Chapter 2
GDP, Productivity, and the Principal Industries

- The trends of rapid growth and falling unemployment rates that typified the Israeli economy in 2004 and 2005 continued in 2006.
- The economy's ambient conditions improved and the macroeconomic policy allowed them to find full expression.
- The hostilities in the north dealt economic activity only a temporary and relatively minor blow—for reasons including the healthy state of the economy before the hostilities started.
- As growth persists, the contribution of the cyclical element has contracted, and that of long-term factors, especially improvements in the production process, has increased. Total factor productivity has improved perceptibly since the beginning of the decade after stagnating in the 1990s, despite its decline in the years of recession.
- The combination of a higher national savings rate and a lower gross domestic investment rate brought about a large and aberrant surplus on balance-of-payments current account.
- The growth rate of manufacturing output accelerated, mainly due to an upturn in exports. In the past three years, manufacturing industries' exports have been powered by high-tech and innovative products, which are human-capital intensive.
- Construction activity edged upward but housing starts declined due to an increase in the prices of raw material, an upturn in construction workers' wages, and continued sluggish demand in most parts of the country.
- GDP per worker in Israel is on a par with the OECD average but falls short of the US level. Israel's per capita GDP is under the OECD average, mainly due to its relatively low participation rate in the labor force.

1. MAIN DEVELOPMENTS

Israel's rapid economic growth evident in the last few years continued in 2006.

The rapid growth trend that typified the Israeli economy in 2004 and 2005 continued in 2006. Gross Domestic Product advanced by 5.1 percent, powered by rapid 6.4 percent growth of business sector product. The strong growth rates were attained even though the hostilities in the north caused economic activity to dip in the third quarter. The rapid growth was also reflected in the labor market. Employment climbed by 3.1 percent and the unemployment rate at year's end fell to 7.7 percent, the lowest rate since the beginning of the decade. The strong GDP growth, tracing largely to a 3.5 percent increase in total factor productivity, was accompanied by a 2.3 percent upturn

in GDP prices, a small increase in real wage, a 1.4 percent decline in unit labor cost, a stable real exchange rate, and the creation of a small surplus in the trade balance. The combination of an increase in the national savings rate and a decline in the gross domestic investment rate created a large and aberrant surplus on balance-of-payments current account even though the external terms of trade continued to worsen.

Table 2.1
Indicators of Economic Activity, 2001–06

(rate of change, percent)

	2001	2002	2003	2004	2005	2006
Per capita GDP in Israel	-2.9	-2.9	-0.3	3.0	3.4	3.2
Per capita GDP in the advanced countries[a]	0.6	0.9	1.3	2.6	2.0	2.5
GDP[b]	-0.6	-0.9	1.5	4.8	5.2	5.1
Business-sector product	-1.9	-2.8	2.2	6.8	6.7	6.4
Index of manufacturing output	-5.0	-1.9	-0.3	6.9	3.6	10.5
Unemployment rate[c]	9.3	10.3	10.7	10.4	9.0	8.4

[a] The US, Japan, the euro zone countries, the UK, and several other countries.
[b] From 1995, in accordance with the SNA 1993 definitions, GDP includes net import taxes and do not include export subsidies.
[c] Actual levels, not rates of change.
SOURCE: Based on Central Bureau of Statistics data.

The high growth rate is the outcome of increases in both supply and demand.

The strong growth trend is the result of increases in both demand and supply. The main underlying factors are favorable changes in the ambient conditions under which the Israeli economy operates. Macroeconomic policy had a salutary effect on stability and confidence in the economy, allowing these conditions to express themselves fully. The acceleration of global economic activity—a matter to which the Israeli economy, as a small and open one, is especially sensitive—resulted in an increase in demand in Israel. At the same time, the Israeli-Palestinian conflict settled at a level of intensity that does not cause significant harm to economic activity. The supply side expanded due to small upturns in labor input and capital stock and the aforementioned improvement in total factor productivity; hence, factor inputs were better utilized.

In the last few years Israel's economy has moved steadily from cyclical to long-term growth.

In the rapid growth process that the economy has enjoyed in the past three years, the portion that traces to cyclical factors, which powered the process that its onset, has contracted, whereas the portion tracing to long-term factors, especially improvements in the production process, has increased. The slowing of the growth rate of total factor productivity during the recovery attests to the decline of the cyclical component. The 1.5 percent average annual growth rate of total factor productivity since 1999—a metric that is largely net of cyclical effects—gives evidence of a long-term expansion of GDP supply, at a rate similar to that in the developed economies. Further evidence of the transition from cyclical growth to long-term growth is the recovery of investment in principal industries, which bottomed out in 2004 and rose moderately in 2005, climbed by a healthy 8.1 percent in 2006.

The growth in activity was accompanied by a gentle 2.3 percent increase in GDP prices,[1] a stable real exchange rate, and the formation of a surplus on goods and services account. These developments indicate that the expansion of GDP supply surpassed the growth that cyclical factors would create. The expansion derived from an increase in demand and was abetted technological changes and production efficiencies.

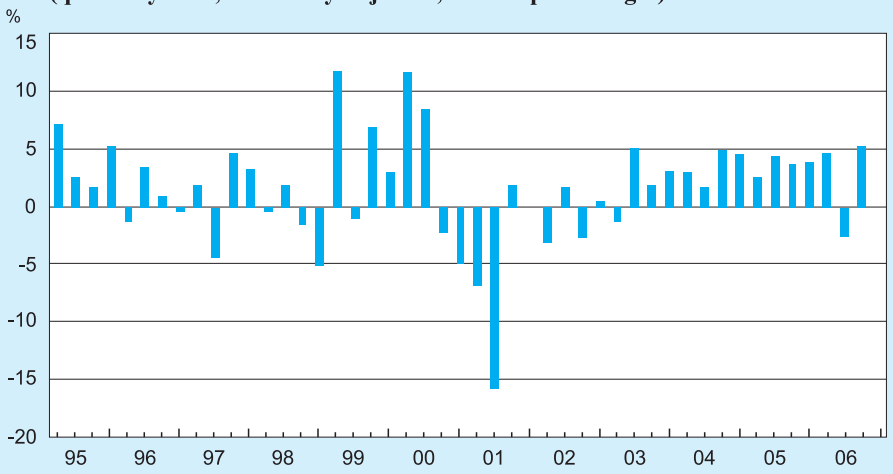
Growth was led by the business sector, particularly exports.

Because the growth was powered by the business sector and especially by exports (excluding diamonds), which increased at a brisk 9.3 percent pace, it is sustainable. Private consumption increased by 4.8 percent, slightly slower than GDP growth, and investment in principal industries advanced significantly for the first time since the recovery began. The lag in the recovery of investment relative to other uses evidently traces to overinvestment during the recession years that caused capital stock to continue to grow rapidly at that time. The increase in investments was supported by a steady upturn in net return on capital, which came to a relatively high 9.8 percent in 2006, far above the expected real interest rates.

For the first time since the recovery started, investment in the principal industries rose significantly.

Examination of the trend in economic activity by industries shows vigorous growth in manufacturing—especially in high-tech industries—and in service industries that are intensive in technological knowledge, such as computer services and R&D. In these senses, Israel's performance corresponds to the burgeoning of these industries around the world. The other industries showed relatively balanced growth rates except for construction, which continued to stagnate. Construction activity advanced by a paltry 1.7 percent despite considerable improvement in per-capita income, but appeared to embark on a recovery at year's end.

Figure 2.1
Change in Per Capita GDP, 1995–2006
(quarterly data, seasonally adjusted, annual percentages)



SOURCE: Based on Central Bureau of Statistics data.

[1] 2006 average compared with 2005 average.

The hostilities in the north had only a small and temporary effect, viewed over the year as a whole.

The growth trend was uneven during the year. Business-sector product advanced at a very rapid 8.0 percent pace in the first half but slumped to 2.4 percent in the second half due to the decline in economic activity during the war in the north. In the aftermath of the fighting, the level of activity fell in the third quarter (Figure 2.1) and business-sector product slipped by 4.1 percent relative to the previous quarter. Thus, a period of twelve consecutive quarters of rapidly expanding economic activity came to an end. The rapid recovery in the fourth quarter, however, proved that the effect of the hostilities was temporary. The loss of GDP on account of the war is estimated at 0.5 percent; the blow to business-sector product is estimated at 0.7 percent (Box 2.2).

The small effect of the war was also due to the economy's favorable situation when it broke out.

Another reason for the relatively small impact of the hostilities in the north on economic activity was the relatively auspicious state of the economy when the warfare began: surging activity, large surpluses in the current account and in the government account, and a macroeconomic policy that had been meeting its targets for several years. This policy enhanced the public's confidence in the economy, as reflected in the stability of the capital and currency markets during the war. This stability was decisive in minimizing the direct cost of the hostilities resulting from the direct blow to production occasioned by mass exodus from the north and large call-ups of army reserves. It also played a crucial role in the rapid recovery of the economy afterwards by preventing the initial shock from rippling into indirect damage. Fixed capital formation, for example—a parameter that is very sensitive to changes in expectations and perception of risk—did not react to the hostilities at all and actually speeded up perceptibly in the third quarter.

Additional factors that helped to minimize the shock were the structure of Israel's debt and liabilities and the fact that the economy has a net asset surplus abroad (negative external debt). In recent years, there has been a process of replacing domestic assets, foremost shares, with foreign assets. Thus, the economy's income is partly insured against domestic shocks.[2] Furthermore, sharing the special risks of the Israeli economy with foreign investors has a moderating effect on their response when a crisis erupts.

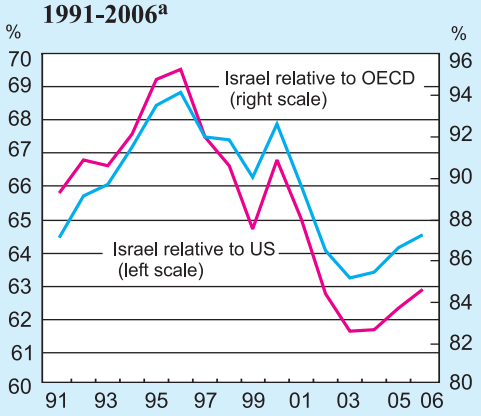
The output gap narrowed considerably during the year.

The output gap: three years of strong growth are gradually closing the output gap that opened during the recession at the beginning of the decade. It is true that by using methods based on a production function one finds that even at the end of 2006 there was a gap between the actual and the potential levels of GDP.[3] An estimate based on separating permanent shocks from transitory ones (Figure 2.3) corroborates this finding. However, the increase in return on capital, the relatively high growth rate of investment in principal industries, the decrease in the capital/labor ratio in 2006, the real appreciation that occurred during this time, and the small decline in unit labor cost all indicate that the process of putting the production capacity of existing factor

[2] Assets abroad create an income flow that is independent of domestic elements such as changes in the security situation. Nonetheless, most of the national income consists of the return to labor, which cannot be insured against domestic shocks.

[3] The methods that the Bank of Israel uses to calculate the output gap are described in the 2004 Annual Report, Research Department section, Box 1. These methods indicate that business-sector output gap at the end of 2006 was still significant.

Figure 2.2
Per Capita GDP in Israel Relative To OECD Countries, and the US, 1991-2006[a]



[a] Per capita GDP adjusted for purchasing power parity in 2005.
SOURCE: Based on Central Bureau of Statistics data.

inputs, especially capital stock, to full use is approaching its end. As for the labor force, the behavior of wages and unemployment rates by level of schooling indicates that the economy is verging on full utilization of workers with high levels of education. The increase in the employment of workers with low levels of education has not, thus far, generated upward pressure on the cost of employing them, evidently because the supply of such workers is growing in tandem. The high unemployment rate among them shows that the economy is still far from fully utilizing this factor input, and this can also be seen from the development of their wages (see Chapter 5, The Labor Market). However, in view of the relatively low product/worker ratio of labor with low levels of schooling, the output gap that originates in these workers' low employment rate is not wide, and the current unemployment rate resembles that non-accelerating inflation rate of unemployment (NAIRU, Figure 2.3). Thus, any further decline in the unemployment rate is expected to be slower.

The gap in per capita GDP vis-à-vis the industrialized countries, that grew in the recession has not contracted yet.

In per-capita terms Israel's GDP relative to the US and the OECD countries has fallen by 5 percentage points since the beginning of the decade (Figure 2.2). This may be due to structural problems that have prevented the Israeli economy from maintaining its relative position. This possibility is supported by comparisons over longer periods of time, showing that Israel's growth rates in total factor productivity and, to a lesser extent, in labor productivity, are lower than in the developed countries.[4]

Total factor productivity has risen markedly since 2000, having stood still during the previous decade.

Trends in total factor productivity (TFP): the average annual rate of increase in total factor productivity was 1.6 percent in the 1970s, 2.5 percent in the 1980s, and zero in the 1990s. From 2000 to 2006, total factor productivity advanced at an average annual pace of 0.9 percent. Although this is faster than in the 1990s, it is lower than in the developed countries at large. Half of the increase of total factor productivity since the beginning of this decade traces to an improvement in the quality of the labor force (Box 2.1).

One of the main reasons for the improvement in productivity is the higher quality of the labor force.

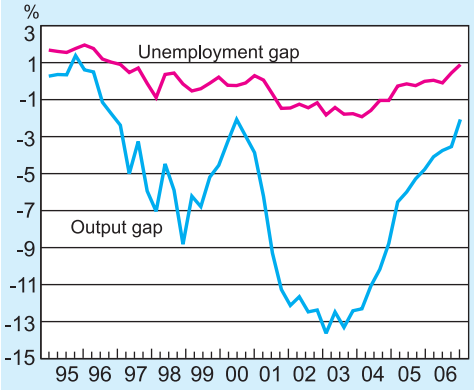
The standstill in total factor productivity in the 1990s is difficult to explain. It coincides with the elimination of almost all barriers to international trade, and with increasing production-technology flows, and foreign investment. Furthermore, the technological revolutions that took place during that decade, especially in computers

[4] See 2005 *Annual Report*, Box 2.3.

and communications, led to strong increases in total factor productivity in developed countries.

One of the reasons for the standstill in Israel's total factor productivity, and for the gap between Israel and the developed countries in the development of this indicator, was scanty improvement in labor-force quality. Changes in labor-force quality are key factors in long-term progress in total factor productivity; they explained 40 percent of the increase in this parameter between 1987 and 2005.

Figure 2.3
Unemployment Gap[a] and Output Gap,[b] 1995: Q1- 2006:Q4 (percent)



[a] The difference between the non-accelerating inflation rate of unemployment and the actual unemployment rate.
[b] The gap between actual GDP and potential GDP.
SOURCE: For unemployment - Friedman A., Suchoy T. (2004), the NAIRU in Israel, *Israel Economic Review 2, (2).*; For output - Menashe Y. and Yachin Y. (2004), Mind the Gap, *Israel Economic Review 2, (2).*

An international comparison shows that labor-force quality is not improving as quickly in Israel as in the developed countries at large. The main reason for this is the absorption of the 1990s immigrants in the labor market. Even though the immigrants' levels of schooling surpassed those of the native population, their vocational skills were not fully transferable to the Israeli economy, especially shortly after their arrival; this was reflected in the immigrants' relatively low wages. Due to the way the immigrants were absorbed, labor-force quality did not increase in the 1990s even though levels of schooling did. Over time, however, the immigrants adjusted their skills to the labor market, at least partly, so that some of the adverse effect on productivity was temporary.

Per capita GDP in Israel is lower than the average in the OECD.

The Israeli economy—a snapshot. Gross Domestic Product in 2006 climbed to NIS 626 billion, per-capita GDP to NIS 88,800, and per capita disposable income from all sources to NIS 55,800 (current prices).[5] An international comparison of per-capita GDP levels, adjusted for purchasing-power-parity differences among countries,[6] rated Israel's per capita product at 88 percent of the OECD average and 63 percent of the US level (Figure 2.2). The main reason for the disparity is Israel's lower rate of employment, tracing to a low participation rate and a relatively high unemployment rate.[7] Another reason is Israel's peculiar age composition—a relatively

[5] Disposable income equals national income minus taxes, and minus income from public sector property plus transfer and interest payments by the government to individuals, plus unilateral transfers from abroad to the private sector.

[6] The calculations are based on OECD purchasing-powered indices, which the Israel Central Bureau of Statistics also calculates, and relies on the 2005 figure that sets the adjusted NIS/$ exchange rate at NIS 3.23.

[7] Israel's unemployment rate, 8.4 percent, surpasses the 5.8 percent OECD average and is much higher than the US rate of 4.4 percent.

small proportion of working-age population, due to a high birthrate by the standards of developed countries.

A comparison of the GDP/worker ratio, which provides a better measure of the technological progress and competitiveness of Israeli firms, shows that GDP per Israeli worker is on a par with the OECD average and comes to 80 percent of the US level.[8]

GDP per worker in Israel is on a par with the OECD average.

These comparisons show that Israel ranks high among the developed countries in production efficiency. This finding is supported by the sectoral composition of the economy and its uses. In certain respects, such as the share of R&D investment and information technologies in business-sector product, Israel is the world's leader.[9] In terms of broader indicators of development, too, such as life expectancy and school enrollment rates, Israel ranks well among the developed countries.

Several development indices place Israel high among the industrialized countries.

Israel's standard of living, however, rates poorly among the developed countries. To narrow the gap, a significant increase of the employment rate is needed. Such a process also entails an increase in investment in order to maintain the capital/labor ratio. Furthermore, production processes in non-tradable industries, in which efficiency is relatively low—such as some service industries and construction—should be streamlined and industrialized. In this context, we should note that the government's de facto policy towards foreign workers, as evidenced by the rise in their number, inhibits this process.

a. The global economy and its effect on the Israeli economy

The external conditions in which the economy operated improved, contributing to continued growth.

The ambient conditions under which the Israeli economy operates underwent several contrasting developments in 2006. Overall, however, the externalities improved and thus helped the economy to grow. The global economic indicators point to an upturn in activity in 2006 relative to 2005. The average per-capita growth rate in the developed countries accelerated to 3.1 percent compared with 2.6 percent in 2005, the growth rate of global trade climbed to 8.9 percent from 7.4 percent in 2005, and, in particular, the growth rate of the developed countries' imports—a key variable in demand for exports from Israel—rose to 6.2 percent, from 5.8 percent in 2005. High-tech industries, to which exports from Israel are linked with particular intensity, also participated in the global prosperity and strong growth. The global economic surge was accompanied by thriving capital markets and relatively low interest rates; both developments had a favorable direct and indirect effect on Israeli firms' capital-raising costs.

[8] However, since the Israeli employee works more hours on average—36.2 hours per week as against 33.9 in the US—the difference between Israel and the US is greater when measured in product per hour.

[9] See Central Bureau of Statistics, *Statistical Abstract of Israel*, 2006, Tables 28.14, 28.15.

