Chapter 3
Inflation and Monetary Policy

- The Consumer Price Index (CPI) rose by 3.4 percent in 2007, above the upper limit of the inflation target.
- The main forces affecting prices were the steep rise in world prices of inputs, the expansion of domestic demand, and the appreciation of the shekel during most of the year.
- In the first half of 2007 real inflation was below the lower limit of the inflation target, while the effect of the forces exerting downward pressure on prices and influenced by local-currency appreciation predominated. During this period the Bank of Israel reduced the interest rate five times, by a cumulative 1.5 percentage points, so that in the middle of the year it stood at 3.5 percent.
- Both real and expected inflation rose in the second half of the year, and the effect of the forces exerting upward pressure on prices resulting from both real economic activity and world prices of energy, goods, and food were predominant. In 2007:III the Bank of Israel raised the interest rate twice, to 4 percent, where it remained until the end of the year.

1. MAIN DEVELOPMENTS

The CPI rose by 3.4 percent in 2007, above the inflation target (1-3 percent). The main forces influencing the development of the CPI were the marked increases in world prices of energy, commodities, and food, the expansion of domestic demand, Israel's continued rapid economic growth, and acting in the opposite direction, the appreciation of the NIS against the dollar for most of the year.

The Consumer Price Index rose by 3.4 percent in 2007, above the inflation target.

Whereas the development of prices abroad and domestic demand contributed to the rise in prices during the year as a whole, the non-uniform development of the exchange rate contributed to the volatility of inflation. The NIS appreciated against the dollar for most of the year but depreciated sharply in the middle, thus contributing to the decline in prices for most of the year but also to their rise in the middle of it. As a result of the various factors that influenced prices, in the first seven months of the year the annual inflation rate (measured over the previous twelve months) was below the lower limit of the target, and was even negative, while as of August the annual rate of change of the CPI entered the target range and even continued to rise, exceeding the upper limit at the end of the year (Table 3.1 and Figure 3.1).

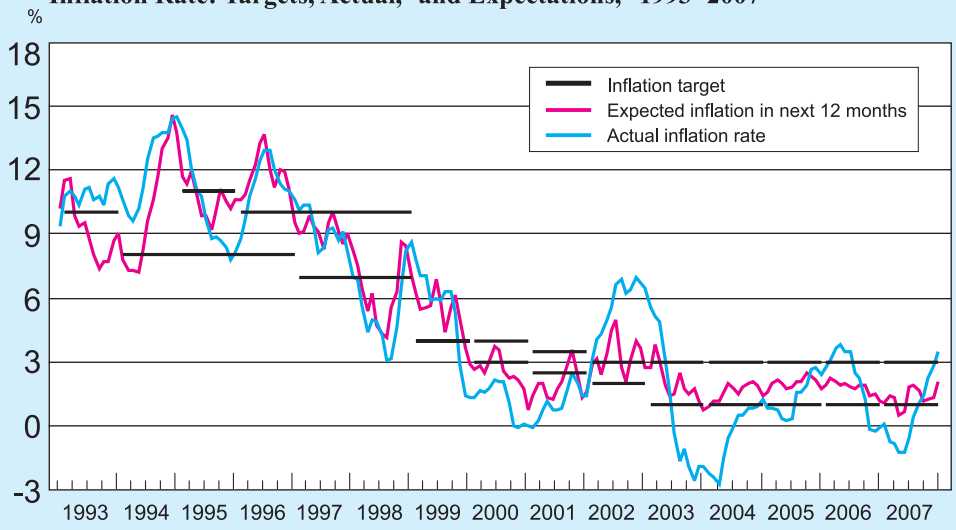
The annual inflation rate over the previous twelve months was below the lower limit of the target in the first half of 2007, within the limits in the second half, and above the upper limit at the end of the year.

Table 3.1
Main Indicators of Inflation and the Monetary Policy, 2001–07

	2001	2002	2003	2004	2005	2006	2007
A. Inflation[a] (percent)							
1. Inflation target	2.5-3.5	2-3	1-3	1-3	1-3	1-3	1-3
2. Actual inflation	1.4	6.5	-1.9	1.2	2.6	-0.1	3.4
3. One-year inflation expectations derived from the capital market[b]	1.9	3.3	2.0	1.5	2.0	1.8	1.3
4. Three- to ten-year inflation expectations derived from the capital market[b]	2.3	4.2	4.2	3.6	3.0	2.6	2.3
5. Forecasters' one-year inflation forecasts[b]	2.2	2.6	2.0	2.1	2.1	1.9	1.9
B. Yields (percent)							
1. Bank of Israel key interest rate[b]	6.8	6.8	7.5	4.2	3.7	5.3	4.0
2. Nominal interest rate in Bank of Israel auctions[c]	7.1	7.3	7.8	4.4	3.8	5.3	4.0
3. Expected real interest rate[d]	5.8	4.5	5.8	2.7	1.7	3.4	2.7
4. Nominal yield to maturity on unindexed government bonds[e]	6.8	9.2	8.0	6.6	5.5	6.0	5.3
5. Real yield to maturity on CPI-indexed government bonds[e]	4.9	5.0	4.9	4.0	3.3	3.8	3.3
C. Depreciation of the NIS (percent)[f]							
1. Against the currency basket[f]	3.7	14.2	-0.5	1.8	1.6	-5.8	
2. Against the dollar[f]	4.8	9.8	-6.4	-1.2	6.2	-8.9	-7.1
3. Against the euro[f]	4.2	25.5	12.7	8.0	-6.1	1.5	2.4
D. Change in asset prices (percent)							
1. Total (nominal) return on shares[f]	-15.4	-8.6	44.4	17.8	35.5	7.9	21.7
2. Apartment prices[g]	-2.3	4.4	-5.2	-1.2	3.8	-3.8	3.4
E. The monetary aggregates (nominal rate of change, percent)[f]							
1. Money supply (M1)	15.4	4.9	7.7	17.9	23.8	8.3	19.3
2. Total credit (C3)	8.0	9.6	-3.0	2.7	3.6	2.5	5.2
F. Actual budget deficit (percent of GDP)							
1. Domestic deficit excluding credit granted	3.5	3.5	6.1	3.2	1.1	0.3	-1.0
2. Total deficit excluding credit granted	4.4	3.8	5.6	3.8	1.9	0.9	0.0
G. Other backround data (percent)							
1. Rate of unemployment[b]	9.3	10.3	10.8	10.3	9.0	8.4	7.3
2. Rate of GDP growth[h]	-0.4	-0.6	2.3	5.2	5.3	5.2	5.3
3. Share of total government debt in GDP[i]	89.4	97.3	99.2	97.6	93.5	84.5	78.5

[a] Change in CPI during the year.
[b] Annual average.
[c] Effective rate, in annual terms.
[d] Nominal rate of interest on Bank of Israel auctions minus inflation expectations, annual average.
[e] Annual average for all terms. Up to and including 2002, gross relative yield; from 2003, gross yield.
[f] December average vis-à-vis December average in previous year.
[g] According to the Central Bureau of Statistics Survey of Housing Prices.
[h] Annual average vis-à-vis that of previous year.
[i] Balance of debt at end of year divided by annual GDP.
SOURCE: Based on Ministry of Finance and Central Bureau of Statistics data.

Figure 3.1
Inflation Rate: Targets, Actual,[a] and Expectations,[b] 1993–2007



a Actual inflation, price rises in previous 12 months.
b Twelve-month inflation expectations, from capital market.

SOURCE: Based on Central Bureau of Statistics data.

The CPI excluding food and energy rose by only 1.8 percent.

Prices of inputs continued to rise worldwide in 2007, and this was particularly noteworthy with regard to energy and food. The dollar price of oil continued to soar, rising by 50 percent to $90 a barrel at the end of the year, while prices of imported raw foodstuffs (used as factor inputs) went up by 20 percent in dollar terms. These two factors accounted for about half of the annual increase in the CPI, while the CPI excluding food and energy rose by only 1.8 percent.

Israel's accelerated economic growth rate also appears to have contributed to the rise in prices in 2007. Whereas in previous years the expansion of economic activity was not accompanied by labor-force pressures, in 2007 there was a turnaround in real unit labor cost, which rose by 2.3 percent.

In the first half of 2007 the Bank of Israel reduced the interest rate by a cumulative 1.5 percentage points in order to bring inflation back to within the target range.

Monetary policy acted to attain price stability in the course of the year while maintaining financial stability and real economic activity. During most of the first half of 2007, as was the case in 2006:IV, strong economic forces were at work and affected prices in opposing directions: on the one hand, the expansion of demand and the rise in the prices of imported inputs intensified the upward pressure on prices, while on the other, the ongoing local-currency appreciation acted to reduce prices. According to the various indicators for assessing inflation, the effect of the downward pressures on prices was predominant, and it was necessary to cut interest rates in order to restore the inflation rate to the target range. The Bank of Israel accordingly reduced the interest rate five times during the first half of the year, by a cumulative 1.5 percentage points, further to the 0.5 percentage-point reduction at the end of 2006, bringing it to 3.5 percent (Table 3.2).

