per cent), fat (20.2 per cent) and energy intake (2.6 per cent). The energy intake from carbohydrates decreased by 4.3 per cent.

in 1987. As the table shows, there was virtually no difference in the contribution of the above-mentioned nutrients for urban and rural families.

The consumption of animal protein amounted to 22.5 and 21.2 grams in urban and rural areas, respectively. In both areas, wheat products occupied an important position in the food consumption patterns. These products play a dominant role in the nutrition of rural people. Wheat products constitute 49.1 per cent of energy intake and 48.7 per cent of protein intake. However, wheat products constitute 44.2 per cent of energy intake and 45 per cent of protein intake for urban areas.

Table 15. RELATIVE CHANGE IN THE FOOD CONSUMPTION PATTERNS FROM 1987 TO 1992

Food group	Percentage change
Wheat product	+16.6
Rice	-7.8
Red meat	-55.4
Poultry meat	-23.9
Fish	-13.0
Dairy products	+50.5
Eggs	-8.5
Oil and fats	-45.5
Fruits	-41.0
Vegetables	-6.9
Legumes	-15.8
Sugar	-19.6

Source: Derived from table 14.

In 1992, the urban population in the under-JD 600 income group consumed 59.6 grams of protein, 50.4 grams of fat and 339 grams of carbohydrates, with a total energy intake of 2,083 Kcal per day, as shown in table 18. However, the average consumption in rural areas amounted to 59.3 grams of protein, 46.4 grams of fat and 352 grams of carbohydrates, with a total energy intake of 2,074 Kcal per day.

Energy intake and nutrient consumption decreased in 1992, compared with 1987. Table 19 shows that the decrease in rural areas was greater than that in urban areas, with the exception of carbohydrates. Energy intake and consumption of all nutrients decreased in both areas.

Table 20 provides the contribution of nutrients to the total energy intake for urban and rural areas in 1992. The table shows that fat contributed very little to the total energy intake in both areas (22.4 per cent in urban areas and 20.4 per cent in rural areas). In 1992, residents of rural areas consumed more bread,

a dominant position in the nutrition of the rural population inasmuch as they constituted 54.5 per cent of total protein consumption and 50.9 per cent of the total energy intake. The contribution of sugar to the total energy intake amounted to 11.3 per cent. Although the rural population appears to receive more energy and nutrients than the urban population, the quality of food consumed in urban areas is relatively higher than that in rural areas.

Table 17. NUTRIENT CONTRIBUTION TO THE TOTAL ENERGY INTAKE OF LOW-INCOME GROUPS WITH ANNUAL INCOME OF LESS THAN JD 600 PER FAMILY IN URBAN AND RURAL AREAS, 1987

Nutrients	Urban	Rural
Total protein	11.7	11.8
Fats	20.5	20.5
Carbohydrates	67.8	67.7

Source: Calculated from table 16.

In 1992, the rural population consumed more wheat products and legumes than urban consumers, while urban consumers showed higher consumption in all other food groups. The urban segment of the JD 600-1,199 income group consumed 67.5 grams of protein, 58 grams of fat and 396.8 grams of carbohydrates, with a total energy intake of 2,388 Kcal per day. About 35 per cent of the protein intake was of animal origin, and wheat products provided more than 48.9 per cent of total protein consumption and 48 per cent of the total energy intake (table 23).

A comparison of food consumption patterns in 1987 and 1992 (tables 21 and 23) reveals a drop in the consumption of certain groups, including red meat, poultry meat, fish, dairy products, oils, fruits, vegetables and legumes. Consumption of red meat dropped by 16.7 per cent; of poultry meat by 15.4 per cent; of fish by 41.7 per cent; of oils by 11.1 per cent; of fruits by 39.8 per cent; of vegetables by 11.9 per cent; and of legumes by 28.5 per cent in rural areas.

Table 24 includes the contribution of protein, fats and carbohydrates to the energy intake in urban and rural areas in 1992. A comparison of these figures with those in table 22 shows that the contribution of protein intake in 1992 remained constant, while the contribution of both fats and carbohydrates worsened, indicating a negative change in qualitative terms. The constant contribution of protein intake to the total energy intake is due to the high consumption of subsidized bread, which is considered the main source of protein and energy.

D. IMPACT OF THE STRUCTURAL ADJUSTMENT PROGRAMME ON THE FOOD CONSUMPTION PATTERN

A comparison of energy intake and food sources is required to determine the impact of the Structural Adjustment Programme on the food consumption pattern of the poor population before and after the implementation of the programme. Table 25 shows the general impact of the Structural Adjustment Programme on the food consumption pattern. The figures demonstrate a decrease in energy intake and almost all energy-producing nutrients in both urban and rural areas.

The Structural Adjustment Programme affected high-income groups as well as low-income groups, but the impact on low-income groups was more significant in nutritive terms. Table 28 summarizes the average intake of energy and nutrients for individuals from selected income groups during 1987 and 1992. The energy intake for the first group (under JD 600 per year) decreased from 2,207 Kcal in 1987 to 2,065 Kcal in 1992. The energy intake for the second group (JD 600-1,199 per year) also decreased from 2,619 Kcal in 1987 to 2,415 Kcal in 1992. The energy intake also decreased for the third group (JD 4,800-5,399 per year) from 2,690 Kcal in 1987 to 2,545 Kcal in 1992.

Table 19. PERCENTAGE CHANGE IN NUTRIENTS AND ENERGY INTAKE IN 1992 COMPARED WITH 1987 FOR FAMILIES WITH ANNUAL INCOME LESS THAN JD 600

Nutrients and energy	Urban	Rural
Protein	-7.3	-9.7
Fats	+2.7	-6.5
Carbohydrates	-7.5	-5.4
Energy	-4.7	-6.6

Source: Calculated from tables 16 and 18.

While the drop in the consumption of poor people made them more vulnerable to under-nutrition, the drop in the consumption of higher income groups can be evaluated as a positive impact of the Structural Adjustment Programme. The positive impact of the programme could be considered as a rationalization of the food consumption pattern of the higher income groups.

Table 20. NUTRIENT CONTRIBUTION TO THE TOTAL ENERGY INTAKE OF LOW-INCOME GROUPS WITH ANNUAL INCOME OF LESS THAN JD 600 PER FAMILY IN URBAN AND RURAL AREAS IN 1992

(Percentage of total energy intake)

Nutrients and energy	Urban	Rural
Total Protein	11.2	11.6
Fats	22.4	20.4
Carbohydrates	66.4	68.0

Source: Calculated from table 18.

Table 23. AVERAGE PER CAPITA FOOD CONSUMPTION, NUTRIENTS AND ENERGY INTAKE FOR FAMILIES WITH ANNUAL INCOME OF JD 600-JD 1,199 IN URBAN AND RURAL AREAS IN 1992

(Per day)

	Urban					Rural				
Food groups	Quantity (gr)	Protein (gr)	Fats (gr)	Carbo. hydrates (gr)	Energy intake (Kcal)	Quantity (gr)	Protein (gr)	Fats (gr)	Carbo. hydrates (gr)	Energy Intake (Kcal)
Wheat products	420	33.0	4.2	243.0	1 146	455.0	36.4	4.5	263	1 242
Rice	60.0	4.2	0.4	47.4	211	55.0	3.9	0.3	43	194
Red meats	28.0	4.5	3.6	..	50	25	4	3.2	..	45
Poultry meat	66.0	11.2	5.3	..	92	55	9.4	4.4	..	77
Fish	8.8	1.6	0.7	..	13	4.9	0.9	0.5	..	7
Dairy products	100.0	3.5	3.0	5.5	64	90.0	3.2	2.7	5	57
Eggs	22.0	2.8	2.5	0.2	35	20.7	2.6	2.3	..	33
Oils	34.4	..	34.0	..	305	40.0	..	40.0	..	360
Fruits	134.0	1.0	1.0	13.0	67	97.0	0.7	1.5	9	48
Vegetables	307.0	3.0	3.0	12.0	89	275.0	2.5	2.5	11	55
Legumes	12.0	2.7	0.3	6.7	40	14.3	3.2	0.4	8	48
Sugar	70.0	..	..	69.0	276	70.0	..	..	69	276
Total		67.5	58	396.8	2 388		66.8	61.8	408	2 442

Source: Department of Statistics, Study of Household Income and Expenditures, 1992, unpublished data.

Table 24. NUTRIENT CONTRIBUTION TO THE TOTAL ENERGY INTAKE OF LOW-INCOME GROUPS WITH ANNUAL INCOME OF JD 600-JD 1,199 PER FAMILY IN URBAN AND RURAL AREAS IN 1992

(Percentage of total energy intake)

Nutrients	Urban	Rural
Total protein	11.3	10.7
Fats	21.4	22.6
Carbohydrates	67.5	66.7

Source: Calculated from table 23.

Table 27. PERCENTAGE CHANGE IN PER CAPITA FOOD CONSUMPTION FOR HOUSEHOLDS WITH ANNUAL INCOME OF LESS THAN JD 600 IN 1992 COMPARED WITH 1987

Food group	Urban	Rural
Wheat products	3.9	2.0
Rice	-18.4	-11.1
Red meats	-9.1	-31.0
Poultry meats	-16.7	-33.3
Fish	+47.4	-25.0
Dairy products	-10.0	-26.7
Eggs	+56.0	+47.0
Oils	No change	-3.4
Fruits	-29.8	-15.4
Vegetables	-16.6	-11.7
Legumes	-26.1	-20.0
Sugar	-23.1	-21.4

Source: Calculated from tables 21 and 23.

Table 28. AVERAGE PER CAPITA INTAKE OF ENERGY AND NUTRIENTS BY INCOME LEVEL IN 1987 AND 1992

(Grams per day)

	Less than JD 600		JD 600-JD 1,199		JD 4,800-JD 5,399	
Nutrients	1987	1992	1987	1992	1987	1992
Total protein	65.0	59.0	70.5	67.0	75.0	70.0
Animal protein	21.9	19.3	23.7	21.9	40.6	33.6
Fats	50.3	48.4	71.0	60.0	70.0	65.0
Carbohydrates	371.0	344.0	424.0	402.0	440.0	420.0
Energy (Kcal)	2 207.0	2 065.0	2 619.0	2 415.0	2 690.0	2 545.0

Source: Department of Statistics, Study of Household Income and Expenditure 1986/1987 and 1992.

ANNEX 1. PRODUCTION, CONSUMPTION, AND FOREIGN TRADE FOR SELECTED CROPS

A. Wheat production, consumption and foreign trade

(Area: 1,000 dunums; quantity: 1,000 tons)

YEAR	AREA	PROD.	YIELD	EXPORT	IMPORT	CONSUMP	PERCAP (KG)
1981	1060.70	60.00	0.06	2.38	728.73	786.35	217.90
1982	759.90	29.10	0.04	1.38	382.33	410.05	176.59
1983	106.60	115.60	0.10	0.88	343.45	458.18	189.70
1984	430.00	25.00	0.06	38.13	465.75	452.63	181.39
1985	943.60	62.80	0.07	64.13	387.90	386.58	148.96
1986	506.50	40.30	0.08	22.13	282.78	617.08	220.69
1987	1245.40	109.30	0.09	69.00	576.78	617.08	220.69
1988	1183.00	137.00	0.12	6.25	424.43	555.18	191.65
1989	897.00	86.00	0.10	21.00	183.28	248.28	82.73
1990	692.50	88.70	0.13	11.63	644.13	721.20	231.82
1991	506.00	57.80	0.11	0.00	779.78	837.58	242.56
1992	858.00	122.50	0.14	0.00	555.60	678.10	183.77
AVR 81-92	849.10	77.84	0.09	19.74	454.58	512.68	177.51
AVR 81-89	903.63	73.90	0.08	25.03	386.16	435.03	163.55
AVR 90-92	685.50	89.67	0.13	3.88	659.83	745.63	219.38

B. Barley production, consumption and foreign trade

(Area: 1,000 dunums; quantity: 1,000 tons)

YEAR	AREA	PROD.	YIELD	EXPORT	IMPORT	CONSUMP
1981	448.30	18.20	0.04	0.00	9.80	28.00
1982	318.70	7.30	0.02	0.00	69.30	76.60
1983	450.00	34.00	0.08	0.00	17.40	51.40
1984	190.30	4.80	0.03	0.00	179.80	184.60
1985	399.20	19.70	0.05	0.00	74.90	94.60
1986	181.90	14.50	0.08	0.00	143.50	158.00
1987	600.60	41.00	0.07	0.00	114.80	155.80
1988	633.60	50.00	0.08	0.00	98.00	148.00
1989	441.80	28.70	0.06	0.00	217.70	246.40
1990	344.40	36.40	0.11	0.00	209.50	245.90
1991	226.00	26.80	0.12	0.00	252.90	279.70
1992	836.00	103.50	0.12	0.00	293.50	397.00
AVR 81-92	422.57	32.08	0.08	0.00	140.09	172.17
AVR 81-89	407.16	24.24	0.06	0.00	102.80	127.04
AVR 90-92	468.80	55.57	0.12	0.00	251.97	307.53