The upturn in global economic activity was accompanied by the third consecutive year of steep increases in the prices of oil and nonfuel commodities.[10] This had a negative effect on the income of economies that are net importers of these commodities, including Israel, and therefore also affected their levels of activity, chiefly by dampening private-consumption demand. Nevertheless, the blow to Israel's external terms of trade was relatively mild. Furthermore, the direct impact of this factor on the production side was negligible because the Israeli economy is not abundant in heavy or energy-intensive industries; accordingly, it is relatively well positioned to withstand it. The increase in the prices of fuel and nonfuel commodities caused the economy's external terms of trade to worsen by only 1.5 percent, resulting in a loss of national income, in purchasing power terms, of 0.6 percent of GDP.

b. The security situation and its implications

During the month of the fighting in the north, Israel's economy exhibited a high level of stability.

Another reason for the growth was the decline in terror attacks since the second half of 2003. This improvement was also one of the factors behind the acceleration of economic activity in the second half of 2006. The blow to economic activity occasioned by the hostilities in the north during the third quarter focused on northern Israel and inbound tourism. However, some economic activity in the north was rerouted to the central and southern parts of the country, and the rapid recovery of activity since the end of the war shows that the effects of the hostilities were temporary and had no long-term implications except for inbound tourism, which had not totally recovered by year's end.

The economy demonstrated strong stability during the month of hostilities in the north. The risk attributed to the economy seemed totally absent during the warfare, as indicated by the lack of response from the capital markets, the foreign-currency market, and the country rating. The risk premium even declined at year's end.

Just the same, Israel's fundamental security risk remains high, and will not diminish significantly until the underlying security conditions take a turn for the better.

c. Economic policy and its effect on activity

Israel's macroeconomic policy in the last few years supports growth.

Israel has had a pro-growth macroeconomic policy in recent years. Its efforts to attain its targets have had a salutary effect on economic stability and confidence and allowed the favorable externalities that affected it to find full expression. This policy, something akin to a long-term investment, partly protects the economy against adverse shocks. Its importance was evident during the hostilities in the north: although the fighting had a direct adverse effect on economic activity, the economy displayed impressive stability during the difficult days and rebounded quickly once the warfare ended.

[10] 29.7 percent in fuel prices and 22.1 percent in nonfuel commodities, annual averages. Source: WEO, September 2006.

In fiscal policy, there was a small rise in expenditure on public consumption.

Fiscal policy in 2006 was noted for a small increase in domestic public-consumption expenditure relative to GDP, although the increase was larger than in the previous two years. The deficit target was met even though the tax-cut plan lowered direct and indirect tax rates and the minimum wage was raised in nominal terms. Per-capita transfer payments were unchanged after three years of steady decline. The tax-cut program, fully performed in 2006, is part of a long-term plan that has lowered tax rates in the past three years. This policy, first implemented in 2004,[11] supported a steady decline in unit labor cost and thereby abetted the economic recovery as well as investment in principal industries. (See Box 6.1 in this Report and Box 2.1 in the 2005 Report.) Notably, lower tax rates, especially in direct taxation, have an upward effect on factor inputs—capital and labor—and thus, in the short term, on GDP. They also boost total factor productivity.[12] The increase in the share of nonwage income (Table 2.5) originated in the upturn in economic activity and caused no harm to the expansion trend.

Monetary policy did not create forces to slow down growth.

Monetary policy was neutral relative to the level of activity, on annual average, i.e., it did not generate forces that would impede growth. Real interest rates rose, but this was foreseen due to the narrowing of the output gap. The real expected short-term interest rate was lower than the long-term rate, the growth rate of nominal product surpassed that of potential product plus the inflation target, and the expected real interest rate was lower than net return on capital, in other words, lower than its equilibrium rate. Although the annual inflation target was not attained, average private-consumption prices climbed by 2.1 percent, in keeping with expectations and the inflation environment that was derived from the Bank of Israel's target.

Box 2.1
Changes in labor quality in Israel and their contribution to total factor productivity[1]

Rising labor quality is a key factor in the process of sustainable growth in a developed economy. Furthermore, its importance is growing over time due to technological improvements that create demand for employees with high levels of human capital. In growth accounting, it is customary to calculate the change in the labor input, labor productivity, and total factor productivity (TFP)

[1] These are the initial results of a study in progress. The study will also analyze labor productivity and Total Factor Productivity, adjusted to labor quality and with the employment of non-Israeli workers taken into account. In the United States, labor quality is sometimes called labor composition.

[11] Value Added Tax was lowered in March 2004 and direct income taxes were reduced at the beginning of 2005.

[12] Y. Lavi and M. Strawczynski (2001), "The Effect of Policy Variables and Immigration on Business-Sector Product and Its Components—Factor Inputs and Productivity—in Israel, 1960–95," *Bank of Israel Review 73* (Hebrew).

without bearing labor quality in mind. This is a reasonable premise in the short term; in the long-term, however, the change in labor quality is substantial.

The conventional calculus of total labor input assumes that all workers are identical and obtains the total by simply adding all workers' labor hours. In a quality-adjusted calculation, different workers' inputs are weighted by their relative wage, thereby generating more accurate estimates of changes in labor productivity and TFP and more effectively identifying the contribution of technological changes to the production process. The main assumption in a quality-adjusted calculation is that workers' wages reflect the marginal value of their output, i.e., that the labor market is competitive—and that wages are not affected by other factors such as discrimination and employees' and employers' bargaining power.[2] The change in labor quality is the difference between the change in *quality-adjusted* labor input and the change in labor input. This kind of calculus, resting on the assumption that the labor market is competitive, is performed by central banks such as the US Federal Reserve, the ECB, and the Bank of England, and also by the US Bureau of Labor Statistics.

The main origin of a change in labor quality is a change in labor composition. The main developments in the labor composition of Israelis over the past two decades (Table 1) are (a) a significant increase in the share of high-educated workers, (b) a large-scale influx of immigrants from the former Soviet Union to the labor market, and (c) a perceptible increase in the share of women.[3]

To take account of labor-quality differences among employed persons, we weight their labor input on the basis of the average wage per labor hour for all workers in the same education and gender group, and, within each group, by differentiating between nonimmigrants and recent immigrants—all of which in accordance with the groups' relative wage in 2005. Table 2 shows that the hourly wage of high educated workers, nonimmigrants, and men surpasses that of low educated workers, new immigrants, and women, respectively. Over time, among the native population, the wage disparities between men and women remained similar at each level of schooling whereas the return to schooling increased. The wage gap between immigrants and natives at the same level of schooling narrowed but remained large. (See expanded discussion below.)

The immigrants who came to Israel from the former Soviet Union in the 1990s typically had higher schooling and labor-force participation than native Israelis. Today, those immigrants account for one-fifth of the country's total labor input. Immigrants receive lower wages than nonimmigrants at the same level of schooling. This is mainly because their vocational skills are not fully transferable to Israel and therefore provide a smaller return—especially

[2] The marginal value of product may also change as a result of supply and demand developments that are unrelated to changes in quality, e.g., a decline in output prices occasioned by a decrease in demand for the product. Thus, wage is only an approximation of labor quality.

[3] In 1987–2005, changes in the average age and nationality composition of the labor force were negligible.

Table 1
Composition of Labor Input of Israelis, selected years (percent)

		1995			2005		
	1987	Total	Non-immigrants	New immigrants[a]	Total	Non-immigrants	New immigrants[a]
Men	68.6	65.6	66.3	61.2	61.6	63.4	53.9
Women	31.4	34.4	33.7	38.8	38.4	36.6	46.1
Total	100	100	100	100	100	100	100
Composition: Non-immigrants vis-à-vis new immigrants	100	100	87.0	13.0	100	80.7	19.3
Years of education							
16+	15.9	19.7	18.8	25.8	27.5	28	25.7
13–15	16.9	22.1	20	36.6	26.1	23.7	36.3
11–12	35.9	37	39.6	19.7	34.1	36.4	24.5
0–10	31.3	21.2	21.7	17.9	12.3	12	13.6
Total	100	100	100	100	100	100	100

[a] Who immigrated to Israel from 1990 onwards.
SOURCE: Based on Central Bureau of Statistics data.

upon arrival but afterwards as well. To demonstrate this, we note that a rather large share of immigrants practice neither the occupations that they had back in their countries of origin nor occupations that correspond to their levels of schooling.

Several phenomena allow us to infer that most of the wage gap between immigrants and nonimmigrants reflects differences in marginal output value. First, in 2005—i.e., after the immigrants had amassed meaningful employment experience in Israel—their wages still fell perceptibly short of the wages of native Israelis. The size of the gap is inconsistent with discrimination and weak bargaining power; instead, it is typical of minority groups, migrants, and others. Second, the convergence of immigrants' wages toward those of nonimmigrants is inconsistent with discrimination.[4] Third, immigrants' relative wage declines in tandem with a rising level of schooling, even though bargaining power usually rises along with schooling because the labor market at issue is more competitive. In sum, the wage gap between immigrants and nonimmigrants, in our estimation, is largely a reflection of differences in labor productivity.[5]

The proportion of women in labor input increased by 7 percentage points in 1987–2005 and reached 38.4 percent in the latter year. Women's wage per hour is lower than that of men who have similar levels of schooling. The gender wage gaps are sizable and have been stable over time. Several pieces of evidence suggest that they trace mainly to differences in labor productivity. (a) Women

[4] Z. Eckstein and Y. Weiss (2004), "On the Wage Growth of Immigrants: Israel 1990-2000," *Journal of the European Economic Association* 2, No. 4, 665–695.

[5] Furthermore, the use of relative wage in 2005 for the calculation of changes in labor-input quality greatly reduces the possibility of discrimination and weak bargaining power as significant factors, in view of the wage-convergence process.

Table 2
Index of Israelis' Hourly Wage

(Male veterans with 16+ years of schooling = 100

Years of education	1987	1995		2005[a]	
		Non-immigrants	New immigrants[b]	Non-immigrants	New immigrants[b]
			Men		
16+	100	100	55.0	100 (75.7)	63.8 (48.3)
13–15	76.1	64.7	38.5	65.5 (49.6)	43.9 (33.3)
11–12	56.2	48.4	33.5	47.3 (35.8)	39.7 (30.1)
0–10	55.6	42.3	29.9	42.4 (32.1)	33.7 (25.5)
			Women		
16+	78.3	83.5	57.7	75.0 (56.8)	51.0 (38.6)
13–15	65.6	61.4	33.4	56.4 (42.7)	38.2 (28.9)
11–12	47.5	43.4	29.4	38.6 (29.3)	29.3 (22.2)
0–10	43.2	33.6	24.9	35.0 (26.5)	27.8 (21.0)

[a] Figures in parentheses are wages per hour in current NIS
[b] Who immigrated to Israel from 1990 onwards.
SOURCE: Based on Central Bureau of Statistics data.

traditionally tend to acquire schooling in fields that deliver a relatively low return in the labor market. (b) Women have less employment experience than men, for the following reasons: (1) a high frequency of part-time work (women's labor hours are about three-fourths of men's), (2) the tendency to leave the labor force for various periods of time due to birthgiving and childcare,[6] and (3) the rapid increase in their labor-force participation rate, due to which they are younger on average, and therefore much less experienced on the job, than male employees. Notably, the return to experience in Israel may be as high as 4 percent per year.

These factors almost certainly explain most of the wage gap between women and men. Thus, other factors—such as discrimination and poor bargaining power—are secondary. As evidence, the unexplained wage gap between men and women in Israel who work for the same employer are small.[7]

The changes in labor quality were calculated for the 1987–2005 period.[8] During this time, labor input of Israelis increased by 68.7 percent[9] and quality-

[6] In 2002, only 61 percent of birthing mothers in Israel returned to work at the end of their maternity leave (which lasts three months, officially). About 13 percent did not return to work after the end of the first year following maternity leave (National Insurance Institute, *2005 Annual Survey*). In addition to the loss of employment experience, protracted absence from the labor force erodes accrued human capital and, in turn, usually reduces the wage level in the succeeding job (the "motherhood penalty").

[7] G. Navon and I. Tojerow (2006), The Effect of Rent-Sharing on the Gender Wage Gap in the Israeli Manufacturing Sector, Bank of Israel, Research Department, Discussion Paper No. 2006.05; J. K. Hellerstein and D. Neumark (1999), "Sex, Wages, and Productivity: An Empirical Analysis of Israeli Firm-Level Data," *International Economic Review 40*, No. 1, 95–123. However, one cannot totally rule out the existence of sex discrimination in hiring.

[8] The base year precedes the onset of mass immigration from the former Soviet Union and follows the period of hyperinflation that distorted relative prices, including wages.

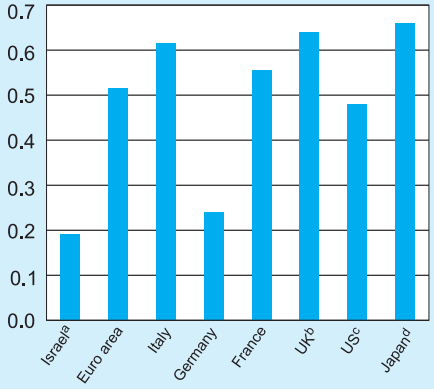
[9] Employment climbed by 82 .4 percent during this time, so the average labor hours per person employed have decreased.

adjusted labor input expanded by 79.8 percent. Thus, the annual average rate increase in labor quality was 0.35 percent. Concurrently, total factor productivity (not adjusted for quality) increased by 0.59 percent per year. Hence, the increase in labor quality explains 40 percent of the improvement in productivity.[10]

The changes in employee characteristics had contrasting effects on labor quality. Quality improved due to an appreciable increase in employees' level of schooling. For example, the share in labor input of persons with 16+ years of schooling climbed from 15.9 percent in 1987 to 27.5 percent in 2005. The average annual marginal contribution of the increase in schooling to labor quality is estimated at 0.75 percent. Two factors acted in the opposite direction: an increase in the share of immigrants, which lowered the quality improvement by 0.33 percent per year,[11] and the increase in the share of women in the total input, which lowered the improvement by 0.11 percent per year. The effects of schooling and gender were very similar to those found in the UK.[12]

The disparities in labor quality between immigrants and nonimmigrants were especially wide shortly after immigration. Immigrants reduced labor quality by 0.88 percent per year in 1990–1995 but by only 0.16 percent per year in 1995–2005. This finding reinforces the claim that the relative improvement in

Figure 1
Rate of Average Annual Change in Quality of Employees, 1995-2005 (Percent)



[a] 1996-2005.
[b] 1996-2002.
[c] 1995-2004, business sector.
[d] 1995-2001.
SOURCE: G. Schwedt and J. Turunen (2006), Growth in Euro Area Labour Quality, European Central Bank, Working Paper No. 575; V. Bell, P. Burriel-Llombart and J. Jones (2005), A Quality-Adjusted Labour Input Series for the United Kingdom (1975-2002), Bank of England Working paper No. 280; Bureau of Labor Statistics (2006), Changes in the Composition of Labor for BLS Multifactor Productivity Measures, 2004, March 23; D.W. Jorgenson (2003), Information Technology and the G7 Economies, World Economics, 4, No. 4, 139-169; and based on data from the Central Bureau of Statistics.

[10] This is an approximation, based on the assumption that labor input is weighted at 68 percent in the production function, resembling its weight in business-sector product, and that the improvement in total factor productivity of the labor force also represents the improvement in the business sector.

[11] The factor at issue is the marginal contribution of the very fact of their being immigrants, with their schooling and gender distribution as given. The superior schooling of immigrants relative to nonimmigrants is reflected in the marginal contribution of schooling.

[12] During the 1985–2002 period, the increase in employees' schooling improved labor quality in the UK by 0.69 percent per year and the upturn in the share of women lowered it by 0.08 percent per year.

immigrants' labor quality over time originates in acculturation.

In recent years, several studies have calculated the rate of change in labor quality in a number of main developed countries by means of methods similar to those employed here. The calculation presented thus far is based, as stated, on the relative wage in 2005, whereas most methods rely on a weighted scale of relative wages between the base year and the latter year (Tornqvist Index).[13] The weighted method cannot be used in an economy that acquires an input that did not exist in the base year, e.g., immigrants. To calculate a comparable statistic for Israel, we used the weighted method for the 1995–2005 period. Figure 1 shows that the improvement in Israel's labor quality was poor by international standards. The proximity of Israel's ranking to Germany's is unsurprising in view of the unification of the latter country, which is similar in nature, magnitude, and timing to the absorption of immigrants in Israel during the 1990s. Even excluding the effects of immigration on labor input, however, Israel's ranking remains relatively low.

[13] For expanded discussion of the method, see U.S. Department of Labor (1993). Labor Composition and U.S. Productivity Growth, 1948–90, Bureau of Labor Statistics, Bulletin No. 2426. When we applied the Tornqvist Index to Israel in 1995–2005, the results were similar to those obtained thus far.

2. DEMAND COMPONENTS, SUPPLY OF DOMESTIC PRODUCT AND IMPORTS

a. Uses

Domestic uses, composed of total final consumption expenditure and gross domestic investment, expanded by 4.1 percent in 2006 and total uses, including exports, increased by 4.5 percent, less than GDP growth.

Private consumption increased, with a rise in the private savings rate.

Private consumption increased by 4.8 percent and the share of private savings in disposable income also rose. Current private consumption climbed at a brisk 5.1 percent pace whereas purchases of durable goods advanced by only 1.3 percent. The increase in total private consumption sufficed for a strong 3.0 percent upturn in per-capita consumption.

The economic expansion, the continued improvement of the labor market, and the cutting of direct-tax rates allowed disposable wage income to rise, and households' disposable income from all sources surged, rising by 6.0 percent. The worth of the public's assets, especially in the financial portfolio, climbed perceptibly pursuant to three previous years of increases. The VAT cut during the year also spurred

consumption by dampening the prices of consumer goods. However, given these factors—especially the strong increases in disposable income and the worth of the portfolio—the growth rate of consumption was rather sluggish. The paltry growth rate of purchases of durable goods, an item that is usually especially sensitive to a change in asset value, stands out in particular.[13] It may have been due to the steady decline in consumer expectations during the year, particularly personal expectations, as evidenced by the consumer-confidence index.[14] Another reason is the lengthy upward trend of inequality in income distribution. This factor usually depresses the marginal propensity to consume because it reduces the share of weak groups in total income. This may also explain the failure of private consumption to respond to the growth of assets, in particular financial assets, which apparently focused on the upper portion of the income-distribution scale. In addition to these factors, the hostilities in the north may have boosted the savings rate due to the prudence motive.

The standard of living, measured in per-capita individual consumption (private consumption plus individual components of public consumption such as healthcare and education) rose by 2.5 percent in 2006.

