Chapter 2

GDP, Uses and the Principal Industries

- GDP grew by a somewhat lower rate in 2008 than in the previous years. In the first part of the year, growth slowed as the economy approached full employment while in the latter part of the year business sector product contracted as a result of the financial crisis and the global slowdown that led to a drop in domestic and international demand.
- Global economic developments dominated the Israeli economy this year. These included a sharp transition from boom to recession in the developed countries, which was accompanied by the collapse of several major financial institutions and the precipitous drop in asset values worldwide.
- Surplus demand, which first appeared in the previous year, began to grow during the first part of the year. Employment and the capital stock grew rapidly, which was accompanied by a slight drop in productivity, an increase in inflation and an appreciation in the real exchange rate. Towards the end of the year, the trend was reversed with a sharp drop in demand and an increase in the rate of unemployment, as well as a real depreciation and a decrease in inflation.
- During the first part of the year, the shekel strengthened significantly, which was a continuation of the real appreciation that began in 2007. The magnitude of the appreciation was larger than could be explained only by economic developments and indeed there was a depreciation at the end of the year which offset the over-appreciation.
- The rate of growth in private consumption slowed as a result of the uncertainty regarding the future economic situation and the drop in the value of financial assets. Current consumption grew moderately during the course of the year while the purchases of durable goods dropped precipitously.
- Exports were significantly affected by the global slowdown. The export of services began to contract already in the second quarter of the year while manufacturing exports fell only in the fourth quarter. The increase in exports during the course of the year was primarily due to the chemical and petroleum industry, while the other industries began to stagnate at an earlier stage.
- The drop in manufacturing exports was the result of a number of domestic and international economic developments: the decline in global demand, the continued worsening in the terms of trade and the real appreciation.
- There was a slowdown in the rate of growth in the construction sector this year and residential housing starts, though they stabilized this year, reflected a downward trend in public construction since the beginning of the decade and stability in private construction. The stability in private construction, together relative price stability until last year, reflected the balance between demand and supply forces. This year saw a turnaround in the prices of rented and owned housing, which increased following a prolonged downward trend.
- The slowdown in the economy, particularly during the second half of the year, was also manifested in the commerce and service industries.

1. MAIN DEVELOPMENTS

Growth slowed in 2008, as the economy approached full employment at the beginning of the year and with the trickling down of the global crisis to the domestic market towards the end of the year.

Following five years of rapid growth, GDP grew this year at a slightly slower rate of 4.0 percent, which is a reflection of slower growth in the business sector. This was the result of the economy approaching full employment at the beginning of the year and the trickling down of the global crisis to the domestic market towards the end of the year. The growth in GDP totaled only 2.2 percent during the year. Exports led the economy's growth but in the course of the year, and particularly at the end of the year, the effect of the global crisis began to show up in the various sectors. Thus, during the last quarter of the year, exports excluding diamonds contracted by 31.6 percent in annual terms. Private consumption slowed, which included a sharp drop in the purchase of durable goods as a result of the fears of recession and the decline in the value of financial assets. Investment in the various industries leveled off later in the year, partly as a result of increased risk and the less optimistic forecasts of economic activity. There was a slowdown on the supply side at the beginning of the year. Thus, the growth in productivity came to an end, which was a continuation of the cyclically-related leveling-off of its trend; the cost of labor per unit of output increased; and the only source of growth in supply was the increase in the factors of production.

Table 2.1
Indicators of Economic Activity, 1999-2008

(annual rate of volume change, percent)

				2008		
	1999-2000	2001-03	2004-07	Total	First half	Secend half
Per capita GDP in Israel	3.4	-1.8	3.3	2.1	3.1	-0.5
Per capita GDP in the advanced economies	0.0	0.9	2.3	0.6	1.4	-1.8
Global per capital GDP	2.8	1.6	3.7	2.2	-	-
GDP	6.1	0.3	5.2	4.0	4.9	1.3
Business-sector product	7.1	-0.7	6.4	4.4	5.8	1.0
Index of manufacturing output	5.7	-2.4	6.2	6.8	10.9	-2.8
Unemployment rate (%)	8.9	10.1	8.8	6.1	6.1	6.2
Gini index (%)	35.5	36.0	38.0	-	37.8	-

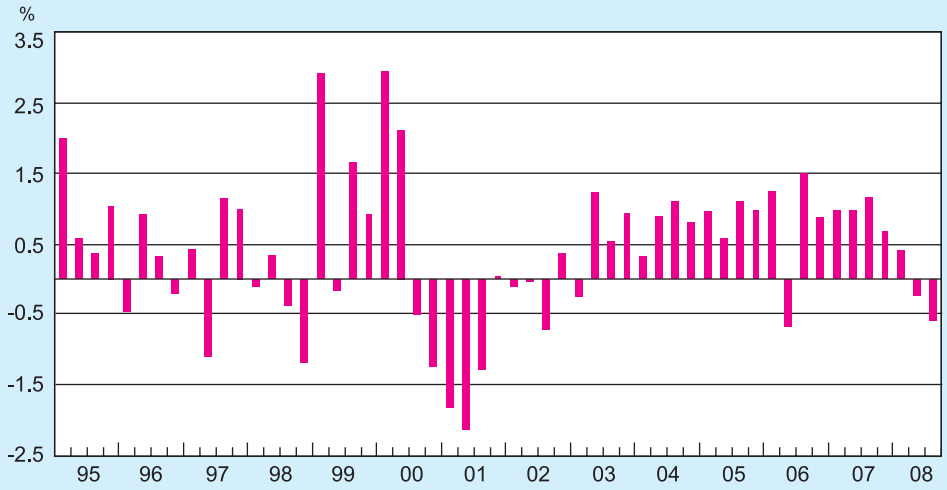
SOURCE: Based on Central Bureau of Statistics data and data of other countries.

The sharp turnaround was manifested at one stage or another during the year in almost all the economic parameters in Israel and world wide.

The year was characterized by a sharp turnaround in economic activity. Thus, following a period of growth in the early part of the year, which was a continuation of the trend in previous years (though with some leveling off), a major slowdown in activity became evident at the end of year and the economy started slipping into recession as a result of the spread of the global crisis from the financial sphere to the real economy. This reversal was manifested at one stage or another during the year in almost all the economic parameters. This was reflected both in international economic conditions, including the slowdown in global growth, fluctuations in the price of oil

and other commodities, fluctuations in the exchange rate of the dollar worldwide and the fall in prices on the capital markets; and in the domestic economy, which was characterized by a decline in exports and employment, the weakening of inflationary pressures, the end of the real appreciation and the fall in the value of assets. The composite state-of-the-economy index signaled the turnaround at mid-year, as did the figures for GDP, which grew during the second quarter at a rate similar to the average for the business cycle as a whole and began to fall during the third quarter (Figure 2.1).

Figure 2.1
Change in Per Capita GDP, 1995–2008
(quarterly data, seasonally adjusted)



SOURCE: Based on Central Bureau of Statistics data.

When the global crisis starting affecting Israel, the economy was in a relatively better situation than it was prior to the last crisis.

The most recent business cycle lasted for about a decade. It began with a boom in 1999–2000, continued with a recession as a result of the bursting of the hi-tech bubble and the start of the Second Intifada and ended at the end of this year after five years of rapid growth and the closing of the output gap.[1] Thus, economic activity this year can be analyzed from the perspective of a full business cycle, particularly in view of the downturn in the global economy during the course of the year. As the global crisis began to take effect, the Israeli economy was in a relatively better situation than it was prior to the last crisis, especially in comparison to other developed countries. Thus, the rate of unemployment is low; the rate of savings is high; the current account is in surplus; the tax burden and the ratio of debt to GDP are lower; and the banking system is stable. This situation enables greater flexibility in carrying out fiscal and monetary policy, given that the global slowdown and its effect on the economy are

[1] The gap between actual output and potential output at full employment. For further details, see Section 3.

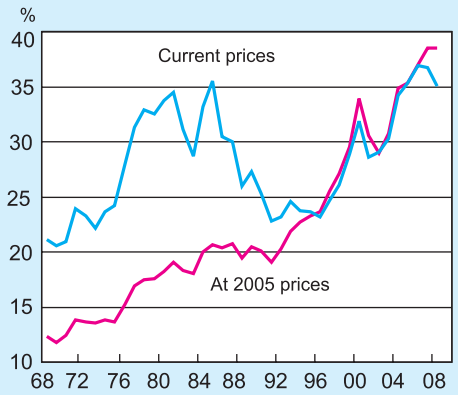
The gap between the standard of living in Israel and that in the developed countries was not reduced in the last ten years, despite the many reforms carried out.

expected to worsen. However, during the boom, the gap in standard of living with the developed countries was not reduced, despite the many reforms carried out in recent years in the areas of employment, welfare and taxation, the downsizing of the public sector and privatization. These reforms were intended to increase the ability to compete, employment and productivity despite the cost in increased inequality. Inequality did indeed increase during the most recent business cycle, also relative to OECD countries; however, the rate of growth in productivity was similar to that in the previous three decades and the average rate of increase in the standard of living is similar to that of the US and was even low relative to the other developed countries.

a. Global developments and their influence on the Israeli economy

This year saw a sharp downturn in the global economy following the onset of the sub-prime crisis, which led to the collapse of some of the largest banks and financial institutions in the world and the injection of funds on an unprecedented scale in order to prevent the collapse of additional companies. The massive write-offs as a result of the collapse of the real estate and financial industries in the US led to a major drop in demand, which in turn gradually led to a slowing of growth worldwide and even recession in the developed countries. This was accompanied by stock market crashes around the world and a global credit crunch that led to the contraction of the supply side.

Figure 2.2
Share of Exports in GDP



SOURCE: Based on Central Bureau of Statistics data.

These developments began to have an effect on the Israeli economy during the course of the year, and are expected to continue to do so, through several channels: decreased demand for Israeli exports; a reduction in the supply of credit and an increased assessment of risk; and a sharp drop in the value of asset portfolios. On the other hand, the global recession led to a sharp fall in commodity prices, especially that of crude oil, which increased the economy's purchasing power.

Israel's increasing dependency on the global economy can be seen in Figure 2.2 which presents the share of exports excluding diamonds in GDP. This share has grown from 12.4 percent in 1968 to 41.6 percent in 2008. The increase in global demand has been one of the most important factors in the economy's growth in recent years.

The share of exports in GDP has grown steadily, increasing Israel's dependency on the global economy.

About one-third of the increase in GDP during the last five years has been the direct result of the increase in the added value of exports, which does not take into account the contribution of export revenues to local demand. Global trade has increased by 6.8 percent since the beginning of the decade, which is similar to its rate of growth

Table 2.2
Global Developments, 1999–2008

(annual and quarterly data)

	1999– 2008 average	2006	2007	2008	2007 I	2007 II	2007 III	2007 IV	2008 I	2008 II	2008 III	2008 IV
GDP in Israel[a]	1.6	3.3	3.5	2.0	3.6	3.9	4.0	4.7	2.7	1.6	-0.9	-2.3
Global GDP[a,b]	4.0	5.1	5.2	3.4	4.9	4.9	4.9	4.5	4.1	3.4	2.4	-5.1
GDP in the OECD	2.4	3.0	2.7	1.0	2.3	3.2	3.6	1.4	1.9	0.5	-0.5	-6.4
GDP of emerging markets[a,b]	6.5	7.9	8.3	6.3	7.8	8.0	8.7	9.1	6.3	4.5	3.9	3.2
World trade[a]	6.8	9.3	7.2	4.1								
US imports[a]	5.0	6.0	2.2	-3.3	7.7	-3.7	3.0	-2.3	-0.8	-7.3	-3.5	-15.7
CDS premium[c]	64	31	22	74	19	17	25	27	66	63	93	125
Dow Jones index	100	108	124	105	117	126	127	127	117	115	106	84
Crude oil prices (dollars per barrel)	42	64	71	97	57	66	74	88	95	121	115	56
Commodity prices excluding oil (index)	100	123	141	151	134	143	141	143	161	167	159	117
NIS/$ exchange rate	4.3	4.5	4.1	3.6	4.2	4.1	4.2	3.9	3.6	3.4	3.5	3.8
NIS/€ exchange rate	4.9	5.6	5.6	5.3	5.5	5.5	5.8	5.7	5.4	5.3	5.2	5.0

[a] Annual rates of change.

[b] The quarterly data are estimates based on incomplete data.

[c] Actual level, basis points.

SOURCE: Based on various sources.

during the preceding decade. However, its composition has changed and reflects the accelerated growth in the developing and emerging countries as compared to declining rates of growth in the developed countries. The contribution of the developed countries to the growth in global GDP fell from a peak of about 60 percent at the beginning of the 1990s to only about 25 percent in recent years.[2] The composition of Israeli trade has changed only partially in this direction and while the proportion of goods imported from the developed countries has fallen sharply, the proportion of exports to the developed countries has remained almost unchanged. The share of exports to the US even increased from 29 percent in 1995 to 38 percent in 2006. This exposure to the US economy has become problematic with the decline in US imports and during the last two years the share of exports to the US has fallen, and by the end of 2008 had reached 33 percent.

The financial crisis led to a significant reduction in the supply of nonbank credit.

Beyond its indirect influence on the Israeli economy through global demand, the financial crisis is also having a direct effect. The write-off for bad debts together with the fall in the total value of firms and the increased assessment of risk, have led to a significant reduction in the supply of nonbank credit and liquidity to the business sector. This has had negative effects on the economy through two different channels: first, it reduces the ability to roll over loans and therefore creates a greater risk of bankruptcy and second, investment plans are rejected due to the increased cost of capital. As a result, the volume of investment in the economy has contracted and with it future potential GDP.

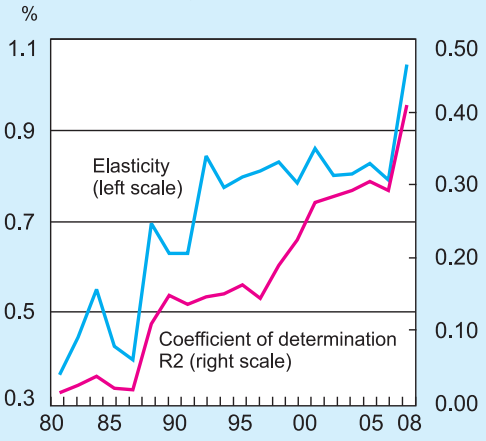
The stronger connection between Israel's economy and the global economy is reflected in the higher correlation between Israel's share market and share markets abroad.

The result of the stronger connection between the Israeli and global economies can be seen in the magnitude and rapidity with which global shocks affect the Israeli economy. Figure 2.3 describes the increasing correlation between the S&P500 index and the Tel Aviv General Share Index,[3] and how in recent decades the influence of the US market on the Israeli market has continuously increased. Thus, the estimated elasticity increased from close to zero and not statistically significant during the 1980s to approximately unitary in recent years, which explains about 40 percent of the movement in the local share market. One of the main disadvantages of the increased correlation on a global level is the reduced possibility of spreading global risk. The S&P500 index began to fall at the end of 2007 and by the end of 2008 had dropped by 41.7 percent. At the same time, the General Share Index in Israel fell by 49.3 percent during the year, thus returning to its level at the beginning of 2004. This decline, which appeared prior to any real sign of lower corporate profits, reflected the expectation of a weakening of global demand, as well as an increase in risk that led to a transition to less-risky assets. During the second half of the year, when expectations of a decline in GDP were realized, the drop in share prices accelerated. The value of the public's

[2] World Economic Outlook, October 2008.

[3] Figure 2.3 presents the estimated elasticity and the coefficient of determination (R2) from a rolling regression of the quarterly rates of change in the Tel Aviv General Share Index on the quarterly rate of change in the S&P500 index (while controlling for the effect of the real exchange rate) for various periods. The coefficient of determination represents the additional explanatory power provided by the inclusion of the S&P500.

Figure 2.3
The Relation between the S&P-500 Index and Israel's General Share Price Index,[a] 1980-2008



[a] The elasticity and the R2 coefficient estimated from the rolling regression between changes in the S&P-500 Index and changes in the General Share Price Index of the Tel Aviv Stock Exchange (see text footnote no 3).
SOURCE: Based on several sources.

asset portfolio fell this year by 12.1 percent. This is expected to reduce private consumption, particularly the purchase of apartments and durable goods.

The terms of trade deteriorated significantly at the beginning of the year, due to the rise in world commodity prices, but the trend reversed at the end of the year.

There was a considerable worsening in external terms of trade due to the further increase in the price of crude oil and other commodities, which was similar in magnitude to that in 2007. This is a continuation of the trend of the past decade and resulted in a cumulative worsening in the terms of trade of about 16.3 percent by the third quarter. This trend was reversed at the end of the year as the global crisis worsened. Thus, the price of crude oil, which had reached 150 dollars by mid-year, fell to less than 40 dollars by the end of the year and the terms of trade improved by 13.0 percent.

The worsening in the terms of trade is a result of two opposing processes that are a manifestation of globalization. On the one hand, the expansion of global trade between the developed and developing countries has increased the degree of specialization in the various economies, which can be expected to improve the terms of trade.[4] On the other hand, the rapid growth in the developing countries led to the sharp rise in the prices of raw materials, particularly crude oil, such that importers of raw materials, such as Israel, experience a worsening in the terms of trade. Without the effect of raw material prices, the terms of trade in fact would have improved.[5]

Despite the effect of increased oil prices and the worsening in the terms of trade on the economy's purchasing power and on the profitability of exports, it appears that in recent years, in contrast to the past, the terms of trade have not been a dominant factor affecting growth in the economy and in fact the main factor has become global demand. This is a surprising result given the magnitude of the change in the terms of trade and its possible effect both on consumers and producers: the demand for oil products is relatively inelastic, and it was therefore reasonable to assume that the demand for other goods would contract, and the profitability of manufacturing is particularly sensitive

[4] Spange, M. and Chris Young (2007) "The macroeconomic impact of globalization: theory and evidence," Quarterly Bulletin Q1, Bank of England.

[5] For further discussion of the effect of oil prices on the terms of trade and the current account, see the chapter on the balance of payments.

to changes in the terms of trade.[6] On the demand side, the increase in oil and food prices was partially offset by the fall in prices of other imported consumer goods. In addition, the final price of gasoline to the consumer is far less volatile than oil prices as a result of the system of taxation and because some of the volatility in the dollar price is a result of fluctuations in currency values. On the production side, the fall in profitability was offset by the increase in total exports and only when demand fell did exports contract. Furthermore, the effect of the worsening in the terms of trade on total production acts with a lag. Finally, it is worth mentioning that the energy intensity of the business sector is falling over time, particularly as a result of the increasing share of services in total GDP.

Another characteristic of this year's economic developments is the uncertainty regarding the intensity of the crisis in the US and the magnitude of its influence on other markets worldwide and in particular Israel. The positive economic figures reported at the beginning of the year led to the belief that the crisis in the real US economy is not as serious as the financial crisis and it was even claimed that global growth may continue even without US demand (a process known as decoupling). This claim was based partly on the above-mentioned change in the composition of global growth during the last decade. Therefore, it was thought in the EU that it is more important to deal with the risk of inflation and therefore the EU even raised its interest rate in mid-year. However, towards the end of the year, as the negative scenarios began to materialize, this theory was abandoned and certainty increased as to the global scope of the crisis (although there is still a high level of uncertainty as to the intensity and duration of the crisis). Accordingly, with the abandonment of the decoupling hypothesis towards the end of the year, the IMF lowered its forecast for growth in trade during 2009 from a positive rate of 6 percent to a contraction of about 3 percent within a period of about four months. For purposes of comparison, the IMF did not manage to predict the previous crisis and during 2001 adjusted its forecast downward several times until actual figures were reported which showed that trade had not grown at all (see Figure 1.2).

