

## Chapter 1

# Output and Demand

Israel's economy was in deep recession in 2001. GDP fell by 0.6 percent, and business-sector product by 1.9 percent, alongside a deceleration in the rate at which output prices rose, an increase in the unemployment rate—to over 10 percent at the end of the year—and a widening of the current account deficit of the balance of payments. Most of the gap between actual business-sector product (which fell) and its growth potential, estimated at 4–5 percent, is explained by two significant demand shocks: 1. The *intifada* which erupted at the end of September 2000 and had an adverse effect on demand for tourism and exports to the Palestinian Autonomy, also had a serious impact on construction and agriculture; 2. The drop in world demand for the product of the high-tech industry and start-ups, which have been Israel's leading export in the last few years. Most of the effect of the demand shocks was expressed in exports, which declined by 11 percent, and in investment, all of whose components fell. Private and public consumption expanded by 3 percent each, however, thereby preventing the exacerbation of the recession in the short run.

Fiscal policy did not support a return to sustainable growth in 2001 because of the sharp rise in the share of public current expenditure in GDP, accompanied by the continued heavy tax burden—which had risen by 2 percent of GDP in 2000. Concurrently, the share of the public debt in GDP rose, and this trend is expected to persist in 2002 following the rise in the deficit target to 3 percent of GDP in that year. As regards monetary policy, the Bank of Israel gradually reduced nominal interest, and hence real interest followed suit. This gradual reduction, in the context of growing fiscal uncertainty, helped to maintain stability in the financial and foreign-currency markets, but due to the rise in uncertainty in the political-security sphere and decline in interest rates abroad it was not enough to significantly stimulate investment and create the conditions for real depreciation, which would stimulate exports. *Ex post*, it appears that the implementation of a more balanced policy mix, with a lower budget deficit and faster reduction of interest, would have led to real depreciation during the year. Notwithstanding, an estimate of the relative price elasticity of exports indicates that depreciation would have contributed only marginally to offsetting the decline in exports.

In the last few years profitability has weakened noticeably, as expressed in the lower return on capital and steep rise in unit labor costs. At the same time, the tax burden on non-wage income has increased, and the downward trend in the export/business-sector product price ratio has persisted. The steps taken at the end of the year, among them the government decision to restore the downward path of the deficit and the Bank of Israel's reduction of nominal interest by 2 percentage points, served to generate real depreciation in the short run, stimulating exports; the persistence of depreciation is contingent on slowing the real growth rate of public current expenditure, however.

An analysis of total factor productivity (TFP) from a long-term perspective shows that its growth rate has fallen every decade. This negative trend is notable in view of the apparent recovery of TFP in the OECD countries recently; it indicates that a substantial change is needed in fiscal policy trends, with a shift towards a composition that stimulates growth. This will be achieved by lowering taxes, reducing the deficit, and increasing infrastructure investment. These changes will help to raise TFP while creating the conditions for a return to a path of sustainable growth once foreign demand revives and the political-security situation is calmer.

## 1. MAIN DEVELOPMENTS

Israel's economy was in deep recession in 2001. GDP fell by 0.6 percent, and business-sector product by 1.9 percent, alongside a slowing in the rate at which product prices rose, a rise in unemployment, and widening of the current account deficit.

The deep recession that prevailed during 2001 was expressed in a 0.6 percent drop in GDP (Table 1.1) and a 1.9 percent decline in business-sector product,<sup>1</sup> compared with a potential growth rate<sup>2</sup> estimated at 4–5 percent. This occurred alongside a slowing of the rate at which the GDP deflator rose, an increase in the unemployment rate to over 10 percent of the labor force at the end of the year, and the widening of the deficit on the current account of the balance of payments. The recession, which began in 2000:IV and deepened during 2001 (Table 1.2), stemmed from a sharp drop in demand. This mainly affected exports, which plummeted, and investment, all of whose components fell. Private and public consumption continued to rise, preventing the exacerbation of the slowdown in the short run. The recession in 2001 came after a surge in activity from 1999:II to 2000:III (Figure 1.1), and *ex post* the average rise in per capita GDP from 2000 to 2001 (Table 1.1) was negligible, similar to its increase in 1997–99.

Two significant demand shocks explain the recession that began in 2000:IV: a) the *intifada*, which was accompanied by considerable uncertainty and had a direct effect on tourism and exports to the Palestinian Autonomy as well as on construction; b) the sharp drop in world demand for the product of the high-tech industry and start-ups,

<sup>1</sup> In the period covered by the appendix tables to this report (1960–2001) this is the first year in which GDP fell, and the second in which business-sector product declined (the first year was 1966).

<sup>2</sup> The potential GDP growth rate is the growth rate derived from factor inputs—capital and labor—in accordance with their weight in production, *plus* the average rise in TFP.

**Table 1.1**  
**Indicators of Economic Activity, 1986–2001**

	(rate of change, percent)										
	1986–89	1990–95	1996	1997	1998	1999	2000	2001	2000–2001	2001	
										Jan–Jun <sup>a</sup>	Jul–Dec <sup>a</sup>
Per capita GDP	1.9	2.4	1.9	0.7	0.3	0.0	3.6	-2.8	0.3	-5.0	-7.1
GDP	3.6	6.0	4.5	3.3	2.7	2.6	6.4	-0.6	2.8	-2.8	-5.0
<i>of which</i>											
Excluding start ups			4.4	3.2	2.5	2.3	4.4	0.4	2.4	-1.0	-3.6
Business-sector product	4.5	7.2	5.3	3.7	2.9	2.4	8.5	-1.9	3.2	-5.4	-7.3
Index of manufacturing output	0.9	7.3	5.4	1.7	2.9	1.4	10.0	-5.7	1.9	-7.2	-10.7
Unemployment rate <sup>b</sup>	7.1	9.3	6.6	7.5	8.6	8.9	8.8	9.3	9.1	8.7	9.9

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

<sup>b</sup> These figures refer to levels rather than rates of change.

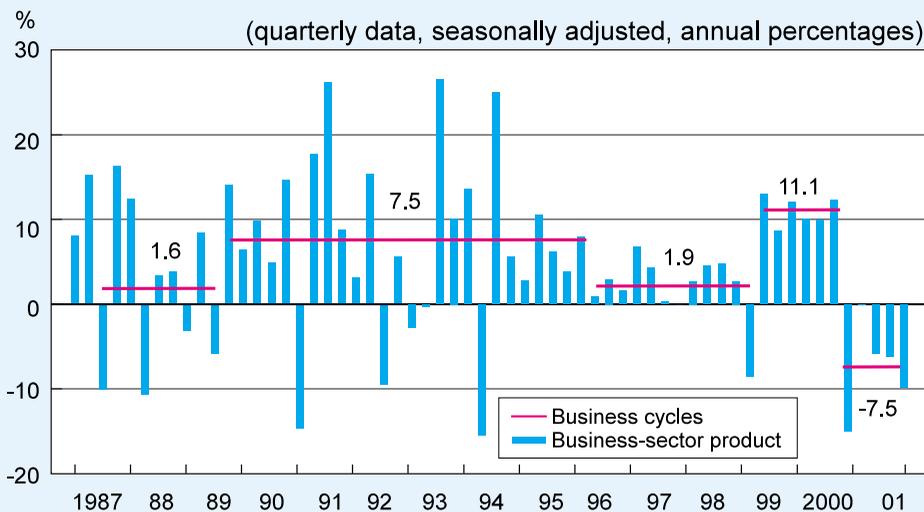
SOURCE: Based on Central Bureau of Statistics data.

which have constituted one of Israel’s major exports in recent years. These demand shocks, which were accompanied by increased uncertainty in the political-security sphere and the business environment, were expressed in plunging tourism exports and a steep drop in high-tech exports, as well as in a fall in investment in construction, start-ups, and machines and equipment.

Fiscal policy in 2001 did not support a return to sustainable growth because of the steep rise in the share of public current expenditure in GDP, alongside a continued 2

Two demand shocks explain the recession that began in 2000:IV: 1. The *intifada*, which directly affected tourism, exports to the Autonomy, and construction; 2. The steep drop in global demand for product of high-tech firms and start-ups.

**Figure 1.1**  
**Business-Sector Product, 1987–2001**



SOURCE: Based on Central Bureau of Statistics data.

Fiscal policy in 2001 did not support a return to sustainable growth due to the sharp rise in current expenditure as a share of GDP, accompanied by an ongoing 2 percent increase in the share of taxes evident since 2000, as well as the greater share of transfer and wage payments and defense expenditure.

Monetary policy contributed to stability in 2001, through the gradual reduction of nominal interest alongside the decline in real interest. Because of other factors, however, *ex post* this was not enough to increase investment and create real depreciation.

The cumulative direct loss of business-sector product due to the *intifada* was estimated at 4 percent of GDP from October 2000 to December 2001, 3 percent of which was in 2001.

