

## *Chapter 1*

# *Output and the Principal Industries*

The recession which has been in evidence since the end of 2000 continued and deepened in 2002. GDP per capita contracted by 3.1 percent, due to the stagnation of private consumption and a marked reduction in investment and exports. The recession encompassed all the principal industries, which suffered from the contraction of demand; labor productivity and total factor productivity continued to decline, and the drop in profitability further undermined the stability of firms. The standstill in economic activity affected the labor market: the real wage was eroded by 5.7 percent, and the unemployment rate rose from 9.3 percent in 2001 to 10.3 percent. The contraction of households' current income, the erosion of financial assets, and the internalization of the depth and persistence of the recession—in the context of the worsening of the liquidity constraint—led to a steep drop in both private consumption and the private saving rate.

The recession is the outcome of two negative shocks—the exacerbation of the armed conflict with the Palestinians (the Intifada) and the economic slowdown and crisis in the global high-tech industry. In contrast with 2001, when the loss of GDP due to the Intifada was similar to that incurred as a result of the fall in demand for Israel's exports, in 2002 the Intifada was the chief cause of the contraction of economic activity. According to a new aggregate estimate, the direct economic damage due to the persistence of the Intifada in 2002 was between 3.1 and 3.8 percent of GDP. The fall in exports resulting from the global economic slump cut GDP by 1.4 percent in 2002.

In this difficult year economic policy could—and should—have bolstered stability and mitigated the negative effect of the external shocks. Just before the beginning of the year an understanding was reached between the Ministry of Finance and the Bank of Israel regarding coordinated policy measures which would have expressed fiscal restraint alongside monetary expansion—a policy mix which would have helped to contain the economic deterioration. The agreement was not implemented, however, because the 2 percentage-point reduction of its key interest rate by the Bank of Israel in December 2001 was not accompanied by the fiscal measures intended to

support it, thereby leading to simultaneous fiscal and monetary expansion. Given these conditions, especially in the context of the exacerbation of the security situation at the beginning of the year, there was sharp local-currency depreciation, which was rapidly translated into protracted price increases, which overshot the inflation target by far, further imperilling the stability of the financial system. These developments required vigorous measures aimed at monetary restraint and fiscal consolidation, namely, a steep rise in the Bank of Israel's key interest rate, and a fiscal adjustment combining heavier taxes and cuts in both transfer payments and government spending while realigning the deficit target upwards. The swings in economic policy were not beneficial, and the high level of real interest towards the end of the year, as well as the increased likelihood that the deficit target for 2003 will not be attained, do not improve the chances of emerging from the recession.

## 1. MAIN DEVELOPMENTS

The recession evident since the end of 2000 as a result of the Intifada and the global slump persisted and deepened in 2002. GDP declined by 3.1 percent, with stagnation in private consumption and a marked contraction of investment and exports.

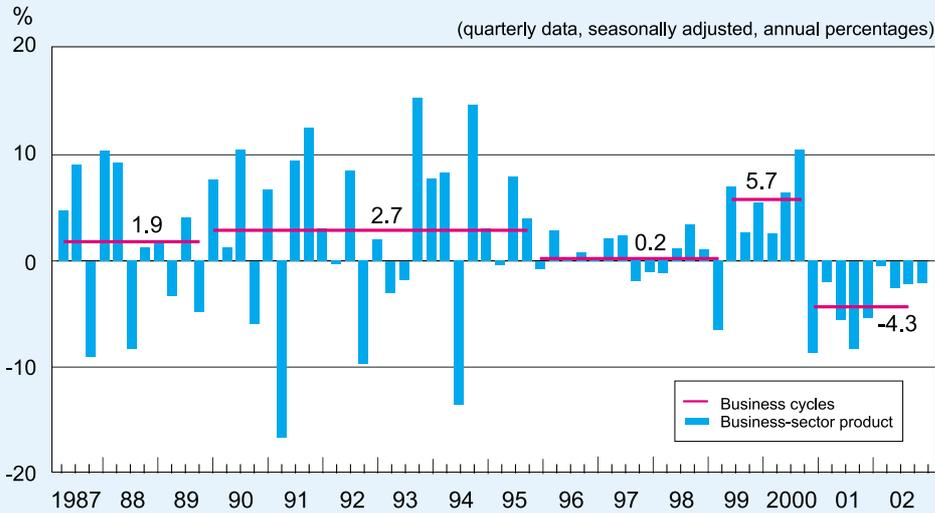
The recession that has prevailed since the end of 2000 persisted and deepened in 2002, against the backdrop of the exacerbation of the armed conflict with the Palestinians (the Intifada) and the global economic slump, and at present there are no signs of recovery. GDP per capita contracted by 3.1 percent, after a similar decline in 2001. Wages per employee post declined in nominal terms for the first time in Israel's history, while in real terms they fell by 5.7 percent. The unemployment rate continued to rise, despite the decline in the participation rate, reaching an annual average of 10.3 percent. The decline in the standard of living due to the fall in current income and erosion of the public's financial assets, together with the internalization of the depth and prolonged nature of the recession and political-security uncertainty, caused households' expectations regarding their future earnings path to be lowered. This was expressed in the marked contraction of private consumption and continued economic stagnation.

The Intifada was the dominant factor affecting the extent of economic activity and the composition of growth in 2002. Previous assessments of the severity of its direct impact on the economy were in the region of a loss of 2 percent of GDP in 2001.<sup>1</sup> In its first year, the Intifada caused immediate damage to several industries—tourism and exports to the Territories, as well as to agriculture and construction due to the drop in employment of Palestinian workers. The aggravation of the military conflict in 2002, including the Defensive Shield operation and the IDF's continued presence in the Territories, led to the internalization of the conflict's horizon and heavy cost, expressed

The Intifada was the dominant factor affecting the extent of economic activity in 2002.

<sup>1</sup> The initial estimate made by the Ministry of Finance in the two months following the outbreak of the unrest (Department of Economic Analysis and State Revenue Administration of the Ministry of Finance, *Economic Outlook*, 27 November 2000, in Hebrew) mentions a maximum decline of 2 percent of GDP in 2001. The Bank of Israel's assessment (*Annual Report, 2001*, Box 1.1) regarding the first five quarters of the Intifada was that the loss would amount to NIS 12.2 billion (at 2001 prices), i.e., about 2 percent of GDP.

**Figure 1.1**  
**Change in Per Capita GDP, 1987–2002**



SOURCE: Based on Central Bureau of Statistics data.

on both the supply and demand sides. An outstanding development in 2002 was that, in addition to the ongoing reduction of GDP, the Intifada caused considerable damage to future GDP, which intensified as the security situation worsened. All these considerations made it necessary to reassess the effect of the Intifada on aggregate uses (Box 1.1), rather than particular industries, as was done in the past. On the basis of this estimate, the continuation of the Intifada in 2002 caused the loss of 3.1–3.8 percent of GDP, i.e. between NIS 14.6 billion and NIS 17.9 billion (at 2001 prices).

The global economic slowdown and the crisis in the high-tech industry, constituting an external demand shock for Israel, caused exports to plummet, thereby serving to further dampen domestic demand and GDP. The shock was particularly intense in 2001,

The direct damage due to the persistence of the Intifada in 2002 is estimated at between 3.1 and 3.8 percent of GDP.

The global slump and the high-tech crisis account for the continued decline in exports, which cut 1.4 percent from GDP.

**Table 1.1**  
**Indicators of Economic Activity, 1986–2002**

	(rate of change, percent)						2002	
	1986–89	1990–95	1996–99	2000	2001	2002	Jan–Jun <sup>a</sup>	Jul–Dec <sup>a</sup>
Per capita GDP	2.0	2.6	0.9	4.6	-3.1	-3.1	-2.2	-2.2
GDP	3.7	6.2	3.4	7.4	-0.9	-1.0	-0.2	-0.3
of which Excluding start-ups	–	–	3.1	5.5	0.1	-0.3	-0.1	0.2
Business-sector product	4.6	7.6	3.8	9.7	-2.4	-3.1	-2.2	-1.0
of which Excluding start-ups	–	–	3.3	7.0	-1.1	-2.1	-2.1	-0.3
Index of manufacturing output	0.9	7.3	2.8	10.0	-5.4	-3.1	-0.6	-1.6
Unemployment rate <sup>b</sup>	7.1	9.8	8.0	8.8	9.3	10.3	10.4	10.2

<sup>a</sup> Annual rates of change, seasonally adjusted, compared with preceding six months.

<sup>b</sup> These figures refer to levels, not rates of change.

SOURCE: Based on Central Bureau of Statistics data.

when the contraction of exports caused the loss of 2.6 percent of GDP. The loss of GDP in 2002 due to the decline in exports was only 1.4 percent. Hence, in contrast with 2001, when the loss of GDP resulting from the Intifada was similar to that arising from the global high-tech crisis, in 2002 the Intifada was the main cause of the contraction of economic activity.

The recession was felt mainly in export industries in 2001, while in 2002 it worsened and encompassed all industries and aggregate uses, except for general government consumption. Whereas the rate of decline slowed in most industries in 2002, conditions do not yet seem to be ripe for a general economic turnaround. Labor productivity and total factor productivity (TFP) fell more steeply in 2002 than in 2001, despite the reduction of labor costs which, together with real local-currency depreciation, served to ease the situation of firms at a time of falling demand. A sharp reduction in public-services labor input and wages is needed in order to enable the process of adjustment in the business sector to continue. Notwithstanding, it is doubtful whether the wheels of growth will get going again as long as the Intifada and the global slowdown endure.

An analysis of the changes in the composition of aggregate uses shows that per capita private consumption declined by 2.5 percent in 2002, a development that has not been in evidence since 1984. Business investment plunged by 9.3 percent, although the rate of contraction of residential investment slowed, after this had been contracting since 1997 and was the main cause of the reduction in gross investment in previous years. The global crisis in the high-tech industry persisted, and in spite of the significant real local-currency depreciation (5.8 percent in terms of export prices), exports of goods and services continued to fall, albeit less sharply than in 2001.

