MACROECONOMIC POLICIES IN JORDAN:

IMPLICATIONS FOR HORTICULTURAL EXPORTS

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MACROECONOMIC POLICIES IN JORDAN: IMPLICATIONS FOR HORTICULTURAL EXPORTS

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Executive Summary

The Setting

Until the mid-1980s, Jordan had enjoyed a long period of relative macroeconomic stability, together with high growth in real incomes and exports. This was due in part to prudent domestic policies. In addition, its special geopolitical position has generated a flow of resources from both Arab and Western countries that sustained its domestic consumption and investment at levels above those that were feasible in the medium term. Since 1986, external and internal circumstances have changed very rapidly for Jordan.

Because Jordan's economy is closely linked with the economies of the Gulf states, whose robustness is heavily dependent on movements in oil prices, the fall in the price of oil in 1986 had important effects on Jordan. Remittances from Jordanians working in the Gulf states and grants from this region to Jordan have dropped significantly. The demand in the Gulf states for Jordan's agricultural exports has also decreased, both because of the drop in their real incomes accompanying the fall in oil prices and because of an increase in domestic production in those states. Jordan's ability to borrow from international capital markets has come under strain, while surges in public sector deficits have increased Jordan's need to borrow, either internally or externally.

Macroeconomic policies are important in determining the performance of agriculture.

The performance of the agricultural sector depends on the interaction of several influences. These include the natural resource base, technologies used in the production and distribution system, and, importantly, the incentives facing farmers and agents in the distribution system. Both specific sectoral policies and economy-wide policies act together to form the structure of incentives. Even if sectoral policies are apparently favorable, macroeconomic policies can act to negate this favorable effect.

A fundamental hypothesis that is explored in this study is that macroeconomic policies constitute a very important part of the incentive structure facing agents involved in the production and marketing of fruits and vegetables. The objectives of the study are to:
(1) document the recent performance of agricultural exports;
(2) link this performance to the real exchange rate, which is a measure that reflects the overall effects of macroeconomic policies; and
(3) investigate some of the determinants of the real exchange rate.

Fruit and vegetable exports have been declining.

While there has been a period of overall real growth in total exports from 1981 to 1988 of 6.6 percent annually, this growth has been erratic (Table 3.4). There has been an almost uninterrupted decline of about 50 percent in the real value of fruit and vegetable exports from 1981 through 1988. The combined effect of these two trends has resulted in a steep drop in the share of fruits and vegetables in total exports from nearly 18 percent in 1981 to 6 percent in 1988, a decline of 66 percent. Adverse external market conditions cannot bear the entire blame for this decline. External circumstances, as measured by the relative price of exports to imports, or the terms of trade, have been favorable to Jordan since 1981 (see Table 3.6 and Figure 3.1). Overall, the index of the terms of trade has improved from 94.2 in 1981 (1980 = 100) to an average of 117.9 in 1988. This secular improvement has been due both to decreases in import prices (following the drop in oil prices) and to a recent recovery in export prices.

A digression on the meaning of the real exchange rate.

A real exchange rate is a relative price. It measures the number of units of a domestic basket of goods and services that must be given up to obtain an additional unit of a foreign basket. If the number of units of the domestic basket required to purchase a unit of the foreign basket rises from 1 to 2, then we say that a real *depreciation* has occurred; it takes more of our resources to obtain a fixed amount of their resources. If, on the other hand, this price falls, say from 1 to 0.5, then the domestic economy's command over foreign goods and services has increased; whereas before it required one domestic basket to purchase one foreign basket, it now only requires 0.5 domestic baskets to purchase the same foreign basket. Alternatively, one domestic basket can purchase two foreign baskets. In this case, a real *appreciation* has occurred.

Both the bilateral real rates and the trade-weighted real exchange rates for Jordan's export markets and import suppliers are presented in Tables 4.4a and 4.4b, respectively. The trade-weighted real exchange rates are plotted in Figure 4.2. Until the mid-1980s, the two rates were similar and moved together. However, from 1985 on, the two rates diverge sharply and, although a significant depreciation in both rates has occurred over the past five quarters, the JD has depreciated more in real terms against its import partners than it has against its export partners.

A clue to the decline in fruit and vegetable exports is the behavior of the real exchange rate over time...

Figure 5.2 shows the export-weighted real exchange rate and the "vegetable-weighted" real exchange rate. This latter is calculated by weighting the real rates for Saudi Arabia and Kuwait by the shares of Jordan's fruit and

vegetable exports to these two countries. A sustained real appreciation occurred from 1976 to 1986. The disadvantage for vegetable exports relative to all exports became more pronounced from 1986. This real appreciation played a key part in the fall in the share of fruit and vegetable exports within total exports (Table 3.4).

...which can also explain the low volume of exports to the EEC.

In addition to the "vegetable-weighted" exchange rate applicable to the Gulf markets, Table 5.1 and Figure 5.1 show a simple average of the bilateral real rates for four potentially important markets in the EEC: France, Germany, the U. K. and Italy. From the exporter's point of view, based solely on the exchange rate effect, the Gulf markets would have appeared more profitable up until 1986. The EEC exchange rate lies below the vegetable-weighted rate for every year in 1975-85 (except for 1980, which is the base year).

The EEC is now significantly more attractive to vegetable exporters.

Given the significant improvement in the EEC real exchange rate since 1986, now is an appropriate time to think of expanding exports to Europe. This is especially true, given current conditions in the Gulf state markets, in particular Saudi Arabia. With a lower level of real income now and in the foreseeable future because of lower oil prices, Saudi Arabia will--all other things being equal--demand less of Jordan's exports of fruits and vegetables. In addition, the Saudi Arabian objective of self-sufficiency in food production is a potential threat for the future growth of Jordanian exports to this market.

The decline in fruit and vegetable exports has also reflected the relative strength of Jordan's competitors.

From the perspective of the *importers* of Jordan's fruit and vegetable exports, Jordanian products have looked more expensive, at least in terms of its exchange rate, if not in terms of its domestic prices. Figure 5.5 shows the Saudi real exchange rates for Jordan and a major competitor in the Saudi Arabia market, Turkey. Figure 5.6 shows the Kuwaiti real exchange rates for these countries. As buyers of tomatoes, Saudi Arabian and Kuwaiti importers want to give up the smallest possible amount of their resources in order to acquire tomatoes. Clearly, this desired outcome could have been achieved by trading with Turkey rather than with Jordan. It is only with the recent real devaluation of the JD that Jordan has regained its competitiveness with Turkey.

But the real exchange rate is not the whole story...

In spite of this apparent lack of competitiveness with Turkey, Jordan's share in the Saudi Arabian tomato import market increased from 1981 to 1983 relative to Turkey's share (Table 5.5). This may have reflected a domestic cost advantage that Jordan enjoyed relative to Turkey as a result of the significant investments in infrastructure (irrigation canals and equipment, plasticulture, etc.) undertaken by the Jordanian government. This remains a hypothesis to be tested. Jordan's relative share, however, has declined from 1984 to 1986, perhaps reflecting its competitive disadvantage shown in Figure 5.5.

Vegetable exports are very responsive to real exchange rate changes.

Table 5.4 shows the cost in rivals to a Saudi Arabian importer of purchasing a kilogram of tomatoes in Amman, as well as the volume of Jordanian exports to Saudi Arabia, from 1987 to May 1989. As the cost to the Saudia buyers increased on average from 1987 to 1988, the volume of exports declined; when the cost decreased from 1988 to 1989, the volume of exports increased. (Note that the increase in the nominal wholesale price from 1988 to 1989 was more than offset by the depreciation in JD, so that the overall effect was to lower the cost to the Saudi buyer.) Where did the extra tomatoes come from in the short run? They were probably diverted from the local market. In addition, the higher quality tomatoes were exported. We estimated the responsiveness of total Jordanian tomato exports to changes in the vegetable-weighted real exchange rate and found an elasticity of 1.9. That is, a 10 percent increase in the real exchange rate would lead to a 19 percent increase in the volume of tomato exports.

Some Causes of Changes in the Real Exchange Rate

We explored some of the linkages between macroeconomic policy and changes in the real exchange rate. In particular, we looked at the effect of fiscal policy (as reflected in the public sector deficit), monetary policy, tariff policy (which affects the prices of imported goods and services), access to capital markets, and nominal exchange rate management.

In order to arrive at a meaningful measure of macroeconomic policy effects on the real exchange rate, we have to have some idea of what the real exchange rate "should" have been. That is, we need some notion of the equilibrium real exchange rate against which we can compare the actual real exchange rate. It is this comparison that allows us to deduce whether the exchange rate is overvalued or undervalued.

One measure of the equilibrium rate is the purchasing power parity (PPP) exchange rate.

The PPP exchange rate adjusts the nominal exchange rate for differences in inflation rates between Jordan and its trading partners (Tables 6.2a and 6.2b). It neglects changes that might have occurred in the real exchange rate (caused, for example, by a permanent change in the price of oil). The PPP rate thus captures the effects of monetary policy through its effects on the inflation rate. The deviations of the actual nominal rate and the PPP rate are shown in Tables 6.3a and 6.3b (an overvaluation is indicated by a negative number). The deviations are weighted and plotted in Figure 6.2.

There was a period of real appreciation from 1977 to about 1985, followed by a significant depreciation. The period of real appreciation also constituted a period of overvaluation relative to the PPP exchange rate. Note that the recent devaluation of the JD has restored the actual exchange rate to its PPP value for Jordan's major exporting partners. In contrast, for Jordan's import suppliers, the weighted PPP deviations suggest that the current exchange rate is undervalued, thereby making imports more expensive relative to what they would be if the PPP rate prevailed.

Domestic policies and external circumstances have enabled Jordan to live beyond its long-run capacity...

Jordan has pursued exchange rate and fiscal policies and has benefitted from external conditions (in the form of grants, remittances, and loans) that have given it a command over goods and services which exceeded the country's productive capacity.

A continuous period of foreign exchange reserve losses in the 1980s implied that the demand for foreign exchange was greater than could be sustained in the long run. In addition, there were flows of grants and remittances that were above their sustainable level. These flows, combined with an exchange rate policy to support the currency, lead to the real appreciation of the JD.

The system of tariffs designed to protect import-substituting industries has raised the cost of imports that the agricultural sector purchases from this sector. This contributes to the overvaluation of the JD. A minimum estimate computed for this study showed that the average tariff was about 9 percent.

...and an alternative measure of the equilibrium exchange rate accounting for these factors confirms the PPP results.

We estimated that the overvaluation of the dinar ranged between 7 and 16 percent during the 1980 to 1987 period, when the unsustainable Central Bank reserve losses, the unsustainable levels of grants and remittances and the effects of the tariff structure were taken into account (see Table 6.6). In general, there is a remarkable convergence

of results concerning the size of the overvaluation of the JD, particularly during the 1980 to 1982 period, when the PPP and the equilibrium exchange rate methods are compared.

Since mid-1988, Jordan's competitiveness in fruit and vegetable production has improved.

The decline in the real oil price decreased Saudi Arabian income, reduced the demand for Jordanian labor abroad, and decreased the flow of grants from other Arab countries. In addition, the disengagement in July 1988 from the West Bank reduced, probably permanently, the supply of remittances by expatriate workers from that region. These circumstances are not likely to be reversed in the near future. The implication is that a real devaluation has occurred and that fruit and vegetable exports are now more competitive than, say, exports of Jordanian engineers. In short, an improvement in Jordan's competitiveness has occurred that will prevail in the medium run. Jordan will need to generate more of its foreign exchange from exports of goods rather than relying so heavily on grants, loans and the exports of services.

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1. INTRODUCTION AND OBJECTIVES

The performance of the agricultural sector in Jordan reflects the influence of several key factors. These include the natural resource base, external events such as droughts and changes in world markets, production and marketing technologies, and access to information. Even more important however, are the economic incentives facing farmers and agents in the distribution system. The structure of these incentives is moulded by the economic policies that are adopted. The incentives determine how the economic agents allocate their resources, including their time, physical and human capital and financial resources.

These policies can apply to the agricultural sector specifically. Credit policies, agricultural investment policies, investment in research and extension by the government or the private sector, and pricing policies affecting agricultural output and input markets are all examples of sector specific policies. In addition, economy-wide policies can have significant affects on the incentives facing the agricultural sector. For instance, commercial policies that set the level of tariffs on imports of capital goods or even prohibit some imports, can affect the performance of the agricultural sector. So, too, can exchange rate policy, which in part determines the attractiveness of Jordanian exports to potential buyers, and can alter the domestic prices facing farmers who either supply the export market or compete with imports.

The effects of even favorable sectoral policies however, can be negated by macroeconomic policies. For example, the favorable impact of a subsidy on an input such as credit or irrigation water, can be totally outweighed by an overvalued exchange rate. A fundamental hypothesis explored in this study is that macroeconomic policies constitute a very important part of the incentive structure facing farmers and marketing agents in the agricultural sector.

This report has three objectives. First, it documents the recent performance of fruit and vegetable exports. Second, it explains this performance with reference to various measures of the real exchange rate and to domestic price behaviour. Third, it investigates some of the determinants of the real exchange rate.

In Chapter 2, some salient macroeconomic aspects are highlighted, while Chapter 3 focuses on the foreign trade sector in general, and Jordan's horticultural exports in

particular. Various measures of the real exchange rate are derived in Chapter 4, and these form a key element in exploring Jordan's ability to compete in export markets (Chapter 5). The report concludes with a preliminary analysis of the determinants of the real exchange rate (Chapter 6). Particular attention is given to the effect of grants, loans and remittances from the Gulf States on the flow of foreign exchange, and hence on the price of the Jordanian dinar.

2. MACROECONOMIC TRENDS: GROWING IMBALANCES

Until the mid-1980s, Jordan had enjoyed a long period of relative macroeconomic stability. This had been due in part to prudent domestic policies. However, its special geo-political position resulted in a flow of resources from both Arab and Western countries that has sustained its domestic consumption and investment at levels above those that are feasible in the medium term.

Its connection with the Gulf economies has four important dimensions:

- the Gulf's demand for exports;
- flow of grants and concessionary loans;
- demand for loans and flow of remittances; and
- acting as guarantor for Jordanian loans.

Both external and internal circumstances have changed very rapidly for Jordan. The fortunes of Jordan's economy are closely linked to those of the Gulf states, and, by implication, oil prices. With the fall in the price of oil in 1986, remittances from Jordanians working in the Gulf states together with grants from this region have dropped significantly. The demand by the Gulf States for Jordan's agricultural exports has also decreased, both because of the drop in real incomes accompanying the fall in oil prices, and because of an increase in domestic production in those states. Jordan's ability to borrow from international capital markets is also declining. These factors play a crucial role in determining the flow of foreign exchange available to Jordan, with consequences for the price of the dinar, and hence the country's competitive position in international markets. These issues are further developed in Chapters 5 and 6 of this report.