Table 2.2
Sources and Uses, 2001-06

(volume rates of change, percent)

	2001	2002	2003	2004	2005	2006
GDP	-0.6	-0.9	1.5	4.8	5.2	5.1
Imports	-5.1	-1.1	-1.4	12.1	3.4	3.1
of which Imports excluding diamonds	-2.8	-5.4	-2.3	12.1	5.9	5.3
Total sources	-1.9	-1.0	0.7	6.8	4.7	4.5
Exports	-11.2	-2.3	8.2	18.2	5.1	4.9
of which Excluding diamonds	-10.4	-6.1	8.5	19.9	7.5	9.3
Gross domestic investment	-3.2	-11.7	-9.6	1.2	11.5	4.1
of which Fixed capital investment	-3.5	-6.0	-5.5	0.3	2.9	6.4
Private consumption	2.6	0.8	0.9	5.5	3.4	4.8
Public consumption	3.8	5.0	-2.3	-2.3	2.7	3.3
Domestic uses[a]	1.2	-0.5	-1.5	2.8	4.4	4.1
Total uses	-1.9	-1.0	0.7	6.8	4.7	4.5

[a] Total uses (excluding defense imports) minus net investment in ships and aircraft and minus exports.
SOURCE: Based on Central Bureau of Statistics data.

[13] See K. Braude and A. Friedman (2005), "The Consumer-Confidence Index and Private Consumption," *Bank of Israel Review 78* (Hebrew); Y. Lavi (2003), "Do Changes in Current Income Help to Explain Changes in Consumption in Israel?" *Israel Economic Review, 1(2).*

[14] Israel Consumer-Confidence Index, Globes Studies, published monthly. The personal-expectations index, which has demonstrated its ability to predict changes in consumption (see previous footnote), declined steadily during the year even though assessments of the current situation improved. In the Ma'ariv/TNS index, too, a gap between the expectations index and the current index opened up during the year, but in this case the expectations index leveled off.

Gross domestic investment increased by 4.1 percent, with a drawdown of inventories. Fixed capital formation, composed of investments in principal industries, residential buildings, and the public services, moved ahead at a relatively brisk 6.4 percent pace.

For the first time since the recovery started, investment in the principal industries rose rapidly.

Investments in principal industries climbed by a vigorous 8.1 percent due to upturns of 10.6 percent in machinery and equipment, 8.1 percent in overland transport vehicles, and 13.5 percent in intangible assets. The last-mentioned (mainly software) has been growing rapidly in recent years and accounted in 2006 for 10.0 percent of total investment in principal industries. Nonresidential building investment rose somewhat sluggishly, by 1.0 percent.

The steep increases in most components of investment in principal industries point to a rather high level of capital utilization. Further evidence of this is the upturn of gross return on capital to 15.2 percent, surpassing its long-term average rate. The improvement in capital utilization has created the need for a significant increase in production capacity in order to boost output farther on—with the exception of buildings, in which a significant oversupply seems to exist. Investment is also being pushed ahead by the low cost of capital, influenced by the booming share markets, and low long-term interest rates. The increase in investment in principal industries brought on a 3.2 percent upturn in the industries' gross capital stock, so that the rise in potential output for 2007, based on the long-term development of total factor productivity, is estimated at 4.5 percent.

Residential investment shows signs of stability and recovery.

Residential investment showed signs of bottoming out and recovering for the first time since the general economic upturn began, increasing at a weak 1.7 percent pace after steady declines in 2003–05. Despite rising per-capita income and general consumption demand in recent years, demand for housing has not advanced significantly. Evidence of this is the scanty change in housing sale prices, a development that has not been fully explained. The industry also encountered supply difficulties, reflected in relatively strong increases in construction costs. (For expanded discussion, see the section on construction below.)

Infrastructure investment—which includes investment in roads, railroads, waterworks and power stations, etc.—increased by 3.3 percent.

Civilian consumption increased slightly faster than did the population.

Public consumption rose by 3.3 percent and domestic public consumption (total public consumption excluding defense imports) advanced by 2.7 percent. Civilian consumption increased by 2.4 percent, slightly outpacing population growth and representing a constant quantitative level of public-service delivery per capita—a policy first applied in 2005 after two years of cutbacks.[15] Defense consumption increased by a steep 5.5 percent due to the hostilities in the north, which led to upturns of 11.8 percent in defense imports, 5.9 percent in domestic procurements, and 1.2 percent in payments to employers, occasioned by the large-scale mobilization of army reserves during the fighting.

Defense expenditure, imports in particular, rose considerably, as a result of the war in the north.

[15] To maintain the quality, and not only the quantity, of the public services, it is also important to maintain the relative wage level of their staff. In 2006, relative general-government wages increased.

The growth rates of public consumption in recent years ostensibly point to the existence of a countercyclical contractionary policy. In fact, however, the policy has stabilized around growth rates that correspond, in quantitative terms, to the rate of population increase, and the expenditure side is independent of the cycle. Since such a policy has facilitated and will continue to facilitate the reduction of the tax burden, its total effect on activity is not necessarily contractionary. A proportional decline in public consumption despite the increase in activity and strong tax revenues enhances the credibility of the policy and raises future personal disposable income. Two derivatives of the policy, the small deficit and the reduction of the debt/GDP ratio, further the decline in the risk premium and interest rates. They also encourage investment by freeing sources of finance for the business sector and making the sources less expensive.

Exports (excluding diamonds) rose at about the same rate as did world trade.

Exports climbed by 4.9 percent and nondiamond exports, a more reliable reflection of the contribution of exports to domestic economic activity, moved ahead at a rapid 9.3 percent pace. Since global trade expanded at a similar rate, Israel maintained its share in the global market. Export activity was powered by manufacturing exports, which advanced by 12.1 percent due to very rapid export growth in high-tech industries and technology-intensive service industries. Exports were the main engine of economic growth in 2006, contributing 2.2 percentage points to the GDP increase (Table 2.3), and their growth is explained largely by the thriving state of high-tech industries around the world. Exports of services advanced more modestly for two reasons: a 3.7 percent drop in exports of tourism services, due to the severe blow inflicted on the industry by the fighting in the north, and a relatively low 6.4 percent growth rate of exports of other services. In total, services exports contributed only 0.4 of a percentage point to GDP growth in 2006, about half their contribution in 2005.

Table 2.3
Contribution of Changes in Uses to Change in GDP, 2001-06

(percent of GDP)

	2001	2002	2003	2004	2005	2006
GDP	-0.6	-0.9	1.5	4.8	5.2	5.1
Derived GDP[a]	-1.5	-1.9	-0.1	5.9	4.3	5.4
Total domestic uses	1.2	-0.6	-1.6	1.8	2.5	3.1
Private consumption	1.1	0.4	0.4	2.2	1.4	2.0
Domestic public consumption	0.7	1.0	-0.3	-0.5	0.4	0.6
Gross domestic investment	-0.6	-2.0	-1.7	0.0	0.7	0.6
Exports	-2.7	-1.3	1.5	4.1	1.8	2.2
of which Goods exports	-1.1	-0.9	0.7	2.6	1.0	1.9
Service exports	-1.6	-0.4	0.8	1.5	0.7	0.4
Tourism	-1.4	-0.4	0.1	0.3	0.3	0.0

[a] The total contributions of domestic uses to GDP, according to input-output coefficients of 1995. The difference between GDP and derived GDP arises from the deviation of actual contributions from those calculated.

SOURCE: Based on Central Bureau of Statistics data.

Table 2.4
Developments During the Year, 2005–06
(seasonally adjusted, quarterly rates of change, in annual terms)

	2005	2006	2006 I	2006 II	2006 III	2006 IV
Sources and uses						
GDP	5.6	4.6	5.7	6.4	-0.8	7.3
Business-sector product	7.1	5.4	7.9	8.7	-4.1	10.0
Private consumption	2.4	5.5	7.7	4.6	4.8	4.9
Public consumption	2.0	6.7	4.8	-0.1	17.9	4.9
Investment in the principal industries	4.0	6.2	5.1	2.9	27.7	-7.7
Residential investment	0.8	6.2	1.9	3.5	4.4	15.7
Exports excluding diamonds	4.4	8.2	1.5	46.0	-13.5	6.8
Tourism exports	61.5	-32.0	9.6	15.8	-89.1	55.4
Imports excluding diamonds	2.8	8.8	7.4	14.5	-7.9	23.8
Unemployment rate[a]	8.9[b]	7.7[b]	8.8	8.8	8.3	7.7

[a] Actual levels, not rates of change.
[b] End-of-year data.
SOURCE: Based on Central Bureau of Statistics data.

b. Sources

Total sources available to the economy increased by 4.5 percent in 2006 due to 5.1 percent GDP growth and a smaller 3.1 percent upturn in total imports. The share of imports in total sources has been rising over time due to long-term trends of greater openness and specialization of the economy and, at this time of surging growth, the channeling of excess demand to imports because of short-term inelasticity of GDP supply. Nevertheless, the share of imports in total sources declined in the past two years due to the smoothing of consumption, the real depreciation (which favors import substitution), and the output gap, which enabled GDP supply to expand with no increase in its relative price.

Factors of production expanded relatively slowly.

Supply of business-sector product: business-sector product advanced at a brisk 6.4 percent pace in 2006. Since factors of production expanded rather moderately this year—capital stock by 2.7 percent and labor input by only 2.8 percent—most of the increase in business-sector GDP traced to the steep 3.5 percent increase in total factor productivity. As the average annual growth rate of total factor productivity since the beginning of the decade was 0.9 percent, the strong increase in the past three years—4.2 percent on average—is largely cyclical and offsets the preceding declines.

Most of the increase in business-sector product was due to the sharp rise in total factor productivity.

The civilian labor force grew in 2006 at a relatively fast 3.2 percent rate, allowing employment to move ahead smartly—by 3.1 percent—and alleviating upward pressure on wages. Wage growth lagged behind labor productivity, which advanced by a steep 3.6 percent. Consequently, unit labor cost continued to decline in 2006, by 1.4 percent, after three years of steeper downturns. The return to labor as a share of GDP in factor-input prices, 69.9 percent, has been slumping for quite some time relative to its long-

Table 2.5
Supply of Business-Sector Product, 2001-06

(volume rate of change, percent)

	2001	2002	2003	2004	2005	2006
Gross capital stock	6.9	5.6	4.0	3.0	2.7	2.7
Labor input[a]	-1.3	0.3	0.0	1.1	2.4	2.8
Civilian labor force plus foreign workers[b]	1.2	0.4	1.1	2.4	1.7	3.2
Total Factor Productivity[c]	-3.1	-4.7	0.9	5.0	4.0	3.5
Rate of return on gross capital (%)	11.0	9.5	10.9	12.0	13.3	15.2
Actual tax rate on non-wage income (%)[d]	31.0	28.2	26.2	25.8	26.8	29.7
Real yield on 10-year bonds (%)	4.9	5.2	4.8	4.2	3.6	3.8
Average real ex post interest (%)[e]	7.1	8.8	11.9	6.9	5.9	11.0
Unit labor cost	3.8	-0.2	-3.9	-3.0	-2.1	-1.4
Labor share	79.7	79.8	76.2	74.0	72.4	69.9
	1970-80	1980-90	1990-2000	2000-06		
Total factor productivity[f]	1.6	2.5	0.0	0.9		

[a] See note 3 to Table 2.A.14.

[b] The labor force plus the labor inputs of Palestinian and foreign workers, in accordance with their share in the business sector.

[c] See note 1 to Table 2.A.15.

[d] Taxes on non-wage income as share of non-wage income in business sector (including executives' pay).

[e] Weighted cost of unindexed credit, CPI-indexed credit, and foreign-currency-indexed credit, minus actual inflation.

[f] For the definition of labor input for the purpose of calculating total factor productivity, see note 3 to Table 2.A.9.

SOURCE: Based on Central Bureau of Statistics data.

term level and its 77.0 percent rate in 2000, when the current business cycle began. The fact that the labor share is continuing to decline despite stability in the capital/labor ratio relative to 2000 indicates that the labor market has not fully responded to the increase in activity. The incomplete nature of the response may originate in nothing more than a lag, but it probably traces also to long-term factors, such as changes in the production function or competition in the global market, that apply direct and indirect downward pressure on wage increases. This possibility is supported by the partial response of other developed countries' labor markets to the increase in activity in recent years.[16]

Although demand has risen constantly for three years, there are no signs of supply constraints.

Although demand continued to increase in 2006 for the third consecutive year, the economy behaved as though no supply constraints were in sight. This facilitated the rapid growth that occurred in the first half of the year, as the growth rate of business-sector product accelerated.

Three reasons for the supply side's rapid response to the increase in domestic demand come to mind. First, during the first three years of the decade, 2001–2003, the severe recession caused idleness among both factor inputs, capital and labor. Second, capital stock continued to expand during these years at a rapid 5.5 percent annual average pace, so that potential output increased substantially even as actual

[16] OECD Economic Outlook, 2006.

product contracted.[17] Third, the labor force has been growing quite rapidly in recent years, partly because of an increase in the share of the population that belongs to the main working-age brackets but mainly due to steady upturn in the participation rate. The last-mentioned factor is partly cyclical but also partly influenced by long-term trends and policy changes in recent years. For these three reasons, the economy had a significant output gap at the beginning of the year, i.e., a rather large difference between actual product and the potential product that would be generated if all factor inputs were fully utilized. The existence of the gap allowed GDP to advance rapidly during the year and allowed supply to expand swiftly without generating significant upward pressure on unit labor cost, which actually continued to decline, and on the real exchange rate—two mechanisms that might have slowed the expansion of supply.

Domestic firms' financing costs were relatively low, as evidenced by low real interest rates and surging capital markets. The contraction of the government deficit freed sources of finance for the business sector at a low price. The decline in credit risk also lowered financing costs. (See chapter on Financial Stability.)

The direct-tax cuts, applying to both capital and labor, had a dampening effect on labor cost and an upward effect on the net (after-tax) return on capital. These changes lower the cost of factor inputs and have an expansionary effect on business-sector supply, especially if they are credible and perceived as permanent. In this context, it is noteworthy that the lowering of direct-tax rates in 2006 was part of a multi-annual tax-cut program that has been fully performed thus far and is expected to continue in the years to come. The fact that the tax cuts were implemented as part of such a program and not in response to the increase in tax revenues strengthens the credibility of the process and heightens its impact, especially on investment.

The gross operational surplus climbed to 30.1 percent in 2006, reflecting a strong 15.2 percent gross return to capital—a high rate relative to the long term and to the norm among developed countries—and a 9.8 percent net rate of return that far exceeded the expected real interest rate. These data reflect an increase in the profitability of domestic firms, which was further evidenced by upturns in the net earnings of firms traded on the Stock Exchange, the share indices, and the return on capital of traded firms, to 14.5 percent. (For expanded discussion, see chapter on Financial Stability.)

The strong competitiveness of Israeli firms relative to firms abroad, occasioned by low unit labor cost and real depreciation, supported and facilitated the rapid increase of business-sector product amidst rising demand.

Israel's labor market is more flexible than those of the European countries.

Israel's labor market, particularly in the business sector is relatively flexible, as manifested in high worker mobility, low termination costs, a large share of employment via personnel companies, and low unemployment insurance. These factors were reflected in large real and nominal wage reductions during the past cycle. Israel's labor market, however, is notable for high public-sector employment. It may reasonably be

[17] One reason for this is the lack of homogeneity in capital stock, as can be seen from the great variation between different industries. This development also supports the claim that the severe recession in 2001–02 is considered temporary.

assumed that Israel's natural unemployment rate is higher than the rate in countries such as the US and Britain but lower than the rate in the European welfare states. However, the large share of foreign workers in the population, especially among low-educated workers, does not allow the actual unemployment rate to fall to its natural level.

3. DEMAND, SUPPLY, AND THE REAL EXCHANGE RATE

There was no marked change in the real exchange rate.

The average real exchange rate was largely unchanged in 2006, with minor movements in contrasting directions. The relative export prices index rose by a gentle 0.1 percent and indicators based on the GDP deflator vis-à-vis the US or Europe or on private-consumption prices showed negligible changes too (Table 2.6). Since real exchange-rate changes have been largely negligible in recent years, the steep real depreciation in 2002 has been preserved, applying steady pressure for the narrowing of the deficit and the creation of a surplus on the trade balance.

The concurrent increases in GDP demand and GDP supply allowed GDP to grow rapidly with no significant change in the real exchange rate. The gentle decrease in relative export prices traces to a 1.8 percent increase in export prices (excluding diamonds)—due to developments in global markets—and a larger 1.9 percent increase in the business-sector plus housing services deflator.

Table 2.6
The Real Exchange Rate and World Trade, 2001–06

(rate of change, percent)

	2001	2002	2003	2004	2005	2006
Real exchange rate (export terms)[a]	0.2	6.2	-2.5	1.3	1.4	-0.1
Real exchange rate (import terms)[b]	-0.1	6.3	1.0	4.7	3.9	1.4
Exchange rate adjusted by GDP deflator vis-à-vis US	3.8	9.4	-1.7	1.4	2.4	-0.1
Exchange rate adjusted by GDP deflator vis-à-vis Europe[c]	0.2	16.3	15.4	11.1	1.7	-0.5
Real exchange rate relative to currency basket[d]	0.9	10.7	5.0	6.9	2.2	0.0
Terms of trade[e]	0.3	-0.1	-3.4	-3.3	-2.4	-1.5
World trade	0.0	3.4	5.3	10.6	7.4	8.9
World export prices	-3.8	0.8	10.2	9.0	5.2	4.3
World import prices	-3.7	-0.6	9.3	9.4	6.0	6.3

[a] Ratio of export prices (excluding diamonds) to business-sector product prices (including housing services).
[b] Ratio of import prices (excluding diamonds) to business-sector product prices (including housing services).
[c] Members of the European Monetary Union.
[d] Calculated by the IMF by weighting the CPIs of various countries according to the extent of their trade with Israel.
[e] Ratio of export prices (excluding diamonds) to import prices (excluding diamonds).
SOURCE: Based on IMF, IFS, US Department of Commerce, Bureau of Economic Analysis, and Central Bureau of Statistics data.

Although relative export prices were stable in annual terms, a trend toward real appreciation was clearly evident during the year, especially from the second quarter onward. The trend was abetted by the rapid increase of GDP in the first half of the year, capital inflows, and, perhaps, a monetary policy that strongly emphasized financial stability during and after the hostilities in the north.

4. SAVINGS, INVESTMENT, AND THE CURRENT ACCOUNT

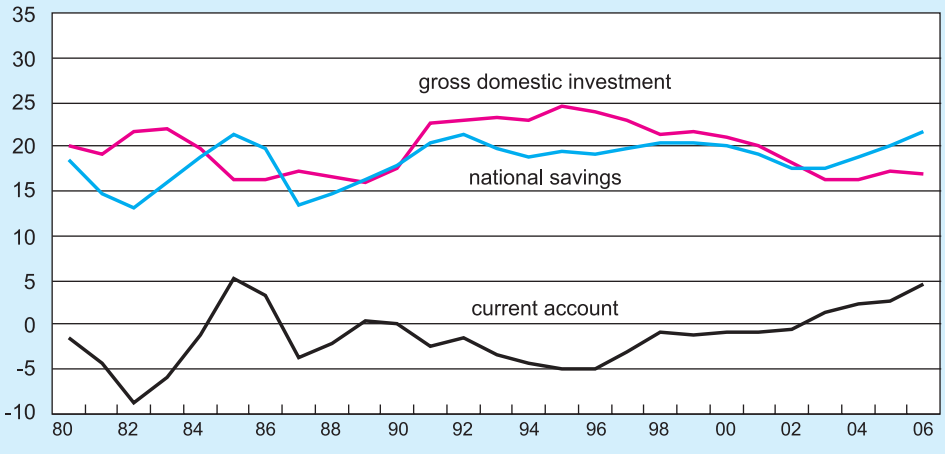
The contrasting and relatively strong changes in savings and investment in 2006 were exceptional.

