Chapter 2
GDP, Uses and the Principal Industries

- GDP grew 4.7 percent in 2011, while unemployment fell to a historic low. Growth moderated during the year, following the slowdown in demand.
- In contrast to most other advanced economies, the output gap continued to narrow in the first half of the year, with a shift towards growth based on an increase in factors of production, rather than increased utilization. These developments were reflected in a continuation of real appreciation in the first half year.
- Growth began to slow towards the end of the first half of the year as a result of rising global pessimism and its effect on the capital market and private consumption, followed by the abatement of global demand. These developments were reflected in the shifting of capital towards countries considered to be a "safe haven," and in a turnaround in nominal and real shekel exchange rate trends – from appreciation in the first half to depreciation in the second half.
- Moderate global demand during most of the year and real appreciation until mid-year slowed exports, while low unemployment and a low real interest rate contributed to a rise in the proportion of domestic uses, particularly of investments in the principal industries and residential buildings.
- A steep rise in the ratio of investment to GDP and a small decline in the rate of private savings this year, together with the public sector's return to negative savings over the past three years, resulted in a balance in the current account, following seven years of surplus.
- Manufacturing industry grew by a moderate 2 percent this year as a result of slower overseas demand, a deterioration in the terms of trade, and the cumulative effect of the stronger shekel. The gap between the rapid growth of manufacturing industry in 2010 and its slower pace in 2011 was also due to fluctuations in the manufacture of pharmaceuticals, a key sector.
- Investments in manufacturing industry were especially high this year, due to a low interest rate, appreciation of the shekel, and rapid growth in recent years, which enhanced the utilization of capital.
- Demand for housing declined during the year, as reflected in a lower volume of mortgages and fewer transactions, and a substantial slowing in the rate of price increases, although prices continued to rise for the fourth year in succession. These changes matched the developments in the economy as a whole, which were affected by a higher interest rate at the beginning of the year and a worsening of the crisis in Europe later. Stabilizing macroeconomic policy measures and fiscal measures also affected these results. Efforts to promote approval of construction plans in the district planning commissions were also stepped up.
- The construction sector posted a high 9 percent growth rate for the second consecutive year, this year accompanied by a rise in both per worker and overall productivity.
- Investment in infrastructure grew 17 percent this year. Prominent rises occurred in the energy sectors (oil and gas), owing to the investments in the gas fields discovered in Israel, while investment in land transportation (roads and railways) was down slightly.
- Trade and services product was up 4.2 percent, following 6.3 percent growth in the preceding year. Output in these sectors grew more rapidly in the first half of the year, then slowed significantly in the second half.

1. MAIN DEVELOPMENTS AND BACKGROUND CONDITIONS

Israel's GDP grew 4.7 percent this year, about the same rate as last year. The growth rate slowed during the year, as a result of rising pessimism regarding the global economy and an actual drop in overseas demand.

In the first half of the year, the output gap continued to narrow, in contrast to most other advanced economies. This was reflected in the further real appreciation of the shekel during this half. Global demand moderated in the second half, as did the growth rate in Israel.

Growth in Israel was more rapid than in the EU countries, which are facing the consequences of the debt crisis, and more rapid than in the US, which is having trouble overcoming the consequences of the previous crisis. In contrast to these economies, the Israeli economy continued to approach its production potential, with unemployment dropping to a historic low and a shift towards growth based more on factors of production, rather than an increase in utilization. These differences in the economic environment and the resulting gaps in interest rates were reflected in the continued real shekel appreciation[1] until mid-year. This process had a negative impact on the worthwhileness of exports, and constituted an additional factor in the slowing of activity in the tradable sectors, together with the dominant effect of the moderation of world trade.

While the slowing of global demand during the year and the ongoing real appreciation of the shekel detracted from the growth rate in exports, growth and the low real interest rate supported an increase in the proportion of domestic uses, particularly investment and consumption of durable goods.[2] Since these goods are

Table 2.1
Indicators of Economic Activity, 2004–11

(percent change in annual terms)

					2011	
	2004-07	2008	2009	2010	First half	Second half
GDP	5.2	4.0	0.8	4.8	5.1	3.4
Per capita GDP in Israel	3.3	2.2	-0.9	2.9	3.3	1.5
GDP of OECD countries	2.9	0.2	-3.8	3.1	1.3	2.3
Per capita GDP in OECD	2.3	-0.5	-4.4	2.6	0.8	1.8
Global GDP	3.8	1.6	-1.8	4.0	-	-
Unemployment rate (%)	8.7	6.0	7.5	6.7	5.8	5.5
Real effective exchnage rate	2.2	-10.7	1.8	-5.1	-3.3	4.5
Terms of trade	-1.7	-5.0	8.4	-3.2	-4.6	-3.2
Advanced economies' imports	7.5	0.7	-12.6	12.1	4.2	-
Exports excl. diamonds	7.5	12.2	-10.2	10.7	5.8	-3.2
Domestic uses	11.4	2.5	0.4	4.3	10.2	3.6
Bank of Israel interest rate	4.2	3.7	0.8	1.6	2.7	3.1

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

[1] According to the purchasing power parity (PPP) coefficient.

[2] Domestic uses excluding these components grew at a slower pace; see Table 2.8 in Section 5A below.

import-intensive, the rise in domestic demand for them caused a steep increase in imports. The changes in the composition of uses and sources were also reflected in a decline of the surplus in the current account of the balance of payments. The much higher ratio of investment to GDP, combined with a lower savings rate, resulted in a balance in the current account, following seven years of surplus.

The background conditions were expressed in a larger proportion of domestic uses and a drop in the current accounts surplus of the balance of payments.

Developments during the year were not uniform. The economy grew rapidly early in the year, owing to a substantial rise in all uses: exports benefited from the continued expansion in global demand; private consumption of durable goods and investment in housing rose steeply, with the help of higher income and the low real interest rate; and investment in industry grew as a result of the full utilization of the production capacity of capital stock. Economic recovery from the effects of the previous global crisis was completed during this period; the unemployment rate fell below its pre-crisis level, and the output gap (estimated with the production function method) reached zero. The process of closing the output gap was reflected during 2010 and early 2011 in the higher unit labor cost, growth in imports, and continued real appreciation of the shekel.

Toward the end of the first half, before the supply constraints were consolidated, signs of a renewed global recession increased, and the growth rate in world trade fell. This development caused a negative turnaround in purchases of durable goods, substantially lower export growth, and later – also a drop in non-durables consumption. The end of the sustained real shekel appreciation, the negative turnaround in the unit labor cost, the drop in utilization of machinery and equipment, and lower imports, among other things, supported the assessment that the source of lower growth was worldwide pessimism and slow demand. On the other hand, gross domestic investment continued its rapid growth – probably as a reflection of earlier investment decisions – and offset the negative influence of the other uses on the GDP growth rate.

a. Global developments and their influence on the Israeli economy

2011 saw a renewed slowdown in global economic activity, accompanied by greater uncertainty concerning it: the GDP growth rates of the advanced economies fell, and world trade slowed, particularly following the worsening of the EU fiscal debt crisis. The emerging marke economies, on the other hand, continued their rapid growth in 2011.

The intensified EU debt crisis placed renewed constraints on credit to businesses and households, and bolstered pessimism among consumer and producers, as seen in consumer confidence surveys and purchasing managers indices in EU countries. All this was followed later in the year by a renewal of the negative trend in the European capital markets.

The worsening of the European debt crisis and the slow pace of recovery in the American economy increased uncertainty concerning global economic activity, and had a negative impact on the Israeli economy.

To the crisis in Europe was added increased anxiety about the large US government debt: on the one hand, an effective plan to reduce the deficit and the debt is needed; on the other hand, extreme and premature restraint is liable to harm recovery, since the American economy is still having trouble re-establishing business sector growth

Table 2.2
Global Developments, 2008-11

(annual and quarterly data)

	2008	2009	2010	2011	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
									Annual rates of change, percent			
Israel's GDP	4.0	0.8	4.8	4.7	5.5	5.9	4.8	7.6	4.7	3.7	3.4	3.2
GDP of advanced economies	0.2	-3.8	3.2	2.0	3.3	4.4	2.4	2.1	1.1	1.3	2.4	3.1
Global GDP	6.0	2.8	7.3	6.4								
GDP of emerging economies	2.8	-0.7	5.1	4.0								
World trade	2.9	-10.7	12.4	6.8	13.6	17.1	8.5	6.3	6.9	1.7	5.5	
Imports of advanced economies	0.7	-12.6	12.1	6.0	15.0	19.0	9.2	4.4	5.4	2.2	3.0	
eurostocks 50[a]	-44	14	-3	-15	-1	-5	1	2	7	-2	-18	-2
s&p500[a]	-38	17	12	4	3	-1	0	10	9	2	-10	3
Crude oil; prices (Cushing)[b]	100	62	80	95	80	80	78	87	96	105	92	96
Commodity prices, excl. oil[b]	151	127	161	191	150	155	159	179	200	199	191	172
ECB interest rate	3.87	1.25	1.00	1.25	1.00	1.00	1.00	1.00	1.00	1.23	1.48	1.27
FED interest rate	2.09	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

[a] The annual rates of change express the change between the last quarter in any year from the last quarter of the previous year. The quarterly rates of change are the average rate in a quarter compared with the average rate in the previous quarter, in quarterly terms.

[b] Index.

SOURCE: Based on various sources.

based on sustainable factors. The deep crisis that emerged in the US in 2008 caused a real contraction in the principal industries, and concern exists that an excessively tardy adjustment to this change has increased the structural unemployment rate, and is hampering the return of private consumption to its pre-crisis levels.

The global slowdown affects macroeconomic developments in Israel through the connection between global demand and Israeli exports: on the average, a change of one percent in world trade leads to a 0.8 percent change in Israel exports.[3] This channel and the joint trends of the capital markets in Israel and around the world influence national income, and thereby also domestic demand.

Another important instrument through which global developments affect the Israeli economy is monetary and fiscal policy. The US Federal Reserve Bank interest rate is near zero, and is expected to remain so at least until the end of 2014. The European Central Bank's interest rate is also low, despite having been raised at the beginning of the year. The gap in interest rates between Israel and the advanced economies, given the differences in growth environment, exerted pressure towards continuation of the real shekel appreciation this year, and was among the factors that slowed Israeli exports, beyond the decline in world trade. On the average, a change of one percent in the real exchange rate causes a 0.2 percent change in Israeli exports. On the other hand, the Israeli economy is small and open to capital movements, and its domestic demand is positively affected by the worldwide low interest rates, and overseas interest rates also influence the Bank of Israel's interest rate policy.

Interest rates in the US and Europe were lower than in Israel, and therefore generated pressure for continuation of the real appreciation of the shekel, which was one of the factors in the slowdown in Israeli exports. On the other hand, the low level of interest rates throughout the world had a positive effect on domestic demand.

The extent of fiscal expansion chosen by governments in order to deal with the slowdown has a major impact on activity around the world, and thereby on demand for Israeli exports. In 2009, the Israeli economy managed to recover rapidly from the effects of the crisis without domestic fiscal expansion (other than the automatic stabilizers), among other things because of the unusually large expansion adopted by governments in the advanced economies. The fiscal situation of the advanced economies is worse than it was before the previous crisis, and they will therefore find it difficult to finance expansion to counter the effects of the current crisis on global demand.

The advanced economies are having trouble financing expansion to moderate the consequences of the current crisis for global demand. This development is affecting worldwide activity and the demand for Israeli exports.

Global commodity prices, which rose steeply at the beginning of the year, moderated in the second half of the year. Price moderation did not, however, extend to fuel prices, probably because of the supply constraint resulting from instability among the oil exporters. These developments were reflected in poorer terms of trade for Israel, thereby contributing to a decline in Israel's balance of trade surplus.[4]

[3] See Friedman, A. and Hercowitz, Z., "A Real Model of the Israeli Economy," Discussion Paper 2010.13, Bank of Israel Research Department.

[4] For further discussion of this issue, see Chapter 7, The Balance of Payments.

b. Economic policy

Early in the year, the Bank of Israel's policy[5] featured a further retreat from monetary expansion, as expressed in a continuation of interest rate hikes. This policy was adopted after inflation exceeded the upper bound of its target, following the closing of the output gap, and as part of measures for dealing with the surge in housing prices.[6] Later in the year, concern increased about the deepening of the European debt crisis, whose effect on the Israel economy was evident in a weakening of demand. The inflationary environment receded, and the Bank of Israel reverted to an expansionary policy. The real interest rate this year was lower than in the past. For example, the average rate was 1.5 percentage points lower than in 2008.[7]

The Bank of Israel interest rate this year was lower than in the past, but higher than the interest rate needed in Europe and the US. This contributed to an increase in the weight of domestic activity, at the expense of exports.

The Bank of Israel's interest rate policy this year affected real activity via two main channels. The first was the low short-term real interest rate derived from the monetary interest rate, which supported domestic demand, particularly private consumption of durable goods, investment in residential construction, and investment in principal industries. This influenced the composition of uses and the rate of savings, and contributed to GDP growth. The second was the fact that the monetary interest rate required to preserve price stability in Israel was higher than the interest rate required in Europe and the US, given the differences in the economies' location in the business cycle. The interest rate gap in recent years bolstered short-term capital movements, thereby contributing to real shekel appreciation[8] and having a negative impact on the profitability of exports, despite the tools used by the Bank of Israel in the foreign currency market to soften these forces.

Fiscal policy in 2011 was slightly expansionary. The deficit is expected to exceed its ceiling in 2012 in continuation of the transition from surplus in the middle of the past decade to deficit in recent years.

Fiscal policy[9] in 2011 was slightly expansionary, considering the economy's location in the business cycle. The cyclically adjusted deficit rose, compared with 2010, due to a negative surprise in the growth rate of tax receipts. The ratio of debt to GDP declined slightly again this year.

The government's projected spending grew, following approval of the recommendations by the Committee for Socioeconomic Change towards the end of 2011 and other decisions taken by the government during the year. The projected spending, however, was not fully carried out. The changes in tax rates passed by the Knesset and the drop in tax receipts following the lower growth rate are expected to have a negative impact on government revenues. The deficit is therefore projected to exceed the ceiling in 2012, a continuation of the transition from surplus in mid-decade to deficit in the past three years. Public expectations concerning government handling of this situation may affect the other uses and/or private savings.

5 For further discussion of this issue, see Chapter 3, Monetary Policy and Inflation.

6 For additional steps taken by the Bank of Israel and the government in this area, see the part of the Principal Industries section below dealing with construction.

7 According to a "zero curve" model.

8 For further discussion of the effect of the interest rate gap on the development of the exchange rate in the Israeli economy, see Djivre, Y. and Yakhin, Y., "A Constrained Dynamic Model for Macroeconomic Projection in Israel," Discussion Paper No. 2010.11, Bank of Israel Research Department.

9 For further discussion of this issue, see Chapter 6 – The Government.

Box 2.1

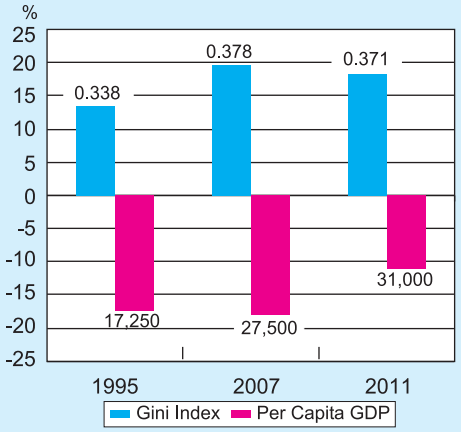
Income and educational inequality and Israel's lag in per worker and per capita GDP

The shocks occurring in the world's economies over the past four years have had only a moderate effect on the Israeli economy. One instance of this is a reduction of the gap in per capita income between Israel and the average for advanced economies, from 23 percent in 2007 to 16 percent in 2011 (Figure 1). At the same time, a slightly longer-term perspective shows that the gap widened during the previous recession (2001–03), and its narrowing in recent years merely restored it to its 1995 level. It is difficult to determine whether the reduction of the gap in recent years is permanent, or whether a return to growth in other countries will cause it to widen again.

The relatively rapid growth in Israel's national income in recent years sometimes raises the question of its distribution. This question also arose during the outbreak of the social protest this year. An international comparison indicates that inequality in net income, as measured by the Gini Index[1], is greater in Israel than in other advanced economies, and that since 1995, this index has risen more in Israel than its average rise in those economies.[2] The increase in net inequality in Israel, especially in comparison with other countries, is linked to the small contribution of government policy to the reduction of income gaps, in contrast to the advanced economies and Israel in the past.

There are many diverse reasons why Israel lags behind in per capita GDP and has greater inequality than the average in the advanced economies, some which are factors in both phenomena. One of the principal reasons is greater heterogeneity in its population (in religion, nationality, degree of religious observance, and number of years living in the country, for example). In particular, the Arab and *haredi* (ultra-Orthodox) populations feature high fertility rates, compared with those in the advanced economies, and low rates of participation in the labor force (especially among ultra-Orthodox men and Arab women). These factors are relevant mainly to per capita GDP and

Figure 1
Per Capita GDP and the Gini Index[a] in Israel compared with the Average in the Advanced Economies, 1995, 2007 and 2010[b,c]



[a] The Gini Index of income inequality varies between 0, full equality, and 1, with all incomes being earned by one individual.
[b] The data on the Gini Index are averages over a period of several years in the mid-1990s, the mid-2000s, and the late 2000s.
[c] The numbers above and below the bars are the levels of each variable in that year. Per capital GDP is in dollars based on the purchasing power parity (PPP) principle.
SOURCE: The OECDSTAT database.

[1] The Gini Index varies between 0, when equality is absolute, and 1, when all income is concentrated in the hands of a single person.

[2] On the average, inequality rose in the advanced economies. For further discussion, see "An Overview of Growing Income Inequalities in OECD Countries: Main Findings," OECD 2011.

inequality in per capita income.[3] This box will focus on the role of per worker GDP and economic income (from labor or capital) in Israel's backwardness in the aspects under discussion.

We will first examine the gap in per worker GDP (in contrast to the gap in per capita GDP, which was already examined above) and in inequality in gross income among employees (in contrast to inequality among the population as a whole following government intervention) between Israel and the average for OECD countries. Such an examination reveals that while the gap is lower, it exists in both aspects, and especially in income inequality: Israel trails by 9 percent in per worker GDP and 11 percent in the Gini Index of inequality in gross income of workers. It also emerges that this gap has remained stable for the past 15 years.

A study by Kimhi (2011)[4] indicates that while inequality in gross economic income has been stable for the past 15 years, the reasons for the wide gaps in Israel have changed during this period: the gaps between educated and uneducated workers have widened, while wage gaps between women and men have narrowed. On the face of it, the relative increase in the salary of educated workers is surprising, given the rapid growth in the supply of such workers in the past two decades: at the beginning of the 1990s, over 25 percent of each age bracket had applied to institutions of higher learning, while this percentage has stabilized at 48 percent in recent years. These study percentages of those with higher education were among the highest in the advanced economies. The obvious conclusion is that the relative demand for educated and skilled workers rose at an even faster pace than the number of educated workers as a result of the larger proportion of the human-capital-intensive sectors. Among other things, this picture is reflected in an increase in the relative wages of software and technology engineers, as indicated by the probe by an inter-ministerial committee, whose initial conclusions were reported to the Knesset Economics Committee by the National Economic Council.[5]

The findings presented herein show that growth in the Israeli economy is based on technology and human-capital-intensive sectors to an even greater degree than that derived from its level of development. In order to sustain such growth and couple it with greater equality and social mobility in the long term, it is necessary to utilize the population's human capital potential by extending access to all groups. The proportion of those seeking higher education rose rapidly in every age bracket, reaching almost 50 percent, the same as the proportion of eligibility for a matriculation certificate, as early as the middle of the first decade of this century. It therefore appears that the current upward trend in the proportion of educated people has reached its maximum in recent years. Any further expansion in the supply of educated workers requires increased investment in core elementary education among Arabs, ultra-Orthodox people, and the population in outlying areas, among whom the proportion of matriculation certificate eligibility is far below average.

[3] See the extensive discussion of inequality, especially the contribution of policy to reduction of inequality, in Chapter 8, Welfare Policy Issues.

[4] Kimhi, Ayal, "Income Inequality in Israel," Policy Paper No. 2011.05, Taub Center for Social Policy Studies in Israel.

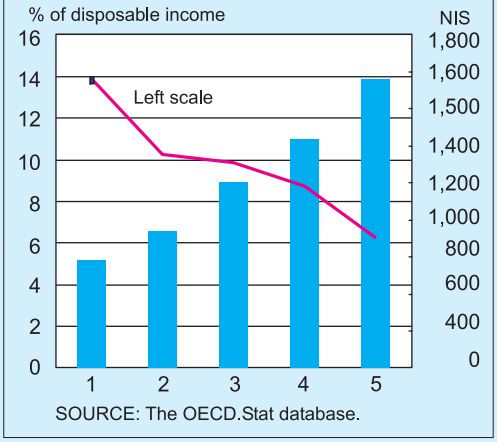
[5] The findings were presented on March 7, 2011 at the Knesset Economics Committee's subcommittee for promoting and aiding knowledge intensive industries.

The income inferiority of households in these populations, especially given the high degree of inequality described in this box, is liable to affect the human capital of their children. Private spending on education is positively correlated with the income quintile, and its proportion of disposable income is more burdensome for the bottom quintiles (Figure 3). Affirmative action in the elementary educational system[6] is probably insufficient compensation for these gaps: the variance in achievement in international tests is relatively high, and the link between socioeconomic background and achievement is stronger in Israel than in most OECD countries.[7] Financing constraints of households, which affect the quality of education in its early stages, influence access to higher education and the maximization of an individual's potential human capital over the long term (for example see Heckman et al., 2003).[8]

Castello and Domenech (2002)[9] found that inequality in education provided a good explanation of slow growth in per capita GDP, because it reflects the incomplete maximization of potential human capital. Their study further indicated that one of the ways that educational inequality affects growth is its negative effect on the process of accumulating physical capital, since human and physical capital are complementary factors of production in many cases. It is possible that these factors do indeed affect Israel's trailing behind the average for advanced economies in per worker GDP (see the discussion of investment and the stock of physical capital in Section 2.a below), as well as Israel's backwardness in infrastructure (see the extensive discussion on this subject in Section 5.c below).

The principal conclusion arising from this box is that how the government deals with large-scale educational inequality probably affects both income inequality and the growth rate of per capita GDP, especially in Israel, where economic growth is particularly reliant on human capital.

Figure 2
Expenditure on Education, by Income Quintile, 2009



SOURCE: The OECD.Stat database.

[6] For further discussion, see Blass, N., Zussman, N., and Tsur, S.: "The Allocation of Teachers' Working Hours in Primary Education, 2001-2009," Discussion Paper Series 2010.18, Bank of Israel Research Department.

[7] OECD (2010), as displayed in Figure 8.9 in the Bank of Israel 2010 Annual Report, for example.

[8] Carnerio, P. and Heckman, J.J., "Human Capital Policy," in Heckman, J.J. and Kruegar, A.B. (editors), Inequality in America: What Role for Human Capital Policies? MIT Press, A. Cambridge Massachusetts, pp. 77-241.

[9] Castello, A. and Domenech, R. (2002), "Human Capital Inequality and Economic Growth: Some New Evidence," The Economic Journal, Volume 112, C187-C200.

2. AGGREGATE DEMAND, GDP, AND IMPORTS

a. Uses

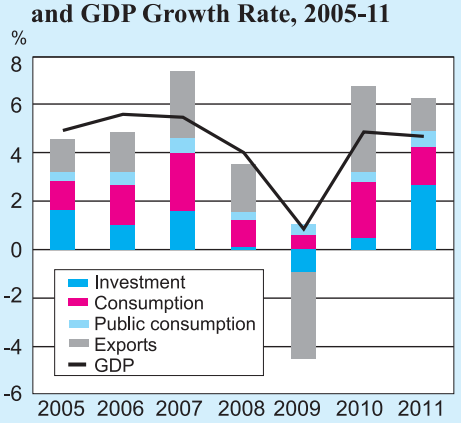
The growth rate in uses, which was higher than last year, was based on the expansion of domestic uses.

Total uses were up 6.2 percent this year, higher than the GDP growth rate. The growth rate of uses, which was faster than last year, was based on the expansion of domestic uses: domestic demand rose as a result of an increase in individuals' income and the need for further investment, given full utilization of the production capacity of the existing stock of physical capital, while the low interest rate accelerated growth in uses. On the other hand, moderate global demand and low profits-due, inter alia, to the gap between Israeli and global interest rates and the real shekel appreciation that it caused-retarded growth in exports. As a result, the composition of uses this year was especially slanted towards domestic uses, spearheaded by investment (Figure 2.1), unlike the composition of uses in the recent growth years (2004-08), when exports led growth of GDP and uses.

The rate of increase in private consumption dropped steeply during the year as a result of a decrease in consumption of durable goods and the slowdown in non-durables consumption in response to weaker growth.

Private consumption rose 3.6 percent this year, compared with last year, but its growth rate fell steeply during the year, mainly due to a negative turnaround in consumption of durable goods. In the first stage, private consumption stabilized naturally, following its rapid rise. In the second stage, it declined, reflecting slower growth and the diversion of sources to smoothing of non-durables consumption (Table 2.3). The lower growth rate in non-durables consumption in the second half of the year also exerted a negative effect on growth in private consumption, although consumption of these goods was smoothed, and its sensitivity to changes in current income is usually slight. At the same time, it is too early to assess whether this response signals expectations of a prolonged crisis and a negative impact on permanent income, among other things because consumer confidence indices for people's expectations are not unequivocal.[10] Short-term fluctuations in non-durables consumption have also occurred in the past, following changes in the economic environment, mostly due to households in the lower income

Figure 2.1
Contribution of the Different Uses and GDP Growth Rate, 2005-11



SOURCE: Based on Central Bureau of Statistics data.