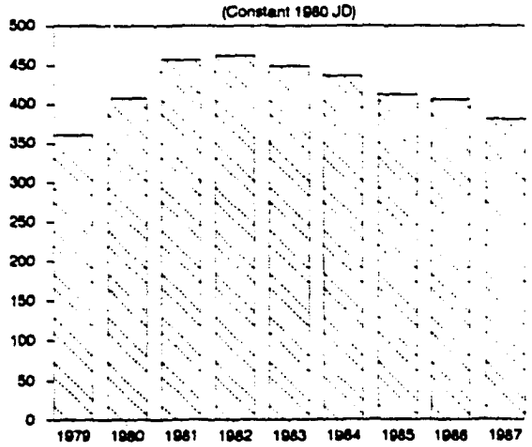
2.1 Characteristics of the Jordanian Economy

Jordan's economy has become highly vulnerable to changes in both the international climate and the economic conditions in the Arab oil-rich countries. Until 1983 important factors contributing to real growth in Jordan included political stability (encouraging private sector investment); adequate international reserves (built up partly as a result of the substantial flow of remittances); and grants from the Arab states. Declines in these remittances and grants have contributed to much slower growth since 1983. As a consequence, Jordan will need to adjust its economic structure, reduce its level of spending and improve the incentives facing the tradable goods sector.

2.2 Growth Rates of GDP and GNP

Table 2.1 shows both gross domestic and gross national products from 1979 to 1987. Following a period high real growth in the late 1970s, annual growth rates peaked in 1980. In this year, real GDP grew at 14.9 percent and real GNP grew by 13.9 percent. However, as a consequence of the recessionary wave which hit the world economy and the oil-rich Arab states, Jordan's real economic growth subsequently declined very sharply. From 1983 to 1987, real GNP fell at an average annual rate of 0.8 percent. This was in sharp contrast to a growth rate of 10.8 percent per year from 1980 to 1982. Real GNP per capita fell by 18 percent, from JD 462 in 1982 to JD 380 in 1987 (see Figure 2.1).

Figure 2.1 Real GNP per Capita
(Constant 1980 JD)



2.3 Public Sector Finances

Jordan's government finances have been characterized by a widening gap between total expenditures and domestic revenues (Table 2.2). This table shows the gross deficit, foreign grants which are received in the form of budget support from Arab countries, and the budget deficit, net of foreign grants.

Until 1983, the budget deficit was relatively stable. Table 2.3 shows the annual growth rates of expenditure, domestic revenue and the deficit for the period 1980 to 1988. From 1979 to 1983 the deficit actually declined at a modest annual rate of 1.7 percent. This arose from a healthy growth of domestic revenue of 18.0 percent per year, while expenditures grew at 7.8 percent annually.

From 1984 to 1988, the position changed drastically. The budget deficit grew at an annual rate of 10.3 percent. The growth of the deficit reflected a much slower growth in domestic revenues combined with an increase in the growth of government expen-

ditures. In particular, capital expenditures grew at the rate of 12.3 percent annually. From 1979 to 1983, the budget deficit net of foreign grants averaged 9.3 percent of GNP. This rose by nearly a half to 13.4 percent for the years 1984 to 1987.

The diminishing importance of foreign grants as a source of deficit financing is clearly seen in Table 2.4. While until 1983, over 60 percent of the gross public deficit was financed by Arab grants, this contribution fell to around 30 percent following the fall in oil prices in 1986. Foreign loans did not rise sufficiently to compensate for the decline in the flow of grants from Arab states. As a consequence, domestic borrowing had to increase sharply.

2.4 Monetary Trends

Since 1980, the Central Bank of Jordan has followed a relatively prudent policy of monetary expansion aimed at maintaining the country's relatively low rates of inflation. The rate of growth of M2 fell from 21.5 percent in 1980 to 8.1 percent by 1984 and has been maintained around this level since that time (Table 2.5).

In 1987 the Central Bank did allow the money supply to increase in an attempt to stimulate domestic investment by providing additional liquidity. Furthermore, domestic credit extended to the government to finance its net budget deficit is leading to increased pressure to expand the money supply.

3. FOREIGN TRADE: A STRUCTURAL DEFICIT

3.1 Overall Trade Position

The major exporting sectors of the economy are mining, manufacturing (including chemicals) and agriculture. The commodity composition of domestic exports is given in Table 3.1. Raw material exports have assumed increasing importance since 1984 with the advent of potash exports. The predominant export markets for agricultural products are the Gulf states, particularly Saudi Arabia and Kuwait. Throughout the 1980s, the main export markets for potash and phosphate and light manufactures have included India, Indonesia, Iraq and Syria.

Major imports consist of fuels and raw materials, food, manufactures and machinery (Table 3.2). Leading import suppliers throughout the 1980s have included Saudi Arabia, West Germany, the U. S., Japan, Iraq, Italy, and the U. K. Iraq was the largest export market during the 1980s and became a leading import supplier (of oil) during the latter half of the 1980s.

A substantial merchandise trade deficit has persisted throughout the 1980s (Table 3.3). The deficit has tended to decline since 1984, reflecting the greater scarcity of foreign exchange with which to finance imports. In fact, imports have remained constant (in nominal terms) or even declined since the early 1980s. The economy's ability to import capital goods and raw materials has been significantly curtailed.

The countries constituting Jordan's major export markets are different from Jordan's main import suppliers. Because of these features of Jordan's economy, changes in Jordan's competitiveness needs to be analyzed at a disaggregated level. For this reason, this study will focus on bilateral trade conditions and on differences between import and export markets in attempting to explain the effects of macroeconomic policies on the performance of fruit and vegetable exports.

3.2 Horticultural Exports

While there has been a period of overall growth in total exports from 1981 to 1988 of 6.6 percent annually, this growth has been erratic (Table 3.4). For example, if the 1988 figures are excluded, then growth in total exports drops to 5.5 percent annually. There

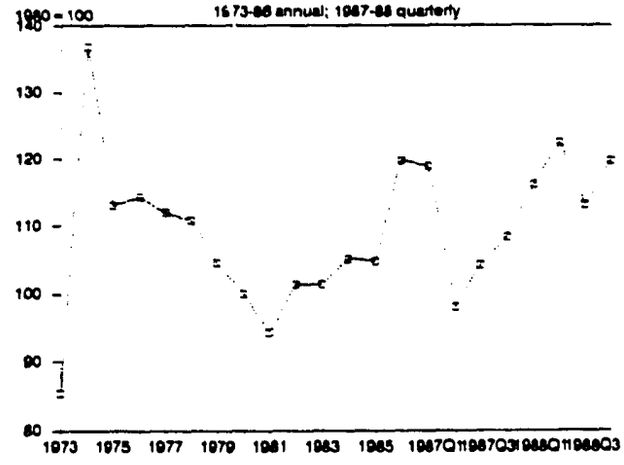
has been an almost uninterrupted decline of almost 50 percent in the real value of fruit and vegetable imports beginning in 1981 and continuing through 1988. Thus, the absolute contribution to Jordan's command over foreign goods and services afforded it by exports of fruits and vegetables has fallen. The combined effect of these two trends has resulted in a steep drop in the share of fruits and vegetables in total exports from nearly 18 percent in 1981 to 6 percent in 1988.

The major horticultural exports from Jordan are tomatoes, cucumbers, eggplant and squash. For each of these commodities, the quantities produced and exported are shown in Table 3.5. A crude indicator of production and exports is formed by summing the tonnages of each commodity and then converting the result into an index with 1980 as a base year. Physical quantities were used, as reliable data on values, which would have been preferable, were not available.

The production index increases steadily from 1976 through 1983 and then falls off from its peak of 184 in 1983 to 117 in 1988. Exports generally increase until 1982 and then fall off. By weight, the proportion of production that is exported increased to about 50 percent in 1980 and then dropped to between 30 and 40 percent. It is only in 1988 that the proportion rose to its level of the early 1980s.

A factor that is sometimes important in explaining export performance is the relative price of exports to imports, also known as the external terms of trade. Declining terms of trade can be a partial explanation for deteriorating exports. However, these have been favorable to Jordan since 1981 (see Table 3.6 and Figure 3.1). Overall, the terms of trade have improved since 1981, moving from 94.2 to an average of 117.9 in 1988. This secular improvement has generally been due to decreases in import prices, rather than increases in export prices. Nevertheless, the fall in import prices has prevented a significant worsening of the trade deficit in recent years. The explanation for the secular decline in the real value of Jordan's fruit and vegetable exports has to lie elsewhere. The following Chapter

Fig. 3.1. External Terms of Trade



examines a factor that is of prime importance in explaining movements in trade aggregates, namely the real exchange rate.

4. REAL EXCHANGE RATES: COMPETITIVENESS REGAINED?

4.1 Exchange Rate Policies

Until 1988, exchange rate policy had remained essentially unchanged since the mid-1970s. In 1975, the Jordanian dinar was pegged to the SDR at a rate of SDR1 = JD 0.387754 and allowed to fluctuate within a band around this rate of plus and minus 2.25 percent. The U. S. dollar is the intervention currency. That is, if the $US/SDR rate, which is monitored daily by the Central Bank of Jordan (CBJ), moves so that the JD/SDR rate would be greater than JD0.396478 or less than JD 0.379030, then the CBJ adjusts the JD/$US rate to keep the JD/SDR rate within the band. 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 international financial markets (IMF, *Exchange Arrangements).*

The following example illustrates the operation of this system. For simplicity, assume that it is CBJ policy to maintain a rigid peg of 0.387754 dinars per SDR, denoted $E_{JD,SDR}$. If the $US/SDR rate, $E_{\$US,SDR}$, is 1.015 (its average value in 1985), then the JD exchange rate for U. S. dollars, measured in dinars and denoted by $E_{JD,\$US}$, would be set at JD 0.382, as determined by the following formula:

$$(E_{\$US,SDR})(E_{JD,\$US}) = E_{JD,SDR} = \text{JD } 0.387754$$

Then if $E_{\$US,SDR}$ rose to 1.344 (its average value in 1988), $E_{JD,\$US}$ would have to be revalued to JD0.289 in order to maintain the peg to the SDR. Once the dollar exchange rate, $E_{JD,\$US}$, has been determined, the exchange rate with respect to other major currencies, including Belgian francs, Deutschmarks, French francs, Italian lire, Japanese yen, Dutch guilders, Swedish kronor, and Swiss francs. For example, in the case of the Deutschmark, the rate is determined by the following formula:

$$(E_{JD,\$US})(E_{\$US,DM}) = E_{JD,DM}$$

where $E_{\$US,DM}$ is determined in an international market and observed by the CBJ. Thus, in setting Jordan's exchange rates with respect to currencies other than the U. S. dollar in the SDR basket, the CBJ has to monitor movements in the dollar exchange

rates of these currencies and convert them to JD exchange rates using the previously determined JD exchange rate for U. S. dollars, $E_{JD,\$US}$.

In practice, as the CBJ's reserve position began to deteriorate, the JD was allowed to move within a wider band since late 1984 (IMF,1989). In February 1986, financial institutions were allowed to quote their own exchange rates using the CBJ rate as a guide. No transactions were taking place at the CBJ rate. In May and June of 1988, the dinar came under speculative attack; on June 6 the CBJ required all financial institutions to quote the CBJ rate, then at JD 0.34. July 1988 saw the disengagement of Jordan from the West Bank, effectively drying up remittance flows from expatriates of the West Bank. With increasing pressure on the dinar and a continuing loss of foreign reserves, the Central Bank was forced to let the dinar float on October 16, 1988.

The dinar depreciated from JD 0.41 per dollar in October to JD 0.49 by January 1989. On February 8, 1989, the Central Bank declared a unification of the CBJ and commercial bank exchange rates at JD 0.54 per dollar and closed down the exchange houses. In July 1989, the CBJ announced the permanent closing of the exchange houses. While the Central Bank continues to announce the exchange rate in accordance with the formula described above, in actuality the CBJ does not transact at this rate. Exporters and importers are forced to turn to the parallel market for their foreign exchange needs, a practice that is neither commented upon, nor officially condoned by the CBJ.

Foreign exchange proceeds from exports must be collected and surrendered to authorized banks in Jordan within six months of shipment. Important exceptions to this requirement are exports of goods to Arab countries and exports of fruits and vegetables to all countries. The lack of a surrender requirement means that fruit and vegetable exporters are free to convert their earnings into dinars at the best rate they can obtain, rather than at the official rate.

Jordanians working abroad were allowed to open and maintain interest-bearing foreign currency accounts with authorized banks; the interest rates on these accounts reflected those prevailing in international markets. A Jordanian expatriate returning home after a stay of more than three years could open a foreign currency account in any amount for up to five years after his return. After five years, the account value was restricted to JD30,000. In addition, Jordanian residents were allowed to maintain foreign currency accounts up to JD30,000, as long as the foreign currency did not come from the

banking system. That is, a resident could not simply convert dinars to dollars at his commercial bank and then open an account with those dollars.

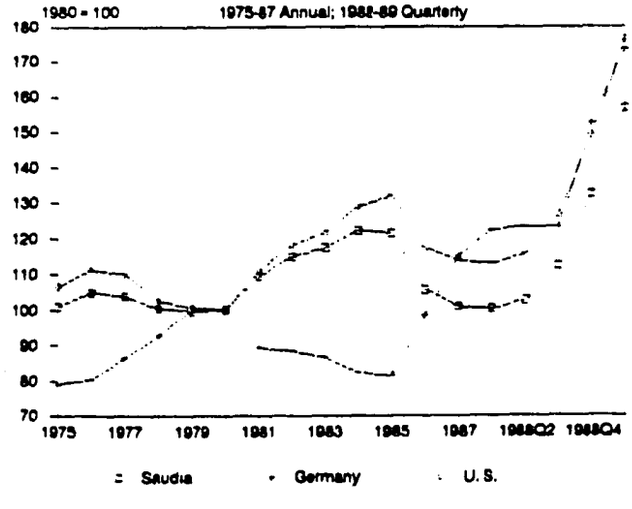
Certain classes of imports are prohibited, including carbonic acid, some non-alcoholic beverages, cigarettes, secondhand vehicles more than 5 years old and military uniforms, although some exceptions are granted for imports from Arab Common Market countries. All imports from South Africa and Israel are banned. Imports that are not prohibited require an import license from the Ministry of Industry and Trade; the licensing fee is 5 percent of the cif value of the import, payable at the time the license is issued. In addition, a 2.5 percent surcharge is levied. Thus, a 7.5 percent tax is levied on all permitted imports.

Most of the imported inputs used in agriculture, such as fertilizers, pesticides and herbicides, and machinery, do not have an additional tariff imposed. Imports subject to duties must also pay 13 percent of the duty-paid value, plus the 7.5 percent licensing; the 13 percent surcharge is used to finance social welfare and certain public facilities, such as universities (IMF, 1988). Once an importer has an exchange permit, which is automatically granted for a nominal fee when the import license has been obtained, the importer can open a letter of credit or pay against documents.

4.2 Nominal Exchange Rates

Bilateral nominal exchange rates, measured as the JD price of foreign exchange, are given for Jordan's main export markets (Table 4.1a) and its main import suppliers (Table 4.1b). Indexes of the rates for Saudi Arabia, Germany, and the U. S. are plotted in Fig. 4.1. The results give us the first inkling of the importance of examining several of Jordan's bilateral trade relations, rather than focusing only on the dollar exchange rate. While the devaluation in October 1988 appears clearly in all three rates, there is an appreciable difference between the price of Deutschmarks and the price of U.S. dollars or Saudi

Fig. 4.1. Nominal Exchange Rate Indexes



riyals. The JD was appreciating against the mark between 1980 and 1985, while it was depreciating against the dollar and the riyal over the same period.