Towards the end of the year assessments of the severity of the global crisis became more negative.

b. The security situation and its effects

The security situation did not affect aggregate economic activity this year and as a result the export of tourist services increased at a rate of 21.9 percent. However, the proportion of the tourism industry in total exports remained very low relative to the period prior to the Intifada.[7] This is in spite of the large increase in tourism in recent years as a result of the improvement in the security situation. Thus, the slowdown in this industry will not have a major effect, as it has in the past. The stable security situation created the conditions for a low increase in defense expenditure and for

[6] See Bank of Israel, Research Department (2008) "Estimation of the profitability of manufacturing exports," Recent Economic Developments 122.

[7] The proportion of tourism services in total exports excluding diamonds fell from an average of 13.2 percent prior to the Intifada to 4.1 percent in 2008.

the more rapid expansion of civilian expenditure. At the end of the year, there was a setback in the security situation due to the hostilities in the Gaza Strip. Due to the short duration of the war, it is reasonable to assume that despite its disruption of life in the South there were no macroeconomic consequences. However, it is difficult to assess the implications for the tourist industry in the future.

c. Economic policy

Macroeconomic policy in 2008 continued to support growth in the business sector: monetary policy was expansionary, and the downward trend in the relative size of government expenditure and of the public debt persisted.

As in previous years, macroeconomic policy supported growth in the business sector. Monetary policy was expansionary and several steps were taken to encourage growth. These included the reduction of the Bank of Israel interest rate already at the beginning of the year in light of the global situation and even prior to the negative developments in the economy. When inflationary signals appeared, the Bank raised the interest rate but towards the end of the year lowered it again. Over the course of the year, the Bank of Israel interest rate in both nominal and real terms[8] was lower on average than in recent years. Furthermore, the Bank of Israel purchased foreign exchange in large quantities and thus contributed to the increased resilience of the economy and a rise in the dollar exchange rate.

Again in 2008, the government's fiscal policy met its expenditure target, consistent with the reduction in taxes and in the public debt. This policy is intended to stimulate the business sector through the expansion of demand for its products and to enlarge the supply of credit available to it. On the expenditure side and in contrast to previous years, the budget was fully expended during the first part of the year, before signs of the slowdown appeared, while the budget was in fact underutilized subsequently, once the crisis had emerged. On the revenue side, the collection of taxes declined significantly due to the reduction in tax rates and the slowdown in activity[9] and as a result the budget deficit grew to 2.1 percent. It is important to mention that the reduction in taxes carried out at the beginning of the year was the result of previous decisions and is part of a long-term policy to reduce taxes and the relative size of the government. With a view to the future, the government decided on a number of steps to stimulate growth in coming years: a program to accelerate public investment, an enlarged R&D budget, loans to small businesses and a limited safety net for pension savings. Nonetheless, the overall budget framework was not enlarged and therefore this policy is primarily a change in the composition of expenditure rather than an anti-cyclical fiscal policy. In any case, the budget was not approved by the Knesset and will be implemented on the basis of the 2008 budget until the formation of a new government.

d. International comparison

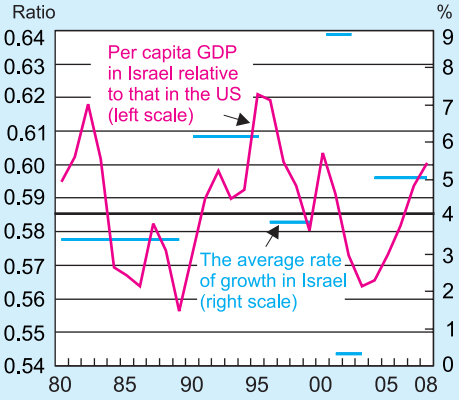
The GDP in current prices reached NIS 714 billion, which is equivalent to about $199 billion. Per capita GDP reached NIS 97,700, which is equivalent to $27,200 and is

[8] The nominal interest rate less expectations of inflation.
[9] Due in particular to the drop in revenues from the capital market.

During the last five years, the Israeli economy has managed to take advantage of the economic boom to reduce the standard-of-living gap (per capita GDP) between Israel and the US, a gap that widened markedly in the previous recession.

equal to about 81 percent of the average level for OECD countries and about 60 percent of that in the US.[10] During the last five years, the Israeli economy has managed to take advantage of the economic boom in order to reduce the per capita GDP gap with the US. Nonetheless, a somewhat longer-term view reveals that it only offset the widening of the gap that occurred during the previous recession. Since the beginning of the 1980s, the Israeli economy has maintained more or less the same gap with the US economy and its fluctuations are consistently correlated with the business cycle in Israel (Figure 2.4). It is difficult to assess what the situation of the economy would have been without the change in direction of economic policy in recent years, though it is clear that global growth and the improvement in the security situation made a major contribution to narrowing the gap created during the previous recession. A comparison to other countries reveals an even less optimistic picture for the Israeli economy, according to which Israel's per capita GDP is currently equal to 67 percent of the average of the 20 wealthiest countries in contrast to 70 percent in 1980.[11] Relative to countries at the same level of GDP in 1980,[12] the gap widened by an even higher rate of 27 percentage points.

Figure 2.4
Per Capita GDP in Israel Relative to that in the US, and the Average Rate of Growth in Israel, 1980-2008



SOURCE: Based on Central Bureau of Statistics and IMF data.

GDP per worker in Israel is equal to about 76 percent of its level in the US. This gap is evidence that levels of production and productivity are higher than the actual standard of living, which is due to the low rates of employment in Israel. The gap in the rate of employment is the result of the proportion of the working-age population, the participation rate and the unemployment rate. The overall gap in employment has declined during the last decade by 3.0 percentage points due to the increase in the participation rate and the drop in the unemployment rate;[13] however, relative per capita GDP has remained almost unchanged, meaning that labor productivity has been eroded relative to the US.

[10] A similar result is obtained using the exchange rate adjusted for purchasing power.

[11] The average of the 20 countries with highest per capita GDP (corrected for purchasing power) in 1980, excluding the Arab oil producers, Germany and the Bahamas.

[12] Average per capita GDP (corrected for purchasing power) of the following countries: Ireland, the Czech Republic, Singapore, Hong Kong, New Zealand and Greece.

[13] Which were partially offset by the rapid increase in the proportion of the working-age population in the US.

2. AGGEGRATE DEMAND, GDP AND IMPORTS

a. Uses

Total uses increased this year by 3.4 percent, which was lower than the rate of growth in GDP and lower than its average over the last decade. It is also significantly lower than the rate of growth in 2007 (7.3 percent) which was particularly high relative to growth in GDP as a result of the real appreciation, the local economic boom and the proximity to full employment. This trend continued during the first part of 2008 but as signs of the slowdown began to appear in other countries, demand began to fall. The growth in local demand slowed this year also in relation to last year's rapid growth though it was still higher than the average for the whole business cycle. In contrast to previous years and the first part of 2008, when it appeared that the effective constraint on growth was from the supply side, the developments during the latter part of the year were characterized by a contraction on the demand side.

Private consumption grew moderately. Purchases of durables fell sharply at the end of the year.

Private consumption rose by 3.9 percent in 2008, which is a significantly lower rate than in the previous year though it is similar to the average for the past decade. Current consumption rose at a moderate rate of 3.4 percent while the purchase of durable goods rose by 8.1 percent. The trend during the course of the year, however, paints a somewhat different picture. While the increase in current consumption was moderate in both halves of the year, the purchase of durable goods, particularly motor

Table 2.3
Sources and Uses, 1999-2008

(volume rates of change, percent)

				2008		
	1999-2000	2001-03	2004-07	Total	First half[a]	Second half[a]
GDP	6.1	0.2	5.2	4.0	4.9	1.3
Bussiness sector product	7.1	-0.7	6.4	4.4	5.8	1.0
Imports	13.7	-2.5	7.7	2.2	3.8	-9.6
of which Imports excluding diamonds	12.2	-3.4	9.2	6.0	5.7	-3.4
Total sources	8.3	-0.6	5.9	3.4	4.5	-2.2
Exports	18.4	-1.7	9.1	3.0	9.6	-15.6
of which Excluding diamonds	18.8	-2.6	11.3	8.0	15.4	-8.3
Gross domestic investment	4.1	-6.5	8.6	3.8	-5.1	20.2
of which fixed capital formation	1.5	-5.1	7.3	5.1	2.0	-4.5
Private consumption	6.2	1.4	5.0	3.9	5.0	-0.4
of which Excluding durables	5.2	2.3	4.4	3.4	2.6	3.1
Public consumption	2.2	1.9	1.4	2.8	2.8	2.5
Domestic uses	4.7	0.0	4.6	3.9	2.8	4.8

[a] In annual terms.

SOURCE: Based on Central Bureau of Statistics data.

Table 2.4
Developments during the Year, 2007 and 2008

(seasonally adjusted, change from previous quarter in annual terms)

	2007				2008			
	I	II	III	IV	I	II	III	IV
GDP	5.4	5.5	5.9	6.8	4.7	3.4	1.3	-0.5
Business sector product	6.6	6.4	7.2	7.9	5.7	3.7	1.0	-1.6
Imports	-5.7	19.8	10.3	15.6	4.5	-7.9	-5.8	-18.6
of which Excluding diamonds	-0.6	23.9	13.9	15.4	9.9	-10.5	-2.8	2.8
Total sources	1.9	9.7	7.2	9.5	4.6	-0.3	-0.9	-6.4
Exports	11.2	3.6	14.1	16.8	18.5	-12.0	1.1	-44.8
of which Excluding diamonds	8.6	5.2	16.3	18.5	29.4	-10.7	7.1	-31.6
Gross domestic investment	-14.2	53.2	2.9	0.7	-19.0	22.4	9.8	40.7
of which Fixed capital formation	12.9	16.7	51.6	-10.3	9.5	0.7	-10.2	2.4
Private consumption	7.4	3.7	8.5	4.6	7.6	0.2	0.6	-3.1
of which Excluding durables	7.8	1.8	8.8	0.7	2.6	4.5	3.8	0.6
Public consumption	-0.5	9.3	-0.4	-4.8	10.8	-4.6	4.3	6.3
Doemstic uses	3.4	11.7	3.5	6.1	0.6	4.2	3.7	7.5

SOURCE: Based on Central Bureau of Statistics data.

vehicles, increased significantly during the first half of the year as a result of the reduction in taxes and the real appreciation and fell by an even greater amount during the second half. Its level in the fourth quarter was 11.7 percent lower than in the same quarter the previous year.

The slower rise in consumption derived from precautionary saving, with the increased uncertainty about the economic situation in the future.

The drop in the rate of growth of current consumption occurred already in the first half of the year, even though growth continued at a significant rate in employment and disposable income. This was apparently the result of increased saving out of precautionary motives in light of the increasing economic uncertainty—which was evident in the Index of Consumer Confidence which began to decline already in late 2007[14]—and the drop in the value of financial assets. Although the financial wealth effect on private consumption is small relative to the income effect of wages,[15] the magnitude of the decrease in wealth was very large. Its estimated effect on the purchase of durable goods is of a greater magnitude, which accords with the theory of current consumption smoothing and the postponement of large purchases in periods of recession. And indeed these purchases declined sharply in the second half of the year.

[14] See Jakob Braude and Amit Freidman (2005), "The index of consumer confidence and private consumption," Israel Economic Review 78.

[15] Yaakov Lavi (2004), "Do changes in current income help to explain changes in consumption in Israel?" Israel Economic Review 71.

Other explanations for the slowdown in current consumption this year, despite the increase in disposable income, include: the increase in the prices of energy and food (during the first half of the year), which are relatively inelastic with respect to price and therefore displaced the consumption of other goods; the erosion of the real minimum wage which affected consumers with a high marginal propensity to consume;[16] and the drop in the rate of public saving.

Exports expanded swiftly at the beginning of the year, but dropped steeply towards the end of the year.

Exports excluding diamonds[17] grew at a rate of 8.0 percent, which is similar to that in recent years. The rapid increase in exports encompassed most of the industries: manufacturing exports grew by 8.0 percent, the export of services by 9.5 percent and the export of tourism by 21.9 percent. However, a breakdown of exports according to the changes in its components during the year presents a completely different picture. Thus, the export of services, apart from tourism, shot up during the first quarter and subsequently declined and by the fourth quarter was only 1.5 percent higher than at the end of 2007.[18] In contrast, manufacturing exports grew at a high rate during the first three quarters and then fell significantly during the fourth quarter. The growth in manufacturing exports was primarily due to chemicals and petroleum; the other industries were stagnant.[19]

The background for these developments includes the changes that have occurred in the global environment during this year. Thus, in the first part of the year, global demand remained high[20] and exports were primarily affected by the drop in profitability per unit of output as a result of the increase in the global prices of oil and other commodities and to a lesser extent the real appreciation. The worsening of the terms of trade did not have an immediate effect on total exports, apparently because of the high level of profitability previous to this and its somewhat lagged effect on exports. In the latter part of the year, global demand declined and resulted in a drop in the prices of raw materials that offset the worsening in the terms of trade, but also led to a significant decrease in the demand for Israeli exports during the fourth quarter, and exports fell by 31.6 percent in annual terms and by 4.1 percent relative to the same quarter in the previous year.

Investment grew more moderately than in the previous two years, but capital stock continued to expand rapidly.

Gross domestic investment grew at a rate of 3.8 percent this year. Fixed capital formation grew by 5.1 percent, which is less than in previous years but still much higher than the average over the whole business cycle. The increase in investment led to a rapid increase in the stock of capital and a continuation of the increase in

[16] According to Lavi (2004), income from wages has a greater influence on private consumption than disposable income from other sources.

[17] The export of diamonds shrank by 20.7 percent this year; however, despite its large share in total Israeli exports, the added value of the diamond industry is relatively low and therefore its effect on GDP is negligible.

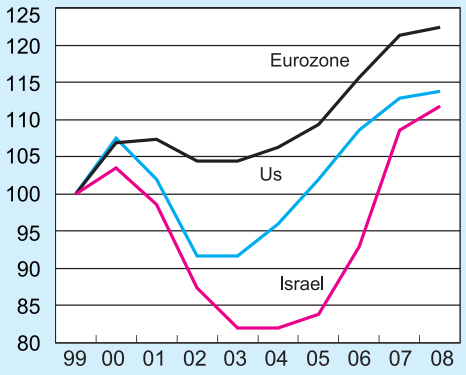
[18] The sharp rise in the first quarter was not necessarily a true expression of the growth in activity since the nominal export of services fell during the first quarter by 6.7 percent and by 2.6 percent for the whole year. The quantitative increase is a result of the sharp drop in prices.

[19] For further details, see the section on manufacturing in this chapter.

[20] Although US imports began to decline already at the end of 2007, the main decline occurred later in the year and global activity still remained at a high level during the first part of the year.

the proportion of investment in business sector product. Thus, the rate of increase in per capita investment was higher than that in the developed countries again this year and the gap created at the beginning of the decade narrowed considerably in recent years (Figure 2.5).

Figure 2.5
Per Capita Nonresidential Fixed Capital Formation in Israel, the US, and the Eurozone, 1999-2008
(Index, 1999 = 100)



SOURCE: Based on Central Bureau of Statistics and OECD data.

Nonresidential fixed capital formation, excluding ships and planes, grew by 7.7 percent due to the rapid growth in investment in machinery and equipment and transportation vehicles while the investment in non-residential construction fell by 0.9 percent. Investment in residential construction grew this year by 3.8 percent which was a continuation of the trend during the last two years.

Nonresidential fixed capital formation declined rapidly in the second half of the year, with the higher assessments of risk and the global slowdown.

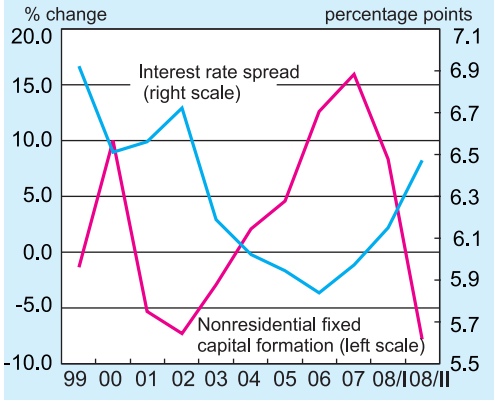
The trend in investment also changed during the course of the year. Thus, the investment in inventory[21] increased significantly during the fourth quarter with the decline in demand while fixed capital formation, apart from ships and planes, went from 8.8 percent growth in the first half of the year to a decline—for the first time since 2003—of 6.5 percent during the second half. This was primarily due to the decreased imports of transportation vehicles while the trends in other industries did not change significantly, perhaps because this type of import adjusts more rapidly than the others. The trend in investment this year was influenced by a number of factors: the closing of the output gap as a result of the increase in employment and capital utilization, which meant that firms could increase supply only through the expansion of the capital stock; and the continuing downward trend in its price in all industries, apart from construction. On the other hand, the credit crisis and the increase in the risk premium and lower expected profits as a result of the global slowdown made investment less worthwhile and led to slower growth in investment. The connection between risk and investment seen this year was similar to that in 2002, when the risk premium rose steeply and as a result investment in the economy declined. At a later stage, the risk premium fell and investment again began to increase (Figure 2.6).[22]

Public consumption grew this year by 2.8 percent, while civilian public consumption grew by 2.7 percent. Although this was lower than in the previous year, it was high relative to the last decade. Per capita civilian consumption which eroded

[21] Apart from the inventory of startup companies. This represents the change in the inventories of raw materials and finished goods.

[22] The risk premium was defined as the gap between the interest rate on overdraft facilities and the Bank of Israel interest rate.

Figure 2.6
The Interest Rate Spread[a] and the Increase in Nonresidential Fixed Capital Formation, 1999-2008



a The difference between bank interest (on overdraft facilities) and the Bank of Israel interest rate.
SOURCE: Based on Central Bureau of Statistics data.

between 1999 and 2006 at a cumulative rate of 4.7 percent, grew during the last two years by a cumulative rate of 3.6 percent and thus returned to its 1996 level. This is in contrast to an increase of about 24 percent in private per capita consumption during that same period.[23] The gap between the rapid growth in standard of living and the stagnation in total public services, such as education and health, has led to a larger shift from private consumption to these needs. And indeed private consumption on education and health as a proportion of private expenditure increased from 10.1 percent in 1997 to 12.5 percent in 2007.[24]

Public civilian consumption per capita increased rapidly in the last two years, after declining during the previous ten years.

b. Sources

The total sources available to the economy rose by 3.4 percent, as a result of the increase of 4.0 percent in GDP and an increase of 6.0 percent in imports excluding diamonds. During the year, there was a significant reversal in the growth of sources, particular imports, from 15 percent at the end of 2007 to a negative 4.9 percent in the second half of 2008 despite the large real appreciation at the beginning of the year which made imports more attractive. During the first part of the year, imports grew faster than GDP, which was a reflection of the long-term upward trend in the proportion of imports in the economy and the closing of the output gap. During the second half of the year, the situation was reversed and GDP grew faster than imports, which provided evidence of the transition from supply constraints in the first half of the year to demand constraints in the second.