The contribution of the fall in global demand for high-tech products to the slower rate of expansion of business-sector product in 2001 is estimated at 2.8 percent.

percent increase, evident since 2000, in the share of taxation in GDP. The increase in expenditure stemmed from the ongoing rise in the share of transfer payments in GDP, the greater share of civilian wage payments and the growth in defense expenditure. In addition, during the year uncertainty regarding fiscal policy grew, in the context of the revised growth forecast for 2002 and the increase in the deficit target for that year, so that the public debt/GDP ratio is expected to rise—further to its 2001 increase (see Chapter 3). Monetary policy focused on maintaining stability in 2001, in view of the deteriorating political-security situation and the uncertainty regarding budget policy in the medium term. This was effected by gradually reducing the nominal interest rate, and hence the real interest rate. This reduction did in fact support an increase in investment, but due to the rise in uncertainty in the political security situation it appears *ex post* that it was not sufficient to significantly increase investment. Furthermore, as a result of the widening of the interest-rate differential between Israel and abroad during the year, in the wake of the more rapid interest-rate reduction in the US, there was only a slight moderation of the long-term downward trend that characterizes the export/GDP price ratio. *Ex post* it appears that a more balanced policy mix consisting of a lower budget deficit and the faster reduction of nominal interest, would have led to a more significant improvement in the export/GDP price ratio. Nonetheless, given the lack of demand from abroad and on the basis of an estimate of the relative price elasticity of exports, it can be assessed that a more significant change in this ratio during the year would have contributed only marginally to offsetting the significant shocks that affected Israel's economy in 2001. After the 2 percentage-point interest-rate cut at the end of the year an opportunity for real depreciation in 2002 was created, provided the government decides during the year to restrain public expenditure in order to attain the deficit target for 2002. The translation of the real depreciation into a rise in exports depends first and foremost on the recovery of world trade and the demand for high-tech products.

The cumulative direct loss of business-sector product between October 2000 and December 2001 due to the *intifada* is estimated at 4 percent of GDP in 2001. Most adversely affected were industries producing for tourism and exporting to the Palestinian Autonomy, and the construction industry. Tourism was further badly hit by the terrorist attacks on the US on 11 September, 2001.

The 8 percent decline in high-tech exports came after a long-term growth rate of about 20 percent from 1991 to 1999, and an exceptional 50 percent surge in 2000. The decline reflects the demand shock that affected all the countries whose exports are led by high-tech products, such as those of south-east Asia. The demand shock also led to a reduction in the capital raised by venture capital funds, with a deleterious effect on the product of start-ups, which have made a major contribution to the growth of business-sector product in recent years. On the basis of the calculation below, the direct contribution of the fall in world demand for high-tech products—as expressed in the drop in the exports of this industry (including mixed high-tech technology and start-ups)—to the decline in the growth rate of business-sector product in 2001 relative to the long-term growth rate of these industries is estimated at 2.8 percent of GDP.

**Table 1.2**  
**Developments During the Year, 1999–2001**

Sources and uses	(seasonally adjusted, quarterly rates of change, in annual terms)																
	During year <sup>a</sup>				1999				2000				2001				
	1999	2000	2001		I	II	III	IV	I	II	III	IV	I	II	III	IV	
<b>GDP</b>	5.2	2.4	-3.7	-4.2	9.0	7.5	8.1	8.1	6.4	7.0	10.4	-9.9	1.3	-3.2	-5.2	-6.6	
Business-sector product	6.1	3.0	-6.3	-8.2	13.3	8.7	12.4	12.4	9.6	9.5	13.1	-15.2	0.4	-6.2	-6.6	-9.9	
Private consumption	3.4	6.3	1.5	2.4	0.4	7.3	2.0	2.0	8.0	15.3	6.8	-3.1	5.4	2.2	4.5	-5.3	
of which Excl. durables	2.7	4.5	3.1	3.6	-0.3	4.8	2.5	2.5	6.1	12.3	5.6	-2.9	4.8	6.1	6.2	-5.2	
Public consumption	6.7	1.2	2.7	-3.2	20.3	6.5	1.1	1.1	-1.7	-13.0	13.0	8.0	1.8	3.0	-2.2	12.1	
Fixed investment	-1.0	-0.8	-12.3	-9.6	8.6	4.7	-13.6	-13.6	13.2	3.3	-3.7	-2.4	1.8	-18.8	-4.8	-24.5	
of which Nonresidential	2.1	4.5	-15.2	-10.1	19.2	15.4	-21.3	-21.3	23.1	7.4	-3.8	6.5	9.7	-22.0	-0.1	-37.1	
Residential	-8.4	-15.4	-2.6	-3.9	-11.7	-10.8	-5.8	-5.8	2.6	-7.1	3.1	-47.6	3.1	-7.7	-3.6	-1.8	
Exports <sup>b</sup>	20.3	7.3	-10.6	10.5	16.3	30.0	22.5	22.5	39.8	17.3	62.1	-43.0	-2.2	-20.7	-16.9	-1.6	
of which Excl. diamonds	18.8	4.7	-7.7	8.3	15.4	29.5	15.4	15.4	38.0	22.5	112.3	-57.4	15.5	-22.9	-25.5	0.2	
Tourism exports	36.3	-38.1	-34.1	44.5	53.0	7.0	54.7	7.0	26.3	-37.1	3.4	-71.8	-10.3	-61.8	-27.3	-38.5	
Goods exports	18.1	13.0	-12.3	-0.3	20.1	25.8	19.2	19.2	49.5	12.0	4.5	7.3	-18.3	-18.0	-11.8	2.5	
<b>Uses</b>	10.0	5.0	-7.0	3.3	15.8	11.6	5.7	5.7	8.8	12.3	8.0	-5.0	1.4	-9.1	-5.8	-10.7	
Imports	22.1	10.4	-13.7	19.0	30.9	17.9	5.3	5.3	14.6	5.6	20.9	10.3	-12.0	-14.3	-14.8	-9.3	
of which Excl. direct defense imports, ships and planes	14.8	13.3	-13.5	5.5	17.5	12.8	13.1	13.1	21.3	15.0	14.8	7.3	-11.9	-10.3	-10.4	-16.5	
<b>Domestic uses</b>	6.3	4.5	-6.2	5.4	12.2	4.7	-1.4	-1.4	3.7	12.1	-9.3	12.5	4.0	-4.0	-0.5	-18.2	
Unemployment rate <sup>c</sup>				8.8	9.0	9.0	8.7	8.7	8.6	8.8	8.8	8.8	8.6	8.8	8.8	9.6	10.2
Labor productivity <sup>d,e</sup>				-13.6	7.7	1.4	0.8	0.8	4.4	3.8	0.3	4.3	7.5	-11.3	1.8	-6.6	
Average hours worked <sup>e</sup>				0.9	4.5	3.4	1.2	1.2	4.0	-5.4	8.3	-5.9	-3.9	-0.3	-7.9	0.0	
Manufacturing production index	7.2	4.5	-9.8	-11.4	5.0	17.6	6.3	6.3	10.7	18.2	4.8	-4.2	-5.0	-14.1	-10.1	-8.4	
State-of-economy index	4.1	5.1	-5.5	-0.4	2.2	8.1	7.4	7.4	4.2	8.6	9.6	1.9	-3.4	-5.9	-10.1	-4.2	

<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 interest receipts from abroad of public sector.

<sup>c</sup> These data refer to levels rather than 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 Labor Force Survey of Central Bureau of Statistics.

SOURCE: Based on Central Bureau of Statistics data.

The fall in investment encompassed all its components: the *intifada* caused residential construction to plummet, and investment in machines and equipment dropped, in contrast with its steady rise in the 1990s.

Private consumption rose more sharply than in 1999, despite the greater intensity of the recession in 2001.

In real terms public consumption grew markedly in 2001.

The fall in demand impacted on construction and manufacturing. The *intifada* affected mainly commerce and services.

Both the saving rate and the investment rate declined in 2001; since the saving rate fell more steeply, the ratio of the current account deficit to total revenue rose.

A long-term perspective shows a steep decline in average TFP in the last decade. A trend change in fiscal policy is required, with a growth-stimulating composition consisting of lower taxes, a declining budget deficit, and increased infrastructure investment.

The decline in investment encompassed all its components. Residential construction contracted by 13 percent, and non-residential construction by 6-5 percent, continuing the trends of previous years. Investment in machines and equipment also fell, due to the decline in the demand for high-tech products, in contrast with its steady rise in the 1990s. In contrast with the fall in construction in the last few years, stemming mainly from the process of adjustment following the period of mass immigration (as explained in the 1997 *Annual Report*), the decline in 2001 was due mainly to the *intifada*.

Private consumption rose by 3.3 percent, more than the increase in 1999, despite the fact that the economic slowdown in 2001 was more marked. Particularly notable was the 3.9 percent increase in consumption excluding durables, in line with the rise in disposable income (Table 1.A.1.19). The growth in private consumption is explained mainly by the steep rise in the average real wage, which increased the share of income and hence consumption, because the marginal propensity to consume among wage-earners is relatively high.

Public consumption in real terms (i.e., relative to the index of consumption prices<sup>3</sup>) rose steeply in 2001, by 4.9 percent, 2.9 percent of it in volume terms. Beyond the increase in defense expenditure, expressed in the volume rise, the real increase expressed the wage increment deriving from entrenched promotion mechanisms which operate in the public sector and have not yet been brought into line with a situation of price stability.