General government consumption was the only category of uses which rose in 2002, growing by 5.3 percent, further to its 3.3 rise in 2001, due to soaring defense costs and rapid increase in civilian public consumption. This development, together with the contraction of GDP, increased the share of general government consumption in GDP, from 29.2 percent in 2001 to 31.2 percent in 2002. The increase in general government consumption offset 1.1 percentage points from the negative contribution of other uses to growth, but this does not contribute to economic recovery as it is financed mainly by additional taxation and an increase in the budget deficit, promising higher taxes in the future.

Business-sector product fell by 3.1 percent in 2002, after contracting by 2.4 percent in 2001. The slump in domestic demand and failure of global demand for Israel's exports to rally were among the main causes of the deterioration in economic activity. Alongside the slump in demand, there was uncertainty regarding the military campaign in Iraq and its geo-political and economic repercussions. This, together with the paucity of economic opportunities due to expectations that the recession would persist, the high real interest rate (both long and short term), and difficulties in raising capital, hampered the recovery of private-sector investment. Despite the decline in unit labor costs, firms' profits continued to deteriorate, so that their stability weakened further.

In 2002 the recession encompassed all the principal industries. The persistent decline in TFP and labor productivity, together with the erosion of profits and return on capital, do not augur well for the future.

Private consumption per capita fell by 2.5 percent in 2002. Nonresidential investment plunged by 9.3 percent, but the rate at which residential investment contracted slowed. Goods and services exports continued to decline.

General government consumption was the only use that expanded in 2002 due to the steep rise in defense expenditure and increase in civilian expenditure. The share of general government consumption in GDP rose from 29.2 percent in 2001 to 31.2 percent in 2002.

Business-sector product fell by 3.1 percent, due mainly to the slump in domestic demand and the failure of global demand for Israel's exports to rally.

The inconsistency of economic policy in 2002 did not contribute to the stability of the economy. At the end of 2001 the Bank of Israel reached an understanding with the Ministry of Finance which involved a package of coordinated policy measures combining fiscal restraint with monetary expansion—a mix aimed at supporting a return to growth. These measures included marked cuts in government expenditure—needed in order to attain the deficit target of 3 percent of GDP in view of the shortfall in tax receipts—and a notable reduction in the Bank of Israel’s key interest rate. In the framework of that understanding, the central bank slashed the interest rate by 2 percentage points in December 2001, but there was no fiscal adjustment as had been agreed. As a result, 2002 began with a expansionary mix of fiscal and monetary policy which was clearly inappropriate for the economy, particularly in view of the aggravation of the security situation in the first few months of the year. The steep interest-rate reduction, increased fiscal pressure due to the marked rise in defense expenditure, lack of a credible response by the government to the deterioration in the economic situation, and rise in Israel’s risk rating led to sharp local-currency depreciation. Developments in the foreign-currency market and a rise in prices to the upper limit of the annual inflation target in 2002:I constituted the response to the conditions prevailing as a result of the failure to implement the economic package. Nevertheless, the central bank refrained from raising the interest rate at that point because of assessments that the stagnation of domestic demand would dampen price increases, so that the economy would benefit from the combination of a low interest rate and real depreciation.

In June, as the local-currency depreciation and rise in prices persisted, feeding one another, fears of a financial crisis grew. The Bank of Israel then raised its key interest rate in stages by 4.5 percentage points, thereby bringing stability to the foreign-currency market and checking the increase in prices. Concurrently, the Ministry of Finance initiated a significant adjustment of the budget framework and composition, in order to divert additional sources to the defense budget. This involved increasing the direct and indirect tax burden—on a temporary basis,<sup>2</sup> until the end of 2003—cutting transfer payments, slashing government expenditure, and raising the budget deficit target to 3.9 percent of GDP. These measures, and the effort to put a cap on government spending at the end of 2002, made it possible to end the year with a deficit of 4.0 percent of GDP. As a result of these developments, the second half of 2002 was characterized by tight fiscal and monetary policy. It is clear, therefore, that a balanced economic policy—along the lines of the package agreed at the end of 2001—would have contributed far more to the economy than the zigzag approach adopted in the course of 2002, as the high level of real interest at the end of the year and increased chances of failing to attain the deficit target in 2003 form a problematic backdrop for emergence from the recession.

<sup>2</sup> In view of recent events, it is doubtful that the assurance that the increase in tax rates is temporary will in fact materialize. The ceiling on National Insurance and Health Insurance payments was raised in 1999 in response to an expected deviation from the budget deficit target, but this tax increase was not rescinded despite the improvement in tax receipts in 2000, when the economy surged. The situation was far worse in 2002, with the marked deviation from the deficit target path, and it looks as if the increase in the tax burden will become permanent.

Shifts in economic policy did not contribute to stability. A coordinated package of tight fiscal policy and expansionary monetary policy, as agreed upon at the end of 2001, failed to materialize. The sharp reduction of the interest rate was not accompanied by fiscal adjustment. As a result, 2002 began with fiscal and monetary expansion—a mix that was inappropriate for the economy, particularly in view of the exacerbation of the security situation.

When sharp depreciation and price hikes persisted, and fears of a financial crisis grew, the Bank of Israel raised its key interest rate by 4.5 percentage points, and this served to calm the foreign-currency market and dampen price increases. Concurrently, the budget was amended, new taxes were imposed, and government spending was slashed. Thus, the second half of 2002 was characterized by fiscal and monetary restraint.

In this difficult year policy measures were taken to contend with three thorny problems: investment in the transport infrastructure continued, the rise in the number of foreign workers was checked, and transfer payments were cut drastically.

Note, however, that although 2002 was a difficult year, decisions were made and policy measures introduced that attempted to tackle three problems which have beset Israel's economy for many years: 1. Investment in the transport infrastructure (roads, including the Cross Israel Highway, railways, and air and sea ports) remained at the high level of NIS 6.7 billion;<sup>3</sup> 2. Bold steps were taken to reduce the employment of foreign workers, who replace low-income Israeli workers and eventually crowd them out of the labor force; at the end of 2001 a charge was imposed for each foreign worker employed,<sup>4</sup> and resources were allocated for policing the illegal employment of foreign workers. These measures helped to bring the number of foreign workers down slightly in 2002 for the first time since 1994, when it began to soar; 3. The expansion of transfer payments, which outpaced the growth of the economy, constituted a disincentive to work, and contributed to the expansion of poverty in the long run,<sup>5</sup> was halted. These measures were essential for removing the main obstacles to sustainable growth while reducing unemployment, but are not sufficient for bringing the economy out of recession. In order to achieve that, a series of complementary steps are required (see the first part of this report).

### Box 1.1

#### An Estimate of the Effect of the Intifada on GDP in 2002

The security unrest which erupted in the Territories in 2000:IV (the Intifada) was partly responsible for the recession which has prevailed in Israel since then. Unlike other violent conflicts in the past, the present one has affected centers of civilian population and employment, bringing with it a change in the general way of life.

At first the Intifada had an adverse effect on incoming tourism and exports to the Territories, as well as on Palestinian workers' access to foci of employment in Israel. As time passed and the conflict intensified the damage spread to many other spheres, chief among them investment and private consumption. In addition, in order to contend with terrorism it was necessary to increase the resources allocated to the various arms of the defense system, with a marked expansion in public expenditure. The recession and the

<sup>3</sup> The extent of investment in the transport infrastructure reached 2.1 percent of GDP. For purposes of comparison, in 1993–96, the period of remarkable expansion of public infrastructure investment, its annual average was 1.7 percent.

<sup>4</sup> While the charge increases the cost of employing a foreign worker, it still does not make it more worthwhile to employ an Israeli worker instead.

<sup>5</sup> See, e.g., K. Flug and N. Kasir (Kaliner) (2003), "Poverty and Employment, and the Gulf Between Them," in *Israel Economic Review* 1; A. Brender, O. Peled-Levy, and N. Kasir (Kaliner) (2002), "Government Policy and Participation Rates in the Labor Force of the Working-Age Population: Israel and the OECD Countries in the 1990s," Bank of Israel *Economic Review* 74 (Hebrew); D. Romanov and N. Zussman (2001), "On the Dark Side of Welfare: An Estimation of Welfare Recipients' Labor Supply and Fraud," Bank of Israel, *Discussion Paper* no. 2001.12.

growing budget deficit made it necessary to take steps which further hampered economic activity, and this magnified the negative effect of the Intifada.

An estimate of the loss of GDP in 2002 due to the continuation of the Intifada is given below, comparing the actual situation with what it might have been had the unrest concluded at the end of 2001. This approach is not the same as comparing the situation with what would have happened had the Intifada not erupted at all; an estimate of the economic effect of the Intifada in 2002 using that approach<sup>1</sup> yields a far greater loss as it incorporates in its base the unmaterialized growth in 2001 as a result of the Intifada.

The estimate of the growth that would have occurred in 2002 if the Intifada had ended in late 2001 should also take the effect of the Intifada after its conclusion into account, as recovery cannot be immediate. With regard to some uses, e.g., exports of tourism services, exports to the Territories, and general government consumption, we have assumed a gradual recovery, while in others, e.g., nonresidential investment and consumption of durables, the response is assumed to be rapid. The sensitivity of the estimate to the pace of economic recovery is examined by means of two scenarios which differ from one another in their ‘optimism’ regarding the speed with which the economy rallies, and this in turn depends on the way the Intifada ends.

According to our estimate, the underlying assumptions of which are given below, the loss of GDP in 2002 due to the Intifada is between 3.1 and 3.8 percent.