4.3 Real Exchange Rates

Movements in nominal rates do not convey much information concerning real economic forces. A more meaningful measure of exchange rate movements can be calculated by appropriately deflating the nominal exchange rates, and computing real bilateral exchange rates.

A bilateral real exchange rate (RBER) is a relative price. It is the price of foreign goods and services measured in terms of domestic goods and services. Formally, it is given by:

$$RBER_{JD,X} = E_{JD,X}/(CPI_J/CPI_X)$$

If the number of units of the domestic basket required to purchase a unit of the foreign basket rises from 1 to 2, then we say that a real *depreciation* has occurred. If, on the other hand, this price falls, say from 1 to 0.5, then the domestic economy's command over foreign goods and services has increased; whereas before it required one domestic basket to purchase one foreign basket, it now only requires 0.5 domestic baskets to purchase a foreign basket. In this case, a real *appreciation* has occurred.

It is for this reason that a real exchange rate is more meaningful than a nominal exchange rate does. A nominal exchange rate conveys no information about the domestic economy's command over *real* resources.

The bilateral real rates were computed by deflating the nominal rates in Tables 4.1a and 4.1b by an appropriate ratio formed from the Consumer Price Indices (CPIs) in Tables 4.2a and 4.2b. In each case, the nominal exchange rate in JD for country X was divided by the ratio of the Jordanian CPI to the CPI of country X.

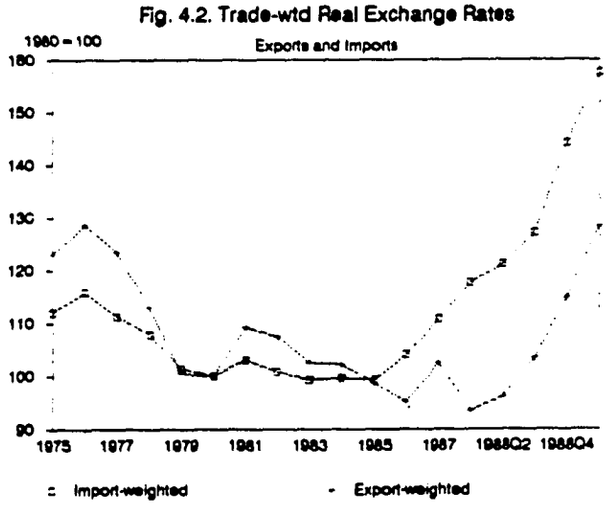
The countries constituting Jordan's main export markets and import suppliers are shown in Tables 4.3a and 4.3b, respectively, along with the trade weights. The export weights represent the share of Jordan's total exports (by value) going to each country, with the shares being normalized so that they sum to one. The import weights represent the share of each import supplier in Jordan's total imports (by value). It should be emphasized that Iraq, an important trading partner in both the export and import

markets, is not represented, because adequate data were not available. This constitutes a serious drawback to the analysis that follows, since Iraq is big enough to alter the time paths of the weighted real exchange rates. In addition, export credits granted to Iraq by the CBJ obscure the true foreign exchange reserves held by Jordan (see Chapter 6).

Both the bilateral real rates and the trade-weighted real exchange rates for export partners and import partners are presented in Tables 4.4a and 4.4b, respectively. The bilateral real rates are expressed as an index with 1980 = 100.00. This is a necessary step in order to compute the trade-weighted real exchange rates, as it is not possible to form a meaningful average of exchange rates whose absolute magnitudes are determined by the arbitrary selection of currency units. The "trade-weighted" real exchange rate is a weighted average of the bilateral real exchange rates. For example, the export-weighted real exchange rate was formed by multiplying each real bilateral exchange rate by its corresponding normalized trade share and summing the results.

The export- and import-weighted real exchange rates are plotted in Figure 4.2. In the early 1980s, the two rates were similar and moved together. However, from the first quarter of 1988 on, the two rates diverge sharply and, although a significant depreciation in both rates has occurred over the past five quarters, the JD has depreciated more in real terms against its import partners than it has against its export partners.

Fig. 4.2. Trade-wtd Real Exchange Rates



These data would suggest, then, that there has been some upward pressure on import prices; to the extent that these imports constitute agricultural inputs, we would expect to find a real increase in the cost of imported inputs used in agricultural production. Jordanian producers now have to give up more domestic resources to acquire an additional unit of foreign inputs than they did in, say, 1985. Note, however, that the export-weighted real exchange rate has also depreciated significantly, so that Jordanian suppliers of exports have more command over domestic goods and services than they did in 1985. For example, every (real) riyal they receive for exporting tomatoes to Saudi

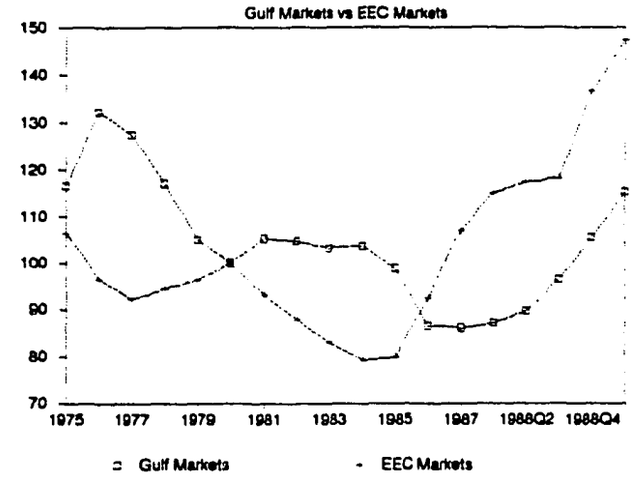
Arabia can currently be transformed into more domestic goods and services (real JDs) than was the case in 1985.

5. VEGETABLE EXPORTS: JORDAN'S COMPETITIVE POSITION

5.1 Ability to Compete in Key Markets

In this section we examine the ability of Jordanian exports to compete in the Gulf States and European markets. Table 5.1 and Figure 5.1 illustrate an alternative weighting of the bilateral real exchange rates, a weighting that highlights the role of Saudi Arabia and Kuwait as major markets for Jordanian fruits and vegetables. The bilateral real exchange rates for Saudi Arabia and Kuwait were multiplied by .64 and .36, respectively; these weights represented the 1987 (normalized) shares of Jordan's fruit and vegetable exports to these countries. Also shown is a simple average of the bilateral real rates for four potentially important markets in the EEC: France, Germany, the U.K. and Italy. The figure shows how the incentives to export to the Gulf states have improved over the last few quarters.

Fig. 5.1. Trade-wtd Real Exchange Rates



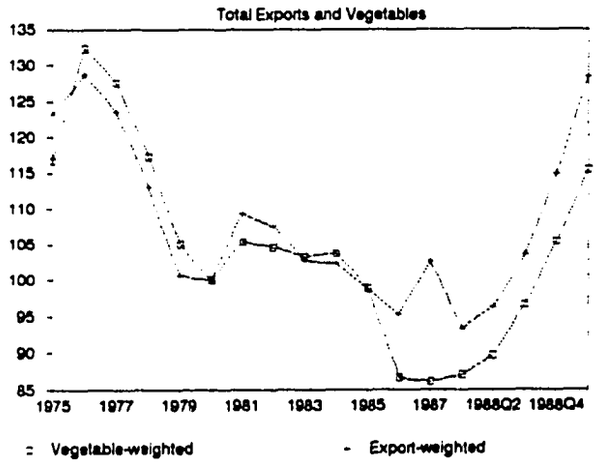
The figure also suggests a reason for the relatively small volume of fruit and vegetable exports to the EEC relative to exports to the Gulf states. The steep appreciation of the EEC-weighted real exchange rate relative to the vegetable-weighted real exchange rate (all other things being equal) made exports to the EEC much less attractive to Jordanian exporters than exports to Saudi Arabia and Kuwait. Why? Because exporting tomatoes to an EEC market and receiving payments in French francs, say, would have given an exporter less claim over Jordanian goods and services than exporting the same tomatoes to Saudi Arabia or Kuwait and getting paid in riyals or Kuwaiti dinars. In 1984, for example, an exporter who acquired a claim on an "average" EEC basket would be able to transform that basket into 0.8 domestic baskets (Table 5.1) while an exporter with a claim on an "average" Gulf state basket could transform those it into 1.04 domestic baskets. Relative price differentials like these could be an important

reason why fruit and vegetable exports to the EEC were (and are) small relative to exports to the Gulf states.

However, in recent years this situation has reversed. Exports to the "average" EEC country should now be much more attractive to Jordanian exporters as shown by the sharp depreciation of the EEC-weighted JD. The size of the differential between the EEC-weighted and the Gulf-state-weighted real exchange rates indicates that fruit and vegetable exporters should be looking to the EEC as potential markets. This is especially true in light of current conditions in the Gulf state markets, in particular Saudi Arabia. With a lower level of real income now and in the foreseeable future because of lower oil prices, Saudi Arabia will (all other things being equal) demand less of Jordan's exports of fruits and vegetables. In addition, the Saudi objective of self-sufficiency in food production is a bad omen for the future growth of Jordanian exports to this market.

An additional comparison is made in Figure 5.2, which juxtaposes the vegetable-weighted and the export-weighted real exchange rates (from Figures 5.1 and 4.2, respectively). This reveals a disadvantage for vegetable exports relative to all exports from 1986. This could have contributed to the fall in the share of fruit and vegetable exports within total exports observed in Table 3.1.

Fig. 5.2. Trade-wtd Real Exchange Rates

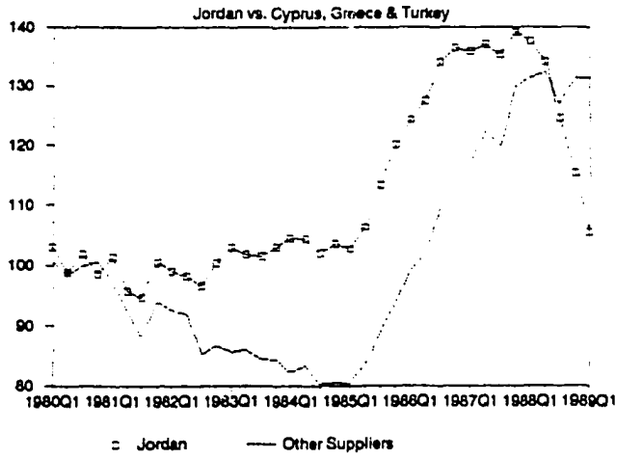


5.2 A View from the Export Markets

Up to this point, we have been looking at markets for Jordanian exports and at markets that supply Jordan with imports from the Jordanian point of view. This perspective led us to calculate the nominal and real exchange rates in terms of the Jordanian dinar. Additional insight into Jordan's horticultural export performance can be gleaned by looking at the problem from the customer's perspective, in particular that of buyers in Saudi Arabia and Kuwait.

Figure 5.3 shows the Saudi real exchange rates for Jordan and an average of Jordan's major competitors in the Saudi market, Cyprus, Greece and Turkey. That is, we are now taking the Saudi perspective and computing the real riyal price of foreign exchange for Jordan and its competitors in the Saudi market. This is done by dividing the nominal exchange rates for Jordan, Cyprus, Greece and Turkey (all measured in riyals per foreign currency unit, since we are looking at markets from the Saudi perspective) by the ratio of the CPI for Saudi to the CPI of the appropriate trading partner.

Fig. 5.3. Saudia Real Exchange Rates



The figure shows that until the third quarter of 1988 a Saudi importer would have had to give up more riyals to acquire Jordanian vegetables than he would have had to give up on average to acquire vegetables from Cyprus, Greece or Turkey. That is, from the perspective of the importers of Jordan's fruit and vegetable exports, Jordan has looked more expensive, at least in terms of its exchange rate, if not in terms of its domestic prices. However, in the third quarter of 1988, Jordan became more competitive vis-a-vis Cyprus, Greece and Turkey because of the strong appreciation of the Saudi real exchange rate with respect to Jordan. The reason for this was the significant exchange rate regime changes in Jordan in the second half of 1988.

Figure 5.4 plots the same information from the Kuwaiti point of view, that is, all exchange rates are calculated in terms of Kuwaiti dinars per foreign currency unit. Again, Jordan is much less competitive from the Kuwaiti point of view than are Jordan's competitors on average. However Jordan again becomes more competitive in the last three quarters of the period.

Fig. 5.4. Kuwaiti Real Exchange Rates

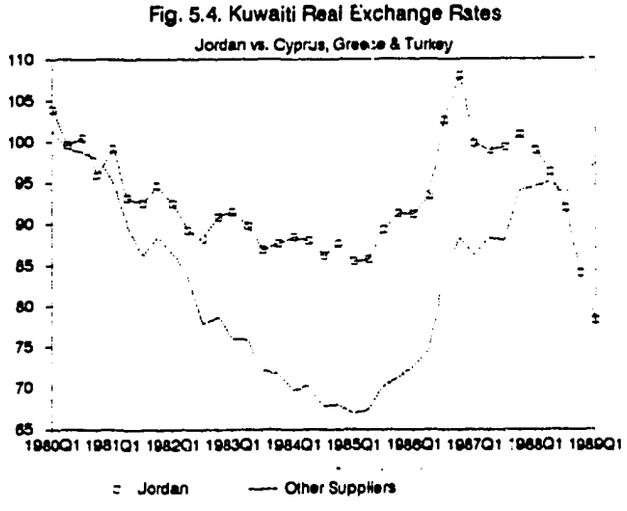


Figure 5.5 presents the Saudi real exchange rates for Jordan and Turkey and Figure 5.6 shows the Kuwaiti real exchange rates for these countries. As buyers of tomatoes, Saudi Arabian and Kuwaiti importers want to give up the smallest possible amount of their resources in order to acquire tomatoes. Clearly, this desired outcome could have been achieved by trading with Turkey rather than with Jordan. It is only with the recent real devaluation of the JD that Jordan has regained its competitiveness relative to Turkey.