Table 3.2
Nominal and Real Interest Rates, Inflation Expectations, and Price Increases, 2006-07

	Bank of Israel key interest rate	Nominal monetary interest rate[a]	1-year inflation expectations		Expected real interest[c]	Real yield to maturity on CPI-indexed bonds[d]	Change in CPI	
			From capital market[b]	Forecasters' average			During period[e]	Monthly[f]
	Period average, percent							
2006								
January	4.5	4.7	1.9	1.7	2.7	3.5	2.7	-3.4
February	4.8	4.9	2.2	2.1	2.6	3.6	3.1	7.2
March	4.8	4.9	2.1	2.2	2.8	3.7	3.6	3.5
April	5.0	5.2	1.9	2.2	3.2	3.8	3.8	10.9
May	5.3	5.4	2.0	1.9	3.3	3.8	3.5	0.0
June	5.3	5.4	1.8	1.8	3.5	3.9	3.5	1.2
July	5.3	5.4	1.8	2.2	3.6	3.9	2.4	1.2
August	5.5	5.7	1.9	2.1	3.7	3.9	2.2	0.0
September	5.5	5.7	1.9	1.9	3.7	3.9	1.3	-9.8
October	5.5	5.6	1.4	1.4	4.2	3.8	-0.2	-7.8
November	5.3	5.4	1.5	1.7	3.8	3.6	-0.3	-2.3
December	5.0	5.1	1.2	1.7	3.9	3.7	-0.1	0.0
2007								
January	4.5	4.6	1.1	1.7	3.5	3.4	0.1	-1.2
February	4.3	4.3	1.4	1.9	2.9	3.2	-0.8	-3.6
March	4.0	4.1	1.3	2.0	2.7	3.2	-0.9	2.5
April	4.0	4.0	0.5	1.7	3.6	3.3	-1.2	6.2
May	3.8	3.8	0.7	1.2	3.1	2.9	-1.2	0.0
June	3.5	3.6	1.8	1.9	1.8	2.8	-0.6	8.8
July	3.6	3.6	1.9	2.7	1.7	2.9	0.4	14.0
August	3.8	3.8	1.7	2.6	2.1	3.5	1.1	8.6
September	4.0	4.1	1.2	1.7	2.9	3.6	1.4	-5.7
October	4.0	4.1	1.2	1.6	2.8	3.4	2.2	1.2
November	4.0	4.1	1.4	1.9	2.7	3.3	2.8	4.8
December	4.2	4.1	2.1	2.4	2.0	3.2	3.4	7.3

[a] Effective interest; in annual terms.
[b] Until 2002 expectations were calculated from relative gross yields; since 2003, from gross yields.
[c] Nominal interest rate on Bank of Israel auctions minus inflation expectations.
[d] Averages for all maturities; up to and including 2002—relative gross, and from 2003—gross.
[e] Change over the same month in the previous year.
[f] In annual terms.
SOURCE: Monetary Department, Bank of Israel and Central Bureau of Statistic data.

Table 3.3
The Exchange Rate, Import Prices, GDP Prices and Consumer Prices, 2001–07

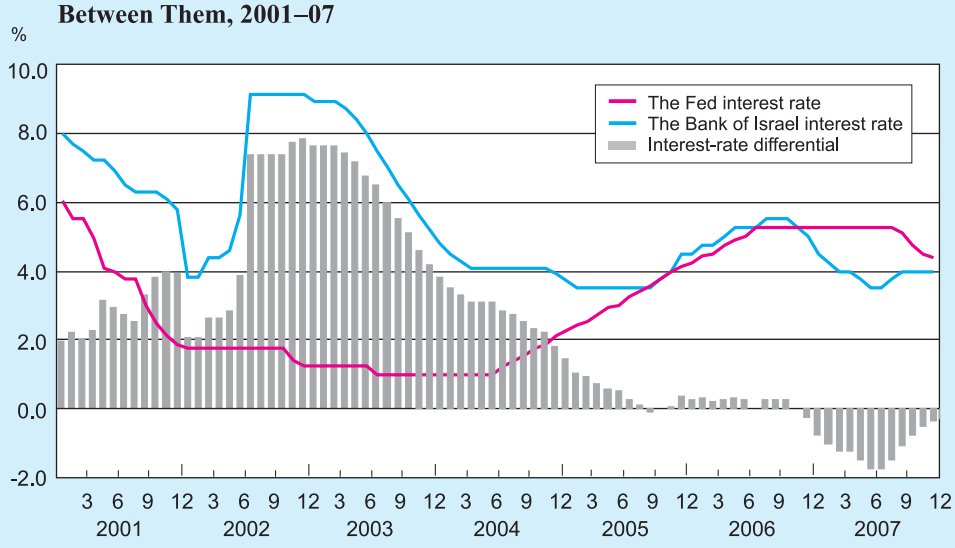
	Import prices[a] ($)							CPI			
	Consumer goods	Investment goods	Production inputs	Fuel	Dollar exchange rate	NIS prices of consumer goods imports[a]	Business-sector product prices[a]	Total	Fuel	Housing	Excluding fuel and housing
	(Compared to previous period, annual averages)										
2001	-1.6	-1.3	-2.5	-11.3	3.0	1.4	0.9	1.1	-3.2	3.8	0.6
2002	0.3	2.1	-1.1	0.8	12.7	13.1	4.1	5.7	6.7	11.5	4.0
2003	4.7	5.0	8.7	12.0	-4.0	0.4	0.9	0.7	9.2	-4.8	1.9
2004	4.2	2.1	12.2	29.0	-1.4	2.7	-1.0	-0.4	8.9	-2.7	0.1
2005	0.9	-2.4	10.8	36.7	0.2	1.1	1.3	1.3	11.8	-1.0	1.9
2006	1.4	-1.1	7.7	17.6	-0.8	0.7	1.9	2.1	9.6	1.2	2.0
2007[b]	3.7	3.7	9.1	12.5	-7.7	-4.3	0.0	0.5	2.0	-2.2	1.2
	(Compared to equivalent period in previous year, last quarter average)										
2001	-0.1	0.9	-6.4	-30.2	4.3	4.2	1.0	1.6	-7.0	5.8	0.8
2002	1.4	4.7	5.6	25.4	10.6	12.2	5.1	6.7	16.4	9.5	5.7
2003	6.8	4.2	8.5	7.5	-6.0	0.4	-1.9	-2.1	2.0	-7.3	-0.8
2004	2.8	1.0	15.7	45.7	-1.0	1.8	-0.6	1.0	16.6	-1.7	1.4
2005	-2.2	-5.7	4.9	25.4	5.7	3.4	3.6	2.6	12.9	3.6	2.0
2006	4.5	2.5	7.7	3.2	-8.4	-4.3	0.6	-0.2	-3.3	-5.2	1.4
2007[b]	5.7	4.5	17.0	45.7	-7.4	-2.1	0.8	2.8	15.1	1.8	2.5
	(Compared to previous quarter, quarterly average)										
2006											
I	1.1	0.6	2.7	4.5	0.4	1.6	0.4	0.0	-1.3	0.0	0.1
II	1.1	1.4	5.1	9.3	-3.6	-2.5	0.3	1.3	8.6	-1.4	1.8
III	1.9	0.0	3.0	3.7	-2.5	-0.6	-0.9	-0.1	1.6	-0.8	0.0
IV	0.3	0.6	-3.2	-12.8	-2.9	-2.7	0.8	-1.4	-11.2	-3.1	-0.4
2007											
I	0.4	1.8	-0.2	-4.4	-1.0	-0.6	-0.4	-0.3	-1.2	-0.7	-0.2
II	0.7	0.6	6.6	18.7	-3.1	-2.4	0.0	0.8	10.1	-0.5	0.6
III	0.6	0.4	5.1	10.0	2.8	3.4	0.5	1.9	2.3	5.2	1.0
IV	3.8	1.7	4.6	16.7	-6.1	-2.5		0.5	3.4	-2.0	1.0

[a] The change in dollar import prices of goods (excluding fuel) multiplied by the exchange rate.
[b] Import prices for fourth quarter are estimates.
SOURCE: Based on Central Bureau of Statistics data.

In 2007:III upward pressure on prices intensified, and the Bank of Israel consequently raised the interest rate.

In 2007:III the principal economic forces operated in the same direction, namely, they exerted upward pressure on prices: local-currency depreciation, which occurred *inter alia* against the backdrop of the low interest rate and the markedly negative interest-rate spread vis-à-vis the Fed rate and expectations that the process of cutting the interest rate had come to an end, as well as the rise in prices of fuels and energy and Israel's accelerated economic growth, all these augmented the upward pressure on prices, creating apprehensions that the inflation rate would overshoot the target. All these factors were supplemented by the rise in the risk premium in Israel and in most of the emerging markets as a result of the global financial crisis (Table 3.3). As a result, the Bank of Israel raised the interest rate twice in 2007:III, by 0.25 percent each time. In 2007:IV strong economic forces affected prices in opposing directions again, and the prevailing interest rate (4 percent) appeared to be appropriate for attaining the inflation target. Towards the end of the year, however, it transpired that the effect of the forces serving to increase prices, primarily because of the rise in world prices of energy and food, was predominant, so that the interest rate for January 2008 was raised by 0.25 percentage points to stand at 4.25 percent.

Figure 3.2
Short-Term Interest Rates in Israel and the US, and the Differential Between Them, 2001–07



SOURCE: Bank of Israel.

The economic conditions prevailing in Israel in the first half of 2007 made it possible to reduce the domestic interest rate to a level that was below that of the US—a situation with hardly any precedent in the last decade. Thus, a negative interest-rate spread of 1.75 percentage points was created between the two countries at the end of

the first half of the year. In the second half of 2007 and at the beginning of 2008 the US Fed reduced its interest rate because of the credit crisis in the financial markets and apprehensions regarding the expected effect of real economic activity, while in Israel the interest rate was raised. The negative interest-rate spread was thus reduced to minus 0.25 percent at the end of 2007, while at the beginning of 2008 the interest rate in the US was 0.75 percentage points lower than that in Israel (Figure 3.2).

Inflation expectation for the next year derived from the capital market were within the inflation target range for most of the year—in the first three quarters they were in the lower part of the range, and in the last quarter, in the upper part. Long-term expectations, up to 20 years, were within the long-term target range as well. This, despite the volatility of inflation and the economic forces acting on prices in opposite directions. The relative stability of inflation expectations and the fact that they remained within the long-term target range provide an indication of the success of the inflation targeting regime in achieving a stable price environment (see Section 3).

2. FACTORS UNDERLYING POLICY AND THE FEATURES OF THE MONETARY REGIME

While 2007 was notable on the one hand for the rise in world prices of energy, food, and goods as well as the expansion of domestic demand, it was characterized on the other by local-currency appreciation against the dollar, which had a moderating effect on prices for most of the year. The CPI rose by 3.4 percent in 2007, above the upper limit of the inflation target, whereas in 2006 prices had remained (virtually) unchanged.