E. Milk production, consumption and foreign trade

(Quantity: 1,000 tons)

YEAR	SHEEP	GOATS	COWS	TOTAL	IMPORT	CONSUMP	PERCAP (KG)
1981	14.40	11.50	16.10	42.00	8.60	50.60	22.66
1982	15.50	13.60	18.10	47.20	11.50	58.70	25.28
1983	15.70	11.10	18.80	45.60	9.90	55.50	22.98
1984	13.60	9.90	26.50	50.00	10.00	60.00	24.05
1985	17.90	12.90	25.60	56.40	11.40	67.80	26.23
1986	14.90	11.00	25.90	51.80	13.00	64.80	24.06
1987	19.80	11.00	30.70	61.50	14.10	75.60	27.04
1988	20.50	12.70	28.60	61.80	13.20	75.00	25.89
1989	24.70	11.50	33.30	69.50	9.90	79.40	26.46
1990	25.20	12.10	59.10	96.40	12.40	108.80	34.97
1991	40.90	26.20	89.60	156.70	14.30	171.00	49.52
AVR 81-91	26.28	13.05	33.85	67.17	10.65	77.65	27.01
AVR 81-89	17.44	11.69	24.84	53.98	9.84	63.82	23.63
AVR 90-91	33.05	19.15	74.35	126.55	13.35	139.90	42.25

F. Red meat (mutton) production, consumption and foreign trade

(Quantity: 1,000 tons)

YEAR	SHEEP	GOATS	COWS	CAMELS	TOTAL	IMPORTS	CONSUMP	PERCAP (KG)
1981	4.10	2.00	1.50	0.90	8.50	26.70	35.20	15.76
1982	4.50	2.40	1.50	0.40	8.80	9.30	18.10	7.80
1983	5.60	2.30	2.10	0.30	10.30	8.80	19.10	7.91
1984	5.40	2.40	2.10	0.20	9.80	8.90	18.70	7.49
1985	6.40	2.80	1.30	0.50	11.00	31.90	42.90	16.53
1986	3.80	1.60	1.00	0.20	6.60	16.30	22.90	8.50
1987	5.00	1.70	1.10	0.20	8.00	37.10	45.10	16.13
1988	5.20	1.90	2.00	0.20	9.30	50.20	59.50	20.54
1989	6.20	1.70	1.00	0.50	9.40	28.30	37.70	12.56
1990	6.30	1.80	1.70	0.40	10.20	20.70	30.90	9.93
1991	10.20	4.00	2.30	0.30	16.80	43.80	60.60	17.55
AVR 81-91	5.70	2.21	1.60	0.37	9.88	25.64	35.52	19.17
AVR 81-89	5.13	2.06	1.51	0.38	9.08	24.17	33.24	21.35
AVR 90-91	8.25	2.90	2.00	0.35	13.50	32.25	45.75	13.35

C. CALCULATING PNA AND P*NA

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
NON-AGRICULTURE	1485.10	1562.40	1619.40	1681.60	1724.90	1698.50	1452.90	1476.70	1514.90	1572.30
NON-AGR.NON-TRADABLES (000	768.50	792.00	770.90	823.40	842.90	888.90	849.10	823.80	850.40	877.00
NON. AGR. TRADABLES	716.60	770.40	848.50	858.20	882.00	809.60	603.80	652.90	664.50	695.30
PNA-NTR%	99.69	102.74	100.00	106.81	109.34	115.31	110.14	106.86	110.31	113.76
PNA-TR%	84.45	90.80	100.00	101.14	103.95	95.42	71.16	76.95	78.31	81.94
SHARE OF NTR(SNTR)	0.52	0.51	0.48	0.49	0.49	0.52	0.58	0.56	0.56	0.56
SHARE OF TR(STR)	0.48	0.49	0.52	0.51	0.51	0.48	0.42	0.44	0.44	0.44
PNA	92.34	96.85	100.00	103.92	106.58	105.83	93.94	93.64	96.28	99.69
CORRECTION FACTOR(SCF)	0.92	0.92	0.92	0.91	0.91	0.92	0.94	0.95	0.94	0.91
EQUIL.EXCH.RATE(E*)/OFFICIAL EXCH.RATE(Eo) (1/SCF)	1.09	1.09	1.09	1.10	1.09	1.09	1.06	1.05	1.07	1.09
TM	0.11	0.11	0.11	0.13	0.12	0.11	0.08	0.07	0.08	0.12
P*NA	101.55	106.85	111.68	117.77	119.35	116.20	98.57	97.92	101.77	108.64

NOTES:

1) PNA-NTR = NTR in year t /NTR in year 1985
2) PNA-TR = TR in year t /TR in year 1985
3) SNTR = NTR/NA
4) STR = TR/NA
5) PNA = SNTR *PNA-NTR% +STR*PNA-TR%
6) SCF = (EXP. +IMP.)/(EXP+EXP.TAX + IMP. +IMP.TAX) {EXP.TAX=0}
7) E*/Eo = 1/SCF
8) P*NA = [STR *(E*/Eo)*{PNATR%/(1/TM)}] + [SNTR*PNATR%]

A. WHEAT

YEAR	WHOLESALE PR. LOCAL JD/TON	CIF $/TON	BORDER PRICE AT (Eo) JD/TON	AT (E*) JD/TON	MARKETIN MARGINS JD/TON	IMPORT COST AT (Eo)	AT (E*)	E*	Eo	NPRd	NPRi	NPRT
1983	108.50	171.94	62.26	67.86	8.00	70.26	75.86	394.69	362.10	0.54	0.01	0.56
1984	119.50	168.87	64.76	70.59	8.00	72.76	78.59	418.02	383.50	0.64	0.02	0.66
1985	119.40	138.77	54.58	59.49	8.00	62.58	67.49	428.70	393.30	0.91	0.05	0.96
1986	119.60	128.08	44.64	49.10	8.00	52.64	57.10	383.35	348.50	1.27	0.06	1.34
1987	119.50	94.64	31.94	34.82	8.00	39.94	42.82	367.88	337.50	1.99	0.07	2.06
1988	120.00	114.00	42.65	46.49	12.50	55.15	58.99	407.77	374.10	1.18	0.02	1.20
1989	132.00	190.30	108.87	115.40	12.90	121.77	128.30	606.43	572.10	0.08	-0.01	0.07
1990	142.00	154.00	101.89	106.98	12.76	114.65	119.74	694.68	661.60	0.24	0.00	0.23
1991	147.00	112.00	76.10	80.67	12.70	88.80	93.37	720.27	679.50	0.66	-0.02	0.64
1992	147.00	151.00	102.50	111.72	12.76	115.26	124.48	739.89	678.80	0.28	-0.01	0.27

NOTES:

NPRd = (LOCAL WHOLSALE PRICE - IMPORT COST AT Eo)/IMPORT PRICE AT Eo

$$\frac{(PA-P'A)}{P'A}$$

NPRi = {PA/PNA - (E*/Eo)PA/P*NA}/{(E*/Eo)PA*/P*NA}

NPRT = {(PA/PNA)-(E*/Eo)P'A/P*NA}/{(E*/Eo)P'A/P*NA}

C. BROILERS

YEAR	WHOLESALE PR. LOCAL JD/TON	WHOLESALE PR. CIF $/TON	BORDER PRICE AT (Eo) JD/TON	BORDER PRICE AT (E*) JD/TON	MKT. MARGINS JD/TON	IMPORT COST AT (Eo) JD/TON	IMPORT COST AT (E*) JD/TON	E*	Eo	NPRd	NPRi	NPRT
1983	700.00	1546.53	560.00	610.40	8.00	568.00	618.40	394.69	362.10	0.23	0.01	0.24
1984	700.00	1460.23	560.00	610.41	8.00	568.00	618.41	418.02	383.50	0.23	0.02	0.25
1985	700.00	1423.85	560.00	610.40	8.00	568.00	618.40	428.70	393.30	0.23	0.03	0.26
1986	700.00	1606.89	560.00	616.00	8.00	568.00	624.00	383.35	348.50	0.23	0.03	0.27
1987	700.00	1659.26	560.00	610.41	8.00	568.00	618.41	367.88	337.50	0.23	0.03	0.26
1988	700.00	1496.93	560.00	610.40	12.50	572.50	622.90	407.77	374.10	0.22	0.01	0.23
1989	875.00	1442.06	825.00	874.51	12.90	837.90	887.41	606.43	572.10	0.04	-0.01	0.03
1990	1010.00	1246.98	825.00	866.25	12.76	837.76	879.01	694.68	661.60	0.21	0.00	0.20
1991	1025.00	1486.39	1010.00	1070.60	12.70	1022.70	1083.30	720.27	679.50	0.00	-0.01	-0.01
1992	1160.00	1487.92	1010.00	1100.90	12.76	1022.76	1113.66	739.89	678.80	0.13	0.00	0.13

NOTES:

NPRd = (LOCAL WHOLSALE PRICE - IMPORT COST AT Eo)/IMPORT PRICE AT Eo

$$\frac{(PA-P'A)/P'A}{}$$

NPRi = {PA/PNA - (E*/Eo)PA/P*NA}/{(E*/Eo)PA*/P*NA}

NPRT = {(PA/PNA)-(E*/Eo)P'A/P*NA}/{(E*/Eo)P'A/P*NA}

E. RED MEAT (MUTTON)

YEAR	WHOLESALE PR. LOCAL JD/TON	WHOLESALE PR. CIF $/TON	BORDER PRICE AT (Eo) JD/TON	BORDER PRICE AT (E*) JD/TON	MKT. MARGINS JD/TON	IMPORT COST AT (Eo) JD/TON	IMPORT COST AT (E*) JD/TON	E*	Eo	NPRd	NPRi	NPRT
1983	2240.00	3253.94	1178.25	1284.30	8.00	1186.25	1292.30	394.69	362.10	0.89	0.01	0.90
1984	2034.00	3072.36	1178.25	1284.31	8.00	1186.25	1292.31	418.02	383.50	0.71	0.02	0.74
1985	1900.00	2995.80	1178.25	1284.30	8.00	1186.25	1292.30	428.70	393.30	0.60	0.04	0.64
1986	1720.00	3380.92	1178.25	1296.08	8.00	1186.25	1304.08	383.35	348.50	0.45	0.04	0.49
1987	1660.00	3491.11	1178.25	1284.31	8.00	1186.25	1292.31	367.88	337.50	0.40	0.03	0.43
1988	1712.00	3096.10	1158.25	1262.50	12.50	1170.75	1275.00	407.77	374.10	0.46	0.01	0.48
1989	2384.00	2024.56	1158.25	1227.75	12.90	1171.15	1240.65	606.43	572.10	1.04	-0.02	1.02
1990	2600.00	2566.88	1698.25	1783.16	12.76	1711.01	1795.92	694.68	661.60	0.52	-0.01	0.51
1991	4000.00	2499.26	1698.25	1800.14	12.70	1710.95	1812.84	720.27	679.50	1.34	-0.02	1.31
1992	3000.00	2995.36	2033.25	2216.24	12.76	2046.01	2229.00	739.89	678.80	0.47	-0.01	0.46

NOTES:

NPRd = (LOCAL WHOLSALE PRICE - IMPORT COST AT Eo)/IMPORT PRICE AT Eo

$$\frac{(PA-P'A)}{P'A}$$

NPRi = {PA/PNA - (E*/Eo)PA/P*NA}/{(E*/Eo)PA*/P*NA}

NPRT = {(PA/PNA)-(E*/Eo)P'A/P*NA}/{(E*/Eo)P'A/P*NA}

C. MUTTON

YEAR	SELLING TO CONSUMERS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	1300.00	1186.25	1292.30	0.10	0.01	0.10
1984	1250.00	1186.25	1292.30	0.05	0.01	0.07
1985	1250.00	1186.25	1292.30	0.05	0.02	0.08
1986	1250.00	1186.25	1304.08	0.05	0.03	0.08
1987	1220.00	1186.25	1292.30	0.03	0.02	0.05
1988	1220.00	1170.75	1275.00	0.04	0.01	0.05
1989	1310.00	1171.15	1240.65	0.12	-0.01	0.11
1990	2620.00	1711.01	1595.92	0.53	-0.01	0.53
1991	2620.00	1710.95	1812.84	0.53	-0.01	0.52
1992	2725.00	2046.01	2229.00	0.33	-0.01	0.33

D. BROILERS

YEAR	SELLING TO CONS. JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	750.00	568.00	618.40	0.32	0.01	0.33
1984	750.00	568.00	618.40	0.32	0.02	0.34
1985	750.00	568.00	618.40	0.32	0.03	0.35
1986	750.00	568.00	624.00	0.32	0.03	0.36
1987	750.00	568.00	618.40	0.32	0.03	0.35
1988	750.00	572.50	622.90	0.31	0.01	0.32
1989	1000.00	837.90	887.40	0.19	-0.01	0.18
1990	1000.00	837.70	879.00	0.19	0.00	0.19
1991	1250.00	1022.70	1083.30	0.22	-0.01	0.21
1992	1250.00	1022.70	113.70	0.22	-0.05	0.22