Fig. 5.5. Saudia Real Exchange Rates

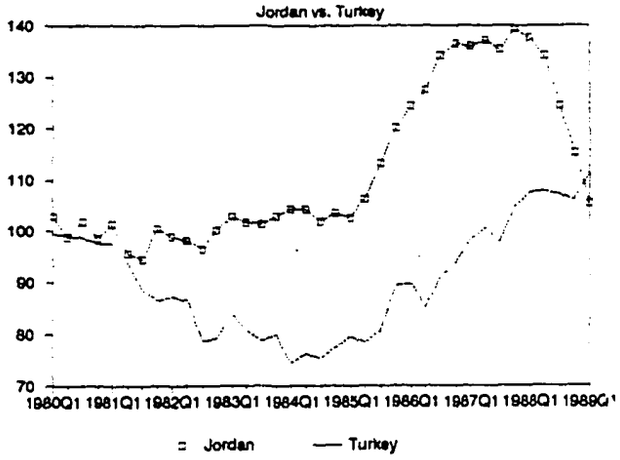
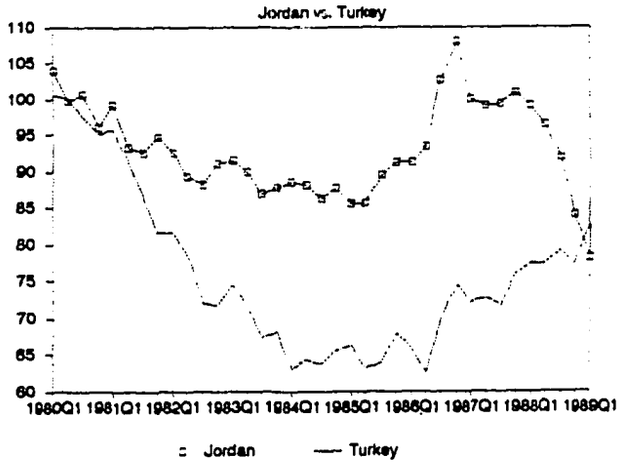


Fig. 5.6. Kuwaiti Real Exchange Rates



5.3 Jordan's Market Share

Thus far, the discussion has concentrated on the effects on competitiveness of changes in the real exchange rate. It has ignored other important influences on competitiveness, for instance, the level of domestic prices relative to those of Jordan's competitors. This section attempts to illustrate the importance of these factors using tomato exports as an example. The domestic price of tomatoes is represented by the wholesale price of tomatoes in Amman (Table 5.2).

Quarterly values of the Saudi riyal nominal exchange rate, real wholesale tomato prices and total tomato exports are shown in Table 5.3. Fourth quarter values for 1986-88 and first quarter values for 1987-89 are presented. Both sets of quarterly data clearly show the nominal devaluation of the Jordanian dinar against the Saudi riyal that took place in 1988. Given this devaluation, we would expect an increase in demand by exporters

for tomatoes, since the foreign exchange they acquire for each kilogram of tomatoes sold gives them a greater command over Jordanian goods and services. Compare the 90 fils which each riyal bought in the first quarter of 1988 with the 141 fils each riyal bought one year later. This outward shift in the demand for tomatoes by Jordanian exporters should increase the price of tomatoes in Amman, all other things being equal.

The table confirms that this indeed occurred. Furthermore, the devaluation of the Jordanian dinar should lower the cost to importers of Jordanian tomatoes and lead to an increase in the volume of tomatoes exported from Jordan. Again, the table shows that this occurred: tomato exports were almost 22,000 tonnes in the first quarter of 1989 compared with 11,000 tonnes a year earlier.

From the perspective of a Saudi Arabian importer, Jordanian tomatoes have become significantly cheaper since the devaluation of the Jordanian dinar. Although the nominal wholesale price of a kilogram of tomatoes in Amman has risen on average from 1987 to 1989 (Table 5.4), the depreciating dinar has more than offset this price rise, so that the cost to the importer, measured in riyals per kilogram, fell from an average of 1.29 in the five-month period January-May 1988 to 1.01 in the same period in 1989. Tomato imports from Jordan accordingly rose from 2200 tonnes to 4200 tonnes. It is interesting to contrast this result with an earlier period (January-May 1987), when the dinar/riyal exchange rate was fairly constant. Between this period in 1987 and the same period in 1988, the exchange rate was constant, but the wholesale price of tomatoes in Amman increased, with the result that the cost to the Saudi Arabian importer increased from 1.20 riyals per kilogram to 1.29 riyals. Imports from Jordan dropped from 3600 tonnes to 2200 tonnes. These results are depicted in Figure 5.7. The inverse relationship between costs (including both domestic price changes and exchange rate changes) and export volumes is clearly seen in this figure. While the wholesale price in Amman is not the actual transactions price for export quality tomatoes, the price movements were similar and the wholesale prices do illustrate the importance of accounting for domestic price changes in evaluating the competitiveness of Jordanian exports.

5.4 Initial Estimate of Demand for Jordanian Tomatoes

In an attempt to estimate the responsiveness of the export demand for Jordanian tomatoes, the following preliminary model was estimated. This model explores the relation between total tomato exports to two key prices. The first is the weighted

average real exchange rate facing importers in the Gulf states. The second is the real wholesale price of tomatoes in the Amman market. The variables used are defined as follows:

LTOMX	=	total Jordanian tomato exports in thousands of tons (see Table 3.5)
D	=	a dummy variable which takes the value of zero for 1975-82 and the value of one for 1983-88 and is intended to capture the effect on tomato production (and hence exports) of a period of major investment in research, technology and infrastructure
LRER	=	vegetable-weighted real exchange rates for the Gulf states (see Table 5.1)
LPW	=	real wholesale price of tomatoes in constant 1980 fils per kilogram (from unpublished AMO data).

A prefix L denotes the natural logarithm of the variable.
The following regression equation was estimated using annual data from 1975-88:

$$\text{LTOMX} = \underset{}{18.6} - \underset{(6.9)^{**}}{21.8}*\text{D} - \underset{(0.8)^{**}}{2.8}*\text{LRER} + \underset{(1.5)^{**}}{4.7}(\text{D}*\text{LRER}) - \underset{(0.5)}{0.2}*\text{LPW}$$

where n = 14 observations, R squared = 0.70 and numbers in parentheses below the coefficients are the standard errors of the estimates. Two asterisks denote significance at the 99 percent level.

This simple model explains 70 percent of the variation in Jordanian tomato exports. The dummy variable is significant as is the real exchange rate and the term reflecting the interaction of the dummy variable and the exchange rate. These preliminary results suggest that the real exchange rate is itself a more powerful determinant of tomato exports than the wholesale price in Amman.

For 1983 to 1988 when D = 1, the equation is given by:

$$\text{LTOMX} = -3.2 + 1.9*\text{LRER} - 0.2*\text{LPW}$$

From this result it follows that the elasticity of tomato exports with respect to the real exchange rate is 1.9. In other words, a 10 percent depreciation of the Jordanian dinar with respect to the currencies of Kuwait and Saudi Arabia would lead to a 19 percent

increase in the real volume of tomato exports. This result provides tentative support for the central hypothesis that Jordanian exports are in fact governed at least in part by the real price of foreign exchange.

A richer specification of the export demand relationship would involve using a measure of Jordan's share of a particular export market relative to that of its competitors. This would then be related to the cost of tomatoes from Jordan relative to the cost from competing suppliers. The effect of real income in the export market should also be explored. This task awaits the development of more detailed data series on the volumes and prices of exports from Jordan and competing suppliers to the principal markets.

6. MACROECONOMIC POLICY: A KEY ELEMENT

6.1 Key Linkages

The real exchange rate has been a focal point of this analysis. It is the key price determining the profitability of exporting fruits and vegetables. In this section, we explore some of the key linkages between macroeconomic policy and changes in the real exchange rate. Elements of macroeconomic policy that matter in this regard are fiscal policy, through its effects on the public sector deficit, commercial policy, through its effects on the imports of goods and services, and monetary and exchange rate policies through their effects on capital flows and the balance of payments.

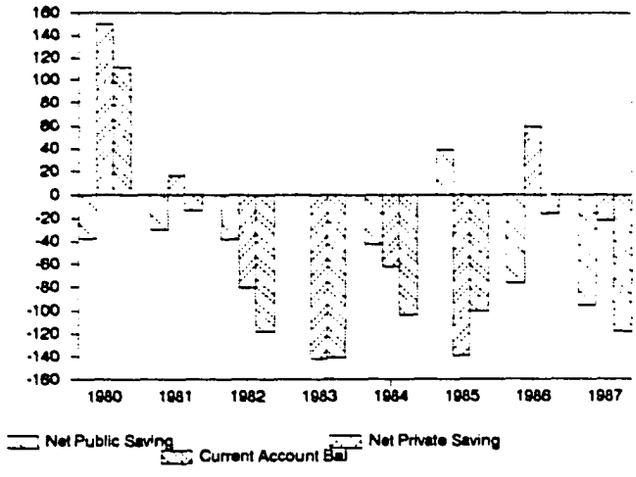
An important feature of an open economy's macroeconomic accounts, the current account balance, is highlighted in Table 6.1. The first line of the table shows the current account balance from 1980 to 1987. A positive number indicates that Jordan is acquiring claims on the rest of the world; Jordan acquired JD112 million worth in 1980. A negative balance on current account means that the rest of the world is acquiring claims on the domestic economy; as the table shows, this was the case for Jordan from 1981 through 1987, when current account deficits of more than JD100 million were common.

The current account balance can be decomposed into the balance of trade in goods and services, where services include factor services, plus the net balance on unrequited transfers (e. g., foreign assistance). This breakdown is shown in the first panel of Table 6.1. Exports and imports of goods and nonfactor services clearly show the large recurring deficit in this aspect of Jordan's international trade; this deficit has been around JD700 million. This deficit is offset to a substantial degree by inflows from two sources, remittances of Jordanians working abroad and unrequited transfers. Obviously, without these two sources of income, profound changes in the Jordanian economy would have to take place in response to the huge deficits in the balance of trade in goods and services, for instance, a large real devaluation.

Another breakdown of the current account balance is to view it as the sum of public sector and private sector net saving (second panel of Table 6.1 and Figure 6.1). This view clearly highlights the current account balance as a country's net claims on the rest of the world. That is, a positive current account balance implies that the country is

spending less than it earns; it is saving. Net public saving has generally been negative for most of the period, so the public sector has been dissaving, or borrowing, for all but two years. After 1980 and 1981, net saving by the private sector has also generally been negative. This overall pattern of dissaving by both the public and private sectors has resulted in a negative balance on current account for much of the 1980s.

Fig. 6.1. Public and Private Saving



How has this excess of spending over income been financed? As shown in the third panel of Table 6.1, it has been financed partly by borrowing (see the entries for net change in capital account) and partly by running down foreign exchange reserves at the Central Bank of Jordan (see the entries for net change in reserves). There have been capital inflows from 1980 to 1987 as shown by the entries for "Net Change in Capital Account" where a positive sign on net change in capital account indicates a net capital inflow, or net borrowing. Except for 1982 and 1987, the Central Bank has had to run down its foreign exchange reserves to help fill the gap between an excess of spending over income, as shown by the entries next to "Foreign Exchange, etc." where a negative sign indicates a reserve outflow.

Net changes in reserves are shown as the sum of two components: credits to Iraq and Syria, and foreign exchange. It is movements in this latter amount that are used as one measure of the sustainability of the current account imbalance (Chapter 6.3).

This chronic imbalance in Jordan's current account and the ways this imbalance have traditionally been financed have important implications for Jordan's international competitiveness via the effects on the real exchange rate. The next two sections explore the influence of macroeconomic policies on two measures of international competitiveness. In section 6.2, the effects of monetary policy are measured by looking at movements in the *purchasing power parity* (PPP) exchange rate. The effects of fiscal and commercial policy on the bilateral real exchange rates are analyzed in section 6.3.

6.2 Purchasing Power Parity Exchange Rates

To the extent that monetary policy affects the domestic inflation rate, it can alter a country's international competitiveness. Other things being equal, if Jordan's inflation rate exceeds the inflation rates of its trading partners, Jordan will become less competitive as its exchange rate appreciates. A measure that captures the effects of monetary and exchange rate policy on international competitiveness is the deviations of the nominal exchange rate from its purchasing power parity (PPP) level.

A PPP exchange rate adjusts the nominal exchange rate in some base year to offset the effects of differential inflation rates, thereby keeping the real exchange rate constant. The base year is supposed to be one in which the nominal exchange rate was in equilibrium. Note that because the exchange rate and the price indices are indexed to the same base year, the nominal and PPP rates are the same in the base year.

The equation below calculates the PPP exchange rate, assuming a base year of 1975:

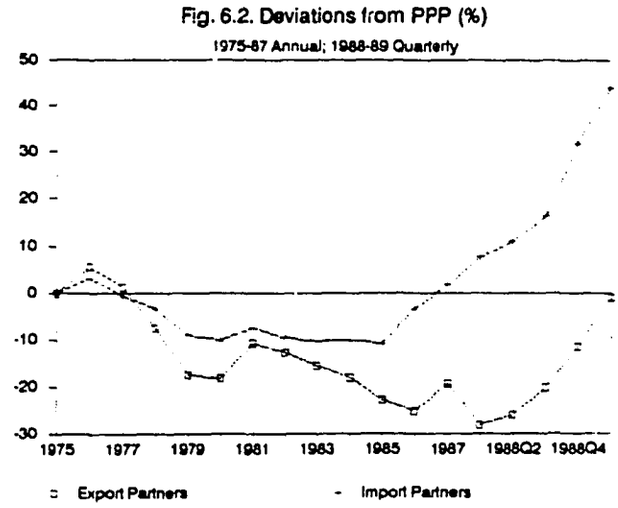
$$E^{P}_{(t)} = E_{75} \{P_{75(t)}/P^{*}_{75(t)}\}$$

E_{75} is the dinar price of foreign exchange for any given country in year t;
$P_{75(t)}$ is the Jordanian consumer price index for year t (1975 = 100); and
$P^{*}_{75(t)}$ is the foreign country's consumer price index.

The PPP exchange rates for Jordan's main export markets and main import suppliers are presented in Tables 6.2a and 6.2b. The deviations of the actual nominal exchange rates (Tables 4.1a and 4.1b) from the PPP rates are one measure of the change in Jordan's competitiveness vis-a-vis its trading partners. That is, the deviations are computed as

$$\% \text{ Deviation from PPP} = \{(E - E^{P})/E^{P}\}*100$$

and shown in Tables 6.3a (Jordan's export markets) and 6.3b (Jordan's import suppliers). In these tables are shown both the bilateral deviations as well as the trade-weighted deviations, where the export and import weights are from Tables 4.3a and 4.3b, respectively. The trade-weighted deviations from PPP are also plotted in Figure 6.2.



In picking 1975 as the base year for our calculations, we were implicitly assuming that the foreign exchange market in which Jordanian dinars were traded for other currencies was in equilibrium, that is, that the nominal exchange rates for 1975 were equilibrium rates. If there had been no real shocks to the Jordanian or world economy since that time and had nominal exchange rates measured in dinars moved exactly as did the differential inflation rates, then the real exchange rate would have remained constant. For example, if the difference between Jordan's inflation rate and that of the USA were to be 10 percent, then the dinar would depreciate against the US dollar by an equal amount. In that case, we would have expected no deviations of the actual exchange rate from its PPP value.

If on the other hand the realized nominal rate remained nearly constant in the presence of significant domestic inflation, then the actual rate would be below its PPP value and a calculation of the deviation using the formula above would yield a negative value. In this case, we say that the nominal exchange rate is overvalued relative to its PPP (equilibrium) value. An overvalued exchange rate amounts to a tax on exports and a subsidy to imports by the amount of the overvaluation. An exporter would have received more (in dinars) for each unit of foreign currency earned at the PPP rate than he received at the prevailing nominal exchange rate. Since he received less at the prevailing rate, he has in effect been taxed by the amount of the overvaluation. Similarly, an importer has to give up fewer dinars at the prevailing rate than he would at the PPP rate in order to acquire a unit of foreign currency; he in effect enjoys a subsidy equivalent to the amount of the overvaluation.