Gross national saving was 21.6 percent of national income, up by a relatively steep 1.5 percentage point.[18] Most of the increase occurred in public savings, which rose precipitously, and was positive, which has happened only once before in the mid-1980s. Private savings increased by 0.4 percentage points. The investment rate was 16.9 percent, down 0.4 of a percentage point. The contrasting flows of savings and investment resulted in the formation of a relatively large 4.7 percent surplus on current account.

Gross fixed capital formation stabilized.

Savings and investment in the Israeli economy have been moving in tandem in recent years and, surprisingly, this process gathered strength with the increase in economic openness. Thus, the contrasting and relatively strong changes in savings and investment in 2006 were exceptional. The decline in the investment rate traced largely to drawdown of stocks. The rate of investment in principal industries was unchanged in 2006 but has been trending down over time. This is due to the maturation

Figure 2.4
National Saving Rate, Gross Domestic Investment, and the Current Account, 1980-2006
(percent of total national income, at official exchange rate)



SOURCE: Based on Central Bureau of Statistics

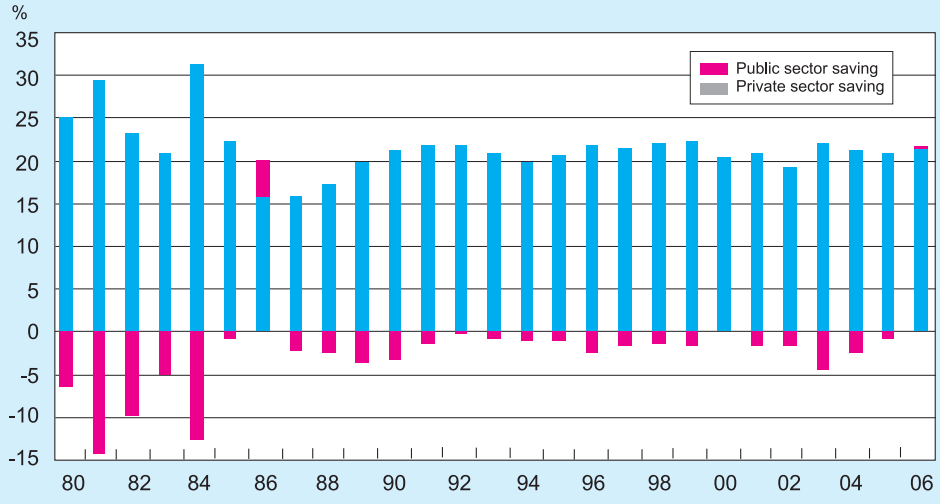
[18] National income = Gross National Product + transfers to individuals from overseas + transfers to general government – interest payments to abroad.

of the economy, during which the economy amassed the capital stock that it needed, and due to structural changes—foremost the steady proportional decline of industries intensive in physical infrastructure, such as manufacturing, and the proportional upturn in industries intensive in human-capital investment, such as information technology. Residential investment also showed a clear downward trend due to the falling rate of population increase. However, these processes seem to have ended; as evidence, in recent years the investment rates have leveled off around 12 percent in principal industries and 4.5 percent in residential building. If this is the case, the decline in the gross investment rate in 2006 was temporary.

It is harder to explain the increase in private savings this year, in view of the perceptible upturn in public savings and the increase in worth of the public's assets. The reason may lie in an unexpected surprise in public savings. Israel's gross private saving rate, 21.3 percent in 2006, was very high relative to the post-stabilization era and relative to other countries. Notably, private saving includes not only household saving but also saving by the business sector (undistributed profits). Thus, some of the increase may trace to the strong profitability of domestic firms.

Private savings as a share of disposable personal income were 28.8 percent in 2006, up 0.8 of a percentage point. In addition to cyclical factors such as the consumption smoothing which cause an increase in the saving rate during times of prosperity, the upturn in 2006, despite the increase in public saving, may also trace to a change for the worse in consumers' expectations. Although the consumer-confidence index suggests that the assessment of present situation improved on average and also during 2006, the expectation indices for the future have been declining steadily since the end of 2005 and at the end of 2006 indicated that consumers expected to be worse off.

Figure 2.5
Gross National Saving Rate, by Sector, 1980-2006
(percent of total national income, at official exchange rate)



SOURCE: Based on Central Bureau of Statistics data.

The private savings rate is on an upward trend.

Several long-term factors are having an upward effect on the share of private saving in disposable income. They include (1) a government policy that is causing the social safety net to fray, and the cut in transfer payments; (2) gradual downsizing of bond issues for pension funds, which makes these funds riskier and, therefore, induces greater savings due to cautionary motive; (3) a gradual shift by central government, including the army, from budgetary pension arrangements to fully-funded pension arrangements; (4) a decrease in the rate of population growth and unexpected upturn in the dependency ratio, both of which have a contractionary effect on future intergenerational transfers; (5) structural changes in the capital market in recent years, such as those that offer more possibilities of saving abroad (for expanded discussion, see chapter on Financial Stability); and (6) the long-term increase in inequality in income distribution, which usually has a dampening effect on the average marginal propensity to consume.

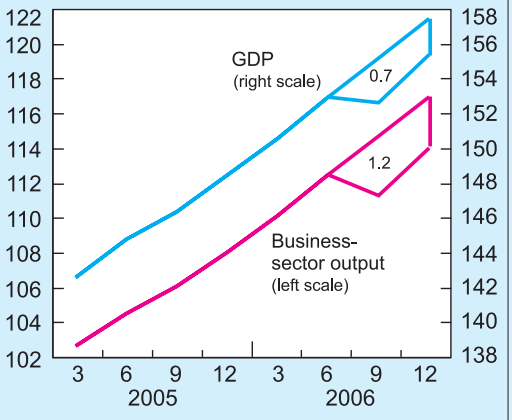
In sum, analysis of the trends and factors that affected the rates of saving and investment in 2006 shows that although most of the increase in the current-account surplus relative to 2005 was temporary, caused by fluctuations in physical stocks and public saving, long-term economic forces are at work that will cause this surplus to increase and lead to a trend of appreciation in the real exchange rate also in the future.

Box 2.2
The economic cost of the Second Lebanon War

The war in the north broke out at a time of upsurge in economic growth, which was reflected by an 8 percent annualized increase in business-sector product. Hostilities began in mid-July and lasted for 32 days. What began as an IDF mission rapidly escalated into a full-scale war, which included a massive call-up of the reserves. The war led to a slowdown in economic activity in the north of Israel and impacted the rest of the country as well. The development of resources and uses during the year[1] shows that activity declined during the period of the war: Business-sector product fell by an annualized 4.1 percent in the third quarter compared with the second quarter, and aggregate GDP dropped by 0.8 percent due to the growth in public spending. However, the slowdown was scarcely apparent in domestic uses, and was mainly reflected by exports and by a fall in inventories. Fourth quarter data reveal a substantial rebound in GDP and business-sector product, although this did not compensate for the decline in the third quarter.

[1] See Table 2.4.

Figure 1
Fall in GDP in Second Half
(NIS billion at 2005 prices, seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

The brief duration of the war makes it possible to quantify the severity of the impact on economic activity. Figure 1 presents actual GDP as compared to the GDP that would have been recorded had the rate of growth in the first half been maintained until the end of the year. The difference between the two, which is the maximum loss of GDP that can be attributed to the war, amounts to 0.7 percent of GDP and 1.4 percent of business-sector product. Nevertheless, this gap should not automatically be regarded as deriving from the war. The damage should be assessed according to the harm caused to each of the principal industries in which an adverse effect was apparent. As an example, the adverse effect on production and commerce was limited to the period of the war itself, while tourism continued to suffer even after the end of the war. On the basis of such an assessment, the damage caused by the war is less serious, and amounts to only half a percent of GDP. However, the direct damage caused by the war (such as damage to property and infrastructures and the fall in inventories) should be added to the damage deriving from the slowdown in activity.

The principal components of business-sector product examined were manufacturing, and commerce and services, as well as the tourism industry, due to the considerable damage which it suffered. Since the other industries[2] effectively serve the activity in the main industries, it was assumed that the damage caused to them was proportionately similar to that caused to manufacturing and to commerce and services.

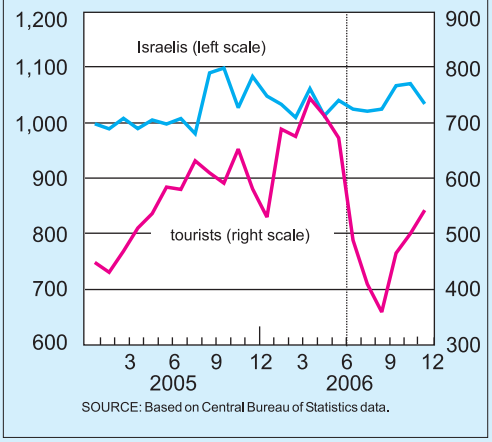
Tourism

Tourism industry activity suffered the most as a result of the war. After the intifada became less violent, the number of tourist arrivals increased

[2] The transport and communications industry, and the electricity and water industry.

persistently, from a low of 180 thousand in the first quarter of 2003 to 550 thousand in the second quarter of the year, and approached the levels recorded before the intifada. In the third quarter, the number of tourist arrivals dropped to 340 thousand. A slight recovery was apparent from the end of the war, and 400 thousand tourists arrived in Israel in the fourth quarter. Although this recovery was more rapid than the rebound during the years 2003 to 2004, it is nowhere near a full recovery. Figure 2 presents a comparison between the number of hotel stays by Israelis and the number of hotel stays by foreign tourists. In contrast to the serious effect on incoming tourism, the war does not appear to have harmed internal tourism. This is because internal tourism shifted from the north of Israel to the center and the south of the country during the war period. It should be noted that this consisted at least partly of tourism by refugees from the north.

Figure 2
Hotel Nights
(thousands, seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

The loss of product in the tourism industry therefore derived from incoming tourism only, and is calculated as the added value which the industry lost due to the decrease in the number of tourist arrivals in Israel and in the number of hotel stays by foreign tourists from the start of the war and until the end of the year. This loss amounted to NIS 1.9 billion or 0.43 percent of business-sector product.

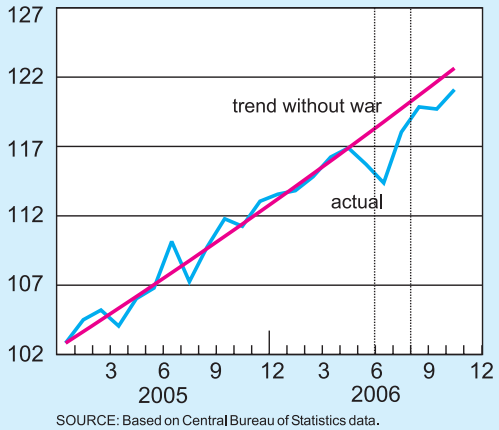
Commerce and services

The commerce and services industry, which accounts for 57 percent of business-sector product, was seriously affected during the war and resumed full-scale activity at the end of the war. As can be seen from Figure 3, the revenue of the commerce and services industry fell by 1.3 percent in July compared with June, and by 3.8 percent compared with the index trend. In August, the industry began to recover and in September the gap with respect to the trend closed. Accordingly, the decline in October and the deviation from the trend in the fourth quarter cannot be attributed to the war. It should be noted that all components of the commerce and services sector declined to some extent in

the war period, except for the business services industry, which accounts for 35 percent of the sector's total product and that actually increased over and above the trend during the war period.

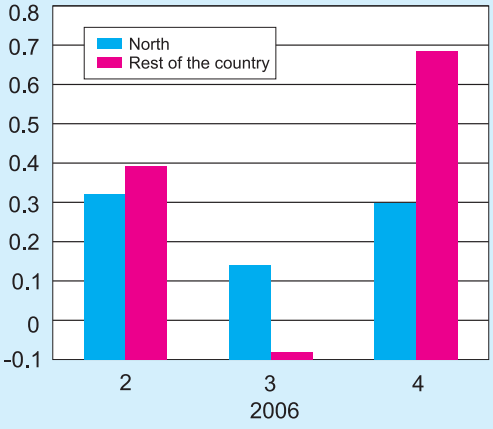
In order to support the claim that the fall in output during the third quarter derived from the war while the slowdown in the fourth quarter did not, the net balance of the revenue of the services industry was examined on the basis of geographical distribution and in accordance with the Companies Survey (Figure 4). It was found that in the third quarter the damage to the services industry in the north was worse than in other regions, while in the fourth quarter a considerable recovery was apparent in the north concurrent with a more moderate rebound in other regions of the country. It is also important to note that fourth quarter activity was found to be similar to the trend after taking into account the damage caused to the industry by the decline in tourism.

Figure 3
Trade and Services Index
(seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

Figure 4
Net Balance of Services Revenue
(quarterly, original data)



SOURCE: Bank of Israel's Companies Survey.

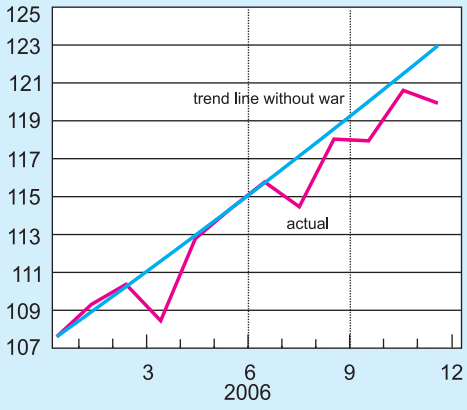
As a result of the war, the industry's revenue in 2006 was 0.54 percent less than the trend had the war not occurred. After weighting the industry's share in business-sector product and excluding the damage caused to the industry by the decline in tourism, it was found that the loss of business-sector product in respect of this industry was 0.17 percent.

Industrial production

Industrial production, which accounts for 22 percent of business-sector product, might have been expected to suffer heavily in the war period – throughout the country because of the large-scale call-up of the reserves, and especially in the north due to the disruption which the recurrent missile bombardment caused to everyday life. However, although industrial production fell by 1.1 percent in August compared with July and by 2.3 percent compared with the trend, the decrease was relatively minor and less even than random fluctuations in the course of the year. Moreover, in July, the main month of the war, no decrease at all was recorded. Since production reverted to the trend in September, in this industry as well the decline in October cannot be attributed to the war. This is confirmed by the Companies Survey, according to which industrial output in the fourth quarter fell in the rest of the country to a greater extent than in the north.

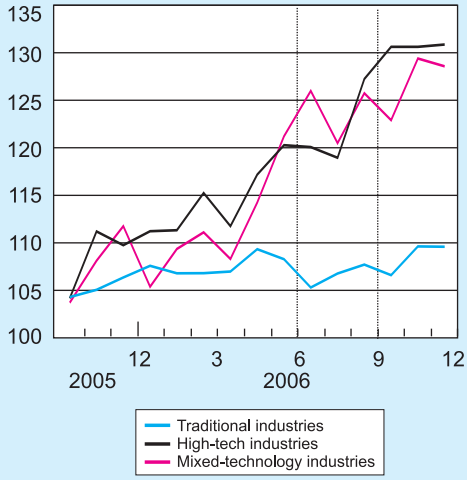
An examination of the industrial production index by technological level (Figure 6) reveals variability in the nature of the damage caused among the different groups in manufacturing industry. The growth in the high-tech industries ceased with the start of the war and resumed immediately and completely at

Figure 5
Index of Manufacturing Production (seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

Figure 6
Index of Manufacturing Production by Technology Classification (seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

the end of the war (to the extent of reverting to the trend). In the other sectors however and especially in mixed-technology industries, activity declined in the war period and after the end of the war recovered only gradually.

Because of the war, industrial production in 2006 was 0.23 percent less than the trend had the war not occurred. After weighting the industry's share in business-sector, it was found that the damage deriving from it was very low and amounted to 0.05 percent of business-sector product, half of which resulted from the tourism industry's adverse effect on manufacturing.

The direct cost

The direct damage caused by the war amounted to NIS 8.1 billion, of which NIS 700 million was damage to civilian property, infrastructures and hospital's inventories,[3] and NIS 7.4 billion was incurred in financing the direct cost of the war, including the renewal of ammunition and fuel stocks, and flight hours.[4] As a result of the defense establishment's financial demands following the war, a committee for examining the defense budget was established. In view of the new defense requirements, the need to make the defense sector more efficient assumes even greater importance, for such a process has long-term implications over and above the direct costs of the war.

Conclusion

The damage to the activity of the principal industries in the economy resulting from the war in the north amounted to 0.67 percent of business-sector product and approximately half a percent of GDP. Most of the damage derived from the tourism industry (0.31 percent) and from the commerce and services industry (0.13 percent). Apart from the loss of product, the direct cost of the war was nearly three times higher, at NIS 8 billion.

The relatively small extent of the damage to economic activity is connected to the economy's resilience in the case of shocks. It can also be assumed that another factor was the economic policy adopted – both fiscal policy and monetary policy, which was focused on maintaining macroeconomic stability: Detrimental as this was to the residents in the north, the government did not declare a state of emergency and did not activate the Home Command during the war, apparently in order to exude a sense of stability and to prevent overspending in the budget. Civilian budgets were cut in order to cover the growth in defense spending. The Bank of Israel raised the interest rate due

[3] Expenditure on the compensation fund except for compensation for economic damage.
[4] Excluding payment for days of IDF reserve duty.

to concern over an increase in the economy's risk premium. In view of the limited damage to economic activity, the question arises as to the damage that would have been caused had it not been for this policy. It may transpire in retrospect that the stabilizing policy could have been relaxed slightly in order to help the residents of the north at the time of the war, and to reduce the adverse impact on civilian public services.

5. THE PRINCIPAL INDUSTRIES

I. Main developments

The rise in business sector activity persisted in 2006, despite the war in the north, and was reflected in the increase in the output of and employment in all the principal industries.

Activity in the business sector continued to grow in 2006, and this was reflected as increased output and employment in all the principal industries (manufacturing, commerce and services, transport and communications, and agriculture). This is in spite of a decline in economic activity during the third quarter, due to the war in the north. The rate of growth is a result of the high increase in productivity, as well as in production factors. Increased activity was led primarily by greater demand worldwide for export products, especially the information and communications technologies (ICT) products in which Israel specializes, and was reflected by a sharp rise in the GDP and the number of employed in the tradable industries of the ICT sector (see Box 2.5 in the section on Commerce and Services).

Industrial output rose faster in 2006, by 10.5 percent.

The pace of growth of industrial output increased this year, and the industry grew at a rate of 10.5 percent. Although significant growth in activity over the past three years has brought industry close to capacity constraints, production ability has not yet been exhausted and the industry was able to meet the increased international demand. This growth in international demand resulted in a 12 percent rise in manufacturing exports, most notably, a significant rise in the export of electronics. Despite the rise in the number of employees, the cost of their employment did not increase significantly––which contributed to greater profitability this year for manufacturers.