[10] At the end of 2011, the Bank Hapoalim Consumer Confidence Index was at the same level as at the beginning of the year and its level in early 2008, before the crisis that broke out at the end of that year, while the Globes Consumer Confidence Index declined during the second half of the year.

deciles having difficulty obtaining credit or using savings to smooth their non-durables consumption.[11]

Private consumption of durable goods, which is very sensitive to business cycles, surged over the past two years, exceeding its level of early 2008 (Table 2.4). This surge was aided by a rise in disposable income, which was not unusual, however, and was small during the past two years as a result of stagnation in real wages. The main cause of the record increase in consumption of durable goods was real appreciation of the shekel, lower import prices and prices of domestic substitutes for imports in recent years, as reflected in the price index for these goods, relative to overall prices for private consumption. A reasonable assumption is that the low interest rate also contributed to the general surge in consumption of durable goods, owing to cheaper credit for households and a drop in the return on savings.

Exports excluding diamonds were up 3.4 percent this year, but fell considerable during the second half (Table 2.3), mainly as a result of slower world trade. Export growth was moderate this year, compared with other years in which the Israeli economy grew at similar rates, and was slightly lower than the rate of growth in world trade and imports of the advanced economies (Tables 2.1 and 2.2, and Figure 7.6 in Chapter 7).

Exports were up slightly this year, and even fell during the second half, as a result of the decrease in world trade.

Table 2.3
Sources and Uses, 2000–11

(real annual rates of change)

	2000-01	2002-03	2004-08	2009	2010	2011 Year	2011 First half	2011 Second half
GDP	4.5	0.5	5.0	0.8	4.8	4.7	5.1	3.4
Business sector product	5.1	-0.2	6.0	0.3	5.8	5.2	5.8	3.8
Imports	3.5	-1.3	6.5	-14.0	12.6	10.6	19.6	-2.7
of which: Imports excl. diamonds	4.7	-3.8	8.5	-12.4	9.5	8.5	13.4	0.5
Total sources	4.2	0.0	5.4	-3.7	7.0	6.4	6.1	4.3
Exports	5.9	2.9	8.6	-12.6	13.4	4.9	7.2	-4.1
of which: Goods	7.6	2.6	7.6	-12.7	16.6	3.8	8.6	-6.2
Services	2.5	3.8	11.3	-12.6	6.4	7.5	7.8	-0.4
Exports excl. diamonds	7.4	1.1	11.6	-10.2	10.7	3.4	5.8	-3.2
Gross domestic investment	-0.4	-7.7	7.1	-7.0	4.0	22.8	40.1	12.2
of which: Fixed capital formation	0.0	-5.4	7.1	-4.1	13.6	16.2	19.4	11.2
Private consumption	6.2	0.3	4.4	1.4	5.3	3.6	5.4	0.1
of which: Non-durables consumption	6.0	1.3	3.7	2.5	4.5	3.2	4.1	1.6
Durables	8.8	-9.1	11.1	-7.7	12.3	9.4	19.6	-13.6
Public consumption	2.5	1.2	1.7	2.4	2.5	3.7	2.0	4.4
Domestic uses	4.0	-0.7	4.2	0.4	4.3	6.8	10.2	3.6

SOURCE: Based on Central Bureau of Statistics data.

[11] See Lavi, Yaacov, "Do Changes in Current Income Help to Explain Changes in Consumption in Israel?" Israel Economic Review, Volume 2, 2004.

Table 2.4
Share of Consumption of Durables in Total Private Consumption, 2003-11

	Share of consumption of durables in total private consumption	Private disposable income	Price of durables relative to price of total private consumption
	(percent)	(annual change, percent)	
2003-07	9.0	4.1	-0.4
2008	11.0	-0.1	-7.1
2009	10.0	6.7	-4.4
2010	16.8	1.1	-3.8
2011	11.2	2.8	-5.7

SOURCE: Based on Central Bureau of Statistics data.

The moderate growth in Israeli exports, especially goods exports, combined with the slowdown in world trade, was also contributed to by a decline in export competitiveness, following the prolonged real appreciation of the shekel. Table 2.6 and the analysis below of the supply of business product (Section b(1)) shows that the decline in profitability of manufactured goods exports and the diversion of labor inputs to non-tradable sectors were among the causes of the tilt towards domestic uses in the composition of uses. The real appreciation of the shekel eroded the shekel prices of export output, contributing to the moderation in exports.

The elasticity of export volume to changes in the real exchange rate is usually low (0.2 on the average), particularly in comparison with its elasticity to changes in world trade (0.8 on the average). The sluggishness of world trade was dominant in explaining weak export growth this year, as well. At the same time, it is possible that the extended duration of the appreciation made it difficult to absorb the drop in profits and to roll some of it over onto the workers, particularly in a year with such low unemployment. An examination of the profits of stock-exchange-listed exporters indicates that real appreciation of the shekel was particularly harmful to companies that were not among the top three exporters. The explanatory power of the real exchange rate with respect to exporters' profits is limited, however; profits were probably affected mainly by other factors such as the productivity and market power of a company vis-à-vis its competitors.[12]

Poorer terms of trade created difficulties for exporters of energy-intensive products, since the price of fuel (together with food) led the rise in import prices. Other countries competing with Israel, however, also faced this difficulty. Nevertheless, it is possible that Israeli companies had particular trouble dealing with it, both because it was combined with the real shekel appreciation and because Israeli companies are usually smaller, and find it difficult to absorb a sustained blow to their profits.

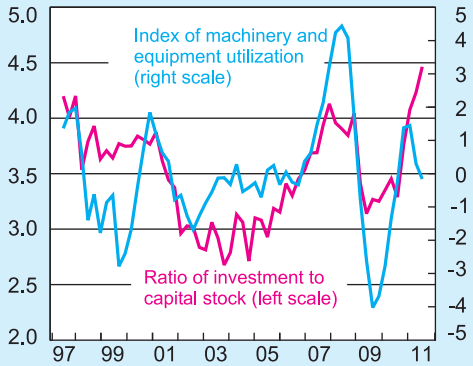
[12] For further discussion, see "Recent Economic Developments," 131, Part B (Bank of Israel).

Services exports rose, compared with last year, at a faster pace than goods exports, but this was primarily an expression of their different growth patterns; exports of services grew in the second half of the preceding year, while exports of goods fell during the same period. This difference was reflected in the average level of both types of exports this year, compared with last year ("edge effect"). The main source of the differences in growth patterns during the same period was an exceptional increase in exports of computer services. The services sold by this sector have a high added value, and the substitutes for some of them provided by the countries competing with Israel are limited. The development of exports in this sector therefore does not necessarily correspond to the global and domestic background conditions.

All components of gross domestic investment rose steeply, leading the rise in domestic demand and economic growth.

Gross domestic investment surged 23 percent last year, leading the growth in domestic demand and economic growth. A large proportion of this increase resulted from an increase in inventory – especially at the beginning of the year – but investment in fixed assets also grew rapidly (16 percent). The speedy rise was due to a number of factors: first of all, economic sectors gradually shifted last year from expansion based on increased utilization of existing factors of production – physical capital and labor – to growth based on increasing those factors (Figure 2.4 and the following discussion). As a result of this process, investment in economic sectors grew, particularly relative to the capital stock (Figure 2.2). The second factor in the rapid rise of investment in fixed assets was the real shekel appreciation, which made imports of machinery and equipment, a key component of investment in the principal industries, cheaper. The price of machinery and equipment fell by an average of 4 percent over the past two years, while prices of its output rose 1.5 percent. The third factor was the low real short-term interest rate, which boosted the growth of investment in both the principal industries and residential construction. The last factor is not necessarily related to the background macroeconomic conditions: exceptional investments in the electronic components sector (by Intel)[13] and the mining and quarrying (drilling for natural gas) sector contributed 6 percent to the average growth of gross domestic investments, compared with the preceding year.

Figure 2.2
Ratio of Investment to Capital Stock, and the Index of Machinery and Equipment Utilization,[a] 1997-11



[a] The ratio of business sector electricity use to the capital stock, deducted from the trend by use of the HP filter.
SOURCE: Based on Central Bureau of Statistics data.

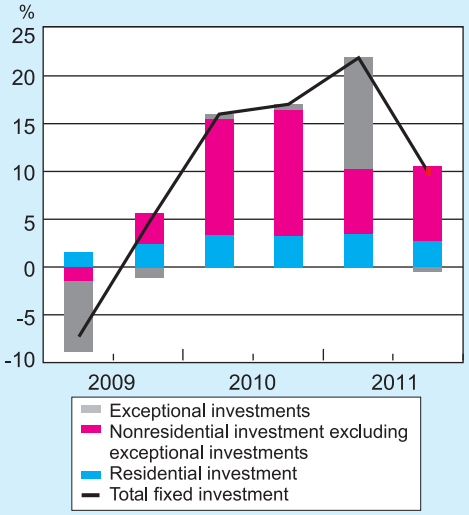
The rapid growth of investment this year reflects the desire of firms to take advantage of the favorable price conditions–a low short-term interest rate and lower import prices–in order to

[13] These investments totaled about NIS 6 billion this year, compared with about NIS 1 billion in the two preceding years.

adjust their capital stocks to the best long-term level. Despite the spurt in investment, compared to the capital stock, it does not appear that this was exceptional or excessive; the ratio of the capital stock to GDP did not differ from its past level, and the return on capital was higher than in previous years (see Table 2.5). A comparison of these indices to their average in the advanced economies supports this assessment: it was found that before the crisis, the ratio of capital to GDP in Israel was 18 percent lower than in the advanced economies, and the return on capital was 28 percent higher. It therefore follows that, at that time at least, the Israeli economy suffered from a lack of investment. It is possible that to some degree, the current surge is compensating for this shortfall.

Figure 2.3 displays the contribution of the various elements of fixed investment according to their size: nonresidential investment – even excluding exceptional investments in the electronic components industry and the mining and quarrying industry – was a dominant element in the increase in investments over the past two years. Its rate of increase slowed somewhat during the year, following expectations of a slowdown in activity, but by year-end still remained rapid, and the contribution of this investment to GDP growth in the second half was decisive. To a degree, the continued rapid growth of investment in the principal industries, despite the slowing of other demand, probably reflects earlier investment decisions. It may also be due to the desire of firms to take advantage of the current low investment costs, under the assumption that the slowdown in demand will not be prolonged. Investments in the electronic components and mining and quarrying sectors surged in the first half, then stabilized at high levels in the second half. Higher investment in residential construction contributed 3 percent to the increase in fixed assets in both 2010 and 2011.

Figure 2.3
Contribution of the Components to the Increase in Fixed Investment, 2009-11
(half-yearly rates of change in annual terms)



SOURCE: Based on Central Bureau of Statistics data.

The growth rate in public consumption this year was higher than in the preceding years.

Public consumption grew 3.7 percent this year, faster than in recent years. This reflected the rapid increase in civilian consumption in both the wage and purchases items, and a slower rise in defense consumption. The rate of increase in public consumption accelerated in the second half of the year.

Mazar found that in the short term, an increase in public consumption boosts domestic demand in Israel, similar to the findings in advanced economies. His study also indicates

that each additional shekel in public spending excluding defense imports increases total GDP by NIS 0.70 ("The Effect of Fiscal Policy and its Components on GDP," Y. Mazar, Discussion Paper Series 2010.07, Bank of Israel Research Department).

b. Sources

The rapid expansion of domestic demand, in tandem with aggregate demand, was reflected in the utilization of surplus production capacity and surplus imports at the beginning of the year. While the cost of labor per output unit rose during this period, this process was not one of the causes of slower growth; the slowdown in demand, which became dominant during the year, prevented at an early stage the consolidation of constraining forces on the supply side. A major proportion of the increase in imports reflected a sharp increase in investments in machinery and equipment in the principal industries aimed at eliminating the lag created during the process of accumulating physical capital and increasing the supply of domestic business-sector product.

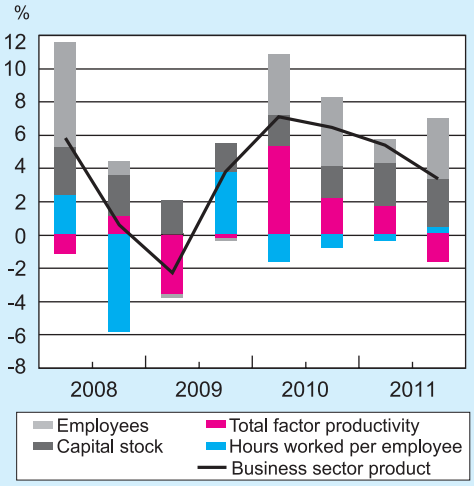
The rapid expansion in domestic demand was reflected in utilization of surplus production capacity and in an import surplus at the beginning of the year. The slowdown in demand became dominant during the year, bringing the consolidation of constraining forces from the supply side to a halt at an early stage.

i. Business sector product

The rapid recovery of demand was met in the first stage – in late 2009 and early 2010 – by a rise in the number of work hours per employee and the cyclical component of overall productivity, reflecting greater utilization of equipment and machinery (Figure 2.4). During this period, productivity rose by an annualized 5 percent, far above the 1 percent average rise during the preceding decade. In the second stage – during 2010 – the contribution of these factors to the response of supply gradually dissipated, productivity neared its long-term growth rate, the number of employees rose, and unemployment fell. As the existing capital stock's production capacity was utilized, both investments and the capital stock rose steeply. During 2011, the contribution of the capital stock to explaining the sources of economic growth increased significantly, and its rise also contributed to a higher rate of potential growth (see Box 2 below on this subject). In the second half, overall productivity fell, probably due to lower demand and the resulting drop in utilization of machinery and equipment.

Utilization of surplus production capacity during 2010 was reflected in

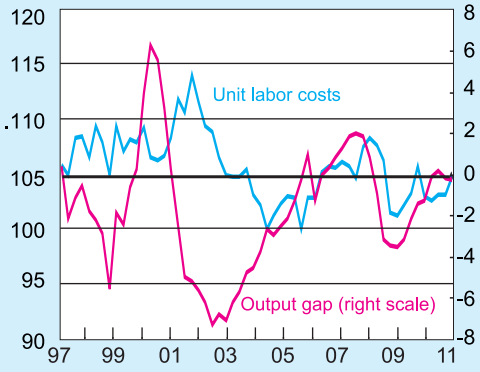
Figure 2.4
The Sources of Growth of Business Sector Product, 2008-11
(half-yearly rates of change in annual terms)



SOURCE: Based on Central Bureau of Statistics data.

a narrowing of the output gap in the first quarter, and in an upward trend in unit labor cost (Figure 2.5). It appears that this process was not among the factors responsible for slower growth, since the return on capital, which reflects the profit of firms, was higher than in the past, and even rose slightly this year. Either way, in contrast to the prolonging of this process in 2006-08, the slowdown in demand became dominant during this year, and prevented at an early stage the consolidation of supply side constraints. The unit labor cost responded rapidly to the drop in demand by falling during the year; its average this year was only slightly higher than the average during the preceding year (Table 2.5).

Figure 2.5
The Output Gap and Unit Labor Costs, 1997-2011



SOURCE: Central Bureau of Statistics.

Over the year, the labor market's response to changes in the GDP growth rate, especially to changes in the output gap, has become quicker.

Figure 2.5 highlights an ongoing process in the Israeli economy in recent years: over the years, the labor market has responded more quickly to changes in the GDP growth rate, especially to changes in the output gap (See Box 5.1 in the labor market chapter on this process). The graph makes it clear that during both the boom and the recession in the early years of the new millennium, the unit labor cost was slow to respond to changes in the output gap; during the 2008 crisis and the ensuing recovery, however, this index lagged only slightly behind the output gap, to a certain degree because the crisis was more expected. An empirical examination[14] also found that the elasticity of total wage payments to the output gap in Israel was high, compared with OECD countries. In 2011, the cost of labor responded instantly and forcefully to the negative developments, but it is premature to draw conclusions from this about the connection between this response and the long-term process.

It is possible that the weakening of labor bargaining power, given the drop in the proportion of unionized workers, has increased the speed of companies' response to changes in demand. Globalization processes are exerting pressure to make the price of labor in the traditional sectors more elastic, both directly (through the entry of foreign workers) and indirectly (through exposure to competing imports). These processes also increase the proportion of high-tech and human capital intensive sectors, in which flexible personal contracts are the norm.

The rapid expansion of domestic uses on the one hand, and the stagnation of exports on the other, were reflected in the sources side: sectors selling to the domestic market, such as the construction and the trade and services industries, grew more rapidly than the manufacturing industry.[15] Table 2.6 examines the supply side of this development,

[14] For further discussion, see "Recent Economic Developments," 132, Part 2 (Bank of Israel).
[15] For further discussion of this subject, see Section 5 – Principal Industries below in this chapter.

Table 2.5
Supply of Business Sector Product, 1999-2011

(annual rates of change)

	1999-2000	2001-02	2003-07	2008	2009	2010	2011 Year	2011 First half	2011 Second half
Business sector product	7.5	-1.9	5.5	4.5	0.3	5.8	5.2	5.8	3.8
Gross capital stock	7.0	5.8	3.1	5.1	4.8	3.5	4.2	5.2	5.8
Labor input	4.1	-0.3	2.5	4.4	0.2	2.6	3.3	2.9	4.8
Total factor productivity	2.4	-3.4	2.7	-0.1	-1.4	2.8	1.5	1.7	-0.5
Civilian labor force plus foreign workers	4.0	1.1	2.1	2.7	2.1	1.6	1.1	-0.6	3.2
Nominal product per man-hour	7.6	-0.1	3.8	0.9	5.2	2.0	1.7	0.5	5.2
Return per man-hour	7.0	1.7	2.8	2.6	-0.3	4.7	2.0	1.7	-1.1
Unit labor cost	-0.5	1.8	-0.9	1.7	-5.2	2.6	0.2	1.2	-6.0
Rate of return to labor in business sector	71.0	73.0	68.5	70.8	67.2	68.9	69.0	-	-
Rate of return to gross capital (percent)	16.6	14.0	15.8	15.9	18.0	17.6	18.3	-	-
Capital/labor ratio	3.0	5.8	0.2	0.7	4.8	0.6	1.6	2.2	1.0
Gross capital stock/product ratio (level)	1.4	1.6	1.7	1.6	1.7	1.6	1.6	1.6	1.6
Nominal declared Bank of Israel interest rate	9.3	6.8	4.8	3.6	0.8	1.6	3.0	2.7	3.1
Corporate tax rate	36	36	34	29	27	26	25	25	25

SOURCE: Based on Central Bureau of Statistics data.

and displays the unit labor cost in the tradable manufacturing industry in comparison with the non-tradable construction, commercial, and hosting industries. Note that the service industries are very heterogeneous in their degree of tradability, and were therefore omitted from the analysis.

The data in the table indicate that the unit labor cost in manufacturing rose by an average of 2.8 percent over the past two years, and by even more this year. This was a more rapid rise than in the non-tradable group of industries. The moderate rise in unit labor cost in the non-tradable sectors made it possible to increase the number of employees in them quickly over the past two years, while the number of employees in industry remained unchanged during this period. The decline in manufacturers' profits and the diversion of labor inputs into the non-tradable sectors therefore explain a large proportion of the differences in growth rates between them, and the domestic trend in the composition of uses.

The increase in the cost of labor per output unit in the tradable manufacturing industry was steeper than in the non-tradable industries, thereby contributing to a diversion of labor input to those industries. A major factor was the shekel appreciation, which lowered production prices in the exporting industries.

There are two main explanations for the rapid rise in unit labor cost in the manufacturing industry. The first is that the proportion of workers in this industry with more than a high school education is higher than in the non-tradable sectors analyzed here (Table 2.6), and the unemployment rate of this group is very low,[16] and exerts upward pressure on the cost of labor in sectors in which such workers

[16] For example, see Figure 5.8 in Chapter 5 – The Labor Market, and in Table 2.7 in the manufacturing item.

Table 2.6
Unit Labor Costs and Product Growth Rate in Selected Industries, by Tradability

(annual rates of change, percent)

	Share of business sector product (%)	Share of employees with higher education (%)	Unit labor costs		Number of employees		Product	
	2011	2009	2009-11	2011	2009-11	2011	2009-11	2011
Tradable industry — manufacturing	20	45.2	2.8	4.0	0.5	0.7	5.6	1.5
Nontradadble industries	22	24.5	0.5	-0.4	3.6	3	6.2	5.6
of which: Construction	8	23.6	0.5	1.0	5.1	2.4	9	8.9
Trade, hotels and catering	14	25.3	0.4	-0.8	3.2	3.2	4.2	2.3

SOURCE: Based on Central Bureau of Statistics data.

are predominant. The second is that the nominal and real appreciation of the shekel cut the price of exports by 8 percent. As a result of low unemployment among the professional workers needed in the sector and competition for them from other sectors, manufacturers were unable to roll this effect over onto the workers. This was reflected in the past two years in a steep rise in unit labor cost relevant to industrial exports. A 15 percent increase in the shekel prices of imported inputs (which account for 40 percent of total industrial inputs) since mid-2009 also contributed to this, although this reflected mainly higher fuel and food prices, which are relevant to only small proportion of the companies.

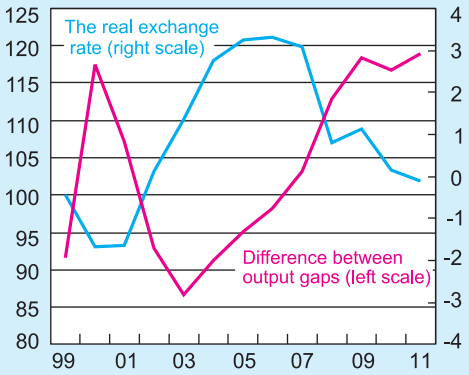
ii. Imports

Imports rose strongly this year, mainly in the first half, as a response to the rapid increase in domestic demand, following the narrowing of the output gap. The balance of trade this year was even, in contrast to last year and the years of prolonged growth, when the rise in imports also served the rapid expansion in exports of goods, and the balance of trade was positive. This situation is reflected in the ratio of production inputs to total imports of goods: the ratio was 72 percent in 2004-07, 68 percent last year, and this year it dropped to 64 percent. As a result of these background conditions, the increase in imports of capital goods (a 40 percent rise) and durable goods (a 15 percent rise) stood out.

3. SUPPLY, DEMAND, AND THE REAL EXCHANGE RATE

Growth in Israel was more rapid than in other developed economies, thereby causing a real appreciation in the shekel exchange rate until mid-year.

Figure 2.6
The Difference between the Output Gap in Israel and that of the OECD Countries, and the Real Exchange Rate using the PPP Coefficient, 1999-2011



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

The real shekel exchange rate is determined as equilibrium between long-term supply factors and cyclical demand factors. Changes in the real exchange rate stemming from demand factors reflect changes in the business cycle, and are therefore shorter-term than changes on the supply side. In recent years, demand in Israel has risen more rapidly than in most advanced economies. This was reflected in the Israeli economy's quicker approach to a zero output gap, despite some increase in the growth rate of potential output.[17] This process was the main cause of the real shekel appreciation over the past four years (Figure 2.6): during part of the period, booming demand exerted upward pressure on the price of non-tradable domestic goods and the price of the domestic component of tradable goods. In addition, by mid-2011 the narrowing of the output gap led to a widening of the interest rate gap with the US and Europe, as part of the Bank of Israel's measures to achieve price stability, and exerted pressure towards nominal shekel appreciation.

The supply factor, which is likely to affect the real exchange rate, is the difference between countries in the development of labor productivity in the tradable sectors, compared with the non-tradable sectors, as described in depth in Box 2.1 in the Bank of Israel 2010 Annual Report. The box showed that the depreciation in 1986-2008 occurred to a large extent because the rise in the productivity ratio between the tradable and non-tradable sectors in Israel was less than this ratio's rise in the US. It was also found that the real appreciation since 2009 is related to an opposite trend, among other things, which gained force as the economy approached full employment during most of the period, although it is still too early to assess these findings. It is possible that one of the instruments through which the increase in relative productivity in the tradable sectors contributed was its positive effect on the current account surplus, and through it – on the nominal and real appreciation.

In addition to the real causes described above, financial factors can also accelerate the trends in the real exchange rate, although only for a limited time, until other prices in the economy are adjusted. The short-term capital movements in recent years increased volatility in the nominal exchange rate, usually expressed through stronger real

[17] For further discussion of the potential output, see Box 2.2.

Developments around the world were reflected in a diversion of capital to countries considered "safe havens," and in a reversal of trend from nominal and real appreciation of the shekel in the first half of the year to depreciation in the second half.

appreciation. This led the Bank of Israel to purchase foreign currency for the purpose of countering these forces. During 2011, forces of this type exerted pressure towards a devaluation: restrictions on foreign investments in the short term, an increase in the economy's risk premium caused by geopolitical events, and the search by investors for a safe haven, given the worsening of the global debt crisis, caused a drop in net capital movements into the economy. The decline of such movements led the Bank of Israel to discontinue its foreign currency purchases. Domestic demand weakened during the year, the process of transition to a positive output gap (inflationary gap) came to a halt, and the interest rate gap narrowed slightly. This process may also have contributed to the reversal of trends in the nominal and real foreign exchange rate – from appreciation in the first half to depreciation in the second.

The cumulative real appreciation of the shekel in recent years had a negative impact on the profitability of some exporting industries, thereby contributing, together with other factors, to a decline in the trade surplus and the current accounts surplus.