World prices of inputs, particularly those of energy and food, rose in 2007. The price of a barrel of oil continued to rise by about 50 percent in dollar terms, continuing the 400 percent increase of the last six years (Figure 3.6). This was the result of global economic growth, which caused demand to increase, occurring in the context of the economic expansion of China and India (see Box 3.1), while being offset by fears that output would contraction as a result of geopolitical tensions. The local-currency depreciation during the year only slightly offset the effect of the global rise in prices of energy and fuel, so that the energy components of the CPI rose by 14.4 percent in 2007 and were responsible for a 1 percentage point rise in the CPI. The energy components of the CPI were affected by another mechanism—the excise tax on fuel—which moderated the effect of the rise in world oil prices on its price in Israel. This tax is fixed in NIS prices per liter and not as a percentage of its consumer price, so that if world oil prices go up only part of the consumer price rises. Currently, the excise tax on fuels for privately-owned automobiles is NIS 2.3 per liter, accounting for 37 percent of its consumer price.

The price of food in the CPI continued to rise in 2007, too, being affected by its upward trend worldwide. Prices of imported raw foodstuffs (which constitute factor

Table 3.4
The Domestic Production Component of the CPI vis-à-vis the Import Component, 2001–07 (Percent)

	CPI	Housing prices	Fuel prices	CPI excluding housing fuel, fruit and veg.	Domestic prices[a]	Import prices[b]	World import prices of consumer goods in dollar terms[b]	NIS/$ exchange rate
				(change during the year)				
2001	1.6	5.8	-7.0	0.7	-0.7	2.8	-0.1	4.3
2002	6.7	9.5	16.4	5.7	0.7	13.5	1.4	10.6
2003	-2.1	-7.3	2.0	-0.7	0.0	-1.9	6.8	-6.0
2004	1.0	-1.7	16.6	1.4	-0.3	4.1	2.8	-1.0
2005	2.6	3.6	12.9	1.2	0.6	2.1	-2.2	5.7
2006	-0.2	-5.2	-3.3	1.0	2.7	-1.5	4.5	-8.4
2007	2.8	1.8	15.1	2.1	5.3	-2.9	5.7	-7.4
				(change from previous quarter)				
2005								
I	0.0	-1.4	-2.6	0.1	0.2	-0.2	1.6	-0.9
II	0.3	0.3	5.0	0.4	0.4	0.2	-0.8	1.2
III	1.6	3.2	8.0	0.5	0.1	1.1	-1.0	2.8
IV	0.7	1.8	2.7	0.3	-0.1	0.9	-2.1	2.5
2006								
I	0.5	1.1	-0.2	0.7	0.1	1.5	1.8	0.4
II	0.7	-1.6	6.4	0.7	1.2	0.0	1.6	-3.6
III	0.0	-2.0	2.0	0.1	0.7	-0.7	1.5	-2.5
IV	-1.5	-2.9	-9.5	-0.5	0.7	-2.3	-0.6	-2.9
2007								
I	0.2	0.4	-0.1	0.2	1.3	-1.4	1.1	-1.0
II	0.2	-0.7	8.0	0.1	1.2	-1.5	1.3	-3.1
III	2.0	4.2	2.6	0.9	1.2	0.6	0.2	2.8
IV	0.4	-1.8	4.5	0.8	1.7	-0.6	3.1	-6.1

[a] Prices of the domestic production component of the CPI excluding housing and fuel. Bank of Israel estimates.
[b] Prices of the imported component of the CPI excluding housing and fuel. Bank of Israel estimates.
SOURCE: Based on Central Bureau of Statistics data.

inputs) also increased by about 27 percent in dollar terms, continuing their upward trend since 2005. An important reason for the rise in world food prices was the greater use of corn and soya in the production of organic fuel, as a result of the steep increase in global energy prices. Thus, a shortage of these products developed, leading to a long series of direct and indirect effects, among them the rise in the prices of corn and soya as well as of their substitutes, an increase in the cost of animal fodder (e.g., for poultry and cattle), and hence a rise in the cost of the food produced from them. Another cause of the higher food prices was the severe weather, which led to a reduction in the supply of wheat, as well as epidemics among livestock. Furthermore, the rise in food prices was also influenced by the increase in the demand for food, primarily from the

expanding economies of India and China (see Box 3.1). In view of all these factors, prices of food in the CPI went up by 6.3 percent in 2007, contributing 0.9 percentage points to its rise.

The food component of the CPI rose by 6.3 percent, and contributed 0.9 percentage points to the rise in the CPI

Box 3.1
China's and India's Effect on Prices in Israel and World Wide

In recent years, we have been witness to strong and uninterrupted growth in China and India, which is expected to continue in coming years. In 2006 and 2007 the Chinese economy grew by 11.1 percent and 11.4 percent respectively, and the Indian economy by 9.7 percent and 8.9 percent[1].

The economic expansion in China and India has a major influence on world growth. As of 2007, according to the estimates of the IMF, China and India account for 10.9 percent and 4.6 percent, respectively, of global output.[2] The influence of China and India is felt through a number of channels, with trade being the largest and most direct. This effect is manifested through changes in relative prices—not only through the sharp reduction in the prices of goods exported from India and China, but also through the increased prices of goods imported by them.[3] The changes in relative prices have no effect on inflation in the long run, but in the short run their effect can be significant, as was evident in 2007.

In this box, we will focus on three main channels of influence: energy prices, food prices and clothing and footwear prices, and will discuss how these affect the Israeli economy.[4] It is important to mention that it is very difficult to separate the effect that China and India have on the prices of goods from the effects of other factors. Nonetheless, inflation in 2007 totaled 3.4 percent, of which 2 percent was the result of increases in the prices of food and energy, and the effect China and India have had on these prices in recent years has been considerable. Therefore, despite the difficulty in quantifying the direct

[1] Source: International Monetary Fund (IMF). The growth figures for 2007 are IMF estimates.

[2] Source: IMF–WEO update January 2008. These figures take into account an adjustment for purchasing power parity. Without this adjustment, China accounts for 6 percent of the global economy, and India, 2 percent.

[3] The relative price of a particular good is the ratio of its price index to the general price index not including that component. The data presented below are calculated according to this definition, apart from some of the global prices which, due to insufficient data, were calculated as the ratio between the index in a specific sector and the overall index.

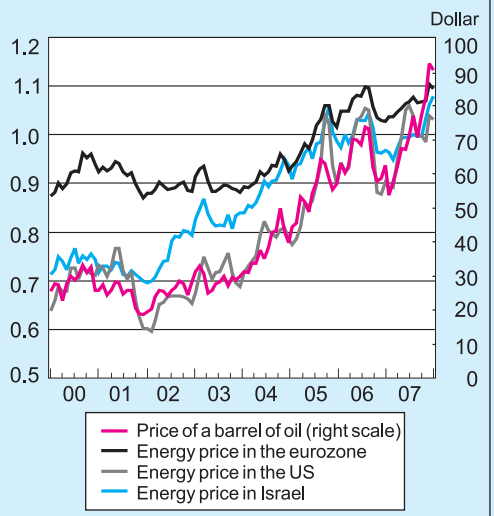
[4] Later in the discussion, we will relate primarily to the effects of demand/supply pressure on the CPI since it represents the most relevant price changes for most of the population. Therefore, we will not review all the channels through which India and China influence other countries, such as their effect of the prices of metals and services.

contribution of China and India, it is important to carry out this analysis. In addition, it is worth mentioning that even though the discussion treats China and India as a single unit, each has a different effect on the prices of goods, with China having the larger influence.[5]

We have recently been witness to sharp increases in **energy** prices, both in Israel and worldwide.[6] China and India are among the largest consumers of energy in the world and during the last two years have been responsible for about 70 percent of the increase in the demand for energy.[7] Since 2002, global energy prices have increased by a cumulative rate of 260 percent.[8] Asia's demand for energy, which is driven by rapid economic development and industrialization, constitutes one of the main factors behind the high level of energy prices.

Figure A shows that since 2002, relative energy prices have been rising in Israel and the US and have since then recorded cumulative increases of 55 and 75 percent, respectively. In the past year, the relative prices of energy in Israel have risen by some 12 percent. It appears that the sharp increase in relative prices is correlated with the increase in the dollar price of a barrel of oil, which has risen by almost 370 percent since 2002 and by about 60 percent since December of last year. Energy constitutes about only 7 percent[9] of the Consumer Price Index in Israel (see the table below). However the direct contribution of energy prices to inflation in 2007 (3.4 percent) was 1 percent. Since 2002, these increases have contributed 3.3 percent to cumulative inflation in comparison to only 1.1 percent during the previous

Figure A
Relative Prices[a] of Energy, and the Price of a Barrel of Oil, 2000-07



[a] See footnote 3 in this Box.

[5] For more details, see: Dancing with the Giants: China, India and the Global Economy (The World Bank).

[6] Energy prices include the price of natural gas, service fees, electricity, gasoline, kerosene and diesel fuel.

[7] Source: International Energy Agency.

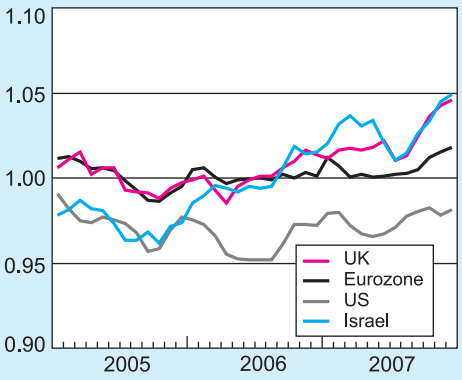
[8] Source: International Monetary Fund (IMF).

[9] Fuels (gasoline, kerosene and diesel fuel) constitute about 4 percent of the General Price Index and electricity, natural gas and service fees constitute about another 3 percent.

five years. Cumulative inflation during the two periods (2002–07 and 1997–2001) was almost identical (about 12 percent) and therefore, one can conclude that inflationary pressure from the energy sector increased significantly between the two periods.

Since Israel is an importer of energy, the sharp increase in relative energy prices beginning in 2002 was accompanied by a worsening in the terms of trade that include the import of fuels relative to the terms of trade that do not.[10] This effect was particularly evident in 2004 when there was an increase in the terms of trade without fuels in contrast to a decrease in the overall terms of trade.

Figure B
Relative Prices[a] of Food, 2005-07



[a] The relative prices in the UK and the eurozone were calculated using the ratio of the food price index to the CPI; in the other countries, using the ratio of the food price index to the CPI excluding food.