### **Investment**

The persistence of the security unrest, the uncertainty as to when it will end, and the consequent contraction of domestic demand have led to a decline in the expected return on investment. This, together with the high real interest rate prior to its sharp reduction at the end of 2001, led to a decline in nonresidential investment by both residents and nonresidents. If the Intifada had concluded at the end of 2001 business investment would have increased by 5–10 percent in 2002. All this is based on the assumption that the process of downward adjustment of investment which began in the mid-1990s had ended, and that real interest would have converged to a level consistent with an environment of price stability. The expansion of business investment at that rate would have partly compensated for its contraction in 2001, but would still have lagged far behind the rate at which it soared when the economy emerged from the slump of 1965–67 and the recession of 1987–89 (Table 1.A.1.3).

<sup>1</sup> Israel Institute of Democracy (2002), “Security Threat and Economic Crisis: The Effect of Terror on Israel’s Economy,” *10<sup>th</sup> Economic Conference*, July (Hebrew).

Residential investment in the Territories and along the Green Line slowed as a direct result of the security instability. Demand for housing declined within the Green Line as well, because of the drop in households' permanent income and the rise in mortgage interest. Nonresident investment in real estate also fell. It is assumed that if the Intifada had concluded at the end of 2001 the resurgence of demand in 2002 and rise in permanent income would have led to a 5–7 percent increase in residential investment.

### **Private consumption**

Private consumption was adversely affected because of households' assessment that income would decline, at least in the foreseeable future, and due to the erosion of the real wage, rise in unemployment, reduction of transfer payments, contraction in the value of the public's assets, etc. The expansion of the budget deficit and the shortfall in tax receipts make it more likely that the tax burden will become heavier, thus further reducing disposable income in the future. In addition, the terrorist attacks served to curtail activities taking place outside the home, including consumption. If the Intifada had concluded at the end of 2001 current private consumption would have expanded by 3 percent, and consumption of durables by 5–10 percent, as is characteristic of economies emerging from a recession.

### **General government consumption**

The increase in both the extent and intensity of the activity of the defense forces in the Territories caused a steep rise in direct public defense expenditure. This has been estimated at NIS 3 billion in 2002 (adjusted for opportunity cost, e.g., of canceled training exercises), NIS 1 billion of which stemmed from the Defensive Shield operation. There were additional expenses, such as the substantial increase in the police force, rise in payments to victims of terrorist attacks, hospitalization costs, installation of an array of security measures in border settlements, etc.—amounting to over NIS 0.5 billion. These are supplemented by the one-off cost of the present stage of construction of the security fence in Israel and around Jerusalem. Thus, the increment in military spending in 2002 was about NIS 4 billion.<sup>2</sup> All this expenditure would have been avoided without the Intifada, and civilian public consumption would have increased by 2.5 percent—its annual average growth rate in the late 1990s.

<sup>2</sup> The financial estimates were made by the Budget Department of the Ministry of Finance, and do not take the increased use of private security services (estimated at over NIS 0.25 billion) into account.

**Table 1.A.1**  
**The Effect of the Intifada on the Economy, 2002**

	(annual rate of change, percent)				
	Actual	Without the effect of the Intifada <sup>a</sup>		Difference	
		Scenario A	Scenario B	Scenario A	Scenario B
<b>Uses and Sources</b>					
Total domestic investment	-10.2	4.1	1.3	14.4	11.5
<i>of which</i> Investment in principal industries	-9.3	10.0	5.0	19.3	14.3
Residential investment	-5.8	7.0	5.0	12.8	10.8
Private consumption	-0.5	3.9	3.0	4.3	3.5
<i>of which</i> Consumption excluding durables	0.2	3.1	2.8	2.9	2.6
Consumption of durables	-6.2	10.0	5.0	16.2	11.2
Public consumption	5.4	1.5	1.9	-3.8	-3.5
<i>of which</i> Domestic defense expenditure	8.9	-3.8	-2.2	-12.7	-11.1
Exports	-3.5	-0.1	-0.4	3.6	3.1
Total uses	-1.1	3.2	2.3	4.3	3.4
Imports <sup>b</sup>	-2.5	1.8	0.8	4.3	3.3
GDP	-1.0	2.8	2.1	3.8	3.1

<sup>a</sup> Under the assumption that the Intifada ended at the end of 2001.

<sup>b</sup> Imports excluding the Intifada effect are derived from the input-output tables and from the changes in uses.

SOURCE: Based on Central Bureau of Statistics data.

### Exports

The estimate of tourism receipts lost is based on the assumption that incoming tourism would recover gradually, but would still not attain the level that prevailed in 1998, the year before the influx of tourists due to the millennium. The estimate of the adverse effect of the Intifada on tourism given in Box 1.11 is based on the scenario that it did not erupt at all.

Exports to the Territories plummeted because of the Intifada's severe impact on the economy there, the contraction of the employment of Palestinians in Israel, which reduced their income and wealth, the fact that Israeli products were not bought because of the consumer boycott, and the disruption of the regular conduct of commerce. The root cause of all these was the hostility between Israel and the Palestinian Authority. It is assumed that in the short term exports to the Territories will not return to their level prior to the Intifada.

It is assumed that the adverse effect on other exports in 2002 was due primarily to the contraction of global demand. The fears of purchasers abroad of interruptions to the supply of Israeli products, the absence of new business connections because businessmen refrained from coming to Israel during a time of tension, as well as a politically-motivated boycott or sanctions against Israel's products are all possibilities, although to date they appear to be limited, so that it is assumed that their impact on nondiamond manufacturing exports did not amount to more than 1 percent.

The calculation of the damage due to the Intifada does not include additional effects, such as the downgrading of Israel's credit rating and rise in the cost of borrowing, damage to the robustness of the banking system and heightened risk of a financial crisis, higher insurance premiums, loss of life and impaired quality of life of those maimed in terrorist attacks and their relatives, and various other indirect costs. Hence, the above estimate of the cost of the Intifada appears to be biased downward.

Note that the cost of the persistence of the Intifada at a given level after 2002 may well be below the above estimate because the processes of adjustment to the new situation and replacement of depleted stocks (e.g., of durables, raw materials, and capital goods) have been completed.

## 2. AGGREGATE DEMAND AND SUPPLY

### a. Demand

Domestic uses dipped by 1.1 percent in 2002, compared with a 1.5 percent rise in 2001.

The shifts in uses (Table 1.2), with a profound decline in both private consumption and gross domestic investment, and their contribution to growth (Table 1.3) indicate that the recession has deepened. Domestic uses declined by 1.1 percent despite the 4.7 percent increase in government spending; this is in contrast with 2001, when domestic uses rose by 1.5 percent.

**Table 1.2**  
**Sources and Uses, 1986–2002**

	(volume rates of change, percent)					
	1986–89	1990–95	1996–99	2000	2001	2002
GDP	3.7	6.2	3.4	7.4	-0.9	-1.0
Imports	4.8	11.0	6.8	12.3	-4.5	-2.5
<i>of which</i> Excl. diamonds, oil, ships and planes	4.1	11.7	6.6	14.5	-3.5	-6.0
Total sources	4.0	7.6	4.3	8.9	-2.0	-1.5
Exports	4.5	7.4	7.8	25.3	-11.7	-3.5
<i>of which</i> Excl. diamonds	3.4	8.3	9.2	27.8	-11.0	-8.0
Goods excl. diamonds	4.5	9.3	9.8	26.9	-6.8	-6.1
<i>of which</i> High-tech exports	–	–	15.9	52.8	-8.3	-9.8
Exports to Palestinian Autonomy	–	–	3.0	-4.8	-28.7	-15.0
Tourism exports	-3.2	7.8	-0.9	-6.5	-33.0	-2.1
Gross domestic investment	3.2	15.4	1.6	-2.8	-2.6	-10.2
<i>of which</i> Nonresidential	2.1	15.6	2.7	6.1	-3.9	-9.3
Private consumption	7.1	7.5	4.2	7.2	2.5	-0.5
Public consumption <sup>a</sup>	0.8	2.9	2.5	1.7	2.4	4.7
Domestic uses <sup>a</sup>	4.8	8.0	3.2	3.6	1.5	-1.1
Total uses	4.0	7.6	4.3	8.9	-2.0	-1.5

<sup>a</sup> Excluding defense imports.

SOURCE: Based on Central Bureau of Statistics data.

**Table 1.3**  
**The Contribution of the Changes in Uses to the Change in GDP, 2000–2002**

	(percent of GDP)		
	2000	2001	2002
GDP	7.4	−0.9	−1.0
Derived GDP <sup>a</sup>	7.5	−1.4	−1.8
Total domestic uses	2.7	1.2	−0.4
Private consumption	2.8	1.1	−0.1
<i>of which</i> Excl. durables	2.3	1.2	0.1
Public consumption <sup>b</sup>	0.5	0.6	1.1
<i>of which</i> Public civilian consumption	0.3	0.5	0.6
Gross domestic investment	−0.6	−0.5	−1.4
<i>of which</i> Nonresidential investment excl. ships and planes	0.5	−0.3	−0.8
Residential investment	−0.5	−0.6	−0.2
Exports	4.8	−2.6	−1.4
<i>of which</i> Goods exports	3.2	−1.0	−0.7
<i>of which</i> Manufactured exports excl. diamonds	3.2	−1.0	−0.8
Service exports	1.6	−1.6	−0.7

<sup>a</sup> The total contributions of domestic uses *minus* imports, according to input-output coefficients of 1995. Discrepancies may arise due to the rounding of figures.

<sup>b</sup> Excluding defense imports.

SOURCE: Based on Central Bureau of Statistics data.