Construction output increased by 2.2 percent in 2006, after years of decline and stagnation.

Output in the construction industry rose by 2.2 percent in 2006, after years of decline and stagnation. This rise in output reflects a significant increase in the scope of renovations, which resulted, in part, from the need to repair damage from the war in the north. Other activity in the industry, including construction of new apartments, did not increase: The number of residential starts dropped and the number of apartments under construction did not rise. In recent years there has been stagnation in apartment prices and activity in the periphery, alongside increased prices in the center of the country and more exclusive areas. The rise in prices in the center has not led, for the time being, to increased building activity in the region. On the supply side, the situation in the last two years has worsened: The cost of imported raw materials rose

sharply, and the cost of unskilled labor has also increased owing to the government's policy of restricting the number of foreign workers in the construction industry.

Output of the trade and services industry grew by 7.1 percent in 2006, continuing the increase evident since the second half of 2003.

The output of the commerce and services industry rose in 2006 by 7.1 percent, continuing the growth that began during the second half of 2003. Activity in these industries, which produce more than half of the economy's business-sector product, is related to a certain degree to greater private consumption, and in particular to increased international demand for ICT products, in which Israel specializes. This increase in worldwide demand led directly to a sharp rise in activity in computer services and R&D. Increased activity in other business services, including legal and accounting services, relied this year to a large extent on demand for ICT products abroad and growth in Israel's capital market. Increased activity in the commercial industries and in some of the service industries—such as hotel and catering services, health, personal services and others—derived from the continuing rise in income and private consumption. Increased activity led to greater employment in most of the industries. Real wages rose in most industries.

The output of the transportation industry rose at a rate of 4 percent. Growth in the transportation industry was achieved due to increased activity in the economy and reforms in the bus and taxi industry. The moderate rise in shipping activity and air transport reflects the moderate increase in travel abroad by Israelis and stability in incoming tourism, and a slight decline in activity at the ports. The output of the communications industry rose this year by 4 percent, among other things, as a result of increased penetration of fast Internet services and the use of third generation cellular phones.

The output of the transport and communications industries rose by 4 percent.

Table 2.7
The Principal Industries, 1996–2006

(rates of change, at constant prices)

		Change from 2005				Annual averages, 1996–2005					
	Industry weights[a]	Product	Labor input	Capital	Real wage per employee[b]	Product	Labor input	Capital	Total factor productivity	Labor productivity	Real wage per employee
Manufacturing	21.4	10.5	1.9	3.4	3.9	2.9	0.0	6.2	0.8	3.0	1.1
Agriculture	2.6	0.6	-7.7	2.1	0.9	4.7	0.4	0.2	4.3	4.3	2.8
Transport and communications	10.1	3.6	9.0	2.4	0.1	4.6	3.0	6.8	-0.1	1.6	-0.2
Construction	6.8	2.2	2.9	0.1	0.6	-1.5	-2.1	7.2	-0.9	0.6	0.8
Commerce and services[c]	55.6	7.1	3.4	3.1	2.3	4.8	4.3	11.0	-1.9	0.5	1.7
Electricity and water	3.4	4.1	-16.4	2.2	6.6	3.9	1.3	4.3	1.2	2.5	2.2
Total business sector	100.0	6.4	2.8	2.7	1.8	3.9	2.2	6.7	0.3	1.7	1.7

[a] Excluding imputed banking services, errors and omissions.
[b] Excluding Palestinians. From 2003, excluding foreign workers.
[c] Including commerce, catering and hotel services, and financial, business and personal services.
SOURCE: Based on Central Bureau of Statistics data.

II. Main developments in selected industries

a. Manufacturing

The growth of manufacturing industry was led by world trade, and the rise in its exports greatly exceeded the increase in domestic sales.

Manufacturing product, which accounts for about one-fifth of business-sector product, increased by 10.5 percent in 2006 after slower growth (3.5 percent) in 2005. The acceleration was evident at all levels of technology intensivity: high-tech, mixed-technology, and traditional industries. Mixed industries suffered more than others during the Second Lebanon War but, by and large, the war had no significant impact on the growth of manufacturing product.[19] Most of the increase traced to a strong upturn in manufacturing exports, especially in electronics, originating in stronger global demand. U.S. trade, a handy index of the development of global demand, increased by 12 percent in 2006 and exports climbed at a similar case. Manufacturing sales to the domestic market expanded at a moderate 4.3 percent pace due to a 4 percent increase in domestic uses. Domestic sales grew more slowly than product mainly because the growth in manufacturing is being powered not by an increase in domestic uses but by the upturn in global demand.

Manufacturing activity is approaching the supply constraint, but production inputs have not yet been utilized to the full.

The response of manufacturing output to the continuing surge in global demand over the past two years has brought manufacturing to the verge of a supply constraint, as evidenced in an increase in machinery and equipment utilization and the worsening of the skilled-worker constraint.[20] However, the decrease in unit labor cost in manufacturing and the handsome growth rate of output indicate that factor inputs in manufacturing have not yet been put to full use. Manufacturing product was able to grow despite the approach of the supply constraint due to improvements in Total Factor Productivity and quantity of factor inputs—capital and labor—that allowed supply to keep up with demand.

Table 2.8
Manufacturing Industry, Main Indicators, 1990–2006

(rate of change, percent)

	1990-2000	2001-2003	2004	2005	2006
Manufacturing product	5.9	-1.1	6.9	3.6	10.5
Domestic sales (volume)	4.3	-2.2	1.4	3.0	4.3
Manufacturing exports (volume)	11.5	-1.3	16.8	4.8	12.0
Output of electronics industry	10.6	-5.2	12.2	5.3	15.3
Output of traditional industries	3.8	-2.8	2.7	2.2	5.5
Output of mixed industries	5.2	5.3	8.1	4.8	13.6

SOURCE: Based on Central Bureau of Statistics data.

[19] See expanded discussion in Box 2.2.

[20] Increases in utilization and labor constraint are reflected in the Bank of Israel Companies Survey and the Manufacturers Association of Israel's survey of expectations.

Exports: In the past three years, the trends in Israeli manufacturing have been driven by exports. The ongoing processes of trade liberalization and economic specialization have boosted the share of exports in manufacturing. The share of export revenue in total manufacturing turnover climbed from 30 percent in 1995 to 43 percent in 2006. Therefore, it is no wonder that the manufacturing business cycles are increasingly susceptible to the influence of exports. Furthermore, added value is higher in most export industries than in those that manufacture for the domestic market, giving exports an even greater influence on product.

In the past three years, both Israel's manufacturing exports and U.S. trade have advanced at a 14 percent average annual rate. Viewed by industries, the exports of industrial chemicals and fertilizers increased in 2006 after declining perceptibly in 2005 but continued to lose share in global trade. The industries that managed to boost their share in trade were pharmaceuticals, which increased very briskly, and electronics, in which exports of components advanced smartly. Exports of electronic components, which in 2005 responded powerfully to the decline in U.S. trade in this industry, outpaced U.S. trade growth in 2006. Electronic communications exports also decreased in 2005 and their share in U.S. trade contracted severely; however, they recovered in 2006 and grew more quickly than U.S. trade. Exports of industrial equipment for control and supervision and medical and scientific equipment—15 percent of total manufacturing exports—moved a head, accounted for a larger share in global trade, and maintained their fraction in Israel's total electronics exports. The increase in the exports of this industry marks the continuation of trends that began in the recession years, when the other electronics industries retreated. After losing some

Table 2.9
Israel's Total Exports and US Total Trade, 2006

(dollars,rate of change, percent)

		2004		2005		2006	
	Share of	Israel's total export	US trade	Israel's total export	US trade	Israel's total export	US trade
Total manufactured exports	100	22	16	7	13	15	12
Total excl. electronics	67	22	16	10	14	13	13
Electronics	33	22	15	2.9	8	17	11
Electronic communications	13.3	20	22	-1	18	17	11
Equipment for control and supervision and medical and scientific equipment	11.6	30	15	10	7	17	10
Electronic components	8.1	12	8	-10	-4	18	9
Chemicals, fertilizers and pesticides	9.1	24	16	-9	10	6	12
Pharmaceuticals	7.5	34	13	49	8	52	14
Rubber and plastics	6	18	14	6	13	11	9
Textiles	3.6	13	10	-1	6	2	4

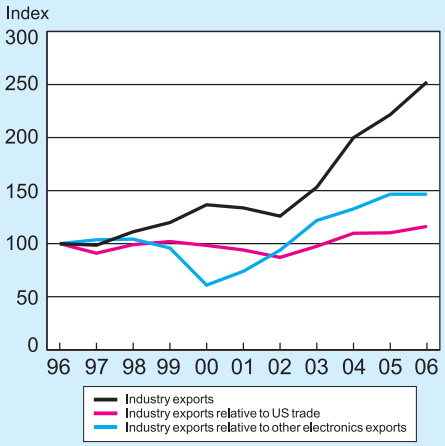
SOURCE: Based on Central Bureau of Statistics and US foreign trade data.

of its share in electronics exports in the 1990s, especially due to the steep decline in the electronics-components industry, this industry bottomed out in 2002—the trough year for high-tech industries at large—and since then has been growing at a 20 percent average annual pace as against only 7 percent among the other electronics industries.

Israel's comparative advantage—its human capital—provides the impetus for the renewed growth in electronics exports.

While some high-tech production has been rerouted to developing countries, production of industrial equipment for control and supervision and medical and scientific equipment remains the province of developed countries. A detailed examination of the internal workings of the industry shows that the upturn in its exports is attributable to an increase in exports of medical and surgical instrumentation, examination and detection instrumentation, and quality-control, management, and early-warning equipment. The average employee in these fields has more than sixteen years of schooling, as against around fifteen in the other high-tech industries. The resumption of growth in electronics exports traces to Israel's comparative advantage, as evidenced by the upturn in exports of knowledge- and innovation-intensive products as against a decline in exports of products in which the production element is dominant. This change in the composition of high-tech exports is in addition to the recomposition of manufacturing exports at large—an increase in exports of high-tech industries at the expense of traditional industries.

Figure 2.6
Development in Exports of Control and Monitoring Equipment and Medical and Scientific Equipment Industry, 1996-2006



SOURCE: Based on US foreign trade and Central Bureau of Statistics data.

Factors of production, productivity, and profitability: the rapid growth of manufacturing output in 2006 was abetted by increases in both factors of production—capital and labor—and in Total Factor Productivity (TFP) and labor productivity. TFP growth was brisk in 2006, especially in mixed-technology industries (10.4 percent) and traditional industries, which are usually noted for low rates of TFP growth (4.7 percent). Examination of the origins of the increase in manufacturing output at different levels of technology intensity shows that in mixed and traditional industries, employment and labor input in hours increased at gentle rates only; therefore, most of their product growth traces to the upturn in TFP. In high-tech industries, in contrast, employment expanded by 7.5 percent, labor input in hours grew by 10.1 percent, and TFP played a smaller role in the growth of product than in traditional and mixed industries.

From the mid-1990s onward, the average annual productivity improvement in traditional and mixed industries has been slower than the norm in developed countries

and in high-tech industries. It stands to reason that most of the contribution of TFP to these industries' growth in 2006 was reflected in greater capital utilization. Therefore, their increase in product has a large cyclical component. In contrast, the mild improvement in the TFP of high-tech industries, at a pace not far from the long-term rate, and the increase in labor hours beyond the increase in the number of employees, indicates that these industries' production capacity is verging on full use and that the cyclical component in their product growth is relatively small.

Growth of the high-tech industries includes a smaller cyclical component than in the other manufacturing industries.

The increase in the highly educated labor force, which exhibits a low unemployment rate,[21] facilitated high-tech hiring in the first half of the year and, in turn, the increase in high-tech product. The Bank of Israel Companies Survey supports this statement by finding that the severity of the skilled-worker constraint in high-tech industries declined in the first half of 2006 after a lengthy upward trend. Later in the year, however, the constraint began to rise again and high-tech firms faced growing difficulty in recruiting skilled workers.

Manufacturers' profitability increased in 2006 and gross return on capital attained the highest level since 2000. Gross return on capital improved because the increase in manufacturing product in the past three years was accompanied by only gentle growth in capital stock and per-hour labor cost, as reflected in steady decreases in the capital/product ratio and unit labor costs. The increase in capital stock has been moderate in recent years because of a slump in investment in principal industries in the late 1990s, after the slackening of mass immigration, which had been accompanied by steeply climbing investment rates. The sluggish pace of increase in labor cost traces to the concurrence of an upturn in labor supply, greater demand for manufacturing labor, and the low level of new workers' wages, which restrains the rate of wage increase among the labor force at large.

The return to gross capital rose, because manufacturing output increased sharply while capital stock and labor costs per hour rose only moderately.

Table 2.10
Manufacturing Industry, Selected Indicators of Activity, 1990–2006

(rate of change, percent)

	1990-2000	2001-2003	2004	2005	2006
Return on gross capital	16.4	10.3	11.4	10.2	12.0
Total productivity	1.5	-1.0	5.2	1.7	7.0
Input/output prices	-0.25	1.2	2.1	3.2	1.6
Costs per hour worked (real, at GDP prices)	4.5	0.3	2.0	6.4	3.8
Labor productivity	3.4	1.9	6.1	2.4	6.8
Labor input (hours)	2.4	-2.9	0.8	1.3	3.5
Gross capital stock (beginning of year)	7.3	4.2	2.8	3.0	2.9
Investment	9.5	-6.4	8.3	6.2	26.6

SOURCE: Based on Central Bureau of Statistics data.

[21] See Table 2.11.

Manufacturing investment expanded appreciably in 2006 and capital stock as of the beginning of the year advanced by 3 percent. The slowing of manufacturing output growth and the decrease in return on capital in 2005 blunted the increase in manufacturing investment that year, whereas the return to a rapid growth trajectory in 2006 boosted the return on capital and caused investments to accelerate in order to compensate for the modest level of investment in the previous year. The increase in investment encompassed all mixed and high-tech industries but skipped over some traditional industries. Investment in some traditional industries—textiles and clothing, paper and paper products, and nonferrous minerals—dipped in 2006; in contrast, investments in electronics, plastics, rubber, and metal moved ahead conspicuously.

The skilled-worker constraint in manufacturing: the growth in manufacturing product over the past three years is making it difficult for some industries to recruit skilled workers. Although there is no evidence that this is affecting the level of activity, the decline in unemployment among skilled manufacturing workers, from 6.4 percent in 2002 to 3.7 percent in 2005, suggests that such a situation is approaching. The continued growth of manufacturing in 2006 probably led this sector another step closer to a supply constraint originating in labor shortage. To identify the kinds of skilled workers who may become hard to recruit, we availed ourselves of 2002–2005 data on wages and employment by occupations, culled from the Central Bureau of Statistics manpower surveys.

In addition to the shortage of engineering and computer staff, there is a shortage of skilled workers in the metals and plastics industries.

Table 2.11 shows that unemployment among engineers, practical engineers, and technicians was very low in 2005 and that the real wage of employees in these professions

Table 2.11
Unemployment[a] and Wages of Selected Skilled Manufacturing Workers

	Relative wage in 1995	Change in real wage 2002 to 2005	Unemployment rate			
			2002	2003	2004	2005
			(percent)			
Total skilled manufacturing workers	100	4.8	6.4	4.9	3.9	3.7
of which						
Engineers	153	2.0	3.9	3.4	1.7	2.0
Engineering technicians (computers) and computer technicians	120	4.4	7.8	6.9	3.9	2.5
Non-computer engineering and other technicians	102	6.5	4.1	3.7	2.4	1.8
Finished metals	65	4.9	7.3	5.4	4.0	2.8
Electricity and electronics	68	-2.5	6.5	4.5	4.9	3.9
Carpentry	51	-0.5	13.1	6.8	5.8	5.5
Textiles	40	3.5	13.2	6.6	3.9	5.8
Plastics and rubber	59	12.2	6.9	6.1	3.6	3.2
Printing and paper	70	8.4	6.7	5.8	3.6	5.3
Chemical production	77	-12.3	5.3	3.0	7.6	6.0

[a] Data on the occupations of individuals who have been out of work for more than a year are not available; the unemployment rate therefore does not include them.

SOURCE: Based on Central Bureau of Statistics data.

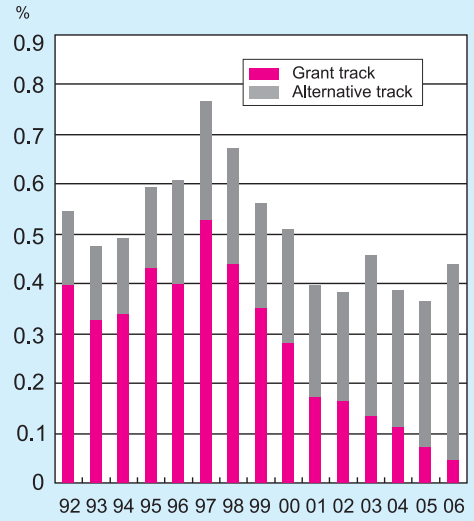
was on the upswing. Therefore, the perceptible increase in 2006 in manufacturing activity generally, and in high-tech-industry activity particularly, may have caused a real shortage of workers in these occupations. The decrease in unemployment and the increase in wages among skilled workers in metals, plastics, and rubber also stand out. The looming labor shortage in these occupations is closely related to the rapid growth of the industries that employ the workers at issue. Thus, in 2002–2006 the output of the plastics and rubber industry increased at a 6.3 percent annual rate and that of metal products advance by 5.3 percent. The severity of the labor shortage in these industries may also originate in the decline of vocational education. The decline may be surmounted by expanding vocational training for jobless persons in high-demand occupations; such training is offered by the Ministry of Industry, Trade, and Employment. Skilled workers in chemical production processes, in contrast, are facing falling wages and high unemployment rates. The output of the petrochemical industry (excluding pharmaceuticals) hardly increased in 2003–05 and began to recover only in 2006.

Box 2.3
The Encouragement of Capital Investment Law and its impact on employment in development areas

The Encouragement of Capital Investment Law (ECIL) provides assistance in the financing of manufacturing and tourism projects, with special emphasis on investment in development areas. The main goals of ECIL are to attract foreign capital, improve the balance of payments, and create jobs. Assistance under ECIL is given in two main programs. The grants program encourages investment in development areas only and is given as a percent of fixed investment, with a higher percent awarded for an approved investment in Class A development areas than in Class B areas.[1] The tax-benefit program, also known as the "alternative track," offers investment incentives in the form of exemptions and concessions on corporate taxes, exemptions and concessions on dividend taxes, and accelerated depreciation. The level of benefits on this program corresponds to the area where the investment is performed. Investments in the central area are also rewarded in this program but those in development areas receive preference, as reflected in the length of the benefit period and the size of the benefits.

[1] By and large, 20 percent for investments in Class A areas and 10 percent in Class B areas.