ANNEX 5. SHORT-RUN EFFECTS OF TOTAL PRICE INTERVENTION ON CONSUMPTION

YEAR		WHEAT		SUGAR		RICE		MUTTON		BROILERS		MILK	
	eii	-0.3		-0.79		-1.02		-2.43		-1.43		-1.79	
		000 TONS	%	000 TONS	%	000 TONS	%	000 TONS	%	000 TONS	%	000 TONS	%
1983		64.60	14.10	-37.02	-60.60	-12.38	-34.28	-3.03	-25.22	-20.19	-47.18	2.93	5.28
1984		65.18	14.40	-23.51	-52.25	-14.60	-26.40	-1.92	-16.51	-21.23	-48.37	2.23	3.71
1985		45.23	9.87	-28.15	-69.85	-9.83	-19.27	-2.24	-19.67	-27.88	-50.70	1.07	1.58
1986		72.20	15.76	-133.15	-108.61	-18.30	-25.56	-5.74	-20.50	-28.99	-51.31	0.66	1.02
1987		37.02	8.08	-103.64	-80.85	-33.44	-46.57	-1.27	-12.99	-32.77	-50.41	-7.54	-9.97
1988		71.62	15.63	-23.70	-31.06	-5.66	-7.37	-3.96	-12.76	-30.13	-46.22	-6.73	-8.97
1989		53.63	11.70	-5.39	-6.21	10.88	27.75	-10.27	-26.35	-18.94	-26.12	-40.71	-51.28
1990		151.45	33.06	54.31	29.00	41.97	34.83	-33.19	-127.64	-15.82	-27.04	-46.44	-42.68
1991		168.35	36.74	NA	NA	NA	NA	-63.33	-125.40	-19.11	-30.04	17.17	10.04
1992		142.40	31.08	NA	NA	NA	NA	NA	NA	-29.49	-30.97	NA	NA

dCTi = eii * NPRTi * COi

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E. MILK

YEAR	SELLING TO CONSUMERS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	820.00	850.99	922.53	-0.04	0.01	-0.03
1984	600.00	620.97	671.86	-0.03	0.01	-0.02
1985	600.00	620.97	671.86	-0.03	0.02	-0.01
1986	600.00	620.97	677.46	-0.03	0.03	-0.01
1987	640.00	620.97	671.86	0.03	0.02	0.06
1988	720.00	692.51	746.97	0.04	0.01	0.05
1989	1000.00	770.28	811.09	0.30	-0.01	0.29
1990	1000.00	804.30	1097.32	0.24	0.00	0.24
1991	1000.00	1048.88	1106.49	-0.05	-0.01	-0.06
1992	1100.00	1049.30	1135.75	0.05	0.00	0.04

IMPORT PRICE IS FOR LIQUID MILK

F.RICE

YEAR	SELLING TO CONSUMERS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	195.00	147.00	160.23	0.33	0.01	0.34
1984	195.00	157.00	171.13	0.24	0.02	0.26
1985	175.00	151.00	164.59	0.16	0.03	0.19
1986	175.00	144.00	158.40	0.22	0.03	0.25
1987	155.00	109.00	118.81	0.42	0.03	0.46
1988	155.00	146.00	159.14	0.06	0.01	0.07
1989	155.00	211.00	223.66	-0.27	-0.01	-0.27
1990	160.00	242.00	254.10	-0.34	0.00	-0.34

G. SUGAR

YEAR	SELLING TO CONS. CONSUMERS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	200.00	114.00	124.26	0.75	0.01	0.77
1984	200.00	122.00	132.98	0.64	0.02	0.66
1985	180.00	98.00	106.82	0.84	0.04	0.88
1986	180.00	78.00	85.80	1.31	0.06	1.37
1987	160.00	81.00	88.28	0.98	0.04	1.02
1988	160.00	116.00	126.44	0.38	0.01	0.39
1989	160.00	147.00	155.82	0.09	-0.01	0.08
1990	190.00	299.00	313.95	-0.36	0.00	-0.37

ANNEX 4. AGRICULTURAL PRODUCT PRICES—CONSUMERS

A. WHEAT

YEAR	SELLING TO MILLS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1983	37.00	70.26	75.86	-0.47	0.00	-0.47
1984	37.00	72.76	78.59	-0.49	0.01	-0.48
1985	34.00	62.58	67.49	-0.46	0.01	-0.44
1986	31.00	52.64	57.10	-0.41	0.02	-0.39
1987	31.00	39.94	42.81	-0.22	0.02	-0.20
1988	31.00	55.15	58.99	-0.44	0.01	-0.43
1989	35.00	121.77	128.30	-0.71	0.00	-0.72
1990	35.00	114.65	119.74	-0.69	0.00	-0.70
1991	35.00	88.80	93.37	-0.61	0.00	-0.61
1992	35.00	115.26	124.48	-0.70	0.00	-0.70

B. BARLEY

YEAR	SELL. TO LIVEST. OWNERS JD/TON	IMPORT COST Eo JD/TON	E* JD/TON	NPRd	NPRi	NPRT
1985	50.00	48.72	52.38	0.03	0.01	0.03
1986	51.50	52.65	57.10	-0.02	0.01	-0.01
1987	45.00	39.94	42.81	0.13	0.03	0.16
1988	42.00	55.15	58.99	-0.24	0.02	-0.22
1989	60.00	121.77	128.30	-0.51	0.01	-0.50
1990	65.00	114.65	119.74	-0.43	0.01	-0.43
1991	65.00	88.80	93.37	-0.27	-0.01	-0.27
1992	65.00	115.26	124.48	-0.44	0.00	-0.44

D. MILK

YEAR	WHOLESALE PR. LOCAL JD/TON	WHOLESALE PR. CIF $/TON	BORDER PRICE AT (Eo) JD/TON	BORDER PRICE AT (E*) JD/TON	MKT. MARGINS JD/TON	IMPORT COST AT (Eo) JD/TON	IMPORT COST AT (E*) JD/TON	E*	Eo	NPRd	NPRi	NPRT
1983	110.00	313.65	113.57	123.79	8.00	121.57	131.79	394.69	362.10	-0.10	0.01	-0.09
1984	110.00	210.47	80.72	87.98	8.00	88.72	95.98	418.02	383.50	0.24	0.02	0.26
1985	110.00	205.22	80.71	87.98	8.00	88.71	95.98	428.70	393.30	0.24	0.03	0.27
1986	110.00	231.60	80.71	88.78	8.00	88.71	96.78	383.35	348.50	0.24	0.03	0.28
1987	110.00	239.15	80.71	87.98	8.00	88.71	95.98	367.88	337.50	0.24	0.03	0.27
1988	110.00	231.03	86.43	94.21	12.50	98.93	106.71	407.77	374.10	0.11	0.01	0.12
1989	160.00	169.80	97.14	102.97	12.90	110.04	115.87	606.43	572.10	0.45	-0.01	0.44
1990	185.00	207.29	137.14	144.00	12.76	149.90	156.76	694.68	661.60	0.23	0.00	0.23
1991	210.00	201.83	137.14	145.37	12.70	149.84	158.07	720.27	679.50	0.40	-0.01	0.39
1992	210.00	202.04	137.14	149.49	12.76	149.90	162.25	739.89	678.80	0.40	-0.01	0.39

NOTES:

NPRd = (LOCAL WHOLSALE PRICE - IMPORT COST AT Eo)/IMPORT PRICE AT Eo

$$\frac{(PA-P'A)/P'A}{}$$

NPRi = {PA/PNA - (E*/Eo)PA/P*NA}/{(E*/Eo)PA*/P*NA}

NPRT = {(PA/PNA)-(E*/Eo)P'A/P*NA}/{(E*/Eo)P'A/P*NA}

B. BARLEY

YEAR	WHOLESALE PR. LOCAL JD/TON	WHOLESALE PR. CIF $/TON	BORDER PRICE AT (Eo) JD/TON	BORDER PRICE AT (E*) JD/TON	MKT. MARGINS JD/TON	IMPORT COST AT (Eo) JD/TON	IMPORT COST AT (E*) JD/TON	E*	Eo	NPRd	NPRi	NPRT
1985	75.50	103.53	40.72	44.38	8.00	48.72	52.38	428.70	393.30	0.55	0.01	0.56
1986	71.00	117.65	41.00	45.10	8.00	49.00	53.10	383.35	348.50	0.45	0.02	0.47
1987	74.00	91.85	31.00	33.79	8.00	39.00	41.79	367.88	337.50	0.90	0.05	0.95
1988	75.00	152.50	57.05	62.18	12.50	69.55	74.68	407.77	374.10	0.08	0.03	0.11
1989	82.00	144.00	82.38	87.33	12.90	95.28	100.23	606.43	572.10	-0.14	0.02	-0.12
1990	100.00	145.00	95.93	100.73	12.76	108.69	113.49	694.68	661.60	-0.08	0.01	-0.07
1991	105.00	116.00	78.82	83.55	12.70	91.52	96.25	720.27	679.50	0.15	-0.01	0.14
1992	105.00	110.00	74.67	81.39	12.76	87.43	94.15	739.89	678.80	0.20	0.00	0.20

NOTES:

NPRd = (LOCAL WHOLSALE PRICE - IMPORT COST AT Eo)/IMPORT PRICE AT Eo

$$\frac{(PA-P'A)}{P'A}$$

NPRi = {PA/PNA - (E*/Eo)PA/P*NA}/{(E*/Eo)PA*/P*NA}

NPRT = {(PA/PNA)-(E*/Eo)P'A/P*NA}/{(E*/Eo)P'A/P*NA}

C. CALCULATING PNA AND P*NA

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
NON-AGRICULTURE(000 JD)	1485.10	1562.40	1619.40	1681.60	1724.90	1698.50	1452.90	1476.70	1514.90	1572.30
NON-AGR.NON-TRADABLES (000	768.50	792.00	770.90	823.40	842.90	888.90	849.10	823.80	850.40	877.00
NON. AGR. TRADABLES (000 JD)	716.60	770.40	848.50	858.20	882.00	809.60	603.80	652.90	664.50	695.30
PNA-NTR%	99.69	102.74	100.00	106.81	109.34	115.31	110.14	106.86	110.31	113.76
PNA-TR%	84.45	90.80	100.00	101.14	103.95	95.42	71.16	76.95	78.31	81.94
SHARE OF NTR(SNTR)	0.52	0.51	0.48	0.49	0.49	0.52	0.58	0.56	0.56	0.56
SHARE OF TR(STR)	0.48	0.49	0.52	0.51	0.51	0.48	0.42	0.44	0.44	0.44
PNA	92.34	96.85	100.00	103.92	106.58	105.83	93.94	93.64	96.28	99.69
CORRECTION FACTOR(SCF)	0.92	0.92	0.92	0.91	0.91	0.92	0.94	0.95	0.94	0.91
EQUIL.EXCH.RATE(E*)/OFFICIAL EXCH.RATE(Eo) (1/SCF)	1.09	1.09	1.09	1.10	1.09	1.09	1.06	1.05	1.07	1.09
TM	0.11	0.11	0.11	0.13	0.12	0.11	0.08	0.07	0.08	0.12
P*NA	101.55	106.85	111.68	117.77	119.35	116.20	98.57	97.92	101.77	108.64

NOTES:

1) PNA-NTR = NTR in year t /NTR in year 1985
2) PNA-TR = TR in year t /TR in year 1985
3) SNTR = NTR/NA
4) STR = TR/NA
5) PNA = SNTR *PNA-NTR% +STR*PNA-TR%
6) SCF = (EXP. +IMP.)/(EXP+EXP.TAX + IMP. +IMP.TAX) {EXP.TAX=0}
7) E*/Eo = 1/SCF
8) P*NA = [STR *(E*/Eo)*{PNATR%/(1/TM)}] + [SNTR*PNATR%]

ANNEX 2. MACROECONOMIC INDICATORS

A. GROSS DOMESTIC PRODUCT (GDP Million JD)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
AGRICULTURE	96.30	76.40	87.50	90.30	116.40	142.30	121.00	158.10	136.90	123.20
NON. AGR. NON-TRADABLES	768.50	792.00	770.90	823.40	842.90	888.90	849.10	823.80	850.40	877.00
CONSTRUCTION	194.60	179.80	144.40	159.50	147.50	139.70	133.40	107.60	112.20	119.00
GOVERNM.SERVICES	292.70	315.70	323.80	348.60	376.40	401.50	385.50	382.80	391.60	403.30
OTHER SERVICES	281.20	296.50	302.70	315.30	319.00	347.70	330.20	333.40	346.60	354.70
NON-AGR.TRADABLES	716.60	770.40	848.50	858.20	882.00	809.60	603.80	652.90	664.50	695.30
MINING	44.80	67.90	62.70	66.40	70.20	70.00	77.40	65.40	57.40	59.70
MANUFACTURING	193.50	215.80	192.90	185.00	192.40	166.00	109.30	226.80	225.70	232.40
ELECTR.&WATER	22.90	33.20	40.10	60.80	64.70	64.50	71.40	41.10	42.00	44.10
TRADE	252.70	257.70	290.50	272.80	266.40	223.50	67.50	51.20	93.30	108.10
TRANSP.&COMMUN.	202.70	195.80	262.30	273.20	288.30	285.60	278.20	268.40	246.10	251.00
NON-AGRICULTURE	1485.10	1562.40	1619.40	1681.60	1724.90	1698.50	1452.90	1476.70	1514.90	1572.30
GDP AT FACTOR PR.	1581.40	1638.80	1706.90	1771.90	1841.30	1840.80	1573.90	1634.80	1651.80	1695.50