An examination of business-sector product by industry shows that the brunt of the impact was felt by construction and manufacturing, reflecting the two main demand shocks—the *intifada* and the decline in demand for high-tech products. The *intifada* also impacted on commerce and services.

Both the national saving rate and the investment rate declined in 2001. Since the saving rate fell by more than the investment rate, the ratio of the current account deficit of the balance of payments to total revenue rose. Some of the expansion of the deficit is connected with cyclical factors such as the demand shocks to the high-tech industry, but some might persist in 2002. There are two reasons for this: 1. According to the 2002 budget figures, the budget deficit that year is expected to be substantial; 2. When the economy emerges from the recession investment is expected to rise, and initially it will not necessarily be contingent on an equivalent rise in the private saving rate, because individuals tend to smooth consumption, i.e. to maintain its existing rate of increase, even if GDP has not risen significantly, assuming that it will grow in the future.

In recent years profitability has declined, casting doubts on the economy's ability to emerge rapidly from the recession. The negative impact on profitability is expressed by a decline in the return on capital—largely due to the sharp rise in wages, reflected in a 5.5 percent rise in unit labor costs. A long-term view shows that average TFP has declined in the last decade<sup>4</sup> (Table 1.4). The slower growth rate of TFP in a long-term

<sup>3</sup> From National Accounts data.

<sup>4</sup> In recent years concern has increased regarding a possible bias in the measurement of capital stock, due to accelerated depreciation relative to previous years—which was not given sufficient expression in capital stock measured by international standards. If this concern is borne out, estimates of productivity in the last few years are biased downwards. Note, however, that this does not alter the conclusion arising

perspective should be addressed by policymakers, and especially requires a turnaround of fiscal policy, expressed by a growth-led budget composition, with lower taxation, a smaller public deficit, and more infrastructure investment. Changes in this direction have characterized the advanced economies in recent years, while in Israel there has been a retreat, expressed primarily in the rise in the tax rate.

## 2. AGGREGATE DEMAND AND SUPPLY

### The demand side

The main component of the decline in demand in 2001 was exports, which fell by 11 percent after rising continuously in recent years, and especially in 2000, when they soared by 24 percent. This sharp drop is explained by the two major demand shocks<sup>5</sup> of 2001: 1. The steep 50 percent drop in tourism and exports to the Palestinian Autonomy (Table 1.3), as a result of the *intifada*; 2. The decline in global demand for high-tech products—Israel’s major export industry in the last few years. These demand trends explained most of the fall in exports of goods and services, which contracted by 6 and 17 percent respectively. The impact on services exports was also expressed in the fall in exports of start-ups, from the high level of 2000 (which included the *Chromatis* transaction). There was also a notable fall in investment, part of it (construction investment) due to the direct effect of the *intifada*, and part as a result of the decline in world demand and increase in political-security uncertainty. Both private and public consumption expanded at a similar rate to that of previous years, thereby preventing a sharper fall in the GDP growth rate. Private consumption excluding durables rose by 3.9 percent—higher than its growth rate in 1999 (when GDP rose), and public consumption went up by a real 4.9 percent (relative to the index of consumption prices)—continuing the real increase of 2000. Most of the real rise stemmed from the increase in wage payments and defense expenditure.

An examination of the development of tourism exports during the year illustrates the impact of the *intifada*. The sharpest fall was in 2000:IV; the low level of tourism exports has been maintained since then, and even declined further when it transpired that the deterioration in the political-security situation would persist, and also because of the contraction of world tourism after the events of September 11 in the US. The

from the findings in the lower part of Table 1.4; under the extreme assumption that the rate at which capital stock rose in the 1990s is 2.2 percent less than measured as an annual average, TFP growth was zero, which is still far below the rate evident in the 1980s.

<sup>5</sup> In contrast with the early 1990s, when the business cycle derived from supply-side factors, at the end of the 1990s the dominant factor was the demand side. This finding is to be found in the article by Yossi Yakhin and Yigal Menashe (2001), “Structural and Non-Structural Approaches to the Quarterly Estimation of the Output Gap,” Bank of Israel Research Department *Discussion Paper* no. 01.13 (Hebrew). A detailed account of the business cycle in Israel appears in the article by Arie Marom (2001), “The Success of the Bank of Israel’s Companies Survey in Diagnosing Developments in the Economy and the Business Cycle,” Bank of Israel Research Department, *Discussion Paper* no. 01.11 (Hebrew).

Exports fell by 11 percent, after rising continuously in recent years, and in 2000 in particular (when they went up by 24 percent). This sharp drop stems from the two demand shocks of 2001: the sharp fall in tourism and exports to the Autonomy due to the *intifada* and the decline in global demand for high-tech products.

The *intifada* impacted on tourism, exports to the Autonomy, and the product of construction and agriculture—so that the resulting fall in the growth rate of business-sector product in 2001 is estimated at 3 percent.

**Table 1.3**  
**Sources and Uses, 1986–2001**

	(volume rates of change, percent)							
	1986–89	1990–95	1996	1997	1998	1999	2000	2001
GDP	3.6	6.0	4.5	3.3	2.7	2.6	6.4	–0.6
Imports	4.8	11.0	7.7	3.3	1.7	14.8	12.2	–4.4
<i>of which</i> Excl. oil, diamonds, ships and planes	4.1	11.7	9.3	2.9	4.4	10.0	14.4	–3.5
Total sources	4.0	7.6	5.5	3.3	2.4	6.1	8.2	–1.8
Exports	4.5	7.4	4.9	8.0	6.6	11.6	23.9	–11.0
<i>of which</i> Excl. diamonds	3.4	8.3	5.5	10.2	10.5	10.8	25.3	–10.1
Goods excl. diamonds	4.5	9.3	8.8	13.1	10.3	7.0	23.9	–5.8
<i>of which</i> High-tech exports	–	–	12.7	23.0	16.4	11.9	52.8	–8.4
Exports to Palestinian Autonomy	–	–	1.4	1.3	5.5	4.4	–10.8	–31.1
Tourism exports	–3.2	7.8	–10.6	–10.2	–6.6	28.5	1.6	–41.4
Gross domestic investment	3.2	15.4	7.1	–2.1	–7.1	9.5	–3.5	–3.9
<i>of which</i> Nonresidential	2.1	15.6	10.5	–1.8	–1.0	3.7	4.3	–4.3
Private consumption	7.1	7.5	5.2	3.9	4.3	3.2	6.6	3.3
Public consumption <sup>a</sup>	0.8	2.9	4.0	1.6	2.0	2.6	1.4	1.9
Domestic uses <sup>a</sup>	4.8	8.0	5.4	2.0	1.2	4.3	3.1	1.5
Total uses	4.0	7.6	5.5	3.3	2.4	6.1	8.2	–1.8

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

SOURCE: Based on Central Bureau of Statistics data.

*intifada* harmed exports to the Palestinian Autonomy, as well as the output of construction and agriculture, thereby causing the rate of business-sector product growth to fall by 3 percent (Box 1.1.).

### Box 1.1

#### The Effect of the *Intifada* on Business-Sector Product

The events that began at the end of September 2000 caused economic activity to contract markedly, mainly in industries producing for incoming tourism and for export to the Palestinian Autonomy, but also in construction and agriculture, including these industries' purchases from other industries. In order to estimate the direct effect of the *intifada* on business-sector product, a simulation of the effect of these factors was performed, assuming that the trends prevailing before the *intifada* would have persisted, using the input-output coefficients of the Central Bureau of Statistics. With regard to tourism and exports to the Autonomy, the simulation assumed that the vast majority of the fall in activity was due to the *intifada*, and adjusted for the effect of non-recurring factors, which increased tourism in 2000, and for the effect of the events of 11 September in the US, which led to a further drop in tourism. For construction and agriculture it was assumed that even without the *intifada* activity would have fallen markedly because of other shocks that affected Israel and impacted on economic activity, especially in those industries.

The simulation showed that the direct loss of GDP between October 2000 and December 2001 (five quarters) is estimated at NIS 12.2 billion (2000 prices), accounting for 4 percent of business-sector product. The decline in the growth rate of business-sector product in 2001, from the low level to which it had fallen at the end of 2000, is estimated at 3 percent. The estimate does not include effects acting in opposing directions and liable to offset one another. On the one hand, there was ‘the multiplier effect,’ i.e., the indirect effect of the decline in GDP on private consumption and investment via the decline in households’ income (by less than the impact on GDP due to the decline in wage payments to Palestinians) and the adverse effect of political-security uncertainty on the business environment. On the other hand, two factors were at work that served to offset the effect of the multiplier: 1. The increase in the product of industries producing for the defense services (against which the alternative cost of enlarging the military reserves should be set); 2. The rise in sales due to the fall in prices, the most outstanding examples of this being the increase in internal tourism and some substitution of workers in construction.