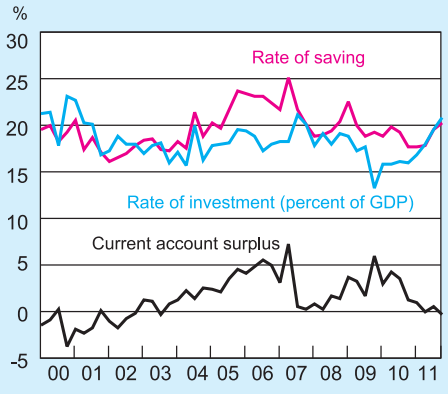
The real exchange rate is determined as equilibrium between a range of supply and demand factors, but itself affects activity, particularly foreign trade and the current account. Some of the real appreciation over the past four years reflected a return to the equilibrium level, and some was due to a change in the equilibrium level caused by the factors described above. In any case, the cumulative real appreciation in recent years had a negative impact on the profits of some export industries, and Israeli exports therefore suffered this year, beyond the effect of the global economic slowdown. In addition, the lower price of imports, compared with their domestic substitutes, contributed substantially to an increase in imports. These forces jointly contributed to a drop in the trade surplus and the current account surplus.[18]

4. SAVINGS, INVESTMENT, AND THE CURRENT ACCOUNT

The rapid rise in investment, given full utilization of the existing production capacity, was the main factor in the decrease in the current account surplus.

The current account surplus declined this year and reached a balance, after consecutive surpluses stretching back to 2003. Strong domestic demand, supported by the low real interest rate, brought the economy close to full utilization of its production capacity, and imports responded to expanded demand, helping to increase potential future production capacity. As part of this process, investment rose rapidly, so that its proportion of national income will match the economy's location in the business cycle. This rise was the principal cause of this year's decline in the current accounts surplus (Figure 2.7).

Figure 2.7
Rate of Saving, Rate of Investment, and the Current Account Surplus, 2000-11

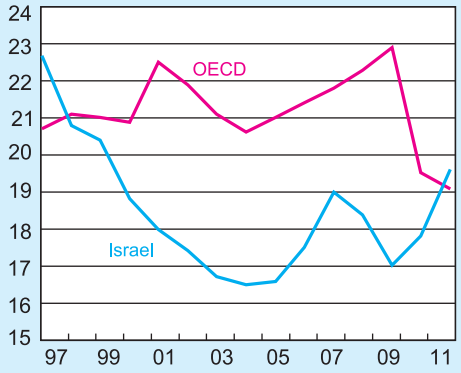


SOURCE: Based on Central Bureau of Statistics data.

[18] For further discussion of the real exchange rate and the current account, see Chapter 7 – The Balance of Payments.

The recurrence of a deficit in the public sector in the past three years and the drop in the private savings rate, encourage by the low interest rate, also contributed to this process.

Figure 2.8
Share of Fixed Investment in GDP, Israel and the OECD, 1997-2011



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

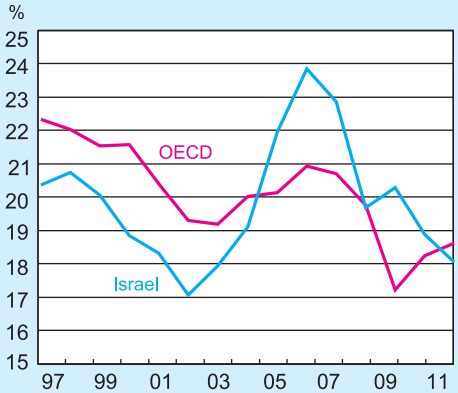
The decline in the current account surplus also contributed to the reversion of the public sector to a deficit in the past three years and a drop in the rate of private savings, abetted by the low interest rate.

The surge in fixed investments brought their proportion of GDP to a higher level than in the advanced economies (Figure 2.8), and was the main factor in the decline in the current accounts surplus. This development resulted from both the steep rise in investment in building in Israel – in contrast to the stagnation in this sector in many of the advanced economies – and the need to increase the capital stock, given utilization of the existing production capacity (see also Figure 2.2 and the discussion of investment in Section 2.A). The low interest rate abetted both of these developments, thereby contributing to the drop in the current accounts surplus. Investment in the principal industries also grew, supported by the prolonged real appreciation, which made imports of cpital goods cheaper.

In recent years, the savings side contributed to the economy's transition from surplus to balance in the current account. Public savings in the past three years were lower than they were in 2005-08, when there was a government budget surplus, as a result of rapid growth and fiscal consolidation. This change, and the decline in the private savings rate this year, brought national savings to a lower level than in the preceding years.

Figure 2.9 shows that the rate of private savings in Israel this year was lower than in the advanced economies – for the first time since 2004 – even though faster growth in Israel would seem to support an increase in the rate of savings in Israel, compared with those countries. The rate of savings this year was also lower than the rate during the preceding growth period, and an increase in private savings could have been expected to offset the decline in public savings over the past four years to some degree (the Ricardo effect). A reasonable assumption is that the main

Figure 2.9
Share of Private Investment in GDP, 1997-2011



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

explanation of this ostensibly surprising development in private savings lies in the prolonged low interest rate, compared with the preceding growth period, and compared with other periods of deficit in the public sector: cheap credit for households and the lower return on savings encouraged individuals to increase their consumption over the past two years, thereby weakening a possible channel for the emergence of the Ricardo effect.

Box 2.2

Potential output in Israel

The important role played by the output gap in economic analysis by policy makers, especially central banks, is derived from its status as an indicator of the state of the business cycle, and as a signal of inflationary pressures. It is therefore very important to find reliable estimates for the output gap for the purpose of determining monetary policy, among other things.

The economic literature defines the output gap as the difference between actual output and potential output, which is unobserved. It is therefore necessary to first define potential output. Okun (1962) defined potential output as the output that would have been achieved at equilibrium in the long term in a state of full employment, in a world with no inelasticity or other distortions (i.e., in a world of perfect competition). According to this approach, which is prevalent in the economic literature, the potential output is the maximum output that can be produced without generating inflationary pressure. This approach is consistent with the neo-Keynesian concept, which defines potential output as the output obtained when there is no inelasticity in the economy (prices and wages), even if the markets are still not be operating under perfect competition.

Beyond this difference between definitions of potential output and gaps in the output derived from them, there are other approaches to estimating the output gap, which can lead to different policy conclusions. For example, according to the approach that assumes that potential output reflects the long-term trend of actual output, which is completely independent of monetary policy measures, the only influence that these measures will have is to reduce the variance in output around the trend. On the other hand, a different approach holds that policy measures (for example, lowering the interest rate) can increase the potential output itself. Under this approach, it is important to take the time aspect into account in measuring the output gap, because if a positive shock, such as lowering the interest rate, accelerates economic activity and inflationary pressure in the short term, for example, investment may rise in the longer term, thereby boosting potential output, not merely actual output.

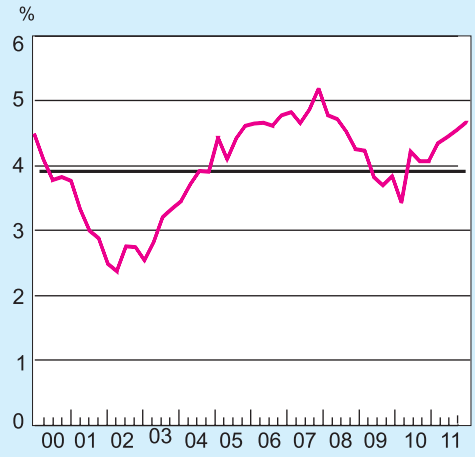
Most of the studies in this field assume that the permanent long-term shocks affect potential output, while temporary shocks are reflected mainly in the output gap. In other words, demand side shocks can be regarded as affecting actual output, and through it the output gap, while supply side shocks can be regarded as affecting potential output. At the same time, in many cases, an empirical distinction between the various shocks and their effect on economic variables is unclear.

The differences in concept and the various approaches to potential output have led to a broad range of methods for measuring it. Two frameworks are prominent: statistical (non-structural) methods and structural methods based on economic theory. In the first framework, the potential output is measured as a simple linear trend, or as an elastic smoothed trend (HP filter) of actual output data. These methods do not require much information and can be applied even if only a single data series is known. Their obvious disadvantage is the inability to distinguish between supply shocks and demand shocks, and the absence of an economic framework for interpreting the change in potential output. The second framework includes a long list of methods. One of the key ones is estimating potential output with the help of an aggregate production function (usually of the Cobb-Douglas type) that includes the production factors in the economy (capital and labor) and the technological change factor. One obvious advantage of the production function approach is its ability to measure the various contributions of production factors and overall productivity to the increase in potential output. This approach, however, requires a relatively large amount of information: an assumption about the production technology, data concerning the potential labor force (i.e., the potential labor input in the business sector) derived from the population growth rate, and labor market data about the labor input, unemployment rate, and the rate of participation. The addition data needed in order to calculate the potential output under this method are data for the capital stock, capital utilization, and overall productivity. In practice, most of these data are derived as an elastic trend of production function components (except for the exogenous assumption about the natural unemployment rate), which makes it somewhat difficult to separate the rise in actual output precisely into its cyclical element and the element stemming from a change in the potential output. Note that in many cases (for example, in the accepted application for calculating the potential output, displayed below), the output gap is not directly addressed in advance as a signal of inflationary pressure, i.e., an equation of this type derived from a Phillips curve connecting the output gap or the unemployment gap to inflation is lacking.

An updated examination of the growth rate in potential output and the change in its various components under the production function approach – the increase in overall productivity, the capital stock, and the potential labor force – according

to the model presented in the study by Menashe and Yakhin (2005) shows that the average annual growth rate in potential output in the business sector in 2010-11 was 3.9 percent[1] (see figure).

Rate of Growth of Potential GDP, 2000-11



SOURCE: Bank of Israel.

This long-term growth rate[2] changed during the course of the business cycle from 3.5 percent in 2000-05, most of which featured a slowdown in activity,[3] to an average of 4.6 percent during the boom years (2005-08) (see table). Potential output grew by an average of 4.4 percent in 2011, higher than its long-term average. This surplus growth is attributable to a large increase in the capital stock caused by the rapid growth of investments in the principal industries since the recovery from the 2008-09 global economic crisis. On the other hand, in the previous boom years, 2005-08, most of the growth in potential output in excess of the long-term rate resulted from an increase in the overall productivity element, reflecting a change in the composition of employment: more highly productive skilled workers were added, especially in the high-tech industries, which recovered from the effect of the crisis at the beginning of the decade, while the proportion of security workers, whose measured productivity is lower,[4] fell – among other things, due to the improvement in the security situation. The cyclical character of potential output, as reflected in the figure, highlights the problem in estimating it, which stems from the difficulty of separating the two components of the change in output: the cyclical part and the part resulting from a change in potential output. This difficulty stands out, given the assessment that the estimated potential output

[1] The average annual growth rate in potential output in 1986-2011 was higher, about 4.9 percent, but the growth rate of per capita output did not change in the 1990s and the following years, because most of the decline in the growth rate of potential output reflects slower growth in population and the labor force, compared with the high rates that prevailed in the 1990s, following the massive wave of immigration from countries that were formerly part of the Soviet Union.

[2] The long-term growth rate of actual GDP in 2000-11, which includes the output of public services and housing services, not just business sector product, varied around an annual average of 3.6 percent.

[3] By its nature, the rate of growth in actual business product is more volatile, and is correlated with the business cycle more than the rate of growth in potential output.

[4] For further discussion, see Chapter 2 of the Bank of Israel 2008 Annual Report, Box 2.1, "The change in overall productivity – technological improvements or pro-cyclical factors," pp. 63-67.

Increase in Business Sector Product, Actual GDP, Potential GDP and its Components, 2000 to 2011

(annual averages, percent)

	Actual increase in business sector product	Increase in potential business sector product	Increase in total factor productivity	Increase in labor force	Increase in capital stock
2000-11	3.9	3.9	1.1	2.2	4.1
2000-05	1.1	3.1	0.5	2.1	3.6
2006-08	5.0	4.6	1.7	2.4	4.0
2009-10	4.3	3.9	1.3	2.1	3.7
2011	4	4.4	1.3	1.9	5.6
2011/I	5.5	4.3	1.3	1.8	5.4
2011/II	3	4.4	1.3	1.9	5.5
2011/III	4.3	4.5	1.3	2	5.6
2011/IV	3.4	4.6	1.3	2	6

SOURCE: Bank of Israel.

actually reflects the development of the output elements over several years, and is not an estimate of output at a stable long-term equilibrium.

The growth rate of potential output may slow down in the coming years, according to demographic projections, which predict a drop in the population growth rate, assuming that the populations with less participation in the labor market (ultra-Orthodox and Arabs) do not change their behavior significantly. If we assume that the growth rate of the working-age population falls from 1.6 percent in 2011 to 1.2 percent by the end of the decade, the growth rate of potential output is liable to drop 0.6 percent, leaving an annual average rate of 3.3 percent. This assumes that the other factors in the production function do not change with respect to their long-term growth rate (measured as the annual average during 2000-11). At the same time, it is possible that policy may result in a higher proportion of educated workers, and encouragement of research and development could result in a faster rise in total productivity in the long term.[5]

Sources:

Okun, A. (1962): "Potential GNP: Its Measurement and Significance," American Statistical Association, Proceedings of the Business and Economic Statistics Section: 98 103 Washington.

Menashe, Y. and Yakhin, Y. (2005): "Mind the Gap: Structural and Nonstructural Approaches to Estimating Israels Output Gap," *Israel Economic Review*, Volume 2, No. 2.

[5] For quantification of the effect of policy variables on productivity in Israel, see Box 2.1 in the Bank of Israel 2007 Annual Report.

5. PRINCIPAL INDUSTRIES

I. Main developments

In 2011, manufacturing output grew by about 2 percent. Excluding the chemicals industry, the rate of growth in manufacturing output this year was similar to that in 2010, though it was lower than the average for 2004–07.

2011 saw a handsome growth rate in domestic demand, coupled with a slowdown in overseas demand, which affected the character of economic growth. The increase in domestic demand contributed to a process of diverting employees from the tradable to the non-tradable sectors, while at the same time essentially eliminating the current account surplus. The following by industry analysis complements the analysis of the macroeconomic data. This analysis makes it possible to obtain a good picture of the various sectors, including their problems and difficulties, which macroeconomic analysis sometimes fails to identify, and which a wise policy is likely to help solve, thereby strengthening growth.

The manufacturing industry, which is tradable, grew by a moderate 2 percent this year, as a result of lower overseas demand for its output, a deterioration in terms of trade, and the cumulative effect of the stronger shekel. The difference between the rapid growth in manufacturing in 2010 and the slowdown in 2011 is also due to fluctuations in the activity of key export sectors, especially fluctuations in pharmaceutical industry production, which shot up by over 25 percent in 2010, and dropped by 10 percent this year. Investments in the manufacturing industry were particularly high this year, a result of a low interest rate, appreciation in the exchange rate, and the rapid growth in recent years, which increased the utilization of capital. The large investments in manufacturing are an expression of its continued ability to operate under competitive conditions, which are becoming more difficult as production costs rise with the growth of the economy and continued globalization.

The price of housing continued to climb this year for the fourth consecutive year, while the rate of change went from a 14 percent rise at the beginning of the year to an actual decrease at year-end. Development in the construction industry this year was in line with the general economy's development, which was affected by the interest rate hike in the first half of the year and the worsening of the crisis in Europe in the second half. Like last year, both demand side and supply side measures were also taken this year to cool the housing market, including the establishment of National Housing Committees (NHC, or "*vadalim*"). Output in the sector grew 9 percent this year, the same as last year, and this year productivity and labor productivity also rose. The increase in activity in the sector was accompanied by continued growth in demand for workers and in the number of Israelis employed in the sector. The demand was only partially met, however, and the shortage of workers was not reflected in a significant rise in wages. The partial response of the supply of workers should be allowed to take its course in order to cause higher wages, thereby promoting technological progress. The increase in activity over the past two years was financed by housing purchasers, i.e., through mortgages, not through direct credit to contractors, leaving the contractors very dependent on demand for housing and quick sales.

Table 2.7
Features of the Principal Industries, 2006-11

(rates of change, at constant prices)

		2011 compared with 2010				2006-10, annual averages					
	Industry shares[a] (%)	GDP	Labor input[b]	Capital stock[c]	Real wage per employee post[d]	GDP	Labor input	Capital stock	Total factor productivity	Labor productivity	Real wage per employee post
Manufacturing	20	1.9	1.0	3.3	-0.2	4.2	0.0	5.3	2.4	4.2	0.0
Agriculture	3	2.0	-4.6	2.0	-0.3	0.1	0.0	1.8	-0.6	0.1	0.8
Transport and communications	10	6.1	5.9	4.7	0.6	5.6	1.8	3.7	2.9	3.8	-1.3
Construction	8	8.9	2.9	6.4	1.4	4.4	3.9	5.9	0.2	0.5	0.9
Electricity and water	2	13.5	14.5	1.1	0.4	3.6	1.8	1.3	2.0	1.8	0.9
Trade and business services[e]	61	4.7	3.1	7.1	-0.2	3.9	4.5	6.3	-1.1	-0.6	0.0
Business sector product based on the principal industries	100	5.1	2.8	4.0	-0.3	4.1	3.2	3.9	0.5	0.9	-0.3

[a] Including imputed banking services, so that the total of the industries is not 100 percent.

[b] Labor input in hours of Israelis, foreign workers, and Palestinians,.

[c] At the beginning of the year.

[d] Not including Palestinians. From 2003, not including foreign workers.

[e] Including hotels and restaurants and personal and business financial services.

SOURCE: Based on Central Bureau of Statistics data.

Output of the infrastructure industries grew 7.5 percent this year, and accounted for 13 percent of business product. Most of this growth was in the electricity and energy industries – a result of the natural gas discoveries and activity related to development of the gas fields. Growth in the transportation industries matched the overall growth of the business sector.

Infrastructure investment grew 17 percent in 2011, compared with 2010, and accounted for 20 percent of investment in the principal industries. Prominent rises were posted in the communications and energy (oil and gas) industries, a result of the investments in the gas fields discovered in Israel, while investment in land transportation (roads and railways) dipped slightly.

Trade and services product grew 4.2 percent in 2011, following 6.3 percent growth in 2010, and accounted for 57 percent of business product. Output in these industries grew relatively rapidly in the first half of the year, while growth in the second half was much slower.

II. Developments in selected industries

a. Manufacturing

(i) Current Developments

Manufacturing output is a key element in economic activity. While it accounts for only one fifth of business product, it is an important growth engine for the economy, and its main source of foreign currency. The opening of the economy to competition from imports had a negative impact on the volume of manufacturing activity, but at the same time contributed to efficiency in industry. Continuation of this process is important, because a rise in the productivity of manufacturing workers frees up workers for employment in other sectors of the economy, and for continued growth.

Manufacturing output rose 2 percent in 2011; excluding chemicals, whose output is volatile, manufacturing output grew 3.7 percent, about the same as in 2010, but lower than the average growth rate in 2004-07. The slow growth of manufacturing output (in particular given the impressive growth of the business sector) reflects a combination of slow global demand, appreciation of the shekel and deterioration of the terms of trade, and a drop in output in the chemicals and electronic components industries, in which the decline was partly a reflection of fluctuations in output around a growth trend.[19] The steep drop in the unemployment rate and the slowing of the increase in the rate of participation in the labor force raise the possibility that supply constraints also contributed to the slowing of industrial output. However, the drop in the number of work hours per manufacturing employee and a moderate rise in the number of those employees in comparison with the economy as a whole support the assessment that

[19] Extreme volatility in the activity of some industries makes it difficult to analyze their activity (in real time), since it is possible that the decline in output reflects only fluctuations around a growth trend.

a constraint in the supply of workers was not an important factor in the slowing of activity this year.[20]

Local demand contributed to growth in manufacturing industries that produce primarily for the local market. In contrast, demand abroad was low throughout the year.

The growth rate of domestic uses (excluding import-intensive components)—led by current domestic private consumption,—which serve as indicators of the potential demand seen by the domestic manufacturing industry, was strong this year. As such, the uses contributed to growth in manufacturing industries whose production is designated principally for the domestic market.

However, an examination of how these indicators developed over the year, indicates a significant slowing of demand in the second half (Table 2.8). In contrast to domestic demand, overseas demand (displayed in Table 2.8 through the imports of OECD countries) was low throughout the year; the slowdown worsened in the second half of the year, reaching a virtual standstill.

It appears that on the macro level, the supply of labor did not constitute a constraint on manufacturing production this year.

On the supply side, it is possible that the drop in unemployment to historically low levels made it difficult to recruit workers for industry; however, it appears that such difficulty played no significant role in the slowdown in the industry. The number of workers in manufacturing is relatively small, only 15 percent of total business-sector employment, and therefore the labor supply available to industry in many occupations is more elastic than the aggregate labor supply in the economy. This is not the case in occupations in which manufacturing is the main employer, or at least accounts for a significant share of those employed in them. For example, it is possible that the shortage of engineers, 35 percent of whom are employed in manufacturing, hampered its growth. Regardless of the above, the drop in the number of work hours per manufacturing employee supports the assessment that at the macro level, the labor supply did not constitute a constraint on manufacturing output this year.

Wages are one of the principal supply factors in manufacturing although the level of activity in manufacturing does not have a major effect on wages.

The nominal wage of manufacturing workers rose 4 percent this year. In that industry, wages are a key supply side factor, but manufacturing activity has little influence on workers' wages, because employees account for a relatively small proportion of total employees in the economy, and because broad collective wage agreements (in the economy as a whole) play a decisive role in determining wages in manufacturing. One example of this is the agreement on a 6 percent hike in the minimum wage in July this year. Fifteen to twenty percent of industrial employees earn the minimum wage plus or minus 20 percent, so the change in the minimum wage is expected to affect a broad group of industrial workers, whether they earn the minimum wage or close to it. Similarly, the agreement on improving the wage terms of contractor employees is expected to exert pressure towards improvement of wage terms in industry, and to raise salary expenses in the sector.

As in previous years, it appears that the capital stock was not a factor hampering production this year. Since the mid-1990s, the Israeli economy has been considered

[20] Were recruitment of new workers an effective constraint on industry, we would expect to see a rise in the number of work hours per employee. Work hours per employee are also likely to rise when demand increases rapidly and output rises accordingly, as occurred in 1999-2000, 2006-07, and 2010; similarly, the number of work hours per employee is likely to fall when demand drops, a situation evident in the second half of the year.

Table 2.8
Indicators of Manufacturing Activity, and the Background Conditions, 2004-11

(annual change, percent, unless stated otherwise)

Indicators of manufacturing activity and the background conditions	2004-07	2008	2009	2010	2011	2011 First half	2011 Second half
Manufacturing share of business sector product	22.1	21.9	21.2	21.1	20.4	-	-
Manufacturing production	6.2	7.4	-6.0	7.8	1.9	3.9	3.9
Manufacturing production excl. chemical industry (23-24)	5.3	-0.2	-5.5	4.0	3.7	5.8	-3.5
Employment in manufacturing	2.5	1.9	-4.7	1.8	1.6	1.7	1.1
Total labor input (hours)	2.4	-0.2	-6.6	2.4	0.8	1.0	-1.0
Hours worked per employee	0.0	-2.0	-2.0	0.6	-0.8	-0.8	-2.1
Nominal cost per man-hour	3.2	4.4	2.6	4.1	4.2	4.6	3.6
Labor productivity	3.7	7.6	0.6	5.3	1.1	3.0	5.0
Terms of trade (export prices divided by import prices)	-3.1	-5.4	11.0	-5.7	-5.2	-5.2	0.6
Real effective exchange rate[a]	2.1	-10.7	1.8	-5.1	-1.4	-3.3	3.2
Inter-industry standard deviation of rate of change of added value	6.3	9.2	10.5	7.3	5.6	-	-
Indicators of demand							
Domestic uses excluding import-intensive components[b]	3.4	1.6	2.9	2.5	4.6	6.1	4.2
Private consumption excl.durables	4.1	1.6	2.6	4.4	3.4	4.1	1.6
Goods imports of OECD countries (volume)	7.4	-0.3	-13.8	12.5	4.9	2.8	0.4
Indicators of supply							
Unemployment rate (actual rate)	8.8	6.1	7.5	6.6	5.6	5.8	5.4
Unemployment rate in skilled manufacturing occupations (actual rate)[c]	4.0	4.3	5.6	4.1	4.0	-	-
Unemployment among engineers (actual rate)[c]	1.3	1.1	3.6	2.0	1.1	-	-
Ratio of job seekers to vacancies in skilled manufacturing occupations	-	-	4.5	2.6	1.5	1.6	1.5
Ratio of job seekers to vacancies among engineers and architects	-	-	1.8	0.9	0.6	0.6	0.6
Capital/labor ratio in manufacturing, at constant prices[d]	1.3	4.6	9.7	1.1	3.9	-	-

[a] A positive sign means real depreciation, and a negative sign, real appreciation.

[b] Domestic uses excluding investment in machinery, equipment and vehicles, and excluding consumer durables.

[c] Excluding those seeking work for more than one year, and is thus lower than the rate that would be shown if all job seekers were included.

[d] Annual average

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

an attractive target for investment (except for the period of the second intifada). It therefore cannot be assumed that capital constraints are having a negative impact on long-term development of manufacturing. In the short term, the level of capital stock can constrain the supply side, especially when demand rises sharply. However, there is no reason to assume that this was the case this year.

The financial crisis that began in 2008 increased the risk premium and cost of raising capital for long-term investments of the type needed in industry. The crisis in Europe, which intensified this year, aggravated the situation, and continues to hamper the raising of capital for investments. In these conditions, it is very likely that at the micro level, small enterprises without strong economic backing find it difficult to raise capital for investments, especially when the banking system is their main source of credit. In contrast to large firms, small enterprises usually lack access to non-bank

The financial crisis raised the risk premium and the cost of raising capital for long-term investment, the type required in manufacturing. Nonetheless, on the macro level there did not appear to be a shortage of investment.