B. TRADE AND IMPORT TAX (Million JD)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
EXPORTS	210.60	261.10	255.30	255.60	248.80	324.80	534.10	612.30	298.60	633.80
IMPORTS	1103.30	1071.30	1074.40	850.20	915.50	1022.50	1230.00	1725.80	1710.50	2214.00
IMPORT TAX	120.70	118.05	117.95	112.00	108.54	117.40	103.90	116.70	136.10	270.00

C. Broiler production, consumption and foreign trade

(Capacity: million birds; quantity: 1,000 tons)

YEAR	CAPACITY	PROD.	IMPORTS	CONSUMP	PERCAP(KG)
1981	5.60	31.40	4.20	35.60	15.94
1982	5.40	32.10	7.70	39.80	17.14
1983	6.70	32.90	9.90	42.80	17.72
1984	8.30	36.50	7.40	43.90	17.59
1985	10.70	49.00	6.00	55.00	21.19
1986	11.70	55.00	1.50	56.50	20.97
1987	12.40	63.50	1.50	65.00	23.25
1988	13.70	63.00	2.20	65.20	22.51
1989	12.30	68.00	4.50	72.50	24.16
1990	11.50	43.00	15.50	58.50	13.80
1991	13.60	50.00	13.60	63.60	18.42
1992	16.70	70.00	25.20	95.20	25.80
AVR 81-92	11.69	54.04	9.02	63.05	22.14
AVR 81-89	9.64	47.93	4.99	52.92	19.52
AVR 90-92	13.93	54.33	18.10	72.43	22.08

D. Egg production consumption and foreign trade

(Capacity: million birds; quantity: million eggs)

YEAR	CAPACITY	PROD.	IMPORTS	EXPORTS	CONSUMP	PERCAP (KG)
1981	2.60	330.00	0.00	35.00	295.00	132.11
1982	2.80	350.00	0.00	63.00	287.00	123.60
1983	3.00	364.00	0.00	63.50	300.50	124.42
1984	3.10	413.00	0.00	94.00	319.00	127.84
1985	3.00	400.00	0.00	32.00	368.00	141.81
1986	3.00	520.00	0.00	133.00	387.00	143.67
1987	3.00	500.00	0.00	91.14	409.00	146.28
1988	3.00	425.00	0.00	95.00	330.00	113.92
1989	3.00	380.00	0.00	38.10	341.90	113.93
1990	3.50	350.00	0.00	3.40	346.60	111.41
1991	3.00	530.00	0.00	16.50	513.50	148.71
1992	3.00	708.00	0.00	75.10	632.90	171.52
AVR 81-92	3.27	479.09	0.00	67.25	411.85	136.29
AVR 81-89	2.94	409.11	0.00	71.82	337.49	125.89
AVR 90-92	3.17	529.33	0.00	31.67	497.60	151.70

Table 25. AVERAGE ANNUAL PER CAPITA INTAKE OF ENERGY AND ENERGY-PRODUCING NUTRIENTS FOR HOUSEHOLDS WITH ANNUAL INCOME LESS THAN JD 600 DURING 1987 AND 1992 IN URBAN AND RURAL AREAS

(Grams/day)

	1987		1992	
Energy and nutrients	Urban	Rural	Urban	Rural
Total	64.3	65.7	59.6	59.3
Animal protein	22.5	21.2	21.9	16.7
Fats	51.8	49.6	50.4	46.4
Carbohydrates	366.5	339.0	339.0	352.0
Energy (Kcal)	2 193.0	2 223.0	2 083.0	2 074.0

Source: Tables 16 and 18.

Table 26. PERCENTAGE CHANGE IN PER CAPITA INTAKE OF ENERGY AND ENERGY-PRODUCING NUTRIENTS IN 1992 COMPARED WITH 1987 IN URBAN AND RURAL AREAS FOR HOUSEHOLDS WITH ANNUAL INCOME BETWEEN JD 600 AND JD 1,119 PER FAMILY

(Percentage of total energy intake)

Energy and nutrients	Urban	Rural
Protein	-3.75	-5.91
Fats	-22.14	-9.05
Carbohydrates	-4.61	-5.55
Energy (Kcal)	-8.50	-7.04

Source: Calculated from table 21.

Table 21. AVERAGE PER CAPITA FOOD CONSUMPTION, NUTRIENTS AND ENERGY INTAKE FOR FAMILIES WITH ANNUAL INCOME OF JD 600-JD 1,199 IN URBAN AND RURAL AREAS IN 1987

(Per day)

	Urban					Rural				
Food groups	Quantity (gr)	Protein (gr)	Fats (gr)	Carbo. hydrates (gr)	Energy (Kcal)	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)
Wheat product	400	32	4	232	1 092	450	36	4.5	261	1 228
Rice	62	4.3	0.4	49	218	50	3.5	0.3	39	176
Red meats	36	5.7	5.7	..	65	30	4.8	3.9	..	55
Poultry meat	70	11.9	5.6	..	98	65	11	5.2	..	91
Fish	8	1.5	0.6	..	12	8.4	1.5	0.6	..	12
Dairy products	80	2.8	2.4	4.4	51	90	3	2.7	5	57
Eggs	20.6	2.6	2.3	0.2	32	19.4	2.5	2.2	..	30
Oils	50	..	49	..	440	45	..	44	..	396
Fruits	184	1.5	1	18	90	161	1.2	1.6	16	80
Vegetables	318	3	3	12.7	90	312	3	3	12	85
Legumes	21	4.7	0.5	11.7	70	20	4.5	0.5	11	65
Sugar	90	..	..	88	352	90	..	..	88	352
Total		70	74.5	416	2 610		71	68.5	432	2 627

Source: Department of Statistics, "Household Income and Expenditures," Amman, 1989.

Table 22. NUTRIENT CONTRIBUTION TO THE TOTAL ENERGY INTAKE OF LOW-INCOME GROUPS WITH ANNUAL INCOME OF JD 600-JD 1,199 PER FAMILY IN URBAN AND RURAL AREAS IN 1987

(Percentage of the total energy intake)

Nutrients	Urban	Rural
Total protein	10.8	10.8
Fats	25.4	23.4
Carbohydrates	63.8	65.8

Source: Calculated from table 21.

Table 26 shows the percentage change of energy and energy intake nutrients before and after the implementation of the Structural Adjustment Programme. The intake of animal protein decreased in both rural and urban areas, but the decrease in rural areas was greater. There was a sizeable decrease in fat consumption in urban areas.

Table 18. AVERAGE PER CAPITA FOOD CONSUMPTION, NUTRIENTS AND ENERGY INTAKE FOR FAMILIES WITH ANNUAL INCOME LESS THAN JD 600 IN URBAN AND RURAL AREAS, 1992

(Per day)

	Urban					Rural				
Food groups	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)
Wheat products	370	29.5	3.5	214	1 000	408	32	4	235	1 104
Rice	40	2.7	0.2	30	133	40	2.7	0.2	30	133
Red meats	30	4.8	3.9	..	55	20	3.2	2.6	..	36
Poultry meat	50	8.5	4	..	70	40	6.8	3.2	..	56
Fish	11.2	2	1	..	17	6.6	1.3	0.7	..	10
Dairy products	90	3	2.7	5	58	55	1.9	1.7	3	50
Eggs	28.4	3.6	3	..	44	27	3.5	3	..	43
Oils	30	..	29	..	261	28	..	27	..	243
Fruits	120	0.4	0.6	13	60	99	0.9	1	10	50
Vegetables	246	2	2	8	90	250	2.5	2.5	10	72
Legumes	17	3	0.5	9	55	20	4.5	0.5	11	65
Sugar	60	..	..	60	240	55	..	..	53	212
Total		59.6	50.4	339	2 083		59.3	46.4	352	2 074

Source: Department of Statistics, Study of Household Income and Expenditures 1992, unpublished data.

Other factors, such as the exchange rate of the Jordanian dinar and the decrease in the gross domestic product (GDP), adversely affected food consumption patterns in Jordan.[10] In addition to the Structural Adjustment Programme, these factors caused the consumption of meats, oils and fruits to decrease.

Table 27 includes the percentage change in the quantities of the different food groups consumed in 1992 compared with 1987. In 1992, the consumption of wheat products, fish and eggs in urban areas increased by 3.9 per cent, 47.4 per cent and 56 per cent, respectively. On the other hand, consumption of rice, red meat, poultry meat, dairy products, fruits, vegetables, legumes and sugar decreased by 18.4 per cent, 9.1 per cent, 16.7 per cent, 10 per cent, 29.8 per cent, 16.6 per cent, 26.1 per cent and 23.1 per cent, respectively. In rural areas, consumption decreased for all food groups except eggs.

[10] Central Bank of Jordan, "Monthly Statistical Bulletin," vol. 29, No. 9 (Amman, September 1993), pp. 7, 90 and 94.

legumes and vegetables than urban consumers. This contrasts with higher consumption of animal products, fruits and sugar by residents of urban areas (table 18).

In 1987, the urban segment of the JD 600-1,199 income group consumed 70 grams of protein, 74.5 grams of fat and 416 grams of carbohydrates, with a total energy intake of 2,610 Kcal per day, as shown in table 21. Wheat products and protein contributed 41.8 per cent and 10.8 per cent, respectively, to the total energy intake.

Table 16. AVERAGE FOOD CONSUMPTION, NUTRIENTS AND ENERGY (PER CAPITA) FOR FAMILIES WITH ANNUAL INCOME LESS THAN JD 600 IN URBAN AND RURAL AREAS, 1987

	Urban					Rural				
Food groups	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)
Wheat products	356	29	3.5	205	967	400	32	4	232	1 092
Rice	49	3.5	..	38	165	45	3.3	..	37	158
Red meats	33	5.3	4.3	..	60	29	4.6	3.8	..	52
Poultry meat	60	10	5	..	84	60	10	5	..	84
Fish	7.6	1.4	0.6	..	11	8.8	1.7	0.7	..	13
Dairy products	100	3.5	3	5.5	64	75	2.6	2.3	..	48
Eggs	18.2	2.3	2	..	29	18.3	2.3	2.0	..	29
Oils	30	..	29	..	261	29	..	28	..	252
Fruits	171	1.5	1.7	17	85	117	0.9	1.1	11	58
Vegetables	295	2.8	2	12	85	283	2.8	2	11	82
Legumes	23	5	0.7	12	74	25	5.5	0.7	13	83
Sugar	78	..	..	77	308	70	..	..	68	272
Total		64.3	51.8	366.5	2 193		65.7	49.6	372	2 223

Source: Department of Statistics, "Study of Household Income and Expenditures", Amman, 1989.

In 1987, the food consumption pattern of the rural population supplied consumers with 71 grams of protein, 68.5 grams of fat and 432 grams of carbohydrates, with a total energy intake of 2,627 Kcal (table 21). Wheat products occupied an important position in the nutrition of the rural population, providing about 50.7 per cent of protein consumption and 46.7 per cent of total energy intake.

Table 22 shows the distribution by percentage of energy sources in rural and urban areas.

In 1992, the rural segment of the JD 600-1,199 income group consumed 66.8 grams of protein, 62.3 grams of fat and 408 grams of carbohydrates, with a total energy intake of 2,442 Kcal, as shown in table 23. Animal protein provided 30 per cent of the total protein intake. Wheat products appeared to hold

C. THE FOOD CONSUMPTION PATTERN OF LOW-INCOME GROUPS DURING 1987 AND 1992

The impact of the Structural Adjustment Programme (SAP) on the food consumption of families with annual incomes of (a) less than JD 600 and (b) JD 600-1,199 is reviewed in this section. The urban and rural areas will also be covered for both years.

Table 14. PER CAPITA FOOD CONSUMPTION PATTERNS IN JORDAN DURING 1987 AND 1992

(Per day)

	1987					1992				
Food groups	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)	Quantity (gr)	Protein (gr)	Fats-hydrates (gr)	Carbo. intake (gr)	Energy (Kcal)
Wheat products	410	33	4	238	1118	478	39	5	279	1 305
Rice	51	4	0	40	180	55	4	0	43	194
Red meats	56	9	7		100	25	4	4		50
Poultry meat	92	16	7		129	70	12	6		105
Fish	20	4	2		30	17	1	1		10
Dairy products	105	4	3	6	67	158	5	5	9	100
Eggs	26	3	3	0	40	24	3	3	0	40
Oils and fats	49		47		423	37		37		330
Fruits	212	2	2	21	100	125	1	1	13	65
Vegetables	318	3	3	13	90	296	3	3	12	85
Legumes	19	4	1	11	65	16	4	0	9	55
Sugar	110			107	428	90			90	360
Total		82	79	436	2770		76	65	455	2 699

Source: Department of Statistics, Household Income and Expenditures in 1986/87, Amman, 1989; Department of Statistics, Household Income and Expenditures, 1992, unpublished data.