Figure 6.2 shows distinctive differences in the pattern of deviations from PPP that faced importers and exporters. From 1978 to 1986 both import- and export-weighted deviations were negative. Thus, on average importers were receiving a subsidy and exporters were being taxed by the amount of the exchange rate overvaluation. From the first quarter of 1988 to the first quarter of 1989, however, the picture changes. Import-weighted deviations of PPP became highly positive, implying that imports are now being

taxed instead of subsidized. The export-weighted deviations become increasingly less negative until the first quarter of 1989, when the weighted deviations were nearly zero. That is, with respect to its major export markets, Jordanian exporters are facing a more neutral structure of incentives with respect to exchange rate policy, when the policy effects are measured in a purchasing power parity sense.

6.3 Equilibrium Exchange Rates

In recent years, Jordan has had a command over goods and services that has exceeded its productive capacity. This excess of absorption over income has been financed in part by Arab grants and loans and remittances from Jordanians working abroad and in part by the exchange rate and fiscal policies the government of Jordan has pursued. As a result, the real value of the Jordanian dinar has been greater than that which would have prevailed if absorption and income had been more nearly in balance. In other words, the Jordanian dinar has been overvalued for several years, leading to a decline in the relative importance of the traded goods sector, including a slow down in the growth of fruit and vegetable exports, and a boom in the nontraded goods sector, such as construction and public works.

In this section, we argue that grants and remittances and foreign reserve flows from the Central Bank were not sustainable at their historical levels and that these "unsustainable" flows led to an appreciation of the dinar. We estimate the magnitude of the unsustainable flows and the amount of the resulting overvaluation using a methodology developed by Krueger, Schiff and Valdes (1989).

Fig. 6.3. Supply and Demand for Foreign Exchange

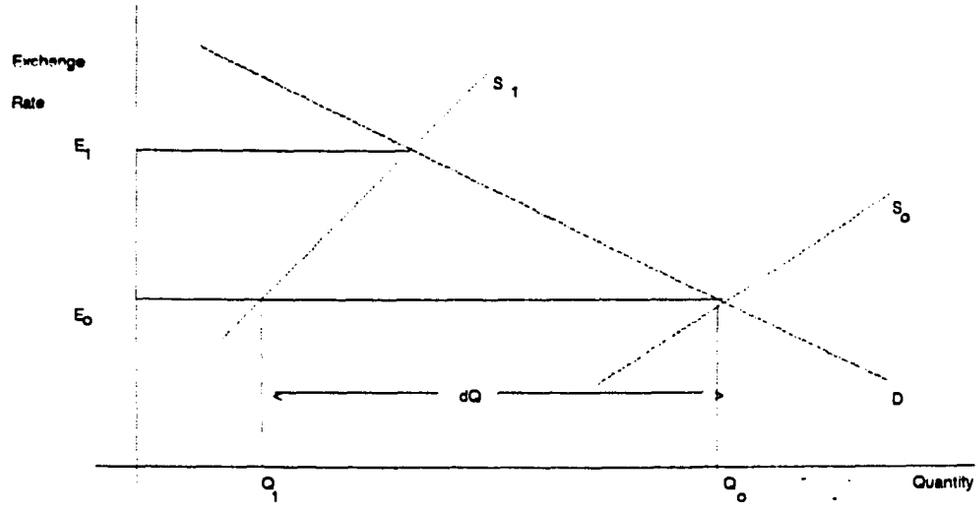


Figure 6.3 depicts supply and demand conditions in the foreign exchange market. The vertical axis measures the exchange rate denominated as the dinar price of U. S. dollars. The horizontal axis measures the quantity of dollars available per year. An initial supply function for foreign exchange, denoted S_0 in the figure, measures the amount of dollars forthcoming at each exchange rate from export earnings and grants and remittances. The intersection of this supply function with the demand function for foreign exchange yields an equilibrium value of the exchange rate, E_0, and the quantity of dollars, Q_0. Estimates of the total supply of foreign exchange available from current account transactions are presented in Table 6.4 for 1980-87.

This supply consists of the change in foreign exchange reserves (foreign currency reserves and gold) at the Central Bank plus all current account credits (exports of goods and nonfactor services, unrequited transfers into Jordan, remittances from Jordanians working abroad, etc.). In order to give a more accurate picture of Jordan's true reserves, Jordanian credits to Iraq and Syria which are included as assets in the balance sheet of the CBJ have been excluded. It is argued that these are not sufficiently liquid to include as part of the nation's command over foreign goods and services, at least in the medium term.

Let us suppose that grants from other Arab countries suffer a permanent decline because of a fall in oil prices. In that case, the supply function would shift back to S_1. If the exchange rate were free to move to clear the market, it would depreciate to E_1. If the CBJ chooses to defend the current exchange rate, E_0, then at that exchange rate only Q_1 dollars per year will be supplied, whereas Q_0 dollars will continue to be demanded. In other words, there will be an excess demand for dollars of Q_0-Q_1, denoted dQ. If transactions are to occur at the exchange rate E_0, that excess demand has to be filled. In the model described below, that excess demand is filled by unsustainable reserve flows from the CBJ and by unsustainable flows of grants and remittances. That is, our model can be represented by the following equation:

$$dQ_t = (dR_t - dR^*_t) + (GR_t - GR^*_t)$$

where:

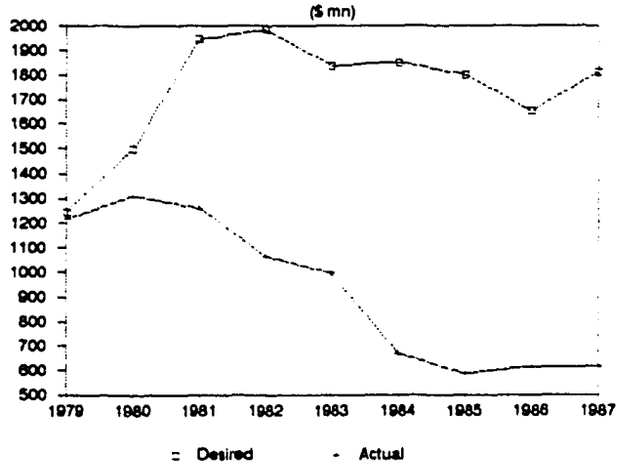
R_t = the actual level of reserves at time t;
dR_t = the change in reserves (i.e., R_t-R_{t-1});
R^*_t = the desired level of reserves;
dR^*_t = the change in desired reserves (i.e., R^*_t-R^*_{t-1});

GR_t = the actual flows of grants and remittances; and
GR^*_t = the sustainable flows of grants and remittances.

To implement the model, we need estimates of the desired reserves and estimates of the sustainable flows of grants and remittances. The level of desired reserves in period t was assumed to be a constant proportion of the imports of goods and services in period t, denoted by M_t; i.e., $R^*_t = kM_t$, where k is estimated as the average number of months of imports which could have been financed by the actual reserves held on average from 1978 to 1980.

The result was k = 5.2 months; that is, desired reserve holdings should equal 5.2 months of annual imports each year. Total imports and desired reserve holdings are shown in Table 6.5. Actual and desired reserves are plotted in Figure 6.4. From 1979 to 1987 actual reserves are always below the desired level, implying an excessive loss of foreign exchange holdings.

Fig. 6.4. Actual and Desired Reserves



The change in the desired reserves represents the annual flows necessary to adjust the stock holdings to their desired level. These are shown in Table 6.5. The unsustainable loss in reserves is then given as the difference between the annual changes in actual reserves and the annual changes in desired holdings. This series is also shown in Table 6.5.

The real value of grants and remittances (GR) were modeled as a function of the real price of oil. This was under the assumption that fluctuations in oil revenues earned by the Gulf states would affect the level of grants and loans these countries would make to Jordan, as well as their demand for labor services provided by Jordanians. The sustainable flows of grants and remittances were assumed to be a function of the permanent, or long-run, real price of oil. This was approximated by the average of real oil prices from 1986-88. A regression of real grants and remittances (GR) on real oil prices (ROP) yield the following result:

$$GR_t = 874.45 + 5.95 * ROP_t$$
$$(158.41)^{**} \quad (2.08)^{**}$$

where:

GR_t = grants and remittances in millions of constant 1980 U. S. dollars

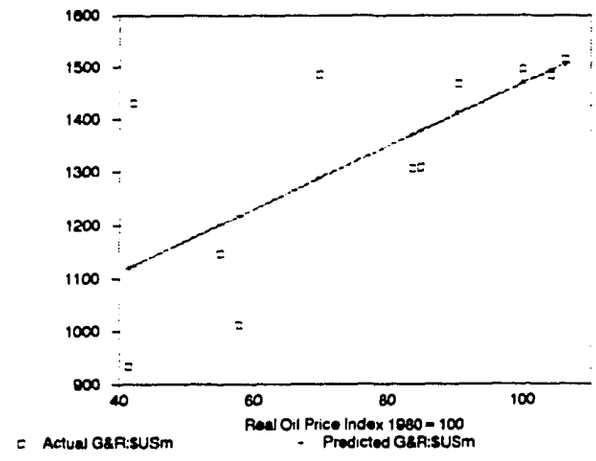
ROP_t = an index of real international oil prices in constant 1980 U. S. dollars and

R squared = 0.48.

The actual and predicted values of grants and remittances as a function of the real oil price are shown in Figure 6.5.

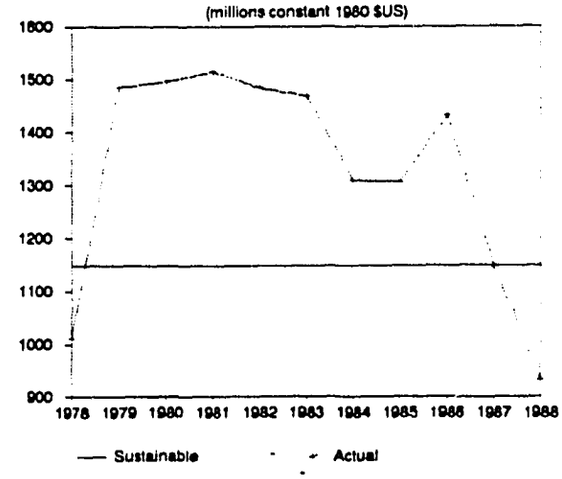
On the basis of this relationship, the sustainable level of grants and remittances corresponding to the predicted real oil price was estimated as $1149 million. This sustainable level is shown as the horizontal line in Figure 6.6. The actual flows of grants and remittances are also shown in this figure.

Fig. 6.5 Grants & Remit's vs Oil Prices



From 1978 until 1987, the actual flows substantially exceeded the sustainable level. The difference between these two comprises the unsustainable flows of grants and remittances. These are shown in Table 6.5. The total unsustainable supplies of foreign exchange (dQ) is then given by the sum of the unsustainable reserve losses and the unsustainable flows of grants and remittances. This sum is shown in the last column of Table 6.5.

Fig. 6.6. Actual and Sustainable G&R
(millions constant 1980 $US)



The equilibrium exchange rate is the rate which would prevail in the absence of these unsustainable flows. It is given by the following relationship:

$$E_1 = \{[dQ/(eQ_1 + nQ_0)] + 1\}^*E_0$$

where e is the elasticity of supply of foreign exchange and n is the elasticity of demand for foreign exchange. Independent estimates of these elasticities were not available. Two cases were examined. Case I assumes the elasticities of supply and demand are 2.0 and 1.0, respectively. Case II assumes these elasticities are 1.0 and 0.5. These values encompass ranges typically found for developing countries.

The extent of the overvaluation attributable to the unsustainable flows of foreign exchange are given in the first two columns of Table 6.6. By this measure, the price of foreign currency was too low throughout the period 1980 to 1987. Simply stated, the high levels of grants and remittances combined with the explicit policy of supporting the JD by running down foreign exchange reserves led to an overvaluation of the dinar. This systematically disadvantaged the tradable goods sector and reduced the exports of fruits and vegetables to levels below those which would have prevailed under a more sustainable foreign exchange regime.

In addition to the overvaluation caused by these policies, the policy of protecting the industrial sector contributed to a further overvaluation of the JD by reducing the demand for imports. In other words, had the industrial sector not been so protected by import tariffs, the price of foreign currency would have needed to have been higher in order to maintain equilibrium in the foreign exchange markets. Due to a lack of known studies estimating the average level of tariffs over time, an estimate of the average tariff rate was formed by taking the import duties recorded by the CBJ as a proportion of the value of total imports. It should be noted that this understates the true level, as it makes no allowance for non-tariff barriers, i. e., quotas, licenses and prior deposit requirements.

When import tariffs, t_m, are incorporated, the expression for the equilibrium exchange rate becomes:

$$E^* = \{[(dQ + (t_m/1+t_m)^*nQ_1)/(eQ_1 + nQ_0)] + 1\}^*E_0$$

assuming that there are no taxes on exports. The extent of the overvaluation is shown

in the last column of Table 6.6 and ranges between 7 and 16 percent. These values are considerably higher than the case that excluded import tariffs, reinforcing the importance of import tariffs as an implicit tax on the exports of fruits and vegetables.

6.4 Implications for Competitiveness

The unsustainable flows of grants and remittances and reserve losses from the CBJ constituted an artificially high availability of foreign exchange in the 1980s. As a consequence, the price of foreign exchange was held artificially low. In other words, the Jordanian currency was overvalued in terms of foreign currencies. In effect, these flows resulted in a real appreciation of the dinar. The result of this appreciation was to place traded goods sector at a competitive disadvantage in international markets.

The decline in the real oil price decreased Saudi Arabian income, decreased the demand for Jordanian labor abroad, and decreased the flow of grants from other Arab countries. In addition, the disengagement in July 1988 from the West Bank reduced, probably permanently, the supply of remittances from workers in that region. These circumstances are not likely to be reversed in the near future. The implication is that a real devaluation has occurred and that fruit and vegetable exports are now more competitive than, say, exports of Jordanian engineers. In short, an improvement in Jordan's competitiveness has occurred that will prevail in the medium run. Jordan will need to generate more of its foreign exchange from exports of goods rather than relying so heavily on grants, loans and the exports of services.

Tables

TABLE 2.1 GROSS DOMESTIC PRODUCT AND GROSS NATIONAL PRODUCT AND REAL GROWTH RATES

	GROSS DOMESTIC PRODUCT			GROSS NATIONAL PRODUCT				
YEAR	AT CURRENT PRICES	AT 1980 PRICES	REAL GROWTH	AT CURRENT PRICES	AT 1980 PRICES	REAL GNP GROWTH	POPULATION	REAL GNP PER CAPITA
	(JD million)	(JD million)	(%)	(JD million)	(JD million)	(%)	(million)	(JD)
1979	753.0	836.7	0.0	921.3	1023.7	0.0	2.84	360.5
1980	984.3	984.3	14.9	1190.1	1190.1	13.9	2.92	407.6
1981	1164.2	1081.0	8.9	1482.7	1376.7	13.6	3.02	455.9
1982	1321.2	1141.9	5.3	1673.4	1446.3	4.8	3.13	462.1
1983	1422.7	1171.0	2.5	1770.3	1456.8	0.7	3.25	448.2
1984	1498.4	1187.3	1.4	1853.6	1468.8	0.8	3.37	435.8
1985	1605.9	1235.3	3.9	1881.8	1447.5	-1.5	3.51	412.4
1986	1639.9	1261.5	2.0	1919.4	1476.5	2.0	3.64	405.6
1987	1686.3	1301.2	3.0	1867.9	1441.3	-2.4	3.79	380.3

Source: Central Bank of Jordan, Statistical Monthly Bulletin, March 1989, Table 46.