Table 2.9
Capital Stock per Employee Post, 2004-11

		Share of investement in GDP (average, percent)[a]				Rate of change in capital stock per employee post in manufacturing				
						In annual terms				Cumulative, over period
	Industry code	2004-07	2008-09	2010	2011	2004-07	2008-09	2010	2011	1995-2011
Manufacturing		16	15	13	21	1	8	1	4	132
Mining and quarrying	(10-13)	10	7	12	33	-5	2	0	12	72
Food, beverages and tobacco	(14-16)	18	15	16	17	4	5	4	7	100
Textiles,clothing and leather	(17-19)	10	9	10	13	6	9	0	3	222
Wood products and furniture	(20,36)	13	12	13	15	5	21	6	7	380
Paper, printing and its products	(21-22)	16	29	23	25	-6	8	1	2	43
Chemicals	(23-24)	13	12	9	17	0	0	1	5	59
Rubber and plastic	(25)	26	24	21	22	3	2	2	1	74
Non-metallic mineral products	(26)	19	18	25	27	2	10	1	3	121
Basic metals	(27)	25	22	17	26	5	14	-1	0	197
Metal products	(28)	10	13	14	15	-5	17	2	1	77
Machinery, equipment and motors	(29-31)	8	6	6	8	-2	0	-1	1	80
Electronics	(32-34)	20	20	13	31	2	10	-1	3	235
Transport equipment	(35)	12	10	12	12	-3	2	10	8	51

[a] The investment/GDP ratio in 2004-08 was calculated at current prices, and in 2009-11 at constant prices (except for total manufacturing), because of lack of data. As GDP prices rose faster than did investment prices, the data for 2009-11 at current prices are apparently lower than those shown in the table.

[b] At constant prices. The value of the capital stock to labor costs rose much more slowly, reflecting the reduction in the price of capital relative to the price of labor.

SOURCE: Based on Central Bureau of Statistics data.

sources of credit; however, at the macro level, we detect no shortage of investments in manufacturing, and the per-worker capital stock in the industry continued its upward trend this year. On the contrary, investments in manufacturing surged this year, and the ratio of investments to output reached a record 21 percent. The low interest rate and the shekel appreciation against foreign currencies, which made machinery imports cheaper, contributed to the extensive expansion in investments. Alongside massive investments in the electronic components sector (an investment by Intel in a new production line) and the mining and quarrying sector (mostly investments related to natural gas exploration and construction of infrastructure for use in the already discovered gas reservoirs), large investments were recorded this year in most manufacturing sectors. The high level of investments and a slow rise in the number of employed workers in manufacturing (no actual change, in comparison with 2008) were reflected in a significant increase in the per-worker capital stock. Its rapid rise has continued since 2008 (other than last year), after having slowed in 2004-07, due to low utilization of the capital stock during the recovery from the 2001-03 recession.

A long-term examination of the development of the per-worker capital stock in manufacturing, compared with its development in the economy as a whole, shows impressive growth, indicating the latent potential of Israeli industry, even in the globalization era. Growth in capital stock in manufacturing is an expression of the long-term structural change taking place in the economy: capital is replacing some production workers, thereby contributing to a rise in output per worker. This process enables the manufacturing industry to maintain itself, despite competition from countries in which the cost of labor is significantly cheaper than in Israel.

There was real appreciation of the shekel during the first half of the year, which was consistent with the trend since 2008 that has limited growth in manufacturing.

The fact that fluctuation between industries this year was not significantly different from the average fluctuation in 2004-07 reflects the relatively stable environment in which industry operated for most of the year, but the background conditions were less favorable. In the first half of the year, there was real appreciation of the shekel, continuing the trend that prevailed since 2008. While some of the shekel appreciation in recent years is attributable to the success of industry in increasing its exports and contributing to the current account surplus, the shekel appreciation was also a result of factors outside manufacturing, and from this perspective, background conditions were less favorable. A three percent depreciation occurred in the second half of the year. This is a slight improvement in the background conditions facing industry, but it may also reflect the slowdown in manufacturing exports and the elimination of the current account surplus.

Raw material prices climbed almost 15 percent this year, following a 5 percent rise in 2010, and were also a background factor retarding growth in manufacturing. The rise in raw material prices caused Israel's trade terms to worsen by over 5 percent in 2011, reaching the same low level that prevailed in 2008. Higher manufacturing output prices, which were up 8 percent this year and 12 percent over the past two years, almost completely compensated for the increase in input prices, but it made manufactured goods relatively more expensive, thereby hampering growth of the industry, especially at a time of weak global demand.

The social protest was another background factor that limited growth in manufacturing.

Another background factor that retarded growth in manufacturing this year was the social protest. The social protest and its accompanying consumer boycott forced domestic manufacturers to lower the prices of certain products and caused them to fear to raise the prices of others. It is important to note that some of the demands for lower prices that arose as part of the social protest appear justified, and reflect the public's perception that monopoly power was being used to set high prices that detract from the "consumer surplus".[21] The Trajtenberg Committee's recommendations for a total elimination of import taxes (except for the agricultural and auto sectors) and expectation of a through reconsideration of import tax policy in the agricultural sector by the Kedmi Committee[22] are likely to change the manufacturing industry's work environment, and to bolster competition in sectors that currently receive import tax protection. As of now, the government has decided to implement only some of the Trajtenberg Committee recommendations concerning import taxes; import taxes on products competing with Israeli industry will be cut by only 25 percent during two years, starting in 2013. The Kedmi Committee recommended partial removal of import taxes on food products, such as beef, lamb, and tuna, but these taxes still remain high.

(ii) Developments in the various manufacturing industries

The industries that produce primarily for the domestic market grew this year by a moderate rate of about 1.5 percent.

The industries that produce primarily for the domestic market grew by about 1.5 percent this year while the number of workers employed in them remained stable (Table 2.10). These industries, which by definition do not export, in general benefit from natural protection against competition from imports, and in some cases also from government protection.[23] As a result, they are particularly exposed to fluctuations in local demand, since the natural protection that blocks competition from imports also makes it difficult to export products produced by these industries. Nonetheless, it appears that during the last decade the volatility in the production of the industries that produce primarily for the local market has been less than that in the industries producing both for the local market and for export (or primarily for export). This outcome is a result of the nature of the products produced by local-market oriented industries, which are largely for current consumption, and therefore even when the calculation of volatility in production does not take into account the years 2008 and 2009 when there was a major decline in global trade, the relatively low volatility remains.

[21] The "consumer surplus" is the benefit in monetary terms derived by a consumer from the difference between the benefit he receives from what he buys and the price that he paid for it.

[22] The Kedmi Committee for examining competition and prices in food and consumer products was established in June 2011, following the rising protest against high food prices, especially the increase in dairy products prices.

[23] Natural protection refers to barriers to competition from imports as a result of the nature of the product or the nature of demand. Examples include a short shelf life and high transportation costs, kashrut and language barriers. Government protection can involve a high tariff, import quotas or stringent regulatory requirements.

Table 2.10
Developments in Manufacturing Sectors by Target Markets

(rates of change, percent)

	Share of manufacturing 2007	Share of employee posts 2007		Annual growth 2004-11	Standard deviation of rate of change 2004-11	2010	2011
	(percent)						
Total manufacturing	100	100	Production	4.4	5.0	7.8	1.9
			Number of employees	1.3	2.6	1.8	1.6
Domestic market oriented[a]	28	45	Production	1.1	3.1	3.8	1.4
			Number of employees	1.1	2.0	2.0	0.3
Mixed[b]	22	20	Production	3.1	7.1	11.6	8.2
			Number of employees	2.1	3.2	3.1	4.5
Export oriented[c]	49	34	Production	7.1	7.3	8.2	-1.1
			Number of employees	2.8	3.2	2.2	2.6

[a] Three-digit industries whose export sales do not constitute more than 25 percent of their total sales.

[b] Three-digit industries whose export sales constitute betyween 25 percent and 50 percent of their total sales.

[c] Three-digit industries whose export sales constitute more than 50 percent of their total sales.

SOURCE: Based on Central Bureau of Statistics data.

The output of the food, beverage and tobacco industry, in which the volatility of demand (and of production) is relatively low, constitutes more than 40 percent of the output of industries producing primarily for the local market. Some of its products, such as milk, fresh meat and fish, enjoy protection from both quotas and natural protection. Thus, for example, the kosher food demands of the large supermarket chains, which is a form of natural protection (originating in the nature of the Israeli public's demand[24]) requires potential competitors abroad to devote special attention to the Israeli market and thus makes it difficult for importers, especially small ones, to compete with local producers. These factors provide the motivation for multinational companies to partner with local manufacturers and to produce international brands in Israel. While this is advantageous for local manufacturers, these arrangements reduce competition and consumer surplus for some food products.[25]

[24] Essentially, the demand for kosher products by a fairly large proportion of the population has created an equilibrium in which most of the large supermarket chains only sell kosher products.

[25] For a discussion of the price differences between Israel and the OECD countries, see p. 33 of Recent Economic Developments 132, September-December 2011.

Table 2.11
Manufacturing Production by Technological Intensity, 2004-11

(rates of change)

	Industry share in manufacturing[a] (2007)	Industry share, by employee posts (2007)	2004-07	2008	2009	2010	2011
	(percent)						
Manufacturing production	100	100	6.2	7.4	-6.0	7.8	1.9
Low-tech industries	20	35	2.1	-1.4	-5.2	2.3	1.0
of which: Food, beverages and tobacco	10	15	1.8	-1.4	-1.4	2.7	3.0
Textiles, clothing and leather	3	5	-0.3	-3.2	-13.8	1.4	-5.3
Printing and publishing	4	7	2.8	-3.0	-9.4	-2.4	-2.6
Medium-low-tech industries	23	27	4.9	1.9	-14.7	13.8	6.0
of which: Sand mining and quarries	3	1	-0.5	0.6	-10.3	12.1	-7.0
Rubber and plastic	5	6	7.3	7.1	-12.2	15.8	6.8
Metal products	9	13	6.3	1.3	-19.3	17.7	11.1
Medium-high-tech industries	16	13	2.8	6.6	-8.7	4.1	4.1
of which: Chemicals (excl. pharmaceuticals)	10	5	9.4	10.0	-8.9	11.5	2.0
High-tech industries	40	25	-0.4	16.8	-0.8	8.8	-0.4
of which: Electronic components	6	5	11.3	-2.1	32	-1.4	-6.1
Electronic communication equipment	5	4	6.4	-2.9	-13.5	-3.8	7.5
Control and monitoring equipment	14	9	16.3	7.8	-0.5	8.0	5.4
Pharmaceuticals	9	3	8.5	57	-6.8	27	-10.6

[a] By added value.

SOURCE: Based on Central Bureau of Statistics data.

The printing and publishing industry also benefits from natural protection in the form of the use of the Hebrew language. However, unlike the food industry, where the rate of growth in demand has been slightly higher than population growth, the printing industry is suffering from the changes occurring in the public's consumption habits as a result of the increased use of the Internet as a source of information and for the transfer of content. Since 2004, the output of the printing and publishing industry has shrunk by about 10 percent and its labor input has fallen by close to 15 percent, although the number of employees in the industry has remained almost unchanged.

The total production of the export-oriented industries, which together constitute about 50 percent of the manufacturing industry, fell this year by about one percent (Table 2.10), a result of the drop in demand abroad and the volatility in the production of certain industries which have significant weights in production. Thus, for example, the output of the pharmaceuticals industry fell by more than 10 percent this year, after an increase of more than 25 percent in 2010. The number of employees in the pharmaceutical industry grew this year by about 5 percent, which is an indicator that the drop in production mainly reflects volatility around an upward trend, rather than a change in trend. The output of the electronic components industries fell this year by about 6 percent, primarily as a result of the temporary slowdown in the output of the Intel factory in Kiryat Gat. The growth in the output of the monitoring and control equipment industry and the airplane and ship industry was lower than during the period 2004–07, which was partly the result of a dip in foreign demand.

iii. The return on capital and the profitability of the manufacturing industries

The return on capital in manufacturing, expressed as a percentage of the capital stock less scrap value, stood at 12 percent this year, which is similar to its level during each of the four previous years.

The return on capital in manufacturing, expressed as a percentage of the capital stock less scrap value, stood at 12 percent this year, which is similar to its level during each of the four previous years. The increase in output prices and the small increase in labor productivity almost completely offset the effect of the increase in the nominal hourly wage in manufacturing and the deterioration in the terms of trade on the return on capital. Table 2.12 presents the return on capital (less scrap value) as a percentage of the capital stock in a number of manufacturing industries (as of 2008). The table is based on the capital stock database of manufacturing built by the Bank of Israel[26], which makes it possible to examine the level of profitability for the various manufacturing industries on the two-digit level (macro-industry level), even though the figures suffer from a lag of about 3 years due to the lag in publication of return on capital figures for the manufacturing industries on the two-digit level.

The return on capital relative to the capital stock was particularly low in the textile, clothing and leather industry and in the paper and publishing and printing industry.

The table clearly shows the low return on capital relative to the capital stock in the textile, clothing and leather industry (industries 17–19) and of the paper, printing and publishing industries (industries 21 and 22). These low levels are not surprising and can explain the contraction of these industries over time.[27] The textile, clothing and leather industry suffered a fatal blow in the local market, as a result of the exposure of the economy to imports during the second half of the 1990s and also in the export market as a result of the globalization process and the loss of the industry's advantage from bilateral trade agreements. The output of the textile, clothing and leather industry and the industry's capital stock continued to contract this year as well and its weight in total manufacturing output stood at only about 2 percent.[28] The return on capital relative to the capital stock in the paper, publishing and printing industry is not sufficient to maintain the level of the capital stock. A higher level of return on capital relative to its stock (though still low relative to other manufacturing industries) can be found in the rubber and plastic industry and non-metallic mineral products industry. Rubber and plastics is a relatively large industry that exports about 45 percent of its production. As a traditional industry that competes in international markets, the industry must maintain low profit margins. Competitive imports are significant in the rubber and plastics industry, such that also in the local market the industry must keep its profit margins relatively low and from this point of view the real appreciation

[26] For a description of the how capital stocks are calculated, see Box 1.6, page 46 of the Research Department section of the Bank of Israel Annual Report, 2001

[27] Although the paper and paper products industry (industry 21) grew at a slower rate during the period 2003–11, this followed a contraction during the years prior to 2003 and in any case its weight in total manufacturing continued to fall during this period as well.

[28] The combination of an absolute decrease in the capital stock and an increase in the capital stock per worker (Table 2.9) is possible since the textile, clothing and leather industry has contracted at a rapid rate.

Table 2.12
Return to Capital, after Deducting Scrap, as Percent of Capital Stock in Selected Manufacturing Industries, 1998-2008

(percent)

	Industry share in manufacturing[a] (2007)	Share of doemstic sales to total sales (2007)	Standard deviation of rates of change in production (1998-2011)	Return to capital[b]				
				1998-2000	2001-03	2004-06	2007	2008
Manufacturing	100	55	5	12	9	10	12	12
Food, beverages and tobacco	10	92	2	7	8	9	15	17
Textiles, clothing and leather	3	43	5	7	4	4	3	1
Wood products and furniture	2	82	7	13	9	12	10	11
Paper, printing and its products	5	93	3	14	9	-3	-1	-3
Chemicals (excl. pharmaceuticals)	10	60	2	11	6	15	16	-
Rubber and plastic	5	54	6	9	8	8	7	4
Non-metallic minerals	3	88	7	6	4	3	6	5
Basic metals	2	84	8	6	2	10	16	9
Metal products	9	63	9	12	13	13	15	12
Electronics	25	26	12	26	11	9	8	4
Transport equipment	6	38	6	8	10	11	14	9

[a] By added value.

[b] Return to capital, after deducting scrap, as percent of capital stock. For details of the calculation of capital stock see Box 1.6, page 46 of the Research Department section of the Bank of Israel Annual Report, 2001.

SOURCE: Based on Central Bureau of Statistics data.

has reduced its ability to compete in foreign markets. It is interesting that despite the appreciated level of the shekel in recent years (relative to the mid-2000s), the production of the rubber and plastics industry has grown at a significant rate during the last two years, such that its level in 2011 was higher than its peak in 2008 by close to 10 percent.

There was a high return on capital in the food, beverage and tobacco industry.

In contrast to the low level of return on capital in the textile, clothing and leather, paper and printing and rubber and plastics industries, it is interesting that the return on capital in the food, beverage and tobacco industry was high in 2007 and 2008. In theory, one might have thought that this industry, which is considered to be traditional and is characterized by a low level of volatility in demand and output, would have a low return on capital; however, it is possible that the natural and government protection, as well as the structure of the market for certain food products (and also the market for beverages) contributed to the relatively high return on capital in this industry. In 2011, the prices of imported raw materials used as input in the food industry rose by more than 15 percent (in shekel terms) and thus they returned to the record levels of 2008. The output prices of the food, beverage and tobacco industry were higher by about 5 percent this year than in 2008. The nominal wage in the food, beverage and tobacco industry has grown during the last three years by a little more than 10 percent, but in view of the share of labor in total production costs and the changes in the prices of raw materials and in output prices, it appears that the return on capital in the industry did not decline this year relative to 2008 and perhaps even increased.

The chemicals industry (excluding pharmaceuticals) also enjoyed a high return on capital.

The chemicals industry (without pharmaceuticals) also exhibited a high return on capital. The oil refining, petrochemicals and synthetic fibers, whose production is mainly destined for the local market, accounts for more than 65 percent of the chemical industry (without pharmaceuticals) according to sales and more than 40 percent according to output. The rest of the chemical industry (without pharmaceuticals) includes the fertilizer and pesticides industry and other chemical industries (cleaning materials, cosmetics, paints and other chemical products). We are unable to estimate the return on capital as a percentage of the capital stock for the oil refining industry separately, but in view of the lack of competition in the industry, the large weight of oil refining and petrochemicals in the chemical industry (without pharmaceuticals) and the composition of the rest of the sub-industries within it, it is reasonable to assume that the oil refining and petrochemical industry had a high return on capital.

(iv) Analysis of long-term developments in the manufacturing industries from an international perspective

During the last three decades, there has been a long-term decline in the proportion of total workers in the economy who are employed in manufacturing.

The last three decades have been characterized by a continuation of the long-term downward trend in the share of manufacturing in total employment and a more gradual decline in the share of manufacturing in total business output. These downward trends are a reflection of two main factors: the first is the process of development and growth in which new production technologies and the accumulation of capital release manpower from manufacturing industries which then becomes available for the service industries, and the second is the process of globalization which operates to shift labor-intensive manufacturing to the emerging market economies and reduce the share of manufacturing in the advanced economies. These two factors have been described in previous Bank of Israel annual reports in the context of specific manufacturing industries, particularly in view of the process to open the economy to imports that took place during the 1990s.[29] In what follows, we will focus on the decline in the number of employees in manufacturing and the similarity between the trend in manufacturing in Israel and that in the advanced economies.

The decline in the proportion of workers in manufacturing industries is not unique to Israel and is a long-term phenomenon that is recognized in the literature.

During the second half of the 1970s, about 25 percent of total employees in Israel were employed in manufacturing, in comparison to the current level of less than 15 percent. This decline is not unique to Israel and reflects a long-term trend that is well-known in the literature, whereby once a certain level of per capita income is reached workers begin shifting from manufacturing to services. On the supply side, the larger increase in productivity in manufacturing explains part of the shift of manpower to services; on the demand side, the increase in per capita income, which increases the demand for services, also contributed to the expansion of employment in services.[30]

[29] See, for example, from p. 40 in the Research Department section in the Bank of Israel Annual Report for 2003.

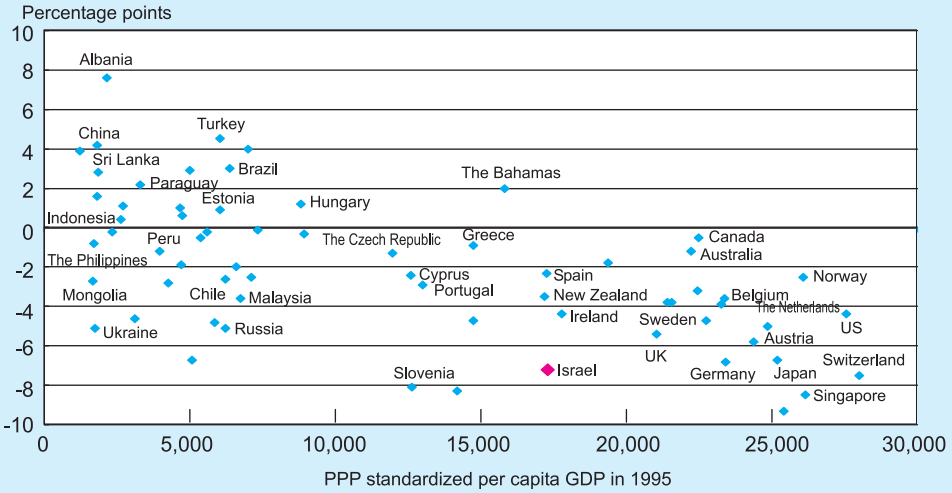
[30] For a discussion of this question in the literature, see for example, R. Schettkat and L. Yocarini (2006). "The Shift to Services Employment: A Review of the Literature", Structural Change and Economic Dynamics 17, 127–147.

We would emphasize that these forces are not related to the effect of globalization on manufacturing in the advanced economies but rather reflect the process of economic development of each economy separately. The globalization process is an additional factor that operates to reduce the share of employees in manufacturing in the advanced economies. The production of labor-intensive goods is being shifted to countries with relatively cheap labor while the advanced economies are becoming increasingly specialized in capital-intensive and human-capital-intensive goods or in the provision of services.

Figure 2.10 presents the change in the proportion of employees in manufacturing between the years 1995 and 2008 for 68 countries (including all the OECD countries) according to each country's per capita GDP in 1995. It demonstrates the decrease in the proportion of employees in manufacturing in the advanced economies alongside the increase in emerging market countries. The negative correlation between the level of per capita GDP at the beginning of the period and the change in the number of employees in manufacturing reflects the stage of economic development in each economy and the process of globalization, which accelerates the contraction of the manufacturing industries in the wealthier countries and intensifies the shift from agriculture to manufacturing in the emerging market countries. It is interesting that in all the countries (except for one) in which per capita income was higher than $15,000 in the base year the proportion of employees in manufacturing declined during this period. Israel experienced one of the largest relative declines (7 percentage points). The main reason for the large decline in Israel involves the structural changes that took place in the Israeli economy during the last 15 years, which were on a larger scale than in most of the other advanced economies, and the process of exposing the Israeli

The negative link between per capita GDP and the trend in the number of workers employed in manufacturing reflects the different stages of economic development between the various economies and the globalization process, which is accelerating the decline of manufacturing in the wealthier countries.

Figure 2.10
The Change from 1995 to 2008 in the Percentage of Total Employees Employed in Manufacturing

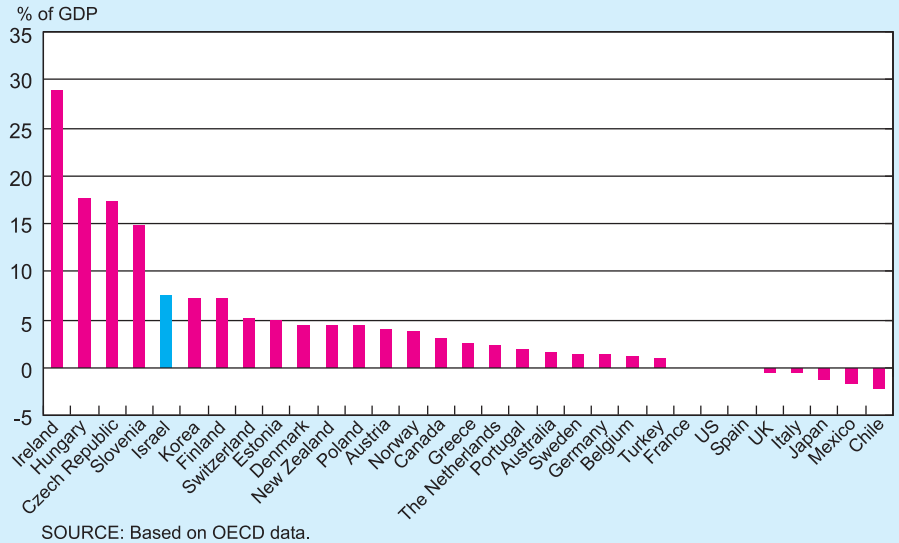


SOURCE: Based on International Labor Organization: KLM database, Penn World table.

economy to imports was a leading factor in these processes. In some of the advanced economies, the decline in employment in manufacturing took place for the most part prior to 1995, which may partly explain why Israel stands out from the other countries when looking at changes in employment since 1995.

The process of development in the various economies in combination with globalization works to shift the production of traditional labor-intensive products to countries with relatively cheap labor, as already mentioned. On the other hand, the advanced economies are becoming increasingly specialized in the production of capital-intensive and human-capital-intensive goods or in the provision of services. These processes are presented in Figures 2.11 and 2.12. Figure 2.11 presents the accumulated growth in the trade surplus of high-tech and medium-high-tech industries and the growth in the foreign trade deficit of the low-tech and medium-low-tech industries in terms of percent of GDP for the OECD countries for the period 1995–2009.[31] The graph reveals the process of expansion in the export surplus of high-tech and medium-high-tech goods and the growth in the import surplus of low-tech and medium-low-tech goods in the OECD countries. Figure 2.12 shows the improvement in the services account of the balance of payments during that period among the OECD countries with the highest per capita incomes, which is an indicator of the structural transition from manufacturing to services.