Figure 1
The Cost of the Encouragement of Capital Investments Law as a Percentage of GDP, by Grant Track or by Alternative Track, 1992-2006



SOURCE: Based on data from the Central Bureau of Statistics, State Revenue Administration, and the Budget Books of the Ministry of Finance.

The ECIL budget is typically very volatile and declined from 0.75 percent of GDP in 1997 to 0.45 percent in 2006. The main trend in this budget is a perceptible and continuous upward trend, since 1997, in the share of tax benefits in total benefits given out under ECIL. Furthermore, in 2005 the handling of these benefits was transferred to the Israel Tax Authority and the budget ceiling that had applied to them was abolished. In the estimation of the State Revenues Administration, NIS 2.4 billion in tax benefits was awarded under ECIL in 2006 as against NIS 1.6 billion average the three previous years. The increase in the proportion of tax benefits obscures the cost of ECIL because the expenditure on such benefits is estimated ex post and may be different from the actual cost. Furthermore, a policy that does not limit the total tax benefit lacks the dimension of prior planning and may interfere with the attainment of deficit targets.

We asked whether ECIL is meeting one of its major goals, i.e., whether it is helping to improve employment in high-unemployment areas. We examined the effect of the law on employment and unemployment in Class A development areas, which are the main beneficiaries of the investment grants. By estimating various equations and applying several methods of inquiry, we found that it is hard to detect any improvement in employment in development areas due to the preference that these areas receive. Our examination focused on approved investments in manufacturing (through both programs: grants and tax benefits) in 1987–2003. The locations examined were fifteen natural regions in southern and northern Israel that are classified as Class A development areas. To probe the cumulative effect of the investments, we used the average investment over a five-year period as a reasonable variable for the state of employment

in the sixth year.[2] The investigation was performed for unemployment rates and employment rates, controlling for the macroeconomic situation, the proportion of immigrants, the share of persons with academic schooling, and the internal migration balance in each region.[3] The results of the examination show that a change in the level of approved investments explains only a small and statistically insignificant portion of a change in rates of unemployment or employment. According to a calculation performed on the basis of the most statistically significant results obtained, the government would have to provide NIS 2 billion per year in funding over five years in order to lower by 1 percent the unemployment rate in the Class A development area at large. The results reveal in particular the scanty success of the grants program, on which more was spent than on tax benefits during most of the examination period.

Many studies[4] indicate that ECIL is detrimental to efficiency in the economy and that it has a warped, or a small and insignificant, effect on employment. The subsidization of capital creates overuse of capital relative to labor and, therefore, does not stimulate labor demand to the desired extent. Furthermore, the granted enterprises have a lower survival rate than enterprises that are established on a fully private financial basis; therefore, the subsidized investments manage to provide mainly temporary and unstable employment. The State Comptroller has referred several times to flaws in the implementation of ECIL, especially the failure of the beneficiary enterprises to meet the employment targets that they presented. Another impediment to the success of ECIL is the protracted decline in the percent of manufacturing employment in total employment and in the share of unskilled workers among manufacturing workers. Even if investments encouraged by ECIL have a favorable effect on employment, they may be performed even without the encouragement or may crowd out other investments. Experience in other countries shows that a favorable effect on employment in areas that received investment encouragement was not accompanied by an increase in labor

[2] Tests were performed by means of additional formulations in which the explanatory power of approved investments was weaker.

[3] Source: investment data—annual reports of the Investment Center, 1986–2003. Employment data—Central Bureau of Statistics Manpower Surveys.

[4] For example, Litvak and Meridor (1982), "Estimate of the Implicit Gift in Investment Encouragement in Israel," *Bank of Israel Survey 5*, pp. 3–24 (Hebrew); Razin and Schwartz (1992), "Evaluation of Israel's Industrial Dispersal Policy in the Context of Changing Realities," *Economic Quarterly 44(153)*, pp. 236–276 (Hebrew, English summary); Moav and Reingevertz (2006), "Israel's Encouragement of Capital Investment Law: Employment in Development Areas 1984–2004," Shalem Center (Hebrew); Lavy (1994), "The Effect of Investment Subsidies on the Survival of Firms in Israel," The Maurice Falk Institute for Economic Research in Israel, Discussion Paper no. 94.04.

productivity and wages in the area; therefore, the goal of narrowing disparities among regions was not obtained.

In view of the blow to economic efficiency and the doubts about ECIL's success in stimulating employment in development areas, alternative **direct** ways of attaining this goal should be sought. The downsizing of the grants budget should continue, the total sum of tax benefits should be capped, and benefits should be conditioned on meeting employment and wage targets and not on meeting investment targets, as per the current practice. Employment in high-unemployment regions may be improved by direct encouragement. Various studies in developed countries[5] show that countries that spend large sums on direct encouragement of employment managed to lower their unemployment rates. The extent of success of each method, however, is not always clear and varies from one country to the next. Direct encouragement of employment in these countries is provided mainly in several forms: employment programs for young jobless people, grants for jobless people who find work more quickly, vocational training, and wage subsidies for the newly hired. Adding a component of vocational training to wage subsidies for newly employed persons was found to increase the probability that such a subsidy would succeed.[6]

In 2003, Israel inaugurated an employment program that provides a direct hiring subsidy—a grant set at 15 percent of the firm's total payroll cost. The firms that receive the grant are chosen by means of an auction in which bids are tendered for the employment of workers in development areas or ultra-Orthodox localities. The program was budgeted at NIS 50 million per year in the past three years and only a few employment auctions have been carried out thus far. It might be worthwhile to consider increasing the program of this budget and to examine the success of the employment auctions that have been performed thus far. According to the criteria of the program, any sum that the winning bidder receives on account of a public subsidy for worker training is subtracted from its grant. This practice should be abolished. Instead, the integration of employment subsidies and vocational training should be encouraged because training may help the individuals in question to find employment in the future as well.

[5] Natalia Presman and Arie Arnon (2005), "Unemployment in Israel and Possible Policy Measures," Van Leer Jerusalem Institute (Hebrew).

[6] Van Ours, J. C. (2000), "Subsidized Jobs for Unemployed Workers in Slovakia," Working Paper No. 311, May 2000; Van Ours, J. C., and M. Vodopivec (2004), "How Changes in Benefits Entitlement Affect Job-Finding: Lessons from the Slovenian Experiment," IZA DP No. 1181.

Box 2.4
Subsidization in the manufacturing industries and the relationship between their profitability and the business cycle

This box presents estimates of subsidization rates in Israel's manufacturing industries, and the relationship between the industries' profitability and global business cycles from 1990 to 2003.

Subsidies under the Encouragement of Capital Investment Law (henceforth the Law) **and those generally intended to encourage R&D––based on technology level and contribution to profit**: The highest rate of subsidization is in the high-tech industries. These are almost the only industries in which R&D is given support. The lowest rate of subsidization is in the traditional technology industries. In the high-tech industries both output and the return to labor have risen noticeably during the aforementioned years, while the rise seen in traditional technology industries was lower. Without the Law and the encouragement of R&D, industrial profits in general would be 39 percent lower, on average [1,2] (see Table 1).

Profitability rate and business cycle: The highest rates of profit from output were found in the high-tech industries, and these are followed—with a significant gap—by traditional and mixed technology industries (see table). As expected, the rate of profitability from the manufacturing output correlated positively with the Israeli business cycle: When estimating the output gap (which represents the business cycle) using the production-function approach,

[1] The rate of profit from product is defined as the difference between output and cost divided by product. Cost data were calculated in a unique manner: interest expenses were imputed, for the first time, to the cost, on the assumption that all of the activity was financed by loans, that is, that the factory has no equity. Subsidies received by the industry were also taken into account. The imputation of interest expenses to cost and the consideration of subsidization created a common denominator for comparing different industries.

[2] Industry surveys contain data on operating profit, but operating profit is not a good common indicator for analyzing industry profitability, for two reasons: (1) While depreciation costs are imputed in the operating, interest expenses for financing the operating assets are not imputed, and therefore, in a capital-intensive industry the operating profit from output will be (relatively) high, and in an industry with low capital intensity, the operating profit from output will be (relatively) low. Imputation of financing expenses to operating capital brings all the industries under a common denominator. (2) Income from capital subsidies by virtue of the Law has been imputed to the profit calculated herein; this is in contrast with operating profit.

the weighted coefficient of correlation obtained is 0.58.[3,4] It was also found that industries with a relatively high rate of profitability (high-tech industries) are also the industries with the highest correlation between rate of profitability and the Israeli business cycle. In industries where exports constitute more than one-third of the output, the weighted coefficient of correlation was 0.13 with the international business cycle (according to estimates of the US output gap by the International Monetary Fund), and in industries where the rate of exports was lower the coefficient of correlation was lower, at –0.06. In other words, the profitability of industries that export a significant portion of their output correlates positively with this cycle.

Table 1
Subsidies and Profitability in the Principal Industries, 1990–2003
(average values, percent)

Level of technology	Profit, percent of product	Rate of change of product	Rate of change in return on labor	Subsidy, percent of return on labor: by virtue of the Encouragement of Capital Investments Law	Subsidy, percent of return on labor: by virtue of the Encouragement of Capital Investments Law and R&D support	Contribution to profit due to the: Encouragement of Capital Investments Law	Contribution to profit due to the: Encouragement of Capital Investments Law and R&D support
Low	8.5	1.3	1.2	2.7	2.8	17.3	18.4
Medium-high and medium low	6.5	4.0	2.5	4.9	5.7	42.3	50.0
High	16.0	7.6	3.6	5.0	10.8	20.8	44.7
Total manufacturing industries, average	8.8	3.3	2.2	3.9	5.6	26.8	38.7

[3] Industrial coefficients of correlation have been weighted according to the weight of the entire industry in the manufacturing output.

[4] See: Joseph Djivre and Sigal Ribon, "Monetary Policy, the Output Gap and Inflation: A Closer Look at the Monetary Policy Transmission Mechanism in Israel, 1989-1999," Discussion Paper Series, Bank of Israel, Research Department, September 2000. Similar results were also obtained using the production-function and structural VAR approaches presented by Yossi Yakhin and Yigal Menashe in "Mind the Gap: Structural and Non-structural Approaches to Estimating Israel's Output Gap," Discussion Paper Series, Bank of Israel, Research Department, November 2001.

b. Construction

Activity in the construction industry continued at a steady level in 2006; the output of the industry did not increase, except for activity in renovations and defense construction.

Construction industry activity, accounting for 5.7 percent of business-sector product, was stable in 2006. Industry output and employment increased by 1.9 percent. The mild upturn in output reflects strong growth in renovation activity, partly for the repair of war damage in the north, and an upturn in defense construction. The remainder of industry activity, for residential and nonresidential purposes, did not increase. Residential starts declined and dwellings under construction were unchanged. In

recent years, there has been a large difference between periphery and center in housing demand: while prices in prestige areas have risen significantly, prices and activity in peripheral areas have stagnated. For the time being, the price upturns in the central area have not led to an increase in building activity there. On the supply side, the situation worsened perceptibly in the past two years; imported raw-material prices spiraled and unskilled labor became more expensive due to the government policy of limiting the number of foreign workers in construction.

The fall in rents and apartment prices are indications that the economic recovery has not yet resulted in excess demand for housing services.

In view of the limping performance of the construction industry, the question is why this of all industries has failed to recover and whether an increase in demand that will lead to a recovery should be expected. In the real-estate market, building supply is inelastic in the short term: the flow originating in construction activity is very small relative to existing building stock. Therefore, an increase in demand is initially met by an upturn in rent. Rent levels in renewed leases declined in 2006. Although the decrease was abetted by the weakness of the dollar against the shekel, it attests above all to the absence of surplus demand for housing services. Housing prices, which did not rise in 2006, point to something similar. Housing prices reflect, according to the rational-expectations approach, expectations of the future trend in housing-service prices.[22] Hence, the stability in housing prices originates in the markets' belief that construction-industry activity is not excessively sluggish or in the belief that demand is poised to increase only moderately and that the new level of demand will be satisfied without a significant increase in land and housing prices. Further indications of the extent of construction activity in the coming year are the number of starts and of new dwellings for sale (out of those begun). Starts declined in 2006 whereas new dwellings for sale plummeted at year's end after three years of relative stability.[23] (The new plateau was 8 percent lower than in the previous three years.) Hence, the extent of industry activity in the near future will be influenced by clashing effects: adversely affected by the decrease in housing starts in 2006 and positively affected by the decline in unsold dwelling stock at year's end. The Bank of Israel Companies Survey shows that a majority of building contractors, although not a significant majority, expect industry activity to accelerate in Q1–2007.

The current extent of residential construction activity is slightly lower than that required demographically.

A conventional way of examining the possibility of an imminent recovery in housing-services demand is by examining the current level of activity against demographic needs. Average housing density has declined: in the past four years, the population has grown by 120,000 persons per year but the number of rooms built could have accommodated a larger increase, i.e., for every room (in a new dwelling) only 0.9

[22] As well as considerations of risk dispersion in assets portfolios: the capital-market liberalization gave Israelis vastly wider options in overseas investment, both in real-estate and in financial investment; one would expect this to dampen Israelis' demand for domestic housing as assets. Domestic disinflation also reduced demand for housing as an asset. See Y. Rubinstein (1999), "Housing Prices in Israel 1996–1997—a Financial Bubble?" in Leo Leiderman (ed.), *Inflation and Disinflation in Israel*, Bank of Israel.

[23] In 2006, housing starts, housing completions, and new dwellings sold were similar at around 30,000, approximating the level in the previous three years: 30,500, 33,500, and 29,500.

Table 2.12
Construction, Selected Data, 1997-2006

	Level in 2006	Annual average change (percent)		
		1997–2002	2005-2003	2006
Total output (NIS million, 2005 prices)	51.8	-4.2	-3.9	1.9
Residential (including renovations)	26.3	-5.5	-2.0	1.5
Nonresidential	11.4	-5.9	-10.0	-5.0
Other construction (earthworks and defense-related)	14	2.7	-1.5	9 .0
Apartments under construction (’000)	56	-7.1	-5.6	-0.5
Residential starts (’000 units)	29.7	-9.2	-2 .0	-4.7
Residential completions (’000 units)	29.9	-10.5	-3.2	-8.5
Sales of new apartments (’000 units)	16.7	-4.1	-4.3	-3.6
Apartments offered for sale (’000)	18.5		-6.5	-0.6
Construction product	25.6	-3.6	-2.7	1.3
Total employees (’000)[a]	192.7	-2.7	-3.8	2.3
Real wage per employee post[b] (2004 prices)	6,164	1.5	0.7	0.8
Apartment prices relative to CPI		-2.6	-4 .0	-0.7
Rent prices relative to CPI		2.5	-6.6	-0.1
Input prices relative to CPI		-0.1	4.3	4 .0
Average mortgage interest rate (annual average)		6.1	5.1	4.9

[a] Includes an estimate of unreported foreign workers.
[b] Until 2002, derived from the wages of Israelis and foreign workers; from 2002, Israelis only.
SOURCE: Based on Central Bureau of Staistics and Ministry of Housing and Construction data.

persons were added.[24] In contrast, the increase in the number of households has far outpaced that of housing starts in recent years (36,000–40,000 per year as against 30,000 on annual average). Notably, 40 percent of new dwellings are owner-built and many of them contain more than one unit. Therefore, the gap between demographic needs and the current level of activity may not be meaningful.

The economic recovery has so far resulted in a rise in housing prices only in the prestigious luxury end of the market, so that no recovery in the activity of the construction industry is evident yet.

The expectation of an upturn in industry activity is based on the premise that an acceleration of growth and an increase in wage income and private wealth boost demand for housing services, reduce housing density, and lead to faster scrapping of old dwellings than the pace warranted by demographic needs. Empirical research on the factors that influence the level of housing starts in Israel (using data for 1974–1990) found that the effect of a quantitative increase in population is three times greater than the effect of an increase in wealth. This is unsurprising, since while the economic situation does affect dwelling size, its main effect is on dwelling location. Indeed, the economic improvement whetted demand for large dwellings in the central area and in central Jerusalem, which was abetted by massive foreign investment in real estate.[25] However, most of the increase in housing prices in central Israel and Jerusalem was passed through to a further upturn in the prices of land in short supply. Construction

[24] Average density today is 0.92 persons per room. The share of households that have fewer rooms than persons declined from 24.2 percent in 2003 to 22.6 percent in 2005.
[25] Foreign investment in real estate was $4 billion in the past four years.

activity, in contrast, remained unchanged: construction in the Tel Aviv, Central, and Jerusalem districts was no greater in 2006 than in 2004. However, the price increase in the high-demand areas made land use more profitable, e.g., by means of clear-and-build projects; therefore, it is ultimately expected to induce an upturn in activity.

In the last few years housing prices in the central part of the country have risen relative to prices in outlying areas.

In recent years, housing prices have been rising in central Israel relative to the periphery. Internal-migration data illustrate saliently the growing preference for housing in the center: the data for 2003–2005 point to a negative internal-migration balance in the Southern and Northern districts (out-migration of 17,500 persons) and a positive balance in the Central District (in-migration of 36,000 persons). A new study found that this migration has been continuing for many years and that the periphery-to-center migrants have relatively high levels of schooling and income.[26] The wish to migrate from periphery to center leads to rising pressure for use of land reserves in the central area[27] and to non-utilization of the ample land reserves that exist on the periphery. The factors behind the periphery–center disequilibrium include the pairing of a strong increase in housing demand in the periphery during the mass immigration years and the focus of economic growth on high-tech industries, which are situated largely in the center, resulting in internal-migration pressure due to considerations of employment and quality of life. Another factor surfaced in 2006: the Second Lebanon War and tension in the areas abutting the Gaza Strip, which underscored the coterminous nature of the country's "confrontation areas" and its peripheries.[28]

The output of nonresidential construction, which accounts for about half of the industry's total activity, remained unchanged in 2006.

Nonresidential construction output, accounting for 45 percent of construction activity, was unchanged in 2006. Construction increased for manufacturing, transport, and communication industries, languished for businesses and offices, plummeted for municipal authorities, and continued to slump for the hotel industry. Construction for principal industries decreased steeply in 2002 and 2003 and leveled off in 2005–2006. In 2006, starts and active construction in terms of area (mainly for industrial buildings and hotels) increased, possibly auguring an upturn in activity in the near future. Civil infrastructure activity (earthwork) advanced briskly in 2006, as did defense construction, which continued to increase on the heels of a sharp upturn in 2005.

In the last two years, there was a significant rise in the prices of imported construction inputs and in the wages of foreign workers, which acted to reduce construction activity.

The supply side of the industry worsened perceptibly in the past two years, to the detriment of activity. The price index of construction inputs, including labor, rose by 6.2 percent in 2006, bringing the increase in the past two years to 16.5 percent. Most of the upturn was occasioned by higher prices for imported raw materials—metal, steel, concrete, and cement—and fuel, which raised haulage costs. Labor wage also increased in the past two years at a hefty 10 percent pace. Most of the upturn accrued to construction workers (12 percent); the wages of managerial personnel, electricians, and plumbers advanced much more moderately (4 percent). The faster increase in

[26] Koby Braude and Guy Navon, Internal Migration in Israel, Bank of Israel Research Department, Discussion Paper Series *(Hebrew only)*.