In 1987, the urban population (per capita) in the under-JD 600 income group consumed 64.3 grams of protein, 51.8 grams of fat and 366.5 grams of carbohydrates, totalling 2,193 Kcal per day, as shown in table 16. The rural population showed a similar food consumption pattern: the average per capita consumption amounted to about 65.7 grams of protein, 49.6 grams of fat and 372 grams of carbohydrates totalling 2,223 Kcal.

Table 16 shows that, in 1987, the consumption of nutrients in rural areas, compared with urban areas, was higher by 2.2 per cent for protein and 1.5 per cent for carbohydrates. Energy intake was 1.4 per cent higher as well. For the same year, the urban population showed higher consumption for all food items with the exception of wheat products.

Table 17 presents a comparison of the contribution of protein, fats and carbohydrates to the total energy intake of low-income groups with an annual income of less than JD 600 per family in urban and rural areas

About 91 per cent of the rural population own their homes, compared with 67 per cent of the urban population.

The governorates of Balqa, Mafraq and Karak possessed the highest share of poor families, while the governorates of Amman and Zarqa possessed the lowest share of poor families (table 13).

The average size of the Jordanian family is 6.8 persons, with poor families numbering 9 persons on average, while non-poor families average 6.4 persons. Children under 15 years of age constitute 51 per cent of poor families, compared with 40 per cent of non-poor families.

Statistics show that poor families have the lowest level of education, which results in unemployment and low income. Poor families are also characterized by a high percentage of handicapped individuals. About 18 per cent of poor families have members who are handicapped, while only 0.6 per cent of non-poor families have members who are handicapped.

The rate of unemployment in families classified as living in abject poverty is 34.2 per cent; for those living in absolute poverty it is 26.8 per cent, and for non-poor families it is 15.3 per cent. Poor people are mainly employed in government offices, in the army, in agriculture and in the service sector.

To determine the impact of the Structural Adjustment Programme on food consumption in Jordan in general and on the poor population in particular, the food consumption pattern of the population before and after the adjustment programme will be studied.

The study of household income and expenditure for 1986 and 1987 will be used to depict food consumption before the implementation of the Structural Adjustment Programme. The preliminary unpublished data of the household income and expenditure study for 1992 will depict food consumption during the implementation of the programme.

For both periods, the general food consumption patterns in rural and urban areas as well as the food consumption patterns of two income groups (less than JD 600 and JD 600-1,199 per family per year, representing the two low-income groups in Jordan) will be studied and analysed in nutritional terms.

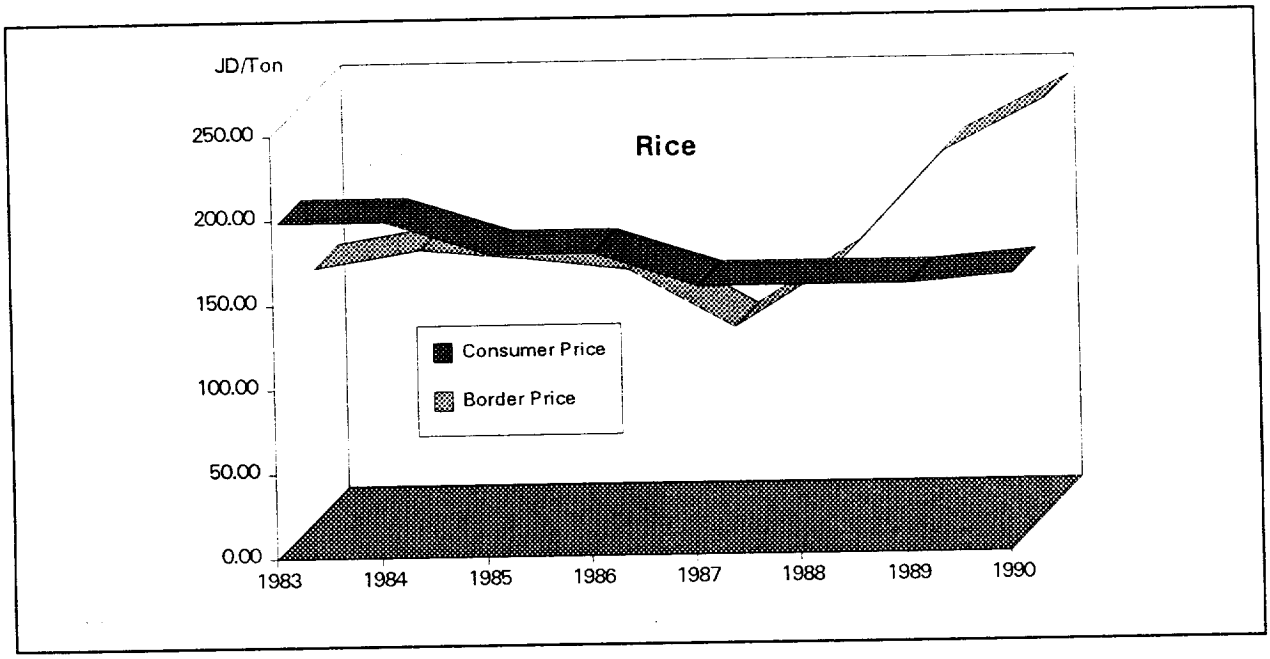
It is necessary to note that, in 1987, the Jordanian dinar was worth about US$ 3, but by 1992 it was worth half that amount. Moreover, the GDP at constant producers' prices (1985 = 100) amounted to JD 2,176.6 million in 1987 and JD 1,939.5 million in 1991.[9]

B. Food consumption patterns during 1987 and 1992

Table 14 provides a comparison between the food consumption pattern in 1987 and 1992. According to the table, the average food consumption figures were higher in 1987 than in 1992 in both quantitative and qualitative terms. In 1987, the per capita consumption of nutrients amounted to 82 grams of protein, 79 grams of fats and 436 grams of carbohydrates. The total energy intake was 2,770 kilocalories (Kcal), of which 13.2 per cent was of animal origin. The contribution of wheat products, oils, sugar, fruits, vegetables, legumes and rice to the total energy intake were 40 per cent, 15.3 per cent, 15.5 per cent, 3.6 per cent,

[9] Central Bank of Jordan, "Monthly Statistical Bulletin", vol. 29, No. 9 (Amman, September 1993), pp. 7, 90 and 94.

Figure XI. DOMESTIC AND BORDER CONSUMER PRICES FOR RICE AND SUGAR



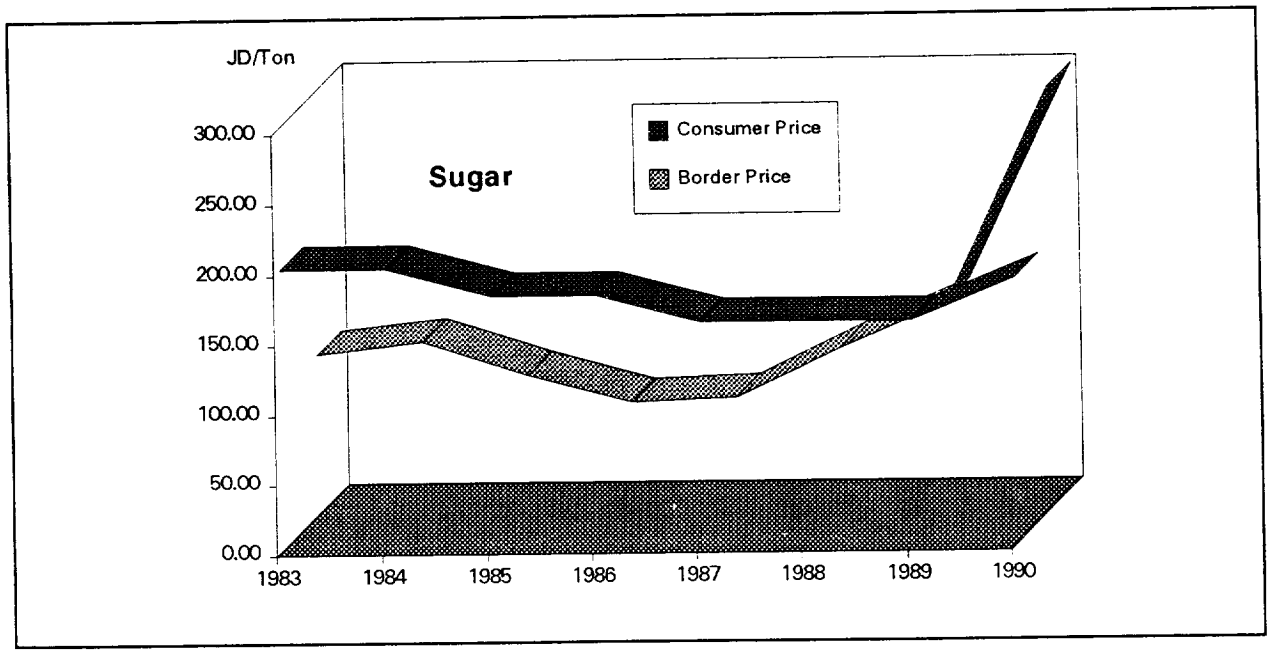
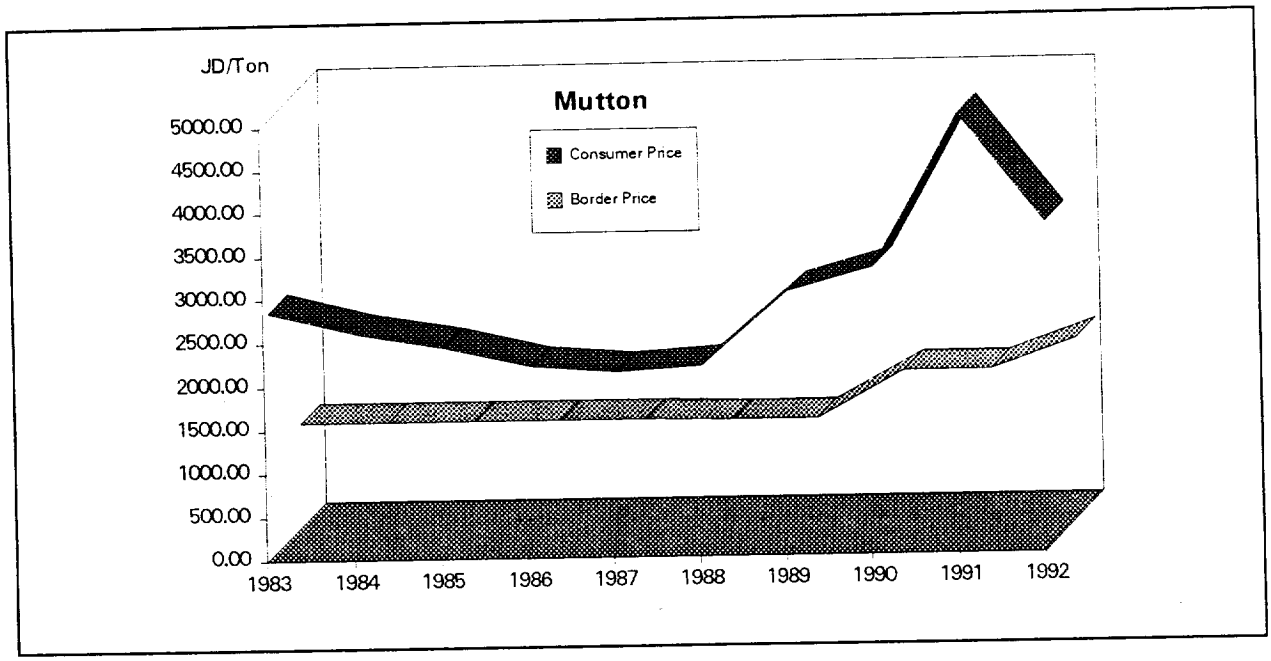