The Intifada and the global slump in general, and the crisis in the high-tech industry in particular, were the main causes of the continuing recession. The direct effect of these shocks in 2001 was expressed primarily in the contraction of exports: exports of manufactured goods and start-ups fell due to the decline in world demand, while exports of tourism services and exports to the Territories plummeted as a result of the Intifada. As a result, nondiamond exports shrank by 11.0 percent in 2001, accounting for the loss of 2.6 percent of GDP, and in 2002 they fell by 8.0 percent, accounting for the loss of 1.4 percent of GDP. Among domestic uses, investment was most adversely affected, as it had anyway contracted in the process of long-term adjustment after surging in the early 1990s. In 2002, as a result of the internalization of the horizon of the recession and continued decline in the return on capital, which plummeted to a level unseen since the Economic Stabilization Program of 1985, nonresidential investment contracted by 9.3 percent, alongside the deceleration of residential investment. All in all, gross domestic investment was down by 10.2 percent in 2002, accounting for the loss of 1.4 percent of GDP. Private consumption fell by 0.5 percent, signifying a 2.5 percent decline in per capita consumption, after being stable in 2001.

The development of economic activity during the year (Table 1.4) shows quite clearly that the decline in private consumption in 2002 stems from its low level at the end of 2001 and drop in 2002:II, when the security situation deteriorated, causing the disruption of daily life. The lower intensity of terrorist attacks in the second half of the year led to some recovery in private consumption. At the end of the year there was a marked fall in general government consumption, particularly defense spending.

As stated, private consumption per capita declined by 2.5 percent in 2002, a reduction not seen since 1984. Per capita private consumption excluding durables dipped by 1.9

In contrast with 2001, when the direct impact of the Intifada and the global slowdown was expressed largely in a decline in exports, the effect of the negative shocks in 2002 spread to investment and private consumption too.

Private consumption plummeted as the security situation deteriorated.

**Table 1.4**  
**Developments During the Year, 2000–2002**

	(seasonally adjusted, quarterly rates of change, in annual terms)															
	During year <sup>a</sup>				2000				2001				2002			
	2000	2001	2002	I	II	III	IV	I	II	III	IV	I	II	III	IV	
<b>Sources and uses</b>																
GDP	3.9	-3.0	1.4	6.0	8.8	13.2	-6.0	0.2	-3.3	-6.4	-3.2	1.5	-0.7	-0.2	0.1	
Business-sector product	4.9	-5.6	0.6	7.6	14.0	15.2	-9.5	0.9	-7.7	-9.1	-7.0	0.5	-2.3	-0.4	-1.0	
Private consumption	7.5	-0.4	0.9	8.7	10.4	7.1	3.3	2.6	0.6	-0.5	-2.4	0.9	-2.3	-0.8	4.3	
of which Excl. durables	5.9	1.3	1.0	7.4	8.3	4.6	2.6	4.0	5.5	-1.2	-0.4	0.6	-2.6	1.6	4.5	
Public consumption	1.3	3.7	2.1	-2.0	-12.8	15.3	6.1	0.1	4.6	-15.8	37.7	-0.3	10.9	2.3	2.5	
Fixed investment	-0.7	-11.2	-4.5	9.1	2.4	-6.1	3.4	-1.7	-18.5	-7.4	-14.1	-8.7	-1.5	-10.6	-5.7	
of which Nonresidential	6.8	-14.8	-3.1	24.1	4.1	-4.9	21.3	3.2	-23.4	-7.9	-22.4	-8.9	1.6	-8.7	-8.6	
Residential	-20.7	1.4	-8.7	-5.3	-11.4	-2.9	-51.1	9.9	-6.2	-1.3	4.6	-3.5	-16.6	-9.7	-11.0	
Exports <sup>b</sup>	11.5	-12.6	5.1	43.0	22.2	61.1	-39.1	-11.7	-22.2	-15.4	0.1	-2.8	5.1	-7.6	-4.0	
of which Excl. diamonds	14.5	-12.5	1.7	34.8	33.1	119.8	-56.5	6.8	-23.4	-24.6	-5.0	-5.7	-3.4	-3.9	11.1	
Tourism exports	-45.3	-8.0	7.8	-12.5	-20.1	-35.8	-79.5	44.1	-38.1	-0.6	-18.1	50.9	-43.4	-19.4	21.2	
Goods exports	17.7	-14.1	6.8	61.4	16.8	5.6	8.8	-23.0	-18.7	-7.9	-5.3	8.4	11.2	-8.8	35.4	
Uses	6.2	-6.4	2.3	6.5	10.9	15.4	-4.2	-1.5	-10.9	-5.4	-5.0	1.2	3.1	-1.1	1.6	
Imports	11.2	-13.6	4.6	14.3	6.0	22.8	12.2	-14.3	-15.6	-14.1	-5.8	2.9	19.4	-14.0	11.5	
of which Excl. direct defense imports, ships and planes	14.3	-13.3	4.2	20.1	18.3	17.8	6.8	-15.0	-9.5	-7.1	-15.9	6.3	-5.8	-9.4	-6.7	
<b>Domestic uses</b>	4.6	-4.6	1.5	-0.7	8.2	-0.1	11.9	3.7	-6.0	-0.7	-10.9	4.9	0.7	3.1	-3.3	
Unemployment rate <sup>c</sup>				8.6	8.8	8.9	8.8	8.6	8.8	9.6	10.3	10.6	10.3	10.3	10.1	
Labor productivity <sup>d,e</sup>				9.2	5.1	1.4	11.8	4.6	-19.0	1.0	-2.7	-1.3	-15.5	11.1	4.4	
Average hours worked by Israelis in the business sector <sup>e</sup>				-3.2	-1.7	9.5	-6.8	-6.2	5.0	-9.7	-1.9	6.9	6.5	-10.3	-2.1	
Manufacturing production index	4.5	-7.4	-0.9	11.3	6.3	5.4	-4.3	-3.7	-17.0	-7.7	-3.9	-3.7	-17.0	-7.7	-3.9	
State-of-economy index	3.7	-4.5	-4.0	6.1	7.0	5.4	-0.1	-3.7	-5.0	-5.7	-4.0	-3.7	-5.0	-5.7	-4.0	

<sup>a</sup> Rate of growth of original data vis-à-vis preceding year.

<sup>b</sup> Excluding receipts from factors of production abroad and public-sector interest receipts from abroad.

<sup>c</sup> These data refer to levels, not to rates of change.

<sup>d</sup> Labor productivity: business-sector product/labor input.

<sup>e</sup> Quarterly data based on National Accounts data and the Labor Force Survey of the Central Bureau of Statistics.

SOURCE: Based on Central Bureau of Statistics data.

percent, while consumption of durables plunged by 6.2 percent, further to the 3.0 percent fall in 2001. The 3.1 percent contraction of disposable private income from all sources exceeded the reduction in current consumption. Consumption smoothing led to a steep drop in the private saving rate, adjusted for consumption of durables, to the low level evident at the end of the 1980s (Table 1.A.1.9).

In view of the erosion of wages, continued rise in the unemployment rate, cuts in transfer payments, imposition of new taxes and expectations of additional ones if the government does not cut its spending in 2003,<sup>6</sup> the public internalized the extended nature and depth of the recession and made a downward adjustment of its assessment of the path of future income (permanent income). One expression of this may be found in the decline in per capita current consumption compared with its stability in 2001, and the sharp contraction of consumption of durables.

Changes in consumption were examined by means of a quantitative analysis, using a model of permanent income with a liquidity constraint.<sup>7</sup> The explanatory variables in the short-term equation are the change in per capita disposable wage income, the change in the net stock of per capita wealth, the change in expected real interest, and an error-correction term adjusting short-run consumption to long-run consumption cointegrated with permanent income. In 2002, as in previous years, the change in disposable income made a major contribution to explaining the behavior of private consumption. The gap between the total contribution of the explanatory variables and the change in actual per capita consumption in 2002 was negative and larger, in absolute terms, than in 2001. It is not clear to what extent this gap may be ascribed to the adjustment of households' expectations regarding their permanent income, or whether the liquidity constraint in 2002 was stronger (especially among low-income households, which have a high marginal propensity to consume), and is not fully expressed in the slopes of the model's explanatory variables. The increase in unemployment and expectations that the recession would persist appear to have contributed to the reduction of permanent income.

Gross fixed investment (gross capital formation excluding the change in inventory) fell by 8.5 percent in 2002, continuing the 6.1 percent decline in 2001. Nonresidential investment (excluding ships and aircraft) was down by 7.1 percent, with a double-digit dip in investment in machinery, equipment, and transport vehicles, while nonresidential construction was 1.4 percent lower. Infrastructure investment contracted in 2002, after rising at a handsome pace in the preceding two years, because of cuts in investment in communications and in sea and air ports (the *Natbag 2000* project), and the stabilization of investment in the transport infrastructure (see Table 1.A.1.19, and detailed information

Per capita private consumption excluding durables dipped by 1.9 percent, and consumption of durables fell by 6.2 percent. Consumption smoothing caused the private saving rate to plummet.

In 2002 the public internalized the length and depth of the recession, and its assessment of future income was adjusted downward.

Nonresidential investment contracted more sharply, while the rate of reduction of residential investment slowed. There are other indications that the contractionary trend evident in construction since 1998 is coming to an end.

<sup>6</sup> J. Lavi and M. Strawczynski (2002), "Does Fiscal Expansion Increase Aggregate Demand and Economic Activity in Israel? An Empirical Examination for 1960–2000," *Pinchas Sapir Economic Policy Forum* (Hebrew). The authors show that fiscal expansion (financed by a deficit or direct taxation) has a significant negative effect on private consumption, even in the short run, with substitution elasticity of 0.5. This increases with a rise in the probability of the permanence of the change (expressed in the extent and persistence of expansion).