In the area of **agriculture**, China and India are among the largest consumers in the world of wheat, rice, palm oil, cotton, rubber, soybeans, soy oil and tea. China has contributed to the increase in the global prices of oils (palm and soy) and of soybeans, due to the large volume of its imports of these goods. In addition, as a result of the growth process, China is undergoing a significant change in its eating habits, which primarily involves a reduced dependency on basic foodstuffs, such as grains and rice, and an increase in other products, such as meat and processed food.

In Israel, as in many other countries, the relative price of food (without fruit and vegetables)[11] has increased by about 9 percent since the second half of 2005 and by about 3 percent since the beginning of 2007. Figure B clearly shows the increase in relative food prices starting from the second half of 2005, also in Britain, the euro zone and the US. The weight of food prices in the General Index is about 14 percent and its contribution to inflation in Israel during the last year was 0.9 percent and since the second half of 2005 about 1.7 percent (with cumulative inflation totaling 5 percent). According to the assessment of the IMF, the forces that are behind the increase in the prices of goods in general and in the prices of food in particular will continue to exist in

[10] The terms of trade were calculated according to the Paasche Index without ships, planes and diamonds.

[11] From this point on, when we refer to food prices, they do not include fruit and vegetables.

2008 due to, among other things, the rapid increase in demand relative to the expected increase in supply.

China and India are the main producers and exporters of **textiles and clothing**.[12] As of 2007, China and India are responsible for about 40 percent of Israel's imports of textiles. Starting in 1996, with the increased exposure of the Israeli market to Third World goods, a significant and uninterrupted increase in the import of textiles from China can be discerned. The relative prices of clothing and footwear fell in various countries. Also in Israel the component of clothing has been declining relative to changes in overall prices in the economy. It is important to mention that part of the decrease in clothing and footwear prices can be attributed to the decline in the quality of the products and not only to the increase in supply. The effect of these prices on inflation has been minor, however, and its effect in 2007 was negligible.

The massive volume of these exports is a result of the low wages and large supply of labor in the two countries, as well as the cheap and accessible supply of land, primarily in the periphery, that enables the construction of clothing and textile factories at low cost. The low production costs result in low consumer prices, despite the cost of transportation. A similar process is evident with regard to other manufactured products. Cheap and abundant labor in China and India (and other emerging markets) competes against domestic workers and makes it difficult for them to ask for wage rises. This situation applies in many advanced economies, and may be one of the reasons for the moderate wage rises in Israel in the last few years (see Chapter 5, The Labor Market). Modest wage rises together with the drop in prices of manufactured goods moderate inflationary pressures and act as a valve in slowing the increase in inflation.

Thus, together with the inflationary pressures arising from energy and food prices, deriving at least partly from China and India, there are deflationary pressures from manufactured goods such as clothing and footwear, as well as forces serving to moderate wage rises, that also originate in those two countries.

[12] The aggregation of textiles and clothing is permissible due to the very strong connection between them, both from a technological point of view and in the context of trade, since textiles are the main raw material for the clothing industry and, in addition, the international and local trade in the two sectors is for the most part regulated by the same laws.

Inflation in the last decade: the contribution of the analyzed sectors and their weights in percent

	Inflation				Contribution to inflation			Weight of the component in percent		
	Energy	Food	Clothing and Footwear	General Index	Energy	Food	Clothing and Footwear	Energy	Food	Clothing and Footwear
1997	8.3	8.4	-4.4	6.9	0.4	1.2	-0.2	4.0	15.2	6.0
1998	4.2	8.6	6.7	8.6	0.2	1.3	0.3	4.0	15.2	6.0
1999	11.0	2.9	-4.0	1.3	0.5	0.4	-0.2	4.7	14.4	4.5
2000	3.9	3.3	-0.1	0.0	0.2	0.5	0.0	4.7	14.4	4.5
2001	-4.5	1.1	-5.7	1.4	-0.2	0.2	-0.2	5.0	14.6	3.4
2002	20.2	4.9	-3.5	6.5	1.0	0.7	-0.1	5.0	14.6	3.4
2003	3.5	0.3	-4.0	-1.9	0.2	0.0	-0.1	5.4	13.5	2.9
2004	12.1	1.8	-4.2	1.2	0.7	0.3	-0.1	5.4	13.5	2.9
2005	7.1	2.0	-4.3	2.4	0.6	0.3	-0.1	6.7	13.9	3.0
2006	-2.0	3.6	-1.7	-0.1	-0.2	0.5	0.0	6.7	13.9	3.0
2007	14.4	6.3	-0.7	3.4	1.0	0.9	0.0	7.3	13.7	3.4

SOURCE: Based on Central Bureau of Statistics data.

The rise in world prices of energy, food, and goods caused inflation to accelerate in many countries. Thus, in 2007 inflation went up by 4.1 percent in the US and by 3.1 percent in the Eurozone, while prices adjusted for the effect of energy and food rose by only 2.4 percent in both those economies. Similar to the trends that characterized the principal economies, in Israel the CPI adjusted for energy and food rose by only 1.8 percent compared with a 3.4 percent rise in the CPI as a whole. Thus, the rise in world prices of inputs exerted upward pressure on domestic prices via the increase in production costs.

The CPI adjusted for housing, fuel, and fruit and vegetables (accounting for 72 percent of the general CPI) rose by 2.1 percent in 2007. This index may be regarded as consisting of the prices of imported finished goods as well as domestically-produced goods and services (the "domestic production component") The import component is influenced, *inter alia*, by the exchange rate and dollar prices of imports of finished consumer goods (and their lags), while the domestic production component is affected *inter alia* by domestic demand and the price of imported inputs which affect production costs. In 2007 there was a steep 17 percent increase in the price of imported inputs in dollar terms (about 8.3 percent in NIS terms), and this had a marked effect on the increase in the domestic price component.

The division of the CPI into a domestic production and an imported component cannot be measured directly, and the estimation is performed by means of econometric models developed in the Bank of Israel (see Box 3.2 in last year's edition of this

The Main Components of the CPI, by their Contribution to Inflation, 2004–07

(percent)

	Energy[a]	Food[b]	Housing	CPI excluding energy, food and housing	CPI
Weight in 2007	7.3	13.7	21	58	100.0
			Annual rate of change in index		
2004	12.1	1.8	-2.5	1.3	1.2
2005	7.1	2.0	5.9	-0.2	2.4
2006	-2.0	3.6	-6.1	1.4	-0.1
2007	14.4	6.3	1.9	1.9	3.4
			Contribution to CPI inflation		
2004	0.7	0.3	-0.5	0.7	1.2
2005	0.6	0.3	1.2	0.3	2.4
2006	-0.2	0.5	-1.2	0.8	-0.1
2007	1.0	0.9	0.4	1.1	3.4

[a] The components of energy are fuel and vehicle lubricants, and electricity, gas and diesel fuel for domestic use.

[b] The food component does not include the fruit and vegetables item.

SOURCE: Based on Central Bureau of Statistics data.

The rise in the domestically produced component in the CPI is explained by the surge in the price of imported inputs and in demand.

publication). This analysis[1] indicates that the domestic production component rose by approximately 5 percent, and this is explained, as stated, by the rise in the price of imported inputs and by the rise in demand, while the import component declined by 3 percent against the backdrop of the moderate increase in the dollar prices of consumption and local-currency appreciation (Table 3.4). In contrast with the steep rise in prices of inputs, those of imported finished goods rose by 6 percent in dollar terms, but in the context of the local-currency appreciation they declined by 2.1 percent in NIS terms.[2]

Another model developed in the Bank of Israel (presented in Box 1, on p. 35 of Inflation Report No. 20, January to June 2007) deducts the effect of a change in the exchange rate and the effect of world prices (including factors of production) from the

[1] Note that this refers to an estimate which indicates trends, and should not be regarded as a precise calculation of prices, serving solely as a means of enriching the discussion.

[2] The relevant exchange rate for prices of imported goods is the effective exchange rate, which weights the exchange rate against the currencies of 23 countries according to their share in Israel's foreign trade. This exchange rate appreciated by 2.3 percent in 2007, constituting a moderating influence on prices.

change in actual inflation. According to this model the rise in inflation is not explained solely by the rise in world factor-of-production and other prices. Thus the conclusion may be drawn that domestic demand also contributed to the surge in price rises to the vicinity of the upper limit of the inflation target.

The rapid expansion of economic activity continued for the fourth consecutive year, reflected by a high rate of GDP and business sector growth alongside the acceleration of private consumption, both current and of durable goods, and the continued growth of exports and domestic investment. Economic activity during this period was based on the continued expansion of international trade, despite some slowing of its rate of growth. Notwithstanding the slowdown of economic activity in the US, relatively rapid economic expansion persisted in Europe, as did the high growth rates in the emerging economies, especially China and India.

Real unit labor cost, which fell in recent years primarily due to increased productivity, rose in 2007, but only moderately.

While excess demand did not find any real expression in labor costs in 2007, there was palpable change relative to previous years. Real unit labor cost, which had declined in the last few years primarily because of the rise in productivity, rose in 2007, albeit by a moderate 2.3 percent (Table 3.5). This was due to the stabilization of the level of labor productivity alongside a rise in the real wage. The reduction of taxes on wages in recent years may have played a part in moderating labor cost (see Chapter 5). However, the demand effect may have been expressed in the fact that, in contrast to previous years, manufacturers did not absorb the rise in the price of imported inputs, passing them on to consumers instead via a rise in the prices of products, as reflected by the increase in the price of the domestic production component.

The leveling of the rise in labor productivity indicates that the possibility of increasing supply by greater utilization of factors of production has almost been exhausted—a situation characteristic of a growing economy in which actual GDP is close to potential GDP, or even exceeds it. Various estimates of potential GDP suggest that GDP growth in the last four years has led, according to one model,[3] to the almost complete closure of the output gap, and according to other models the gap has been closed and has actually become positive, i.e., actual GDP has surpassed potential GDP.[4] Although the different methods yield a wide range of estimates of the output gap, but what they all have in common is the finding that in the last few years GDP has risen faster than potential GDP. This may be an indication of increased demand to the extent of full utilization of capacity. Hence, the deflationary pressures that according to all the methods existed at the beginning of the 2000s have weakened, and in fact pressures tending to boost inflation may have appeared.