Supply of business sector product

Business sector product grew by a rate of 4.4 percent, which was still above the average during the business cycle as a whole but significantly lower than during the last four years. Despite the major role played by demand towards the end of the year,

[23] The gap between the growth in private consumption and in civilian public consumption was maintained also in current prices and therefore this does not reflect the substitution between the quantity of public services and their quality.

[24] Calculated using data from the Household Expenditure Survey. For further details, see Section 4 in Chapter 6.

Business sector product growth moderated, with part of the slowdown the result of the cyclical component of growth. Factors of production increased swiftly, and productivity remained almost unchanged.

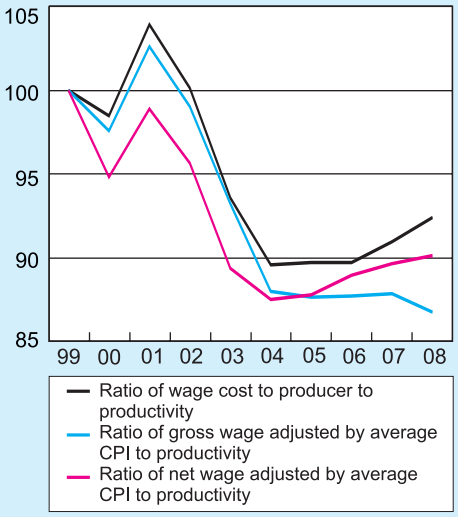
at least part of the slowdown was the result of the cyclical component of growth. This can be seen from an analysis of the components of growth, which shows that productivity remained almost unchanged this year, following rapid growth since 2004, which reflected the increased utilization of factors of production. As utilization increased, the quantities of the factors of production began to gradually increase and this year both labor input and the stock of capital grew rapidly, by 3.9 and 4.9 percent respectively.

The rate of unemployment dropped this year to 6.1 percent, while the rate of participation in the workforce remained stable. Thus, upward pressure might have been expected on wages, which have eroded relative to productivity in recent years.[25] However, the real hourly wage in fact declined, despite the increase in the nominal minimum wage in mid-year. There are a number of possible explanations: the inflationary surprise at the beginning of the year which eroded the nominal increase in wages; the drop in the rate of unemployment which primarily involved less-skilled workers whose marginal productivity and wages are lower than average; the significant increase in the number of foreign workers during the last two years, which has satisfied the demand for unskilled workers; the reduction in direct tax rates[26] which increased net wages again this year and reduced the pressure for an increase in gross wages; and the weakening of labor's bargaining power as a result of the increasing global mobility of capital and the decrease in the share of public sector product in GDP, which led to a downward trend in the share of labor in GDP in recent decades, both in Israel and abroad.[27]

In the last ten years wages increased at only a moderate pace, and labor's share of GDP declined.

Figure 2.7 presents the ratio between real hourly wages and GDP per hour of work (a measure of labor's share in GDP). It can be seen that inflation and the tax reduction indeed explain part of the erosion in the ratio of wages to productivity although over the business cycle as a whole erosion is evident that is not the result of these factors.

Figure 2.7
The Ratio of the Real Wage to Labor Productivity, 1999-2008



SOURCE: Based on Central Bureau of Statistics data.

[25] In the long term, the real wage is determined according to labor productivity and the ratio of output prices to consumption prices. In the short run, it is affected by, among other things, the unexplained component of inflation. See Yaakov Lavi and Natan Zussman (2005), "The determination of the real wage in the long run and its changes in the short run—evidence from Israel, 1968–1998," Israel Economic Review 77.

[26] Tax reductions this year were concentrated in the mid-range of salaries.

[27] See Box 2.2 in the 2007 Bank of Israel Annual Report.

The cost of raising capital for the business sector rose sharply as a result of the real and financial global crisis. The risk premium as derived from the CDS spread rose sharply, together with the yields on corporate bonds. The primary nonbank credit market dried up completely following the jump in the assessment of risk and the lack of confidence in large lenders' ability to service their debt.[28] Although the nominal bank interest rate (on overdraft facilities) less inflation decreased as a result of the inflationary surprise, the nominal interest rate itself rose during the second half of the year, despite the continuing decline in the Bank of Israel interest rate and the reduced expectations of inflation during this period. As a result, the risk premium rose this year (Figure 2.6). The return on capital remained high this year despite the decline in profitability and the slowdown in activity towards the end of the year. Figure 2.8 shows that in general the return on gross capital[29] is correlated with the ratio of the General Share Index to nominal business sector product. This is evidence of the link between profitability in the financial market and that in the real market. This year,

The cost to the business sector of raising capital surged as a result of the financial and real global crisis.

Although profitability remained high in the real market, in the financial market it fell sharply, due to concern over the economic situation in the future.

Table 2.5
Supply of Business Sector Product, 1999-2008

(volume change, percent)

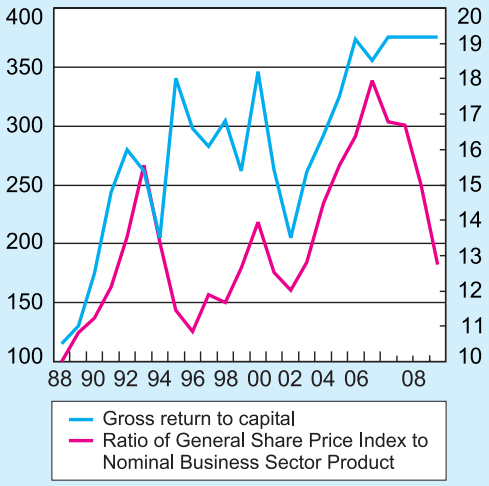
				2008		
	1999-2000	2001-03	2004-07	Total	First half[a]	Second half[a]
Business sector product	7.1	-0.7	6.4	4.4	4.9	1.3
Gross capital stock	7.2	5.1	2.9	4.9	5.5	5.3
Labor input[a]	4.1	-0.1	2.9	3.9	6.0	-3.0
Total factor productivity	2.0	-2.1	3.4	0.2	-0.2	1.3
Civilian labor force plus foreign workers	4.0	0.8	2.6	3.1	4.8	0.3
Working age population as share of total	71.2	71.6	71.6	71.6	71.6	71.6
Labor force quality	0.4	1.1	0.5	-0.8		
Compensation per man-hour[b]	6.5	0.2	3.4	3.1		
Gross product per man-hour[b]	7.1	1.1	4.0	2.1		
Rate of labor compensation in business sector (%)[b]	70.1	70.3	65.1	66.6		
Rate of return to gross capital (%)[b]	17.0	14.8	17.9	19.5	19.7	19.3
Capital/labor ratio	3.2	5.0	-0.4	0.5	-1.1	5.1
Gross capital stock/GDP ratio	1.6	1.8	1.7	1.7	1.7	1.8
Bank of Israel''s published nominal rate of interest	10.7	7.0	4.2	3.7	3.7	3.6
Interest on overdraft facilities	17.4	13.5	10.2	9.8	9.9	9.8
12-month forward inflation expectations (%)	3.3	1.9	1.7	1.9	2.6	1.2
Real yield on 10-year bonds (%)	5.3	5.0	3.8	3.3	3.2	1.6
Tax on non-wage income (%)[b]	21.2	19.7	20.6	18.8		

[a] In annual terms.
[b] At current factor input prices.
SOURCE: Based on Central Bureau of Statistics data.

[28] See Chapter 4.
[29] The share of capital in output divided by the gross stock of capital.

the link was broken and the financial market fell sharply, apparently due to uncertainty and the expectations of further declines in real activity. It may be that the decline is also a manifestation of the overvaluation of shares in recent years as a result of the increased proportion of shares in provident and pension funds.

Figure 2.8
Return to Capital and the Ratio of the Share Price Index to Business Sector Product, 1988-2008



SOURCE: Based on Central Bureau of Statistics data.

Productivity remained almost unchanged this year, continuing the slower increase in productivity evident in the last two years.

Productivity remained almost unchanged this year, which was a continuation of the declining rate of growth in productivity during the last two years. This was a result of the weakening of the cyclical component in productivity which can be explained by two factors: The first is the more moderate increase in the utilization of existing factors of production, which is not measured directly in the calculation of productivity. According to the Bank of Israel Companies Survey, utilization of capacity remained unchanged during the first three quarters and even declined during the fourth. The second factor is the drop in average labor productivity with the entry of lower-skilled workers into the labor market.[30] The quality of the workforce, as measured by the proportion of skilled workers, fell during the last two years following the entry of unskilled workers into the labor market and the sharp rise in the number of foreign workers.[31] Even without these factors, estimated productivity rose by only 0.3 percent as compared to an average increase of 1.2 percent during the course of the business cycle as a whole (see Box 2.1). In recent years, there has been erosion in the capital to labor ratio. It is difficult to determine what part of the erosion is cyclical and what part is long-term. Figure 2.5 shows that the increase in per capita investment is in line with that in the developed countries; however, the growth in employment was faster in Israel during this period. The breakdown of growth during the last decade by industry can at least partially explain the erosion in the capital to labor ratio. Thus, the growth in employment in commerce and services was more rapid than in manufacturing, which is capital intensive, while the stock of capital per worker in manufacturing in fact grew significantly.

[30] See Box 2.1 in the 2007 Bank of Israel Annual Report on the effect of the business cycle, and in particular the rate of unemployment, on productivity.

[31] The calculation of the quality of the workforces is based on Amit Friedman and Noam Zussman (2008), "Quality of the workforce in Israel," Discussion Paper Series, Research Department, Bank of Israel.

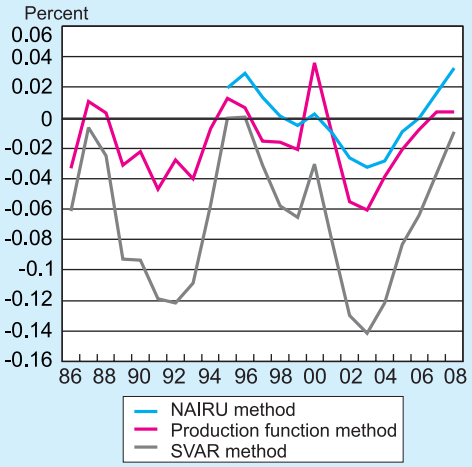
3. DEMAND, SUPPLY AND THE REAL EXCHANGE RATE

The output gap, which had widened considerably during the recession of 2001–03 and which had narrowed gradually since then, contracted further in 2008.

The estimated output gap, which reflects the gap between the economy's potential productive capacity, i.e., supply (which is not directly observed), and actual demand was closed this year according to the existing measures. This followed the opening of a large output gap during the recession of 2001–03 and its gradual narrowing since then. Figure 9 shows the various methods for estimating the output gap: the production function method which uses the deviations of the participation rate, the unemployment rate and the number of work hours per worker from their long-term trends;[32] the SVAR method which estimates the link between GDP and unemployment while taking lagged effects into account and differentiating between demand shocks and supply shocks by imposing the assumption that demand shocks only have a short-term effect;[33] and the NAIRU method which estimates the connection between the output gap and inflationary pressures.[34] According to the last method of estimation, the level of activity surpassed that which is compatible with stability in inflation already at the end of 2006 and since then the growth in activity has created upward pressure on prices. According to the other models, the output gap was closed this year.

These findings are in accord with the various developments in 2008—the decrease in the current account surplus, the end of growth in productivity and the sharp increase in labor input and nominal wages—which point to demand pressure during most of 2008, a continuation of the previous year's trend. The increasing demand pressure, together with the increase in global commodity prices, led to a significant rise in inflation[35] and a large real appreciation, which was also a result of the worldwide decline in the value of the dollar and the weaker US economy. However, the developments towards the end of the year showed a reversal in trend. Demand weakened, particularly

Figure 2.9
The Output Gap, by Different Methods of Estimation, 1986-2008



SOURCE: Based on Central Bureau of Statistics data

[32] Yigal Menashe and Yossi Yakhin (2005). "Mind the Gap: Structural and Nonstructural Approaches to estimating Israel's Output Gap," Israel Economic Review 2, No.2

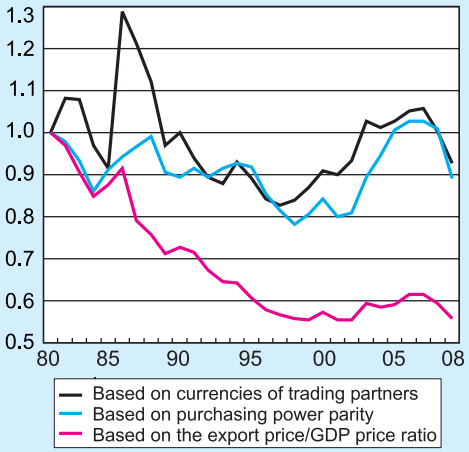
[33] Based on an internal document.

[34] Tanya Sokhoi and Amit Freidman (2004), "Estimating NAIRU in Israel as an unobservable variable," Israel Economic Review 76.

[35] It is not possible to differentiate between an increase in prices due to more expensive imported inputs and that due to the increase in domestic demand. According to national account figures, the prices of private consumption and civilian public consumption increased at a high rate, output prices increased moderately and import prices declined.

that for exports; inflation declined sharply; there was a real depreciation;[36] and in the fourth quarter, there was even a widening of the output gap for the first time since 2003.

Figure 2.10
The Real Exchange Rate, by Different Methods of Calculation, 1980-2008



SOURCE: Based on Central Bureau of Statistics and IMF data

The shekel strengthened markedly at the beginning of the year, continuing the real appreciation of 2007.

The sharp appreciation in the real exchange rate during the last two years was manifested, until mid-year, in a sharp appreciation of the dollar and from that point on in an inflation gap between Israel and the rest of the world. Although according to Box 2.2 the appreciation can be partially explained by economic developments, such as the closing of the output gap relative to the rest of the world, the surplus in the current account, the reduction in the debt to GDP ratio and the interest rate differential, these factors cannot completely explain the appreciation and part of it in fact remains unexplained. The explanation of the depreciation during the previous years of growth is also only a partial one and it is possible that the sharp appreciation was a correction of the "over-depreciation" during the period 2002–06. The liberalization in the capital market during that period led to a significant increase in the proportion of foreign assets in the public's asset portfolio and therefore led to a depreciation in previous years while the emergence of the global crisis during the last year partially restored the proportion of local investments in the portfolio, due to the improved performance of the economy, and therefore led to an appreciation. The interest rate differential in equilibrium is meant to reflect this phenomenon although it is possible that information constraints are leading to a deviation from this equilibrium.

The full extent of the appreciation could not be explained by economic developments, and at the end of the year the shekel depreciated, offsetting the earlier "over-appreciation."

4. SAVINGS, INVESTMENT AND THE CURRENT ACCOUNT

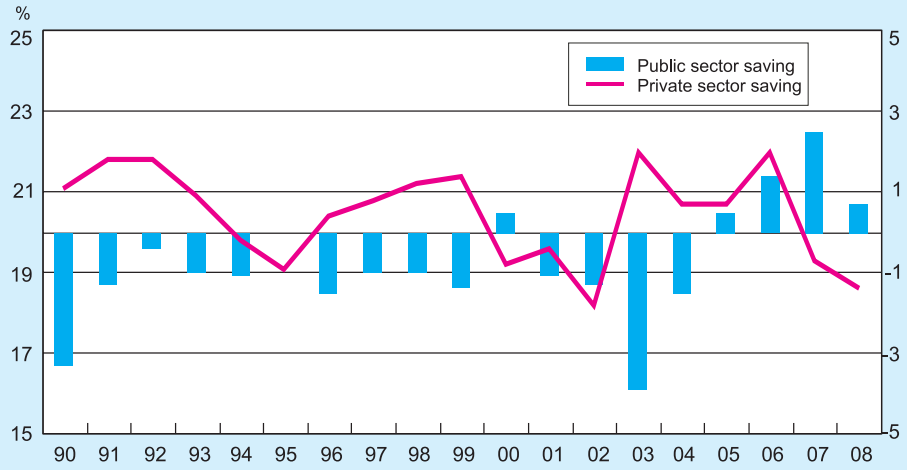
The gross national rate of saving declined in 2008, following the surprise negative turnaround in tax revenues.

Gross national saving fell this year to a level of 19.3 percent of the economy's total income, which represented a continuation of the previous year's trend. The rate of saving is characterized by an upward trend that is flattening over time as a result of the economy-building process and capital accumulation. Once this trend is removed, it appears that savings adjusted to the business cycle or in other words followed the consumption-smoothing model. Thus, it fell during the last period of recession and rose during the period of rapid growth. The decrease in the rate of saving this year is

[36] The real exchange rate, which is measured by the ratio of export prices to output prices, depreciated during the fourth quarter. According to the REER index, it only depreciated at the beginning of 2009.

a result of the decrease in public saving which is due to the negative surprise in tax collection and a small decline in private saving.

Figure 2.11
Saving Rate, by Sector, 1990-2008
(percent of total national income)



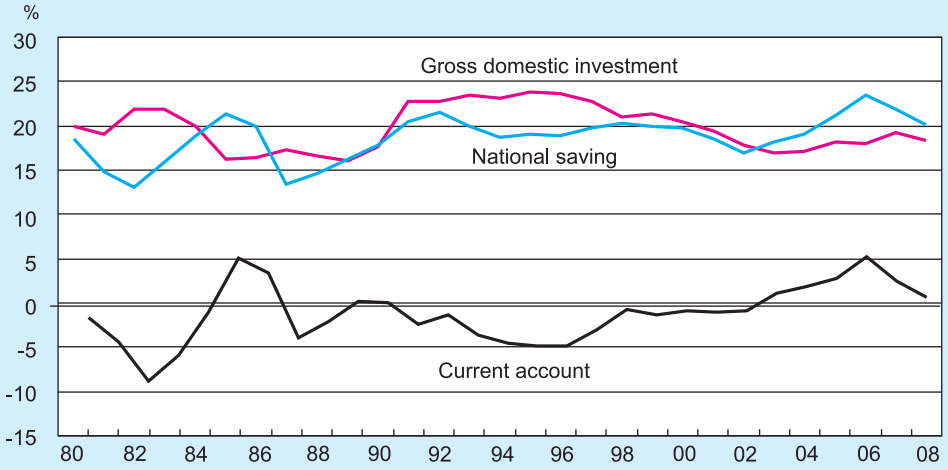
SOURCE: Based on Central Bureau of Statistics data.

The rate of private saving is influenced to a great extent by public saving. Thus, a simple estimation of the relationship between the two showed that an increase of one percentage point in public saving leads to a drop of half a percentage point in private saving.[37] This phenomenon, which is the result of the government's current account deficit being viewed as equivalent to future taxes, was far more dominant during the period prior to the Stabilization Plan when the public deficit was large and subject to large fluctuations. However, estimation for the period following the Stabilization Plan shows that this relationship in fact still exists. According to this finding, the rate of saving this year was lower than that estimated due to the sharp drop in public saving. It is possible that the reason for this lies in the negative surprise in public saving, which is similar to what occurred in the previous two years when public saving grew beyond expectations and private saving declined about a year later.[38] In contrast, the global slowdown that began at the end of the year was expected to lead to a decline in the rate of saving due to consumption-smoothing considerations, although according

[37] Estimated for the period 1966–2008 with a logarithmic trend removed. A similar effect was found in a regression of differences. It should be remembered that this regression is subject to bias if there are measurement errors since private saving is calculated by subtracting public saving from total saving.