TABLE 2.2 GOVERNMENT FINANCE: 1979 - 1988 (JD million)

YEAR	CURRENT EXPENDITURE	CAPITAL EXPENDITURE	TOTAL EXPENDITURE	DOMESTIC REVENUES	DEFICIT (-) OR SURPLUS (+)	FOREIGN GRANTS	DEFICITS AFTER FOREIGN GRANTS
1979	321	194	515	188	-327	210	-117
1980	336	227	563	226	-337	209	-128
263	252	256	508	309	-199	206	7
264	443	251	694	362	-332	200	-132
265	454	252	706	401	-305	197	-108
266	488	233	721	415	-306	106	-200
267	543	263	806	441	-365	188	-177
268	571	411	982	514	-468	144	-324
269	603	363	966	532	-434	128	-306
270	661	385	1046	541	-505	164	-341

Source: Central Bank of Jorda. .onthly Statistical Bulletin, Volume 25, Number 3, March 1989, Table

TABLE 2.3 ANNUAL GROWTH RATES OF EXPENDITURES, REVENUES AND THE DEFICIT (per cent)

YEAR	CURRENT EXPENDITURES	CAPITAL EXPENDITURE	TOTA EXPENDITURE	DOMESTIC REVENUE	DEFICIT
	%	%	%	%	%
1980	4.5	14.5	8.5	16.8	3.0
1981	14.0	11.3	13.0	26.8	0.3
1982	11.7	-2.0	6.8	14.6	-1.8
1983	2.4	0.4	1.7	9.7	-8.8
1984	7.0	-8.2	2.0	3.4	0.3
1985	10.1	11.2	10.7	5.9	16.0
1986	4.9	36.0	18.0	14.2	22.0
1987	5.3	-13.2	-1.7	3.4	-7.8
1988	8.8	5.7	7.6	1.7	14.1
AVERAGE ANNUAL GROWTH RATE FOR THE PERIOD					
1979-1983	8.6	6.5	7.8	18.0	-1.7
1984-1988	7.5	12.3	9.2	6.6	10.3

Source: Calculated from Table 2.2

TABLE 2.4 SOURCES OF FINANCING OF GROSS BUDGET DEFICIT

YEAR	GROSS DEFICIT	FOREIGN GRANTS	DOMESTIC LOANS	FOREIGN LOANS	USE OF CASH BALANCES
	(JD million)	(%)			
1979	327	64.2	9.8	11.6	14.4
1980	337	62.0	5.3	21.4	11.3
1981	338	61.0	5.3	22.5	11.2
1982	332	60.0	8.4	19.6	12.0
1983	305	64.6	9.5	25.2	0.7
1984	306	34.6	8.5	39.9	17.0
1985	365	51.5	9.6	44.4	-5.5
1986	468	30.7	16.0	34.2	19.1
1987	434	29.5	30.0	14.5	26.0
1988	505	32.5	17.4	20.0	30.1

TABLE 2.5 GROWTH RATES OF MONEY SUPPLY 1980 - 1988 (%)

YEAR	MONEY SUPPLY (M1)	MONEY SUPPLY (M2)
1980	20.5	21.5
1981	15.2	16.5
1982	10.9	15.9
1983	9.4	13.1
1984	1.0	8.1
1985	-3.5	6.3
1986	5.4	9.5
1987	10.2	12.6
1988	16.0	9.7
AVERAGE ANNUAL GROWTH RATES		
1979-1983	14.8	17.6
1984-1988	7.0	9.9
1979-1988	9.4	27.3

TABLE 3.1 DOMESTIC EXPORTS BY COMMODITY (in JD million)

YEAR	TOTAL FOODS LIVE & ANIMAL	OF WHICH: VEGETABLES	FRUIT	RAW MATERIALS	CHEMICALS	MANUFACTURED GOODS	OTHER	TOTAL EXPORT
1979	21.2	11.9	6.8	27.6	7.1	14.1	-6.1	82.6
1980	23.5	11.4	7.8	49.2	10.9	18.7	-1.4	120.1
1981	33.0	19.5	10.2	56.7	17.9	34.6	-2.9	169.0
1982	39.1	18.3	12.5	61.5	23.1	32.5	-1.4	185.6
1983	36.3	17.6	7.6	52.7	36.8	17.9	-8.8	160.1
1984	41.8	18.6	8.4	87.1	67.6	33.8	3.8	261.1
1985	43.6	16.6	7.4	98.5	50.9	39.7	-1.4	255.3
1986	41.9	13.4	8.5	97.8	54.5	19.6	-10.1	225.6
1987	33.8	14.8	5.2	91.5	69.9	37.3	-3.7	248.8
1988	30.0	15.2	4.4	146.9	91.6	39.4	-2.7	324.8

Source: Central Bank of Jordan, Monthly Statistical Bulletin Volume 25, Number 3. March 1989, Table 38.

TABLE 3.2 IMPORTS BY COMMODITY (in JD million)

YEARS	FOOD & LIVE ANIMALS	FUEL & LUBRICANTS	CHEMICALS	MANUFACTURED GOODS	MACHINERY & TRANS. GOODS	MISCELLANEOUS MANUFACTURED GOODS	OTHER	TOTAL IMPORTS
1979	108.3	74.1	30.3	141.9	153.9	53.6	27.4	589.5
1980	118.8	122.2	39.2	147.7	199.9	58.3	29.8	715.9
1981	167.9	182.3	50.4	176.6	338.0	91.9	40.4	1047.5
1982	191.9	240.7	54.1	191.7	319.4	85.6	59.1	1142.5
1983	180.4	212.7	57.8	198.0	262.0	92.3	100.1	1103.3
1984	184.3	213.6	79.9	166.4	215.9	95.9	115.3	1071.3
1985	175.8	223.3	67.6	169.6	207.4	105.1	125.6	1074.4
1986	165.6	116.5	74.9	140.9	176.6	79.9	95.8	850.2
1987	155.7	156.1	91.7	162.2	186.3	87.7	75.8	915.5
1988	172.9	157.8	100.5	177.1	233.7	75.4	105.1	1022.5

Source: Central Bank of Jordan Monthly Statistical Bulletin.
Volume 25, Number 3. March 1989, Table 39.

TABLE 3.3 EXTERNAL TRADE AND BALANCE 1979 - 1988 (in JD million)

YEAR	IMPORTS	DOMESTIC EXPORTS	RE-EXPORTS	TOTAL EXPORTS	TRADE BALANCE
1979	589.5	82.6	38.4	121.0	-468.5
1980	715.9	120.1	51.3	171.4	-544.5
1981	1047.5	169.0	73.6	242.6	-804.9
1982	1142.5	185.6	78.9	264.5	-878.0
1983	1103.3	160.1	50.5	210.6	-892.7
1984	1071.3	261.1	29.6	290.7	-780.6
1985	1074.4	255.3	55.5	310.8	-763.6
1986	850.2	225.6	30.4	256.0	-594.2
1987	915.5	248.8	66.9	315.7	-599.8
1988	1022.5	324.8	56.7	381.5	-641.0

Source: Central Bank of Jordan, Monthly Statistical Bulletin. Volume 25, Number 3. March 1989, Table 36.

TABLE 3.4. EXPORTS FROM JORDAN: NOMINAL AND REAL VALUES: 1978-1988

	EXPORTS				SHARE OF VEGETABLES, FRUITS & NUTS IN:		REAL VALUE OF:	
			OF WHICH:					
YEAR	TOTAL	FOOD & ANIMALS	VEGE-TABLES	FRUIT & NUTS	TOTAL EXPORTS	FOOD & ANIMALS	TOTAL EXPORTS	VEGETABLE, FRUIT & NUT EXPORTS
							(1978 = 100)	
	JD mn	JD mn	JD mn	JD mn	%	%		
1978	64.1	16.3	8.1	6.5	22.8	89.6	100.0	100.0
1979	82.6	21.2	11.9	6.8	22.6	88.2	116.6	115.9
1980	120.1	23.5	11.4	7.8	16.0	81.7	149.2	104.8
1981	169.0	33.0	19.5	10.2	17.6	90.0	173.5	133.9
1982	185.6	39.1	18.3	12.5	16.6	78.8	176.2	128.4
1983	160.1	36.3	17.6	7.6	15.7	69.4	145.7	100.7
1984	261.1	41.8	18.6	8.4	10.3	64.6	219.1	99.5
1985	255.3	43.6	16.6	7.5	9.4	55.3	209.8	87.0
1986	225.6	41.9	13.4	8.5	9.7	52.3	215.6	91.9
1987	248.8	33.9	14.8	5.2	8.0	59.0	239.3	84.5
1988	324.8	30.0	15.2	4.4	6.0	65.3	272.0	72.1

Source: CBJ, Monthly Statistical Bulletins, various issues.

Note: Real values computed by deflating by the U. S. wholesale price index.

TABLE 3.5. PRODUCTION AND EXPORTS OF MAJOR VEGETABLES FROM JORDAN ('000 TONS)

YEAR	TOMATOES		CUCUMBERS		EGGPLANT		SQUASH		TOTAL		TOTAL (1980 = 100)	
	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS
1975	151.8	53.2	17.1	4.4	85.8	22.0	17.2	6.6	271.9	86.1	72.2	46.7
1976	145.3	67.5	18.4	6.8	44.0	17.7	18.6	8.0	226.3	100.1	60.1	54.3
1977	155.7	62.6	21.7	8.5	49.1	0.0	18.1	12.1	244.6	83.2	64.9	45.2
1978	201.5	81.0	22.5	15.2	48.6	24.8	21.3	20.3	293.9	141.2	78.0	76.6
1979	195.4	105.5	44.5	17.1	69.4	31.8	27.5	23.6	336.8	178.0	89.4	96.6
1980	206.2	110.3	64.2	24.9	81.4	27.4	25.0	21.7	376.8	184.3	100.0	100.0
1981	341.4	128.0	106.1	43.3	99.3	33.6	34.0	28.7	580.8	233.6	154.1	126.8
1982	375.4	152.3	87.5	54.7	110.0	37.6	73.8	40.2	646.7	284.8	171.6	154.6
1983	408.2	125.5	108.2	59.1	93.9	27.4	83.1	32.7	693.4	244.7	184.0	132.8
1984	354.6	128.0	99.1	58.1	73.7	35.2	78.7	23.5	606.1	244.8	160.9	132.8
1985	399.3	108.2	124.7	58.5	76.2	31.7	69.5	23.9	669.7	222.4	177.7	120.7
1986	305.9	95.0	92.7	39.6	80.0	27.0	52.0	18.0	530.6	179.6	140.8	97.5
1987	268.4	94.5	110.7	43.3	48.9	22.7	47.5	14.4	475.5	174.8	126.2	94.9
1988	290.7	118.3	80.2	44.8	34.9	26.0	33.4	15.3	439.2	204.4	116.6	110.9

Source: Agricultural Marketing Organisation, Amman.

TABLE 3.6 EXTERNAL TERMS OF TRADE, 1973-1988
(1980 = 100)

YEAR	UNIT PRICE INDICES: EXPORTS	IMPORTS	TERMS OF TRADE (a)
1973	41.8	48.9	85.5
1974	85.1	62.2	136.8
1975	96.5	85.3	113.1
1976	86.8	75.9	114.4
1977	86.8	77.5	112.0
1978	83.5	75.3	110.9
1979	84.2	80.6	104.5
1980	100.0	100.0	100.0
1981	114.7	121.7	94.2
1982	125.4	123.7	101.4
1983	114.6	113.0	101.4
1984	124.8	118.7	105.1
1985	121.1	115.6	104.8
1986	104.3	87.0	119.8
1987Q1	104.8	88.1	118.9
1987Q2	90.3	92.2	97.9
1987Q3	97.7	93.9	104.1
1987Q4	95.8	88.3	108.5
1988Q1	101.5	87.4	116.1
1988Q2	108.1	88.3	122.4
1988Q3	110.7	97.8	113.2
1988Q4	126.5	105.7	119.8

Notes: Export unit price index divided by Import unit price index.

Source: Central Bank of Jordan, Monthly Statistical Bulletins, various issues.

TABLE 4.1a NOMINAL EXCHANGE RATES FOR JORDAN'S MAIN EXPORT MARKETS
(JD PER UNIT OF FOREIGN CURRENCY)

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA
1975	0.0905	1.0987	0.0861	0.0322	0.8139	0.000488	0.0380	0.000767
1976	0.0941	1.1362	0.0863	0.0336	0.8490	0.000399	0.0371	0.000801
1977	0.0932	1.1480	0.0838	0.0332	0.8407	0.000373	0.0376	0.000793
1978	0.0899	1.1131	0.0779	0.0309	0.7815	0.000360	0.0373	0.000692
1979	0.0894	1.0871	0.0765	0.0303	0.4290	0.000361	0.0369	0.000482
1980	0.0896	1.1045	0.0761	0.0302	0.4264	0.000349	0.0380	0.000476
1981	0.0980	1.1887	0.0844	0.0334	0.4730	0.000291	0.0382	0.000524
1982	0.1030	1.2218	0.0897	0.0298	0.3116	0.000260	0.0372	0.000533
1983	0.1050	1.2428	0.0923	0.0277	0.3080	0.000239	0.0359	0.000399
1984	0.1093	1.3000	0.0980	0.0275	0.2769	0.000219	0.0337	0.000375
1985	0.1088	1.3110	0.1003	0.0248	0.2244	0.000206	0.0318	0.000354
1986	0.0945	1.1993	0.0891	0.0211	0.1818	0.000235	0.0278	0.000273
1987	0.0904	1.2169	0.0864	0.0195	0.1525	0.000262	0.0261	0.000206
1988Q1	0.0898	1.2256	0.0300	0.0192	0.1448	0.000273	0.0259	0.000203
1988Q2	0.0920	1.2552	0.0307	0.0195	0.1483	0.000272	0.0257	0.000206
1988Q3	0.1006	1.3283	0.0336	0.0207	0.1623	0.000272	0.0264	0.000222
1988Q4	0.1185	1.5778	0.0396	0.0239	0.1911	0.000337	0.0298	0.000259
1989Q1	0.1404	1.8368	0.0469	0.0273	0.2263	0.000388	0.0344	0.000302

Source: IMF, International Financial Statistics.