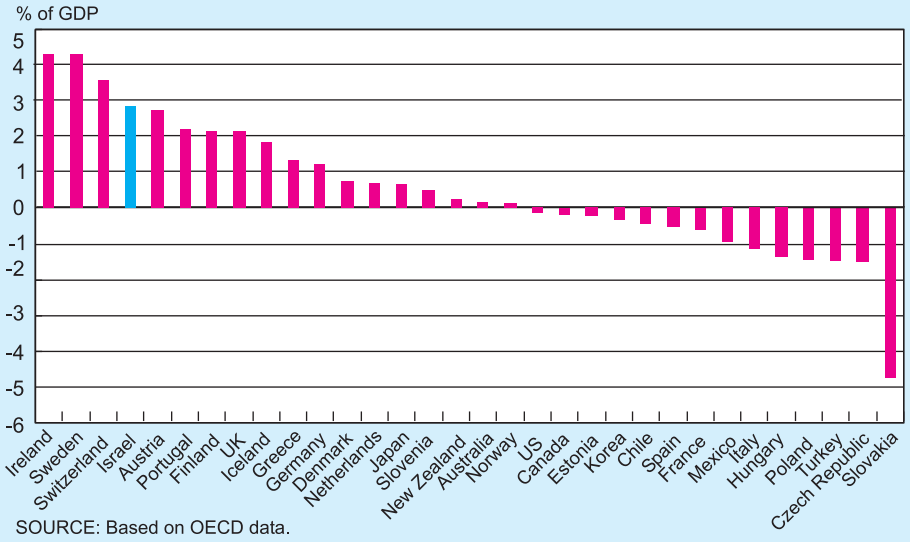
Figure 2.11
Increase in the Surplus on the Trade Account of High-Tech and Medium-High-Tech Industries and the Increase in the Deficit on the Trade Account of Low-Tech and Medium-Low-Tech Industries from 1995 to 2009



SOURCE: Based on OECD data.

[31] Thus, for example, for a country in which the surplus in the commercial account for high-tech goods grew between 1995 and 2009 by one percent of GDP and in parallel the deficit in the commercial account for low-tech goods also grew by one percent of GDP, the column will reach a height of two percent.

Figure 2.12
Change in the Services Account of the Balance of Payments between 1995 and 2009



SOURCE: Based on OECD data.

Both of the graphs show that the transition processes in Israel are also characteristic of the advanced economies. The expansion of the export surplus of the high-tech and medium-high-tech industries and the import surplus of the low-tech and medium-low-tech industries between 1995 and 2009 totaled about 8 percent of GDP while the improvement in the services account totaled close to 3 percent of GDP. These processes partly reflect the structural changes that occurred in manufacturing during this period though they were also the result of the overall improvement in Israel's current account.

b. Construction

The developments in the construction industry during the course of the year were consistent with those in the economy as a whole, which was characterized by a slowing of activity during the second half of the year.

Home prices continued to rise in 2011, for the fourth consecutive year, which was also the case for rents. However, the rate of change in home prices became significantly more moderate during the course of the year, dropping from 14 percent in the first third of the year to negative rates at the end of the year.[32] In parallel to the slowed pace of increase in home prices, there was a drop in the total volume of housing transactions and mortgages and in the number of housing starts. In addition, the inventory of unsold new housing grew, thus returning to its level at the beginning of the decade. The developments in the housing sector during the course of the year were in line with those in the economy as a whole, with a dampening of activity in the second half of the year.

[32] Data on home prices are released with a lag of two months and the last three monthly figures are updated each month. When the social protests began in the second half of July, the last known Index of Home Prices was for April–May and these first published indices continued to indicate high rates of change, as in the previous year.

In response to the continuing increase in home prices and rents[33], measures were adopted during the previous year and in the first half of this year to cool the housing market. These included monetary, macroprudential and fiscal measures on the demand side, while on the supply side they included efforts to expand the marketing of land and to accelerate the approval process for building plans through the creation of National Housing Committees. A social protest movement started during the summer which received widespread support from various segments of the population. The main issue of the protest was the high level of home prices and rents. As a result of the protests, the government established the Trajtenberg Committee, which discussed the issues brought up in the protest and submitted recommendations to the government for improving the situation of the middle class.

The high level of activity in the industry continued this year. Output grew by about 9 percent, similar to the previous year, and labor and productivity also grew this year. The high level of activity was manifested in an increased number of housing starts and in the number of houses under construction. However, there was no major change in the number of housing completions, which is consistent with housing starts in 2009, as it takes about two years to construct a house. The increase in activity in this industry was accompanied by continued growth in the number of Israelis employed in it, which satisfied only part of the demand for labor in the industry. Despite the marked increase in the demand for labor, including for "wet" work, relative wages in the industry hardly grew this year. "Wet work" includes wall and floor tiling, plastering, masonry, iron work and molding. With respect to the financing of activity in the industry, despite the high level of construction activity and the industry's high financial leverage, there has been no increase of direct financing to the industry, i.e., from banks and non-bank sources, during the last two years, and this year it even declined. The activity in the industry during the last two years was therefore financed—to a greater extent than in the past—by the sale of housing close to the start of construction, for the most part facilitated through mortgages for homebuyers. Therefore, and in view of the problems of the industry in obtaining financing from the banking and non-banking systems, builders are dependent to a great extent on the rapid sale of housing. The risk in the industry is therefore a function of demand and the trend in prices, which are to a large extent determined by the situation of the crisis in Europe, and its effect on the Israeli economy in general, and on the response of monetary policy to these shocks.

(i) Prices

Although the price of housing continued to rise, for the fourth year in a row, the rate of annual increase fell from 14 percent at the beginning of the year to a negative rate at the end of the year.

The level of housing prices continued to rise this year but the rate of increase slowed to an annual average of 7.3 percent in real terms as compared to about 14 percent on average during the previous two years (Table 2.13).[34] Other indications of

[33] The housing services component of the CPI is called the "Index of Housing Prices" and for the most part is measured according to rental contracts. Thus, it will be referred to here as "rents" to eliminate confusion.

[34] Adjusted using the CPI excluding housing.

Table 2.13

Construction Industry Selected Data,1997-2011

	Level in 2011 (NIS billion, at 2005 prices)	Annual average change (percent)					
		1997-2002	2003-07	2008	2009	2010	2011
Total construction output	71.3	-3.6	0.3	4.7	2.1	11.1	9.2
of which: Residential (incl. renovations)	42.2	-4.6	0.5	10.8	8.3	12.7	13.2
Nonresidential (buildings)	15.1	-5.3	-1.4	2.0	-4.0	11.9	4.8
Other (earthworks and defense related)	11.5	1.8	1.8	-5.4	-5.7	10.3	2.5
Stock of homes under construction ('000)	77.5	-5.7	-0.9	3.7	3.1	6.4	14.1
Housing starts ('000 units)	43.6	-7.6	-0.6	7.1	5.7	14.4	9.5
Housing completions ('000 units)	33.9	-9.1	-3.2	3.2	7.3	1.3	2.4
Apartments offered for sale by private sector (‘000 units)	13.8	--	-2.3	-1.6	-8.7	6.7	25.9
Construction product	35.8	-2.7	1.4	4.3	0.7	9.2	8.9
Employees[a] ('000)	228.8	-3.3	-0.1	3.1	-3.1	7.2	2.6
Real wage in construction per employee post[b] (NIS/month, at 2004 prices)	6,529	1.1	0.8	1.9	-1.7	0.8	1.9
Home prices relative to CPI excl.housing	--	-2.2	-3.0	2.5	12.6	15.3	7.3
Rents relative to CPI excl.housing	--	2.5	-3.4	-1.5	11.5	2.9	3.1
Home prices relative to CPI	--	-3.6	-2.3	2.8	10.0	14.5	6.6
Rents relative to CPI	--	1.7	-2.7	-1.2	8.9	2.3	2.3
Input prices relative to CPI	--	-0.2	3.9	-0.6	-3.3	-0.1	0.6
Annual average interest rate on mortgages	--	6.2	5.3	4.5	1.9	2.5	3.2

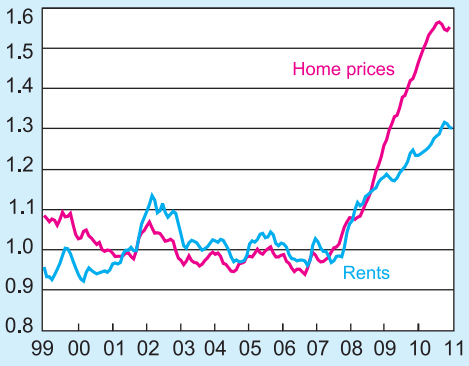
[a] Includes an estimate of unreported foreign workers.

[b] Until 2002, derived from the wages of Israelis and foreign workers; since 2002, Israelis only.

SOURCE: Based on Central Bureau of Statistics and Ministry of Construction and Housing data.

dampened demand were the drop in total housing transactions and the volume of mortgages and an increase in the number of new unsold houses (those for sale). During the course of the year, the rate of increase in housing prices slowed to an even greater extent, and its real rate of increase reached 4.7 percent, in contrast to 11.9 percent in 2010 and 16 percent in 2009.

Figure 2.13
Home Prices and Rents, 1999-2011
Index (December 2001 = 1)



SOURCE: Based on Central Bureau of Statistics data.

The trend during the year was not uniform: during the first quarter, the high nominal rate of change that characterized the previous year continued and during the next four months, April to July, it declined to about one quarter of that, i.e., 3.6 percent (in annual terms). There was an additional decline during the final third of the year, during which the price indices declined–for the first time since 2007 (apart from the two months at the beginning of the current crisis at the end of 2008)–at a negative nominal rate of 2.3 percent in annual terms.

From a regional perspective, the data (which are not adjusted for quality)[35] indicate that already in the second quarter there was a drop in prices in most areas, including Tel Aviv and the Central District, which gained in momentum during the third quarter. Overall, housing prices fell by 2 percent, which varied between the regions of the country. Thus, in Haifa and the North, prices continued to rise as in the previous two years, while in Tel Aviv and the Central District prices fell by 4 percent.

There was therefore a significant dampening of the rate of increase in prices this year. Although there were already signs of a downward trend in the second half of 2010, it is important to determine the factors that led to the dramatic change in the rate of change of housing prices this year, which will be discussed below.

The delinking between the price of housing and rents during the current cycle reflects an anomaly of a low interest rate environment.

Despite a slowdown in the rate of increase, housing prices continued to rise this year (Figure 2.13). Since the beginning of the current price cycle, which began in 2008 and accelerated during 2009 and 2010, home prices rose in nominal terms by 59 percent (Table 2.14), double the rise in rents (i.e., housing prices that enter the CPI) and even more in real terms. Although the level of home prices at the starting point of the current cycle was at its lowest point since the beginning of the decade, and therefore some of the increase in prices was a result of adjustment, rents had a similar trend and therefore there was no major delinking between them. In contrast, during the current price cycle, we are seeing a large extent of delinking. The common trend over time, as can be seen in Figure 2.13, reflects the fact that they are substitutes

[35] And therefore their reliability is limited. Nonetheless, they provide an indication of the development of prices in the various regions of the country.

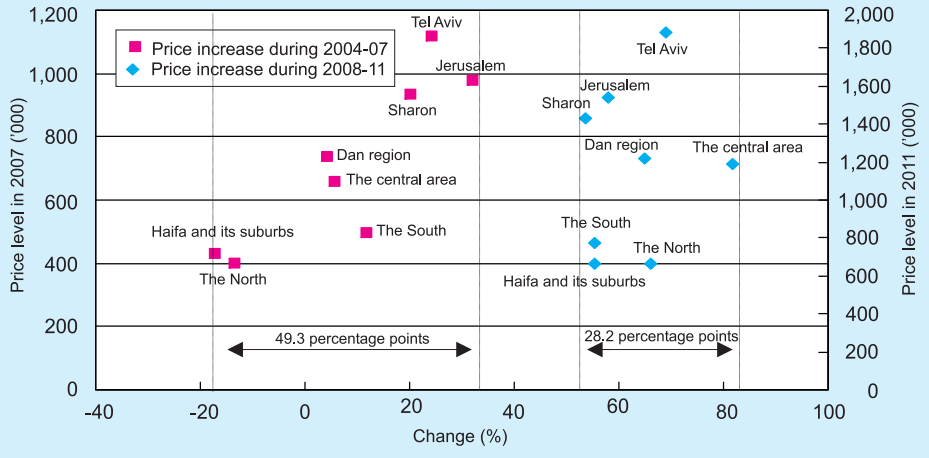
for each other in the provision of housing services (see Nagar and Segal, 2011).[36] In contrast, during the current price cycle, we are seeing delinking to a great extent since homes are also being purchased for investment and saving purposes and not just for residence. The large degree of delinking therefore reflects the anomaly of a low-interest environment, which encourages the purchase of homes for these purposes.

Figure 2.14 compares the rates of change in housing prices during the current round (2008–11) to those during the period prior to it (2004–07). The graph indicates that the rates of price increases were relatively similar across regions during the current round, despite the large differences in price levels between them. In other words, the increase in housing prices encompassed all regions. In contrast, there was a large degree of variation between regions of the country during the period 2004–07 and at the extremes the differences were almost double those during the current round of housing price increases; in certain areas, there were even negative rates of change; and the magnitude of the rate of change increased with the price level. The situation of 2004–07 is more characteristic of demand that is determined by relatively local developments and therefore indicates a relative shortage in housing (as in the case of normal price changes on the stock exchange). In contrast, an all-encompassing increase in housing prices, with little variation across regions, is less indicative of a housing shortage.

In response to the large increase in housing prices, a number of policy measures were adopted at the end of 2011, which were partly a continuation of previous policy measures. Some of the measures were meant to restrain the demand for housing while others were meant to increase its supply. The former included the raising of

In response to the significant price increases, macro-prudential and fiscal measures were adopted again this year in order to constrain demand, while on the supply side measures were made to speed up the process of building approval through National Housing Committees.

Figure 2.14
The Increase in Home Prices, by Area and Price Level, 2008-11 Compared with 2004-07



SOURCE: Based on Central Bureau of Statistics data.

[36] Nagar, W. and G. Segal, (2011), "What Explains the Developments in Home Prices and Rents in Israel in 1999–2010," Israel Economic Review 85, December (Hebrew) and BoI Working Paper to be published.

Table 2.14
Change in Home Prices and Housing during the Current Price Cycle

	Home prices			Housing prices (rents)		
	Nominal change	Real change, deflated by the CPI	Real change, deflated by the CPI excluding housing	Nominal change	Real change, deflated by the CPI	Real change, deflated by the CPI excluding housing
2008	10.6	6.5	8.7	12.1	8.0	10.2
2009	19.9	15.4	16.0	5.6	1.6	2.1
2010	14.1	11.1	11.9	4.9	2.1	2.9
2011	5.3	3.1	3.9	5.1	2.9	3.7
Total	59.2	40.7	43.1	30.4	15.3	20.0

SOURCE: Central Bureau of Statistics and Bank of Israel.

the monetary interest rate from 2 percent in January to 3.25 percent in June, which was also consistent with convergence toward the inflation and output gap targets. The Bank of Israel also adopted a macroprudential measure in May that restricted variable-rate mortgagees for a period of up to 5 years to only one-third of a total housing loan, even for first-time housing purchases (see also Chapters 3 and 4 of this report). On the fiscal side and in addition to the expanded marketing of land (as described below), a number of measures were announced at the end of 2010 which were translated into legislation during 2011.[37] These included an increase in the housing purchase tax and an exemption from the land betterment tax for sellers of second and third apartments by the end of 2012, regardless of how long the asset was held. In March, the creation of the National Housing Committees was announced, which was meant to accelerate the process for approving building permits, and in May the cancelation of the exemption from the betterment tax on the sale of second and third apartments starting in 2013 was announced, a measure that was later modified before becoming legislation (see the box).

Fiscal policy measures adopted in 2010 and 2011

a. Summary of the steps taken in 2010 (for further details see the Bank of Israel Annual Report for 2010)

1. Steps to restrain demand: An increase in the purchase tax on the purchase of investment apartments was announced in December 2010. It was raised to 5 (from 3.5), 6 and 7 percent (an increase of one percentage point for each) for apartments

[37] These measures are in effect from the date they are passed and not from the date they are announced. The reason for mentioning the two dates in this report is related to the possibility that the announcement creates expectations.

costing up to NIS 1 million, from NIS 1–3 million and more than NIS 3 million, respectively. This measure became law on February 21, 2011. In addition, the exemption from VAT for buyers groups was cancelled during the first half of the year. (Buyers groups are organized groups of people who buy land together for their own residential use.)

2. Steps to increase supply: An exemption on the and betterment tax for sellers of a second and third apartment until the end of 2012 (up to a total amount of NIS 2.2 million) was announced in December. The measure became law in February 2011. In addition, the Israel Land Administration (ILA) Council announced a discount of 15 percent on the price of land for builders who complete construction within 30 months of winning the tender for projects consisting of at least 50 units. In November 2010, a partial exemption from the betterment tax was announced for sellers of land that is available for construction, on the condition that construction is completed within 30 months.

b. Steps taken in 2011

1. Increasing the period of holding an apartment for purposes of the exemption from the betterment tax on the sale of a second apartment from four to eight years: The original announcement in May involved a cancelation of the exemption from the betterment tax at the beginning of 2013. This step, together with the exemption given until the end of 2012 for the sale of a second (and third) apartment, created a limited-time tax shelter and thereby increased the profitability for existing investors to exit the housing market. The legislation that passed on August 1, 2011 was modified somewhat, whereby the duration for holding an apartment in order to benefit from the exemption was lengthened from four to eight years, instead of cancelling the exemption regardless of the period the apartment is held (for further details, see Recent Economic Developments 131, Bank of Israel, Research Department, November 2011).

At the same time, an exemption from the betterment tax was granted for the sale of an apartment that is currently used for purposes other than residence, conditional on the apartment reverting to residential use. The exemption will last until June 3rd, 2013 (passed on August 1, 2011).

In July, the building of 10,000 student dormitory units was announced, which later on was also recommended in the Trajtenberg report.

2. National Housing Committees (NHC): The Prime Minister declared the creation of the NHCs on March 7th. They are meant to accelerate the process for approving building plans in the district committees according to a plan that will take 18 months to implement. The NHCs are subcommittees of the District

Committees. From the time of the declaration until the date the legislation was passed,[1] NHCs operated under the authority of the District Committees, while giving preference to defined plans (see below). From the point the legislation was passed, their powers exceeded those of the District Commitees.[2] As part of this plan, at least 50,000 housing units will be submitted for approval on the "Fast Track" and an additional 63,000 housing units according to the normal procedure in the District Committees. Only building plans for residential housing with at least 80 percent on State-owned land will be approved and the submitted building plans will be subject to the following criteria: the plan will include at least 200 housing units; the implementation of the plan is highly feasible; significant planning steps have already been taken; and the plan will contribute to increasing the supply in areas of high demand. An additional decision was made that directs the District Committees to give precedence to residential construction, according to a list to be submitted to the committees, over any other plans that are non-residential (such as transportation, gas stations and industrial and commercial buildings) and also over residential construction on private land.

Comparison of the National Housing Committees and the Regular Track: Stages in the "production" of building approval and the time required

<table>
<tr><th>Stage</th><th>Initiator</th><th>Approval by</th><th>Estimated time required on the regular tracks</th><th>Time required according to the NHC Plan</th></tr>
<tr><td>1. Examination of the feasibility stage</td><td></td><td></td><td>Minimum of one year</td><td></td></tr>
<tr><td>2. Plan is submitted for approval to the District Committee</td><td>Israel Land Administration (ILA), the Ministry of Construction and Housing (MoCH) or the local authority</td><td>The District Committee</td><td>Minimum of three years; average of five years</td><td>About one year</td></tr>
<tr><td>3. Preparation of a development plan (water, electricity and roads)</td><td>ILA, MoCH, or the local authority</td><td>The local authority and the various government ministries[a]</td><td>About 18 months</td><td rowspan="4">No more than 3.5 years</td></tr>
<tr><td>4. Marketing of the land</td><td>ILA, MoCH</td><td rowspan="2"></td><td>Six months</td></tr>
<tr><td>5.1 Implementation of development (issuing of a tender to development contractors)</td><td>ILA, MoCH</td><td rowspan="2">About three years (regression result); implemented in parallel to other stages.</td></tr>
<tr><td>5.2 Preparation of plan for obtaining a construction permit</td><td>Winner of the land tender (the contractor)</td><td>The local authority</td></tr>
<tr><td>6. Start through completion of unit</td><td>Contractor</td><td></td><td>About two years</td><td>About two years</td></tr>
</table>

[a] The development plan requires the approval of the local authority and the various ministries, such as the Budget Branch of the Ministry of Finance and the Ministry of Transportation.

[1] This plan has given additional names: the "Green Track", the "Fast Track" and Lahav ("Building Acceleration"). The government decision was made on March 13, 2011 and became law on August 3, 2011 ("Planning and Building Processes Law for the Acceleration of Residential Construction," Temporary Order, 2011). According to the legislation, the Temporary Order will be in effect until the end of 2013, rather than 18 months in accordance with the government decision.

[2] Similarly, national subcommittees were also created to operate within the framework of the National Committee and also in this case the powers of the national subcommittee exceeded those of the National Committee.

In general, it may be assessed that the procedure for building approval in Israel takes an average of about 11 years, according to the stages presented in the table. The NHC plan focuses therefore on shortening the approval stage in the District Committees (Stage 2 in the table), from 5 years on average to only one year. This is to be accomplished through two main steps to increase the efficiency of the committees: the concentration of all procedures with the District Planner and the shortening of time between the various stages in the approval process in the District Committee (such as the submittal of the plan, the time for the relevant ministries to submit their opinion and the time allotted for appeals). It is also important to mention that the plan does not eliminate any of the stages in the approval process at the regular district level. Following the final approval of the District Committee (which is published in the Records), the plan also shortens the time to receive a final permit by 1.5 years (Stages 3–5 in the table) by setting a completion date: if the procedures have not been completed within 3.5 years, the plan will be returned to the District Committee and it will make the final decision.

We note that a similar plan was implemented during the wave of price increases in the 1990s, while Ariel Sharon was the Minister of Housing. The plan was called Committees for National Housing and an estimated 100,000 housing units were approved within this framework. These programs were criticized for issues such as the quality of construction, the surrounding development and the impact on the environment. Therefore, all the stages in the current program are being implemented as in the regular track and there is involvement by all the bodies that are relevant according to the Planning and Building Law, though it is accompanied by an increase in the efficiency of the process.

(a) The supply of building approvals and land

The output of the National Housing Committees: The operation of the Fast Track (by means of the NHCs, under the authority of the District Committees) began already in June 2011, according to the decision of the government and prior to the passing of legislation on August 3, 2011. The partial data that are available indicate that the number of plans discussed by the various District Committees (the regular District Committee, the plans on the Fast Track and the NHC following the passing of legislation, as described in the framed section above) increased this year, as did the total number of approvals. However, the increase within the framework of the NHCs was on a small scale for the following reasons: (a) the National Housing Committees were established by law during August–September and therefore only three months remained until the end of the year; (b) it appears that some of the plans advanced

by one or two stages within the committees, but not to final approval; (c) when the committee decides that the plans are deficient, they are returned to the initiators (primarily the Israel Land Administration and the Ministry of Construction and Housing) in the various statutory stages for the purpose of corrections and additions, which involve the cooperation and approval of additional players, such as the Ministry of Transportation, the Ministry of the Environment and the municipal authorities, and require the allocation of budgets for the development of infrastructure, such as roads, sewers, schools and kindergartens. The acceleration of procedures also means that initiators and other players must designate additional manpower, both in order to submit more "mature" plans and to quickly correct plans that are returned from the District Committee.

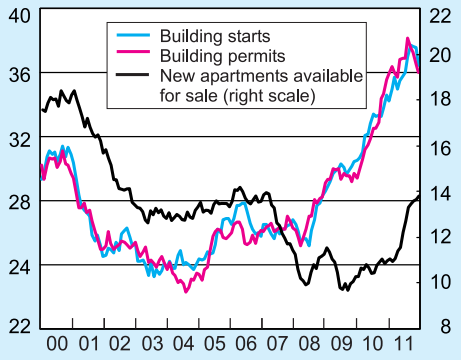
The outcome is that the work of the National Housing Committees (and prior to the passage of the legislation, within the framework of the Fast Track) has become more efficient in the discussion of plans, but other barriers remain in place. Nonetheless, the recognition of urgency and increased efficiency for plans on the Fast Track have in the end led to an increase in the number of plans approved this year, even though the output of the NHCs, after the passing of legislation and measured by the number of final approvals, was only modest at this stage, as already mentioned. It is also worth noting that even if the National Housing Committees have issued final approvals to initiators, there still remain additional stages to be completed—preparation of land for marketing, issues of development tenders, marketing of the land and the process of approval in the local committees—which take an additional five years on average until the issuing of a final construction permit (see Stages 3–5 in the table in the framed section above; these stages were shortened to 3.5 years by the National Housing Committees Law).

Residential housing transactions approved by the Israel Land Administration ("ILA approvals"): The number of approvals this year was similar to last year, i.e.,about 25,000 housing units, in contrast to 17,200 and 15,100 in 2009 and 2008, respectively. The data on the number of ILA approvals in a given year also includes the marketing of land to successful bidders who paid this year for land marketed in previous years (and therefore in any year the land marketed and approvals are not synchronized). Land is marketed after it has received final approval from the District Committees and after a tender has been issued to contractors for infrastructure, since the cost of marketing also includes the costs of development. The time from the marketing of land by the ILA (after approval has been granted by the District Committees) until the receipt of a final building permit is estimated to be about three years.[38]

Final building permits: The data only include privately initiated construction (on private land and land marketed by the ILA). The results of a regression of housing starts on building permits show that most of the permits are utilized within six months. Since 2008, and with greater intensity since 2009, the number of housing permits grew to a peak of 38,200 housing units in June of this year. Since then, a downward trend

[38] This is derived from the results of a regression of ILA approvals on building permits.