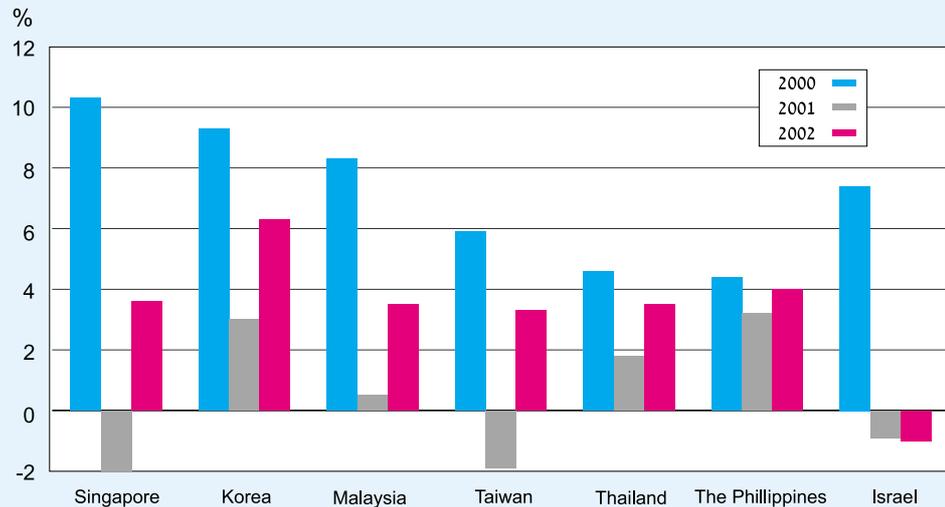
<sup>7</sup> For the particulars of the model, see Box 1.3 in Bank of Israel, *Annual Report 2001*.

in the section on transport and communications later in this chapter). The rate at which residential investment declined slowed in 2002, to stand at 5.8 percent, compared with 12.7 percent in 2001. This may indicate the conclusion of the contractionary trend that has characterized the construction industry since 1998, a conclusion which is borne out by data on the rise in building starts and apartment prices during the year. Factors hampering the recovery of the industry and working in the opposite direction include security and economic uncertainty and the high rate of long-term interest.

Israel's exports underwent a marked structural change in the 1990s, when the share of the high-tech industry in nondiamond manufacturing exports rose consistently, reaching 53 percent at its peak in 2000. Exports of start-ups expanded, due to lively demand for the product of the high-tech industry. The economic crisis which emerged in late 2000, led by the bursting of the bubble in the internet commerce and communications industries, caused demand for IT software to plummet and hence gave rise to the rapid contraction of the high-tech industry all over the world.<sup>8</sup> The contraction was felt acutely in 2001 in countries which had specialized in that field, including Israel. In contrast with Israel, however, growth revived in 2002 in other countries whose exports were led by the high-tech industry (Figure 1.2). Israel's high-tech export industry may have specialized in spheres where demand has not revived (as explained in the section on manufacturing, below), but the exacerbation of the security situation may also have served to divert demand to suppliers in countries with a less troubled business environment.

The bursting of the high-tech bubble curbed growth in many high-tech export oriented countries, including Israel, in 2001. Growth resumed in the other countries in 2002, but not in Israel. This is connected with the specialization of Israel's exports in spheres where demand did not revive, but demand may have been diverted away from Israel because of the aggravation of the security situation.

**Figure 1.2**  
**Growth in East Asian Countries**  
**with IT-Oriented Exports and in Israel, 2000–2002**



SOURCE: Based on World Economic Outlook.

<sup>8</sup> Box 1.2 in Bank of Israel, *Annual Report 2001*.

Goods and services exports, which were down by 12 percent in 2001, continued to contract in 2002, and nondiamond services exports declined by 6 percent. In the high-tech industry, which is dominated by electronics, the decline was 11 percent, while this trend was checked in exports of the mixed and traditional manufacturing industries. Diamond exports soared by 24 percent thanks to the revival of global demand. Services exports shrank by 12 percent, primarily due to plunging exports of software and R&D.

Exports of goods and services continued to contract in 2002, while diamond exports soared due to the revival of global demand.

The persistent double-digit rate of decline in exports of tourism services (this also includes consumption by foreign workers in Israel) and of exports to the Territories are among the results of the Intifada. The number of incoming tourists fell by 30 percent in 2002, further to the 50 percent decline in 2001, while global tourism dipped slightly (see Box 1.11 below). Goods and services exports to the Territories contracted because of the decline in the standard of living and purchasing power there, irregularity of commerce, and boycott of Israeli products.

The worsening security situation continued to impact on tourism and exports to the Territories.

General government consumption was the only use that rose in 2002. Domestic public consumption (i.e., excluding defense imports) grew by 4.7 percent, after a 2.4 increase in 2001. Had it not been for the Intifada it would have risen by 1.5–1.9 percent in 2002 (Box 1.1). Domestic defense consumption expanded by 8.9 percent due to the steep 12.4 percent rise in domestic purchases (current expenditure, construction, including the security fence, etc.) and a 6.2 percent rise in real wage costs, partly as a result of reserve duty payments, which rose in 2002, especially during and after the Defensive Shield operation. The heavier security burden was also expressed in civilian public consumption (e.g., the additional budget for the police service), and part of it, such as soaring demand for security guards, served to increase costs in the private sector. Civilian public consumption was up by 3.2 percent because of the 4.3 percent rise in purchases and 2.7 percent increase in wage costs, the latter due to the 3.1 percent expansion of employment, which was partly offset by the erosion of the real wage in the general government services.

General government consumption was the only use that rose in 2002. Domestic defense consumption grew by 8.9 percent, and civilian consumption expanded by 3.2 percent.

## b. Business-sector product

Business-sector product contracted by 3.1 percent in 2002, continuing its 2.4 percent decline in 2001. With the exception of start-ups, the decline in business-sector product was sharper in 2002 than in 2001 (2.1 percent compared with 1.1 percent in 2001), indicating a further deterioration in business activity. The reasons for this are the decline in domestic demand due to the Intifada, stagnation in goods exports because of the slump in world demand for high-tech goods, and the lack of growth of international trade in other products.

Business-sector product contracted by 3.1 percent in 2002.

Developments during the year (Table 1.4) indicate a deceleration of the rate at which business-sector product declined. The suppression of private consumption because of the deterioration in the security situation in 2002:II, at the time of the Defensive Shield operation, and the subsequent cautious return to the way of life that had prevailed previously, appears to have had a decisive effect. This was expressed in the sharp drop in business-sector product and index of manufacturing production at that time, even

Developments during the year reflect a deceleration of the rate of decline of business-sector product, although this quickened in 2002:II, as the security situation deteriorated.

**Table 1.5**  
**Supply of Business-Sector Product, 1986–2002**

	(volume rate of change, percent)					
	1986–89	1990–95	1996–99	2000	2001	2002
Gross capital stock	2.6	4.9	9.2	7.4	6.7	5.2
Labor input <sup>a</sup>	2.0	6.9	3.7	5.5	-1.7	-0.4
Civilian labor force <i>plus</i> foreign workers <sup>b</sup>	2.2	5.0	4.0	4.2	0.9	-0.1
Total factor productivity <sup>c</sup>	2.3	1.2	-1.5	3.3	-3.3	-4.5
Rate of return on net capital (%)	5.2	12.6	9.6	9.9	4.6	3.2
Roads capital stock per factor input unit <sup>d</sup>	1.0	-0.4	1.6	-1.1	4.6	5.4
Share of tax on non-wage income (%) <sup>e</sup>	31.8	26.3	28.0	31.5	32.9	30.7
Real yield on 10-year bonds (%) <sup>f</sup>	4.1	3.0	4.7	5.5	4.9	5.2
Average real ex post interest (%) <sup>g,h</sup>		5.9	10.7	10.1	7.2	8.9
Real ex post interest on unindexed credit <sup>h</sup> (%)		7.0	11.4	13.2	7.0	3.9
<i>of which</i> Real ex post overdraft interest <sup>h</sup> (%)		8.3	13.3	16.1	8.6	0.5
Real ex post interest on CPI-indexed credit <sup>h</sup> (%)		4.2	5.5	7.0	6.1	5.8
Real ex post interest on foreign-currency indexed credit <sup>h</sup> (%)		2.0	9.1	1.5	6.9	14.7
Unit labor cost 3.1	-1.1	0.6	-1.2	6.6	1.3	
	1962–1971	1972–1981	1982–1991	1992–2002		
Total factor productivity	4.4	1.8	1.6	-1.2		

<sup>a</sup> See notes to table 1.A.1.15.

<sup>b</sup> The labor force *plus* the labor inputs of Palestinian and foreign workers, in accordance with their share in the business sector.

<sup>c</sup> Productivity level is calculated as the residual by deducting the rise in inputs (labor and capital) from business-sector product weighted by the production function (see note d).

<sup>d</sup> A factor input unit is weighted at 68 percent labor and 32 percent capital.

<sup>e</sup> Taxes on non-wage income as share of non-wage income in business sector (including executives' pay).

<sup>f</sup> From 1987.

<sup>g</sup> Weighted cost of unindexed credit, CPI-indexed credit, and foreign-currency-indexed credit; from 1993.

<sup>h</sup> Deflated by actual inflation.

SOURCE: Based on Central Bureau of Statistics data.

though the extensive mobilization of reserve soldiers may have had only a limited adverse effect on supply. As was the case in 2001, the price of business-sector product rose less than the CPI, providing additional evidence of the sluggish demand for domestic product.

The protracted recession had a marked impact on the labor market (Table 1.5, see also Chapter 2). Labor input in the business sector declined for the second year in succession, alongside stability in the number of Israelis employed, a steep drop in the number of Palestinian workers, and a smaller dip in the number of foreign workers. Unit labor costs rose by 1.3 percent in 2002; costs per hour worked fell by 1.3 percent, mainly because the erosion of the real wage, and labor productivity (product per hour worked) declined by 2.6 percent. In the past, unit labor costs would fall after having risen, so that in the long run the two trends offset one another, and over time labor productivity and the real wage rose in step with one another. In 2001, however, unit labor costs rose by an exceptional 6.6 percent, and continued to increase in 2002, so that the process of adjusting labor input and costs to contracting demand does not appear to have ended yet.

Business-sector labor input contracted in 2002, although the number of Israelis employed remained stable and that of non-Israelis fell. Real unit labor costs rose because of the decline in labor productivity.