TABLE 4.1b NOMINAL EXCHANGE RATES OF MAIN IMPORT SUPPLIERS
(JD PER UNIT OF FOREIGN CURRENCY)

YEAR	SAUDI ARABIA	GERMANY	U.K.	U. S.	JAPAN	ITALY
1975	0.0905	0.1295	0.7070	0.3185	0.00107	0.000487
1976	0.0941	0.1318	0.6013	0.3322	0.00112	0.000399
1977	0.0932	0.1418	0.5757	0.3289	0.00123	0.000372
1978	0.0899	0.1521	0.5872	0.3058	0.00146	0.000360
1979	0.0894	0.1641	0.6366	0.3003	0.00137	0.000361
1980	0.0896	0.1640	0.6955	0.2985	0.00132	0.000348
1981	0.0980	0.1465	0.6722	0.3311	0.00150	0.000291
1982	0.1030	0.1449	0.6162	0.3521	0.00141	0.000260
1983	0.1050	0.1421	0.5507	0.3623	0.00152	0.000238
1984	0.1093	0.1350	0.5154	0.3846	0.00162	0.000218
1985	0.1088	0.1339	0.5118	0.3937	0.00165	0.000206
1986	0.0945	0.1611	0.5140	0.3497	0.00207	0.000234
1987	0.0904	0.1883	0.5559	0.3390	0.00234	0.000261
1988Q1	0.0898	0.2004	0.6061	0.3367	0.00263	0.000272
1988Q2	0.0920	0.2017	0.6345	0.3448	0.00274	0.000271
1988Q3	0.1006	0.2018	0.6415	0.3774	0.00282	0.000272
1988Q4	0.1185	0.2497	0.7956	0.4444	0.00356	0.000337
1989Q1	0.1404	0.2845	0.9211	0.5263	0.00414	0.000388

Source: IMF, International Financial Statistics.

TABLE 4.2a CONSUMER PRICE INDICES FOR JORDAN'S MAIN EXPORT MARKETS (1980 = 100)

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA	JORDAN	TRADE-WTD AVERAGE
1975	65.7	69.5	61.3	65.9	54.6	46.4	82.3	48.6	57.7	66.7
1976	86.4	73.1	68.3	70.6	60.2	54.1	75.9	58.3	64.3	76.1
1977	96.2	80.4	76.4	77.7	67.9	64.1	82.3	64.7	73.7	84.4
1978	94.7	87.4	80.2	82.5	75.4	71.8	84.4	70.0	78.9	86.5
1979	96.4	93.5	84.1	89.3	82.9	82.5	89.7	84.4	90.0	91.0
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	102.7	107.4	118.4	111.9	110.5	119.5	113.0	112.2	107.7	109.5
1982	102.1	115.7	135.3	118.5	126.8	139.2	121.9	122.9	115.7	115.1
1983	101.8	121.2	143.6	125.8	147.2	159.6	136.3	137.4	121.5	120.0
1984	101.3	122.6	156.6	134.1	172.3	176.8	147.7	151.7	126.2	129.6
1985	97.0	124.4	183.8	141.9	195.2	193.0	155.9	158.9	130.0	137.0
1986	94.1	125.6	250.2	147.1	239.3	204.3	169.5	168.2	130.0	152.6
1987	93.2	129.6	365.2	154.1	286.6	213.9	184.5	183.8	129.6	181.4
1988Q1	93.8	133.1	398.8	158.6	300.1	220.9	192.7	193.8	130.1	177.4
1988Q2	94.5	135.2	500.3	163.7	333.5	223.0	198.0	197.1	130.9	184.6
1988Q3	94.0	136.8	627.6	172.5	339.9	225.3	205.2	200.9	131.3	191.7
1988Q4	93.5	138.5	787.2	181.8	355.1	229.6	212.6	202.7	142.5	200.0
1989Q1	93.1	140.1	987.5	191.6	371.1	233.9	220.3	204.5	153.6	209.4

Source: IMF, International Financial Statistics.

TABLE 4.2b CONSUMER PRICE INDICES OF MAIN IMPORT SUPPLIERS (1980 = 100)

YEAR	SAUDI ARABIA	GERMANY	U. K.	U. S.	JAPAN	ITALY	JORDAN	TRADE-WTD AVERAGE
1975	65.7	82.0	51.1	65.3	72.6	46.4	57.7	66.0
1976	86.4	85.6	59.6	69.1	79.4	54.1	64.3	75.5
1977	96.2	88.7	69.0	73.6	85.9	64.1	73.7	82.4
1978	94.7	91.1	74.7	79.2	89.5	71.8	78.9	85.5
1979	96.4	94.9	84.8	88.1	92.8	82.5	90.0	91.2
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	102.7	106.3	111.9	110.4	105.0	119.5	107.7	108.0
1982	102.1	111.9	121.5	117.2	107.8	139.2	115.7	112.2
1983	101.8	115.6	127.0	120.9	109.9	159.6	121.5	116.5
1984	101.3	118.4	133.4	126.1	112.3	176.8	126.2	121.1
1985	97.0	121.0	141.5	130.6	114.6	193.0	130.0	127.3
1986	94.1	121.0	146.4	133.1	115.3	204.3	130.0	134.6
1987	93.2	121.4	152.5	137.9	115.4	213.9	129.6	134.3
1988Q1	93.8	122.0	155.2	140.8	115.3	220.9	130.1	137.4
1988Q2	94.5	122.7	159.0	142.5	116.1	223.0	130.9	139.0
1988Q3	94.0	122.8	161.1	144.5	116.3	225.3	131.3	140.1
1988Q4	93.5	123.3	164.5	145.9	117.1	229.6	142.5	141.6
1989Q1	93.1	125.2	167.1	147.5	117.5	233.9	153.6	143.2

Source: IMF, International Financial Statistics.

TABLE 4.3a NORMAILIZED EXPORT TRADE WEIGHTS

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA	TOTAL
1975	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1976	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1977	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1978	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1979	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1980	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1981	0.37	0.12	0.20	0.04	0.00	0.02	0.18	0.07	1.00
1982	0.41	0.10	0.12	0.04	0.00	0.03	0.25	0.04	1.00
1983	0.45	0.13	0.05	0.08	0.00	0.06	0.18	0.05	1.00
1984	0.35	0.11	0.03	0.10	0.00	0.05	0.30	0.06	1.00
1985	0.33	0.07	0.03	0.05	0.03	0.03	0.38	0.08	1.00
1986	0.29	0.09	0.05	0.03	0.04	0.07	0.35	0.08	1.00
1987	0.25	0.09	0.07	0.10	0.13	0.09	0.21	0.08	1.00
1988Q1	0.23	0.07	0.02	0.03	0.05	0.09	0.42	0.08	1.00
1988Q2	0.23	0.07	0.02	0.03	0.05	0.09	0.42	0.08	1.00
1988Q3	0.23	0.07	0.02	0.03	0.05	0.09	0.42	0.08	1.00
1988Q4	0.23	0.07	0.02	0.03	0.05	0.09	0.42	0.08	1.00
1989Q1	0.23	0.07	0.02	0.03	0.05	0.09	0.42	0.08	1.00

Source: Central Bank of Jordan, Monthly Bulletin of Statistics, March 1986 and March 1989, Tables 36 and 37, respectively.

Notes: Shares for 1981 are used for 1975-80. Quarterly shares for 1988 and 1989 are the annual 1988 shares.

TABLE 4.3b NORMALIZED IMPORT TRADE WEIGHTS

YEAR	SAUDI ARABIA	GERMANY	U. K.	U. S.	JAPAN	ITALY	TOTAL
1975	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1976	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1977	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1978	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1979	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1980	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1981	0.27	0.17	0.09	0.26	0.11	0.10	1.00
1982	0.34	0.15	0.08	0.21	0.13	0.08	1.00
1983	0.32	0.13	0.10	0.20	0.16	0.09	1.00
1984	0.34	0.11	0.12	0.20	0.13	0.10	1.00
1985	0.29	0.12	0.11	0.23	0.12	0.13	1.00
1986	0.13	0.17	0.18	0.20	0.18	0.13	1.00
1987	0.19	0.18	0.14	0.23	0.14	0.12	1.00
1988Q1	0.17	0.15	0.15	0.30	0.12	0.11	1.00
1988Q2	0.17	0.15	0.15	0.30	0.12	0.11	1.00
1988Q3	0.17	0.15	0.15	0.30	0.12	0.11	1.00
1988Q4	0.17	0.15	0.15	0.30	0.12	0.11	1.00
1989Q1	0.17	0.15	0.15	0.30	0.12	0.11	1.00

Source: Central Bank of Jordan, Monthly Bulletin of Statistics, March 1986 and March 1989, Tables 36 and 37, respectively.

Notes: Shares for 1981 are used for 1975-80. Quarterly shares for 1988 and 1989 are the annual 1988 shares.

TABLE 4.4a BILATERAL REAL EXCHANGE RATES OF JORDAN'S MAIN EXPORT MARKETS (1980 = 100)

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA	EXPORT-WTD AVERAGE
1975	114.8	119.8	120.2	121.8	180.6	112.5	142.7	135.8	123.2
1976	141.0	117.0	120.5	122.2	186.4	96.3	115.2	152.5	128.7
1977	135.7	113.4	114.2	116.2	181.6	93.0	110.7	146.2	123.5
1978	120.4	111.6	104.1	107.1	175.1	94.0	105.2	128.9	113.1
1979	106.7	102.3	94.0	99.8	92.7	95.0	96.9	94.9	100.6
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	104.2	107.3	121.9	115.3	113.8	92.7	105.6	114.6	109.3
1982	101.4	110.6	137.9	101.4	80.1	89.8	103.3	118.9	107.5
1983	98.2	112.2	143.5	95.0	87.5	89.8	106.0	94.7	102.7
1984	97.9	114.3	159.9	96.8	88.7	87.9	104.0	94.6	102.3
1985	90.5	113.6	186.5	89.6	79.0	87.8	100.3	91.0	98.7
1986	76.3	104.9	225.4	79.0	78.5	105.7	95.3	74.1	95.2
1987	72.5	110.2	320.0	76.8	79.1	123.8	97.7	61.4	102.6
1988Q1	72.2	113.5	120.9	77.8	78.3	132.7	101.0	63.4	93.4
1988Q2	74.1	117.4	154.4	80.8	88.6	132.8	102.5	65.2	96.3
1988Q3	80.4	125.3	211.3	90.4	98.5	134.0	108.6	71.5	103.6
1988Q4	86.8	138.8	287.6	101.1	111.7	155.9	117.2	77.4	114.8
1989Q1	94.9	151.7	396.3	112.8	128.2	169.5	129.9	84.5	128.4

TABLE 4.4b BILATERAL REAL EXCHANGE RATES OF MAIN IMPORT SUPPLIERS (1980 = 100)

YEAR	SAUDIA ARABIA	GERMANY	U. K.	U. S.	JAPAN	ITALY	IMPORT-WTD AVERAGE
1975	114.8	112.2	90.0	120.7	102.6	112.5	112.1
1976	141.0	107.0	80.1	119.6	105.0	96.3	115.9
1977	135.7	104.0	77.5	110.0	109.2	93.0	111.4
1978	120.4	107.1	79.9	102.8	125.6	94.0	108.0
1979	106.7	105.5	86.2	98.5	107.5	95.0	101.5
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	104.2	88.2	100.4	113.7	111.1	92.7	103.2
1982	101.4	85.4	93.0	119.5	100.2	89.8	101.0
1983	98.2	82.4	82.8	120.8	104.7	89.8	99.3
1984	97.9	77.2	78.3	128.7	109.4	87.9	99.8
1985	90.5	76.0	80.1	132.5	110.4	87.8	99.3
1986	76.3	91.4	83.2	119.9	139.5	105.7	104.1
1987	72.5	107.5	94.0	120.8	158.3	123.8	110.9
1988Q1	72.2	114.5	103.9	122.0	177.2	132.7	117.7
1988Q2	74.1	115.2	110.8	125.7	184.6	132.8	121.2
1988Q3	80.4	115.1	113.2	139.1	189.7	134.0	127.3
1988Q4	86.8	131.7	132.1	152.4	222.3	155.9	144.1
1989Q1	94.9	141.4	144.0	169.3	241.0	169.5	157.5

TABLE 5.1 REAL EXCHANGE RATES FOR VEGETABLE EXPORTS

YEAR	VEGETABLE WEIGHTED (1)	EEC WEIGHTED
1975	116.6	106.4
1976	132.3	96.5
1977	127.7	92.2
1978	117.2	94.5
1979	105.1	96.2
1980	100.0	100.0
1981	105.3	93.1
1982	104.7	87.9
1983	103.3	83.0
1984	103.8	79.3
1985	98.8	79.8
1986	86.6	92.3
1987	86.1	107.1
1988Q1	87.1	115.2
1988Q2	89.6	117.4
1988Q3	96.6	118.4
1988Q4	105.5	136.6
1989Q1	115.3	147.5

Source: CBJ, External Trade Statistics.

(1) Weights of .64 and .36 were used for Saudi Arabia and Kuwait, respectively. They represent over 80% of vegetable exports in 1987.

(2) Computed as average of real exchange rates for France, Germany, Italy, and the U.K.

TABLE 5.2 WHOLESALE PRICES OF TOMATOES IN AMMAN: 1982-1989

YEAR	NOMINAL PRICES		WHOLESALE PRICE INDEX		CONSTANT PRICES	
	ANNUAL AVERAGE	QUARTERLY	ANNUAL AVERAGE	QUARTERLY	ANNUAL AVERAGE	QUARTERLY
	(fils/kg)		(1979=100)		(fils/kg)	
1982Q1	116	139	129	130	90	107
1982Q2		87		129		67
1982Q3		90		128		70
1982Q4		147		129		114
1983Q1	130	172	135	136	96	126
1983Q2		136		134		101
1983Q3		94		135		70
1983Q4		118		133		89
1984Q1	129	116	137	136	94	85
1984Q2		137		137		100
1984Q3		95		137		69
1984Q4		169		137		123
1985Q1	119	132	139	139	86	95
1985Q2		105		137		77
1985Q3		73		140		52
1985Q4		165		139		119
1986Q1	113	101	138	138	82	73
1986Q2		79		139		57
1986Q3		64		138		46
1986Q4		207		140		148
1987Q1	90	110	140	138	64	80
1987Q2		82		139		59
1987Q3		85		141		60
1987Q4		81		140		58
1988Q1	117	91	153	145	76	63
1988Q2		135		149		91
1988Q3		64		150		43
1988Q4		179		168		107
1989Q1		162		181		90

Source: Central Bank of Jordan, Monthly Statistical Bulletins, various issues.

TABLE 5.3 TOMATO EXPORTS, WHOLESALE PRICES AND EXCHANGE RATES

YEAR/QTR		EXCHANGE RATE	REAL WHOLESALE PRICES	TOTAL TOMATO EXPORTS FROM JORDAN
		(fils/riyal)	(fils/kg)	(mt)
1986	4	92	148	1675
1987	4	89	58	9454
1988	4	124	107	21423
1987	1	90	80	9253
1988	1	90	63	11160
1989	1	141	90	21654

Source: Central Bank of Jordan, Monthly Statistical Bulletins and unpublished reports from the Agricultural Marketing Organization.