Figure 2.15
Private Sector Building Permits and Starts (annual number) and New Apartments Available for Sale, 2000-11
('000 housing units)



SOURCE: Based on Central Bureau of Statistics data.

has appeared (Figure 2.15). The drop in housing starts in the third quarter may therefore also be the result of a decline in building permits, apart from other factors (difficulties in obtaining financing and a drop in demand).

In conclusion, the situation as a whole and the average time needed to obtain building approvals indicates that the increased marketing of land by the ILA during the last two years has not yet been significantly reflected in final permits. This conclusion is supported by the data on housing starts according to ownership of the land, which indicate that housing starts on privately owned land continued to constitute about half of the total. In addition, the creation of the National Housing Committees has exposed the existence of other major barriers, and even if the plan is successful this will be manifested in final permits only in another 4.5 years. Therefore, if the ILA approvals and the NHCs have until now had an influence on prices, it is through expectations rather than actual housing starts.

b. Analysis of the factors behind the slowdown in housing price increases

The creation of the National Housing Committees increased the efficiency of the process for approving building plans; however, other barriers remained in place.

The rate of change of housing prices declined this year, from an increase of 14 percent in the first third of the year to negative rates in the last third, is worthy of analysis and the quantification of its causes, specifically in view of the numerous policy measures adopted during the year. It is important to understand the effect of these measures and to analyze their trends. Below we will evaluate, in terms of the price of a house, the effects of the various measures adopted, most which can be attributed to demand factors.[39]

The increase of 1–1.5 percentage points in the purchase tax for purchasers of an investment apartment: This raised the price of an apartment by those percentages from the perspective of a potential investor.

Exemption from the betterment tax for the sale of two investment apartment until the end of 2012 also for a holding period of less than four years: This

[39] The analysis is in terms of compensatory price. For example, assume that a potential investor expects a certain rate of increase in housing prices (prior to a policy measure being adopted), and accordingly decides to purchase an apartment. After the policy measure has been adopted, we ask what addition to the price is required by this investor in order to return him to the situation prior to the policy measure being adopted. Alternatively, to what extent has his capital gain been eroded as a result of the tax. However, this approach is not appropriate to a situation in which the investor expects a drop in prices, since in any case—even without any tax measure being adopted and certainly if it is—the attractiveness to the potential investor has declined and exiting the investment has become more worthwhile for him.

measure is intended to encourage the exit of existing investors (supply). An analysis of the effect of the exemption[40] indicates that, under certain assumptions regarding the holding period and the profit that has accumulated, non-utilization of the exemption to sell an investment apartment by the end of 2012 translates into a loss of 2 percent of the price of the apartment.

Extension of the holding period to be eligible for the exemption from the betterment tax on an investment apartment from 4 to 8 years: This measure was directed primarily at the potential entry of new investors. It does not affect the entry of "traditional" investors who hold an apartment for longer periods. For new investors of the speculative type, this measures leads to a loss of 0.8 percent of the price of an apartment relative to the previous situation.

Overall, it appears that the effect of these measures on both existing investors and potential ones amounts to about 2 percent of the price of the apartment. Thus, for example, the additional cost for a speculative type of investor as a result of the changes in the purchase tax and the betterment tax is between 1.8 and 2.3 percent and for other investors is even lower. (We would mention that at the same time these measures create pressure toward increasing rents in the short run.)

An increase in the rate of interest from 2 percent in January to 3.25 percent in June: The results produced by an econometric model[41] show that a permanent increase of 1.25 percent reduces housing prices by 7.8 percent. In addition, using discounting formulas for the stream of payments on a mortgage, the decrease in the price of housing that compensates for this increase in the interest rate is 6.2 percent for a mortgage of 10 years and 12.1 percent for 20 years (on the assumption that the apartment is financed entirely by loans or on the assumption that one can obtain a return equal to the interest rate on savings).

The macroprudential policy measure: A loan to a potential homebuyer (including a single home and not just for an investor) will now be composed of up to one-third at a non-indexed rate of interest and a minimum of two-thirds at an indexed rate of interest (the latter component is more expensive at the time the loan is received) instead of 50 percent for each component, which on average is the situation that existed prior to the introduction of the measure (in April 2011). In comparing between the interest rates at the time, the measure is equivalent to raising the rate of interest by one-quarter of one percent[42] and therefore it decreases the price of an apartment by 1.6 percent. On the other hand, the effect of raising the interest rate by 1.25 percent will decline from

[40] See Recent Economic Developments 131, November 2011 (Bank of Israel).

[41] Nagar, W. and G. Segal, (2011) - see footnote 37. This result was obtained on the assumption that new unindexed credit comprises one-half of the new total mortgage and CPI-indexed credit comprises the other half. The full effect on the price is felt after two years for a permanent change.

[42] The interest rates that prevailed at the time the measure was introduced were (as of April 2011): Bank of Israel interest rate – 3 percent; the interest rate on non-indexed mortgages – 4.1 percent (prime less 0.4 percent); the real indexed interest rate charged by the mortgage banks (average for all terms) – 2.6 percent; and the expectations for one-year inflation, as derived from the capital market – 3.1 percent. We would mention that the measure was announced at the end of April and went into effect on the 18th of May.

7.8 to 5.2 percent,[43] such that the overall effect of the two measures on loans provided from June onwards is a 6.8 percent decrease in the price of an apartment.

Table 2.15 summarizes the effects, most of which act on demand. The outcome of the fiscal measures adopted in terms of the price of an apartment amounts to about 2 percent and the largest effect (7–8 percent) is that of the increase in the monetary rate of interest.[44]

The dominant factor in the sharp decline in the rate of growth in housing prices this year was the raising of the monetary rate of interest during the first half of the year.

Table 2.15
Policy Measures Taken and their Effect on Home Prices

	Target population	Effect on price (%)
1. Total effect of purchase tax and land betterment tax		1.8-2.3
of which: a. Increase in purchase tax	Potential investors	1-1.5
b. Extension of period of ownership to qualify for exemption from land betterment tax	Potential/speculative investors	0.8
2. Cancellation of exemption from land betterment tax till end-2012	Current investors	2
3. Increase in interest rate	Existing and potential mortgage takers	7.8
4. Increase in interest rate and macroprudential measures	Potential purchasers	6.8

SOURCE: Bank of Israel.

The supply side: It is possible that the creation of the NHCs and the expanded marketing of land will have an effect on expectations of a drop in prices; however, since these measures will only find expression in new starts in a number of years (if the plan succeeds) it is reasonable to assume that these measures were not a major factor in the large reduction in the rate of growth in housing prices (through expectations), which was observed this year. The contribution of increased housing starts and completions (3,600 and 800 housing units, respectively; see below) to the drop in prices is estimated at about 1.2 percent, even if housing starts are treated as construction that has already been completed.[45] It appears therefore that housing starts and completions are also not among the main reasons for the sharp decline in the increase of housing prices this year. Furthermore, the unsold stock of housing grew during the same period and returned to its level at the beginning of the previous

[43] An increase of 1.25 percent in the interest rate leads to a decline of 7.8 percent in housing prices when half of an average new mortgage loan bears a non-indexed interest rate. Reducing this component from one-half to one-third also reduces the effect of the interest rate by one-third, i.e.,to 5.2 percent from 7.8 percent.

[44] For an analysis of the causes of the increase in housing prices, see also the Bank of Israel Annual Report for 2010, Chapter 2, the section on construction.

[45] This estimate is based on the model of Nagar, W. and G. Segal (2011). Their model includes the ratio of the population to the housing stock as a variable. In simulations where the housing stock is raised so that the effect of this variable on housing prices becomes zero, an increase of 3,000 housing units leads to a decline in housing prices of one percent.

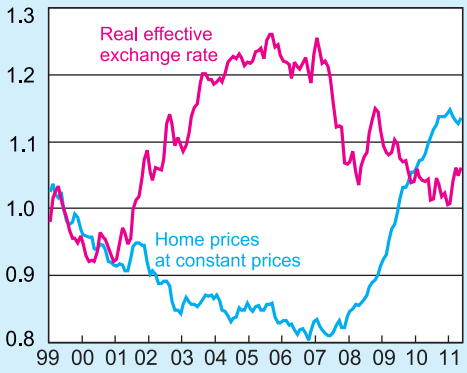
decade; this situation is not consistent with a serious shortage of housing, but is consistent with slow demand.

It is also important to mention that the slower increase in housing prices during the second half of the year was consistent with the trend in general economic activity and therefore it is possible that the moderating of the trend in housing prices was partly the result of these cyclical factors and not just specific steps taken in the housing market. During the second half of the year, the rates of growth in the economy slowed, price increases measured by the CPI slowed, capital market yields increased and there was a transition to nominal and real shekel depreciation. This followed four previous years in which the forces for appreciation dominated and this was also reflected in the purchase of foreign currency (by the Bank of Israel) from the beginning of 2008 until the first half of 2011. The reasons for these changes during the second half of the year, beyond the effect of the raising of the interest rate during the first half, were not related to the local economy, but rather to the worsening crisis in Europe which increased uncertainty and led to a search for "safe havens". This led to the export of capital to, among other countries, the US. Consequently, the shekel depreciated, despite the raising of the interest rate in the first half of the year. This situation made it possible to maintain the interest rate at a higher level than during the previous two years and the derived real rate of monetary interest even became positive during the second half of the year, for the first time since 2009. This resulted in a moderation of the slope of the yield curve, accompanied as well by a decrease of longer-term yields (see also Chapter 3), which implies a dampening of monetary expansion.

The trend in housing prices is dependent to a large degree on the global economy and its effects on the Israeli economy, and the response of policy to these effects.

Essentially, the current wave of housing price increases since 2008 is an expression of the forces pushing for a real appreciation of the shekel, as can be seen in Figure 2.16. When there is a shock abroad, as occurred in the current crisis which began in 2008, unemployment rises there, which leads to downward pressure on wages and therefore downward pressure on prices. At the same time, monetary policy abroad has reduced interest rates there in order to stimulate economic activity, which has led to an export of capital. These two developments create forces for real depreciation abroad, which implies forces for real appreciation among their trading partners, including Israel (for further details, see also Chapter 7). In what follows, we will describe two channels through which this situation affects the Israeli economy and the housing market in particular: (a) The monetary interest rate: In an

Figure 2.16
The Effective Exchange Rate and Home Prices, Levels in Real Terms, July 1999 to 2011
Index (December 1999 = 1)



SOURCE: Based on Central Bureau of Statistics data.

attempt to restrain the forces for a real appreciation in the Israeli economy, which is liable to increase unemployment by reducing the profitability of exports, a policy is adopted to reduce the local interest rate. The lower interest rate makes financial saving less worthwhile and encourages the consumption of goods and the purchase of assets, such as housing, using cheap credit. (b) The "income effect": When prices abroad decline, as described above, money is left over after the purchase of a given basket of goods. It becomes possible therefore to increase the consumption basket of all goods, both imported and locally produced, or to increase savings. However, if the return on saving falls, as a result for example of a cut in the interest rate which is intended to stimulate economic activity and to prevent real appreciation, the money that is freed will also be allocated to the purchase of locally produced goods or to other forms of savings such as the purchase of housing that serves both as savings and also as consumption of a locally produced good in the form of housing services. This situation creates pressure for an increase in the prices of locally-produced goods (which works toward the erosion of the income that was freed) and thus a process of real apprecation develops in any case. However, for goods whose supply can be rapidly increased—by increasing production or imports—the price increase will be small. In contrast, for goods with an inelastic supply, such as an apartment which is also a locally produced good, the market is cleared through an increase in price. It is no surprise therefore that the social protest was also aimed at the high prices of other locally produced goods, such as dairy products, which enjoy protection from imports.

The difficult choice, in light of this discussion, is therefore between allowing the forces for the appreciation of the shekel to operate, which may lead to an increase in unemployment, or to attempt to constrain these forces by reducing the interest rate (alongside direct intervention in the foreign currency market) and thus bring about an increase in housing prices (which in turn motivates activity in the construction industry). The conclusion which arises from this analysis is that the trend in the price of housing, even though it is clearly a locally produced good, is dependent to a large extent on events in the global economy, and how they affect the Israeli economy, and the response of policy to these effects.

Policymakers faced a difficult choice during the current wave of price increases between an increase in unemployment as a result of the forces acting to appreciate the shekel, and restraining these forces thorugh an interest rate cut, which tends to increase housing prices.

(ii) The level of activity

In response to the increase in prices, the industry continued to grow at an impressive rate, with output growing by about 9 percent for the second consecutive year (Table 2.12). Its share of total business output continued to grow, reaching a level of 8 percent this year as compared to 7.2 percent in 2008. During the last two years, construction recorded the highest rate of growth among the economy's industries. The main growth occurred in housing construction, which grew at a rate of 13 percent, as in the previous year; non-residential construction also expanded but at a slower rate. The number of residential housing starts continued to increase this year, reaching a level of 43,400 units by the end of the year, as compared to 39,800 and 34,900 in 2010 and 2009, respectively. This is the highest level achieved since the beginning of 2001

The impressive growth in the industry's output last year continued this year and total productivity also grew this year.

(Figure 2.5). This year the number of housing starts exceeded the past decade's annual average number of new households (40,000). It is worth mentioning that the annual level of housing starts reached a record of 44,300 units in August 2011 and since then has declined. Since the number of permits also declined (see Figure 2.15), it is unclear whether the drop in building starts is explained by a drop in building permits or the decisions of builders to build less due to the expected drop in prices and the difficulty in obtaining financing. At the same time, the number of housing units available for sale grew at a high rate starting from the second third of the year, from 15,400 units in April to 19,300 at the end of the year, thus returning to its 2002 level.

The growth in activity was also reflected in the continued growth in housing starts, which this year exceeded the average increase in number of households. Housing completions are in line with housing starts two years previously (2009).

There was no major increase in building completions relative to the previous year and by the end of the year there were 33,900 completions recorded. The slow increase in completions reflects the average time for constructing an apartment in Israel, i.e., about two years, so that the increase in building starts in the second half of 2009 is reflected in completions only during the second half of 2011. Moreover, during the last two years, the proportion of high-density building (buildings with three or more floors) in housing starts has increased to 60 percent as compared to 52 percent in 2008–09 and it may be that this type of construction requires more time (for example, due to the construction of underground stores). Another possibility is the shortage of workers, for which there is evidence in the Job Vacancy Survey (see below). Whatever the case, in view of the desire to improve production processes and to become less dependent on foreign workers, a temporary frictional shortage is a natural outcome and this should be tolerated in order to bring about a rise in wages, and thus to an increase in capital and technological improvements.

(iii) Factors of production and profitability

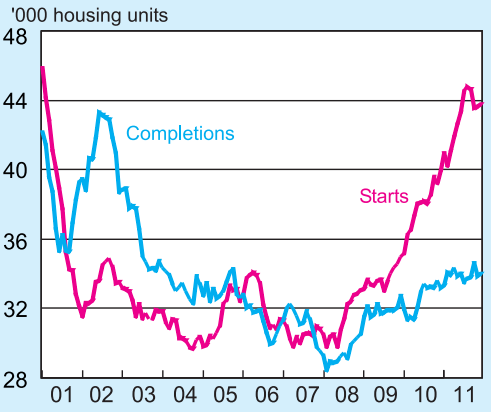
(a) Employment

The high level of activity in the construction industry this year was accompanied by continued growth in the number of its employees. Thus, 5,100 new Israeli workers joined the industry. Among the non-Israeli workers, there was substitution between foreign workers, whose number declined, and Palestinians, whose number grew (by 4,400).[46] The growth in the employment of Israelis 2011 was a continuation of the impressive growth last year, which added 13,800 workers—constituting about one-quarter of the additional employees in the business sector last year, which greatly exceeds the share of the construction industry in business output. The small increase this year does not make it possible to obtain a clear statistical picture with regard to breakdown by profession (Table 2.16). In any case, this small increase is consistent with the picture obtained from the Job Vacancy Survey, according to which the demand for workers in "wet work"[47] rose to 6,400 at the end of year.

[46] Data on foreign workers do not include illegal immigrants from Africa (Eritrea and Sudan). Nonetheless, it is known from non-official sources that a portion of them work in construction.

[47] "Wet work" includes wall and floor tiling, plastering, masonry, iron work and molding.

Figure 2.17
Building Starts and Completions, Annual Number, 2001-11



SOURCE: Based on Central Bureau of Statistics data.

Demand was the dominant factor in the growth of the number of employees, evidence of which can be found in the parallel increase in activity following the increase in housing prices and the large number of vacant positions in the industry according to the Job Vacancy Survey. Nonetheless, the real wage of Israeli workers rose by only one percent, which continued the trend in the previous year when it rose by only 0.7 percent. Although the rate of increase in wages of Israeli workers in the business sector was even smaller (0.2 percent), one might have expected a larger increase in the construction industry due to the increased demand, and in order to attract Israeli workers, particularly in view of the data which show that the average wage for Israelis in the construction industry is only 89 percent of the average for Israeli workers in the business sector. It therefore worthwhile that vacant positions be filled by Israelis, through an increase in the wages offered to them.[48]

Vacant positions should be filled by Israelis by means of an increase in wages, which will also act to accelerate technological progress in the industry.

During the last decade, policy efforts have intensified to reduce the number of non-Israeli workers, and in particular foreigners (see also the Bank of Israel Annual Report for 2010). As part of these efforts a decision was made to reduce the number of foreign workers to zero by the end of 2010 (apart from experts)[49], and last year it was decided to delay the decision until the beginning of 2013. Nonetheless, the government decided this year again to extend the period of the present quota for workers in the construction industry until the end of 2015. In addition, the government approved an increase in the number of Palestinian workers by 5.300, of which 4,000 are earmarked for construction (for further details, see Chapter 5). The lack of consistency in the policy of reducing the number of non-Israeli workers, as was evident this year, is

[48] In order to increase wages in the construction industry up to the level of the average wage in the business sector, which is the situation in other countries and was the situation in the 1960s in Israel prior to the entry of non-Israeli workers, an average real wage increase of 20 percent is needed. This will require an increase in the price of housing of 3.5 percent on average in order for the same level of profitability to be maintained, even without technological improvements in production and the resulting reduction in the number of workers. For further details, see Weizman Nagar (2011), "The development of industrialized processes in the construction industry in Israel, 1960–2010", (in preparation); and also "Report of the Committee for Regulation, Supervision and Enforcement of the Employment of Palestinian workers in Israel," May 2011.

[49] Government decision 446 from 2006. Decisions 147 and 1066 from 2009, when the official number of foreigners was 8,000, delayed the implementation to the end of 2011, together with a change in the pace of the gradual reduction. Decision 2080 (2010) delayed implementation until the beginning of 2013.

Table 2.16
Composition of Employees in the Construction Industry, 2000-11

	Number of employees ('000)			Change from previous year ('000)				
	2000	2005	2011	2009	2010	2011[a]	2001-11	2006-11
Total	238.1	184.5	228.1	-6.5	15.0	5.8	-9.4	44.2
Israelis	117.8	128.2	162.5	-8.3	13.8	5.1	44.7	34.3
Foreigners	62.5	36.8	32	0.5	-1.2	-3.7	-30.6	-4.8
Palestinians	57.8	19.4	34.2	1.3	2.4	4.4	-23.6	14.7
Composition of Israelis								
Builders and construction workers	38.4	43.2	57.9	-7.6	6.1	1.4	19.5	14.7
of which: "Wet work"[b]	25.5	31.7	41.3	-7.5	5.3	0.5	15.8	9.5
Total non-Jewish Israelis	43.3	54.3	81.1	-1.8	6.7	7.6	37.8	26.8
Builders and construction workers	21.4	26.3	38.8	-4.2	5.9	-0.1	17.4	12.5
of which: "Wet work"[b]	17.2	22.2	31.8	-4.4	6.7	-0.6	14.6	9.6

[a] A number less than 2 means the figure is not significant statistically.

[b] "Wet work" includes wall and floor tiling, plastering, masonry, iron work and molding.

SOURCE: Based on Central Bureau of Statistics data.

delaying the hiring of Israeli workers and the filling of positions through an increase in wages and as a result, is also delaying technological progress in the industry.

Support for the industry take the form of wage assistance during the absorption period of new workers and assistance in capital investment, rather than increasing, or keeping at current levels, the number of non-Israeli workers.

Since the beginning of the decade, the number of foreign and Palestinian workers has declined by 54,000 and the industry has absorbed about 45,000 Israeli workers, of which about 35 percent are in "wet" occupations (Table 2.16). Despite this substitution in the composition of workers, wages have not risen and for Israelis they have even dropped by 4.5 percent, in contrast to a decline of only 0.1 percent in the business sector as a whole (Table 2.17). The entry of Israeli workers even without an increase in wages disproves the commonly made claim that Israelis are not willing to work in the construction industry, particularly in "wet" work. At the same time, capital has grown in the industry and the stock of capital per hour of work has even doubled. As a result, labor productivity has increased, particularly per hour of work, and so has overall productivity (see below). Thus, it is essential to continue to sustain a policy to reduce the number of non-Israeli workers. Such a policy not only contributes to the industrialization of construction and the reduction of the costs of production, but also reduces the inequality of income and reduces the rate of poverty (especially because the workers joining the industry are mostly men and in general are the main breadwinners in their families). The data for 2010 also show that some of the Israelis joining the construction industry were previously unemployed (Chapter 5, Table 5.8). It appears therefore that the lack of consistency and constancy in the policy of reducing the number of non-Israeli workers is a significant factor in the continuing low level of wages in the industry, despite the shortage in workers (according to the

Table 2.17
Indicators of Productivity in the Construction Industry, 2001-11 (percent)

	2008	2009	2010	2011	2001-11	2006-11
Product						
Total	4.3	0.7	9.2	8.9	23.6	43.6
Per worker	1.2	3.9	1.8	6.1	29.0	16.1
Per hour	1.8	3.2	3.1	6.0	34.7	16.2
Capital						
Per worker	4.5	8.9	-2.1	5.5	91.2	14.9
Per hour	5.2	8.1	-0.9	5.4	100.1	15.3
Real wage per employee post in construction						
Total	1.1	-2.0	1.1	1.7	0.2	4.4
Israelis and foreigners	1.9	-1.7	0.8	1.9	1.5	6.8
Israelis	2.5	-1.9	0.7	1.1	-4.5	5.7
Real wage per employee post in the business sector						
Total	-0.7	-2.6	0.7	0.3	-1.5	0.6
Israelis	-0.3	-2.5	0.7	0.3	-0.1	1.2
Estimated total factor productivity in construction[a]	0.7	3.0	2.1	5.8	13.6	7.3

[a] Calculated by the Cobb-Douglas production function, assuming that capital constitutes 10 percent of the product.

SOURCE: Based on Central Bureau of Statistics data.

Table 2.18
How the Construction Industry is Financed, 2009-11

(NIS billion)

	Balance			Change (NIS billion)	
	2009	2010	2011	2010	2011[a]
1. From the domestic banking system[a]					
Balance-sheet credit risk	104.2	106.2	105.9	2.0	0.3
Total credit risk	167.9	187.2	197.0	19.3	9.8
2. From the capital market					
Issues: Bonds				5.9	6.1
Shares				7.0	1.6
Repayments (including interest)				12.0	10.5
Net capital raised				0.9	-2.5

[a] Data on the banking system for 2011(and the change from the previous year) relate to the third quarter.

SOURCE: Bank of Israel.

Job Vacancy Survey), and in the resulting low level of capital stock in the industry (see below), which reflects use of relatively old technology. Therefore, the appropriate support for the industry would be wage subsidization during the period of on-the-job training for new workers, in addition to measures to subsidize investment, rather than increasing or maintaining the number of non-Israeli workers.

An extension order was signed in 2011 for the wage agreement signed in January 2010, according to which the wage will be raised to NIS 5,000 per month starting from January 2012, as compared with NIS 4,437 previously (see also Chapter 5). Thus, the gap will widen relative to the general minimum wage in the economy, which currently stands at NIS 4,100 and will be raised to NIS 4,300 in October 2012. This is a step in the right direction in order to attract Israelis to the industry and to upgrade production processes, but it may not be sufficient to bring about the desired change in the industry's technological level and in its composition of employment and thus wages will need to rise further.

(b) Capital, productivity and financing of activity

The rate of growth in the construction industry's capital stock this year was higher than that of labor input and therefore the ratio of capital per employee grew (following its erosion last year; Table 2.17). This situation has contributed to the increase in output per employee even though the rates of growth of total output were similar to those of the previous year. The increase in capital has also contributed to the rise in total productivity, which was estimated this year at 5.8 percent, as compared to 2.1 percent last year, in spite of similar construction industry output growth rates during the two years. Total productivity is estimated using the assumption of a Cobb-Douglas production function and that the share of capital in output is 10 percent. The assumption of this low share of capital is based on the fact that the ratio of the stock of capital to the industry's output is only about one-third of that in the business sector as a whole (0.66 as compared to 1.7) and on the commonly made assumption that the share of capital in business sector output is 33 percent.[50] The ratio of capital to output in the industry has improved since 2000, when it stood at only 0.44. Despite this growth of capital, its level remains low and indicates that the level of technology use in construction is well behind other industries and that major improvement is still needed.[51] The growth in capital during the last decade has improved not only productivity per employee but also total productivity. Thus, the capital has facilitated the increase in industrial inputs in construction, and has also improved production

[50] We note that total productivity is estimated according to number of employees and not according to work hours, which declined to a greater extent during the decade due to the drop in the number of foreign workers. In addition, the larger the share of capital, the lower will be the total productivity obtained through this calculation. Thus, for example, raising the share of capital in output to 20 percent leads to an increase of 5.2 percent in productivity this year, 12.1 percent during the period 2006–11 and 2.1 percent during the period 2001–11.