[38] The estimation of the effect of private saving also found a strong effect for error correction, i.e. the adjustment in saving following deviations from the long-term equilibrium in the previous period.

Figure 2.12
National Saving Rate, Gross Domestic Investment, and the Current Account, 1980-2008
(percent of total national income, at official exchange rate)



SOURCE: Based on Central Bureau of Statistics.

to the estimated model the effect of public saving is larger and was expected to lead to an increase in private saving.

The rate of investment from gross national income also fell this year to a level of 18.6 percent, against the background of the increased risk premium in the business sector. Nonetheless, the increase in investment in Israel this year was larger than that in the OECD countries (Figure 2.5). The larger decline in saving relative to investment this year, which was a result of the decline in public saving, led to a large reduction in the current account surplus, which was a continuation of the previous year's trend. The reduction in the current account surplus is in accord with the increased attractiveness of imports, in particular the import of vehicles (which involve a high level of expenditure), as a result of the real appreciation and the reduction in taxes, and also in accord with increased price of oil:[39] it is reasonable to assume that without the increase in the price of oil, the rate of saving would have been higher[40] since the expenditure on energy would have been lower (as a result of the inelasticity of the demand for energy with respect to price).

The current account surplus shrank considerably.

[39] See the chapter on the balance of payments in this report.
[40] Assuming consumption-smoothing and that the increase in prices is perceived as temporary.

Box 2.1 The change in total productivity—technological improvements or pro-cyclical factors?

The issue of the contribution of technological improvements (which account for most of the increase in total productivity) to growth is an important one in economic analysis and policy making.[1] As a result, economic research since the 1960s has dealt extensively with the measurement of total productivity. The first and most widely accepted model even today for studying this issue is Solow. The model assumes perfect competition and that the economy's production function exhibits constant returns to scale and therefore changes in total productivity (which are meant to reflect technological improvements) are measured as a residual (the Solow Residual) obtained after removing the effect of changes in factors of production (capital and labor) from the growth in GDP.

The empirical findings in the US and other countries have shown that this residual is pro-cyclical or in other words reflects not only technological improvements and supply factors but also temporary changes in demand. Thus, during a boom it is significantly higher than the average change in total productivity and during a recession is lower and sometimes negative. Over a long period of time, which includes a sufficient number of booms and recessions, the average of the Solow Residual will also reflect the average change in total productivity.

Two main explanations have been suggested in the economic literature for the pro-cyclical behavior of the Solow Residual: 1) The economy's production function does not fulfill the assumption of constant returns to scale and perfect competition and therefore if these incorrect assumptions are imposed, then part of the contribution of the changes in factors of production to growth will be included in the Solow Residual. An example of this can be found in Hall (1988), according to which the pro-cyclical behavior of the Solow Residual in the US manufacturing industry is the result of the incorrect assumption of constant returns to scale when in fact increasing returns to scale is the correct assumption. 2) The production function does not include capacity utilization, which is usually correlated with the business cycle, such that this measurement error in the factors of production "imports" cyclical effects into the Solow Residual. Support for this can be found in Basu and Fernald (1997) and Basu and Kimball (1997) which showed that the cyclical behavior of the Solow Residual in US manufacturing is the result of not including utilization of factors

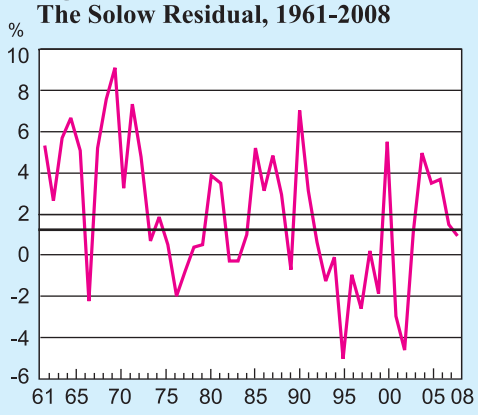
[1] Box 2.1 in the 2007 Bank of Israel Annual Report presents a detailed discussion of the effect of policy variables (such as tax rates), number of foreign workers and proportion of skilled workers, on total productivity in Israel.

of production in the measurement of total productivity. Similar findings were obtained by studies in other developed economies.

The change in total productivity presented in the Bank of Israel Annual Report and other Bank of Israel publications is calculated according to the Solow Residual approach.[2] Figure 1 shows the Solow Residual for Israel during the period 1961–2008. It can be seen that the periods in which it was higher than the average for the sample (i.e. 1.3 percent annually)[3] are ones in which the Israeli economy was in a boom (i.e. the 1960s apart from the short period prior to the Six Day War, the boom following the Stabilization Plan in the mid-1980s, the early years of immigration following the creation of the State, the hi-tech boom in 2000 and the exit from recession followed by a boom during the years 2004–08).

An exception is the period 1993–06, which is classified as a recession in terms of total productivity but is in fact characterized by a high rate of growth in GDP. It is possible that this is related to the supply effects of the mass wave of immigration to Israel during this period. Thus, the period was characterized by growth in the supply of labor, the stock of capital and potential GDP; however, this was not accompanied by an increase in total productivity due to the slow and lagged adjustment process in the absorption of immigrants within the Israeli labor market. A correspondence can be seen between periods in which the Solow Residual was below the average for the sample period and periods of recession in the Israeli economy, which includes most of the 1970s (as a result of the global energy crisis), the crisis during the years prior to the Stabilization Plan, the slowdown in the second half of the 1990s and the previous recession in 2001–03 which resulted from the hi-tech crisis and the security situation during that period.[4]

Figure 1
The Solow Residual, 1961-2008



SOURCE: Bank of Israel.

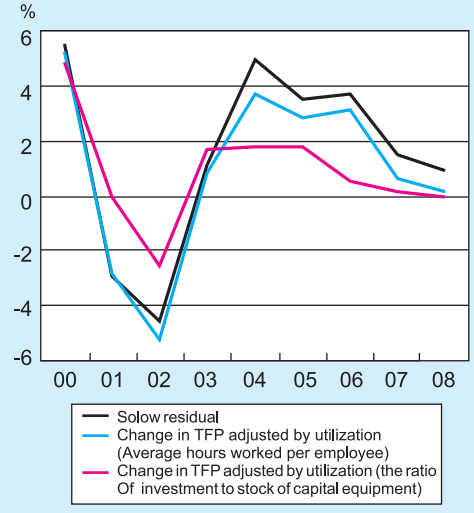
[2] With the assumption of constant elasticities of production with respect to capital and labor.

[3] The average Solow Residual for Israel is also similar to that of many developed economies, such as the US, Britain, Germany and Sweden as calculated by the OECD for the period 1985–2006. See also http://stats.oecd.org/WBOS/Index.aspx?DatasetCode=MFP. The average Solow Residual, which includes the sample period 1973–2008, is one percent per year.

[4] Evidence of the pro-cyclical behavior of the Solow Residual can also be found in the high correlation (63 percent) between it and the change in business sector output between 1980 and 2008.

A recent study done at the Bank of Israel (Djivre and Menashe, 2009) could not reject the hypothesis that the production function for business sector output exhibits constant returns to scale and that the business sector is characterized by perfect competition. As a result, the study suggested a number of measures of utilization that are correlated with the pro-cyclical component of the Solow Residual, such as the average number of work hours for full-time skilled male workers[5] and the ratio of investment to the stock of capital equipment in the business sector. The latter is a measure of adjustment costs which are also correlated with the business cycle. However, this index is also affected by the adjustment processes of the stock of capital which does not always react quickly to changes in the business cycle.[6] In order to neutralize other factors in the Solow Residual that do not represent the technological improvements included in it, a number of adjustments were made in its calculation, in addition to the use of the two indexes of capital utilization mentioned above. Thus, the calculation of labor input took into account the quality of the workforce by using an index of quality (Zussman and Freidman, 2008) that was available from 1988 onwards. In addition, the elasticity of production with respect to labor input changed over time and was calculated by the weight of salary and salary-related expenditure in GDP measured according to factor of production prices.

Figure 2
The Solow Residual and the Change in TFP[a] Adjusted by Capital Utilization, 2000-08



[a] Total factor productivity.
SOURCE: Bank of Israel.

Figure 2 presents the following variables for the period 2000–08 which represents the most recent business cycle: the original Solow Residual without any adjustment or correction; the change in productivity after corrections for

[5] The choice of fulltime skilled male workers is meant to neutralize the effect of upward trends in the proportion of female and skilled workers during the sample period of 1979–2006.

[6] The study also examined other indexes of utilization, such as the index of electricity consumption for capital equipment in the business sector which performed well until the mid-1990s but subsequently remained low and was no longer correlated with the current stage of the business cycle. Also looked at was the net balance of the rate of utilization in manufacturing according to the Bank of Israel Survey of Companies, which is correlated to a large extent with the business cycle. However, its values, which are qualitative, are not translatable in terms of changes in capital utilization.

the quality and elasticity of labor and using capital utilization as measured by the index of average work hours per worker; and the change in productivity after the aforementioned corrections in labor and the use of capital utilization according to the ratio of investment to capital equipment in the business sector.

Figure 2 shows that the change in total productivity adjusted for utilization has an average that is close to the original one though its variance over the business cycle is reduced.[7] This means that part of the variance in total productivity, which is due to the business cycle and not to changes in the supply side or technological improvements, was removed, as intended. Thus, an examination of the most recent business cycle shows that total productivity, adjusted for the influence of the two average indexes of utilization, grew by an annual rate of 1.1 percent,[8] which as mentioned is close to the long-term rate of increase. Also for the period 2004–07, which many feel was characterized by an increase in productivity, it was found that the change in utilization-adjusted productivity (using the ratio of investment to stock of capital equipment) is not an outlier but rather is similar to its long-term average. It is worth mentioning that in 2000, there was almost no difference between the various productivity indexes since the boom was manifested primarily in the hi-tech industries, which are characterized by a high level of productivity and therefore the high residual was not due to the fact that utilization was not taken into account.

Table 1 describes the average changes in the Solow Residual and total productivity adjusted for the various utilization indexes for the period 1996–2007 with classification of periods as booms or recessions, as well as the average growth rate (1.0–1.3 percent annually) in total productivity over a longer period (1980–2008).

The table shows that although the adjustment for the utilization of capital in the various regressions eliminates the decline in total productivity to a large extent during the periods of recession in the late 1990s and, in particular, during the early 2000s, it leaves total productivity at a level below the long-term average. This indicates that these recessions were also affected by the supply side. Thus, during the previous recession, which was a result of the security situation and the hi-tech crisis, skilled workers with a high level of productivity were laid off while the employment of security guards with lower measured productivity increased

[7] The reduction in the variance of utilization-adjusted total productivity is found for all the years according to the index of the ratio of investment to the stock of capital equipment in the business sector and from 2003 onward according to the utilization index of work hours per worker.

[8] The annual average of the Solow Residual grew by a higher rate of 1.5 percent during the most recent business cycle since it also includes the increase in the quality of labor input from 1999 to 2008, which is the result of the increase in the proportion of skilled workers and the decrease in the proportion of non-Israeli workers in the workforce.

Table 1
The Solow Residual and the Change in TFP[a] Adjusted by Capital Utilization, 1996–2008

		TFP adjusted by quality of labor and utilization based on	
	Solow residual	average hours worked per employee	ratio of investment to stock of equipment
1980-2008	1.3	1.1	1.0
1996-1999	-1.3	-0.4	0.8
2000	5.5	5.3	4.9
2001-2003	-2.1	-2.4	-0.3
2004-2007	3.4	2.6	1
2008	-0.2	0.3	-0.3

During the most recent boom (2004–07), the increase in inputs was more gradual and accompanied by a not insignificant rise in productivity. In 2008, the trend was reversed and total productivity grew only marginally.

In summary, the empirical findings presented above strengthen the claim that in estimating the contribution of technological improvements to growth the Solow Residual must be adjusted for utilization of capital and labor, which represents the pro-cyclical factors. This kind of adjustment also contributes to the improved measurement of the change in total productivity during the most recent business cycle.

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Box 2.2
The real appreciation in 2008 and the equilibrium real exchange rate

The real exchange rate is one of the most important macroeconomic indices for the competitive position of an open economy. There is no unique way of measuring the real exchange rate though all the indices point to a sharp real appreciation during the second and third quarters of 2008.

Was the appreciation of the real exchange rate in line with the fundamental factors that determine its movements or is it a result of only temporary factors? In principle, the rapid appreciation, particularly during the second quarter of the year, is an indication that the exchange rate was below its equilibrium level since it is difficult to justify such a fast and large change in a "real" variable. Nevertheless, it is possible that the exchange rate prior to the large appreciation was over-depreciated and therefore the appreciation simply represented a return to equilibrium.

In order to answer this question, which has implications for the assessment of both the current and future economic outcomes, we estimated the relationship between the level of the exchange rate and a number of fundamental factors, which according to economic theory determine its movements, and tested the relationship between the deviation of the exchange rate from equilibrium and a number of temporary factors that could explain it. A deviation of the real exchange rate from equilibrium can lead to a reduction in competitiveness and a slowdown in growth in the case of an appreciated exchange rate and to "overheating" and inflation in the case of a depreciated exchange rate, and whatever the case will lead to an inefficient allocation of factors of production between the tradable and non-tradable sectors.

The index of the real exchange rate that is analyzed here is the Real Effective Exchange Rate (REER), which is published by the IMF. The REER is calculated by weighting the nominal exchange rate by the level of prices of private consumption in Israel relative to its trading partners, where the weight of each bilateral index in the general index is determined according to the composition of Israel's foreign trade (with a correction for indirect effects through a third party). Since the index is relative to other countries, it is not affected by a decline in the price of tradable goods relative to non-tradable goods over time (the Balassa-Samuelson effect) and does not have a time trend (as is the case for other developed countries as well). This is in contrast to the index based on the price of exports relative to output which shows a long-term trend of real appreciation. The REER index is correlated with the unit labor cost index and therefore it also represents the level of competitiveness among local producers.[1]

[1] A. Freidman and N. Liviatan (2008), "The real exchange rate and the current account," Research Department, Bank of Israel, unpublished.

Methodology: There are many approaches to defining equilibrium for the real exchange rate. According to the Fundamental Equilibrium Exchange Rate approach (FEER), the equilibrium exchange rate is defined as the level that balances the economy internally and externally or in other words which is compatible with "normal" utilization of factors of production and a sustainable current account.[2] The main problem in empirically implementing this approach is that it requires numerous assumptions regarding the level of fundamental variables, such as potential output in Israel and abroad and the long-run level of exogenous capital inflows.

One of the common approaches in the literature for estimating the deviation of the real exchange rate from equilibrium is based on the equation for uncovered interest parity in real terms:[3] According to this relationship, the current real exchange rate is dependent on expectations of the future exchange rate and on the real interest rate differential (adjusted for risk) between Israel and the world, where expectations of the future exchange rate are dependent on a number of fundamental economic factors.

This approach is called the Behavioral Equilibrium Exchange Rate (BEER) and its advantage lies in the fact that it does not require a large number of assumptions but rather is based on the actual values of a number of observed variables and therefore is easy to implement and interpret. The results presented here are based on this approach.

Implementation: In order to estimate the equilibrium exchange rate level, a number of equations were estimated using the fundamental variables which are commonly used in this literature.[4] These include: the economy's net investment position, which represent the pressure on the income account (a high level of liabilities tends toward a depreciation); the proportion of public consumption in GDP or the output gap (i.e. the difference between actual GDP and its trend or the relative output gap with the US), which represent the relative pressure on the prices of non-tradable goods; the external terms of trade, which represent the exogenous income effect on the economy (a worsening in the terms of trade tends toward a depreciation); the public debt to GDP ratio, which represents country risk; and the current account deficit or surplus, which is an indication of the required adjustment in the exchange rate in order to balance the current account.

[2] J. Williamson (1994) (ed.), "Estimation of FEERs, in estimating equilibrium exchange rates," Institute for International Economics.

[3] J. Frankel and A. Rose (1995), "Empirical research on nominal exchange rates," in G. Grossman and K. Rogoff (eds.), Handbook of International Economics.

[4] IMF, Research Department (2006), "Methodology for CGER exchange rate assessments,"; R.L. Driver and P.F. Westaway (2004), "Concepts of equilibrium exchange rates," Working Paper no. 248, Bank of England.

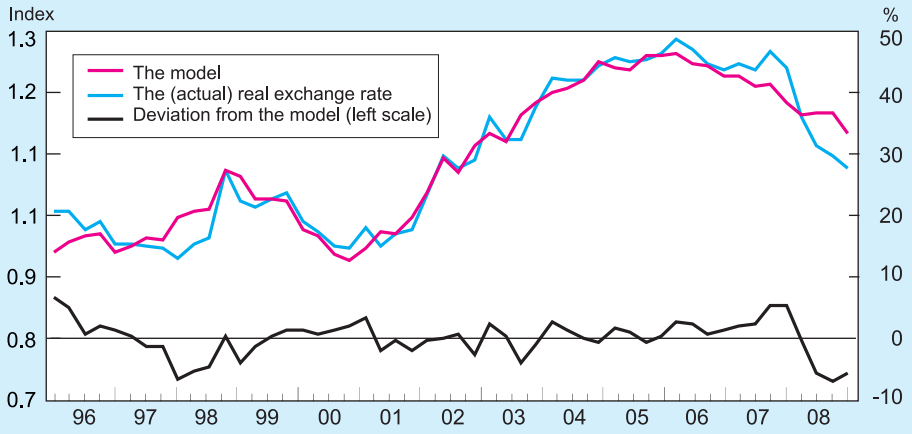
The assumption of this method, which requires some justification, is that on average, during the sample period (1990 to 2008), the real exchange rate was in equilibrium. Thus, the fact that there was a free-floating exchange rate regime in place during most of the period and that on average the deficit in the current account was negligible (about one percent of GDP) provide evidence of this assumption.

Results: The various models for estimating the exchange rate indicate that during 2008 there was over-appreciation and that the level of the real exchange rate in the third quarter appreciated by about 6 percent relative to the factors that explain its movements (depending on the model and the sample period).

Figure 1 presents the level of the actual real exchange rate in comparison to that which is generated by the model that includes the trends in the current account and the economy's net investment position, the debt to GDP ratio and the real interest rate differential between Israel and the US. In order to calculate expectations of the future, which are not based only on past values of the fundamental variables, use was made of the excess return on the Tel Aviv 100 Index relative to a global share index (see the section on the financial account in Chapter 7).

Deviations from the equilibrium exchange rate (over-appreciation) occurred in 1997 and 1998 and during 2006 and 2007 (over-depreciation); however, the real exchange rate was usually near its equilibrium level. This is not surprising since there was a free-floating exchange rate regime in place and there was no reason for a prolonged deviation from the level that is compatible with the economy's fundamentals.

Index of the Real Exchange Rate, and its Deviation from its Equilibrium Level, 1996-2008



SOURCE: Bank of Israel.

A possible explanation of the over-appreciation during 2008 is the difference in timing and intensity of the global financial crisis between Israel and abroad. The global crisis and its effects on real activity abroad affected Israel with a lag and the intensity of the crisis, up to this point, has been greater in other countries. This situation worked to increase capital inflows, particularly the "return" of financial capital that Israelis had previously invested abroad (see Section 3 of Chapter 4 in this report). The difference in the expected effects of the global crisis is reflected in the relative return on the Tel Aviv 100 Index (which recorded an excess return during 2008) which was found to have a statistically significant effect on the real exchange rate. However, even taking this fact into account, the exchange rate was still over-appreciated and therefore this is not a full explanation.