The two spheres worst affected by the *intifada* were tourism and exports to the Palestinian Autonomy, which lost 55 and 66 percent of their cumulative added value respectively between October 2000 and December 2001. The effect of the *intifada* was also felt in construction, and the industry’s cumulative added value dropped by 10 percent. The *intifada* reduced the supply of Palestinian workers, most of them in construction, but the predominant factor in the housing market in 2001 was the fall in demand—as indicated by the decline in housing prices, due partly to the *intifada* and partly to other factors, chief among them the slump in world trade and the shock to the high-tech industry.

### **Direct Effect of *Intifada* on Principal Industries, October 2000–December 2001**

	Percent of business-sector product <sup>a</sup>	Cumulative business- sector product loss		Cumulative product loss (%)
		In billions of NIS (at 2000 prices)	As % of business-sector product	
Tourism <sup>b</sup>	3.8	6.5	2.1	55
Construction	8.5	2.8	0.9	10
Agriculture	2.5	0.5	0.2	7
Exports to Palestinian Autonomy <sup>c</sup>	1.1	2.4	0.8	66
<b>Total</b>		<b>12.2</b>	<b>4.0</b>	

<sup>a</sup> Including purchases from other industries.

<sup>b</sup> Represents impact on many industries, mainly hotels and catering, transport, storage and communications, manufacturing, real estate, rentals and business services, and wholesale and retail trade.

<sup>c</sup> Represents impact on many industries, including manufacturing, transport, storage and communications, commerce and repairs, and electricity and water.

The simulation also shows that the *intifada* primarily harmed commerce and services (catering and hotel services, and business services excluding computers and R&D); the weighted rate of change of these industries declined by 0.7 percent, while had it not been for the *intifada* it would have risen by 4.6 percent. In manufacturing, on the other hand, most of the impact was due to the fall in world demand for high-tech products.

Exports of high-tech products fell by 8 percent, after soaring in recent years. The direct contribution of the fall in exports of high-tech products and start-ups to the reduction of business-sector product relative to the long-term growth rate is estimated at 2.8 percent.

The other main shock that affected exports in 2001 was, as stated, the contraction of demand for high-tech products, the export of which declined by 8 percent, after surging in the last few years. The shock that hit the global high-tech market was felt particularly acutely by countries where high-tech exports accounted for a large share of exports. One of the most significant components acting directly to reduce the growth rate of Israel's business-sector product in 2001 was the product of start-ups, which fell significantly, after soaring in 2000. This decline was the result of the drop in global demand for high-tech products and the fall in the Nasdaq, and could well have been influenced by the security uncertainty, which caused the flow of financing sources via venture capital funds to contract.<sup>6</sup> The direct contribution of the fall in exports of the high-tech industry and start-ups to the decline in business-sector product, relative to their long-term growth rate, is estimated at 2.8 percent (Box 1.2).

### Box 1.2

#### The Demand Shock to the High-Tech Industry and Start-Ups

In the last few years the structure of production in Israel, and of exports in particular, has changed. The share of the high-tech industry in manufacturing exports grew from 60 percent in 1990 to 65 percent in 1995 and 76 percent in 2000. This marked increase reflects the utilization of Israel's comparative advantage in highly-educated personnel by international standards.<sup>1</sup>

The growth rate of international trade slowed significantly, from 12.4 percent in 2000 to 2.7 percent in 2001. The slowdown was not uniform, and was felt particularly in the high-tech industry and start-ups, the demand for whose product plummeted, as shown in the table.

The decline in both sales of semiconductors, which are an important component of electronics products, and their prices, clearly indicates that the shock is associated with a sharp contraction in *demand* for high-tech products. The fall

<sup>1</sup> The effect of the structural change on Israel's growth rate is discussed in the paper by Karnit Flug and Michel Strawczynski (2001), *Post-Stabilization Growth: Are We There?* presented at the Conference in Memory of Michael Bruno (unpublished).

<sup>6</sup> The characteristics of venture capital funds as a source of finance for high-tech firms are analyzed in the paper by Hedva Ber (2001), "Is Venture Capital Special? Evidence from a Market that Began as Government Initiative," Bank of Israel Research Department, *Discussion Paper* no. 02.01 (Hebrew).

**Indicators of Demand Shock in the High-Tech Industry, 1999–2001**

	Sales of semi- conductors <sup>a</sup>	Price of semi- conductors <sup>b</sup>	Nasdaq <sup>b</sup>	Venture capital funds in Israel <sup>c</sup>
1999	18.0	-50.0	40.9	84.7
2000	52.0	66.7	42.8	155.4
2001	-38.0	-90.0	-46.2	-15.9

<sup>a</sup> May–June–July average vis-à-vis equivalent period in preceding year.

<sup>b</sup> July–July.

<sup>c</sup> Q2–Q2 (including Israeli funds and joint Israeli-foreign funds).

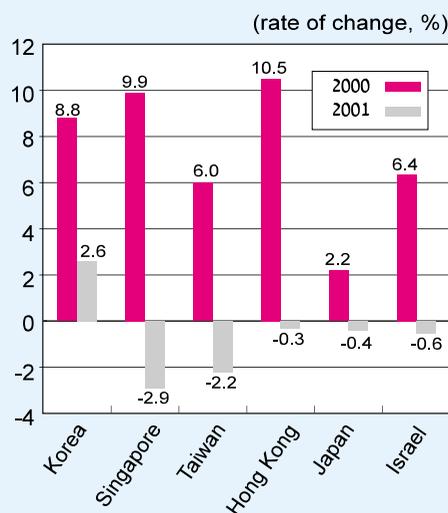
SOURCE: *World Economic Outlook*.

in the Nasdaq and in venture capital funds directly affected Israel, restricting the ability of high-tech companies to finance the expansion of their activities by going public in the US. This is also the case with start-ups, which had made a marked contribution to GDP growth in 2000. The impact of the shock to the high-tech industry was felt not only in Israel, but also in south-east Asia, where these exports occupy a prominent place, as the figure below shows.

In order to quantify the effect of the shock to the high-tech industry on business-sector product in Israel a simulation of the development of the high-tech industry (including mixed high-tech industry) was run assuming that had it not been for the shock it would have expanded at its long-term rate—the average rate for 1991–99. With regard to the development of start-ups, it was assumed that they would have expanded in accordance with their growth rate in 1997–2000 (after adjusting for the *Chromatis* transaction in 2000). A comparison of the results of the simulation with the actual development enables us to

estimate the direct effect of the high-tech shock on the business sector's growth rate in 2001, and this is assessed as 2.8 percent of business-sector product.

**GDP of Countries with High-Tech Led Exports, 2000–2001**



SOURCE: *World Economic Outlook*.

The decline in nonresidential investment was marked. Investment in construction was affected by the *intifada*, and in machinery and equipment it was hit by the considerable uncertainty as to global recovery.

Investment was also affected by the increased tax burden. The gradual reduction of the Bank of Israel's key interest rate was not enough *ex post* to stimulate domestic investment and create significant real depreciation. On the basis of an estimate of the relative price elasticity of exports it can be assessed that additional real depreciation during 2001 would have been accompanied by only partial offsetting of the fall in exports.

Nonresidential investment declined by 4.3 percent in 2001, after rising in 2000. This contrasts with previous years, when the contraction of construction investment stemmed from the conclusion of the expansionary effect of the influx of immigrants, and the gradual adjustment of the supply of housing to the needs of the population. A large part of the decline in 2001 is explained by the *intifada*, as is evinced by the recovery that had emerged in building starts before the *intifada* erupted and came to an abrupt end when it began. As regards the decline in investment in machines and equipment, in contrast with the rise in recent years, a large part of this is related to the fall in the demand for manufacturing product—primarily as a result of the contraction of demand for high-tech products. Firms do not appear to have renewed investment due to uncertainty regarding the recovery of demand for exports. During the course of 2001, however, it transpired that the slump in the advanced economies was worsening, supplemented by another crisis of confidence following the events of September 11 in the US, and deteriorated further in the wake of the political-security uncertainty.