The increased cost of the labor component in product led to further erosion of the net return on capital, which fell to 3.2 percent in 2002, after plummeting from 10 to 4.6 percent in 2001. The decline, which detracts from the profitability of the business sector, led to a 22 percent diminution in income tax revenues from firms, continuing the 10 percent fall in 2001. The recession also had a highly adverse effect on small businesses: income tax revenues from self-employed persons plunged by 17 percent in 2002, after an 8 percent decline in 2001. The tax burden of the business sector became heavier in 2002, as the Ministry of Finance’s indemnity for employers’ National Insurance payments was reduced and the ceiling on Health Insurance payments removed. The 1 percentage-point increase in V.A.T. served to dampen domestic demand too, and it is reasonable to assume that a large part of it was not rolled over to consumers—because of the stagnation of private consumption—hence also serving to undermine firms’ profitability.

Total factor productivity (TFP) fell by 4.5 percent in 2002, after declining by 3.3 percent in 2001. In the previous decade TFP was negative, on average, in contrast with its rise in the OECD countries from the mid-1990s. Nevertheless, the reliability of the TFP figures is limited because of possible changes in the industry production function and a lack of accurate data on capital stock in some industries. According to the data for manufacturing, which are accurate,<sup>9</sup> TFP declined by 2.2 percent in 2002, further to the 4.8 fall in 2001 (Table 1.A.1.16). This means that a further increase in efficiency is needed in order to foster competition in both the domestic and export markets. In addition, the process of absorbing the new technologies of the 1990s in general, and ICT in particular, may not yet have been concluded.

Another factor serving to reduce TFP in 2002 was the increased tax burden on labor and consumption. The diversion of sources to the general government sector during a recession goes against the long-term policy of transferring public resources to the private sector. According to recent estimates, raising taxes by 1 percent of GDP reduces business-sector product by 2 percentage points in the long run, and its short-term effect is expressed chiefly in TFP.<sup>10</sup>

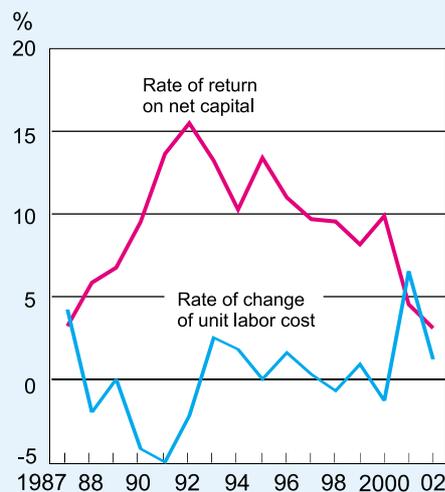
<sup>9</sup> Z. Eckstein and H. Regev (1999), “Productivity Growth in Israeli Manufacturing, 1975–94,” *Economic Quarterly*, 2 (Hebrew).

<sup>10</sup> Y. Lavi and M. Strawczynski (2001), “The Effect of Policy Variables and Immigration on Business-Sector Product and its Components (Factor Inputs and Total Factor Productivity); Israel, 1960–95,” Bank of Israel *Economic Review* 73.

Firms’ profitability and the return on capital in the business sector continued to deteriorate.

TFP fell by 4.5 percent, after a 3.3 percent decline in 2001. The downward trend has been in evidence since the beginning of the 1990s.

**Figure 1.3**  
Rate of Return on Net Capital\* in the Business Sector and Rate of Change of Unit Labor Cost, in Business Sector, 1987–2002



\*Excluding roads

SOURCE: Based on Central Bureau of Statistics data.

In view of security uncertainty and expectations that the recession would persist, the low real interest rate in the first half of 2002 did not have a marked effect on economic activity.

The decline in the supply of sources of bank finance hindered firms from raising capital and exacerbated households' liquidity constraint.

The real wage was eroded in 2002, investment in the transport infrastructure continued, and the reform of direct taxation progressed—all of which are necessary conditions for a return to sustainable growth. However, there are still many obstacles in the path of the economy, chief among them the size of the public sector.

The low real interest rate in the first half of 2002 did not appear to have a significant effect on economic activity because this period was characterized by marked political-security uncertainty, doubts regarding the government's ability to meet the deficit target and adopt the measures required for fiscal restraint, as well as the assessment that the Bank of Israel would have to raise the interest rate in order to halt price increases and maintain financial stability. Ex post, the real weighted interest rate was in fact 8.9 percent in 2002, compared with 7.2 percent in 2001. Given this atmosphere, the paucity of business opportunities, and expectations that the recession would persist, it is doubtful whether a low real interest rate would have been sufficient to lead to the renewal of investment by firms and households. Moreover, the decline in supply of bank sources of finance, in view of the deterioration in business results and the banking system's mounting loan-loss provision, made it difficult for firms to raise capital and aggravated households' liquidity constraint. According to reports from firms participating in the Bank of Israel's Companies Survey, financing difficulties, which intensified during the year, were the main supply-side constraint on firms in most of the industries surveyed.

Several developments in 2002—the erosion of the real wage which, together with real depreciation, improves firms' competitiveness, the implementation of the income-tax reform intended to ease the overall tax burden in coming years, continued public investment in the infrastructure, cuts in transfer payments, and increase in incentives to participate in the labor force—constitute essential conditions for restoring the economy to a path of sustainable growth once the negative external shocks are over. Nevertheless, many obstacles still obstruct the economy's path to sustainable growth, chief among them the size of the public sector. The share of general government in GDP continued to rise in 2002 and could impair the expansion of the business sector.<sup>11</sup> In addition, it is doubtful whether the steep cuts in transfer payments will endure because of the public's sensitivity to the distress of the low-income section of the population and the weak labor market. Experience shows that the shift to a new plateau of defense expenditure tends to persist for many years, even when needs decline.<sup>12</sup>

### 3. THE REAL EXCHANGE RATE, SAVING, AND INVESTMENT

#### The real exchange rate

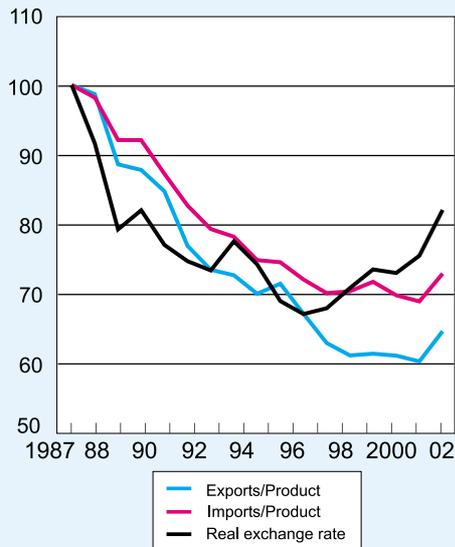
There was marked real local-currency depreciation in 2002, with a deterioration in the terms of trade and improvement in the trade deficit.

There was real local-currency depreciation of 5.8 percent in 2002 in export-price terms (7.3 percent in import-price terms), compared with real appreciation in 2001 (Table 1.6, and Figure 1.4). Such significant real depreciation could have been expected to have had a palpable effect on the development of foreign trade, but nondiamond goods exports fell by 6 percent in 2002, similar to their decline in 2001, while imports

<sup>11</sup> Y. Zeira and M. Strawczynski (2001), "Reducing the Size of the Government in Israel after 1985," in A. Ben-Bassat (ed.) *From Government Intervention to a Market Economy*, Am Oved (Hebrew).

<sup>12</sup> In the last few years the reduction of the share of defense expenditure in GDP has been completed to a great extent, underlining the need to place the subject on the public agenda.

**Figure 1.4**  
**Indices of Prices of Imports and Exports Relative to Implicit Deflator of Business-Sector Product, and Real Exchange Rate Index, 1987–2002 (1986=100)**



SOURCE: Based on Central Bureau of Statistics data.

(excluding defense imports, diamonds, ships, and aircraft) were down by more than in 2001 (6.9 percent, after 4.2 percent). Israel's terms of trade (the export/import price ratio) deteriorated by 1.4 percent while the trade deficit (excluding diamonds, ships, and aircraft) narrowed by 2.2 percent because imports declined more steeply than exports.

It was hoped that the real depreciation would enable exports to rally in 2002, thus serving to stimulate economic activity and improve the trade deficit by curbing competing imports. This effect may still be expected in 2003, but it is clear that the passthrough relationship between real depreciation and exports should be reviewed. No link was found in the 1990s between the behavior of the real exchange rate and the terms of trade and total goods exports, the rise in which was led by the acceleration of

The dominant factor in the development of Israel's exports since the mid-1980s—including the recession of the last two years—has been global demand for its high-tech products and this has outweighed the price effect embodied in real depreciation.

high-tech exports. The factor that has dominated Israel's exports since the 1980s is global demand for high-tech products, which served to increase nondiamond goods

**Table 1.6**  
**The Real Exchange Rate and World Trade, 1986–2002**

	(rate of change, percent)									
	1986–89	1990–95	1996	1997	1998	1999	2000	2001	2002	
Exchange rate (export terms) <sup>a</sup>	-5.1	-3.5	-3.4	-2.7	0.4	2.0	-2.7	-1.3	5.8	
Exchange rate (import terms) <sup>b</sup>	-6.8	-3.4	-6.1	-6.3	-2.9	0.4	-0.5	-1.4	7.3	
Exchange rate adjusted by GDP deflators	-8.4	-2.9	-2.7	1.2	4.3	3.8	-0.7	3.4	8.8	
Nominal exchange rate against the currency basket	16.9	9.6	3.5	4.3	9.6	8.3	-4.7	1.4	14.2	
Terms of trade <sup>c</sup>	1.8	-0.1	2.9	3.8	3.4	1.6	-2.3	0.1	-1.4	
World trade, volume growth	6.4	6.1	6.7	10.3	4.1	5.3	12.4	2.7	na	
World export prices	6.4	1.6	-1.7	-6.3	-6.0	-0.9	0.0	-3.4	na	
World import prices	3.9	1.0	-1.2	-5.5	-6.7	-2.4	1.3	-3.2	na	

<sup>a</sup> Ratio of export prices (excluding diamonds) to business-sector product prices (including housing services).