In early 2009 the REER depreciated, such that the deviation from equilibrium narrowed significantly. According to other indices of the real exchange rate, such as the price of exports relative to the price of GDP, a real depreciation occurred already in the fourth quarter of 2008. These trends support the conclusion that the appreciation in mid-2008 was a temporary deviation of the real exchange rate from its equilibrium level.

5. THE PRINCIPAL INDUSTRIES

I. Main developments

Business-sector output expanded more slowly in 2008 than in the last four years (Table 2.6). The expansion stemmed from the rise in factors of production. The slowdown in activity in the principal industries worsened during the year as a result of the global financial crisis and economic slump. The decline in demand abroad impacted on manufactured and services exports. The moderation of domestic demand, primarily in Q4, weakened manufacturing, commerce and services, and the transport industry.

Business-sector product expanded more slowly in 2008 than in the last four years.

Although manufacturing output expanded by 7 percent—a faster rate than in 2007—an examination of the development of activity in the course of the year shows that it slowed sharply in the second half. Moreover, the rise in the first six months of the year reflects mainly a steep increase in the chemicals and oil industry, without which manufacturing output would have risen by only 2.9 percent in 2008. The slowdown in manufacturing is the result of the influence of the global crisis on demand in Israel and abroad. Firms' financing difficulties due to the financial crisis and the increase in risk, together with pessimistic expectations regarding economic activity, were also expressed in a drop in investment in manufacturing in the second half of the year.

Although manufactured product expanded by 7 percent, a faster rate than in 2007, it slowed sharply in the second half of the year.

The activity of the construction industry did not increase substantially, and the number of building starts remained unchanged. Despite the moderation of activity, the number of persons employed in this industry rose in 2008, continuing the increase in

Table 2.6
The Principal Industries, 1998–2008

(rates of change, at constant prices)

	Change from 2007 to 2008							1998–2008, annual averages					
	Industry weights[a]	Product	Change in product per half year, in annual terms I	Change in product per half year, in annual terms II	Labor input	Capital	Monthly wage per employee post[a]	Industry weights in 1998[b]	Product	Labor input	Capital	Total factor productivity	Labor productivity	Real wage per employee post
Manufacturing	21.5	7.0	13.3	-8.8	1.9	5.8	-1.8	21.8	3.6	0.6	4.8	1.5	3.0	2.3
Agriculture	2.8	-5.2	-5.6	-6.4	6.6	1.4	-1.3	2.5	4.0	-0.4	0.5	4.0	4.4	1.7
Transport and communications	11.0	1.4[c]	-4.8	0.6	0.8	5.1	-2.7	9.6	4.5	2.9	5.0	0.5	1.5	-0.4
Construction	7.3	2.3	0.3	-1.6	3.9	7.1	0.2	12.5	-1.7	-2.8	5.8	-0.3	1.1	-1.2
Electricity and water	3.1	0.1	-0.3	-11.0	20.2	0.0	4.5	3.4	3.9	-1.0	3.8	2.8	4.9	2.2
Commerce and business services[d]	58.8	3.2	2.0	2.4	4.6	4.4	1.9	50.2	6.1	4.1	6.7	0.9	1.9	1.0
Business sector product	100.0	4.4	4.1	2.1	3.9	4.3	-0.7	100.0	4.2	2.2	4.7	1.1	2.0	1.3

a Excluding imputed banking services, errors and omissions.

b Excluding Palestinians. From 2003, excluding foreign workers.

c Estimate.

d Including commerce, catering and hotel services, and financial, business and personal services.

SOURCE: Based on Central Bureau of Statistics data.

2007, while the real wage remained stable; this would appear to be a lagged response to the ongoing decline in the number of persons employed since 2000. In 2008 there was a turnaround in the price of owner-occupied housing and rents, both of which rose after declining for a long time, a development which could lead to the revival of activity in this industry. However, the global financial crisis, which intensified at the end of the year, and especially the great vulnerability of the real-estate industry to the crisis, could impact on the industry's output—both on the demand side and as a result of financing difficulties on the supply side.

The rise in activity of the construction industry moderated, and the number of residential building starts remained unchanged.

The economic slowdown was expressed in the contraction of activity in the transport and communications industry in the second half of the year. This industry expanded by 1.4 percent in 2008, the result of an increase in transport output and a decline in communications output. The growth of transport was led by the rise in the product of land transport, primarily due to the increase in demand for bus, truck, and train services. The output of the communications industry fell this year because of the slower expansion of utilization of new communications services.

The transport and communications industry grew by 1.4 percent in 2008, with an increase in transport output and a small decline in communications output.

The economic slowdown, particularly in the second half of the year, was reflected in the activity of the commerce and services industries, whose output rose by only 3.2 percent in 2008, down significantly from 2007 (when it was 9.1 percent). The slowdown in activity encompassed all the commerce and services industries, although in most of them it began in the second half of the year: commercial activity declined, the expansion of the product of the banks and the financial institutions was checked, the growth rate of tourist entries decelerated, and in Q4 the extent of financing in the venture capital market—the market which serves as the engine of growth for start-up and computer services firms —declined.

The economic slowdown was reflected in the activity of the commerce and services industries, whose output rose by only 3.2 percent in 2008, down significantly from the increase in 2007.

The output of agriculture, which is characterized by wide annual fluctuations, fell by some 5.2 percent despite the rise in labor and capital inputs. This industry's share of business-sector output was 2.8 percent in 2008, a year which was characterized by a sharp 16 percent drop in agricultural exports.

Agricultural output, which is characterized by wide annual fluctuations, fell by some 5.2 percent despite the rise in labor and capital inputs.

II. Developments in selected industries

a. Manufacturing

Manufacturing output, which accounts for about one-fifth of business sector output, grew this year by 7.1 percent, following an increase of 4.4 percent last year. However, this acceleration in growth does not accurately reflect the activity in the industry during 2008. An examination of the trends reveals that during the course of the year the accelerated growth in manufacturing production came to an end and that during the second half of the year it actually declined. Furthermore, the growth during the first half of the year was concentrated in only some of the manufacturing industries and largely reflected a sharp increase in production in chemicals and petroleum. Without chemicals and petroleum, manufacturing production rose by only 2.9 percent.

Most of the manufacturing industries did not participate in the accelerated rise in manufacturing output in the first half of the year; the rise reflected a surge in production in chemicals and petroleum, and in the second half of the year total production already recorded a decline.

Table 2.7
Manufacturing Industry, Main Indicators

(annual rates of change, percent)

	Weight in the industry	1991–2000	2001–2003	2004–2006	2007	2008			
						Total	Total excl. chemicals and oil	First half[a]	Second half[a]
Manufacturing production	100	5.9	-1.1	6.8	4.4	7.1	2.9	12.0	-3.9
Domestic sales	57	4.3	-2.2	2.8	4.8	-0.5	-1.4	6.3	-7.1
Manufacturing exports	43	11.5	-1.3	11	12	8.8	3.4	13.8	-1.0
Production of electronics industries	29.1	10.6	-5.2	10.9	9.2	1.8	-	1.7	0.6
production of medium-high- and medium-low-tech industries	34.7	3.8	5.3	8.1	4.5	18.0	8.9	31.4	-12.8
Production of low-tech industries	36.2	5.2	-2.8	3.4	2.8	0.1	-	0.3	-5.1

[a] Compared with previous half year.

SOURCE: Export data, the National Accounts; other, based on Central Bureau of Statistics data.

The slowdown in manufacturing during the course of the year and the first signs of a contraction in industry activity towards the end of the year followed broadly-based and prolonged growth since 2004 (at an annual rate of 6 percent). During this period, the number of workers, capital utilization and investment in the industry grew significantly and from 2007 onward there were clear signs that the industry was approaching full utilization of its productive capacity and that growth in the industry was slowing somewhat as a result.[41] At the beginning of 2008, the global financial crisis worsened and this was reflected in an accelerated slowdown in the Israeli manufacturing industry during 2008, particularly on the demand side.

The continuation of the global financial crisis slowed world trade, and hence Israel's exports, while the decline in private consumption and investment impacted negatively on manufacturing sales to the domestic market.

The global financial crisis affected demand in the manufacturing industry through two main channels: First, the continuation of the global crisis led to a slowdown in real global activity and particularly in global trade. The slowdown in global trade and demand affected manufacturing exports, whose rate of growth slowed during the course of the year. Second, the global financial crisis and the expectations that it would trickle down to Israel were reflected in a contraction of local demand, both private consumption and investment, which led to a drop in domestic manufacturing sales.

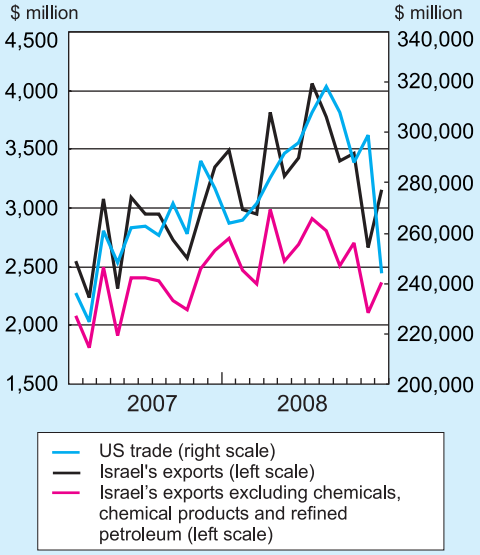
In addition to the slowdown in demand, there was also the effect of higher appraisals of risk and the decrease in sources of nonbank credit as a result of the global crisis. These factors made it difficult for manufacturing companies to finance their activities and in particular to further increase investment, which contracted during the second half of the year. The decrease in investment reduced the rate of growth in the capital

[41] For further details, see the parallel section in the 2007 Bank of Israel Annual Report.

stock and is expected to hinder the response of the manufacturing industry to renewed demand in the future.

Exports: The rate of growth in manufacturing exports slowed somewhat in 2008. This reflects accelerated growth in exports during the first half of the year—thanks primarily to the sharp increase in the exports of the chemicals and petroleum industry—and a decrease during the second half. The slowdown in exports occurred simultaneously with the slowdown in global trade and it is possible that exports were also affected with a lag by the 6 percent appreciation in the real exchange rate of export prices relative to manufacturing prices during the first half of the year. Nonetheless, it is worth mentioning the empirical evidence of a decrease in the elasticity of exports relative to the real exchange rate in recent years[42] and that the effect of the real exchange rate on exports is not uniform over all industries.[43]

Figure 2.13
Israel's Exports and US Trade, 2007-08



SOURCE: Based on Central Bureau of Statistics data.

The decline in global demand, which was reflected to a large extent in the drop-off in US trade during the second half of the year, was the main factor behind the contraction of Israeli manufacturing exports. The decrease during the second half of the year, without chemicals and petroleum, was more moderate than that of total exports, whose growth excluding these industries began to gradually slow already at the beginning of the year (Figure 2.13).

The growth of exports excluding chemicals and petroleum started moderating gradually as early as the beginning of the year.

An examination of the trend in US trade, which serves as a convenient index for the trend in global trade in the various manufacturing industries, shows that industrial chemicals and fertilizers and pharmaceuticals led growth in trade this year. At the same time, Israeli exports of these products grew significantly and, as already mentioned, constituted the main source of growth in exports this year. In contrast, growth in the export of electronics products came to a halt and the slowdown in this industry was even greater than that in US trade of these goods.

Domestic sales fell due to the drop in domestic demand, which declined during the year as expectations persisted that the global crisis would affect Israel's economy too.

Sales to the local market: Total domestic sales dropped this year by a rate of 0.5 percent and the downtrend became more pronounced as the year progressed. The decline encompassed most of the industries at all levels of technology intensity.

[42] Y. Lavi and A. Friedman (2005), "The real exchange rate and Israel's foreign trade", Bank of Israel, Discussion Paper Series 05.10.

[43] See Box 2.3.

Table 2.8
Israel's Total Exports and US Total Trade, 2007 and 2008

(dollars, rate of change, percent)

	Share of manufactured exports	2007			2008		
		US trade	Israel's total export		US trade	Israel's total export	
		($)	($)	(vol.)	($)	($)	(vol.)
Total manufactured exports	100	7.1	16.8	12.3	9.3	17.0	6.8
Total excl. chemicals oil and pharmaceurical	77	6.7	17.0	12.2	8.8	11.0	1.7
Electronics	24	7.0	7.5	4.8	4.7	-1.2	0.1
Industrial chemicals and fertilizers	11	16.2	18.3	11.6	15.1	47.3	21.1
Pharmaceuticals	12	13.9	10.6	13.2	11.6	37.3	33.0
Rubber and plastics	5	5.6	14.1	7.3	3.4	3.6	-4.4
Textiles	2	3.0	-9.3	-12.8	-2.5	2.3	-2.4

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

The decline was particularly large in textiles and clothing, plastics and rubber and electronic components, in which exports were also largely stagnant this year.

The contraction in domestic sales even beyond the drop in manufacturing exports can be explained by two main factors: First, the expectations that the crisis would continue to trickle down to the domestic economy have reduced consumer confidence. The consumption of manufacturing products dropped by 5 percent already in the second quarter and continued to decline somewhat in the third quarter. Second, pessimism grew among investors during the course of the year with respect to future economic activity and their financial capability, which was reflected in reduced investment in machinery and equipment during the third quarter, both imported and domestically produced.

Financing difficulties in manufacturing: Credit to the business sector fell during 2008 following a steep and prolonged uptrend during the previous three years. This was primarily due to the contraction in nonbank credit. As a result of the shortage in nonbank credit, the demand for bank credit and its volume increased while the margins demanded by the banks on loans widened.

As nonbank sources of credit dried up, in the second quarter the number of companies participating in the Bank of Israel's Companies Survey that reported financing difficulties as the main constraint on their activity increased.

Starting in the second quarter, there was an increase in the proportion of manufacturing companies in the Bank of Israel Survey of Companies who reported that the difficulty in obtaining financing was the main constraint on their activity. Small- and medium-sized companies are reporting the greatest difficulty in obtaining financing due to the limited scale of credit generally available to them. Towards the end of the year, this constraint worsened for large companies as well, apparently due to the difficulty in obtaining nonbank credit, which prior to the global financial crisis was plentifully available.

Analysis of manufacturing sub-industries

The growth of manufacturing output was not uniform across the various sub-industries in comparison to last year (Table 2.7 and Appendix Table 2.20). Thus, in most of the traditional industries, production declined and in others growth in production slowed, apart from metal products in which growth accelerated somewhat. Production in most of the mixed manufacturing industries increased, apart from jewelry and precious stones. The electronics industry grew at a very modest rate following high growth during the period 2004–07.

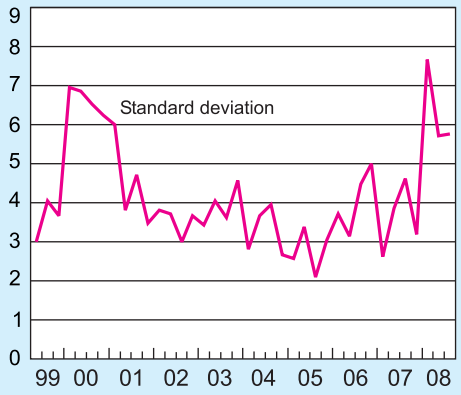
Both towards the end of 2000 and towards the end of 2008 it became clear that the overall growth of the manufacturing industry at the beginning of the year was not stable, and reflected an imbalance between the sub-industries.

The large variation among manufacturing industries was particularly evident during the first half of the year, during which there was rapid growth in manufacturing output as a whole. Figure 2.14 presents the standard deviations of changes in the seasonally-adjusted production of manufacturing sub-industries, weighted by the size of the industry. It shows that the standard deviation in the second quarter of the year was very high, as it was in the second quarter of 2000, during which manufacturing output grew significantly and reflected rapid growth in the electronics industry. Both in late 2000 and late 2008, there was a slowdown in activity and it became apparent that the growth in manufacturing output as a whole was not stable and reflected unbalanced growth across sub-industries. In 2000, it was the electronics industry that grew rapidly while this year it was the mixed industries, particularly chemicals and petroleum.

The increase in manufacturing output was not uniform over the course of the year either (Table 2.7). During the first half of the year, production grew by 12 percent and, as already mentioned, reflected to a large extent the rapid growth in chemicals and petroleum (a mixed industry). During the second half of the year, production declined in the mixed industries, including chemicals and petroleum, as did manufacturing production as a whole. Production in the traditional industries was stagnant from the beginning of the year and began to decline subsequently. Production in the electronics industry increased over the course of the whole year though at a low rate relative to previous years.

A comparison between periods shows that the slowdown in the traditional industries during the second half of 2008 was similar to that during the recession in 2001–03. Although the growth in production in electronics slowed considerably, production did not decline this year as it did in the previous recession, which was the result of the steep decline in production in those industries. Production in the

Figure 2.14
Standard Deviation of Growth of Manufacturing Sub-Industries, 1999-2008



SOURCE: Based on Central Bureau of Statistics data.

mixed industries was subject to large fluctuations during the year and therefore it is difficult to compare their current situation to the recession in 2001–03, which did not particularly affect them.

Factors of production, productivity and profitability

The slowdown in the rise in the factors of production in 2008 reflects the moderation of activity in the manufacturing industry, as does the low increase in total factor productivity excluding the chemicals and petroleum industries.

In parallel with the slowdown in activity in the manufacturing industry, the growth in the number of employed also slowed in 2008 and the prolonged upward trend in work hours leveled off. These trends became more pronounced in the second half of the year in response to the drop-off in demand both in Israel and worldwide, rather than as a result of the increasing inability to further increase labor input that characterized previous periods. This can be seen in the slowed rate of increase in the nominal cost per work hour and the 3.4 percent decline in cost per unit of output, despite the acceleration in inflation during most of the year.

The investment in manufacturing grew significantly this year again, though as with other measures of manufacturing activity its trend was not uniform over the course of the year. Thus, the first half of the year was characterized by a continuation of the previous year's trend and investment continued to grow at a high rate. This was partly due to the appreciation in the NIS/$ exchange rate which significantly lowered the cost of physical capital at the beginning of the year and prior to the increase in uncertainty later in the year. The increased uncertainty that was the result of the global crisis, together with the depreciation in the exchange rate, led to a sharp reduction in investment in imported equipment and machinery and a decrease in total investment.

Investment in the mixed industries accelerated this year, particularly in chemicals and petroleum, due to the significant growth in these industries during the previous two years and the beginning of this one. Investment in the traditional and hi-tech industries slowed somewhat although, as already mentioned, this was reflected only in the second half of the year due to economic developments in Israel and abroad.

Table 2.9
Manufacturing Industry, Main Indicators, 1990–2008

(rate of change, percent)

	Annual average				
	1990-2000	2001-2003	2004-2006	2007	2008
Total productivity	1.5	-1	4.4	0.2	4.7
Nominal costs per hour worked	11.4	1.5	3.2	4.3	3.5
Labor productivity	3.4	1.9	4.7	0.2	6.9
Labor input (hours)	2.4	-2.9	1.8	4.4	-0.1
Gross capital stock (beginning of year)	7.3	4.2	2.9	4.3	6
Investment	9.5	-6.4	13.7	19.6	17.1

SOURCE: Based on Central Bureau of Statistics data.