There was 9 percent local-currency appreciation against the dollar in 2007, and this served through most of the year to depress prices, constituting a moderating influence that offset the forces exerting upward pressure on prices. This trend was not

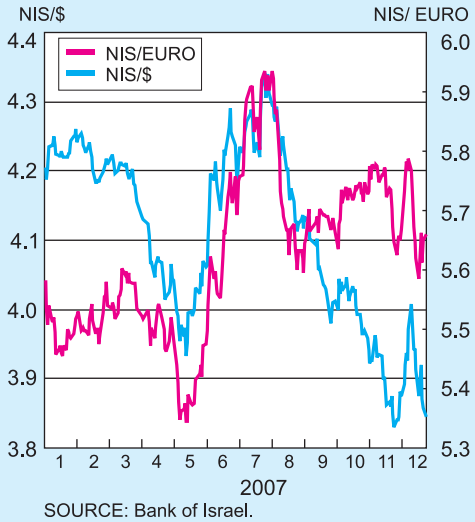
[3] The Blanchard & Quah (1989) method. For details see Y. Menashe and Y. Yachin (2004), "Mind the Gap," Israel Economic Review Vol. 2 No. (2)

[4] Using the linear trend and the HP filter trend, and the estimate of the level of GDP and the rate of unemployment that do not exert pressure on prices. For details of this estimate see Box 1.1 in the Bank of Israel Annual Report for 2004, available on the Bank's website: http://www.boi.gov.il .

There was 9 percent local-currency appreciation against the dollar in 2007, but in the middle of the year there was sharp depreciation.

consistent, however, and in the middle of the year there was 10 percent local-currency depreciation against the dollar, intensifying the forces exerting upward pressure on prices at that time. Thus, the exchange rate of the NIS against the dollar constituted one of the main reasons for the volatility of prices during the year (Figure 3.3 and Figure A in Box 3.2).

Figure 3.3
Exchange Rate Against the Dollar and the EURO, 2007



SOURCE: Bank of Israel.

In 2007:I and in particular in 2007:II until mid-May, there was 7 percent local-currency appreciation against the dollar, continuing the trend evident during the latter half of 2006. The entrenchment of the NIS during this period stemmed mainly from long-term domestic factors, and especially Israel's favorable economic situation and the persistence of export-oriented growth, as well as the current-account surplus and continued capital inflow. This occurred against the background of the entry of foreign investment houses into the market following the introduction of primary dealers (market makers) in the bond market in the autumn of 2006. These factors were accompanied by the continued consolidation of the credibility of macroeconomic policy, which was also supported by the decision of the OECD to embark on the process of enabling Israel to join the organization.

As a result of all these factors Israel's risk premium was reduced and assessments that its country rating would be improved abounded. In addition, the increased strength of the NIS was also bolstered by global factors, among them the weakening of the dollar in global financial markets, especially vis-à-vis the currencies of emerging markets. From mid-May to July there was a trend shift, and the NIS depreciated by 10 percent against the dollar, even weakening against many other currencies, including those of both emerging and developed economies. This was apparently due to a combination of several short-term factors which were operating at that time, among them the low interest rate and expectations that there would be no further interest-rate reductions after an extended series of reductions, the negative interest-rate spread vis-à-vis the US, which even increased to –1.75 percentage points during the first half of the year, the acceleration of the rate of investment abroad by institutional investors, and the rise in political and security uncertainty.

During July a credit crisis developed in the US and world financial markets, leading to a rise in the level of global risk as well as to greater volatility in the financial markets. In August the trend of local-currency appreciation that had characterized the

Table 3.5
Nominal Labor Costs per Unit of GDP, Unemployment Rate, and Prices, 2001–07
(percent)

	Nominal labor compensation per hour		Real business-sector product	Nominal unit labor costs in business sector[a]	CPI	Unemployment rate
	In business sector	In public sector				
	(average annual change over previous year)					(period average)
2001	4.4	3.7	-1.7	6.3	1.1	9.3
2002	-1.4	1.1	-2.4	0.7	5.7	10.3
2003	-1.8	-3.5	3.2	-5.2	0.7	10.8
2004	1.1	4.2	7.2	-3.5	-0.4	10.3
2005	3.7	1.8	6.5	1.5	1.3	9.0
2006	3.8	2.5	6.5	2.2	2.1	8.4
2007	2.6	1.9	6.1	1.8	0.5	7.3
	(change from same quarter in previous year)					
2004						
I	1.2	8.7	6.8	-4.4	-2.5	10.9
II	1.0	0.3	6.4	-2.9	-0.7	10.4
III	0.3	0.2	6.9	-3.8	0.6	10.1
IV	1.9	7.6	8.6	-2.8	1.0	9.9
2005						
I	2.8	-5.2	6.5	0.5	0.8	9.2
II	3.4	8.1	6.7	1.5	0.3	8.9
III	4.5	7.6	5.2	3.8	1.7	8.9
IV	4.2	-2.4	7.5	0.3	2.6	8.9
2006						
I	4.8	1.5	7.0	2.7	3.1	8.8
II	4.0	4.7	9.0	-0.7	3.6	8.8
III	3.2	2.0	5.7	1.9	2.0	8.3
IV	3.4	1.6	4.4	5.0	-0.2	7.8
2007						
I	2.7	0.7	6.2	1.6	-0.6	7.8
II	2.9	1.9	4.2	3.8	-1.1	7.5
III	2.6	0.7	6.1	2.2	0.9	7.2
IV	2.3	4.3	8.0	-0.5	2.8	6.7

[a] Wage per employee post as reported to the National Insurance Institute, adjusted by real GDP.
SOURCE: Based on Central Bureau of Statistics data.

exchange rate at the beginning of the year resumed, and this continued until the end of the year (although not consistently), with the NIS appreciating by 6 percent against the dollar. This trend was supported by long-term factors, and was accompanied by the effect of short-term factors, most of them the result of the credit crunch, whether directly or indirectly; these included the contraction of the interest-rate spread due to the reduction of the US interest rate alongside the rise in the domestic interest rate, the weakening of the dollar worldwide, and the repatriation of residents' investments.

The link between the exchange rate and the housing component in the CPI was weakened in 2007. The housing component rose by 1.9 percent during the year despite local-currency appreciation.

In a small economy such as Israel's which is open to international trade and capital flows, the passthrough from the exchange rate to prices operates through several channels, among them prices of imported goods and of domestic products based on imported inputs and raw materials. In addition, the exchange rate against the dollar had an additional and marked effect on prices via the housing item, even though this is nontradable. In 2007, however, the link between the exchange rate and the housing item weakened: the housing item rose by 1.9 percent in the course of the year even though there was local-currency appreciation during the year (Table 3.6). This contrasts with the high 90 percent correlation in the past between exchange-rate shifts against the dollar and changes in the owner-occupied housing index.[5]

Renewed rental contracts serve as an indicator of this development, as these constitute the main component in the calculation of the housing index: after a protracted period in which the vast majority of such contracts were denominated in dollars, these began to decline from 90 percent of all contracts to 60 percent in 2007. This is very positive development, as there is no economic logic in dollar linkage of prices at a time of low inflation, and it exposed all those concerned to exchange-rate risk. However, an analysis of the various reasons for the weakening of the link between the exchange rate and the housing index (given in detail in Box 3.2) shows that the decline in the proportion of dollar-denominated rental contracts explains only a small part of this trend. Most of it stems from the adjustment of prices, in particular the increase in dollar-denominated rents, as a result of greater demand for housing services and as compensation for the weaker dollar, made possible by excess demand. The increase in demand for housing was evident primarily in the central coastal region, and was expressed in the contraction of the stock of available housing units, which exerted upward pressure on housing prices and hence on rents.

In mid-1997 the Bank of Israel stopped intervening in foreign-currency trading, and the exchange rate is essentially determined freely by market forces; this contributes to the correct pricing of currency risks, increases the freedom of action and effectiveness of monetary policy, and augments integration with global financial markets. Nevertheless, as a result, the exchange rate is exposed to factors which are exogenous to Israel's economy in addition to the effect on it of domestic factors, thereby increasing its volatility. While the volatility of the NIS exchange rate is no greater—and in some cases even smaller—than that of other currencies, because of the high passthrough from the exchange rate to prices in Israel, even adjusting for the housing item, the volatility of the exchange rate is expressed in the wider fluctuation of inflation than is the case in other economies, and this hampers the ability to attain the inflation target in the short term.

In 2007, too, despite the weakening of the link between the exchange rate and the housing index, the volatility of the exchange rate was expressed in the fluctuation of

[5] The correlation was calculated using to the quarterly change, from 1999 to 2006. The owner-occupied housing index accounted for 80 percent of the housing index, and was influenced by changes in the exchange rate via prices of new dollar-denominated rental contracts.

Table 3.6
Price Developments, 2001–07

	CPI	Fruit & vegetables	Food	Housing	Apartment maintenance	Clothing & shoes	Education, culture and entertainment	Health	Transport and communications	Core index[a]	Index of controlled and supervised products	Wholesale price index of industrial production[b]
						Year-end, percentage annual change						
2001	1.4	6.9	1.1	5.2	0.9	-5.7	-0.3	6.0	-0.5	0.2	1.5	0.5
2002	6.5	-1.2	4.9	8.2	10.7	-3.5	3.5	5.7	9.3	6.9	7.3	5.6
2003	-1.9	4.2	0.3	-6.7	0.0	-4.0	-0.5	-0.4	-0.6	-0.3	-0.6	2.9
2004	1.2	6.0	1.8	-2.5	5.6	-4.2	-0.6	3.3	3.3	2.5	2.6	5.2
2005	2.4	-9.6	2.0	5.9	5.1	-4.3	0.7	2.2	1.4	1.7	3.9	4.3
2006	-0.1	12.0	3.6	-6.1	-1.2	-1.7	1.2	1.8	0.0	1.4	0.3	2.7
2007	3.4	7.0	6.3	1.9	6.1	-0.7	1.5	1.9	4.2	3.8	5.7	6.7
						Percentage, monthly change						
2007												
January	-0.1	4.5	0.2	-0.5	0.9	-6.1	-0.5	0.2	-0.2	0.0	0.2	0.7
February	-0.3	-3.8	0.7	0.2	-0.1	-7.5	-0.1	-0.1	-0.3	0.0	0.0	0.1
March	0.2	-3.1	0.6	0.0	0.0	-3.6	0.4	0.0	1.1	0.5	0.2	1.3
April	0.5	2.3	0.0	-0.2	0.4	3.9	0.9	0.6	1.1	0.7	0.3	0.0
May	0.0	3.7	0.3	-1.1	-1.3	1.2	-0.1	0.3	0.4	0.3	-0.7	-0.1
June	0.7	-5.0	-0.4	1.3	0.0	15.1	-0.2	0.2	1.0	0.2	0.0	0.5
July	1.1	-0.6	0.2	3.8	0.6	-3.5	1.2	-0.2	1.3	0.8	0.5	1.2
August	0.7	6.1	1.1	1.6	1.1	-8.3	1.6	0.2	-0.3	0.5	1.1	0.7
September	-0.5	3.2	0.5	-0.8	0.6	-3.6	-1.5	0.4	-0.9	-0.7	0.8	0.4
October	0.1	0.2	0.7	-1.5	1.4	0.7	0.1	0.3	0.1	0.4	0.9	1.0
November	0.4	-0.2	1.3	-0.8	1.6	3.0	-0.3	0.1	0.4	0.6	1.4	0.5
December	0.6	0.1	0.9	0.0	0.8	10.8	0.0	-0.1	0.4	0.3	0.6	0.2

[a] The CPI excluding housing, fruit and vegetables, clothing and shoes, and price-controlled products.