[27] The Tel Aviv and Central districts accommodate 41 percent of the population and 47 percent of new dwellings.

[28] The war caused direct damage in the form of rocket strikes; the product generated by renovation activity in its aftermath is estimated at NIS 450 million.

construction workers' wages is explained, among other things, by the replacement of foreign workers and territories labor with Israelis[29]: in the past two years, employment of foreign construction workers declined by 11,000 and that of Israelis increased by 6,400. This substitution raises the wage costs of construction workers[30] and, therefore, has an upward effect on housing prices (and a downward effect on housing supply). However, it makes an important contribution to the enhancement of employment and wages of poorly schooled Israelis and to the mitigation of economic inequality. Concurrent with the worsening on the supply side, real long-term interest climbed in 2006, dampening demand for housing as an asset. Notably, the change took place against the background of an especially low real interest rate in 2005; the 2006 level was still low relative to the more distant past.

There is no real justification for allocating land to firms that specialize in rental accommodation, which would mean a government subsidy for these large companies.

At year's end, the Government approved a motion by the Minister of Construction and Housing to encourage construction for rental by offering firms tax benefits but had not yet ruled on the minister's request to create a special allocation of land for rental purposes. The existence of a well developed rental-housing market is advantageous due to the high employment costs and the spreads between debitory and creditory interest rates. Today, most owners of rental dwellings are private individuals who own one or two dwellings; firms avoid this activity. The new draft legislation, which establishes an exemption from land-betterment tax for assets leased for twenty-five years and allows offsetting of expenses, is worthy because it equalizes the situation of firms with those of private landlords, who enjoy a de facto exemption from land-betterment tax.[31] In contrast, a specific allocation of land for rental dwellings, i.e., a government subsidy for firms, would give firms a significant and wholly unjustified advantage. Although firms do enjoy an edge because they provide superior housing maintenance and long-term security for lessees, these advantages are priced in the market and, therefore, do not justify a subsidy. The main reason for the absence of firms in the rental market is that firms demand a much higher rate of return than individuals do. This is because individuals regard their housing investments as low-risk activities and because their investment alternatives are inferior to those of large companies.

[29] However, most of the wage increase (7.5 percent) took place in 2005 while the increase in employment of Israelis occurred in 2006.

[30] Noam Zussman and Dmitri Romanov (2003), *Foreign Workers in the Construction Industry: Situation and Policy Implications*, Bank of Israel Research Department, Discussion Paper Series *(Hebrew only)*, found that the replacement of 30,000 foreign workers with Israelis would raise the industry's wage level by 16 percent.

[31] Importantly, homeowners are liable to Value Added Tax (15.5 percent) and purchase tax when they acquire a new dwelling (and, indirectly, a preexisting one as well). Therefore, the tax rate imposed on individuals' rental income is not much lower than the 20 percent rate that applies to real gains on tradable securities on the Stock Exchange. In the former case, too, the taxes are not deferred but are due as soon as the asset is acquired.

c. Commerce and services

The rise in activity of the trade and services industries continued in 2006, despite the drop in activity in the third quarter due to the war in the north.

In 2006 the rise in activity in the commerce and services industries, which had begun during the second half of 2003, continued despite the decline in economic activity during the third quarter due to the war. Activity in these industries, which produce more than half of the economy's business sector output, is mainly related to increased demand for high-tech products around the world, in which Israel specializes, which led directly to a sharp rise in activity in computer services and R&D. Increased activity in other business services, including legal and accounting services, relied this year to a large extent on demand for ICT products abroad and the growth in Israel's capital market. The rapid growth of the commercial industries and in some of the service industries—such as hotel and food services, health, personal services and others—derived from the continuing rise in income and private consumption. The drop in output of financial institutions reflects, for the most part, a decline in the output of insurance companies and only a moderate rise in the output of the banks.[32]

The higher level of activity led to a considerable increase in employment in most industries, and to a certain rise in the real wage.

The improved activity led to a significant increase in employment in most industries, and to a certain rise in the real wage. In the computer services and R&D industry, real wages rose significantly after having risen in previous years, owing to the high demand for skilled workers in this area. The industry absorbed many workers in 2005

Table 2.13
Main Trade and Services Indices, 2006

(rates of change, percent)

	Share in trade and services product (percent)	GDP	Labor input	Real wage per employee
Trade and services	**100**	**8.6**	**2.3**	**1.7**
Trade	28	6.9	-0.3	-0.1
Services	72	9.3	3.2	2.4
Hotels and restaurants	4	6.8	1.9	0.3
Banking, insurance and financial services	15	-0.5	5.3	5.9
Education, health and welfare	7	7.0	1.2	0.2
Personal and other[a]	6	9.3	7.3	6.2
Business services	40	12.9	4.1	2.4
of which Computer services and R&D	15	11.8	9.4	3.6
Real estate and hiring of machinery and equipment	7	19.4	17.4	2.9
Legal, accounting, architectural and engineering services	13	12.9	2.9	1.4

[a] Including community, social and personal services, and services to households by individuals.
SOURCE: Central Bureau of Statistics.

[32] This decline is related also to an accounting notation, due to changes in the classification of investments in insurance companies. There are other indicators (the significant rise in employees and wages) that show a considerable increase in activity in the financial sector in 2006.

and 2006—at an annual rate of 9 percent and 7 percent. In the financial industries wages rose nicely, perhaps because the workers' union in this industry is strong and workers are more professional. In the personal service industry wages rose due to the increase in disposable income, primarily among the top deciles of the population, who are the main consumers of these services, and because the return is primarily to labor. Generally speaking, the only slight rise in wages and increased employment demonstrate a lack of any real restriction on increased supply in the commerce and services industries, except for computer services and R&D, where—as in the other tradable industries of ICT —the economy has nearly exhausted its production capacity. (See also Table 2.11 in the Section on Industry.)

Box 2.5

Industrial contribution of ICT industries to growth

The information and communications technologies (ICT) industry is a conglomerate of production and service industries for the electronic absorption, presentation, and transmission of information. It incorporates manufacturing industries—communication equipment; supervisory, measurement, and control apparatus; and electronic components—and service industries: communications and computer and R&D services, including start-ups. ICT production, mainly by high-tech industries, is typified by international competition. The growth of the industry creates demand for business services, and over time the industry has grown faster worldwide than the business product.

ICT output in Israel is relatively large compared to that in other countries: Some 16.8 percent of the business output in 2006, compared with an average of about 9 percent in OECD countries and about 10.2 percent in the US in 2003 (see Figure 1).[1] Local expenditure on ICT is limited because of the economy's small size, and therefore the share of exports in output is very high—approximately 57 percent in 2006.[2] A significant share of international investments are made in Israel in this industry. The extent of capital raised through venture capital funds in Israel was some 6.3 percent of the total capital raised in the US.[3]

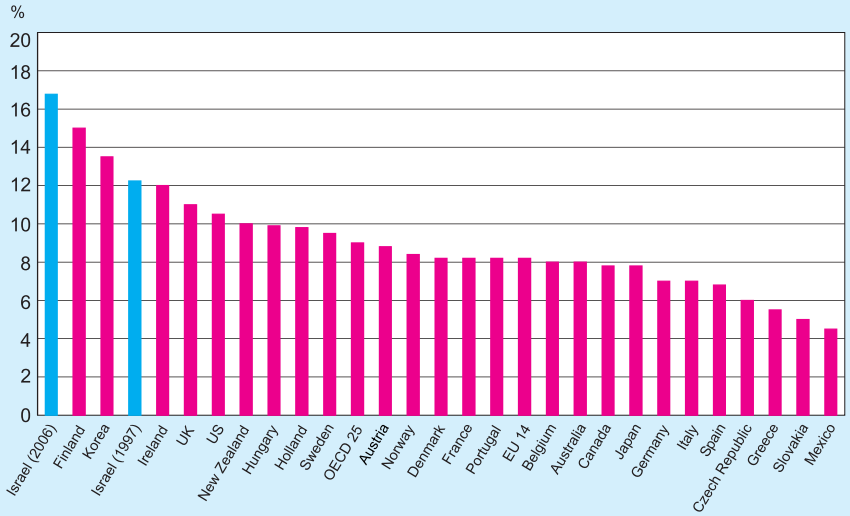
Production in Israel is strongly directed towards the development of new products through research and development services and start-up companies, therefore the weight of R&D and start-ups in the industry output and business sector product as a whole are a great deal higher than the worldwide average.

[1] OECD Information Technology Outlook, 2006.

[2] About 72 percent of the output of the ICT industry was for export; this does not include communications services that are, in fact, included in the ICT industry but the amount of exports they produce is negligible.

[3] http://www.ventureone.com/ii/V1-EY_4Q06_USFinPR.pdf.

Figure 1
ICT Product as a Share of Business-Sector Product, 2003



SOURCE: For Israel, Central Bureau of Statistics; for OECD countries, OECD Information Technology Outlook, 2006.

Israel is one of the world's leaders in R&D—among other things, because of its well-educated manpower base and the high output per worker ratio. Focusing on start-ups illustrates the risk involved in specialization: Although Israel benefited from the growth of the technology field in 1999 and 2000, it also suffered when the technology bubble burst throughout the world.

The output of the ICT industry in Israel grew by 10 percent in 2006, reaching NIS 62 billion. The increase included all related sub-industries—computer and R&D services and manufacturing. Exports rose by 18 percent (see Table 1)—due to the recovery of the global economy, which increased demand for ICT output and led to higher prices. Investment in ICT companies through venture capital funds rose this year to $1.62 billion, the number of people employed in the industry grew by 7.3 percent, and the real wage paid rose this year by 3.7 percent. Wages also rose thanks to an increased demand for workers as a result of greater demand worldwide for ICT products, and thanks to increased labor productivity in the ICT industries. Nevertheless, the persistently high demand for high-tech workers in 2006 led to a slight reduction in their average number of years of education, from the average number in 2005.

This industry is characterized by a high correlation with the international business cycle, and the Israeli business cycle: The coefficient of correlation between the Israeli business cycle[4] and the rate of change for the industry

[4] Based on estimations of the output gap using the production-function approach. according to Djivre and Ribon (See Note 4 in Box 2.4 above.)

Table 1
The ICT Industry, Main Indicators

	Product at 2000 prices	Employees	Exports	Capital raised by high-tech companies
	(average rates of change, percent)			($ million)
2006	9.9	7.3	17.6	1,622
1997-2006	8.5	7.0	11,6	1,369
	NIS million	'000	$ million	
2006	62,391	181.7	15,807	

For explanation See Table 2.A.35.
SOURCE: Central Bureau of Statistics and IVC Research Center.

output is an average of 0.53, while the coefficient of correlation between the international business cycle (based on estimates of the US output gap by the International Monetary Fund) and the rate of change for the industry output is 0.51. This means we must also examine it from a long-term perspective. In 1997-2006, industry output and industry exports rose on average more than total business sector product and exports (see Table 1), so the industry's share of the business sector rose from 12.2 percent in 1997 to 16.8 percent in 2006, and its share in the export of goods and services (according to the definition of the balance of payments in current dollars) rose during that period from 19 percent to 25 percent.

Selected services

The output of computer services, R&D, and start-ups rose by 12 percent in 2006; this industry together with the other ICT industries pulled the whole business sector after them.

Computer services industry, R&D and start-ups: The output of computer services and R&D and start-up companies rose this year by 12 percent, taking along with it—in addition to other ICT industries—the entire business sector. Exports for the industry rose this year by 20 percent, and the number of workers increased by 10 percent. It is important to emphasize that this industry is very pro-cyclical, both in terms of the international business cycle and in terms of the Israeli business cycle. Thus it must be looked at from a long-term perspective as well: The industry output rose an average of 13 percent from 1997-2006, and dollar exports rose during that same period by 17.5 percent—exceeding the average rise in business sector output and exports in general.

Activity by start-up companies, which constitutes 15 percent of the output of the computer services and R&D industry, is financed by venture capital funds and this year's moderate growth stems from a slight drop in the scope of recruitments by companies last year and a rise of 21 percent this year.[33]

[33] The output of start-ups is measured by the scope of investment in the industry over a period of two consecutive years.

Banking, insurance and financial institutions:[34] Output of financial institutions declined this year by half a percent—a drop that primarily reflects the decreased output by insurance companies and only a slight increase in output of banks.[35] The reforms instituted in previous years continued to have an impact this year on the financial system, and generally speaking these reduced the banks' weight in financing the business sector and the banks' control over the public's savings channels through provident funds, mutual funds and the management of the public's deposits. Concomitantly, the weight of institutional investors increased in financial activity.

The business results of the industry highlights the sensitivity of incoming tourism to the security situation.

Tourism and hotel services: The industry's financial results reflect the sensitivity of incoming tourism to the security situation. The number of tourists entering Israel rose during the first half of 2006 by 6 percent compared with the first half of 2005, and dropped by about 5 percent over the year as a whole. The number of tourist bed nights rose this year by only one percent; hotel occupancy remained almost unchanged, at some 57 percent; and the total number of tourists' and Israelis' bed nights rose slightly and approached the peak level of 2005 (mainly due to increased Israeli bed nights). The loss in 2006 due to the lack of foreign tourism in the wake of the war in the north is estimated at 0.37 percent of business sector product (because of the damage to foreign tourism and air transportation of Israeli carriers). Thus, foreign tourism in 2006 constituted around 1.69 percent of business sector product. The damage in tourist and Israeli hotel bed nights due to the war was not consistent. The more dependent the region was on foreign tourism and the farther north the area is located, the greater the damage suffered. (For more details see the Survey of Economic Developments for recent months, 116, Part B; regarding damage caused to business sector product in the wake of the war in the north, see Box 2.2 of this report.)

Israel has considerable potential to attract tourism, as it is a focus for both Christian and Jewish religious tourism.

Israel has considerable tourist potential, being a center of religious tourism—for both Christians and Jews. Nevertheless, the output derived from incoming tourism is not great, and for the most part does not exceed 2 percent of the output. In light of higher unemployment rates among unskilled workers in the periphery, economic success in the tourism industry is especially important because it allows for the reduction of structural unemployment among unskilled workers in these areas. Realizing the tourist potential requires that we become more competitive with regard to air transport (see Box 2.5 in the Bank of Israel Annual Report for 2005), and also necessitates direct government investment, for example, in marketing efforts overseas, which does not benefit any single private entity but does benefit the entire economy; and investments in tourist projects that take advantage of the historical value of many sites in Israel—to establish museums, refurbish and restore historic sites, and the like.[36]

[34] The reference here is aimed at completing the picture of the economy's various industries. For an extensive report on the industry see the Annual Survey of Israel's Banking System by the Supervisor of the Banks, to be published in the summer, and Chapter 4—The Financial System, of this report.

[35] As stated, also due to changes in the classification of investments in insurance companies.

[36] For details see the Caesarea Forum XIV, June 2006, "Towards balanced growth: Empowering traditional industries," pp. 21-23.

It appears that in the last two years hotels have encountered the supply constraint, as the average occupancy level came close to its end-1990s peak levels.

It would appear that the hotels have reached their capacity constraint in the past two years (in some months and in certain areas), since the average occupancy reached almost peak levels at the end of the 1990s (61 percent). The consumer price index for hotel services (for Israelis) rose during the last three years by more than 32 percent, compared with an increase on about only 3 percent in the CPI, and a 13.5 percent increase in the index of expenditure on overseas travel. Since travel overseas is an alternative service to hotel services in Israel, the price of accommodation in Israel rose significantly during the last three years relative to the price for Israelis accommodation abroad. This trend even accelerated during the past two years. Another indication of the capacity constraint of the hotels is the considerable decline in the number of closed hotel rooms over the last four years, having reached its peak in 2002, due to the Intifada, and increased activity in the rural accommodations industry in recent years, which is an alternative service to hotel accommodations, especially for Israelis. Stays in rural accommodations in 2005 constituted some 14 percent of all stays for hotel services. Despite the above, there was no real investment during the last two years in the capacity for tourist hotels; nonetheless it is important to recall that only in 2005 and 2006 was tourism able to escape the serious crisis due to the Intifada. Investment in tourist hotels is characterized, to a great extent, by international competition. If the government decides to promote the industry it must soon define the rules for encouraging investments in hotels, because at this point the uncertainty regarding investment rules is keeping investors away.

d. Transport and communications

The output of the transport industry rose by 4 percent in 2006, due to both increased activity and reforms in the industry.

The output of the transportation industry, which is 7 percent of business sector product, grew in 2006 at a rate of 4 percent. This growth was achieved due to increased activity in the economy and industry reforms, led by increased output in land transport, mainly buses and taxis, compared with only a slight rise in activity in shipping and air transport. The increase in the output of taxis reflects industry reform, which gradually increased the number of taxis since 1998. The moderate rise in shipping and air transport consists of a slight increase in the number of Israelis traveling abroad, stability in tourist entries into the country, and a moderate decrease in the scope of activity at the seaports. The output of trains (whose share in land transport output is only 1.6 percent), went down.

Increased activity in the industry led to a rise in the number of people employed in this sector. With regard to land transport, the number of employees rose by 7 percent and wages showed almost no increase, due to the high rate of unemployment among unskilled workers in the economy, and because new workers in the industry earn less than veteran workers. The wage in the maritime and air transport sectors fell, after rising significantly in the last few years.

Output of the communications industry increased by 4 percent in 2006.

The output of the communications industry, which makes up 4 percent of business sector product, grew by 4 percent this year. Elasticity of private consumption of communications services with respect to income is low, and therefore the rise in private

Table 2.14
Transport and Communications, Main Indicators, 2006

(annual change, percent)

	Share in total commerce and services product (%)	Product, at 1995 prices	Labor input	Real wage per employee	Output price relative to CPI
Transport and communications	**100**	**3.7**	**8.6**	**0.1**	**0.8**
Communications	35	3.8	10.5	1.9	0.1
Transport and storage	65	3.7	7.8	-0.8	1.2
of which Buses, taxis and trains	17	7.2			-1.3
Trucks	16	-0.8			5.3
Air and sea transport, airports and seaports	20	1.2	13.2	-1.6	-1.8

SOURCE: Central Bureau of Statistics.

earnings had only a relatively moderate impact on the industry. The rise in the industry's output in previous years derived from the increased use of innovative communications services, such as Internet, cellular phones and multi-channel television. This year there was a significant increase in penetration of fast Internet and the use of third generation cellular phones, and these led to the rise in output.[37] In other areas there were only moderate increases, and even some declines: Usage of landline telephones dropped; with regard to international calls the use of Internet increased (which is not included in the output) at the expense of the services of communications companies; penetration of cellular phones reached saturation; prices for communications this year did not show any real change—mainly due to technological advances which lower the price of earlier technologies (increased bandwidth) and heighten competition (Internet telephony), and because of intervention by the Communications Ministry to reduce inter-network call connection charges.

Full utilization of the external advantages of the transport and communications industries depends to a large extent on government regulation and supervision, which in the last few years have acted to streamline them and increase their competitiveness.