Figure IX. DOMESTIC AND BORDER CONSUMER PRICES FOR MUTTON AND BROILERS



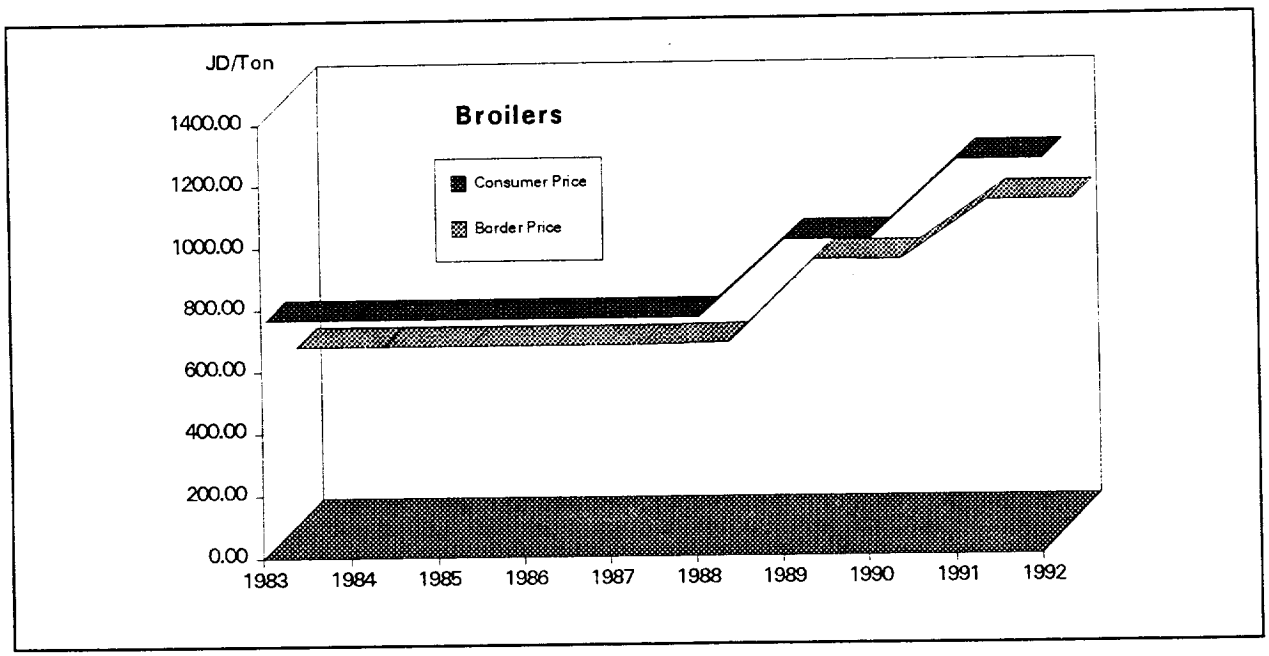


Table 12. RICE CONSUMER SUBSIDIES

Year	Imports (1,000 tons)	Import costs (JD/ton)	Wholesale selling price (JD/ton)	Unit subsidy (JD/ton)	Total subsidy (1,000 tons)
1981	36.9	156	170	-14	-517
1982	45.9	190	170	20	918
1983	36.1	147	165	-18	-650
1984	55.3	157	165	-8	-442
1985	51.0	151	145	6	306
1986	71.6	144	145	-1	-72
1987	71.8	109	125	-6	-1144
1988	76.7	146	125	21	1611
1989	39.2	211	125	86	3371
1990	120.5	242	130	112	13496

Source: Ministry of Supply.

(d) Consumer subsidies were much greater than producer subsidies. In 1992, total consumer subsidies reached a peak of JD 42.9 million, of which JD 36.2 million consisted of subsidies for imports and JD 6.7 million consisted of subsidies for local production. Consumer subsidies reached their lowest level (JD 7.4 million) in 1986.

Table 9. FEED SUBSIDY FOR IMPORTS AND DOMESTIC PRODUCTION OF BARLEY, 1986-1992

Year	1986	1987	1988	1989	1990	1991	1992
Imports (1,000 tons)	143.5	114.8	101	201	200	293	230
Procurement (1,000 tons)	204	12.5	27	1	7	9	53
Import costs (JD/ton)	49.0	39.0	70	95	109	92	87
Procurement costs (JD)	71.0	74.0	75	82	100	105	105
Sales price (JD/ton)	51.5	45.0	42	60	65	65	65
Import costs - Sales price	-2.5	-6.0	28	35	61	27	22
Proc. costs - Sales price	19.5	29.0	33	22	35	40	40
Total Subsidy (1,000 JD)	-312	-326	3 719	7 057	12 445	8 271	7 180

Source: Ministry of Supply.

Note: Total subsidy is calculated as follows:
Imports *(Import cost - sales price) + Procurements * (Procur. cost - sales price).

(b) *Sugar*

Jordan does not produce sugar. Imported quantities dropped in 1983 and 1984 to about 40,300 tons compared to 90,800 tons in 1981 and 1982; they increased during 1985 and 1986 and then dropped again in the two subsequent years.

The largest quantity of imported sugar was 187,300 tons in 1990 (table 11). Import costs also fluctuated from 1981 to 1990, the lowest being JD 78 per ton in 1986 and the highest being JD 299 per ton in 1990. The unit subsidy was negative from 1983 to 1988, signifying that the Government was benefiting from the sugar trade (the total net income in that period was about JD 22.9 million). The highest subsidy (JD 32 million) was paid in 1990.

(c) *Rice*

As with sugar, all rice in Jordan is imported. The largest imported quantity was 120,500 tons in 1990, with a total subsidy of JD 13.5 million. The lowest imported quantity was 36,100 tons in 1983. There were negative subsidies in 1981, 1983, 1984, 1986 and 1987. The wholesale selling prices were reduced from JD 170 per ton in 1981 and 1982 to JD 130 per ton in 1990 (table 12).

Table 7. WHEAT PRODUCTION, IMPORTS, GOVERNMENT PROCUREMENT AND SUBSIDIES FOR FARMERS

Year	Prod. (1,000 tons)	Procur. (1,000 tons)	Procur. Price (JD/ton)	Imports (1,000 tons)	Import cost at Eo (JD/ton)	Unit subsidy (JD/ton)	Total subsidy (1,000 JD)
1988	137.0	59.0	120.0	360	55	65	3 835
1989	86.0	43.0	132.0	406	122	10	430
1990	88.7	55.0	142.0	458	115	27	1 485
1991	47.8	36.0	147.0	515	89	58	2 088
1992	122.5	60.0	147.0	452	115	32	1 920

Source: Ministry of Supply.

(g) Moreover, some other reasons for the failure of farmers to sell more produce to the Ministry of Supply may be: (i) some illegal exports to Saudi Arabia, where support prices were higher in some years; (ii) free-market sales, particularly later in the season; and (iii) a preference for home consumption. Variation in government intervention and procurement methods might have also caused fluctuations in procurement percentages.

(c) *Barley*

As with wheat, the Ministry of Supply declares the prices of barley at the sowing date (autumn) and makes purchases mostly during the two months (May/June) after the harvest. Table 8 shows the procured quantities and their prices, the quantities and prices of imports and the amount of subsidy paid to the farmers by the Ministry of Supply from 1988 to 1992. The following facts emerge:

(a) Nearly 40 per cent of production was procured on average from 1988 to 1992, which is a lower figure than that of wheat. The proportion was high (54 per cent) in 1988 and low (3 per cent) in 1989;

(b) Unit subsidy was highest in 1992 (about JD 18 per ton) and lowest in 1988 (about JD 5 per ton);

(c) Producer subsidies reached their highest level of JD 954 million in 1992;

(d) Negative subsidies (taxes were prevailing in 1989 and 1990).

(d) *Livestock feed*

The Ministry of Supply sells wheat bran produced in its mills to livestock owners through the Jordan Cooperative Organization (JCO). The Ministry of Supply sells about 13,300 tons monthly. Wheat bran, which is a by-product of milling, was priced at about JD 20 per ton until 1990, when it increased to JD 42 per ton. The quantities sold to livestock producers were 137,000 tons in 1990, 140,000 tons in 1991 and 143,000 tons in 1992. The wheat bran sold to livestock producers represents no financial or budgetary burden; the selling price of wheat bran covers, *inter alia*, the financial costs of milling, and the raw material

Table 6. EFFECTIVE RATE OF PROTECTION AND DOMESTIC RESOURCE COST FOR WHEAT AND BARLEY IN 1988 AND 1991

	1988*		1991**	
Measure	Wheat	Barley	Wheat	Barley
ERP	1.0	0.877	1.096	0.860
DRC	0.23	0.979	0.580	0.721

Sources: * El-Habbab, M.S. and A. Jabarin, "The Impact of Wheat Policy on Traditional and Modern Rain-fed Wheat Production".

** Sunna, S. et al., "Jordan's Agricultural Sector Review and Policy Implication Plan—Rain-fed Agriculture".

In the short run, output is assumed to be given by $dX_{i,t-1} = 0$; therefore, with the above assumptions, the effect of the policy on output is:

$$dX_{i,t} = v_i \, b_i \; ERP_{i,t-1}$$

The changes in output of wheat occasioned by policy intervention in 1988 and 1991 were 558.7 tons and 445 tons respectively, which equals 0.408 per cent and 0.770 per cent, respectively, of the local production. The fact that the resultant percentages are positive indicate that the actual output levels are 0.408 per cent and 0.770 per cent over what they would have been in the absence of intervention.

D. EFFECTS OF PRICE INTERVENTION ON AGGREGATE CONSUMPTION

Measuring the effects of removing price intervention on aggregate consumption enables the examination of the impact of intervention on consumer welfare for the country as a whole.

The effects of total price intervention on consumption in period *t* may be determined by using the following formula:

$$dC_i^t = e_{ii} \; NRP_i^t \; C^{ot}_i$$

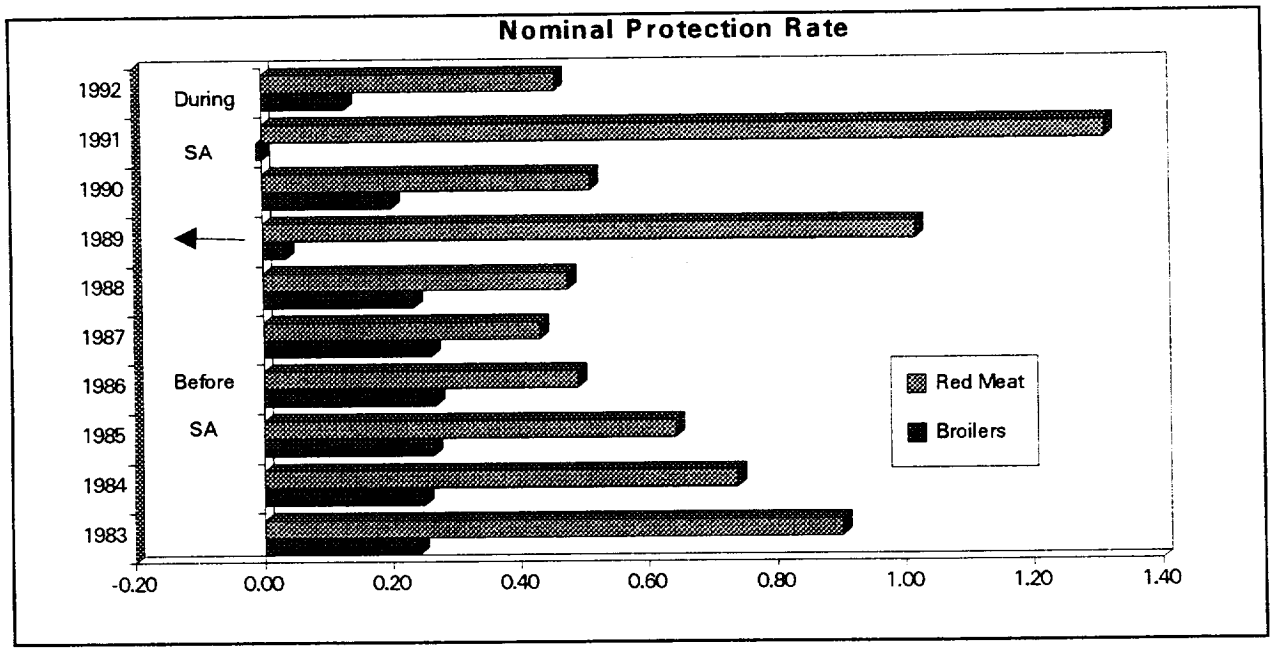
Where:

dC_i^t = total change in consumption owing to change in own-price of crop *i*
e_{ii} = own-price elasticity of consumption of crop *i*
NPR_i^t = total nominal rate of production of crop *i*
C^{ot}_i = level of consumption of crop *i* at distorted consumer price

For red meat, broilers, milk, sugar and rice, the actual own-price elasticities of consumption were calculated; for wheat the own-price elasticity of consumption in Egypt was used.

Annex 5 summarizes the results of the short-run effects of total price intervention on consumption of wheat and broilers for the period from 1983 to 1992, of sugar and rice from 1983 to 1990, and of red meat and milk from 1983 to 1991.

Figure VII. NOMINAL PROTECTION RATE FOR MEAT AND BROILERS



The effects of indirect intervention for the producer side are presented in annex 3, while the effects of indirect intervention for the consumer side are presented in annex 4.

In general, the NPR values were relatively neutral for all the selected commodities (the highest was 0.05 for barley in 1987, and the lowest was zero for wheat in 1990 (annexes 3.B-3.E).

3. *Total effects of pricing policies (NPR_T)*

The total direct intervention is the sum of direct (agricultural pricing policies) and indirect (exchange and trade policies) intervention on relative prices. The results in this section indicate that indirect policies have a marginal effect on price intervention. The total effects of pricing policies are measured by NPR_T, which is calculated as follows:

$$NPR_T = \frac{P_A/P_{NA} - (E*/E_O)\ P'_A/P*_{NA}}{(E*/E_O)\ P'_A/P*_{NA}} = \frac{P_A - P'_A}{P'_A}$$

Where: P_A = the producer (or consumer) price of crop *A*
P'_A = the border price equivalent of crop *A*
P_{NA} = the non-agricultural (NA) price index
$P*_{NA}$ = the NA price index adjusted for exchange rate and trade policies
$E*$ = the equilibrium exchange rate
E_O = the official exchange rate.