Both total productivity and labor productivity grew at high rates this year although this was due largely to the very high growth in chemicals and petroleum. Excluding this industry, total productivity increased by only one percent and labor productivity grew by 3 percent. The only moderate growth in total productivity in most manufacturing industries reflected, during the first quarter, the cyclically-related full utilization of capital and the closing of the output gap which became evident already in 2007. The worsening global crisis and the resulting slowdown in demand in the second quarter led to the slow growth in the second half of the year.

Box 2.3
The factors determining manufacturing exports

During the period of growth that began in 2004 and came to an end in the middle of last year, numerous changes occurred in the economic environment that determines Israeli exports and in particular manufacturing exports. These include rapid growth in global trade, a significant worsening in the terms of trade and widely-fluctuating nominal and real exchange rates. At the same time, Israeli exports grew rapidly until the middle of this year, when they experienced a sharp reversal in trend. These developments highlighted the question of how sensitive Israeli exports are to each of these factors.

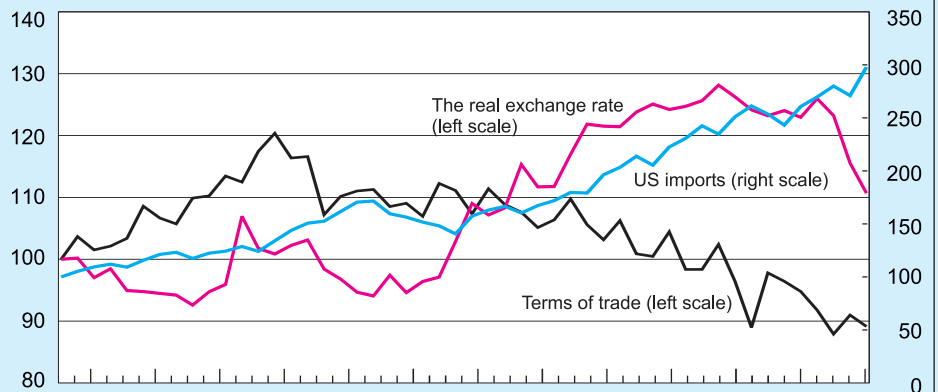
The following will analyze the influence of changes in profitability and its components and in global demand on the quantity of exports from manufacturing sub-industries with a high proportion of exports. In addition, the effect of these changes on the proportion of exports in the total output of these industries will be examined.

Figure 1 presents the changes in the main variables that are likely to affect Israeli exports, which include the real exchange rate, the terms of trade and US imports, which is meant to capture the effect of global trade. As can be seen, global trade grew continuously from 2003 onward. The terms of trade worsened during most of the period while the depreciation of the exchange rate was halted in early 2006 and since then the shekel has appreciated sharply. The worsening in the terms of trade, particularly during the last two years, significantly reduced the profitability of exports while the influence of the nominal exchange rate was very limited due to the rise in the dollar price of exports.[1]

Table 1 presents the main developments in the sub-industries analyzed for the sample period 1996–2008. The table shows that differences between export industries in the sample with respect to changes in global prices were not reflected

[1] For further discussion, see Recent Economic Developments 122, May to August 2008, Bank of Israel Research Department.

The Real Exchange Rate, the Terms of Trade, and US Imports, 1996-2008, (indices, 1996 = 100)



SOURCE: Bank of Israel.

in parallel quantitative changes in the exports of those industries. Accelerated technological improvements in industries such as plastics and rubber, machinery and equipment and electronics offset to a large extent the increase in prices in these industries and therefore it is difficult to identify the effect of the price changes on the quantity of exports in a long-term analysis such as this. In contrast, there was significant growth in Israeli exports in industries in which US imports also increased significantly and this can in fact be seen in a long-term analysis (see Table 1).

In order to also examine the short-term effects of the different variables, as well as the effect of industry-level variance over time, on the quantity of exports, regressions were estimated for eight export industries over a sample period of 13 years. The influence of global demand and the terms of trade are exogenous and therefore it is straightforward to interpret the results of the regressions in this regard. In contrast, the real exchange rate is determined simultaneously with total exports and therefore its influence cannot be estimated simultaneously. Therefore, we estimated the effect of these variables with a lag of one year (and also with a lag of two years in versions that control for exports).[22]

The regression results are presented in Table 1 and show that both the terms of trade and global demand (which is represented by US imports) had a positive and

[2] This is meant to solve the problem of endogeneity that results from serial correlation. Thus, exports are correlated both with exports in the next period and with the contemporaneous real exchange rate. Controlling for lagged exports eliminates this correlation. Note that the sharp appreciation during the past year is not reflected in our sample since the analysis looks at its effect lagged by one year.

Table 1
Main indicators of activity of the export industries in the sample

	Share of exports in output		Average annual change, 1996–2008			
	1996	2008	Exports	dollar price	Output	US imports
Mining and quarrying	42.8	44.8	7.0	8.0	-0.2	14.7
Textiles	59.6	70.3	1.1	1.1	-1.0	4.9
Chemicals and petroleum	68.3	75.0	10.5	3.8	8.2	11.7
Plastic and rubber	58.3	64.2	7.7	0.7	4.8	7.6
Machinery and equipment	56.5	63.5	8.9	0.0	0.5	6.8
Electronic components	44.3	56.0	5.2	-0.9	6.9	-0.6
Electronic communication equipment	51.0	55.8	7.1	-1.5	4.4	9.6
Equipment for control and supervision, medical and scientific equipment	48.5	60.7	10.8	-0.6	4.9	8.3

significant effect on the total exports of all the industries in the sample (Equation 1 and 2) and on the share of exports in the total output of these industries. The magnitude of the effect of the terms of trade is larger than that of global demand. However, the effect of global demand is immediate and prolonged while the effect of the terms of trade is only found with a lag of one year.[33] These results are robust in the different versions, apart from the effect of global trade on the proportion of exports in output, which was not found to be significant in the version that controls for the effect of lagged exports.

An examination of technology intensity (traditional, mixed and hi-tech) showed that exports of the textile industry (a traditional industry) were influenced only by changes in the terms of trade while changes in US imports did not have any effect. This is perhaps due to the intense competition from labor-intensive countries which have been increasing their share of global trade in these products over time. The results regarding the effect of global trade and terms of trade in the mixed and hi-tech industries (Equation 3 and 4) are similar to those obtained from the equations that included all the industries in the sample.

As mentioned above, the terms of trade have a strong and very persistent effect on exports. Changes in the terms of trade during this period were primarily the result of fluctuations in the prices of imported inputs, whose cost accounts

[3] Table 1 presents the results of the regressions in which all the explanatory variables are lagged. In similar regressions with unlagged variables, only the effect of global demand was found to be significant.

for over 40 percent of export revenues and whose prices increased by an average rate of 4.5 percent annually during the sample period. In contrast, export prices (apart from those of the mining and quarrying industry) increased by a much lower rate. The prices of imported inputs were influenced by the narrowing gap between their supply (which declined) and their demand (which increased), especially in the case of oil,[4]and as a result the prices of raw materials increased. These factors, which explain the changes in import prices, are perceived as being permanent relative to other types of change. Studies worldwide have shown that the effect of changes perceived as permanent and persistent are stronger than those perceived as temporary (Campa, 2004).

The results regarding the magnitude of the real exchange rate's effect on exports are sensitive to the version used. The exchange rate's influence in a regression that does not control for the effect of lagged exports (Equation 1) was found to be positive and significant and was greater than that of US imports, but less than that of the terms of trade. In contrast, controlling for lagged total exports (Equation 2) reduced the coefficient of the real exchange rate, which was found not be different from zero. However, it is possible that the real exchange rate's effect on the total exports of the industries in the sample is difficult to identify due to the limitations imposed by simultaneity on the specification of the regressions.

The analysis according to level of technology intensity showed that the effect of the real exchange rate on exports in the mixed industries was positive and significant and its elasticity with respect to exports was found to be unitary after controlling for lagged exports (Equation 4). The real exchange rate was not found to have an effect on the exports of hi-tech industries. It may be that the mixed industries were affected by changes in the real exchange rate while the fluctuations in the exports of the hi-tech industries that began in 2000 were in fact among the causes of the change in the exchange rate.[5]

Our findings are in agreement with the study done by Sofer (2005) which found that the real exchange rate had a positive effect only after omitting the exports of hi-tech industries. Additional support for these findings can be found in Chinn (2004) who clamed that when estimating the effect of the real exchange rate on the US trade deficit, the hi-tech industries should be omitted since the

[4] There are signs of an end to the growth in global oil production as it approaches its limit. It should be remembered however that such signs have also appeared in the past and were followed by the discovery of additional sources of oil. Nonetheless, the expectation of reaching the supply constraint in itself can lead to increased oil prices.

[5] This is known as the Dutch Disease and involves a situation in which a sharp increase in external revenues due to one industry is liable to harm other industries as a result of the strengthened local currency and the reduced profitability of those industries. However, the real exchange rate was not found to have an effect on the textile industry (a traditional industry).

dynamic of export prices and quantities in these industries differs from that of the economy as a whole.

Table 2
Elasticities of the explanatory variables relating to exports—main results[a]

	Total sample panel		Panel of industries involved	
Equation number	1	2	3	4
Lagged dependent variable		0.37*		0.5*
Terms of trade	1.11*	1.28*	1.26*	1.83*
US imports	0.45*	0.27*	0.55	0.42*
Real exchnage rate	0.83*	0.30	1.22	1*

* Significant at 1 percent level.

[a] Based on a regression of a quarterly panel of eight industries over thirteen years. All variables are rates related to the equivalent quarter last year. All explanatory variables have a one-year lag.

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Chinn, M. (2004). "Income, Exchange Rates and the US Trade Deficit, Once Again," International Finance 7(3), 451-469.

Sofer, Y. (2005). "Measurement of the real exchange rate and its effect on exports and imports", Bank of Israel, Issues in Foreign Exchange, 1/05 (Hebrew).

J. Campa (2004). "Exchange Rates and Trade: How Important Is Hysteresis in Trade?" European Economic Review 48.

b. Construction

The rebound in the construction industry apparent during the previous two years slackened in 2008. The industry's product rose by about 2 percent compared with about 5 percent in 2007 and the rate of growth in housing investment, which accounts for half of the industry's product, amounted to two thirds of the 2007 growth rate (Table 2.10). The expansion in housing investment, however, was reflected by an increase in the area of building starts rather than in the actual number of starts, which remained unchanged. Total nonresidential activity declined due to the slower growth in nonresidential construction and a 9 percent decrease in civilian infrastructure works (earthworks). Despite the moderate activity, the number of persons employed in the industry rose by a substantial 14 percent in the last two years. Concurrent with the slower pace of activity, a new development was observed that could be indicative of a future upturn in activity in the industry: prices of owner-occupied apartments and apartment rental prices rose in real terms during the year following a continued decline. A notable increase was also recorded in the number of new and second-hand

The rebound in the construction industry apparent during the previous two years slackened in 2008. The growth in product was reflected by the area of building starts, rather than in the actual number of starts.

apartment transactions for the second consecutive year. However, initial data show that this trend slowed as the global crisis worsened in the fourth quarter of the year.

Following a downtrend that had lasted for a decade, a rebound in the industry's activity was recorded from 2006. The industry's share of GDP fell persistently from 9 percent at the beginning of the current decade to 6.9 percent in 2005. The trend changed when the industry recovered in 2006 and its share of GDP amounted to 7.3 percent in 2008, the same as in 2007. But unlike in 2006, when most of the output growth was recorded in other works—civilian infrastructure, defense construction and refurbishments (partly for repairing damage caused in the Second Lebanon War)—in the last two years both residential and nonresidential construction expanded.

Table 2.10
Construction, Selected Data, 1997-2008

	Level in 2008 (NIS million, 2005 prices)	Annual average change (percent)			
		1997–2002	2003–06	2007	2008
Total output	55.9	-4.9	-0.8	5.7	1.6
of which Residential (including renovations)	29.5	-3.7	-0.1	6.4	4.3
Nonresidential	12.8	-5.3	-11.1	7.6	4.9
Other construction (earthworks and defence-related)	13.5	1.8	0.5	5.8	-9.4
Apartments under construction ('000)	57.8	-5.8	-4.3	2.7	0.4
Residential starts ('000 units)	30.5	-7.6	-3.1	-1.5	-0.2
Residential completions ('000 units)	30.2	-8.9	-7.7	-4.9	2.8
Apartments offered for sale ('000)	14.5		-4.2	-14.9	-13.6
Construction product	28.8		-1.3	5.3	2.3
Total employees ('000)[a]	213.9	-3.2	-3.9	9.7	3.9
Real wage per employee post[b] (2004 prices)	6,400	1.1	0.2	2.7	0.8
Apartment prices relative to CPI exl. housing	--	-2.2	-2.9	-3.3	1.5
Rent prices relative to CPI excl. housing	--	2.5	-3.4	-3.4	-1.5
Input prices relative to CPI	--	-0.1	4.1	3.3	-0.6
Average mortgage interest rate (annual average)	--	6.2	4.8	4.1	4.1

[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 Statistics and Ministry of Housing and Construction data.

The downturn in the number of housing starts since the beginning of the decade derives from public-sector initiated construction, while privately-developed construction remained stable.

The number of housing starts remained unchanged compared with 2007. The downtrend since the beginning of the decade derives mainly from public-sector initiated construction, which is concentrated in areas of national preference that are not significant demand areas. Privately-developed construction, which is concentrated in demand areas, remained stable at a level of approximately 25,000 housing units (Table 2.A.34). Building starts have averaged approximately 31,000 housing units a year since the beginning of the decade, which is almost certainly less than the demographic requirements dictated by an annual increase of 40,000 households in

Israel. This gap has led to a decrease in the number of apartments available for sale, which in 2008 reached its lowest level in the last ten years.[44] Concurrent with the downtrend in building starts, from the time the economy left the recession at the beginning of the decade the area of apartments has tended to increase. This is expressed in the increased proportion of new apartments with 5–6 rooms and the decrease in the proportion of those with 3–4 rooms. The increase in size is attributed *inter alia* to the continuing decline in the share of public-sector initiated construction in building starts—because the area of apartments in this form of construction is limited—and to the large share of owner-builder construction (as opposed to apartments built for sale), which is notable for larger-sized apartments. During recent years, the latter form of construction reached half of all private sector construction.[45] As a result, the decrease in average housing congestion (number of persons per room) continued,[46] despite the gap between the number of building starts and demographic growth. The decrease in congestion appears to have mainly occurred among households belonging to the upper median of the income-earning strata.

The trend in apartment prices and apartment rental prices changed during the year, and these rose following a creeping decline over ten years. The rebound ended in the fourth quarter due to the global crisis.

Owner-occupied apartment prices rose in 2008 by an average of 1.5 percent in real terms (relative to the consumer price index exclusive of housing), following a continual decrease that lasted for ten years. The real increase during the course of the year was larger, at 7 percent. However, average apartment rental fees continued to fall during the year (Table 2.10) although in the course of the year, a large real increase of 5 percent was recorded here as well. The increase in renewed contracts was even larger, concurrent with a rapid increase in the number of contracts in shekels and a decrease in dollar contracts.[47] Apartment prices (owner-occupied and rental fees) therefore revealed a major new trend in 2008, following a continued decline.[48] Accompanying the price increase was a growth, amounting to 20 percent in the last two years, in the number of new and second-hand apartment transactions. These developments, which occurred before the global crisis had spread to Israel, are indicative of a rebound in the industry. An examination of geographical distribution shows a price increase in

[44] The number of apartments available for sale fell to 14,500 in 2008, compared with 16,800 in 2007 and 30,800 in 2000. An estimate of the monthly average sales shows that the stock of apartments in 2008 is enough for ten months demand. However, since much of this stock does not appear to be in demand areas, the relevant stock is even smaller.

[45] Approximately 40 percent of the land for owner builder construction was supplied by the private sector. In Israel Land Administration tenders for own construction, an average of 8,800 housing units a year have been offered since the beginning of the decade. In tenders for contractors and the Housing Ministry (public sector construction), an average of 15,000 housing units a year were offered. These tenders were under-subscribed, and part of them were not in demand areas.

[46] The number of persons per room fell from 0.98 in 2000 to 0.91 in 2008, and the proportion of households with less than one person per room rose from 54 percent in 2000 to 59 percent in 2007.

[47] At the end of the year, 82 percent of renewed rental contracts were in shekels, compared with 35 percent at the end of 2007 and 13 percent at the end of 2006.

[48] Taken into account in these prices are size and quality, as well as regions around the country, but not regions within the cities.

demand areas—Jerusalem and the center—while the downtrend in prices in the Haifa and northern region continued.[49]

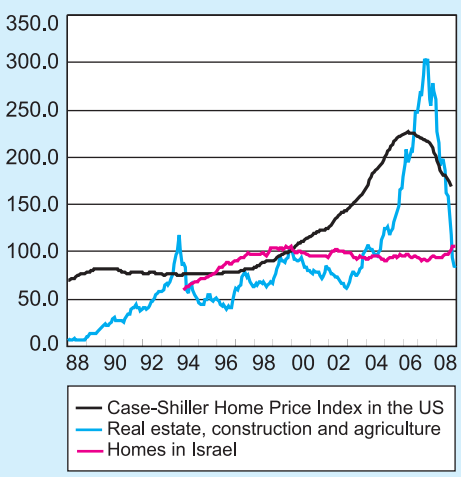
The relative stability in residential apartment prices and apartment rental prices since the beginning of the decade, together with the stability in privately developed construction, was indicative of equilibrium between demand and supply.

An analysis of demand factors in the last five years apparently reveals demand pressures: The standard of living in Israel rose, financing costs fell and the public's wealth increased. Adding to this was the shortfall in building starts relative to the demographic growth and the substantial increase in demand for real estate in Israel from nonresidents. However, these pressures were not apparent either in residential construction activity or in price. An analysis of the supply side of the private sector shows an unchanged annual amount of housing starts (which were affected by the decrease in financing costs, but also by the increase in input prices). It is therefore surprising that despite the development of factors indicative of demand pressures and the lack of response on the supply side, prices for residential apartments and apartment rental remained largely stable during recent years, (and only in 2008 was an increase recorded). Moreover, since apartment rental prices are supposed to lead housing prices because supply is rigid in the short term, the initial response to demand surpluses should be a rise in rental prices. However, owner-occupied apartment prices and rental prices developed in a similar manner from the beginning of the decade. The relative stability in prices since the beginning of the decade and their similar development, despite the emergence of demand pressures and the fixed level of supply, are indicative of equilibrium in the housing market during those years.

The decline in the demand for housing as part of the investment portfolio may have been due to the decline in inflation and liberalization.

The question therefore arises as to how demand surpluses were met in recent years. There are several possible answers: (1) A drop in demand for housing as part of the asset portfolio. This could have resulted from the decline in inflation in the present decade and the liberalization in the economy,[50] which increased the opportunities for investing abroad, both apartment purchase and financial investment, as well as the increased opportunities for investment in Israel, in corporate bonds for example. (2) The growth in owner-builder construction—approximately half of privately developed new apartments are in this category and in

Figure 2.15
The Real Estate Index on the Tel Aviv Stock Exchange and Prices of Owner-Occupied Homes in Israel and the US, 1988-2008 (January 2000 = 100)



SOURCE: Bank of Israel.

[49] Since prices in the geographical distribution are not exclusive of quality and size, they cannot be compared. But this notwithstanding, prices did fall in the Haifa and northern region.