TABLE 5.4 COST IN RIYALS TO SAUDI ARABIAN IMPORTERS OF 1 KG OF TOMATOES IN THE AMMAN WHOLESALE MARKET AND JORDANIAN TOMATO EXPORTS TO SAUDI ARABIA

YEAR	MONTH	WHOLESALE PRICE OF TOMATOES IN AMMAN	EXCHANGE RATE	COST OF SAUDI ARABIAN BUYERS	EXPORTS OF TOMATOES TO SAUDI ARABIA
		(fils/kg)	(fils/riyal)	(riyals/kg)	(mt)
1987	Jan	151	90.2	1.67	586
	Feb	84	90.9	0.92	707
	Mar	110	89.3	1.23	2,270
	Apr	92	88.3	1.04	5,250
	May	101	90.7	1.11	8,964
	Jun	61	91.4	0.67	13,840
	Jul	64	92.3	0.69	5,727
	Aug	62	91.1	0.68	4,919
	Sep	114	92.6	1.23	1,413
	Oct	93	90.6	1.03	954
	Nov	67	89.1	0.75	1,798
	Dec	83	88.0	0.94	1,599
1988	Jan	93	89.6	1.04	1,679
	Feb	63	90.7	0.69	992
	Mar	113	90.1	1.25	1,106
	Apr	246	89.7	2.74	484
	May	66	91.3	0.72	6,963
	Jun	72	97.7	0.74	11,187
	Jul	63	99.4	0.63	9,983
	Aug	58	100.6	0.58	7,644
	Sep	70	101.4	0.69	6,916
	Oct	86	118.4	0.73	5,477
	Nov	206	124.5	1.65	2,715
	Dec	248	127.5	1.95	555
1989	Jan	172	131.6	1.31	664
	Feb	126	144.7	0.87	972
	Mar	112	144.7	0.77	4,708
	Apr	225	144.7	1.55	2,723
	May	76	144.7	0.53	12,071
Averages:					
Jan-May 1987		108	89.9	1.20	3,555
Jan-May 1988		116	90.3	1.29	2,245
Jan-May 1989		142	142.1	1.01	4,228

Source: Central Bank of Jordan, Monthly Statistical Bulletins and unpublished reports from the Agricultural Marketing Organization.

Note: The exchange rates for April and May 1989 were estimated.

TABLE 5.5 JORDAN'S SHARE RELATIVE TO TURKEY'S SHARE IN THE SAUDI ARABIAN TOMATO IMPORT MARKET

YEAR	SHARE
1982	0.64
1983	0.86
1984	0.64
1985	n/a
1986	0.54

Source: AMO data.

TABLE 6.1 MACROECONOMIC ACCOUNTING: THREE EQUIVELANT APPROACHES (JDmn)

		1980	1981	1982	1983	1984	1985	1986	1987
CURRENT ACCOUNT BALANCE	CAB	111.6	-13.7	-118.3	-141.3	-104.1	-99.9	-16.0	-118.4
Exports of Goods and Services	Xgs	531.1	731.1	778.3	741.3	830.5	858.9	707.6	772.4
Imports of Goods and Services	Mgs	1031.3	1482.4	1613.5	1540.2	1640.8	1636.5	1334.6	1346.2
Net Workers' Remittances	RE	190.8	288.9	319.5	330.1	377.5	310.4	328.0	255.3
Net Unrequited Transfers	URT	421.0	448.7	397.4	327.5	328.7	367.3	283.0	200.1
TOTAL	CAB	111.6	-13.7	-118.3	-141.3	-104.1	-99.9	-16.0	-118.4
Net Public Saving	T-G	-38.1	-30.0	-38.3	0.2	-42.4	39.1	-75.9	-95.8
Net Private Saving	S-I	149.7	16.3	-80.0	-141.5	-61.7	-139.0	59.9	-22.5
of which: savings	S	272.7	259.8	175.9	5.1	71.1	-69.1	-20.1	-72.6
investment	I	123.0	243.5	255.9	146.6	132.8	69.9	-80.0	-50.1
TOTAL	CAB	111.6	-13.7	-118.3	-141.3	-104.1	-99.9	-16.0	-118.4
Net Change in Capital Account	dK	32.0	69.0	113.4	156.8	64.4	137.6	50.9	75.9
Net Change in Reserves	dR	-110.1	-15.3	62.4	-50.3	69.3	-18.5	-18.3	36.5
of which: credits to Iraq and Syria		1.0	-1.0	0.0	28.3	81.0	44.7	27.6	4.6
Foreign Exchange, etc.		-111.1	-14.3	62.36	-78.6	-11.7	-63.21	-45.88	31.9
Net Errors and Omissions		-33.5	-40.0	-57.5	34.8	-29.6	-19.2	-16.6	6.0
TOTAL	CAB	111.6	-13.7	-118.3	-141.3	-104.1	-99.9	-16.0	-118.4

Source: Central Bank of Jordan, Monthly Statistical Bulletins.
Note: Private investment was calculated by subtracting government capital expenditures from gross fixed capital formation less consumption of fixed capital. Changes in stocks have been ignored.

TABLE 6.2a PURCHASING POWER PARITY EXCHANGE RATES OF JORDAN'S MAIN EXPORT MARKETS
(JD PER UNIT OF FOREIGN CURRENCY)

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA
1975	0.0905	1.0987	0.0861	0.0322	0.8139	0.00049	0.0380	0.00077
1976	0.0766	1.1641	0.0861	0.0335	0.8226	0.00047	0.0459	0.00071
1977	0.0789	1.2131	0.0882	0.0348	0.8359	0.00045	0.0485	0.00074
1978	0.0858	1.1947	0.0900	0.0351	0.8059	0.00043	0.0507	0.00073
1979	0.0962	1.2739	0.0979	0.0370	0.8361	0.00043	0.0544	0.00069
1980	0.1029	1.3234	0.0914	0.0367	0.7702	0.00039	0.0542	0.00065
1981	0.1080	1.3271	0.0832	0.0354	0.7506	0.00035	0.0517	0.00062
1982	0.1167	1.3234	0.0782	0.0359	0.7027	0.00033	0.0514	0.00061
1983	0.1228	1.3267	0.0774	0.0355	0.6357	0.00030	0.0483	0.00057
1984	0.1282	1.3623	0.0737	0.0346	0.5641	0.00028	0.0463	0.00054
1985	0.1379	1.3830	0.0647	0.0337	0.5129	0.00026	0.0452	0.00053
1986	0.1422	1.3698	0.0475	0.0325	0.4184	0.00025	0.0416	0.00050
1987	0.1431	1.3236	0.0325	0.0309	0.3483	0.00024	0.0381	0.00046
1988Q1	0.1428	1.2941	0.0298	0.0301	0.3340	0.00023	0.0366	0.00043
1988Q2	0.1426	1.2814	0.0239	0.0294	0.3024	0.00023	0.0358	0.00043
1988Q3	0.1438	1.2700	0.0191	0.0280	0.2975	0.00023	0.0347	0.00042
1988Q4	0.1568	1.3620	0.0166	0.0288	0.3090	0.00024	0.0363	0.00045
1989Q1	0.1699	1.4507	0.0142	0.0295	0.3188	0.00026	0.0378	0.00049

NOTE: Computed as the nominal exchange rate in 1975 multiplied by the ratio of the Jordanian CPI to the foreign CPI.

TABLE 6.2b PURCHASING POWER PARITY EXCHANGE RATES OF MAIN IMPORT SUPPLIERS
(JD PER UNIT OF FOREIGN CURRENCY)

YEAR	SAUDI ARABIA	GERMANY	U. K.	U. S.	JAPAN	ITALY
1975	0.0905	0.1295	0.7070	0.3185	0.00107	0.00049
1976	0.0766	0.1382	0.6755	0.3354	0.00109	0.00047
1977	0.0789	0.1529	0.6688	0.3609	0.00116	0.00045
1978	0.0858	0.1593	0.6613	0.3591	0.00119	0.00043
1979	0.0962	0.1745	0.6645	0.3682	0.00131	0.00043
1980	0.1029	0.1840	0.6261	0.3604	0.00135	0.00039
1981	0.1080	0.1864	0.6026	0.3516	0.00138	0.00035
1982	0.1167	0.1902	0.5962	0.3558	0.00145	0.00033
1983	0.1228	0.1934	0.5990	0.3622	0.00149	0.00030
1984	0.1282	0.1961	0.5923	0.3607	0.00152	0.00028
1985	0.1379	0.1977	0.5752	0.3588	0.00153	0.00026
1986	0.1422	0.1977	0.5560	0.3520	0.00152	0.00025
1987	0.1431	0.1965	0.5322	0.3387	0.00152	0.00024
1988Q1	0.1428	0.1963	0.5251	0.3331	0.00152	0.00023
1988Q2	0.1426	0.1963	0.5155	0.3311	0.00152	0.00023
1988Q3	0.1438	0.1967	0.5102	0.3276	0.00152	0.00023
1988Q4	0.1568	0.2126	0.5423	0.3520	0.00164	0.00024
1989Q1	0.1699	0.2256	0.5756	0.3754	0.00176	0.00026

Note: Computed as the nominal exchange rate in 1975 multiplied by the ratio of the Jordanian CPI to the foreign CPI.

TABLE 6.3a PERCENTAGE DEVIATIONS FROM PURCHASING POWER PARITY: JORDAN'S MAIN EXPORT MARKETS

YEAR	SAUDI ARABIA	KUWAIT	SYRIA	PAKISTAN	EGYPT	ITALY	INDIA	INDONESIA	TRADE-WTD AVERAGE
1975	0	0	0	0	0	0	0	0	0
1976	23	-2	0	0	3	-14	-19	12	5
1977	18	-5	-5	-5	1	-17	-22	8	1
1978	5	-7	-13	-12	-3	-16	-26	-5	-7
1979	-7	-15	-22	-18	-49	-16	-32	-30	-18
1980	-13	-17	-17	-18	-45	-11	-30	-26	-18
1981	-9	-10	1	-5	-37	-18	-26	-16	-11
1982	-12	-8	15	-17	-56	-20	-28	-12	-13
1983	-14	-6	19	-22	-52	-20	-26	-30	-15
1984	-15	-5	33	-21	-51	-22	-27	-30	-18
1985	-21	-5	55	-26	-56	-22	-30	-33	-23
1986	-34	-12	87	-35	-57	-6	-33	-45	-25
1987	-37	-8	160	-37	-56	10	-32	-55	-19
1988Q1	-37	-5	1	-36	-57	18	-29	-53	-28
1988Q2	-36	-2	26	-34	-51	18	-28	-52	-26
1988Q3	-30	5	76	-26	-45	19	-24	-47	-20
1988Q4	-24	16	139	-17	-38	39	-18	-43	-12
1989Q1	-17	27	230	-7	-29	51	-9	-38	-1

Note: Computed as the difference between the actual and the PPP rate (Table 6.2a) expressed as a percentage of the PPP rate.

TABLE 6.3b PERCENTAGE DEVIATIONS FROM PURCHASING POWER PARITY: JORDAN'S MAIN IMPORT SUPPLIERS

YEAR	SAUDI ARABIA	GERMANY	U. K.	U. S.	JAPAN	ITALY	TRADE-WTD AVERAGE
1975	0	0	0	0	0	0	0
1976	23	-5	-11	-1	2	-14	3
1977	18	-7	-14	-9	6	-17	-1
1978	5	-5	-11	-15	22	-16	-3
1979	-7	-6	-4	-18	5	-16	-9
1980	-13	-11	11	-17	-3	-11	-10
1981	-9	-21	12	-6	8	-18	-7
1982	-12	-24	3	-1	-2	-20	-10
1983	-14	-27	-8	0	2	-20	-10
1984	-15	-31	-13	7	7	-22	-10
1985	-21	-32	-11	10	8	-22	-11
1986	-34	-18	-8	-1	36	-6	-4
1987	-37	-4	4	0	54	10	2
1988Q1	-37	2	15	1	73	18	8
1988Q2	-36	3	23	4	80	18	11
1988Q3	-30	3	26	15	85	19	16
1988Q4	-24	17	47	26	117	39	32
1989Q1	-17	26	60	40	135	51	44

Note: Computed as the difference between the actual and the PPP rate (Table 6.2b) expressed as a percentage of the PPP rate.

TABLE 6.4 AN ESTIMATE OF THE TOTAL SUPPLY OF FOREIGN EXCHANGE FROM FOREIGN ACCOUNT TRANSACTIONS ($US mn)

YEAR	FOREIGN CURRENCY RESERVES	GOLD	TOTAL FOREIGN EXCHANGE RESERVES	CHANGE IN TOTAL FOREIGN EXCHANGE RESERVES	CURRENT ACCOUNT CREDITS	TOTAL SUPPLY OF FOREIGN EXCHANGE
			R+	(Rt-Rt-1)	X	Qs'=X+(Rt-Rt-1)
1979	1138.1	81.6	1219.7	----	----	----
1980	1106.8	204.2	1311.0	91.3	3836.1	3744.8
1981	1049.4	213.4	1262.8	-48.2	4440.3	4488.5
1982	847.6	216.0	1063.6	-199.2	4252.3	4451.5
1983	798.4	199.5	997.9	-65.7	3865.9	3931.6
1984	499.5	172.2	671.7	-326.2	4005.3	4331.5
1985	398.7	189.8	588.5	-83.2	3909.3	3992.5
1986	414.2	203.5	617.7	29.2	3778.6	3749.4
1987	413.6	200.1	613.7	-4.0	3826.8	3830.8

Sources: Foreign currency and Gold Reserves from the IFS.

Note: The foreign curren y reserves exclude the Joradanian government credits to Iraq and Syria held as claims for payment for exports to those countries (see Table 6.1).

TABLE 6.5 AN ESTIMATE OF THE TOTAL UNSUSTAINABLE SUPPLY OF FOREIGH EXCHANGE ARISING FROM LOSSES IN RESERVES AND GRANTS AND REMITTANCES ($US mn)

YEAR	TOTAL IMPORTS OF GOODS AND SERVICES	DESIRED RESERVES	CHANGE IN DESIRED RESERVES	UNSUSTAINABLE LOSS OF RESERVES	UNSUSTAINABLE FLOWS OF GRANT & REMITTANCES	TOTAL UNSUSTAINABLE SUPPLY OF FOREIGN EXCHANGE
	M	R*	R*t-R*t-1	dR-dR*		dQ
1979	2874	1245.4	----	----	----	
1980	3459	1498.9	253.5	-162.2	346.8	509.0
1981	4491	1946.1	447.2	-495.4	398.6	894.0
1982	4580	1984.7	38.6	-237.8	372.2	609.9
1983	4243	1838.6	-146.0	80.3	359.6	279.3
1984	4272	1851.2	12.6	-338.8	184.8	523.6
1985	4157	1801.4	-49.8	-33.4	180.6	214.0
1986	3815	1653.2	-148.2	177.4	315.1	137.7
1987	4174	1808.7	155.6	-159.6	-2.2	157.4

TABLE 6.6 AN ESTIMATE OF THE DEGREE OF OVERVALUATION ATTRIBUTABLE TO THE UNSUSTAINABLE SUPPLY OF FOREIGN EXCHANGE

YEAR	EXCLUDING IMPORT TARIFFS		INCLUDING IMPORT TARIFFS
	CASE I	CASE II	CASE II
	%	%	%
1980	-4.5	-8.7	-12.6
1981	-6.6	-12.5	-15.6
1982	-4.6	-8.7	-12.3
1983	-2.4	-4.6	-8.9
1984	-4.0	-7.7	-11.5
1985	-1.8	-3.5	-7.6
1986	-1.2	-2.4	-7.2
1987	-1.4	-2.7	-7.1

Note: Case I assumes supply and demand elasticities of foreign exchange are 2.0 and 1.0, respectively.

Case II assumes these elasticities are 1.0 and 0.5.

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