[b] Excluding fuel.

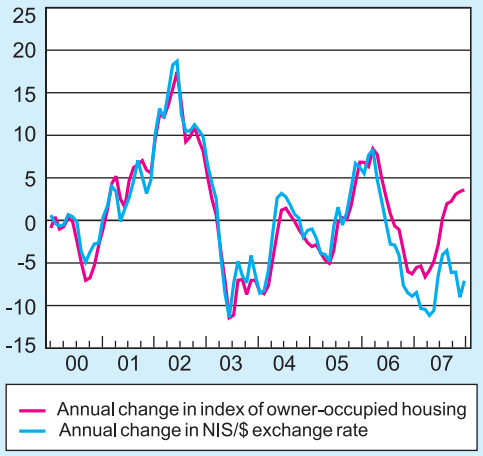
SOURCE: Central Bureau of Statistics data.

inflation around the target as a result of the high passthrough. Thus, even though forces were at work throughout the year to push prices up as a result of the increase in world prices of inputs and the expansion of domestic demand, the ongoing local-currency appreciation in the first half of the year exerted downward pressure on prices, so that the annual rate of change in the CPI (over the previous twelve months) was below the lower limit of the target and even negative. By contrast, the reversal of the exchange-rate trend and the switch from local-currency appreciation to sharp depreciation in the middle of the year, together with other factors, caused the CPI to rise by a steep 2.5 percent in June–August, so that its annual rate of change came within the inflation target range, even continuing to ascend and overshoot its upper limit at the end of the year.

Box 3.2
The Dissociation of the Housing Prices from the NIS/Dollar Exchange Rate

The main feature characterizing the price of owner-occupied housing[1] in the last decade (and even earlier) has been the close connection between shifts in it and changes in the NIS/dollar exchange rate, as shown in Figure A. Thus, for example, in 2002 there was 9.8 percent local-currency depreciation alongside an 8.1 percent rise in the price of owner-occupied housing, and in 2003 there was 6.4 percent local-currency appreciation with a 7.0 percent decline in the price of owner-occupied housing. In 2006 there was 8.9 percent local-currency appreciation while the price of owner-occupied housing fell by 6.3 percent. In 2007, unusually, the close connection between the two variables was weakened, with 7.1 percent local-currency appreciation and a 3.6 percent rise in the price of owner-occupied housing.

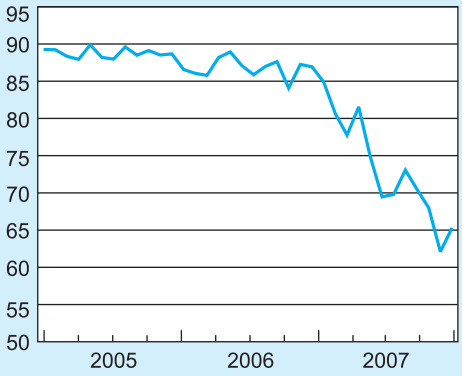
Figure A
Change in the Price Index of Owner-Occupied Housing, and the NIS/$ Exchange Rate, 2000-07 (percent)



SOURCE: Central Bureau of Statistics.

[1] The reference is to the consumer price of housing services of owner-occupied housing.

Figure B
Renewed Rent Contracts Quoted in Dollars as Share of Total Renewed Contracts, 2005-07 (percent)



SOURCE: Central Bureau of Statistics.

We do not have a full explanation for the persistence of the close connection between the NIS/dollar exchange rate and housing prices. A recognized phenomenon that characterized the housing market in the past was the tendency to link prices to the dollar (both the purchase price of houses and rents). This trend developed during the years of high inflation, when indexation to the dollar provided ongoing protection against changes in the inflation trend, but did not disappear once the disinflationary process had been completed. It would appear that in the past the conditions enabling the housing market to abandon its habit of indexation to the dollar did not develop. However, since renewed rental contracts were involved, even if the contract was quoted in dollars, when it was renewed the price in dollars could have been expected to be adjusted in accordance with changing conditions, such as large-scale local-currency appreciation or depreciation, or a substantial change in supply or demand conditions. Note that for almost a decade there was very little change in dollar prices. Thus, most of the changes in the owner-occupied housing index reflected shifts in the exchange rate rather than demand and/or supply in the housing market. This may be explained in part by the fact that some contracts are renewed between the same tenant and landlord. Changes in such contracts are likely to be smaller than changes in contracts between a landlord and a new tenant. Various other prices are also customarily quoted in dollars, such as lawyers' fees and the price of services related to the organization of social and other functions. It seems, however, that those dollar prices were adjusted faster to the changed circumstances, particularly the shekel/dollar rate.

It would appear that the link between owner-occupied housing and the exchange rate was weakened in 2007 as a result of two main factors that had not occurred simultaneously in the past: the increased demand for housing in the central region, expressed in the decline in the stock of available units, so that there was upward pressure on the price of units for sale and rent, and the extensive local-currency appreciation that began in 2006:II and persisted, with

wider fluctuations than in the past, throughout 2007, causing losses to landlords who had indexed rents to the dollar.

According to figures issued by the CBS, shown in Figure B, *the proportion of renewed rental contracts quoted in dollars has been declining, and this trend intensified in 2007* (the average was 89 percent in 2005, 87 percent in 2006, and 65 percent at the end of 2007; for more details, see Bank of Israel, Inflation Report No. 21, July–December 2007, p. 9 Box 1). This is undoubtedly an important expression of the weakening of the connection between the dollar and housing prices. Another aspect of this process which occurred in 2007 is the rise in rents in dollar terms by those who still indexed them to the dollar.

The change in the owner-occupied housing index (Δp_t) can be approximated by the weighted average of the shift in rents quoted in NIS (Δp_t^{NIS}) and that in rents quoted in dollars ($\Delta p_t^{\$}$) translated into NIS by means of the change in the NIS/dollar exchange rate (Δe_t). The weight ($w_t^{\$}$) reflects the extent of contracts quoted in dollars.

$$(1) \quad \Delta p_t \equiv w_t^{\$} \cdot \left(\Delta p_t^{\$} + \Delta e_t\right) + \left(1 - w_t^{\$}\right) \Delta p_t^{NIS}$$

According to this, the weakening of the association between changes in the housing index and those in the dollar exchange rate can be expressed via three channels:

1. *A decline in the share of rental contracts quoted in dollars* ($w_t^{\$}$). This channel severs the link for a relatively long term, because while the contract is in effect the price is not mechanically adjusted to changes in the exchange rate and also because when the contract is renewed the point of departure will be the rent in NIS in the preceding year.

2. *Big shifts in rents quoted in dollars*. In the framework of a contract quoted in dollars compensation for local-currency appreciation (that has occurred or is expected to occur) or for a rise in demand can be achieved by increasing the price in dollars when the contract is renewed. This channel severs the link when the contract is renewed, but while the contract is in effect the price is still fully linked to changes in the exchange rate, and the point of departure for the renewed contract remains the rent in dollar terms from the preceding year.

3. *Big shifts in rents in contracts quoted in NIS*. When these prices undergo major changes the statistical connection between the owner-occupied housing index and the dollar is weakened. However, this need not necessarily apply in

the long term to the relation between housing prices and the dollar, because if the share of dollar-denominated rental contracts remains high, as soon as NIS-denominated rents stabilize the housing index will in large part once again be determined by exchange-rate shifts.

Below we attempt to assess the contribution of each of the channels to the weakening of the connection in 2007. The difficulty in estimating this stems from the fact that the changes in rents denominated in dollars or NIS are unknown. The CBS publishes only the aggregate change in NIS terms (the owner-occupied housing index) and the proportion of rental contracts denominated in dollars. However, it is possible to determine a reasonable range for these shifts (assuming that the change in one of the prices enables us to extrapolate the change in the other by means of the above equation).

From an examination of a number of alternatives with regard to the possible changes in 2007 in rents quoted in NIS (a range of between 2 and 20 percent), it transpires that in 2007 there was a significant rise of between 5 and 12 percent in rents denominated in dollars. *It would appear that this is the predominant channel in the severance of the linkage between the dollar and housing prices*. According to our calculations, this channel contributed between 40 and 80 percent of the difference between local-currency appreciation and the price of owner-occupied housing, while the decline in the share of dollar-denominated rents contributed one third of the difference at the most.

The Bank of Israel's policy is to adjust the interest rate gradually, so that the return of the inflation rate to the target is steady.

Because of uncertainty regarding the future development of the economic variables affecting prices, policymakers act in accordance flexible inflation targeting regime, that endeavors to combine and balance the main objective of reducing the fluctuation of inflation from the target with the secondary objective of trimming the deviation of GDP from its potential (see Box 3.1 in last year's edition of this publication). In 2007, too, a flexible inflation targeting regime policy was adopted. Thus, despite the ongoing local-currency appreciation in the first half of the year the interest rate was reduced gradually and relatively moderately, in order to cause inflation to rise gradually to the target range.