The NPR_D for milk was negative only in 1988 and it was highest in 1990 (annex 3.D).

Table 5. CONSUMER PRICES FOR SELECTED COMMODITIES

Year	Wheat	Barley	Mutton	Broilers	Milk	Sugar	Rice
1983	37.00	N.A	2800.00	750.00	820.00	195.00	200.00
1984	37.00	N.A	2542.00	750.00	600.00	195.00	200.00
1985	34.00	50.00	2375.00	750.00	600.00	175.00	180.00
1986	31.00	51.50	2150.00	750.00	600.00	175.00	180.00
1987	31.00	45.00	2075.00	750.00	640.00	155.00	160.00
1988	31.00	42.00	2140.00	750.00	720.00	155.00	160.00
1989	35.00	60.00	2980.00	1000.00	1000.00	155.00	160.00
1990	35.00	65.00	3250.00	1000.00	1000.00	160.00	190.00
1991	35.00	65.00	5000.00	1250.00	1000.00	160.00	190.00
1992	35.00	65.00	3750.00	1250.00	1100.00	180.00	190.00

Source: Ministry of Supply.

On the consumer side, wheat consumers were subsidized since the NPR_D had a negative value during the entire period. The implementation of the SAP did not affect the level of wheat subsidy for consumers. On the contrary, the NPR_D for wheat increased from -0.44 in 1988 to -0.71 in 1989 (annex 4.A).

Barley sold to livestock producers was subsidized in 1986 and from 1988 to 1992. In 1985 and 1987, the NPR_D had a positive value (that is, it was taxed). The level of subsidy fluctuated during the period under study, and, in fact, the subsidy increased, on average, during the SAP period (annex 4.B).

Mutton was not subsidized for the consumer during the period under review, and the NPR_D fluctuated every year (its highest level was 0.531 in 1991 and its lowest was 0.26 in 1987) (annex 4.C).

Broiler consumers were taxed less after the implementation of the SAP (the NPR_D was 0.32 from 1983 to 1987, decreased to 0.19 in 1989 and then increased to 0.22 in 1991-1992).

Milk consumers were subsidized during the period 1983 to 1986 and in 1991. In general, NPR_D values were low (the highest was 0.3 in 1989), which indicates that the pricing policy for milk was neutral.

Rice was subsidized during 1989 and 1990 only, while sugar was subsidized only in 1990.

In summary, wheat and, to some extent, barley remained subsidized even during the SAP period. The fluctuation in protection rates was largely due to variation in international prices.

IV. MEASURES OF INTERVENTION

The relative prices were used to measure the intervention in both the production and consumption of selected products (wheat, barley, red meat, broilers, eggs, sugar and rice). The prices of these products were calculated, then deflated by the price index for non-agricultural goods. The non-agricultural price index was calculated by separating the components of the gross domestic product for non-agricultural sectors into tradable sectors and non-tradable sectors.[4] The nominal protection rates (NPRs) for the period 1983-1992 were calculated. These include the direct nominal protection rate (NPR_D), the indirect nominal protection rate (NPR_I), and the total nominal protection rate (NPR_T). Local wholesale prices, in addition to import costs (prices), are presented in annex 3. Import cost, insurance, freight (c.i.f.) prices were adjusted by the official and equilibrium exchange rate, and marketing margins were then added to reach the import cost for each crop.

The import costs (estimated at the official exchange rate) of wheat, mutton and broilers were lower than the local wholesale prices during the whole period. On the other hand, the local wholesale prices for barley were higher than the import costs in all years except 1989. The local wholesale prices for all products are, in general, increasing since most of them are set by the Government. The price of local wheat increased from JD 108.500 per ton in 1983 to JD 147 per ton in 1991 and 1992, while the price of imported wheat fluctuated during that period, the lowest being JD 31.940 per ton in 1987 and the highest being JD 108.870 per ton in 1989. The prices of wheat before the implementation of the SAP (between 1983 and 1988) were lower than the prices after 1988. The official exchange rate began to shift upwards in 1989 (it was JD 0.374 per U.S. dollar in 1988 and then increased to JD 0.572 per U.S. dollar in 1989 and to JD 0.679 per U.S. dollar in 1991) (annex 3.A). From 1983 to 1992, there was a jump in the price of domestic wheat from JD 108.50 to 147.00 per ton. The wholesale prices of local barley followed the same pattern as wheat. On the other hand, the shifts in the price of imported barley occurred only from 1988 to 1990 (JD 57.05 per ton in 1988, JD 82.38 per ton in 1989 and JD 95.93 per ton in 1990). Afterwards, prices started to drop (to JD 78.82 per ton in 1991 and JD 74.7 per ton in 1992) (see annex 3.B).

The prices of locally produced broilers were stable at JD 700 per ton during the period 1983-1988. They increased in 1989 to JD 875 per ton and then to JD 1,160 per ton in 1992. The prices of imported broilers were also fixed by the Government, and so they followed the same patterns as the locally produced prices (annex 3.C).

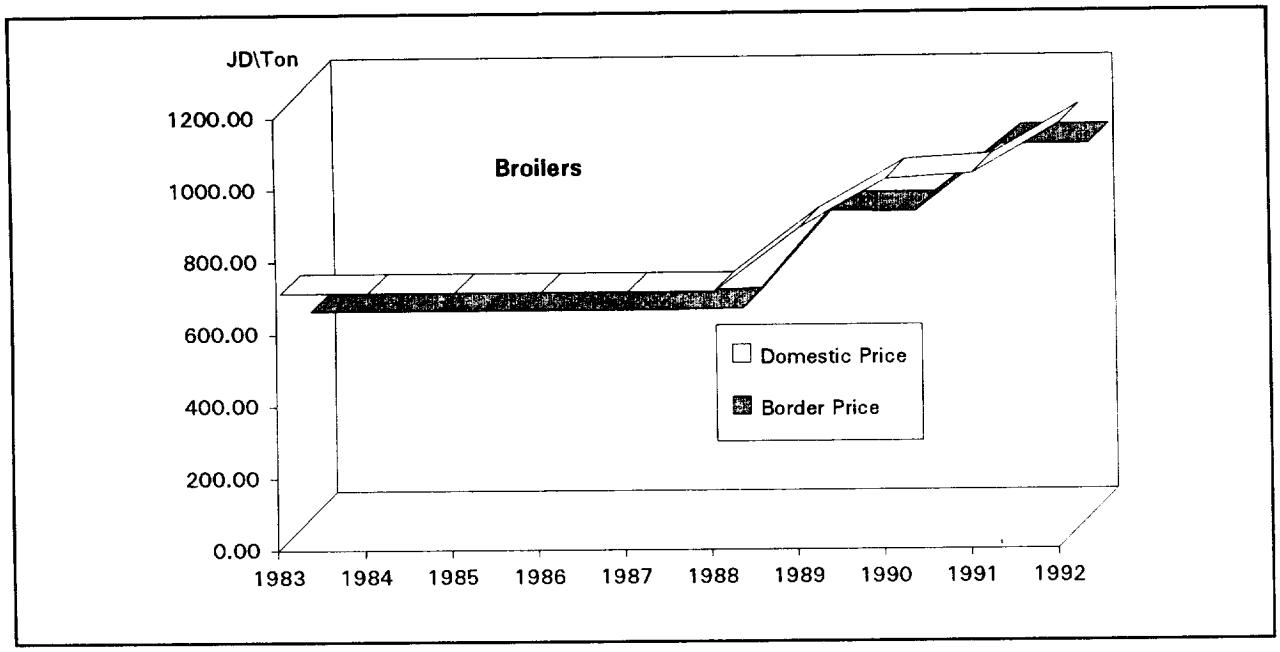
The prices of local mutton dropped from JD 2,240 per ton in 1983 to JD 1,660 per ton in 1987. They then began to increase and eventually reached JD 4,000 per ton in 1991, after which they began to drop again, reaching JD 3,000 per ton in 1992.

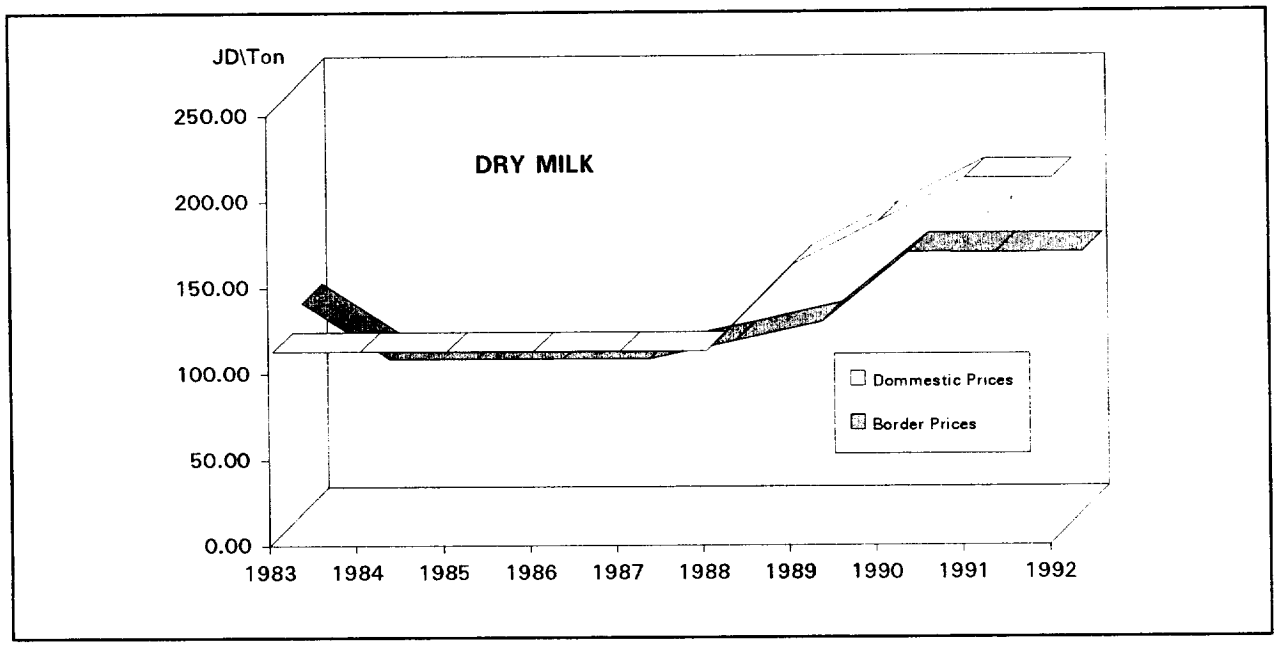
On the consumer side, most of the wheat procured by the Government and all the imported wheat is milled by Government-owned mills. The rest is sold to the public sector and to licensed private-sector mills. The flour is then sold to urban or village bakeries. The flour produced by the Government is sold mainly to bakeries at subsidized prices, and to grocery stores.

The price of bread is fixed according to the type of loaf. No time series data are available for different varieties of loaves; thus, the price of wheat sold to domestic mills has been selected as representing the best indicator of the "average consumer price for bread". The border-price equivalent of wheat at the

[4] Jean-Jacques Dithie, "Trade, Exchange Rate, and Agricultural Price Policies in Egypt", World Bank (Washington, D.C., 1989).

Figure IV. DOMESTIC AND BORDER PRICES FOR BROILERS AND DRY MILK





Wheat and barley prices are set in advance by the Ministry of Supply, but they do not necessarily follow the international prices. It is the secular trend rather than the level of international prices in an individual year that may be taken into account in determining support prices, along with other factors (*inter alia*, the cost of production, the need for improving self-sufficiency, and the response of production to price changes). The effect of price fixing and direct subsidies will be discussed in chapter IV.

The ceiling for wholesale and consumer prices for broilers are set by the Ministry of Supply. The wholesale prices are supposed to cover the production costs in addition to a small profit margin. In spring, broiler production meets competition from lamb production, and wholesale prices of broilers are sometimes not sufficient to cover production cost. The prices of milk and milk products are also set by the Ministry of Supply depending on the cost of production. Milk processing plants are obliged to use fresh liquid milk at the fixed price so as to support local production. In addition to direct subsidy (through price fixing), the Government subsidized farmers by exempting them from land and income taxes and by selling water at a low price (about one third of the operation and maintenance [O and M] cost) in the Jordan Valley.

Prices of agricultural products are also indirectly affected by economy-wide intervention such as exchange-rate and trade policies. Inputs, except water, are indirectly subsidized through exemption from tariffs. Agricultural loans, offered by the Agricultural Credit Corporation (ACC), are also subsidized, since the interest rate ranges between 7 and 8.4 per cent and the commercial interest rate is greater than 11 per cent.