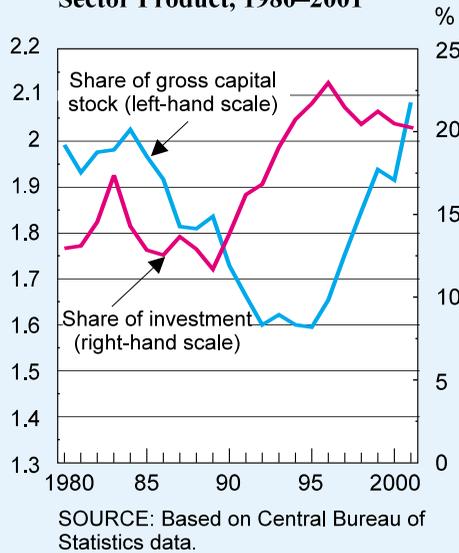
Over and above all this, investment was affected by the rise in the tax burden, which will apparently persist due to the ongoing increase in public current expenditure in the last two years.<sup>7</sup> In view of the increase in the public deficit and the deficit on the current account of the balance of payments, the Bank of Israel gradually reduced the nominal interest rate. While this reduction served to reduce real interest during the year and maintain the financial stability of the economy, *ex post* its average level did not significantly stimulate domestic investment, against the backdrop of the sharp recession and growing uncertainty.<sup>8</sup> The gradual reduction of the interest rate during the year, against the backdrop of the more rapid reduction in the US, widened the interest-rate differential and prevented the significant real depreciation which would have stimulated exports. It appears now that a more balanced mix, comprising a lower budget deficit and faster reduction of nominal interest, would have led to more significant depreciation during the year. Nevertheless, on the basis of the relative price elasticity of exports (the price of exports relative to the GDP deflator)<sup>9</sup> it can be assessed that in response to an additional average 3 percent real depreciation exports would have risen by 1.5 percent, i.e., only partly offsetting their decline in 2001. At the end of 2001 the Bank of Israel reduced the nominal interest rate by 2 percentage points, and this was accompanied by significant nominal depreciation. If this step is backed up by additional government decisions to slow the rate of expansion of public current expenditure, the

<sup>7</sup> The persistence of the rise in the tax burden in 2000 is analyzed in the paper by Adi Brender (2000), "Estimations of the Tax-Revenue Function," Bank of Israel Research Department, *Discussion Paper* no. 01.13 (Hebrew).

<sup>8</sup> Several papers prepared in Israel indicate that a fall/rise in real interest acts to increase/decrease investment, see Box 2.1 in Bank of Israel Annual Report, 1998, and the study by Hedva Ber, Asher Blass, and Oved Yosha (2001) "Monetary Transmission in an Open Economy; the Differential Impact on Exporting and Non-Exporting Firms," Bank of Israel Research Department, *Discussion Paper* no. 01.01. Most studies assume a linear connection between interest and investment, and do not directly incorporate a factor representing political-security uncertainty.

<sup>9</sup> See Box 6.1, Bank of Israel *Annual Report* 1999.

**Figure 1.2**  
Share of Gross Capital Stock  
and Investment in Business-  
Sector Product, 1980–2001



depreciation could be protracted and translated into real depreciation in 2002. If cuts are made in current expenditure, as was agreed when the 2002 budget was approved, alongside a further effort to attain the target deficit for that year, this will signal a change of direction in fiscal policy and the government's intention to return to a strategy of adhering to the declining deficit path. This would stimulate sustainable growth led by the business sector once demand abroad revives.

Private consumption rose by 3.3 percent in 2001, similar to the increase in national disposable income. The main reason for the expansion of private consumption was the marked rise in the real wage (Box 1.3), which served to increase the share of wage income in

In the last few days of 2001 the Bank of Israel reduced the nominal interest rate by 2 percentage points, alongside significant nominal depreciation. If this step is accompanied by a marked deceleration of the growth rate of public current expenditure the depreciation might be translated into real depreciation in 2002.

Private consumption rose by a similar rate to that of disposable income.

total disposable income (Figure 1.6), since the share of consumption in wage income is larger for wage-earners than for non-wage-earners.

### Box 1.3 Private Consumption in Israel, 2000–01

In order to analyze the reasons for the rise in private consumption, below we present an attempt to quantify the various factors explaining the change in per capita private consumption in 2000 and 2001 (see table). The analysis was undertaken within the framework of equations that examine the long-term relation between per capita consumption and per capita wage income. The method is similar to that used in previous studies of private consumption in Israel.<sup>1</sup> The estimation equations were examined using quarterly data for the period between January 1990 and March 2001.

In addition to examining the long-term relation, the dynamic changes in per capita consumption (excluding durables) were estimated as a function of the rate of change in per capita wage income. This relation is explained by assuming that consumers have a liquidity constraint, i.e., they cannot borrow substantial

<sup>1</sup> Yaacov Lavi (1999), "Do Changes in Current Income Help to Explain Changes in Consumption in Israel? An Empirical Test of the Permanent Income Hypothesis with Rational Expectations," *Bank of Israel Economic Review* 71.

amounts. Additional variables explaining the change in per capita income are the change in the stock of real net per capita assets, which includes the total stock of tangible and financial assets *less* the liabilities of the nonfinancial private sector, the change in the expected real short-term interest rate (current account and overdraft interest *less* inflation expectations derived from the capital market), and a dynamic error-correction factor, which ensures that the development of private consumption in the short run fits the long-term relation between it and the independent variables.

### Contribution to Change in Per Capita Consumption, 2000–2001

	Year	Regression coefficient	Rate of Change (%)	Contribution to explaining change in consumption
Change in real expected short-term interest	2000	-0.08	-0.54	0.04
	2001		-0.90	0.07
Change in real wage	2000	0.54	6.2	3.4
	2001		3.1	1.7
Change in stock of per capita wealth	2000	0.35	0.5	0.2
	2001		-0.5	-0.2
Other factors (error correction)	2000	-0.82	-0.6	0.5
	2001		0.7	-0.6
Total explained change	2000			4.1
	2001			1.0
Rise in total per capita consumption	2000			4.0
	2001			0.9

The results of the examination show that the liquidity constraint was well able to explain the change in per capita consumption in 2000, using the change in wage income, but for 2001 its explanatory power depended to a great extent on additional factors beyond the factors presented in the equation and captured by the error correction factor. These factors, which do not appear in the long-term relation but have a short-term effect, include the rise in unemployment. An additional examination did in fact show that the unemployment rate and the return on shares, reflecting the moderation of economic activity in 2001, had a significant effect on consumption. A possible explanation of the relation between the rise in the unemployment rate and the contraction of consumption beyond the fall in income of unemployed persons is that consumers were beset by uncertainty and hence cut consumption and increased precautionary savings.

Real public consumption (relative to the index of consumption prices) rose by 4.9 percent in 2001 as a result of the expansion of wage payments and increase in defense expenditure. An analysis of the rise in public consumption must distinguish between non-recurring expenditure, which is associated with a temporary economic situation, and ongoing expenditure, which restricts the flexibility of the budget. Defense expenditure is connected directly with the deterioration of the security situation, which caused an acceleration of its quantitative expansion, from 0.1 percent in 2000 to 2.1 percent in 2001.<sup>10</sup> The increase in defense expenditure is closely connected with the security situation, and hence its continuation in the coming years will depend on the intensity and persistence of security incidents. The real rise in wage expenditure in the public sector, however, could indicate a continued rise in public current expenditure, because of the government's lack of direct control over the dynamics of wage agreements, as has occurred in the past.

Real public consumption (relative to the GDP deflator) rose due to the increase in wage payments and defense expenditure.

In general, and in the context of the expansion of public expenditure in 2001, a distinction should be made between the short run (a year) and the long run (more than a year). In the short run a rise in public expenditure could prevent the exacerbation of the recession due to the direct increase in demand, of both the government and households—the latter in the wake of the rise in wages and transfer payments. All this is assuming that households do not offset this short-term rise by a parallel reduction of private consumption (no clear evidence has been found for this, as is indicated by the steeper rise in private consumption than in GDP) or investment (which did in fact fall in 2001, but was influenced primarily by the ongoing security uncertainty and the recession). In the longer run, however, the expansionary effect has been growing weaker: the offsetting by means of private consumption and investment will increase as long as the rise in current expenditure continues to be accompanied by a large and continuing public deficit,<sup>11</sup> which will give rise to a further increase in the tax burden. The public's assessment of the future need to impose taxes could be reinforced by the significant increase in the share of public current expenditure in GDP, the offsetting of which in the future, once the economy revives, is doubtful. Experience shows that at a time of prosperity governments do not tend to offset the accelerated expansion of public expenditure.<sup>12</sup> The reason for this is that some of the items in which expenditure was increased are of an ongoing nature, and the government is not in direct control of the dynamic determining its development. Two outstanding examples of this are transfer payments, which are growing in response to the continuous growth of income inequality, and public-sector wage payments, which cannot always be cut at a time of prosperity.<sup>13</sup>

The offsetting effect of increased public expenditure on private consumption and investment will intensify if the rise in current expenditure continues to be accompanied by a large and continuing public deficit, which will aggravate the tax burden.

<sup>10</sup> The growth rate of this item is affected by the 5.7 percent fall in purchases, which account for a third of defense consumption; this decline is surprising in view of the aggravation of the security situation in 2001.

<sup>11</sup> Over and beyond the budget deficit of 4.6 percent of GDP (excluding defense aid) in 2001, in comparison with the target of 1.75 percent of GDP, several upward revisions of the deficit target for 2002 were made, attended in the final event by decisions to impose new taxes.

<sup>12</sup> This is evident in most of the OECD countries; see the study by Zvi Hercowitz and Michel Strawczynski (2001), "Cyclical Ratcheting in Government Spending; Evidence from the OECD," Bank of Israel Research Department, *Discussion Paper* no. 01.09.

<sup>13</sup> The expansionary wage agreements of 1993 and 1994 were signed in a period of prosperity.