In the middle of the year, after it became clear that the exchange rate trend had shifted to sharp depreciation (*inter alia* as a result of the reduction of the interest rate), and that this, alongside the rise in input prices, could constitute an upside risk to the attainment of the target, an interest-rate hike was needed. The hikes in the interest rate were also made gradually, and only after assessments had intensified that the rate of price increases might exceed the upper limit of the target range. This was intensified by the fact that the need for a change in the interest-rate trend emerged quite soon after the interest-rate cuts, because of the implications for the financial and real markets.

Consequently, the Bank of Israel responded to the changes in the exchange rate only when it appeared that they were leading to the protracted departure of inflation from the target. Moreover, the Bank of Israel's response employed the interest-rate instrument at a relatively gradual pace while accepting the possibility that inflation could deviate for a while from the target range, whether upwards or downwards. This was done in order to avoid sharp interest-rate changes in the context of the uncertainty prevailing with regard to the persistence of the deviation, particularly in view of the fluctuations in the exchange rate.

In view of the credit crisis, which began in the US and the principal global financial markets in mid-2007, many central banks injected large amounts of liquidity into the markets and reduced the interest rate or refrained from raising it.

A credit crisis emerged in the US and the principal global financial markets in the middle of the year, emanating from the sub-prime mortgages (see Section 2 of Chapter 4). The crisis was expressed in a steep drop in the extent of liquid sources and difficulties in raising short-term capital on the financial markets, and was accompanied by a sharp increase in global risk-aversion, embodied in a rise in risk premiums, the widening of yield spreads in the bond markets, and shock waves that went through global stock markets. All this led many central banks in the US, Europe, and other developed economies to inject huge amounts of liquidity into the credit markets in order to allay the impact of the crisis and prevent it from worsening. The Fed reduced its key interest rate, and other central banks either followed suit or refrained from raising their interest rates. This conflicted with the restraint biased policy adopted by most of the leading central banks in the first half of the year as a result of the rise in global inflation risks, primarily because of the increase in oil and food prices. In spite of the crisis, global inflation risks remained high, although the possible adverse effect on financial markets, and primarily on economic activity, obliged many central banks to shift the emphasis in the middle of the year from inflation to financial stability and to inject liquidity in an attempt to alleviate the damage to real economic activity.

Despite the shock to global financial markets, the adverse effect on Israel's capital markets was moderate in 2007 in comparison with many developed economies. Similarly, as a result of the low exposure of the domestic banks to the sub-prime mortgages there were no liquidity difficulties on the credit markets. The efficient functioning of the markets was also due to Israel's sound economic fundamentals combined with the high level of credibility of both monetary and fiscal macroeconomic policy.

Fiscal policy contributed to maintaining financial stability and supported price stability.

The public debt/GDP ratio continued to contract sharply in 2007, for the fourth year in succession, and the credibility of fiscal policy was entrenched further. This was also due to the adherence to two targets—the deficit ceiling and the government expenditure target—for the second consecutive year (see Chapter 6). Despite the planned 2.9 percent deficit, the government ended the year with a balanced budget. The low budget deficit reflects a steep increase in tax receipts for the second year in succession, as a result of accelerated economic growth. Thus, in 2007, too, fiscal policy contributed to the maintenance of financial stability and bolstered price stability. The reduction of the need for government borrowing also freed sources for the business sector investments, and boosted the development of nonbank sources to finance it. The

combination of responsible fiscal policy and monetary policy that adheres to its targets supports the continuation of economic growth and the maintenance of economic and financial stability.

3. MONETARY POLICY IN 2007

Since 2003 monetary policy has operated under an inflation target regime that defines a continuous price-stability target of between 1 and 3 percent. A long-term target makes monetary policy more transparent and credible, and also helps to anchor inflation expectations within limits, thereby making it easier to attain.

The main instrument used by the Bank of Israel to attain the target is its key interest rate, which affects the development of inflation via aggregate demand, inflation expectations, and the exchange rate, with the speed of the policy passthrough differing between the various channels. In order to make decisions about the interest rate the Bank of Israel monitors the development of several economic indicators, among them developments on the capital, financial, and foreign-currency markets, and real economic activity. It also uses econometric models for forecasting inflation, and these examine the development of prices according to various monetary policy and economic development scenarios. By tracking the various developments and indicators the Bank of Israel is able to constantly examine the response of the markets and its implications for expected inflation, as well as to determine the appropriate interest rate for attaining the inflation target for the next year or two while maintaining the stability of the financial markets.

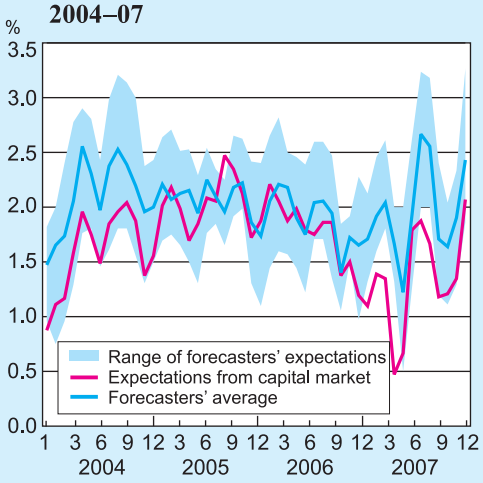
In the first half of 2007 both actual and expected inflation was low due to the strengthening of the NIS.

For most of the first half of 2007, as was the case in 2006:IV, expected inflation was below the lower limit of the target range, and it seemed that overall combined effect of the range of economic forces tended towards smaller price increases and even price reductions. These were expressed in the actual development of prices—the monthly rates of change in the CPI were below their seasonal trend throughout most of the period; inflation in the previous twelve months, which serves as the yardstick for assessing adherence to the inflation target, was negative for most of this period, generally remaining around minus one percent. This was the case following the first three quarters of 2006 when the actual annual inflation rate in the previous twelve months remained close to and even above the upper limit of the target. This development was also accompanied by a decline in expected inflation: inflation expectations for a year ahead as derived from the capital market, which ranged around the midpoint of the inflation target for most of 2006, fell to the lower limit of the target in 2006:IV and 2007:I, ranging from 1.1 to 1.5 percent, and for most of 2007:II (particularly in April and May) dipped even below the lower limit of the inflation target, to an average level of 0.5 percent, with expectations of a moderate interest-rate reduction (Figure 3.4).

The decline in prices in the first half of 2007 was the result of the 7 percent appreciation of the NIS against the dollar, mainly in 2007:II, due mainly to long-

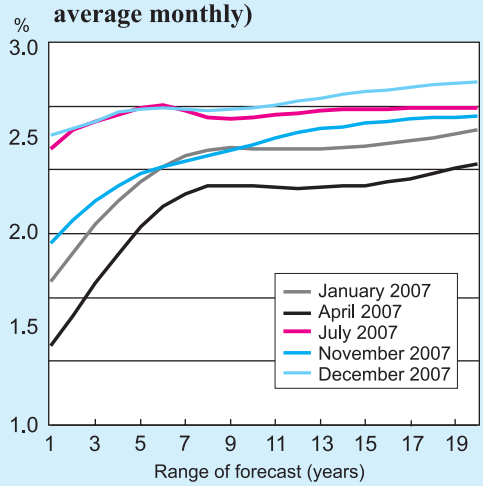
term domestic factors, in particular the positive state of the economy due to the current-account surplus and capital inflow, as well as global factors such as the weakening of the dollar in global money markets and especially vis-à-vis the currencies of emerging economies; all these also contributed to the stronger NIS. This was bolstered further by the reduction of Israel's risk premium, as measured by five-year CDS spreads, which fell from 22 basis points at the beginning of the year to 17 basis points in May, and also expressed by the narrowing of the yield gap between unindexed 10-year government bonds and US T-bills, which fell to zero in May (compared with a 1.5 percentage-point spread in 2006:IV). This occurred alongside the decline in yields on the government bonds and *makam* (short-term bills issued by the Bank of Israel) markets, which reached their minimum level in May. The decline in yields was also supported by the reduction in the government's borrowing requirements because of the budget surplus due to revenues that were substantially higher than expected.

Figure 3.4
Inflation Expectations for 12 Months Ahead Derived from Capital Market, and Forecasters' Expectations, 2004–07



SOURCE: Bank of Israel.

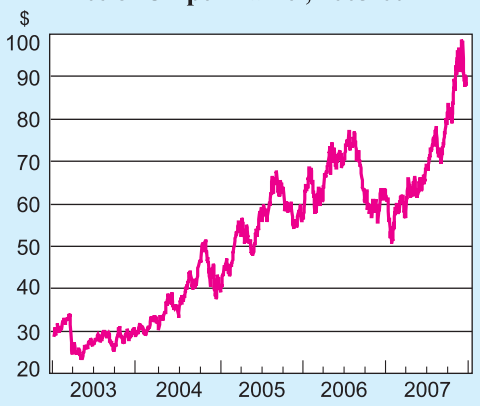
Figure 3.5
Inflation Expectations Curve, 2007 (capital market data, average monthly)



SOURCE: Bank of Israel.

In contrast with the forces exerting downward pressure on prices, other powerful forces also exerted upward pressure on them; these stemmed from the continued rapid economic growth and the rise in world prices of goods and energy. However, because of local-currency appreciation, the forces exerting downward pressure on prices predominated, so that it was necessary to lower the interest rate in order to restore inflation to the target range. Consequently, following the two interest-rate cuts in the last two months of 2006, the Bank of Israel reduced its key interest rate five times in the first half of 2007, by 0.5 percentage points for January and by 0.25 percentage points each for February, March, May, and June. Thus, in June the interest rate stood at 3.5 percent, 1.5 percentage points below the rate at the end of

Figure 3.6
Price of Oil per Barrel, 2003-07



SOURCE: Bloomberg.

2006 and 2 percentage points below the rate prevailing at the beginning of 2006: IV, prior to the start of the interest-rate reduction process (Figure 3.7).