2. *Consumer prices*

Price controls are enforced by the Government through price edicts and judicial coercion or directly exercised through control over the quantities available in the market, principally by means of a monopoly on the imports of controlled products or through domestic procurement of products. Essentially, all food products bought at a retail store in Jordan are subject to price controls. Typically, prices are announced for an undetermined period of time and are specified for the numerous levels of the marketing chain. The major aims of fixed consumer prices are to stabilize prices for most food items and to provide subsidies to consumers, as in the case of bread, milk, sugar and rice. Consumer subsidy levels are discussed in detail in chapter IV.

As for fruits and vegetables, the Government does not interfere directly in wholesale prices; it sets only the retail prices. Every day, two-tier retail prices (often referred to as the "upper" and "lower" retail price) are announced on the basis of the summary wholesale prices of the previous day. Retailers are prohibited from selling above the published "upper" level. The "lower" retail price is the level above which retailers are not allowed to sell the second-grade products. However, it has no effective relevance for price control purposes, since the products are not sorted and sold by grade at the retail level. The retail price control policies have had significant effects on the marketing of fruits and vegetables in Jordan, including: (a) the obstruction of the development of a well defined system of quality grades and standards, affecting both the quality of the product supplied to the market and the range of commodities available to the consumer; and (b) the distortion of prices at both the wholesale and retail levels of the marketing chain owing to the lack of an effective price discovery mechanism and the existence of market manipulation.

controls are placed on those crops which are in surplus and are causing depressed prices, or those which the Government is promoting (potatoes, onions, garlic and apples).

Quantitative restrictions are the main interventional policy instruments. The list of commodities subject to quantitative restrictions include sugar, red lentils, wheat, wheat bran, barley, yellow maize, rice, olive oil, powdered milk, frozen chicken and fish, and fresh, chilled and frozen red meat. The Ministry of Supply had been given import monopoly rights for these items. However, these import monopolies have been relaxed of late, and the private sector has been allowed to import barley, yellow maize, frozen fish, and fresh, chilled and frozen red meat. The prices of all these commodities, however, are still controlled by the Ministry of Supply. The profit that the Ministry of Supply reaps from import monopolies is used to subsidize other foodstuffs, mainly bread.

The Agricultural Marketing and Processing Company (AMPCO), a semi-public company, was offered a monopoly on the import of apples, potatoes, onions and garlic. It uses its trading activities in these commodities to compensate for its losses in tomato paste operations.

Import bans remain in effect for the following commodities: tomato paste, canned whole tomatoes, tomato juice, white cheese, yogurt, fresh milk and table eggs. Also, in order to promote the production of fruits and vegetables, the Government has banned their importation. The exceptions to this policy are the barter agreements between Jordan and neighbouring countries, and for tropical products that are not produced in Jordan.

The protective policy has had a positive impact and has encouraged farmers to produce commodities needed for domestic markets. As an example, since the Government banned the importation of apples in 1984, apple production has increased from 2,000 tons to 12,000 tons in 1991, and it is expected that growth rates will continue. However, the repercussion of this policy has been that some of the neighbouring countries, Iraq, Lebanon and the Syrian Arab Republic, have taken similar measures, which may negatively affect the comparative advantage in the vegetable export market for Jordan.

Import licenses for some fruits and vegetables were issued according to a monthly plan determined by representatives of the Ministry of Agriculture, the Ministry of Supply, and the Agricultural Marketing Organization (AMO).

The other major commodities which need prior approval by the Ministry of Supply are: barley; live animals; fresh, chilled and frozen red meat (mutton and veal); chick-peas; maize; feed concentrates; vegetable oils; dry beans; flour derivatives; milk powder; and certain dairy products.

In general, the quantitative restrictions have resulted in the protection of some agricultural produce and have led to higher consumer prices of the protected commodities, and those whose import is the sole domain of AMPCO. To partially offset the effect of higher consumer prices, the Government introduced another distortion through the imposition of retail price control for most fruits and vegetables.

Tariffs applied to the agricultural sector are used as a protective measure. Although the tariff bans were narrowed to a range of 5 to 50 per cent, several commodities were subject to additional tariff surcharges and could reach 20 to 25 per cent in addition to basic tariffs. The levy or tax applied to the import of items subject to duties is 17.2 per cent, while items not dutiable are subject to a 7.2 per cent tax.

(c) Minimal government intervention:

(i) Designing a national agricultural policy and strategy;

(ii) Designing an institutional development plan for the Ministry of Agriculture;

(iii) Establishing a programme to develop agricultural research, including action to upgrade the institutional status of the National Center for Agricultural Research & Technology Transfer (NCARTT);

(iv) Reforming the Agricultural Credit Corporation (ACC) by following international standards, including protection from the imposition of debt relief measures by Government, and a loan recovery plan;

(v) Restructuring the cooperative system in Jordan.

(o) Increase the resources of the Central Bank of Jordan (CBJ) in foreign exchange to cover at least three months of imports in 1998 instead of 67 days in 1991;

(p) Improve other indicators of performance of the Jordanian economy, such as remittances and tourism.

The Jordanian Government adopted proper policies for the implementation of the SAP as negotiated with IMF, which resulted in the following achievements:[2]

(a) As a result of the adoption of the reform package of November 1988, external debt was rescheduled and budget deficit was reduced from JD 111 million in 1988 to JD 70 million in 1989;

(b) The trade deficit decreased sharply as imports dropped by 22 per cent and exports increased by 9 per cent;

(c) The stability of the Jordanian dinar's exchange rate has been maintained since September 1989 as a result of careful intervention by the CBJ, coupled with Arab financial assistance;

(d) Although the budget deficit has decreased to just 15 per cent of GDP in 1989 (excluding grants), the Government has moved to control spending. In addition, the Government's budget policy has focused on raising domestic revenues;

(e) Official data for the first quarter of 1990 on the cost of living index and inflation indicate a 1.9 per cent increase in the cost of living index, thus implying an official estimate of a 10 per cent increase in the cost of living in 1990, compared with a 26 per cent increase in 1989;

(f) Jordan's traditional exports (phosphates, potash and fertilizers) generated in 1989 around 47 per cent of Jordan's export earnings as a result of a forceful drive to establish new markets in the Indian subcontinent, South-East Asia and Eastern Europe;

(g) The net domestic borrowing by the treasury during the first five months of 1990 was around US$ 30.6 million and constituted less than one third the amount of domestic borrowing during the same period in 1989;

(h) Remittances from Jordanian expatriates during the first half of 1990 were 43 per cent higher than those of the same period in 1989.

The SAP implementation was interrupted by the outbreak of the Gulf crisis at the end of 1990 and the beginning of 1991. An ESCWA study[3] estimated the loss to the Jordanian economy during the last five months of 1990 to be US$ 1,360 million (about 31 per cent of GDP).

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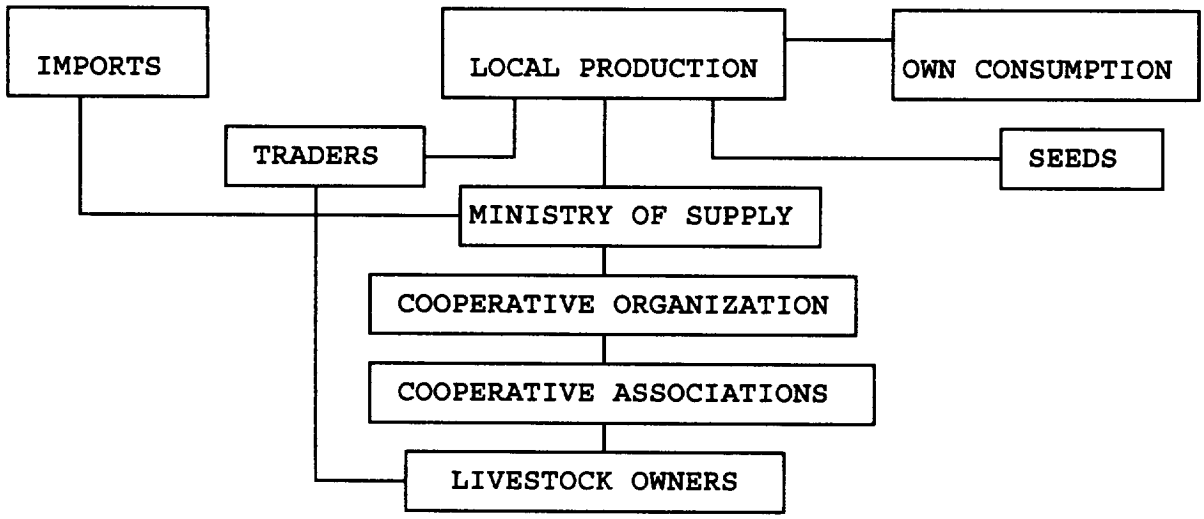
[2] ESCWA, *The Impact of the Gulf Crisis on the Jordanian Economy* (E/ESCWA/DPD/1992/5), p. 6.

[3] Ibid., p. 30.

Jordan does not produce sugar or rice. The Ministry of Supply is responsible for importing all the local requirements of these two commodities. The average consumption of sugar and rice during 1986-1990 was about 120,000 and 76,000 tons, respectively.

Figure II. MARKETING CHANNELS FOR LOCAL BARLEY



The self-sufficiency ratio (SSR) of wheat during 1981-1992 was about 15 per cent as compared with 16.9 per cent during 1981-1989 and 12 per cent during 1990-1992.

The per capita consumption of wheat increased from an average of 163.5 kg during 1981-1989 to about 219 kg during 1990-1992.

Table 3. AGRICULTURAL EXPORTS AND IMPORTS AND THEIR CONTRIBUTION TO TOTAL NATIONAL EXPORTS DURING 1981-1992

(Millions of Jordanian dinars)

Year	Total Agr. Exports	Exports Value	% of Total	Total Agr. Imports	Imports Value	% of Total
1981	242.6	70.1	28.9	1047.8	156.5	14.9
1982	264.5	65.1	24.6	1142.5	177.3	15.5
1983	210.6	46.7	22.2	1103.3	157.1	14.2
1984	261.1	41.8	16.0	1071.3	184.3	17.2
1985	255.3	43.6	17.1	1074.4	175.8	16.4
1986	225.6	41.9	18.6	850.2	165.6	19.5
1987	248.8	33.8	13.6	915.5	155.7	17.0
1988	324.8	30.0	9.2	1022.5	172.9	16.9
1989	534.1	48.6	9.1	1230.0	197.7	16.1
1990	612.3	59.8	9.8	1725.8	403.9	23.4
1991	598.6	86.0	14.4	1710.5	417.7	24.4

Source: Ministry of Agriculture.

Figure I shows the marketing channels for locally produced wheat.[1] The producers retain about one third of their produce for home consumption and about 8 per cent as seeds for the next season. Approximately 50 per cent is sold to the government committees. Imported wheat is processed at the mills belonging to the Ministry of Supply. Flour is then sold to bakeries and groceries, while wheat bran is sold to livestock owners.

2. *Barley*

Barley is mainly produced in the marginal lands where the level of precipitation does not exceed 250 mm. Sheep owners expanded barley cultivation in the steppe region in order to produce enough barley as forage or grain for their sheep. In general, barley is an ideal crop for arid areas. It is a multi-purpose crop that can be used as green hay when necessary, as in drought years.

[1] M.S. El-Habbab et al., "Market Prospects for Agricultural Products for Zarqa River Basin Project", Amman.

The proportion of agricultural exports in total exports was about 15 per cent during 1981-1991 (table 3).

Although the sector cannot cover all the needs of the country, the gap is being covered by importing agricultural products. The average imports during the period 1981-1991 reached JD 1,172 million; the agricultural product imports formed about 18.0 per cent of the total imports (table 3).

Table 1. RELATIVE IMPORTANCE OF THE AGRICULTURAL SECTOR DURING 1981-1991

(GDP in current prices)

(Millions of Jordanian dinars)

Year	Total GDP	Agricultural sector	% of total
1981	1482.7	75.5	5.09
1982	1684.2	81.9	4.86
1983	1765.8	97.2	5.16
1984	1891.4	79.6	4.20
1985	1940.6	87.5	4.51
1986	2080.3	100.2	4.82
1987	2136.2	125.3	5.86
1988	2112.3	124.1	5.88
1989	2235.0	143.5	5.87
1990	2618.4	184.9	7.06
1991	2399.6	179.4	7.48
1992	3048.2	177.6	5.83

Source: Department of Statistics - Annual Yearbook (1981-1992)

B. PRODUCTION, CONSUMPTION AND EXTERNAL TRADE FOR SELECTED AGRICULTURAL PRODUCTS

Food crops (cereals and pulses) and livestock (sheep, goats and poultry) dominate the agriculture sector; non-food crops are limited to tobacco (3,000 hectares [ha]).

In this study, a few agricultural products that are subject to government intervention have been selected. These products are wheat, barley, broilers, table eggs, milk and red meat.

The analysis for wheat, barley, broilers and eggs covers the period 1981-1992. The analysis for milk and red meat covers the period 1981-1991.

LIST OF FIGURES

CONTENTS *(continued)*

LIST OF TABLES

Bibliographical and other references have, wherever possible, been verified.

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