The ongoing nature of these processes is evinced by the dynamic of fiscal policy in 2000, when the tax burden increased by 2 percent of GDP in the wake of the upsurge in revenue,<sup>14</sup> alongside the acceleration of the real rate of expansion of public expenditure beyond the long-term average. The continued rise in public expenditure in 2001 made the increase in the tax burden permanent, and no adjustment (rather, a further increase) is expected in the framework of the revised 2002 budget.

TFP declined in 2001. For the first time in many years both the civilian labor force (including foreign workers) and labor input fell.

### The supply side

The supply-side indicators are presented in Table 1.4. Total factor productivity (TFP), which rallied temporarily in 2000, fell again, by 1.6 percent. For the first time in many years both the civilian labor force (including foreign workers) and labor input declined, the latter by a steep 2.5 percent.

**Table 1.4**  
**Supply of Business-Sector Product, 1986–2001**

	(volume rate of change, percent)							
	1986–89	1990–95	1996	1997	1998	1999	2000	2001
Gross capital stock	2.7	5.0	9.3	9.9	8.5	7.4	7.2	6.6
Labor input <sup>a</sup>	2.0	6.6	6.1	3.3	1.2	4.1	5.7	-3.5
Civilian labor force <i>plus</i> foreign workers <sup>b</sup>	2.2	5.4	6.6	5.2	5.1	3.7	3.9	0.0
Total factor productivity <sup>c</sup>	2.2	1.3	-1.7	-1.6	-0.6	-2.6	2.2	-1.6
Rate of return on net capital (%)	5.2	12.7	11.0	9.6	9.5	8.1	9.2	4.9
Roads capital stock per factor input unit <sup>d</sup>	0.9	-0.1	0.3	2.3	3.0	1.2	-1.1	5.9
Share of tax on non-wage income in GNP (%) <sup>e</sup>	31.8	26.3	27.1	29.8	29.1	28.0	32.7	33.6
Real yield on 10-year bonds (%) <sup>f</sup>	4.1	3.0	4.6	4.1	4.9	5.2	5.5	4.9
Average real ex post interest (%) <sup>g,h</sup>		6.0	7.5	9.1	14.9	11.3	10.1	8.6
Real ex post interest on unindexed credit <sup>h</sup> (%)		7.0	10.1	11.5	8.8	15.3	13.2	7.7
<i>of which</i> Real ex post overdraft interest <sup>h</sup> (%)		8.3	11.8	13.2	10.6	17.7	16.1	9.3
Real ex post interest on CPI-indexed credit <sup>h</sup> (%)		4.2	5.1	4.8	5.7	6.6	7.0	6.2
Real ex post interest on foreign-currency indexed credit <sup>h</sup> (%)		2.0	0.8	4.2	27.7	3.7	1.5	10.2
Unit labor cost	3.1	-1.1	3.1	-0.6	0.7	1.1	-0.5	5.5
	1962–1971		1972–1981		1982–1991		1992–2001	
Development of total factor productivity	4.3		1.8		1.4		-0.6	

<sup>a</sup> See note 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> Data as of 1987.

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

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

SOURCE: Based on Central Bureau of Statistics data.

<sup>14</sup> The increase in the tax burden since 2000 is affected by ongoing factors (income tax on wages) and temporary factors (advance payments on corporation taxes, which are expected to be offset by firms' losses). The expected rise in the statutory tax rates in 2002 indicate that the increase in the tax burden is permanent, however.

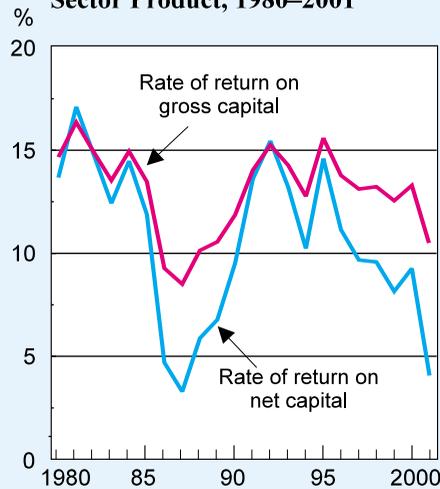
The return on capital also plummeted. This is explained in part by the sharp 5.5 percent increase in unit labor cost. This unprecedented decline appears to be due to several factors. First, since the beginning of the recession was unexpected and it was difficult to assess its length, the adaptation of wage agreements was very gradual, and began to have an effect only in the course of 2001, mainly in the second half of the year. The fact that there was no moderation of the rate at which wages rose during the year constituted significant nominal rigidity that prevented rapid adjustment of the business cycle from the current slump to profitable stability and hampered firms' operational decisions. Second, the price of business-sector product rose by only

0.9 percent in 2001, compared with a 1.4 percent increase in the index of consumption prices, attesting to a fall in demand for domestic product. Third, the decline in the number of persons employed by firms because of the slump was gradual, as is indicated by the development of the unemployment rate during the year, with a sharp fall in employment only in the second half. The fall in the profitability of production makes it very difficult for firms to recover, suggesting that emergence from the recession may be very slow. One of the main mechanisms for reversing the situation is real depreciation; a development of this kind appeared to be emerging at the end of 2001, and will have an effect only during 2002, provided the real economic conditions for its persistence are created.

A policy variable that did not serve to stimulate emergence from the recession and a return to sustainable growth was the share of taxes in non-wage income, which rose to a peak in the period following the Economic Stabilization Program (ESP) of 1985 (Table 1.4). This constitutes part of the increase in the tax burden, which adversely affects the growth of business-sector product, reducing the incentive to utilize factor inputs and harming estimated TFP. According to studies undertaken in the past, a rise in the tax burden has a significantly negative effect on GDP.<sup>15</sup> This indicator stresses the recent deterioration of the government's growth strategy, which should have been

<sup>15</sup> Several studies have estimated the quantitative effect of reducing the tax burden on the rise in GDP, both in Israel and in other countries. In Yaacov Lavi and Michel Strawczynski (2001), "The Effect of Policy Variables and Immigration on Business-Sector Product and its Components; Israel 1960–95," *Bank of Israel Economic Review*, 73, the authors found that an ongoing increase in tax as a share of GDP reduces business-sector product by 2 percent after several years. Their study shows that a significant part of the impact is in TFP, which also includes investment in human capital (education).

**Figure 1.3**  
Rate of Return on Gross Capital Stock and Investment in Business-Sector Product, 1980–2001



SOURCE: Based on Central Bureau of Statistics data.

The rate of return on capital also plunged. Part of the explanation lies in the sharp rise in unit labor costs. The adjustment of wage agreements to the recession was gradual.

One of the main endogenous mechanisms for reversing the economic situation is real depreciation.

A policy variable that did not operate to stimulate emergence from the recession and a return to sustainable growth was the share of taxation in non-wage income, which had risen to a peak level in the period following the stabilization program.

The failure to reduce inequality calls for changes in the long-term policy regarding transfer payments.

The real weighted interest on unindexed, CPI-indexed, and foreign-currency-indexed credit declined gradually in 2001 by 2 percentage points.

After a very long period in which the stock of roads infrastructure remained unchanged or rose slightly, in 2001 it rose by 6 percent per unit of production.

The average growth rate of TFP has been declining for the last three decades. This is in contrast with the recent trend shift in the advanced economies.

based on a path of sustainable growth led by the business sector. A necessary condition for easing the tax burden in the future is a parallel reduction in public expenditure relative to its level in the past two years. The main policy problem in this connection is in the area of transfer payments, which have risen considerably in the last few years as a result of the ongoing increase in income-inequality.<sup>16</sup> In view of the steep rise in inequality it will not be possible to slash this expenditure in the immediate future, and it would be advisable for the government to undertake a thorough review of its policy regarding transfer payments and its long-term implications. Long-term policy should aim at gradually leading some individuals away from the cycle of welfare benefits to the productive cycle (see Chapter 2).<sup>17</sup> One way is to establish a positive connection between benefits and labor-force participation.

Weighted real interest on unindexed, CPI-indexed, and foreign-currency-indexed credit declined gradually, by an average of 1.5 percentage points in 2001, but in the context of the slowdown in demand this decline was not enough to generate a significant change in firms' investment plans. The reduction of the nominal interest rate at the end of the year, on the basis of the assumption that world demand would rally, could significantly increase the chances of a recovery in investment, and the revival of the US economy is a development that supports this.

After a very long period of stagnation or minimal increase, the capital roads stock per unit of production rose by 6 percent in 2001. While this development serves to increase Israel's productive ability, it is not sufficient because the accumulated backlog is particularly great (see section on transport and communications). In recent years there appears to have been growing awareness of the need to back the rise in roads investment with an equivalent increase in investment in methods of mass transportation, such as trains, and this has grown substantially. Alternative methods of mass transportation, on the other hand, including in areas where congestion is particularly high, such as the light rail project in the Tel Aviv area, are expected to be inaugurated only at the end of the decade (see section on transport).