[50] Regarding the effect of the decline in inflation on demand for housing as an asset, see Y. Rubinstein (1999). "Apartment Prices in Israel in the Years 1996-1997–A Financial Bubble?". From: Inflation and Disinflation in Israel, Leo Liederman, ed., Bank of Israel.

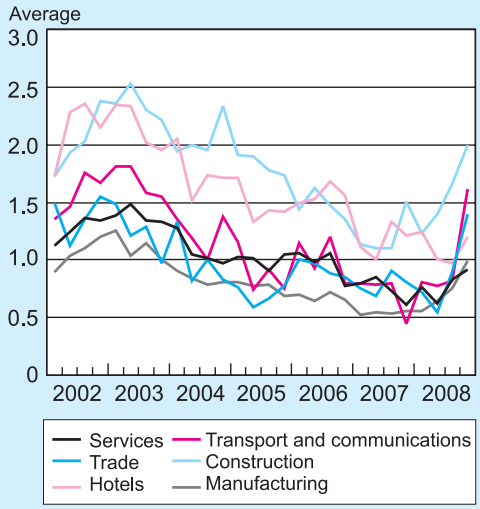
many cases, these apartments actually contain more than one housing unit. These apartments appear to supply part of the demand for rental, and are thereby closing part of the gap with demographic growth.

The effect of liberalization can be seen in Figure 2.15, which presents prices of real estate industry shares on the Tel Aviv Stock Exchange (TASE) compared with prices of owner-occupied apartments in Israel and the USA. During the 1990s the prices of the TASE shares to some extent reflected the behavior of prices of owner-occupied apartments in Israel, in a manner detached from apartment prices in the USA. From 2003 however, the market prices of the industry's shares in the TASE were closely connected to the housing bubble in the USA (which emerged in other countries as well), and were completely detached from the development of prices of owner-occupied apartments in Israel. In this situation, even though the domestic construction industry did not share in the vibrant real activity in Israel in the last five years, the high vulnerability to the global crisis of the real estate shares in the TASE could harm local construction activity. Thus, companies that are not publicly traded (in the TASE) could also suffer, for example from the restrictions imposed on banks for sector-specific loans and from banks' excessive screening of potential borrowers due to informational asymmetry (Figures 2.16 and 2.17). The higher level of credit risks deriving from the construction industry's financial leverage (the ratio of capital to total assets), which is higher than in other industries, also reduces lenders' flexibility when granting credit, especially in a time of financial crisis.

Some improvement on the supply side was apparent in 2008 following a continued deterioration: average construction input prices fell slightly in real terms, by less than one percent, (although they rose by 3.3 percent during the year), due to the fall in world commodity prices and the decline of the proportion of Israelis in the industry. This followed an average annual increase of 4 percent in the last five years due to the increase in world commodity prices and the change in the composition of employees—an increase in the number of Israeli workers and a decrease in the number of foreign workers. This development adversely affected contractors' profitability, because foreign workers' wages are lower than Israelis' wages and their output per employee is higher.

Some improvement on the supply side (inputs) was apparent in 2008 following a continued deterioration.

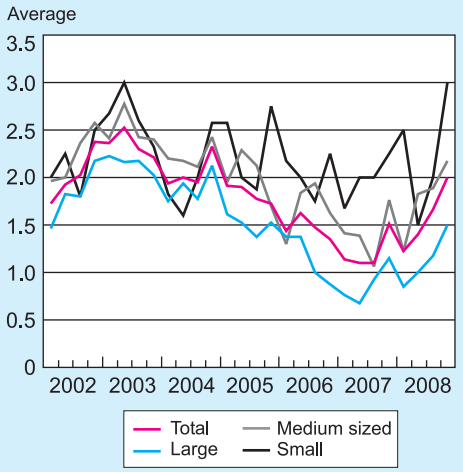
Figure 2.16
Financing Constraint, by Industry, 2002-08



SOURCE: Based on Companies Survey data.

Despite the activity slowdown, a large 14 percent increase was recorded in the number of persons employed in the industry,[51] which was reflected by a 7 percent decrease in output and product per worker from the peak level recorded in 2006. The increase in the number of employed persons in the industry therefore appears to have been a delayed adjustment to the continued decrease in the number of workers in it previously and the change in their composition, which was also reflected by the reduction in the average length of construction in the last two years after the length of this period had peaked at 26 months in 2005. Concurrently, the real wage per employee of Israeli workers increased by 0.8 percent in real terms in 2008 following a 2.7 percent increase in 2007—higher rates than the average in the Israeli economy.

Figure 2.17
Financing Constraint in Construction, by Size of Company, 2002-08



SOURCE: Based on Companies Survey data.

The number of foreign workers rose again in 2008, contravening government resolutions.

During recent years the government made a number of resolutions to reduce the number of non-Israeli workers in the industry, and to totally cease the employment of legal foreign workers in 2010, except for specialists.[52] This is in order to encourage the employment of Israelis and to reduce inequality in wage levels. Since the peak year of 2002, the number of legal and illegal foreign workers has declined and in 2007 their number totaled 33,000 compared with the peak level of 80,000. In 2008 however, their number rose again and reached 37,000. This was in addition to the growth in the number of Palestinian workers (Table 2.A.35).[53] The increase in the number of foreign workers, most of them illegal, contravenes government resolutions, whereby the quota of permits in the industry amounted to 9,000 for 2008, and does not conform to the intention to stop the employment of foreign workers in construction by 2012.

Looking ahead, the past year's price increase together with the decrease in input prices and the increase in the number of new and second-hand apartment transactions could encourage the supply side. At the same time however, although the industry did not share in the prosperity in Israel during recent years, it will almost certainly be

[51] The situation in terms of work hours is similar.

[52] See: The Committee for the Formulation of Policy Concerning Non-Israeli Workers (2007), "Socio-Economic Agenda, 2008-2010".

[53] The quota for Palestinian workers was 28,600 in 2008, compared with the actual number of 26,900. The quota of permits for foreign workers was 10,500 in 2008, compared with the planned number of 9,000, and 15,000 in 2007. It transpires that the number of illegal foreign workers increased by 8,300.

affected by the negative turnaround, especially in the last quarter of the year, in the global and domestic business cycle. On the demand side for residential apartments, a downturn is expected because of the decline in occupational security and the erosion of the public's financial assets, and also possibly due to a decline in real wages. These factors are also apparent from the difficulties in obtaining a mortgage following the reduction in the loan-to-value ratio prescribed by the banks and the widening of the risk margin. Financing difficulties have increased on the supply side as well. While these difficulties are typical of the economy as a whole, companies large and small, they are particularly severe in the real estate industry (which in any case is notable for a higher rate of leverage than the other principal industries), as apparent from Companies Survey data (Figures 2.16. and 2.17). Accordingly, now that the business cycle is at a low ebb, which could last longer than in normal business cycles, an active and counter-cyclical policy would be highly appropriate. The recovery of the industry will be largely dependent on a supportive policy with respect to projects and finance and especially the initiation and development of infrastructure projects, which currently constitute a quarter of the industry's output. Another possible means of support is to increase financing assistance to contractors and to home-buyers.

Although the industry did not share in the prosperity in Israel during the last five years, it will almost certainly be affected by the negative turnaround in the present business cycle, on both the demand side and the supply side.

c. Commerce and services

The output of the commerce and service industries, which account for about 57 percent of business sector output, grew by 1.9 percent in 2008. This represents a significant slowdown relative to the growth rate in the previous year (9.1 percent). The slowdown in activity encompassed all the commerce and service industries and only became apparent in most of them during the second half of the year. The increase in employment and labor input in the industry did not reflect the effects of the slowdown, although signs of a slowdown did appear in the informal indexes published late in the year.[54]

(1) Commerce

The output of the commerce industry, which accounts for about 17 percent of business sector output, grew by 2.4 percent. This is primarily a reflection of the sharp increase at the beginning of the year; already during the second quarter a slowdown in the industry's output became apparent. The source of the slowdown was the decline in demand due to the economic crisis, particularly the trend in private consumption, which rose during the first half of the year and declined somewhat in the second half, following a prolonged decline in the public's purchases and in consumer confidence.[55]

The slowdown in activity due to the crisis encompassed all the commerce and services industries, and in most it only became apparent in the second half of the year.

The commerce industry is particularly sensitive to the financial difficulties that have developed in the economy. This is because much of the sector is composed of

[54] For further discussion, see Chapter 5: The Labor Market.

[55] A more extensive analysis of private consumption can be found in Section 2.a of this chapter.

small businesses, which are particularly affected by the increased market power of the banks (which is the result of the increased demand for bank credit that followed the decline in nonbank credit and their higher margins due to the increase in risk). The problems in obtaining financing were reflected in the Bank of Israel's Survey of Companies, which revealed the severity of financing constraints in all industries in the economy. It is possible that the steps recently taken by the Ministry of Finance to provide assistance to small- and medium-sized businesses will ease the financing difficulties being experienced by the industry.

(2) Selected services

The growth of the business services industry halted, mainly due to the stagnation in activity in the computer and R&D services industry during the second half of the year and the stagnation in the export of services which occurred already during the second quarter of the year.

Business services: The output of the business services industry, which constitutes about one-quarter of business sector output, grew only moderately at a rate of 0.7 percent. The growth in the industry's output, which in 2007 led the growth in activity in commerce and services, came to an end primarily due to the stagnation in activity in the computer and R&D services industry during the second half of the year and the stagnation in the export of services which occurred already during the second quarter of the year and signaled the onset of the global crisis. Nonetheless, labor input grew as it did last year though the growth in real wages came to an end.

Computer and R&D services constitute about one-third of business services. There was no growth in activity in the industry in 2008, which slowed during the course of the year and even declined late in the year. This was reflected in, among other things, the total capital raised in the venture capital market, which constitutes the engine of growth for start-up companies. Thus, total capital raised in 2008 rose by 18 percent; however, towards the end of the year, the effects of the global crisis already were felt, with a decline of 22 percent in capital raised relative to the previous quarter.

In light of the success of government intervention in the venture capital market in the past, it is recommended that support of that market be considered because of the current global crisis.

The venture capital market in Israel, which differs from those in other countries, was created at the initiative of the government, which was directly and heavily involved in the process. In 1992, a government venture capital fund was created with the goal of setting up venture capital funds together with private investors. The goal of the government initiative and involvement was first and foremost to make it easier to raise venture capital. The secondary goal was the creation of conditions for the development of a venture capital market in Israel. The government imitative and involvement in this process did in fact achieve its goals. Thus, financing became available to startup and hi-tech companies on a much larger scale and there developed a broad private venture capital market. In light of this success and the current global crisis, it is recommended that support of the venture capital market be considered. It is likely that such support will have a major influence on the market, which is particularly sensitive to the type of financial difficulties that characterize this crisis.

Banking, insurance and other financial institutions:[56] The output of financial institutions, which accounts for about 10 percent of business sector output, rose by

[56] For a more detailed discussion of the industry, see the Supervisor of the Banks, Annual Report 2008 which will be published in the summer and Chapter 4: the Financial System in this report.

Table 2.11
Main Trade and Services Indices, 2004–08

(rates of change, percent)

	Share in trade and services product (%)	GDP	Labor input	Real wage per employee
2004–2008				
Trade and services	100	7.7	3.1	1.9
Trade	29	5.5	2.2	0.9
Services	71	8.6	3.4	2.3
2008				
Trade and services	100	1.9	7.0	0.3
Trade	30	2.4	8.6	-0.4
Services	4	1.8	6.5	0.5
Hotels and restaurants	70	0.7	5.9	-2.3
Banking, insurance and financial services	14	2.3	6.4	1.9
Education, health and welfare	7	4.0	3.9	-0.4
Personal and other[a]	6	3.2	15.0	-1.6
Business services	38	1.1	7.3	1.6
of which Computer, R&D and real estate services and machinery and equipment rental	7	3.9	0.6	-0.3
Legal, accounting, architecture and engineering	13	2.6	3.2	-1.2

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

a moderate rate of 2.3 percent, following a sharp increase in the previous year. The slowdown in activity in the industry was the first sign of the effects of the global financial crisis. The slowdown began in the first half of the year, in contrast to the slowdown in real activity in most industries. The drop in the profits of the banks and the fear that the financial crisis would spread led to a significant decline in the bank shares index during the course of the year.

Tourism and accommodation services: The output of the tourism and accommodation services industry, which constitutes 2.5 percent of business sector output, grew by 0.7 percent this year, which represents a major slowdown in growth relative to last year's rate (5.4 percent). The slowdown in growth primarily reflects the drop in Israelis' hotel bed nights, while tourist bed nights rose sharply, by 28.4 percent. However, the contribution of this increase to the industry's revenues and output was more moderate, with revenue from tourists growing by only 13.6 percent.

The rate of increase in tourist arrivals slowed during the year. From July there was a marked slowdown also in the increase in world tourism, another indication of the global crisis.

The sharp increase in hotel occupancy by tourists took place in spite of the global economic crisis. As shown by figures published by the United Nations World Tourism Organization (UNWTO), there were no signs of a slowdown in the growth of tourism in other countries either but starting in July a major slowdown in the rate of growth could be seen. UNWTO expects that the slowdown will continue and even worsen in 2009 such that global tourism will grow only negligibly or not at all.

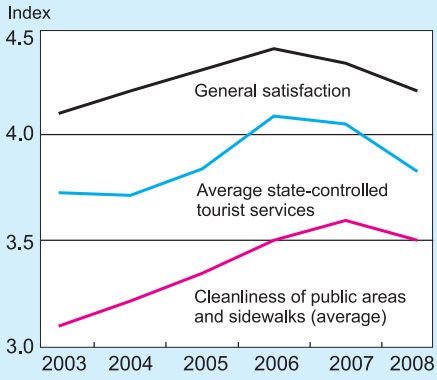
In Israel, as well, the rate of increase in number of tourists entering the country slowed during the course of the year. Thus, following an increase of 25 percent during the first half of the year, the rate of growth dropped almost to zero in the second half. Nonetheless, the situation of the industry was relatively good prior to the crisis and since the recovery from the Second Lebanon War the hotel occupancy rate has been about 60 percent, which represents a cumulative increase of almost 50 percent relative to occupancy in early 2003.

Box 2.4
Inadequate maintenance of city centers in tourist cities

The center of a city which constitutes a tourist attraction is the basis on which the tourism industry—accommodation and catering services and retail trade—grows. Since such centers are public areas, it is the task of the local authority to maintain and develop them.

In some local authorities which have areas of tourism, the maintenance of the town center is deficient, and this impacts on tourism. The annual surveys of incoming tourism undertaken by the Ministry of Tourism show that foreign tourists' satisfaction with town centers which are tourist attractions is significantly lower than their satisfaction with other general aspects of their experience as tourists, and specifically is lower than their satisfaction with other tourist services for which the government is responsible, such as the roads, the beaches, port services, etc. (Figure 1).

Tourists' Dissatisfaction with the State of Maintenance at Tourist Centers,[a,b] 2003-08



[a]The tourist gives a grade from 1 (the lowest) to 5. State-controlled tourist services include the cleanliness of public areas and sidewalks, the road network, the quality of advertisements, nature and the environment, beaches, archaeological sites, and airport services. It is noteworthy that the quality of advertisements also received a low rating from tourists.
[b]The data in the figure are averages, and include also towns in which tourist centers are maintained at a high level.
SOURCE: Ministry of Tourism Surveys of Incoming Tourism, 2003-08.

Municipalities have an incentive to maintain the town center to a high standard because this serves to attracts tourists, thus increasing residents' income, and hence the town's income from taxes (rates). Nonetheless, there are instances of poor maintenance—primarily by weak municipalities which suffer from financial difficulties or bad management. Thus, for example, in Tiberias the standard to which the promenade is maintained is not high and in Ramle the town center is not

well maintained. In some towns a general makeover is required, but even if the government undertakes to finance this the municipality will not be able to maintain it to the required standard.

Inadequate maintenance, and the consequent tourist dissatisfaction, undoubtedly harms the demand for tourism services in Israel. In other words, the adverse effect is not limited to the town concerned but extends to the country as a whole. This impact is doubtless especially apparent in tourism from the developed countries, as these tourists are particularly sensitive to the subject of maintenance.

The solution we propose is to provide incentives to municipalities to maintain their tourism centers adequately by providing development grants via the Ministry of the Interior and tourism infrastructure development grants via the Ministry of Tourism. Municipalities which do not provide proper maintenance will receive smaller grants. In this way it will be possible, for example, to split a tourism development project into several smaller projects and make the next stage of government funding contingent on adequate maintenance, subject to examination by the Ministry of Tourism.[1] The maintenance of these sites can also be made subject to public review and ranking via the Internet.

More radical solutions are also possible. Thus, a municipality which fails to adequately maintain a tourism center may be obliged to forfeit part of its municipal tax. However, such solutions have grave implications for the independence of these municipalities, and conflict with policy in this sphere. Municipal taxes underlie central government's aspiration to decentralize authority, and the government does not confiscate money even when a municipality does not pay its employees' wages.

While the solution of making balancing grants contingent on proper maintenance of tourism centers is less radical, this also involves undue interference in a municipality's priorities. For example, a municipality may wish to focus more on education than on its tourism center in the belief that this is what its residents prefer. We have no desire to meddle to an inordinate extent in a municipality's priorities, our aim being solely to further those aims which central government considers appropriate.

Removing the task of maintenance from a municipality by using a government corporation is even less desirable, because this has an even more deleterious effect on the policy of the decentralization of authority and could reduce the municipality's general responsibility for the welfare of its inhabitants.

[1] For this purpose it is necessary to clearly map the borders of tourism centers.

d. Transport and communications

The output of the transport industry increased by 3.8 percent in 2008, due to the growth of economic activity.

Economic activity: the product of the transport industry grew by 3.8 percent in 2008 (Table 2.12), due to the expansion of economic activity in general. However, the growth rate decelerated in the course of the year, as this industry provides services to—and is influenced by—the activity of other industries, which slowed. The expansion was led by the rise in the product of land transport, mainly buses, trucks, and trains. The 9.7 percent increase in bus product reflects the growth of public transport activity. This was due primarily to the entry of unskilled workers—the population which uses buses—into the labor market as well as to the improvement in tourism. This expansion also stemmed from the increased cost of travel by car because of rising fuel prices. The rise in train product persisted in 2008, reflecting the improvement in trains as a means of transportation in recent years.

Table 2.12
Transport and Communications, Main Indicators, 2008

(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	1.4[a]	0.8	-2.4	-1.9
Communications	36	-2.5	4.2	-5.3	-1.6
Transport and storage	64	3.8	-0.8	-0.9	-2.0
of which Buses, taxis and trains	19	5.6	-3.9	1.0	-0
Trucks	15	8.3			-1.8
Air and sea transport, airports and seaports	13	-2.2	-1.8	-3.6	-3.8

[a] A rough evaluation.
SOURCE: Central Bureau of Statistics.

The expansion of activity in this industry did not lead to an increase in its labor input. The real wage in transport fell slightly as a result of the steep rise in prices. The real wage in land transport rose slightly due to the reduction in the unemployment rate of unskilled workers as demand for their services grew.

The output of the communications industry, which accounts for 4 percent of business-sector product, declined in 2008.