[51] For further details, see Weitzman Nagar (2011), footnote 49.

processes. This is reflected in total productivity, which is apart from the improvement in labor and capital productivity. The increase in productivity makes it possible to raise wages; however, wages (per salaried worker) have hardly risen during the last decade, despite the increase in labor productivity and total productivity. This situation again emphasizes the competition from Palestinian and foreign workers, which is delaying an increase in wages and technological improvements. At the same time, it is possible that the stagnation in wages is also part of a wider phenomenon, i.e., the lack of change in the real wage in the business sector as whole during the last decade.

The activity in the construction industry is financed in general through credit, and the ratio of credit to the total balance sheet is in general high (see also Chapter 4). However, despite the high level of activity in the industry, current credit to builders has not grown and has even declined. Thus, the net capital raised in the capital market, i.e.,through shares and bonds (including interest payments), was a negative NIS 2.8 billion. With respect to bank financing, balance sheet credit grew by only NIS 0.3 billion. What then was the source of financing for the industry? Off balance sheet credit to the real estate and construction industry grew by NIS 9.8 billion (as of the third quarter of 2011) as compared to NIS 19.3 billion last year, and a significant portion of this credit is composed of sales guarantees provided to homebuyers. It appears therefore that the strong demand and the early sale of apartments (closer to the start of construction) served to finance building activity. However, with the drop in demand during the second half of the year, which was also reflected in a drop in the volume of mortgages and the number of transactions and an increase in the number of apartments for sale, this source of financing also contracted considerably, and the problem of obtaining financing became more acute for builders. The difficulty in raising capital through the capital market due to the shocks in Europe, the caution exercised by the banks in providing credit, and the Basel III requirements to increase capital adequacy are also limiting the possibilities of obtaining financing in the industry. Therefore, the ability to finance the activity is dependent to a large extent on the ability to sell houses quickly, which is determined by the demand for housing and the accompanying mortgages. These in turn are dependent to a large extent on the development of the crisis in Europe and its effects on the Israeli economy in general and the monetary rate of interest. Therefore, the financing of activity in the industry under these conditions also depends on the willingness of builders to compromise on the prices they charge.

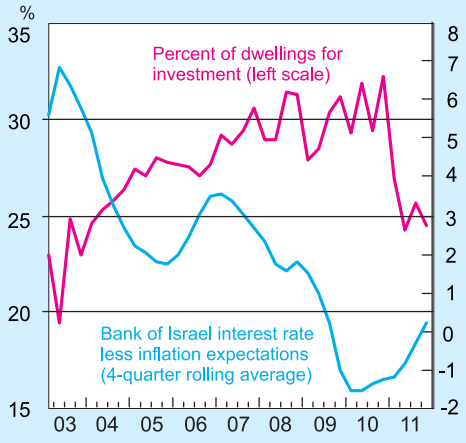
The increased activity in the construction industry during the last two years was not financed through direct credit to builders but rather through the early sale of housing; therefore, with the decline in demand, the continued financing of activity is partly dependent on the willingness of builders to accept lower selling prices.

Box 2.3
The main developments in the market for investment apartments in recent years

The developments in the housing market have received a great deal of attention since the steep rise in housing prices began in 2008. One of the main developments during this period has been the increase in the proportion of apartments purchased as second residences, which are defined as investment apartments (as opposed to an apartment that is used for residence by the purchaser), which has risen from about 22.5 percent of total home purchases in 2003 to about 31 percent in 2010. This box provides a description of the main events in the market for investment apartments, including from the viewpoint of financing.[1]

The number of apartments purchased for investment and their proportion in total purchases has risen during most of the last decade and reached a peak in 2009–10. An analysis by the State Revenue Administration[22] of the purchase of investment apartments during the period 2003–09 indicates that two main sub-periods can be distinguished: up until 2008 and following it. The first period was influenced by, among other things, the personal tax reform, which went into effect in mid-2002 and ended the tax discrimination that benefited residents of Israel who rented out an apartment abroad relative to those who rented out an apartment in Israel, and which imposed a tax on capital gains starting from 2003. An additional explanation of the increase in the proportion of investment apartments is the growth over the course of the decade in the number of apartments purchased by nonresidents, a significant portion of which are intended for investment.[3]

Figure 1
Percent of Investment Dwellings in Total Dwelling Purchases and Real Bank of Israel Rates, 2003-11



Source: Bank of Israel.

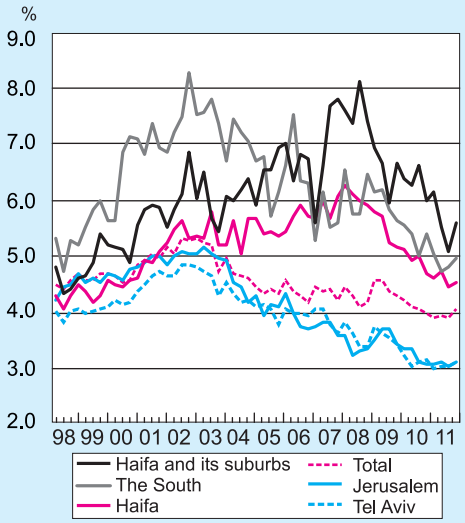
[1] While data exists for the purchase of investment apartments, there are no continuous data on sales. Therefore the discussion will not relate to the stock of investment apartments, but only to their purchase. Furthermore, due to the shortage of continuous data on the activity of foreign residents in the market for investment apartments, no differentiation was made here between the activity of nonresidents and that of residents.

[2] "Purchasers of investment apartments – characteristics and trends: a long-term analysis," by Galit Ben-Naim, Position Papers and Articles, State Revenue Administration 2009. Thanks go to Ms. Ben-Naim also for her assistance in preparing this box.

[3] "Annual review of the activity of foreign residents in the real estate market in 2009," Position Papers and Articles, State Revenue Adminisrtation, 2010.

The second period was influenced by the events surrounding the financial crisis. With the decline in the local interest rate to historically low levels, the returns on conservative investment channels also declined and at the same time riskier assets (such as shares) became even riskier. In contrast, the average national return[4] on apartments stood at about 4.5 percent during each of the years from 2006 to 2008 and in some regions was even higher than that. Indeed, not only did the proportion of investment apartments in total purchased apartments rise (despite the significant drop in the activity of foreign residents), this was accompanied by a change in the geographic trend, such that the preference for Tel Aviv as a destination for investment, which had prevailed until 2008, shifted to Beer Sheva and Haifa where the return was markedly higher than in the past (Figure 2).

Figure 2
Annual Return on Dwellings in Different Areas, 1998-2011



Source: Bank of Israel.

An analysis of the profile of investors since 2008 shows it to be similar to that prior to 2008. The division into salaried workers and the self-employed shows that the main growth in recent years can be attributed to salaried workers, whose proportion rose from 57 percent in 2006 to 61 percent in 2009. The median income of the buyer of an investment apartment, both in 2006 and 2009, exceeded the average wage by 40 percent. The median price of an apartment purchased for investment purposes in 2009 stood at about NIS 600,000 (in nominal terms) and the changes observed in that price relative to previous years are small (in real terms). However, as housing prices increased, the relative value of investment apartments relative to the price of an average apartment fell from about 80 percent during the period 2003–07 to 67 percent in 2009. The median price of an apartment in terms of work years for the purchaser of an investment apartment remained almost unchanged between 2006 and 2009 at about 4.5 work years. It appears therefore that despite the increase in the proportion of apartments bought for investment purposes, the profile of the investors with respect to income and available capital has remained almost unchanged and only their number has changed. The relative

[4] Calculated as annual rent divided by the price of the apartment.

price of a purchased apartment has fallen, which is consistent with the shift to regions with lower prices.

The proportion of investment apartments has fallen significantly since the beginning of 2011 to about 25 percent of total purchases. This is the result of, among other things, the policy measures adopted during the year (for a description of these measures, see above). Although no analysis has yet been performed of the profile of investors and the apartments they purchase since the change, it can be assumed that to the same extent that the profile did not change when the conditions for purchasing an investment apartment improved so also it likely remained unchanged when they worsened. This assumption is important in the analysis of the financing aspect of purchasing an investment apartment, since the relevant data in the monthly reports on mortgages provided to the purchasers of an investment apartment exist only from April 2011 onward.

In accordance with the profile of investors provided above, it appears that the purchasers of an investment apartment require a smaller amount of credit to purchase an apartment than purchasers of an apartment for residence. Thus, of about 15,000 apartments purchased for investment purposes from April to December 2011, mortgages were used in the purchase of only about 7,600 of them. In other words, only about one-half of the purchasers of investment apartments needed a loan in order to finance the purchase and this is in contrast to more than 90 percent of the purchasers of apartments for residence during the same period.

The average size of a mortgage obtained by purchasers of investment apartments was 8.1 percent less than that obtained by purchasers of apartments for residence. The expected repayment period for the former was shorter by 3.5 years than for the latter and the interest rate for the former was somewhat higher. A weighting of the parameters (under certain assumptions) shows that the size of the monthly repayment on mortgages provided for the purchase of an investment apartment is 6.5 percent higher than mortgages provided for the purchase of an apartment for residence. Therefore, there may be two explanations that complement one another: first, investors have greater financial means that enable them to afford higher monthly payments[5] and second, on the assumption that an investment apartment is purchased in order to rent it out (and not just for capital gains) the rent received constitutes the main source for covering the monthly repayment.

The findings above indicate that the behavior of purchasers of investment apartments in the mortgage market differs from that of purchasers of an apartment for residence, which is the result of the difference in their profiles. The relatively

[5] Although in the absence of data on income, there is no possibility of knowing whether only the amount of the repayment is larger or also its proportion of the purchaser's income.

larger amount of equity capital possessed by purchasers of investment apartments and the relatively cheap apartments that they purchase make it possible for about one-half of them not to borrow at all. Even those that do borrow take out a smaller loan than the purchasers of apartments for residence and their monthly repayments are higher.

These findings are relevant to the effectiveness of various specific measures adopted in order to create negative incentives for the purchase of investment apartments. Thus, since the increase in the purchase tax applied to all purchasers of a second apartment, it is reasonable to assume that this measure will affect the considerations in purchasing an investment apartment. In contrast, since only about one-half of the purchasers of investment apartments require a mortgage and in addition they are able to afford larger monthly repayments, the effect of the limitations placed on all new mortgages during 2011 on these purchasers was apparently weaker.

Mortgages Granted by Purpose of Purchase, April–December 2011

	For investment	For owner occupancy
Total mortgages (NIS million)	3,993.2	28,050.3
Share of mortgages requested in total purchases (excluding credit repaid) (%)	50.5	92.5
Share of mortgages granted (%)	12.5	87.5
Average mortgage (NIS '000)	523.1	568.9
Average interest rate (%)	3.8	3.6
Average repayment period (years)	17.1	20.6

SOURCE: Bank of Israel (Banking Supervision).

c. Infrastructure industries: activity, investment and regulation

The infrastructure industries include transportation, communications, energy and water. The economic activity in these industries has three aspects: output, investment in infrastructure and regulation.

The output of the infrastructure industries increased by about 7.5 percent in 2011.

The output of the infrastructure industries, which increased by about 7.5 percent in 2011 (Table 2.19), constitutes 13 percent of business sector output. The main increase in activity this year was recorded in the electricity and energy industries, which is the result of the discovery of natural gas and the activity related to the development of the gas fields. In the transportation industry, activity expanded at a similar rate to that of the business sector as a whole.

Investment and regulation: The investment in infrastructure is an area of the economy in which the direct involvement of the government is justified, since in most cases the return to the investor is lower than the return to the economy (positive

Table 2.19
The Infrastructure Industries—Product and Labor Input, 2005-11

(change, percent)

	Product			Labor input
	2011	2010	2005-10	2011
Total infrastructures	7.5	5.9	4.3	6.7
of which: Transport and storage	4.4	9.4	4.3	4.3
Communications	-1.5	6.9	5.9	9.1
Electricity, energy and water	13.5	0.2	3.7	14.5

SOURCE: Central Bureau of Statistics.

externalities) and as a result private investment would be insufficient. The utilization of externalities in the infrastructure industries is dependent to a large extent on government regulation and supervision. Regulation encourages investment, such as in the case of the allocation of concessions for oil and gas drilling, and also increases efficiency, for example, through the entry of new competitors into the cellular phone market.

Investment in infrastructure increased by 17 percent relative to 2010. The increase in the energy industries (oil and gas) was particularly large.

The investment in infrastructure increased by 17 percent from the level of 2010 and constituted about 20 percent of investment in the principal industries. Especially notable was the increase in investment in the energy industries (oil and gas), for the purpose of developing the gas fields discovered in Israel, while in land transportation (roads and railways) investment fell somewhat and in real terms remained at its average level for the period 1995–2004. Investment in transportation constitutes about 30 percent of infrastructure investment, and investment in energy, which until recent years was a neglible portion of infrastructure investment, has grown to about 28 percent. The main regulations introduced this year were in the following industries: the natural gas industry, in which the Oil Profits Taxation Law was passed based on the recommendations of the Committee to Examine Fiscal Policy regarding Israel's Oil and Gas Resources ; the communications industry, in which connectivity fees were lowered and the entry of additional cellular phone operators was approved, which will lead to additional investment in the industry; and the public transportation industry, in which a reorganization of public transportation took place in the Tel Aviv region.

Table 2.20
Infrastructure Investment, 1995-2011

(annual change, percent)

			Transport							
	Total infra-structures	Communications	Total	*of which*: Land transport	*of which*: Roads	*of which:* Rail	*of which*: Seaports and air-ports	Electricity	Energy (oil and gas)	Water
1995-2000	4.0	11.8	4.7	4.4	3.8	14.0	6.2	-1.9	-8.6	0.9
2001-05	-3.0	-9.4	-2.4	-0.3	-12.2	40.9	-16.7	1.1	1.7	5.9
2006-10	4.4	-0.3	2.9	1.3	8.2	-7.8	18.8	0.0	50.9	-3.3
2011	16.5	-4.6	-8.4	-4.7	-2.6	-10.0	-33.5	15.6	77.6	31.7
2011 (NIS million)	25,749	3,207	7,794	7,075	5,172	1,883	719	4,751	7,324	2,445

SOURCE: Central Bureau of Statistics.

(i) The communications industry

The output of the communication industry, which accounts for 4 percent of business output, remained almost unchanged this year.

The output of the communication industry, which accounts for 4 percent of business output, remained almost unchanged this year.[52] In cellular phones, fast Internet and multi-channel television industries, the rates of penetration among the population have already reached saturation. Thus, a significant proportion of the increase in the industries' revenues in recent years has resulted from the introduction of new products, primarily in the area of mobile phones. Investment in the industry fell by 5 percent in 2011, following declines during the last ten years, with the completion of the large investments in cellular phone and multi-channel television infrastructure.

The regulation in the industry has two aspects: regulation that allows an increase in the efficiency of activity in the industry, and regulation that facilitates investment in the industry's infrastructure. Thus, regulation not only increases efficiency in the industry but also facilitates the addition of new services. A large portion of the investment in the industry is subject to regulatory approval.

The government has in recent years worked to increase the efficiency of the industry and to facilitate the introduction of new services. At the beginning of 2011, connectivity fees were reduced and in addition regulations went into effect to cancel fees for changing providers in all sectors of the industry.

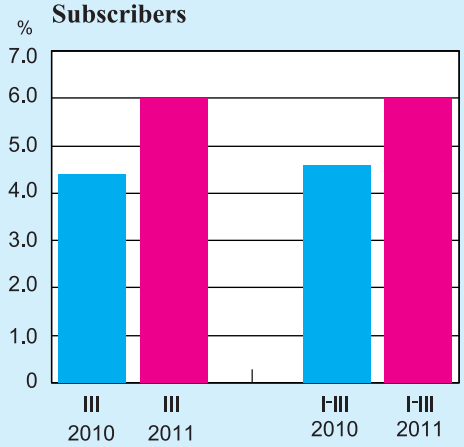
The government has in recent years worked to increase the efficiency of the industry and to facilitate the introduction of new services. In early 2011, regulation was introduced to increase efficiency by reducing connectivity fees (the prices paid for completing a call from a customer of one operator to the customer of another). These fees are supervised by the regulator since the determination of the network to which the caller is connected is not under his control (in other words, this essentially constitutes a monopolistic segment). As of now, conectivity fees in Israel are among the lowest in the world.

Regulations that cancelled fines for switching operators in all branches of the industry (landline phones, digital television and the Internet) were introduced, following the introduction of similar regulations for cellular phone services at the start of the year. This makes it easer for consumers to transfer from one operator to another and thus increases competition. An indication of the results can be seen in the increased the churn rate, i.e., the proportion of customers who switched cellular phone operators (Figure 2.18).

The Ministry of Communication granted licenses to two additional cellular phone operators with infrastructure who will apparently begin operating in the private market in 2012.

Additional regulation to improve efficiency in the cellular phone industry involved the provision of licenses to

Figure 2.18
Churn Rate[a] among Mobile Phone Subscribers



[a] The share of subscribers who discontinue their subscription.
SOURCE: Financial statements of Bezeq (Pelephone), Cellcom and Partner.

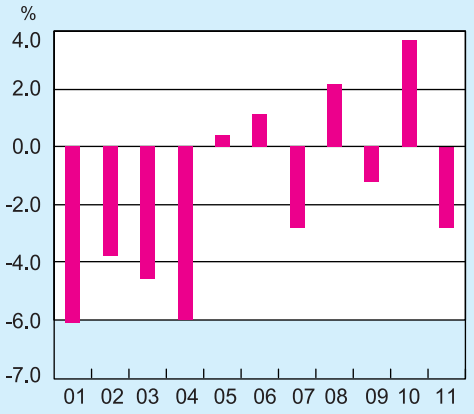
[52] The initial estimate of the Central Bureau of Statistics is that output fell by about 1.4 percent and that during the course of the year started to grow again.

virtual operators (an operator without infrastructure who buys airtime from an operator with infrastructure). Eight operators have received such licenses in recent years, and one of them has already started to sell communication packages to consumers. The proportion of virtual operators in the total number of cellular phone operators in the OECD is in general quite low (less than 5 percent) and their proportion of revenues is even less.[53] Nonetheless, since they are a competitive threat to the operators with infrastructure they improve the level of competition.

Regulation that facilitates investment in infrastructure and thus increases the efficiency of activity in the industry involved the granting of licenses to additional cellular operators with infrastructure who are expected to begin operating in the private market, apparently in 2012. In addition, the government decided on the licensing of an additional company in the area of Internet infrastructure. This policy will lead to an increase in investment in the industry in coming years.

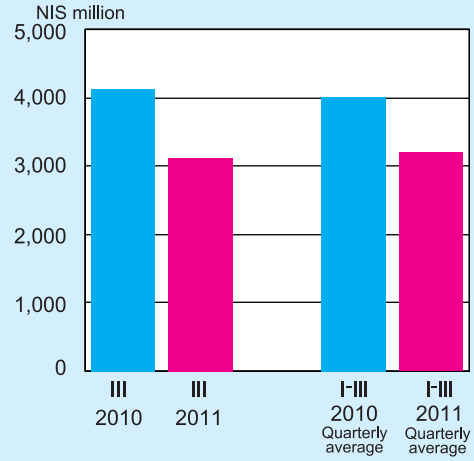
These reforms led to a decline in output prices in the industry: The CPI for telephone services (both cellular and landline) fell in real terms in 2011, following an increase in the previous year (Figure 2.19). This is apparently due primarily to the reduction in conectivity fees. In addition, the total revenues of the cellular companies from the sale of services fell as a result of the preparations for competition and the entry of a virtual operator (Figure 2.20).

Figure 2.19
The Real Change[a] in the Index of Telephone and Internet Services, 2001-11



[a] December to December.
SOURCE: Based on Central Bureau of Statistics data.

Figure 2.20
Mobile Phone Companies' Revenue from their Services,[a] 2010 and 2011



[a] Revenue from the sale of services and equipment.
SOURCE: Financial statements of Bezeq (Pelephone), Cellcom and Partner.

These reforms led to a drop in output prices in the industry.

[53] OECD Communication Outlook 2011.

(ii) The transportation industries

The output of the transportation industry grew by 4.4 percent and labor input grew by about 4 percent.

The transportation industry is composed of public transportation, trucks, sea and air transport and the airports and seaports. The output of the industry grew by 4.4 percent this year and labor input rose by about 4 percent (Table 2.21).

(a) Public transportation: buses, trains and public transport systems[54]

The figures for public transportation indicate only a small increase in activity. The number of railway passengers has not grown since 2008.

The data for the public transportation industry show only a slight increase in activity. Although the number of bus seats has grown by about 5 percent and total mileage grew by about 3 percent, mileage on fixed lines grew by only about one percent and the number of passengers on the trains decreased by about one percent. The decline in rail passengers followed significant growth in total passengers until 2008, which can be attributed to the accelerated development of the railway from 1998 until 2008. However, in recent years, the level of investment has declined, the passenger capacity has grown only slightly[55], and there has been almost no improvement in travel time. In addition, there were temporary interruptions in service due to expansion projects and poor labor relations.

Table 2.21
Main Indicators of Developments in Transport, 2011

(change, percent)

	Share of transport and storage	Product	Labor input
Transport and storage	100	4.4	4.1
of which:Buses, taxis and trains	24	2.9	3.5
Trucks	30	7.0	
Sea and air freight, seaports and airports	22	2.2	-4.8

SOURCE: Central Bureau of Statistics.

(b) Government policy in the public transportation industry

As part of the regulation of public transportation, a reorganization was carried out in the Tel Aviv region with the goal of creating more direct routes. The structure of fares was also changed.

Public transportation policy in Israel primarily involves regulation, investment and subsidization. With respect to regulation, a reorganization was carried out of public transportation in the Tel Aviv region which reduced the non-linearity of the network. In addition, the structure of fares was changed in a way that allows free transfer between operators in a large area within a fixed time through the use of "smart" cards. Investment in recent years has been on a relatively small scale, which has not allowed public transportation to develop to the level of service that exists in Western Europe. Meanwhile, subsidization reduces the real price of a trip, or at least

[54] The railway includes Israel Railways and public transport includes public transportation in the metropolitan areas such as light rail and the Metronit (the electric bus system planned for Haifa).

[55] In 2012, carriage capacity is expected to increase by 1,400 seats.

maintains it at a fixed level in real terms. The result of this policy—together with other factors, including an increase in the standard of living—is that the share of public transportation in passenger trips, primarily in the metropolises, is very low relative to what is commonly observed in metropolises in Europe, and is even declining.

Investment: Total investment in public transportation. Investment in the railway and public transit systems grew significantly during the period 2000–05 but has declined in the following years due to a fall in the investment in Israel Railways. With respect to public transit, three public transport lines are being created in Metropolitan Haifa on designated routes (the "Metronit") with a total length of about 45 km. Operations are expected to begin at the end of 2012. In Jerusalem, one line of the light rail went into operation at the end of 2011, while in Metropolitan Tel Aviv there are delays in the construction of the light rail system.

Total investment in public transportation, i.e. the railway and public transit systems, grew significantly from 2000 until 2005; however, during subsequent years investment declined, due to the reduced level of investment in Israel Railways.

Subsidies to public transportation: The government is encouraging the industry by lowering fares or at least not raising them in real terms. (The fares reached a peak in 2004 and fell by about 6 percent by 2006; since then they have remained almost unchanged.) In addition, additional price reductions are planned in accordance with the government decision in January that adopted the recommendations of the Committee for Economic and Social Change. Nonetheless, an empirical analysis of the effect of fares on number of passenger trips by means of public transportation shows that the effect is weaker than it was in the past and that in recent years a new relationship has developed[56], whereby per capita growth acts to reduce travel by bus since an increase in standard of living allows commuters to purchase private vehicles.

International comparison: A comparison was made of the share of public transportation in passenger trips in Israel and in other countries, which included 17 metropolitan areas, most of them in Western Europe. The metropolises in Israel were Tel Aviv, Jerusalem, Haifa and Beer Sheva. Public transportation in Israel had the lowest proportion of passenger trips. The comparison takes into account, through a regression estimation, the effects of standard of living (measured by per capita GDP) and average family size in the metropolitan area.

A comparison between metropolitan areas in Israel and other countries shows Israel to have the lowest proportion of public transportation within total passenger trips.

In metropolitan areas where the quality of public transportation is positive (see Table 2.22), the level of public transportation is higher than the average for all 17 metropolitan areas, while in metropolitan areas where the quality of public transportation is negative, it is lower than the average (Table 2.22). Thus, for example, in London which has a well-developed system of public transit the quality of public transportation is high and about 22 percent of passenger trips that were—according to the regression—meant to be in private vehicles were in fact made by public transportation.[57] It was also found that standard of living, which is measured by per

[56] It was found that the number of trips per capita on buses with fixed routes is primarily determined by the security situation (with which it is negatively correlated) and to some extent by per capita growth (again with which it is negatively correlated). In contrast, no explanatory effect was found for bus fares or for the prices of new automobiles.

[57] However, a congestion charge is imposed in London, which provides an incentive for using public transport.