Ten-year period averages for the development of TFP are given at the bottom of Table 1.4. In the last three decades the average growth rate of TFP has been falling, and became negative in the last decade. This development runs counter to the trend in the advanced economies, as is indicated by the international comparison of TFP in the OECD countries. Starting in 1995, a process of improving TFP has been under way in those countries, in the wake of structural reforms that bolster competition,<sup>18</sup> and

<sup>16</sup> See the study by Yossi Zeira and Michel Strawczynski (2001), "Reducing the Size of the Government in Israel After 1985," in A. Ben-Bassat (ed.) *From Government Involvement to a Market Economy*, Am Oved Publishers (Hebrew).

<sup>17</sup> The difficulties associated with the current system of transfer payments and its implications for the labor supply are delineated in several studies which are due to appear in the forthcoming issue of the Bank of Israel *Economic Review*. Among them are those by Adi Brender, Osnat Peled, and Nitza (Kaliner) Katzir, Dimitri Romanov and Noam Zussman, and Michael Sarel.

<sup>18</sup> From IMF Working Paper 02/10, Salgado (2001). *The Impact of Structural Reforms on Productivity Growth in Industrial Countries*. According to that study, average TFP in the OECD countries fell from 3 percent in the 1960s to 1.4 percent in the 1970s, 1.1 percent in the 1980s, and 1.0 percent in the 1990s (up to 1998); in 1995–98 there appears to have been some recovery to an average level of 1.3 percent.

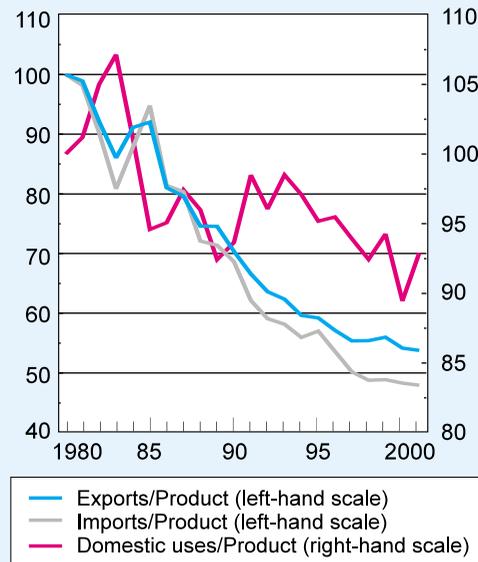
alongside significant changes in budget policy, above all a reduction in the deficit and taxation (see Chapter 3). The fall in TFP casts doubts on Israel's ability to return to a path of sustainable growth, and underlines the need to take steps that will stimulate productivity—lowering taxes, reducing the share of current expenditure in GDP, cutting the budget deficit, and increasing infrastructure investment.<sup>19</sup>

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

#### The real exchange rate

In the last few years the share of exports in business-sector product has risen and that of domestic uses has fallen, alongside a decline in the export/import price ratio relative to the GDP deflator (Figure 1.4). This decline, reflecting growth led by the traded industries, intensified in previous years by capital inflow from abroad, which augmented the supply of foreign currency and led to local-currency appreciation. Because of the reduction in capital inflow in 2001, there was a trend reversal in the exchange rate—a development that could have been expected to raise the export/GDP price ratio. As Figure 1.4 shows, the decline in this ratio moderated only slightly in 2001, as a result of the rise in the exchange rate relative to the GDP deflator and the fall in prices abroad. Towards the end of the year, after the interest rate was reduced by two percentage points, there was a possibility of real depreciation in the short run, which could have influenced the export/GDP price ratio in 2002.<sup>20</sup> It seems, however, that the persistence of real depreciation depends to a great extent on creating the conditions that support it, foremost among them a slowing of the rate of expansion of public current expenditure.

**Figure 1.4**  
Indices of Prices of Imports and Exports and of Domestic Uses Relative to Implicit Price Index of Business-Sector Product, 1980–2001 (1980 = 100)



The contraction of capital inflow in 2001 caused a trend reversal in the exchange rate, which could have been expected to cause the export/GDP price ratio to rise. However, the decline in this ratio was curbed only slightly this year, reflecting the fall in export prices, which was moderated by the local-currency depreciation relative to the GDP deflator.

SOURCE: Based on Central Bureau of Statistics data.

<sup>19</sup> See Zvi Hercowitz, Yaacov Lavi, and Rafi Melnick (1999), “The Impact of Macroeconomic Factors on Productivity in Israel, 1960–96,” *Bank of Israel Economic Review* 72.

<sup>20</sup> Empirical support for the view that reducing the interest rate generates real depreciation is provided by Y. Djivire and S. Ribon (2000), “Monetary Policy, the Output Gap, and Inflation; A Closer Look at the Transmission Mechanism,” Bank of Israel Research Department, *Discussion Paper* no. 00.09 (Hebrew).

**Table 1.5**  
**The Real Exchange Rate and the Traded Sector, 1986–2001**

	(rate of change, percent)							
	1986–89	1990–95	1996	1997	1998	1999	2000	2001
Exchange rate (export terms) <sup>a</sup>	-5.1	-3.8	-3.5	-3.1	0.0	1.1	-3.3	-1.2
Exchange rate (import terms) <sup>b</sup>	-6.8	-3.7	-6.0	-6.4	-2.8	0.2	-1.2	-1.5
Nominal exchange rate								
against currency basket	16.9	9.6	3.5	4.3	9.6	8.3	-4.7	1.4
Traded product of business sector <sup>c</sup>	2.0	5.7	4.3	4.3	5.1	2.2	9.2	-7.5
Traded demand in business sector <sup>c</sup>	4.1	8.8	6.5	3.7	4.3	9.2	12.4	-2.0
Terms of trade <sup>d</sup>	1.8	-0.1	2.6	3.5	3.0	0.9	-2.2	0.3
World trade, volume growth	6.4	6.1	6.7	10.3	4.1	5.3	12.4	2.7

<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> See Table 1.A.1.8.

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

SOURCE: Based on Central Bureau of Statistics data.

An analysis of the current economic situation in Israel and elsewhere shows that real depreciation is one of the most significant endogenous mechanisms for contending with a recession, particularly in view of the ongoing nature of the grave political-security situation, which hamper the recovery of investment and consumption. Real depreciation would make exports more worthwhile and imports less so, while creating the conditions for improving the balance of payments. Improving the ability of Israeli exports to compete in international markets, and especially in the high-tech industry, would be of signal importance, once world trade began to rally. World trade, which grew by only a meager 2.7 percent in 2001, after expanding by 12.4 percent in 2000 (Table 1.5), is expected to recover in 2002.

There was no significant change in the terms of trade in 2001; this also indicates that the demand shocks affecting Israel this year were the main cause of the decline in exports.

### **Saving, investment, and the current account**

The national saving rate as a share of total revenues fell to 18 percent in 2001, compared with 19.3 in 2000 (Table 1.A.1.17). The decline in national saving reflects the fall in public saving, explained largely by the sharp drop in tax receipts due to the unexpected decline in economic activity and rise in government expenditure. The latter was the outcome of the rise in public-sector wage payments (rise in wages and labor input).

Gross domestic investment was 19.5 percent of total revenue in 2001, compared with 20.4 percent in 2000. The decline represents a 3.9 percent reduction in gross investment, further to the 3.5 percent decline in 2000 and the 9.5 percent rise in 1999.

The level of investment remained high, and gross business-sector capital stock at the beginning of 2002 was up by 5.1 percent over the beginning of 2001. Although this rate is lower than it was in 2000 (6.6 percent), it is higher than the growth rate of actual

There was no significant change in the terms of trade in 2001.

The fall in the national saving rate reflects mainly the decline in public saving.

Gross domestic investment declined as a share of total revenue.

The level of investment remained high, and gross business-sector capital stock was up by 5.1 percent at the beginning of 2002 over the beginning of 2001.

business-sector product (which fell by 1.9 percent), and close to the growth rate of potential GDP.

Fixed investment declined markedly (by 6.6 percent) in 2001 and, in contrast with 2000, almost all its components contracted; residential investment plummeted by 12.8 percent, continuing the ongoing contraction since 1998. The decline reflects the fall in residential demand due to the deterioration in the security situation, in addition to other factors, which acted in previous years to moderate residential demand, including the erosion of mortgages for eligible persons and the relatively high interest rate on non-directed mortgages. Alongside demand factors, which provide the main explanation for the decline in construction investment, supply factors also played a role. These included the fall in the supply of Palestinian workers at the end of 2000 and construction companies' financing difficulties, as is also indicated by firms' reports during the year to the Bank of Israel's Companies Survey. Nonresidential investment (excluding ships and planes) also contracted, by 7 percent, reflecting a drop in investment in structures (6.5 percent) and transport vehicles (8.9 percent), and a sharp fall in investment in equipment (8.6 percent). In addition, there was a slight rise (3 percent) in investment in intangibles (software, R&D), which in recent years had been characterized by accelerated investment. Inventory investment soared in 2001, expressed in an increase in inventory as a share of business-sector product (to 3.1 percent). This increase characterized the first and unexpectedly severe stage of the current recession, in 2000:IV.

Fixed investment plummeted in 2001 and in contrast with 2000 all its components fell.

Investment in inventory soared in 2001, characterizing the initial stage—unexpected in its intensity—of the current recession.