The product of the communications industry, which accounts for 4 percent of business-sector product, declined by 2.5 percent in 2008.[57] The proportion of expenditure on communications declines as individuals' income increases (lower than unitary elasticity), hence the effect of the rise in income on the industry is relatively moderate. The rise in the industry's product in earlier years was the result of the expanded use of new communications services such as the internet, mobile phones, and multi-channel television. In 2008 the use of 'third generation' mobile phones increased, encompassing more than a third of users and leading to expansion of

[57] A rough evaluation.

product.[58] In other spheres the increase was more moderate: the use of land lines grew slowly; the increase in broad-band internet use slowed to only 6.7 percent; the extent of mobile phone penetration reached saturation point, and the number of broad-band TV subscribers remained unchanged.[59] In accordance with the long-term trend in both Israel and the rest of the world, the price of communications rose by less than the CPI in 2008, partly as a result of technological advances and the regulatory policy, which stimulates competition.[60]

The infrastructure: the transport, communications, energy, and water industries are infrastructure industries which have externalities for the economy as a whole, and their importance far exceeds their weight in GDP. Thus, for example, an improvement in the quality of public transport and the road infrastructure[61] will expand employment possibilities, improve the quality of the matching between workers and firms,[62] and thereby increase product and reduce unemployment. Maximizing the positive externalities of the transport and communications infrastructure industries depends to a great extent on government regulation and supervision, and in recent years this has served to increase efficiency and competition in the industry.[63]

The transport, communications, energy, and water industries are infrastructure industries which have externalities for the economy as a whole.

Reforms must be preceded by study and planning, which take a long time—often longer than the term of office of the minister responsible for the sphere. Consequently, in developed economies the regulation of the infrastructure, particularly of communications, is in the hands of an independent authority rather than a government ministry. It would be advisable to establish an authority which is responsible for regulating communications, including the determination of regulation policy and rules. This authority would fulfill its task and exercise its authority independently.

Reforms must be preceded by study and planning, which take a long time—often longer than the term of office of the minister responsible for the sphere.

Communications: competition was introduced into land-line telephony in 2006, since when the market share of companies competing with Bezeq has been increasing. In order to help them, Bezeq has not been allowed to reduce its rates, but this policy will become more flexible as Bezeq's market share declines. In December 2007 the market share of Bezeq's competitors in land-line telephony was 11.8 percent, and rose to 16.2

[58] The third generation of mobile phones is a technological innovation which reduces firms' operating costs and enables the introduction of additional services. If the rates do not decline accordingly, this innovation is translated into a rise in the profits of the mobile phone companies, and hence to a rise in their product.

[59] Figures for the use of communications services were provided by the Ministry of Communications, and cover only up to the end of the third quarter of 2008.

[60] As a result of the reforms and technological improvements, since 2000 the index of telephone services has declined by 2 percent, compared with the 16 percent increase in the CPI.

[61] The road and private transport infrastructure (except for travel on toll roads) is not included in the product of the industry.

[62] The road infrastructure made a signal contribution to the rise in the wage of commuters (see Ron Frisch and Shai Tzur, "Transport Infrastructure Investment, Commuting, and Wages," Discussion Paper 2008.03, Bank of Israel, Research Department).

[63] For an indication of the fact that the quantity of the infrastructure and the quality of regulation in Israel does not differ substantially from that in the developed economies, see Ran Shaharabani, "The Effect of Infrastructure Capital on the Principal Industries in Israel, 1990–2003," Discussion Paper 2008.05, Bank of Israel, Research Department).

Competition was introduced into land-line telephony in 2006, since when the market share of companies competing with Bezeq has been increasing.

percent in August 2008.[64] The 'reform of phone number mobility' (whereby subscribers were able to keep their phone numbers when moving to a different provider), which began at the end of 2007 for both mobile and land-line telephones, also contributed to the improvement in competition. In the sphere of mobile telephony the introduction of virtual providers—who rent air time from an existing mobile phone firm (which owns the infrastructure)—has progressed, and is expected to begin operating in 2009. This reform will improve competition in the sphere without increasing the radiation which is an inevitable by-product of regular mobile telephony.

A metropolis requires unified and concentrated management of the provision of public transport, and this kind of management is indeed to be found in the metropolitan areas of developed countries.

Public transport: new bus companies have begun to operate, particularly on inter-urban lines, in addition to the traditional Egged and Dan companies. The reform has almost been completed, as today some 20 percent of the lines are in the hands of new companies, and the target is to reach 25 percent. The reform which introduced the new companies helps to make the service better and cheaper, and is suitable for a non-metropolitan area. A metropolis requires unified and concentrated management of the provision of public transport, and this kind of management is indeed to be found in the metropolitan areas of developed countries. In a metropolis it is not desirable to have several different public transport companies because a bus operator will have no economic motive to service the transport lines of another operator as the two are in direct competition with one another. A metropolis requires investment in the mass transportation system, and once means of public transport other than buses are added changes will have to be made in the organizational structure of public transport.[65] This will involve unified management instead of the private monopoly which currently exists.

The Ministries of Transport and Finance should work to reorganize public transport in the central conurbation.

Change in bus lines in the central conurbation: the lines in this area have hardly changed at all in the last thirty years despite the many changes that have occurred in loci of employment. Today there are many, convoluted bus lines and the frequency of the buses is low. The Ministries of Transport and Finance should work to reorganize public transport in the central conurbation, reducing the number and complexity of the bus routes and increasing the frequency of the service. This will shorten average bus journeys and make bus transport more attractive.

Reducing the cost of sea and air travel as well as of freight will help to expand tourism and goods transportation, and will make the economy more open.

Open skies: reducing the cost of sea and air travel as well as of freight will help to expand tourism and goods transportation, open up the economy, and even improve the lot of the consumer by reducing the cost of imported goods as well as of vacations abroad. In the European Union and the US the open skies policy makes extensive competition between air carriers possible, whereas in Israel the level of competition is relatively low.

The government decided to make air transport policy more flexible.

In a series of decisions made in 2008 and at the beginning of 2009, the government decided to make air transport policy more flexible, and as compensation for this to increase government participation in security services from 50 to 80 percent on routes where new carriers were added during 2008. Policy till now has made it possible for

[64] Data from the Ministry of Communications.

[65] For further elucidation, see the report of the Sedan Committee for the Reform of Public Transport, October 2007, and Box 2.5 in last year's edition of this report.

very few carriers to compete with El-Al on its routes because of a government decision in 2003 which greatly restricted licensing of such routes to other carriers until the number of passengers passing through the national airport reached 10.7 million.[66]

In the wake of the government's decision in 2008, the trend has been to make Israel's bilateral air transport agreements more liberal, and these accords will enable many air carriers to fly regularly to and from Israel without the need for specific government approval. The liberal air transport agreements and the improvement in the economic situation improved competition in the industry: the number of additional new carriers flying to and from Israel increased, El-Al's dominance declined, and the number of routes with more than two approved carriers grew. This trend will apparently not persist in 2009 because of the economic situation.

Regulations enabling the Antitrust Authority to limit code-sharing agreements were introduced at the end of 2008. To date agreements between airlines on routes to and from Israel have not required the approval of the Antitrust Authority. The restriction of code-sharing agreements with foreign airlines by Israeli airlines using the same routes should improve competition. This refers to a joint ticket of the parallel kind, in which both airlines operate on the same route, thereby apparently harming competition, rather than to the restriction of complementary code-sharing agreements, which enable passengers to benefit from the code-sharing agreement and use the foreign airline for the connecting flight. Note that in the US and the EU code-sharing agreements of the restricting kind are limited, particularly for routes on which only a few airlines operate.

Regulations enabling the Antitrust Authority to limit code-sharing agreements were introduced at the end of 2008.

The electricity infrastructure: the capacity of Israel's electricity industry is not sufficient to meet current demand or expected levels of future demand. The expansion of capacity is a lengthy process that requires long-term planning. Capacity was not expanded to a sufficient degree in recent years and a period of several years is required in order to do so. In view of the increase in demand, an emergency plan to expand production by the Israel Electric Company, by means of a 'combined cycle power plant (CCPC), has been put into operation (in a CCPC a gas turbine generator generates electricity and the waste heat is used to make steam to generate additional electricity).

The capacity of Israel's electricity industry is not sufficient to meet current demand or expected levels of future demand.

Reform of the electricity system: in 2008, too, no agreement was reached with the Israel Electric Company and its employees with respect to the reform of the company including breaking its monopoly and establishing four divisions: system management, production, transmission, and marketing. It has been decided, accordingly, to establish a government corporation to manage the system. The management of the system by an entity that is external to the Electric Company could help to incorporate private producers of electricity into the system.

[66] The government decided in early 2008 to finance 80 percent of the security costs of carriers, and in August 2008 it decided to finance 80 percent solely on routes of specified new carriers, and only provided the number of passengers at Ben-Gurion Airport did not exceed 10.7 million. In February 2009 the government decided to finance 60 percent of security costs and, as stated, once the air flight agreement to encourage competition is signed with the EU this will rise to 75 percent.

Box 2.5
Review of the functioning of the ports

The need for competition in the ports stems from the desire to increase their efficiency, enhance the utilization of capital, and cut waiting time. In the framework of the reform, three government corporations were established in order to operate the ports; an additional corporation was set up to manage, maintain, and develop the ports' assets, and the Shipping and Ports Authority in the Ministry of Transport coordinates supervisory powers. The reform involved wage increases for the workers.

An assessment of the effect of the reform, now in its fourth year, on the ports' performance shows an improvement in the performance measures over 2007, which was a bad year for the ports' performance, primarily because of problems in the area of labor relations. In some of the measures performance was better, or at least no worse, than in 2006.[1] The improvement in the functioning of the ports is largely a function of labor relations, but encouraging night work in the ports also makes their services more efficient. The implementation of the reform of charges will improve the performance of the ports in the future. Furthermore, the operation of the future development of the ports should be undertaken independently of the existing port companies.

Reform of port charges

The proposed reform of port charges, which has been delayed, could stimulate competition to some extent because it would better reflect the ports' true costs as well as enabling competition to be extended to areas now considered to be unprofitable functions, such as the handling of export cargoes (because of the structure of the charges). The reform of the charges should also change the composition of payments made to the port companies, so that a larger share of the payment for port services will come from shipping companies—in contrast with the current situation, in which most of the payment is from freight owners. This will put the shipping companies in a stronger position vis-à-vis the ports, because, unlike the individual freight owner, they can alter their behavior in order to improve competition. Although the reform has gone through all the stages to gain professional approval, including hearings for interested parties, it has not yet been brought before the Charges Committee for approval and then to the Ministers of Transport and Finance for their signature on the order. Note that in the past there have been several attempts to amend anomalies in port charges but these have failed, inter alia, because of the power of groups that would be adversely affected by the proposed reforms.

[1] See the table showing measures of required services in http://www.mot.gov.il/wps/pdf/SHIPPING/MadadeySherutNidrashim.pdf

Incentives for night work in the ports

There are significant positive externalities to night work in the ports since it increases capital utilization. The work of the ports is capital-intensive, as is the case with the ports and the logistic network associated with them, including roads and trucks for loading, unloading, and transportation of cargo. One of the reasons for the inefficiency of the ports in Israel is their low productivity at night: only 17 percent of the movement of containers—their entry into and exit from the ports—takes place at night. Logistic activity at night would shorten the queue for unloading ships and reduce congestion on the roads. In other countries the logistic chain, including ports, freight companies, inland warehouses, and manufacturing companies, also operate at night. In the port of Los Angeles, for example, the incentive to work at night is achieved through port charges, with the night tariff being considerably lower than the day tariff.

At the beginning of 2008 a pilot project[2] was introduced in Haifa Port aimed at operating the logistic chain at night. This requires certain obstacles originating with the haulage firms, manufacturing plants, and the inland warehouses—which hardly work at night—to be overcome. Thus, for example, the manufacturing plants have to organize the opening of their warehouses at night and the haulage firms need to allocate additional truck-drivers. An inland warehouse will open at night only if there is sufficient and consistent demand for it. The port also has to organize the opening of its gates between 4.30 and 6.30 in the morning. The incentive offered is the subsidization of the inland warehouse's container activity at night.[3] This benefits the economy as a whole since there are considerable externalities from the diversion of activity to the night-time. Thus, it is important to make it clear to the various elements in the logistic chain that the government is determined to internalize the positive externalities of operating the ports at night. To date the pilot project has increased the night activity of Haifa Port, in terms of the movement of containers, from 17 percent of all container movement to 27 percent in the busiest month (Figure 1). In the last few months night activity has lessened due to the economic slowdown.

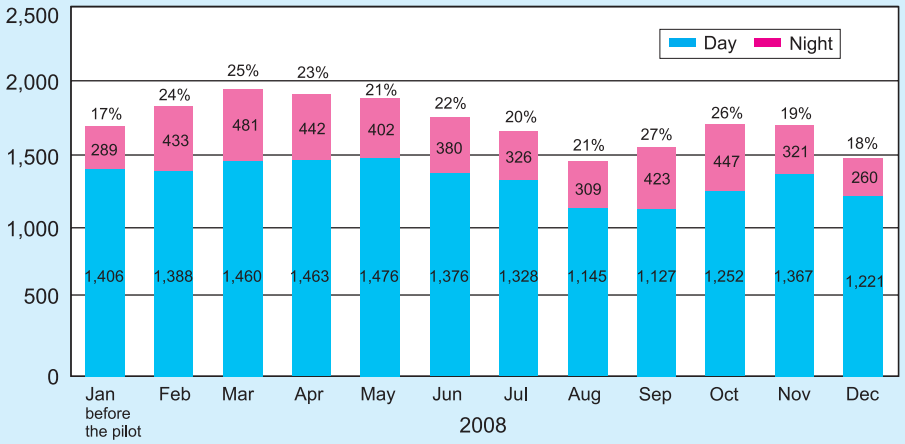
The plan was for the pilot project to continue until December 2008, after which it was intended to continue with night activity via port charges—setting a lower tariff for port services at night and a higher one during peak hours. This plan was supposed to be implemented via the reform of port charges, but although the pilot project stopped as scheduled, the second phase has been postponed. Because of the importance of the pilot project it would be desirable to extend it until the reform of port charges is approved, as stopping it will

[2] The pilot project is managed by the Israel Ports Authority in cooperation with the Haifa Port Company and the Ministry of Transport.

[3] In this way trucks can transport containers both to and from the port, i.e., not travel empty.

cause the activity of the logistic chain—part of which has already become accustomed to working at night—to revert to peak hours only.

The Movement of Containers into and out of Ports, Night and Day,[a] 2008



[a] The percentage is the share in total container movements that occur at night.
SOURCE: Bento Consultants Ltd.

International comparison of road congestion: the goal of this comparison is to evaluate the investment in roads in Israel from an international perspective. This is done from the point of view of road congestion, but also has other aspects, and these are reviewed below. Road congestion in Israel has decreased in recent years due to the relatively extensive investment in the roads. According to estimates, the level of congestion in Israel is similar to that in Ireland and is 15–20 percent higher than the average in the UK and Spain (Figure 2.18). The UK and Ireland are appropriate reference points for Israel since they have similar topography, which is a major determinant of road capital. The ratio of road capital to potential GDP in Israel is lower than that in the UK and higher than that in Ireland (Figure 2.19). In accordance with the world trend of declining infrastructure investment, the road capital/potential GDP ratio has been falling in the last few years. In 1997–2007 average annual expenditure on roads (including maintenance) was 0.6 percent of GDP in the UK, 1.1 percent in Ireland, and 0.9 percent in Israel.

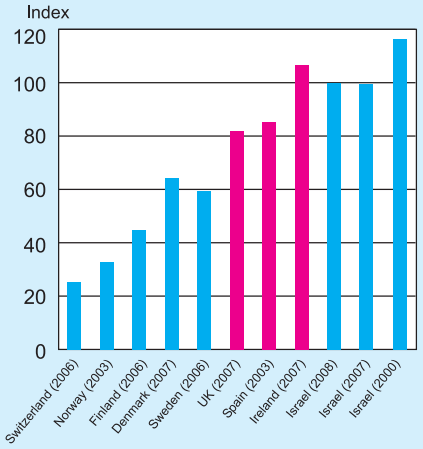
The ratio of road capital to potential GDP in Israel is lower than that in the UK and higher than that in Ireland.

The index of road congestion, shown in Figure 2.18, is calculated by the ratio of mileage to net road capital. Mileage is calculated by weighting the mileage of

the different vehicle types (cars, buses, and trucks) by a coefficient that measures the extent to which they impede traffic.[67] Net road capital is the accumulated expenditure on roads *less* 2 percent a year (the accepted rate of depreciation used by the CBS). Net road capital is calculated using a weighting by investment prices, which vary between countries. This index is preferable to others, such as mileage *divided by* total road length in which a narrow road is counted in the same way as a wide one, and an interchange is not counted at all.

Limitations of the comparison: Topography—expenditure on roads is also contingent on topography. In Switzerland, for example, there are numerous tunnels, which are very costly to construct, while Israel has less need for tunnels. The topography of the UK, Ireland, and Spain is similar to that of Israel, as is their average road density. Level of motorization—note that the level of motorization in Israel (number of cars per 1,000 inhabitants) is significantly lower than in Europe. The rise in the standard of living in Europe brought with it an increase in motorization, so that Israel should prepare its road infrastructure for a similar increase. In 1995–2008 motorization in Israel rose in line with the rise in per capita GDP (in constant terms), i.e., by 24 percent. *Railway intensity in Israel*—in most European countries trains constitute an alternative means of transport; this is not the case in Israel as its railway system remains underdeveloped. Consequently, a road may be built which links hitherto unconnected areas but on which there is not much traffic. Average

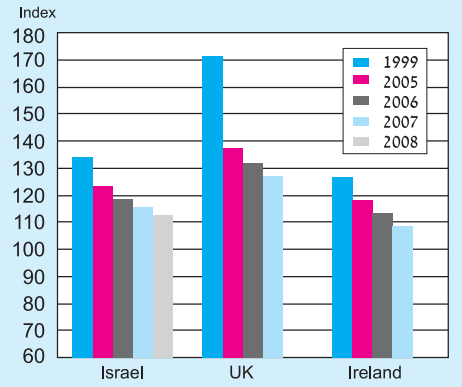
Figure 2.18
Road Density,[a,b] (Israel 2008 = 100)



[a] 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.
[b] The index of road congestion is calculated by the ratio of mileage to net road capital.
SOURCE: IRF International Road Statistics 2008. For Israel, UK, Ireland and Denmark, the Central Bureaux of Statistics. Total road network is taken at the end of the year reviewed.

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

Figure 2.19
Index of End-of-Year Road Capital Intensity: Road Capital divided by GDP,[a,b]



[a] For details see Figure 2.18.
[b] Potential GDP neutralizes the effect of the business cycle on road capital intensity. To enable a comparison to be made between different countries, potential GDP is weighted for purchasing power parity.
SOURCE: See Figure 2.18.

[67] A bus impedes traffic twice as much as a car, and a truck 2.5 times as much.

congestion—the calculation relates only to average congestion even though there are more and less congested roads. Note that congestion in the center of Israel, and particularly in the central conurbation, is greater than it is in peripheral areas, so that it may be worthwhile investing in mass transport systems in the center, as is accepted in developed countries.

Other aspects of investment in roads: Positive externalities of cross-country projects—a road that changes the entire road system, such as Highway 6, generates traffic, i.e., it links areas that previously did not have sufficient inter-connections, thereby giving the population residing along the road new opportunities and improving its mobility. This means that simply evaluating its benefit in reducing congestion is not sufficient.