Table 2.22
International Comparison of the Quality of Public Transport in Various Metropolitan Areas[a] in 2008

	Average family size	Per capita GDP (€)	(1) Share of journeys by public transport, calculated form the regression	(2) The actual share of journeys by public transport	(2)-(1) Quality of public transport: the difference between the actual share of journeys by public transport and that derived from the regression[b]
London[c]	2.3	45,381	28.5	50.1	21.6
Helsinki	2.1	48,850	23.2	38.0	14.8
Stockholm	2	45,795	21.9	36.4	14.5
Budapest	2.6	15,672	42.5	52.1	9.6
Madrid	2.8	30,850	40.5	49.5	9.0
Vienna	2.1	34,700	25.2	30.6	5.4
Paris	2.3	47,155	27.0	29.4	2.4
Barcelona	2.6	29,836	36.4	34.9	-1.5
Warsaw	2.8	15,439	47.9	45.5	-2.4
Copenhagen	1.9	41,735	20.7	18.0	-2.7
Turin	2.2	19,973	31.0	26.8	-4.2
Sheffield	2.3	19,832	34.8	28.5	-6.3
Stuttgart	2.1	39,221	24.5	18.1	-6.4
Berlin	1.9	37,260	23.6	15.9	-7.7
Amsterdam	2.1	33,800	25.2	17.2	-8.0
Montreal	2.3	25,980	31.8	21.4	-10.4
Birmingham	2.4	23,755	35.6	23.0	-12.6
Beersheba[d]	3.8	18,345	72.6	39.0	-33.6
Tel Aviv (2003)[d,e]	3.4	18,748	61.5	24.0	-37.5
Haifa[d]	3.5	19,311	62.5	24.0	-38.5
Jerusalem (2006)[f]	4.3	16,170	92.7	23.0	-69.7

[a] The estimate is based on a regression in which the dependent variable is the share of total metropolitan journeys that are made by public transport, and the independent variables are per capita GDP and the size of a metropolitan family.

[b] A positive difference means high quality public transport.

[c] London has a congeston charge, which encourages people to travel by public transport.

[d] Average family size in Israel is very high relative to the European norm. Taking the value 2.8 for the average metropolitan family size in Israel, which is the upper limit of family size in Europe, Israel's three major cities (Tel Aviv, Jerulsalem and Haifa) are in the last place in the table, and Beersheba is in a similar position to Sheffield.

[e] For Tel Aviv the estimate of jouneys by public transport is from 2003, when terrorist attacks had an effect, so that the data have a slight downward bias.

[f] The estimate for Jerusalem is from 2006. Jerusalem apparently has a topgraphic problem which prevents widespread use of public transport. Family size is particularly large, so that the rate calculated from the regression may have a slight upward bias.

SOURCE: EMTA Barometer of Public Transport in the European Metropolitan Areas, the Central Bureau of Statistics, and the Ministry of Transport.

capita GDP, has a negative effect on the proportion of public transportation in total passenger trips while family size has a positive effect, since children are, in general, consumers of public transportation.[58]

The outcome of the government's investment and subsidization policy: Government policy has resulted in a situation where a private vehicle is the preferred alternative from the viewpoint of the vehicle owner; however, the use of a private vehicle creates negative externalities, which include the need to develop additional road systems in the metropolitan areas, air pollution, energy expenditures, cost of lost time, and a loss of productivity that could have been achieved through denser housing, which would be possible if there was a more efficient system of public transit.[59]

In order to increase the number of passengers using public transportation, service needs to be improved in order to create an attractive alternative to private vehicles. This can be accomplished through investment in the public transit systems and in the public transportation lanes and through subsidization in order to increase the frequency of trips and improve service.

In order to increase the number of users of public transportation, service needs to be improved, such that it will become a worthwhile alternative to private vehicles. This can be done through investment in public transit systems and in public transportation lanes and subsidization to increase the frequency and level of service in public transportation.

Regulation of the airline industry: The reduction in prices of air transportation will increase the export of tourism and goods, the openness of the economy and even the welfare of consumers, by bringing down the prices of imported goods and holidays abroad. Within the EU and the US, there is a high level of competition among airlines due to the fulfillment of two necessary conditions for competition: a flexible flight policy and a high level of demand for air transportation. These are manifested in a high volume of flights, which can support a large number of carriers and a high level of competition between them. In contrast, the level of competition in Israel is much lower.

Reducing the price of air transportation will improve the openness of the economy and the welfare of consumers.

A series of government decisions in 2008 and the beginning of 2009 went part of the way towards creating an open skies policy through the gradual shift to more liberal flight agreements. Thus, the agreements make it possible to increase the number of carriers for regular flights, and to determine the capacity and frequency of regular flights by the designated carriers, without need of government approval. In 2011, liberal flight agreements were signed between Israel and the Czech Republic and Hungary. These are likely to improve competition, but liberal agreements have not yet been signed with a number of countries whose volume of traffic from Israel is higher, such as Holland, Romania and Poland.[60] In 2008, limits were placed on share code agreements of the parallel type (in which two companies operate on the same line and as a result of cooperation between them the level of competition is reduced). The government also decided in 2008 to advance an open skies agreement with the EU,

[58] See Footnote 4 in Table 2.22 regarding the average size of a family in Israel.

[59] Graham (2007) found that the elasticity of output with respect to density of housing and/or the size of the population in a city and/or the size of the employment centers in the city is 0.13, which is higher for the service industries (0.2) and lower for manufacturing (0.07). The existence of a high-quality public transit system enables a higher population density.

[60] Also, the agreement between Russia and Israel allows almost only one carrier for each country, even though the volume of traffic is high.

which will allow multiple carriers without any restrictions on seating capacity and flight frequency from any destination in the EU.[61]

Following the government decisions and the growth in demand for air transportation, the level of competition in air transportation has improved in Israel, as reflected in the various indicators (Table 2.23).

Table 2.23
Competition Indices in International Passenger Air Transport, 2004-11

Index	2004	2005	2006	2007	2008	2009	2010	2011
Market share of minor companies[a]	0.49	0.48	0.51	0.54	0.57	0.58	0.55	0.58
Routes with three or more carriers	0	0	1	1	6	8	8	9

[a] The market share of minor companies is 1 minus the market share of the dominant company in the number of passengers by scheduled carriers, in this case, 1 minus El Al's market share. The higher the minor companies' share, the higher the degree of competition.
SOURCE: The Ministry of Transport, Civil Aviation Authority.

(iii) The electricity, energy and water sectors

Output and labor input in the electricity, energy and water sectors grew significantly this year, as did the investment in infrastructure in these sectors, which was primarily due to the development of the gas fields.

The electricity sector produces and distributes electricity; the energy sector includes the search for natural gas and the creation of infrastructure for its transport; and the water sector is responsible for transporting, treating and distributing water, as well as for desalination. The economic activity in these sectors in 2011 was characterized by significant growth in output, labor input and investment in infrastructure, primarily due to the investment in the development of natural gas fields (Tables 2.19 and 2.20).

Infrastructure and regulation in the electricity sector: According to the Ministry of National Infrastructures, the reserve capacity in electricity production, which is currently about 9 percent of peak demand, is insufficient for an environment in which demand is growing and the country has no option of connecting to the grid of a neighboring country for backup.[62] Therefore, and in view of the problems in gaining approval of a coal-fired plant, an emergency plan was activated to increase the productive capacity of the Israel Electric Corporation (IEC) by means of "combined cycle" plants which run on gas and require a relatively short time to build. The activation of the plan has increased productive capacity by more than 16 percent since the end of 2007 and it will enable reserve capacity to be increased to 15 percent by the end of 2014. The availability of gas, thanks to the system of transporting natural gas (see the section on the energy sector), and its low cost relative to oil, has also led to the conversion of electricity plants from oil to natural gas (Table 2.24).

According to the Ministry of Infrastructure, the reserve electricity capacity, which is currently about 9 percent of peak demand, is too low for an environment of rising demand.

Regulation: Most of the OECD countries have already opened up the market for electricity production—and distribution as well—to competition. In contrast, the

[61] The implementation of the decision, which is being delayed, should be accompanied by an examination of the structure of the optimal air transportation market. Recently, a committee was appointed in the Air Transport Authority for this purpose.

[62] OECD Economic Survey for Israel, 2011.

Table 2.24

Declared Electricity Generating Capacity[a], 2003-14

	2003	2008	2009	2010	2011	Forecast for 2012[b]	Forecast for 2013[b]	Forecast for 2014[b]
Nominal capacity, end-year (MW)								
Electric Corporation	10,117	11,430	11,664	12,769	13,166	13,291	13,666	13,666
Private generating companies[c,d]					76	76	526	1,376
Share of electricty generated during year								
Gas	0	26	33	37	32			54[e]
Coal	79	65	65	61	62			44
Fuel oil	17	3	1	1	2			2[e]
Diesel oil	4	6	2	1	5			

[a] Clearly, declared capacity is different from the actual. Thus, in 2010, although 20 percent of the declared capacity was by diesel oil, only a far smaller share was actually generated.

[b] The forecast is based on generating capacity under construction.

[c] Not including green energy, as installed capacity which is available almost all-year round cannot be compared with green energies, especially solar and wind energy, which are less available.

[d] Excluding cogeneration (or CHP, combined heat and power), which can produce 412 MW, but supplies mainly one large customer, and not the national grid.

[e] The forecast for natural gas depends on the flow of gas from the Tamar field, from Egypt, and on the use of liquid gas when necessary from the terminal opposite Hadera. The forecasts for fuel oil and diesel oil relates mainly to diesel oil, and also renewable energy.

SOURCE: The Israel Electric Corporation and the Ministry of National Infrastructures.

reform of the Israel Electric Corporation, which is meant to dismantle its vertical monopoly (production, transport and distribution), has been delayed. However, the entry of private producers into electricity production has been made possible in recent years.

In recent years, licenses have been granted for the construction of electricity plants to private producers and currently they are building plants with a combined output of about 1300 megawatts (about 10 percent of total capacity). Once these facilities have been built (probably by 2014) the private producers will control a sizable portion of supply. However, the IEC will continue to control the supply chain. Another 500 megawatts will be produced by plants that are being built by the IEC. Thus, in total, there are plants under various stages of construction which will increase production capacity by about 14 percent.

In recent years, private electricity producers have been granted licenses to build electricity plants and about 1,300 megawatts of capacity are currently under construction.

Licenses have been granted for the construction of power plants based on renewable energy, in accordance with the government decision to build 2700 megawatts of production capacity based on renewable energy sources. The advantage of these facilities is that they produce clean energy; however, they sell their electricity to the IEC at a relatively high price, that is much higher than the generating costs of the IEC

itself or any of the private conventional producers. For example, the cost for the IEC to produce a kilowatt hour of electricity is about NIS 0.30 while "green electricity" is currently sold to the IEC for about one shekel per kilowatt hour. Furthermore, due to the non-continuous nature of production from renewable energy, there are high costs of connecting the facilities to the electricity grid, relative to the costs for conventional power plants. These costs (i.e., the high price of the electricity itself and of connection) are born by the consumer through higher electricity prices.

Significant gas fields have been discovered in Israel (Tamar, Leviathan and others).

The energy industry: Significant natural gas reservoirs have been discovered in Israel (the Tamar field, the Leviathan field and others). In 2011, the Knesset approved the Oil Profit Tax Law, which was based on the recommendations of the Committee to Examine the Fiscal Policy Regarding Israel's Oil and Gas Resources (the Sheshinski Committee). Thus, the state is also benefiting from the discoveries through significant tax revenues. A discussion of the macro effects of the discoveries can be found in Chapter 7: The Balance of Payments.

The consumption of natural gas declined in 2011 due to the disruptions in the supply of gas from Egypt and the depletion of the Yam Tethys field. However, once development of the Tamar field is completed in mid-2013, consumption of natural gas is expected to resume its upward trend.

In parallel to the discoveries of natural gas, the construction of the system of transporting natural gas is continuing and most areas of the country are already connected. This has made it possible to increase the use of natural gas—which is a cheaper and less polluting source of energy than oil and its byproducts—to about 14 percent of Israel's total energy consumption in 2009 and to about 17 percent in 2010. This was accomplished primarily through its use in the production of electricity and in consumption by large factories. However, in 2011, due to the partial interruption of supply from Egypt and the depletion of the Yam Tethys field, the consumption of natural gas in Israel declined (Table 2.24 - Breakdown of Electricity Production). The completion of the development of the Tamar field in mid-2013 will make it possible to return to the upward trend in the consumption of natural gas. The forecast of the demand for natural gas prepared by the Ministry of National Infrastructures predicts a marked increase in the use of natural gas from 5.3 BCM in 2010 to 11.1 BCM in 2020, while the consumption of other sources of energy will grow at much slower rates. Thus, the intensity of gas usage in the production of electricity will grow, as it will in other uses, primarily in industry.

The consumption of fresh water in Israel stood at 1,260 million cubic meters in 2010, which represents an 8 percent increase over 2009.

The water system: The consumption of fresh water in Israel was 1,260 million cubic meters in 2010[63], an increase of 8 percent over 2009. Of this, 55 percent is used by households. The main growth in the consumption of fresh water has been in the agricultural and manufacturing sectors while the consumption by households rose by less than one percent. In recent years, a water shortage has developed due to reduced rainfall and because water prices did not reflect the damage caused to reservoirs as a result of usage when reserves are very low. In view of the shortage of water, the government decided in 2008 to increase the supply of water through desalination and as a result desalination will increase to 600 million cubic meters (Table 2.25).

In parallel to the increase in supply, it was also decided to reduce demand through pricing policy. Thus, the government decided that the real costs of water production,

[63] Data on the consumption of water is published by the Water Authority with a lag of one year.

Table 2.25
Water Desalination, 2008-14

	Capacity of desalination plants, end-year[a] (million m3)[a]	Incremental capacity from end of previous year (million m3)
December 2008	130	130
December 2009	140	10
December 2010	270	130
December 2011	293	23
Forecast		
December 2012	314	21
December 2013	393	79
December 2014	586	193

[a] Capacity is the ability to produce water during a year for 20–25 years, in accordance with the conditions specified in the agreement with the State. Most production is at night, when electricy is cheap and available, as per the agreement.
SOURCE: Israel Water Authority.

and in particular desalinated water, will be internalized in the prices of water since otherwise excess demand for water would result. This policy is reducing the support of the government for the water sector, and accordingly, prices for water and sewage for the household consumer were increased by about 40 percent in 2010 (since then they have remained almost unchanged).[64]

Regulation of the water sector: The water sector has undergone structural reform in recent years. Thus, the authority to determine water policy has been transferred from various units to the Water Authority, which now holds most of the policy making authority, including price setting, allocation of water, approval of investment in water and sewage infrastructure and water sector planning. Thus, an important principle has been established, whereby the authority that approves investment also sets water prices. In this way, the Water Authority must balance between the desire to increase investment in the water sector and the resulting increase in water prices. As a result of the Water Corporations Law of 2001, local authorities were no longer involved in water supply. The law created water corporations within the local authorities that are responsible for the supply of water and the collection of payment for water use, investment in the water network and the reduction of depreciation. Currently there are more than 50 regional water corporations, some of which are very small (even though the sector is characterized by increasing returns to scale). However, only a small proportion of the price of water can be attributed to the switch to water corporations. The increase of water prices following the reform has made it possible for the water

The water system has gone through structural changes in recent years. The authority to determine water policy has been transferred from various units to the Water Authority

[64] Water prices for agriculture and industry are being increased at a rate agreed upon by the representatives of those sectors and the government. The price of water for agriculture is much lower than that for households.

corporations to increase investment in the water and sewage infrastructure and this has brought about a gradual reduction of leakage in urban water pipes.[65] However, initial data for 2010 does not point to an increase in investment by water and sewage corporations or local authorities in the water system.[66]

(iv) Trade and services

The output of commerce and services, which accounts for about 57 percent of business output, grew by 4.2 percent in 2011.

The output of the trade and services industry, which accounts for about 57 percent of business output, grew this year by 4.2 percent, as compared to a 6.3 percent annual rate of growth in previous years (Table 2.26). The output of these industries grew at a relatively rapid rate in the first half of the year while growth slowed markedly in the second half.

The labor input in trade and services grew at a slower rate in 2011 than in the previous year. The real wage remained almost unchanged and it is possible that the absorption of new workers, who are paid relatively low wages, was a factor in moderating the growth in real wages.

The growth in the services industry was led by an increase in exports.

The growth of the trade and services industry was led primarily by an increase in exports (primarily of computer and R&D services and tourism services) of about 10 percent; local activity also grew, which was reflected in private consumption.

Labor productivity in the trade and services industries: The level of labor productivity in Israel, in terms of purchasing power, was about 60 percent of that in the US in 2010 and 80 percent of the average for the OECD. The gaps in terms of output per worker were smaller, which is a result of the larger number of work hours per worker in Israel (68 percent of the level in the US and 95 percent of the OECD average).

The level of labor productivity in Israel in 2010, in terms of purchasing power, was about 60 percent of that in the US and about 80 percent of the OECD average.

A comparison between countries of output per worker in a particular industry relative to that of the total business sector can highlight the differences in the production function, the industry's barriers to entry, and excess profits (which are an indicator of a lack of competition). The output per worker in all the trade and service industries and in transportation and communications (Table 2.27) relative to total output per worker in the business sector in Israel is similar to the situation in the US economy, although differences were found on the sub-industry level.

The ratio of output per worker in the hotels and restaurants services industry to that for the business sector in Israel in 2010 (0.65) was found to higher than in the US (0.59) and also its share of the business sector in Israel is small relative to the US. This industry is characterized by very low wages both in the US and in Israel. It may

[65] Guy Navon (2011) "Water corporations, household waste disposal and budget implications", Bank of Israel memo.

[66] Calculations by the Central Bureau of Statistics using data on investment in water and sewage.

Table 2.26
Main Trade and Service Indicators, 2004-11

(Rate of change, percent)

	Share in trade and services product	Product	Labor input	Real wage per employee
		2004 - 2010		
Trade and services	100	5.9	3.7	1.0
Trade	22	5.0	2.3	0.0
Services	78	6.1	4.4	0.9
of which: Hotels and catering	5	9.0	3.3	0.1
Financial and business services	60	6.0	4.6	1.5
Personal and other	6	6.5	4.8	-0.7
		2010		
Trade and services	100	6.3	3.3	1.0
Trade	21	4.6	2.4	0.2
Services	79	6.7	3.6	1.1
of which: Hotels and catering	4	14.0	2.9	1.3
Financial and business services	62	6.6	3.0	1.4
Personal and other	6	5.2	3.5	-0.6
		2011		
Trade and Services	100	4.2	2.4	0.2
Trade	20	1.8	3.3	-0.5
Services	80	4.8	2.1	0.5
of which: Hotels and catering	4	2.9	1.1	-0.7
Financial and business services	63	4.7	0.2	1.0
Personal and other	6	5.5	5.3	0.0

SOURCE: Based on Central Bureau of Statistics data.

be that the minimum wage in Israel, which is higher than in the US (as a proportion of the average wage), constitutes a barrier to the development of the industry in Israel.[67]

Also in financial services, the ratio of output per worker to output per worker for the business sector as a whole in Israel was higher than in the US. It is important to mention that this industry is subject to regulation that to a large degree determines the level of competition and its barriers to entry. As an industry in the non-tradable sector, competition in Israel may be limited. The fact that Israel is a small country allows for high wages in the industry, relative to the US; however, it also limits the industry's development.

The ratio of output per worker in the business services industry to output per worker in the business sector as a whole in Israel is lower than in the US. In the US, the larger share of real estate services, in which output per worker is very high, is particularly notable. The ratio of output per worker in the transportation and communications industry in Israel to output per worker in the business sector as a whole is similar to that in the US.

[67] There was no difference in 2000 (in contrast to 2010) between Israel and the US in output per worker in the food services and trade industry relative to the business sector as a whole. The gap developed as a result of the increase of the minimum wage in Israel relative to the average wage in the economy.

Table 2.27
Labor Productivity in Trade and Services Relative to Labor Productivity in the Whole Business Sector, Israel and the US

	2000		2010		Industry share (%) of total business sector 2010	
	Israel	US	Israel	US	Israel	US
Labor productivity in trade, services, transport and communications relative to that in the business sector	0.98	0.97	0.93	0.94	68	77
Details						
Labor productivity in trade, hotels and catering relative to that in the business sector	0.66	0.67	0.65	0.59	14	17
Labor productivity in financial services relative to that in the business sector	1.80	1.74	2.51	1.93	11	10
Labor productivity in business services relative to that in the business sector	1.44	1.64	1.28	1.66	23	28
Labor productivity in transport and communications relative to that in the business sector	1.58	1.17	1.33	1.31	10	8

SOURCE: Central Bureau of Statistics and the US Bureau of Economic Analysis.

The rate of increase in labor productivity in the services industries in Israel for the period 1996–2009 was lower than the OECD average.

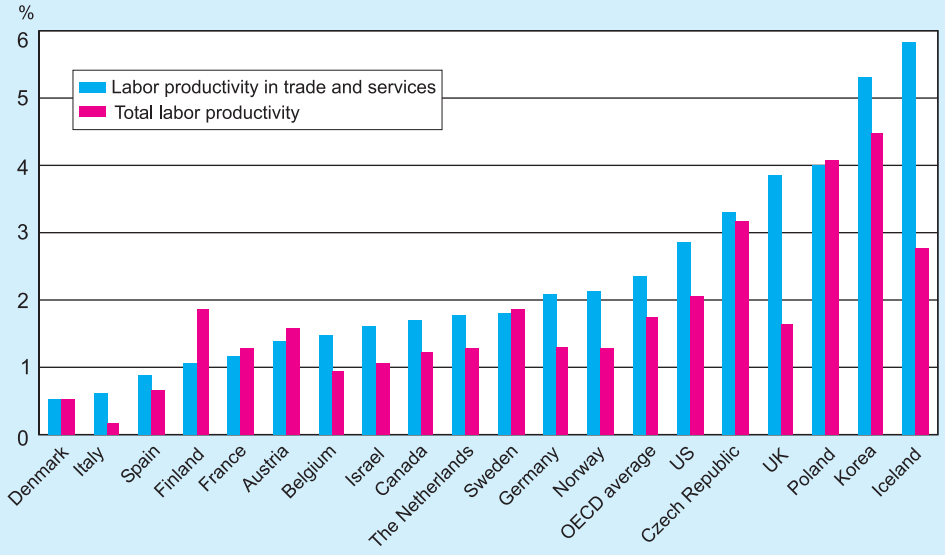
In comparison to the OECD countries, the rate of increase in labor productivity in the trade and service industries in Israel was lower than the OECD average during the period 1996–2009 (Figure 2.21). This low rate of growth is consistent with the increase in the real wage and the slow rate of growth in labor productivity in the economy relative to the OECD. An examination of sub-industries, such as trade and hospitality and food services, as well as the financial and business services industries, provide a similar picture.

Selected services

The output of the business services industry continued to grow in 2011, though at a slower rate.

Business services: The output of business services, which constitutes about one-quarter of business output, continued to grow in 2011 (at a rate of 5.7 percent) though at a slower rate than in 2010. The main factor in the growth of the industry was the acceleration in the export of business services, primarily the export of computer and R&D services, which constitutes over 40 percent of the industry's output. The rate of growth in local uses, and with them the local demand for services, was lower, though it also contributed to the increase in the industry's output. The number of employees in business services remained almost unchanged this year, which was a result of the

Figure 2.21
Labor Productivity in the Trade and Services Industries, 1998–2009



SOURCE: Central Bureau of Statistics and OECD.

increase in the number of employees in export-oriented industries, such as computer and R&D services, and the slight decline in the rest of the business services.[68]

The output of computer and R&D services constitutes about one-third of the total output of the business services. The activity in the industry, which fell during 2010, expanded again this year and this was at a higher rate than for trade and services as a whole. The export of other services, which includes the export of computer and R&D services, rose by about 10 percent in 2011, after only a moderate increase in 2010. The increase in activity in the industry was also reflected in a marked increase in inputs (such that the number of employees in the industry grew by more than 7 percent) and the amount of risk capital raised. The raising of risk capital, which is the engine of growth for start-up companies in this industry, grew by about 70 percent in 2011 relative to 2010 and was even higher than the levels typical of the industry prior to the financial crisis, i.e., in 2007 and 2008.

The output of computer and R&D services grew at a faster rate this year than total activity in commerce and services.

Banking, insurance and other financial institutions[69]: The output of financial institutions, which accounts for 12 percent of business output, grew this year by 2.4 percent and the number of employees in the industry grew by only 2.2 percent, following a marked increase in the previous year. The real wage in financial services

[68] For further details, see Chapter 5: The Labor Market.

[69] The discussion is meant to complete the picture of the economy's industries. For more details on the industry, see the Supervisor of Banks, Annual Survey 2011, to be published in the summer, and Chapter 4: The Financial System in this report.

continued to rise this year, at a rate of 0.4 percent, although it is still lower than prior to the financial crisis.

The output of hospitality and catering services grew this year by only 2.9 percent, following a 14 percent increase in previous years.

Tourism: The tourism industry is based on hospitality services. The output of hospitality and food services, which constitutes 2.5 percent of business output, grew by only 2.9 percent this year, following growth of 14 percent in the previous year. The sources of this growth are the demand by tourists for visits to Israel and demand by Israelis for hotel services, which is to a large extent a substitute for demand by tourists, particularly in periods of instability in the security situation.[70]

Hotel stays by tourists and Israelis remained almost unchanged this year relative to the previous year, which was a record year for tourism. The lack of growth is apparently a result of the security situation which is similar to that which prevailed in 2010 and of the economic situation in Europe and the US, from which originate most of the tourists coming to Israel. In addition, it should be remembered that hotel capacity is limited, and occupancy during the last two years (about 70 percent) is considered to be full occupancy.

Although the costs of staying in a hotel constitute only 30 percent of the expenditure of a tourist in Israel, the shortage of hotel rooms is a barrier to the development of the industry. The number of rooms currently stands at 47,000 and has remained almost unchanged during the last ten years. It should be remembered that hotels are to a large extent a planned industry. The government encourages it through the allocation of land for tourism use, the approval of building plans for hotels and, in many parts of the country, also through investment grants.

[70] See Y. Menashe and R. Shaharabani, "The Hotel Market in Israel," Discussion Paper Series 2011.04, Research Department, Bank of Israel.