<sup>b</sup> Ratio of import prices (excluding diamonds) to business-sector product prices (including housing services).

<sup>c</sup> Ratio of export prices (excluding diamonds) to import prices (excluding diamonds).

SOURCE: IFS, US Dept. of Commerce/Bureau of Economic Analysis and based on Central Bureau of Statistics data.

exports fourfold in 1986–2000, and lies behind the stagnation of exports in the last two years. After the emergence of the global economic crisis in 2000 and the bursting of the internet bubble, electronic components and other advanced industries are not showing signs of recovery, and this effect apparently outweighs the price effect of real depreciation. Exports of the traditional and mixed industries, where the positive effect of real depreciation should be more significant because of their low profit margins and greater competition in the target markets, remained flat in 2002, after declining by 3.3 percent in 2001 (in dollar terms).

The real depreciation contributed to the contraction of imports, which fell more steeply in 2002 than in 2001, also as a result of the income effect and the stagnation of investment.

On the other hand, the real depreciation contributed to the contraction of imports, which fell more steeply in 2002 than in 2001, although this development is evidently also due to the income effect of the recession, reflected in lower domestic demand. The income effect was clearly expressed, for example, in the 13.4 percent drop in imports of consumption durables, while imports of current consumption goods dipped by only 1.6 percent (in dollar terms). Imports of capital goods (excluding ships and aircraft) declined by 7.0 percent, in line with the stagnation of nonresidential investment. The effect of the real depreciation appears to have been the dominant factor in checking the long-term downward trend of manufacturing sales to the domestic market (see section on manufacturing, below).

An analysis of the development of the real exchange rate in the framework of the Balassa-Samuelson hypothesis shows that since 1986 the fluctuations in the exchange rate have been closely allied with the productivity-led growth of the tradable industries.

The development of the real exchange rate in Israel and the factors influencing it in the long and short terms have been discussed at length in empirical studies.<sup>13</sup> A different viewpoint is put forward in the framework of the Balassa-Samuelson Hypothesis, which gives expression to supply-side factors, claiming that real appreciation is the outcome of accelerated growth led by a steeper rise in productivity in the tradable sector than in the nontradable one. Hence, during a recession real depreciation (measured by the exchange rate vis-à-vis the dollar adjusted by GDP deflators in Israel and the US) can be expected. An analysis of the development of the real exchange rate in the framework of the Balassa-Samuelson Hypothesis (Box 1.2) shows that since 1986 its variance has indeed been closely allied with productivity-led growth in the tradable sector, even though during that period Israel suffered severe demand shocks, chief among them the influx of immigrants from the former USSR and the bursting of the internet bubble, as well as being subject to the effect of nominal factors, such as autonomous capital inflow and the process of disinflation.

### Box 1.2

#### The Real Exchange Rate and the Balassa-Samuelson Hypothesis

According to the Balassa-Samuelson Hypothesis, a steeper increase in productivity in the tradable than in the nontradable sector, provided capital and labor are mobile between the sectors and the economy is open to the international capital market, causes the relative price of nontradables to rise. Differentials in productivity and an increase in the relative price of

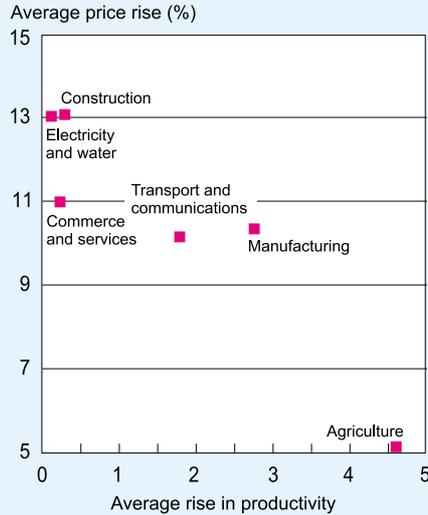
<sup>13</sup> See, e.g., L. Meridor and S. Pesach (1994), “The Real Exchange Rate in Israel: A Thirty-Year Perspective,” Bank of Israel, *Discussion Paper* 94.15 (Hebrew); A. Sussman (1998), “The Real Exchange Rate in Israel, 1980–97,” Bank of Israel, *Discussion Paper* 98.05 (Hebrew).

nontradables implies that at a time of accelerated growth there should be real local-currency appreciation, while during a recession there should be depreciation. It is customary to test this hypothesis by comparing two countries, examining the real exchange rate by means of their exchange rates adjusted by their general price indices (CPI, GDP deflator, etc.).

We examined the Balassa-Samuelson Hypothesis for the real exchange rate between Israel and the US<sup>1</sup> since 1986, focusing on the interaction between differential productivity and the different price increases in the tradable and nontradable sectors, as well as between productivity and growth. As Figure 1 shows, there is a negative correlation between productivity and the increase in prices by principal industry. The tradable industries (agriculture, manufacturing, transport and communications) were characterized by relatively high productivity in the last fifteen years, while productivity was relatively low in the nontradable industries (construction, commerce and services, electricity and water).

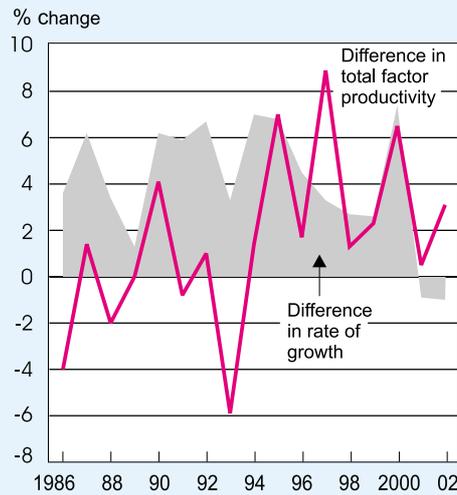
Since increasing productivity determines economic growth (Figure 2), it comes as no surprise to find that growth is the mirror-image of real exchange-

**Figure 1  
Productivity and the Rise in Prices, by Principal Industries, 1986–2002**



SOURCE: Based on Central Bureau of Statistics data; Bureau of Economic Analysis, US Dept. of Commerce; Bureau of Labor Statistics, US Dept. of Labor.

**Figure 2  
Productivity and Growth in Israel and the US, 1986–2002**



SOURCE: Based on Central Bureau of Statistics data; Bureau of Economic Analysis, US Dept. of Commerce; Bureau of Labor Statistics, US Dept. of Labor.

<sup>1</sup> D. Romanov (2002), “The Real Exchange Rate and the Balassa-Samuelson Hypothesis: An Appraisal of Israel’s Case Since 1986,” Bank of Israel, Research Department, mimeo.

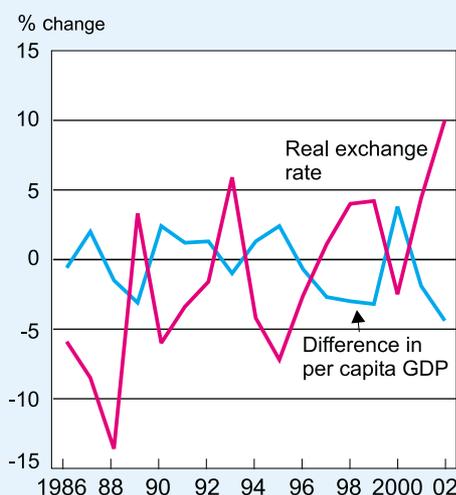
rate shifts (Figure 3) (appreciation is denoted by a decline in the real exchange rate).

Furthermore, the variance in the real exchange rate was decomposed into three factors: 1. The variance in the nominal (NIS/\$) exchange rate; 2. The differential in tradable industries prices in Israel relative to the US; 3. The differential between the relative price of nontradables in Israel and the US. In contrast to the first two components, which are nominal, the third reflects the real mechanism of the Balassa-Samuelson

Hypothesis, which is posited on differences in productivity. The elasticity of the real exchange rate to the differential price increases in the tradables and nontradables sectors in Israel and the US is estimated at 0.6.

The analysis shows that only about one quarter of the real depreciation that occurred in Israel in 2001 is explained by the steeper reduction in relative prices in the nontradable sector here than in the US, deriving from the erosion of productivity in manufacturing and agriculture. Most of the effect (about half the real depreciation) derived from nominal factors—depreciation and a faster rise in output prices in the tradables sector in Israel than in the US—stemming from the strong demand shock that affected Israel's export industries in 2001.

**Figure 3**  
**Growth and the Real Exchange Rate in Israel and the US, 1986–2002**



SOURCE: Based on Central Bureau of Statistics data.

The national saving rate declined to 16.7 percent of total revenues—its lowest level since 1989. The contraction of private saving made consumption smoothing possible due to the sharp drop in disposable income.

### Saving, investment, and the current account

The national saving rate as a share of income fell for the fourth successive year, and reached 16.7 percent, compared with 18.3 percent in 2001 (Table 1.A.1.17). Israel's saving rate has not been so low since 1989, the last year of the recession which began in 1987 (see box in the first part of this report). The decline in private savings, due to the real erosion of 3.1 percent of individuals' disposable income and consumption smoothing, led to the decline in the national saving rate—as the public saving rate rose slightly in 2002 due to the sharp fall in foreign debt servicing costs.

Per capita private consumption contracted in 2002, in contrast with its more partial adjustment in 2001, indicating that the public had internalized the protracted decline in its income. However, the partial rate at which consumption contracted (2.5 percent, compared with the 3.1 percent decline in disposable income) attests to the assessment by the public that the recession would eventually end.

The reduction in the private saving rate, only part of which was for consumption smoothing purposes, was also due to financial factors such as the negative yield on some investment instruments and the adjustment of the public's financial asset portfolio in view of the taxation of capital income, scheduled to begin in 2003.