**Table 1.6**  
**Investment in Inventory, 1998–2001**

	(percent of business-sector product, current prices)			
	1998	1999	2000	2001
Total investment in inventory	−0.03	1.83	1.74	3.10
Fuel and diamonds	−0.18	−0.53	−0.26	−0.12
Total investment excluding fuel and diamonds	0.15	2.36	2.00	3.22
<i>of which</i> Manufacturing	0.30	0.52	1.07	−0.48
Other	−0.90	0.10	−2.00	0.02
Start-ups	0.75	1.72	2.93	3.68

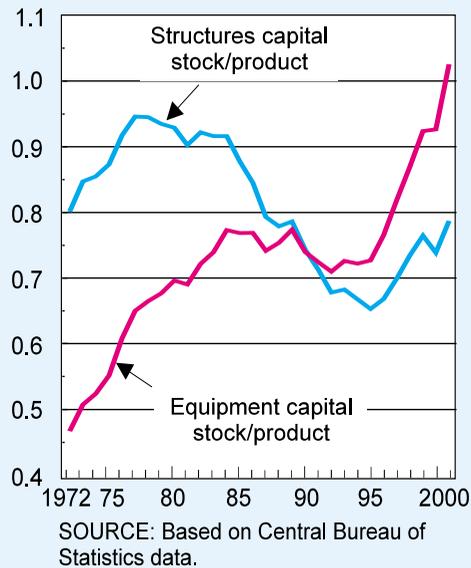
SOURCE: Based on Central Bureau of Statistics data.

Most of the increase in inventory investment in goods and raw materials was in the commercial industries (a rise of 2 percent of GDP), as well as in the inventories of start-ups. Rates of inventory investment in manufacturing (0.5 percent of GDP) fell during 2001, after soaring in 2000:IV (Table 1.6). The development of inventory investment is consistent with the hypothesis that in 2001 manufacturing firms began to reduce the inventories they had accumulated since the beginning of the recession, at the end of 2000, in view of its continuation and exacerbation.

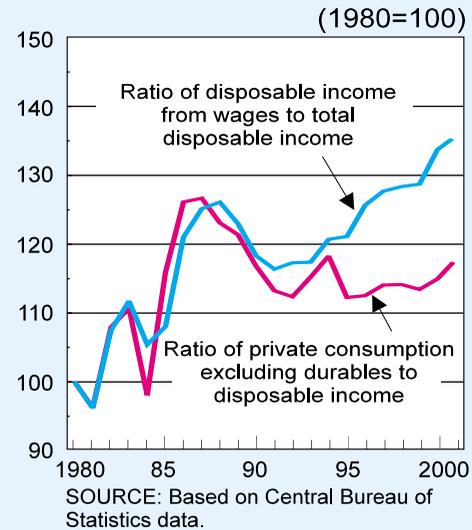
The main factors operating to reduce nonresidential investment, including by the business sector (which fell by 4.6 in 2001), were the increased security and political uncertainty in the wake of the acts of violence in Israel, the global slowdown, which served to defer investment, and the sharp drop in share prices, reflecting investors'

The main reasons for the contraction of non-residential investment were the increased security and political uncertainty, the global recession, and the sharp drop in share prices.

**Figure 1.5**  
Composition of Ratio of Gross Capital Stock to Business-Sector Product, 1972–2001



**Figure 1.6**  
Share of Private Consumption (Excluding Durables) in Total Disposable Income, and Share of Disposable Income from Wages in Total Disposable Income, 1980–2001



expectations that the future flow of receipts from investment projects would shrink.<sup>21</sup> The decline in investment and profitability is clearly reflected in the sharp fall in the return on capital (Table 1.A.1.10), which has evinced a declining trend since 1996. This contraction is explained both by specific factors operating in 2001, such as the sharp wage-hike, and by long-term factors, such as tighter monetary policy and the conclusion of the process of utilizing opportunities created in the wake of the influx of immigrants (which raised the return on capital in the first half of the 1990s).

When the components of the gross capital stock/business-sector product ratio in 2001 are analyzed more closely, we see that the structures capital stock/business-sector product ratio is relatively stable, and similar to that prevailing before the influx of immigrants, while the equipment and machines capital stock/business-sector product ratio is considerably higher than it was then. Note that the rise in the equipment capital stock/business-sector product ratio should be viewed in the context of its long-term trend, according to which this has been rising since the early 1970s, thanks to technological advances (Figure 1.5).

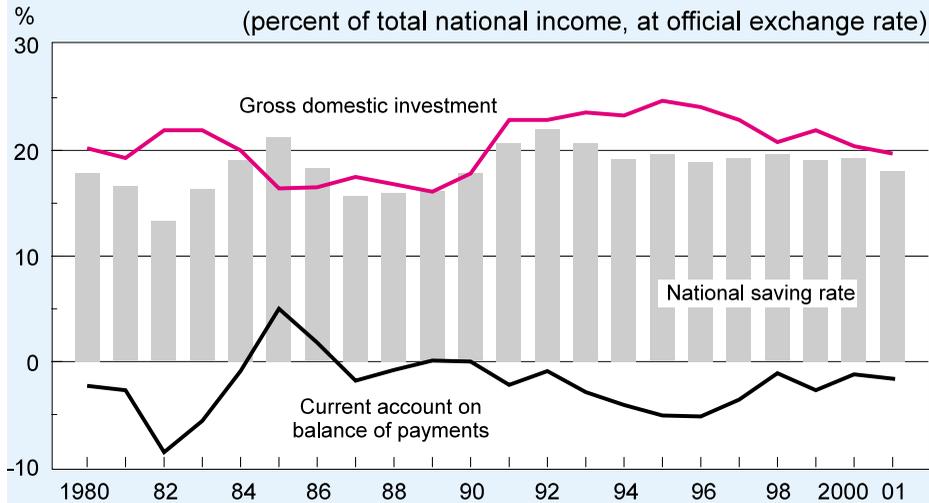
Investment in the roads infrastructure rose markedly in 2001 (17.1 percent)<sup>22</sup> for the second year in succession (see Table 1.A.1.19 and the section on transport and communications).

<sup>21</sup> The accepted index for estimating a firm's value is based on an attempt to assess the future value of projects it will undertake, known as Tobin's Q. There is a close connection between this index and the development of the stock market, see A. Blass and O. Yosha (2001), "The Reform of Israel's Financial System and the Capital Flows of Publicly Traded Manufacturing Firms," in A. Ben-Bassat (ed.) *From Government Involvement to a Market Economy* (Am Oved publishers) (Hebrew).

The structures capital stock/business-sector product ratio was similar to its level before the influx of immigrants, while the equipment and machinery capital stock/business-sector product ratio was markedly higher.

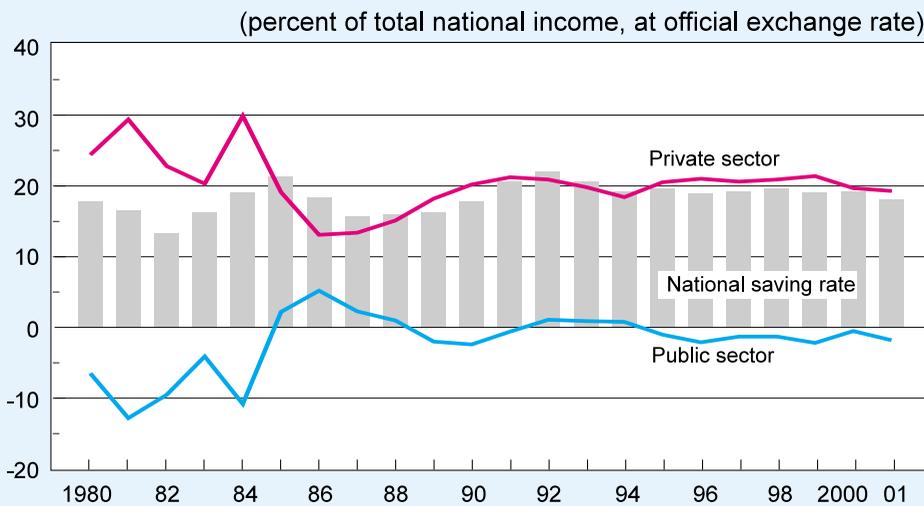
There was a notable increase in investment in the roads infrastructure.

**Figure 1.7**  
**National Saving Rate, Gross Domestic Investment, and Current Account**  
**on Balance of Payments, 1980–2001**



SOURCE: Based on Central Bureau of Statistics data.

**Figure 1.8**  
**Gross National Saving Rate, by Sector, 1980–2001**



SOURCE: Based on Central Bureau of Statistics data.

The national saving rate declined more steeply than the investment rate. The net current account deficit consequently grew, to stand at 1.5 percent in 2001, after 1.2 percent in 2000 (not including capital transfers). Note that in most of the previous years, in contrast with 2001, the rise in the current account deficit was accompanied by the expansion of investment, which reduced the risk of an increase in the deficit, because the maturation of investment accelerates future GDP growth.

The fall in the national saving rate was steeper than that in the investment rate, so that the net current account deficit rose.