Transport and communications are infrastructure industries that have exogenous influences on the entire economy, and their importance outweighs their actual proportion in the output. For example: Improving the quality of public transportation and roads[38] would expand employment opportunities for workers, would improve the quality of the fit between workers and businesses, and this would raise output and reduce unemployment; reducing the price of maritime and air transport would increase exports, tourism and trade, and would even benefit consumers by reducing the price of imported goods and vacations abroad. Maximizing the exogenous advantages of the transport and communications industries depends to a great extent on government supervision and legislation, and in recent years the government has acted to streamline the industry and make it more competitive: In early 2007 the

[37] Third generation cellular telephones are a technological innovation that reduces the companies' operating costs. If rates are not reduced accordingly, this innovation translates into higher profits for the cellular companies and, in return, an increase in their output.

[38] Road infrastructure and private transportation (except for transportation on toll roads) is not included in the industry.

privatization of the Oil Refineries (known by its Hebrew acronym "Bazan") was completed; in public transport there are now new bus companies in addition to the veterans, Egged and Dan; regarding the seaports, each port now operates as a separate company; the Ports Authority has become a supervisory body; in the communications sphere, competition has already begun for landline telephony, although the market share of those companies competing with Bezeq is still small; in the postal field, the Postal Authority has become a government company and the area of bulk post has been opened up for controlled competition. Among the steps the government has decided on but hasn't yet implemented: Increasing competition in air transportation; and cellular and landline telephony, by enabling customers to keep their telephone number when transferring from one telephone network to another. Even though the law states that number mobility would be possible from the beginning of Q3 in 2006, this reform was postponed to the end of 2007 at the earliest.[39] The government's decision to establish a national communications authority—a professional body whose job would be to supervise and legislate in the communications sphere and would replace the Communications Ministry—has also not been implemented.

It may be too early to assess the effect of the reform of the ports on their efficiency, as they are still in the adjustment stage of the move from the previous structure to the new one.

Reform in the seaports: The need to introduce competition into the seaports came from the desire to streamline their operations, increase their capital utilization, and reduce waiting times at the ports. In the wake of the reform, three government companies were established to operate the ports, an additional government company was formed for management, maintenance and development of the ports' assets, and the Shipping and Ports Authority of the Transportation Ministry coordinates the supervisory authorities. The reform involved additional costs for workers' salaries, including a one-time grant, and raising annual wages. An examination of the reform's impact on the ports' performance during its second year shows that according to data from the Shipping and Ports Authority for 2006, there was no significant improvement in the indexes measuring their performance, neither relative to the period prior to the reform nor relative to other ports around the world. Even discounting the quarter that included the war in the north (Q3 of 2006), which disrupted operations, the indexes show no improvement (Table 2.15). It may be too early to assess the reform's contribution towards making the ports operate more efficiently, because the ports are still adjusting to the transition from the previous structure to the current structure following the reform.

Coordination among the port workers' committees during the last year was, evidently, lower than in previous years; there is the beginning of marketing activity for the purpose of recruiting customers from Port A to Port B, and perhaps future privatization based on the reform outline already defined can help improve the competitive approach between the ports. The reform in port fees, which is being delayed, may also encourage competition to a certain extent, because it would better

[39] This is an alternative to increasing competition by increasing the number of competitors, which involves increasing the number of antennas, whose exogenous impacts are negative. Alternatively, it is possible to obligate cellular companies to allow additional companies to use the existing infrastructure, in exchange for payment.

reflect the ports' real costs and thus spheres that have up to now been operating at a deficit would become more competitive, such as freight export (due to the fee structure). Reform of fees should also succeed in changing the composition of the payments made to the port companies, so that a larger portion of the payment for port services would come from shipping companies—in contrast with the present situation where most of the payment comes from the freight owner. This would give shipping companies more bargaining power with the ports because, as opposed to the owner of a single shipment, the shipping companies can modify their behavior in order to improve competition. It is important that the future development of the ports be implemented through a third party, that is to say, unrelated to the present port companies.

Investment in the transport infrastructure increased in 2006.

Investment in transportation infrastructures grew this year. With regard to land transport, investment grew to NIS 8.1 billion. In recent years investment levels have increased significantly, both for trains and light rail, and for roads, in accordance with government policy. The roads are proceeding on the basis of a long-term plan, the main substance of which is completion of existing projects, construction of interchanges and roads that run east-west to connect the highways that run north-south, in order to create a modern road system. For further information on investment in public transportation, trains and the light rail, see Box 2.6.

Table 2.15
Operational Facts about Israel's Seaports

	Average per hour dwelling productivity in Israeli ports (containers)[a,b,c]				Number of container ships that docked		Average number of containers handled, (TEUs per ship)[d]	
	Ships' dwelling time A[e]		Ships' dwelling time B[f]					
	Haifa	Ashdod	Haifa	Ashdod	Haifa	Ashdod	Haifa	Ashdod
2001	17.9	9.2	19.3	10.9	1,158	975	840	511
2002	18.5	11.1	20.0	13.5	1,376	1132	906	535
2003	17.3	11.7	20.1	14.2	1,144	1041	1,014	513
2004	22.5	12.9	24.0	15.2	1,051	928	1,033	544
2005	24.2	14.5	25.7	16.0	1,250	1063	1,107	586
2006	21.7	17.8	23.5	19.0	1,080	1029	1,053	692

[a] The data for 2006 do not include the third quarter, because of the war in the north.

[b] Hardly any large ships docked in Ashdod because the wharves are unsuitable for them, and because the port does not operate on the Sabbath (Saturday), which reduces its efficiency.

[c] The per hour dwelling productivity of large ships is twice or more that of small ships. The table shows that the average number of containers per ship (the number of containers divided by the number of ships) increased every year; hence, the improvement in the indices relative to 2003 is not only the result of greater efficiency.

[d] TEU—Twenty-foot equivalent unit, a unit of measurement equal to the space occupied by a standard twenty foot container.

[e] The number of hours from the time work started on the ship till the harbor pilot leaves the ship after guiding it out of the port and the ship sails.

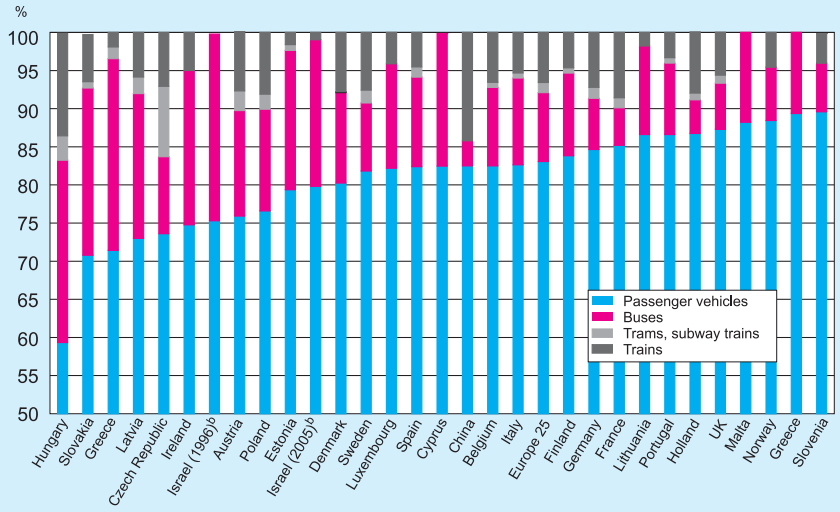
[f] The number of hours from the start of the first shift in which hands were ordered till the harbor pilot leaves the ship after guiding it out of the port and the ship sails.

SOURCE: The Shipping and Ports Authority.

Box 2.6
Encouraging public transport

Present situation: The use of public transport in Israel was high relative to EU countries in the 1990s, but has declined dramatically in recent years—from 25 percent of all passenger-kilometers in 1996 to some 20 percent in 2005 (Figure 1)—and its composition is problematic. While in EU countries it is standard, within metropolitan areas, to use electric buses and subways—means of mass transit that have almost no sensitivity to road congestion—and the proportion of bus usage out of the total passenger-kilometers has even dropped as standard of living increases,[1] in Israel it is still common to use buses only and the use of trains is quite limited.

Figure 1
Use of Various Means of Transport by Country, in Terms of Kilometer Per Passenger,[a] 2003



[a] Use of public (road and rail) and private transport is calculated as the number of passengers multiplied by the average number of kilometers per passenger.
[b] 1996 data are according to Travel Habits Survey 1996/97, and 2005 data are estimates based on 1996 data and rates of change of real turnover (in buses) and of travel (private transport) in the years 1996-2005.
SOURCE: For Israel, Travel Habits Survey 1996/97 and the Central Bureau of Statistics; for the other countries, Eurostat - Transport Statistics in Focus, 9/2006.

[1] In 1996 the share of public transport in Israel out of all passenger-kilometers was much higher than projected using a regression that explains the share of public transport out of all passenger-kilometers based on the adjusted output only, while in 2005 the share of public transport in Israel was similar to the projection using the regression. The share of buses in Israel out of all passenger-kilometers was much higher than projected using a regression that explains the share of buses out of all passenger-kilometers (in any country) based on the adjusted output only. This regression illustrates that the share of buses in public transport declines as the country's per capita GDP (adjusted for purchasing power) rises.

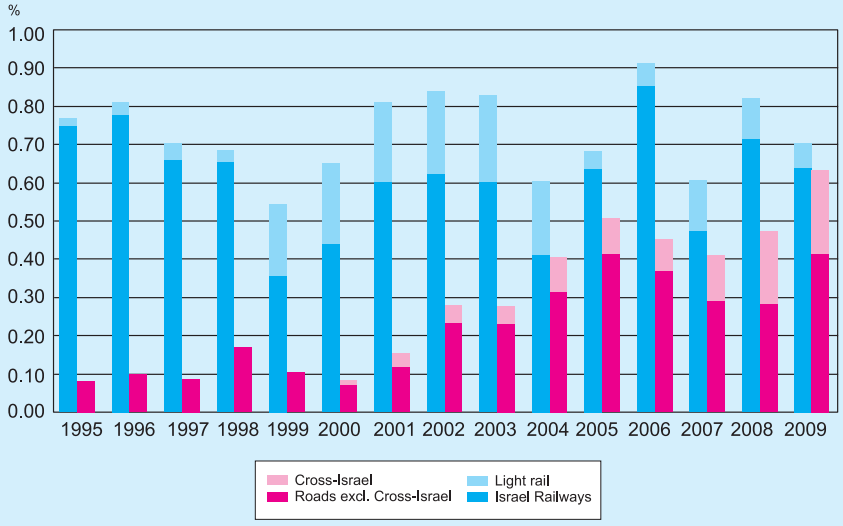
The government is increasingly recognizing that the way to solve the problem of traffic congestion is by improving public transport. The need to allow commuters access to their places of employment is vital in a modern society, but relying solely on road investment usually leads to bottlenecks at the entrance to large cities, which are often employment hubs. In order to encourage the use of public transport we must invest in its infrastructures, promote existing public transport (buses) and fix the distortions in the tax system that encourage the use of private vehicles.

Investment in public transport infrastructures: Government activity in the past two years indicates a change—Budgets for trains, light rail transit (LRT) systems and public-transport (mainly bus) lanes have increased dramatically in recent years: Israel Railways, which became a government corporation in 2004, received an unprecedented budget, spread over several years, for development of some NIS 32 billion (undergoing approval), but the timetable for completing the long-term development plan will be much longer than originally thought. The government is promoting mass transit systems in Jerusalem and in the Tel Aviv metropolitan area: The winner of the tender for the Jerusalem LRT system has signed a financing agreement with the banks, and in 2006 work had already begun on site. A winner has been chosen to build and operate the Tel Aviv LRT system. The return on the investment for the train and LRT in Tel Aviv will increase as the rail network expands, and therefore it is important to encourage the construction of additional lines in Tel Aviv's LRT[2] besides the one light rail route that has been approved so far (the "Red Line")—but for the time being there is no progress in that area (Figure 2).

Reform in public transport: The use of public transport should be encouraged in other ways, besides investing in infrastructures, by reducing its cost and improving service. The reform is continuing to transfer the rights to operate bus lines which up to now had been controlled by Egged and Dan. By the end of 2006 Egged and Dan had lost about 15 percent of their activity to new companies, and in 2007 another 7 percent will be transferred to private operators. The reform has led to a significant drop in fares on the lines that were transferred to the new companies, and thus encouraged the use of public transport and caused the industry to become more efficient—the average nominal wage in 2006 declined by 13 percent relative to 2001. But this measure has had almost no impact on fares on lines that remained in the hands of the long-established bus companies, which still account for the bulk of transport activity. The Ministry of Finance is streamlining the operations of the old companies by reducing the subsidies it pays them without raising fares. The

[2] Or BRT (bus rapid transit)—long buses that travel in designated lanes and have priority at traffic lights.

Figure 2
Investment in Transport - in Roads, Rail and Light Rail,[a] 1995-2009



[a] Light rails of Tel Aviv and Jerusalem, excluding Israel Railways.
[b] From 2007, GDP is assumed to grow by 4 percent a year.
SOURCE: Up to 2006, Central Bureau of Statistics; estimates for 2007-09 are based on data from the budgets department of the Accountant General of the Ministry of Finance and the Cross-Israel Company.

reform is being implemented through tenders. In the early tenders, winners were selected according to the fare and quality of the ride they promised to supply; afterwards the method was changed, and the tender focused on the royalties the operator would provide the government, and it was found that the payment came at the expense of the benefit of public transport passengers. The payment of franchise fees is, in essence, a tax on passengers who are not blocking the highways or polluting the air with their cars, and this indicates that the government's priorities are faulty. Although transferring the monopolies enjoyed by Egged and Dan to the public by collecting royalties is desirable, it is more important to ensure that public transport becomes a real alternative for car owners too. Therefore, greater emphasis must be placed on shortening the length of the commute by increasing the frequency of bus trips and reducing the inconvenience of traveling by bus (by using a greater number of shorter buses, traveling on shorter roads), and by not being afraid to offer subsidies if necessary. Shiftan and Sharaby[3] found that the greatest improvement in public transport deriving from the reform was on the Beersheva-Tel Aviv line, where a franchise was given to two competing companies. This indicates that for

[3] Y. Shiftan and N. Sharaby (2006). "Competition in bus public transport in Israel." *Transport Research Record*.

lines that enjoy a high volume of ridership, real competition between several operators is preferable to granting a franchise to one supervised monopoly.

Correcting distortions in the tax system: Several distortions in the tax system need to be amended, and these include:

1. In many sectors of the economy some of the wage payments are for vehicle maintenance, encouraging the purchase of private cars.

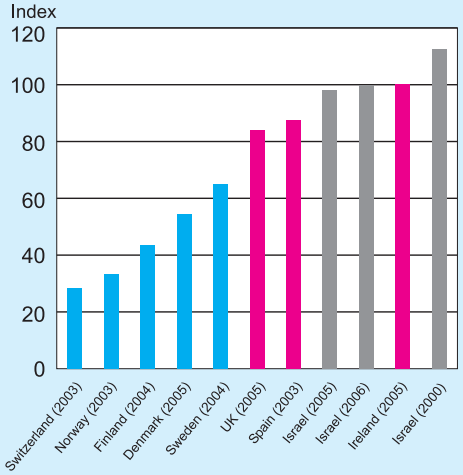
2. The income imputed to owners of company cars is too low and artificially encourages the supply of vehicles to employees in lieu of wages. In early 2007 it was decided to gradually raise the imputation, and if the law passes in the Knesset this inconsistency will be corrected.

3. The marginal cost of travel for some of those driving company cars is zero because they do not pay ongoing costs, such as gas, road tolls and traffic fines.

International comparison of traffic congestion: The purpose of the comparison was to examine investment in roads in Israel from an international perspective. Investment in roads is examined here from the perspective of traffic congestion, but there are other aspects as well, as we shall see later on. Traffic congestion in Israel has been reduced in recent years due to the relatively large investment in roads. According to estimates traffic congestion in Israel is similar to that in Ireland, and is about 15 percent-20 percent higher than the average congestion in Great Britain and Spain (Figure 2.7). Britain, Ireland and Spain are good reference points for Israel because they have a similar topography, and the roads are greatly influenced by the topographical structure. In Britain, the average annual expenditure on roads (including maintenance) in 1997-2005 came to 0.6 percent of the product; in Ireland during 1997-2005, it was 2.2 percent of GDP and in Israel, during that same period the figure was 0.9 percent of GDP.

International comparisons of road congestion should be treated with reservation.

Figure 2.7
Road Density, 2005



SOURCE: IRF International Road Statistics 2006. For Israel, UK, Ireland and Denmark, the Central Bureau of Statistics. Total road network is taken at the end of the year reviewed.

Road congestion in Israel has declined in the last few years, as a result of the relatively large investment in roads.

The figure presents a traffic congestion index. This index is calculated by dividing the total kilometers driven by the net road capital. Kilometers driven is calculated by weighting the kilometers driven of different types of vehicles (cars, buses and trucks) by their different traffic

The index of road congestion is calculated by dividing kilometers driven by net road capital.

disruption coefficients.[40] The net capital is the accumulation of expenditure on roads from which we subtract, as is commonly accepted by the CBS, 2 percent per year. The net capital is calculated by weighting for investment prices, which differ from country to country. This index is preferable over others, such as kilometers driven divided by length of roads, because using the latter index, a narrow road is counted the same as a wide road, and interchanges are not counted at all.

Reservations regarding the comparison: Topographical structure—Expenditure on roads also depends on topographical structure. In Switzerland, for example, there are many tunnel roads whose cost is high, while in Israel fewer tunnels are necessary. In England, Ireland and Spain, the topographical structure is similar to that of Israel, and the average traffic congestion is similar to Israel. Level of motorization in Israel—It should be noted that the level of motorization in Israel (number of cars per 1,000 inhabitants) is significantly lower than European countries. As the standard of living rose in Europe so did the level of motorization and thus Israel must prepare, in terms of road infrastructure, for increased motorization. In Israel, the level of motorization between 1995 and 2005 rose by 17.4 percent, while the GDP per capita (in terms of buying power of current dollars), which reflects the standard of living, rose by 32 percent. Proliferation of trains in Israel—In most European countries, trains are used as a transportation alternative; not so in Israel, where the train network is not sufficiently developed. Therefore, a road may have been paved where the kilometers driven may not be so high, but it links areas whose connectivity was insufficient. Average congestion—This calculation relates only to average congestion, and everyone knows that roads can be more congested or less congested. It is important to remember that congestion in the center, and particularly in the metropolitan areas, is higher than in the periphery, and therefore it might be more worthwhile to invest in mass transit systems in the center, as is the case in many developed nations.

Additional aspects with regard to road investment: Positive exogenous influences of system-oriented projects; a road that changes the entire road system, such as Route 6, the Trans-Israel Highway, generates mileage, that is, it connects areas where previously the connection between them was insufficient, and thus opens new opportunities for populations living near the road and improves their mobility. This means it isn’t enough merely to examine its benefit as reducing congestion.

[40] Buses disrupt traffic twice as much as cars; trucks disrupt traffic 2.5 times as much.