The gross domestic investment rate as a share of income fell by 1.2 percentage points to stand at 18.6 percent. This reflects a 10.2 percent contraction in gross domestic investment at a time when total income did not increase in real terms.

The decline in fixed investment has persisted since 2000, but as a share of GDP it has been falling since 1995, when it constituted 26.2 percent, to stand at 17.4 percent in 2002. The main reasons for the decline in 2002 were the security unrest and assessments regarding the persistence of the recession in Israel and slow global recovery, as well as difficulties in raising capital. These short-term factors may have combined

with the long-term contractionary trend observed after the period of accelerated growth in the early 1990s (Figure 1.5 and Table 1.A.1.3). Among the factors contributing to this trend were the high interest rate that expressed tight monetary policy during the disinflationary period. The decline in investment and profitability is clearly reflected by the sharp drop in the return on capital (Table 1.A.1.10), which has been declining since 1996.

Residential investment fell by 5.8 percent in 2002, after a cumulative 33 percent decline since 1997. Investment in nonresidential construction, which has also trended down since 1997, contracted by only 1.4 percent, after falling by 5.9 percent in 2001. These developments may be viewed as signalling the imminent conclusion of the lengthy process of adjustment undergone by the construction industry with the ending of the effect of the absorption of large-scale immigration, after causing the real-estate industry to surge. The significant drop in housing prices since the end of 1998, together with

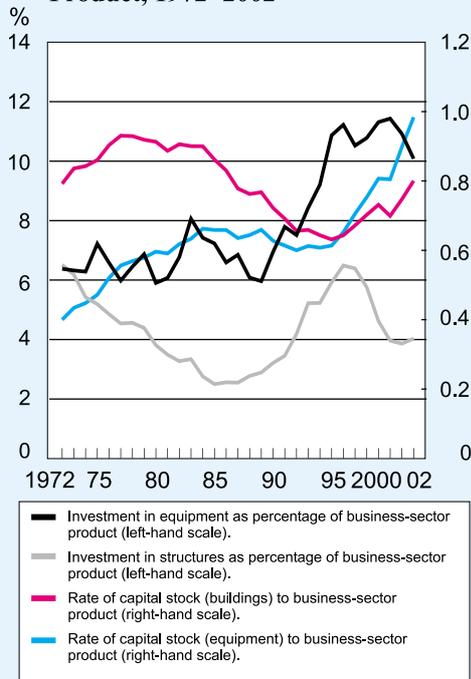
In spite of some smoothing, the 2.5 percent contraction of per capita private consumption attests to the internalization of the depth and persistence of the recession by the public.

The gross domestic investment rate dipped by 1.2 percent of total revenues.

The decline in investment in fixed assets has persisted since 2000, and is due to security uncertainty, assessments regarding the persistence of the recession in Israel, the absence of a rapid global economic recovery, and difficulties in raising capital.

Residential investment declined by 5.8 percent in 2002, and investment in nonresidential construction contracted by 1.4 percent. This may be regarded as an indication that the protracted process of adjustment undergone by the construction industry since the boom period due to the massive influx of immigrants has come to an end.

**Figure 1.5**  
Composition of Ratio of Gross Capital Stock to Business-Sector Product, and Investment as Percentage of Business-Sector Product, 1972–2002



SOURCE: Based on Central Bureau of Statistics data.

the persistent rise in rent, has helped to revive investment in real estate, as expressed in the increase in building starts and sales of new apartments in 2002. The reawakening of demand appears also to have been influenced by expectations of local-currency depreciation in the wake of the reduction of the nominal interest rate at the end of 2001 and the acceleration of inflation in the first half of the year. The increased worthwhileness of investment in real estate also stemmed to some extent from the negative yield on stock markets in Israel and abroad and the fact that real-estate prices in the US and Europe stabilized at a higher level than that evident during the boom years. Two factors were at work to moderate the demand for real estate, however: 1. The marked fall in building starts in the Territories and along the Green Line as a result of the security incidents; 2. The economic uncertainty and expectations of a decline in permanent income and rise in mortgage interest, in the wake of the decline in saving in the private sector and rise in the government debt.

Investment in the transport infrastructure has risen sharply since 2000.

Against the backdrop of the decline in private investment, general government investment in the roads infrastructure, which has risen notably since 2000 (Table 1.A.1.19) was remarkable. The growth of this kind of investment, as well as that in water and electricity, has long been needed, and is still needed as a basis for sustainable growth and precondition for the revival of private investment and emergence of the economy from recession.

The growth rate of the inventory of start-ups slowed in 2002 for the first time since 1995 because of grave problems in raising capital.

The rate of inventory investment in manufacturing and commerce as a share of GDP slowed in 2002. The increase in the inventory of start-ups slowed for the first time since 1995, when inventory records were introduced for this industry (Table 1.7). The reason for this was the difficulty of start-ups to raise capital: the share indices of high-tech companies all over the world plunged during 2002 (the Nasdaq fell by 31 percent, the Tel-Tech by over 35 percent), and investment by Israeli venture capital funds was also down by about 30 percent from 2001.

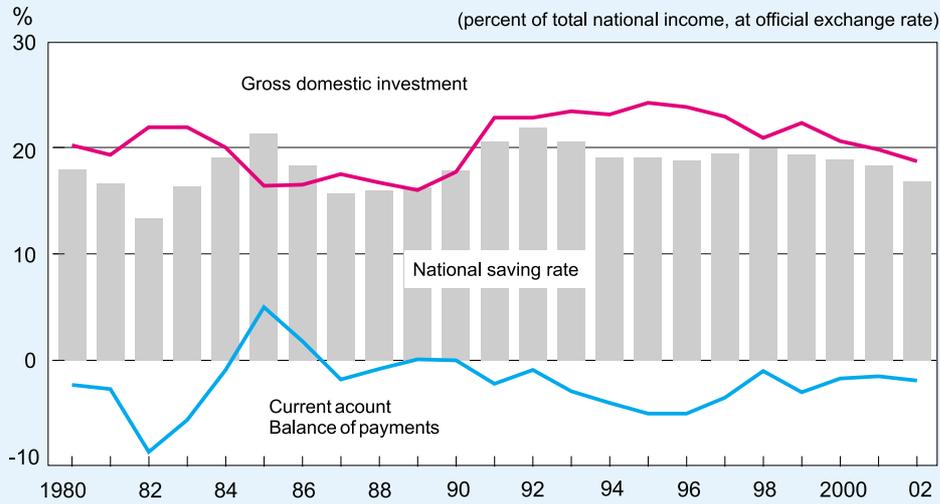
The current account deficit widened from 1.4 percent of income in 2001 to 1.9 percent in 2002 due to the 1.6 percentage-point decline in the saving rate, partly offset by the contraction of investment. Since the beginning of the 1970s the deterioration in the current account has generally stemmed from a steeper rise in investment than in

**Table 1.7**  
**Investment in Inventory, 1998–2002**

	(percent of business-sector product, current prices)				
	1998	1999	2000	2001	2002
Total investment in inventory	0.45	2.89	2.24	4.12	3.84
Fuel	0.10	-0.30	-0.09	0.21	-0.49
Diamonds	-0.27	-0.27	-0.21	-0.44	0.34
Total investment excluding fuel and diamonds	0.62	3.46	2.54	4.35	3.99
<i>of which</i>					
Manufacturing	0.30	0.54	1.28	-0.55	0.51
Other	-0.42	1.06	-2.17	0.590.	0.83
Start-ups	0.73	1.87	3.50	4.29	2.65

SOURCE: Based on Central Bureau of Statistics data.

**Figure 1.6**  
National Saving Rate, Gross Domestic Investment, and Current Account Balance of Payments, 1980–2002

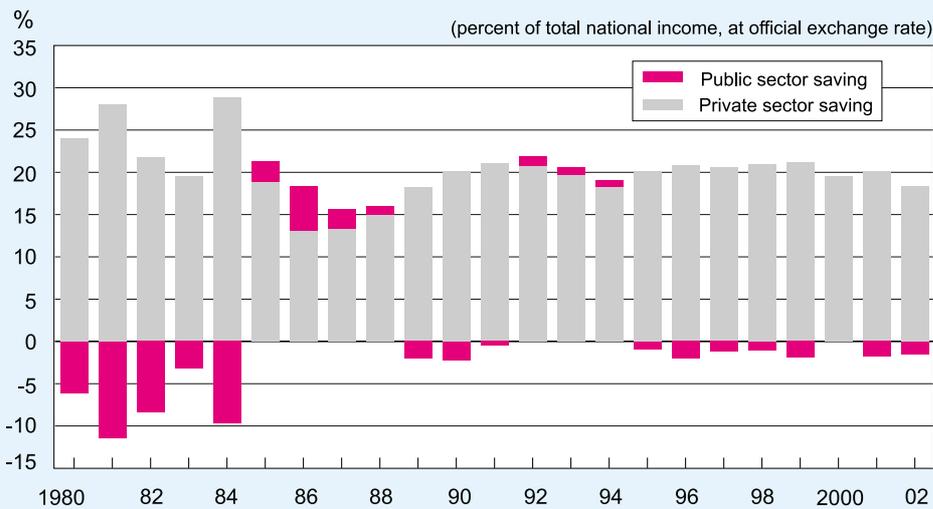


SOURCE: Based on Central Bureau of Statistics data.

The current account deficit widened from 1.4 percent of total revenues in 2001 to 1.9 percent in 2002, as a result of the 1.6 percentage-point dip in the saving rate, which was partly offset by the contraction of investment.

saving—serving to reduce the risk inherent in the expansion of the deficit because the maturing of investments accelerates future GDP growth. In 2002, however, as was the case in 1973 and 1974, the current account deficit grew while investment contracted.

**Figure 1.7**  
Gross National Saving Rate, By Sector, 1980–2002



SOURCE: Based on Central Bureau of Statistics data.