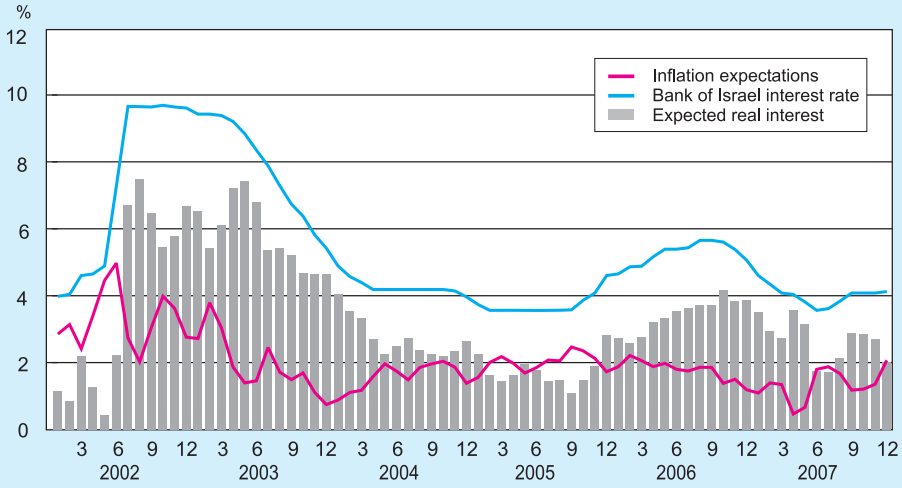
The Bank of Israel reduced the interest rate by a cumulative 1.5 percentage points in the first half of the year, bringing it to 3.5 percent, in order to restore the inflation rate to within the target range.

In the second half of May there was a trend shift in local-currency appreciation, *inter alia* against the backdrop of the cumulative interest-rate reduction, and by the end of July the NIS had depreciated by 10 percent against the dollar, and had even weakened substantially against other currencies in both emerging and developed economies. This process, combined with the international credit crisis that erupted in July led to volatility in Israel's financial markets, and this was expressed in the rise in Israel's risk premium, from 17 basis points in June to 33 in August (Figure 3.8), with a steep increase in yields—about 1.5 percentage points in nominal terms and about 1 percent in real terms, causing a large 1.5 percentage-point yield gap on 10-year bonds, after this had been zero in June.

In the second half of May the local-currency appreciation trend switched, and there was sharp local-currency depreciation until the end of July. Concurrently, other forces continued to act to raise prices.

During this period real economic activity continued to expand rapidly, with a persistent rise in demand as global oil and food prices continued to increase, thereby affecting the prices of inputs and goods imported into Israel. However, in contrast

Figure 3.7
Bank of Israel Interest Rate,[a] Inflation Expectations[b] and Expected Real Interest,[c] 2002–07

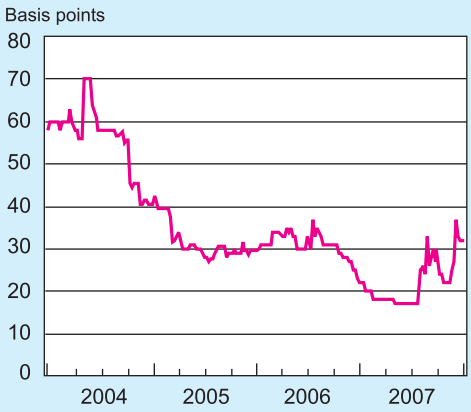


[a] The effective rate of interest in Bank of Israel auctions
[b] For 12 months, derived from the capital market..
[c] Bank of Israel interest rate minus inflation expectations.

SOURCE: Bank of Israel.

with the first half of the year, when these upward pressures on prices were offset by the downward pressure exerted by local-currency appreciation, during this period all the forces acted simultaneously to push prices up.

Figure 3.8
Israel's Risk Premium as Measured by CDS Spread, 2004-07



SOURCE: Bloomberg.

These pressures were reflected by the steep and rapid rise in expected inflation, as expressed in the increase in inflation expectations derived from the capital market, from 0.5 percent in May to an average of between 1-8 and 1.9 percent in June and July, alongside expectations of an interest-rate hike. At the same time private forecasters' predictions of inflation rose from an average level of 1.2 percent in May to 1.9 and 2.7 percent in June and July, respectively, together with expectations that the interest rate would be raised by 0.75 percentage points. The Bank of Israel's econometric models also yielded assessments that the rise in domestic prices (the component which is not affected directly by exchange-rate developments) would exceed the inflation target for the previous twelve months. And indeed, the actual inflation data from mid-July did in fact bear out the expectations. In the period from June to August the CPI rose by a steep 2.5 percent, far above the seasonal path of an increase of between 0.4 and 0.9 percent.

The Bank of Israel raised the interest rate for August and September, so that by the end of 2007:III it stood at 4 percent.

In view of all this, assessments that the future development of prices would jeopardize the attainment of the inflation target increased; the Bank of Israel accordingly raised the interest rate by 0.25 basis points each for August and September, so that at the end of 2007:III it stood at 4 percent. The interest-rate hikes were relatively moderate because of assessments that basic forces, among them the continued current-account surplus, capital inflow, and expectations of interest-rate reductions in the US, would act to maintain the strong NIS and restrain inflation in the future.

Starting in August there was another trend switch, and once again there was local-currency appreciation against the dollar.

Starting in August the exchange-rate trend did indeed reverse, so that by the end of the year there was 6 percent local-currency appreciation against the dollar (albeit not continuously). The return to appreciation led to the restoration of downward pressure on prices, moderating the effect of input prices and economic growth on price increases. Thus, there was a 0.4 percent decline in actual prices in September and October, and inflation was below its seasonal path, while assessments of expected inflation declined: during this period inflation expectations stabilized near the lower limit of the target, around the 1.2 percent level, as against an average level of 1.8 percent in the period from June to August, whereas forecasters' predictions declined from 2.6 percent to 1.8 percent on average. This took place alongside the moderation of the implicit expectations and assessments of interest-rate hikes to expectations of

slight and even negligible shifts for the year ahead. At the same time, real and nominal yields on *makam* and government bonds resumed their decline.

The NIS rallied anew in August mainly as a result of the weakening of the dollar worldwide following the deepening of the sub-prime crisis at the end of August and the beginning of September, when extensive liquid funds were injected into the markets by the central banks, while interest rates in the US and other countries were slashed. Thus, the negative interest-rate spread between Israel and the US and other advanced economies contracted. After the crisis had eased to some extent, alongside the reduction of Israel's risk premium, it flared up again in November in the wake of the publication of indicators and forecasts signifying that the crisis would lead to a steep decline in the profitability of financial entities, leading to assessments that it would cause credit to contract, primarily in the US, thereby increasing the risk inherent in economic activity in the US and worldwide. Consequently, and despite the fact that economic growth had persisted in Israel, fears of an economic slowdown emerged, based on apprehensions that the crisis would have an adverse effect on exports, thereby moderating the demand-side pressure on prices. During this period opposing forces that offset one another appeared to be affecting prices, so that inflation in the coming year was expected to remain within the target range. As a result, the interest rate for the period from October to December remained unchanged at 4 percent.

The interest rate for October through December remained unchanged in view of assessments that mutually opposing forces were at work on prices and would offset one another.

Towards the end of 2007 and at the beginning of 2008, however, the various indicators showed that the forces exerting upward pressure on prices, led primarily by increases in world prices of goods, energy, and food, were predominant, and the tendency of both actual and expected inflation to exceed the target for the year ahead emerged. In view of these developments the Bank of Israel raised the interest rate for January 2008 by 0.25 percentage points to 4.25 percent, leaving it at that level for February, too.

Exchange-rate developments underline the dilemma facing monetary policymakers during the period reviewed: the existence of two powerful forces acting on prices in opposing directions and with different time-frames. On the one hand, the exchange rate, which was characterized by appreciation for most of the year, served to keep prices low in the short run. On the other, strong forces were at work to raise domestic prices because of the increase in global energy and goods prices as well as the expansion of real economic activity. However, while the forces exerting upward pressure on prices because of real economic activity have a long time-span, and their influence is expected to be felt only after considerable time, it is difficult to predict whether local-currency appreciation, which serves to moderate prices, will persist. Furthermore, the effect of monetary policy on the various forces is not uniform: the forces exerting upward pressure on prices as a result of real economic activity are characterized by inelasticity and inertia, being influenced more slowly by monetary policy—generally in the medium term. The effect of the interest rate on the exchange rate, on the other hand, usually has a shorter time-frame, though it is difficult to assess its intensity,

primarily because of the existence of significant exogenous factors that influence the exchange rate.

Taking into consideration the moderating effect of the exchange rate on prices, the Bank of Israel cut the interest rate in the first half of the year, in order to return inflation to within the target range. The process of reducing the interest rate was a gradual one, and took into account the forces acting to raise prices in the medium term, and the volatility of the exchange rate. That volatility gave rise to concern that the trend of the exchange rate could suddenly be reversed and lead to price increases, and thereby endanger the achievement of the inflation target.

4. PRICES

a. The development of prices

The CPI rose by 3.4 percent in 2007, above the upper limit of the inflation target, but the development of the monthly price indices was not uniform during the year: from January to May the CPI rose by only 0.3 percent compared with its seasonal path[6] of 1–1.9 percent, while from June to the end of the year the CPI soared by a cumulative 3 percent, far above the upward path of between 0 and 1.1 percent.

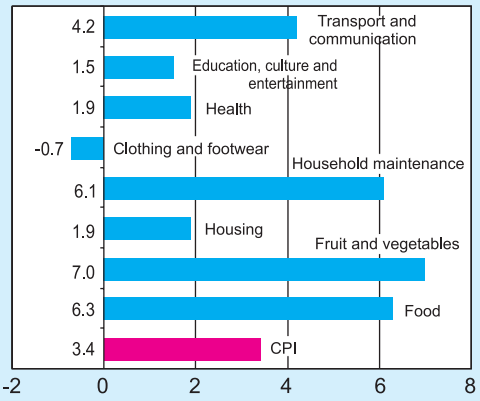
The *housing index* is one of the main components of the CPI for two reasons: first, it is the largest item, accounting for 20 percent of the index, and second, in the last decade it has had a high correlation with the development of the NIS/dollar exchange rate. This is because the housing component is measured from rental contracts (primarily those that are renewed), most of which were denominated in dollars. In order to calculate the CPI the dollar price in these contracts is translated into NIS on the basis of the change in the exchange rate and thus the housing item is directly affected by the exchange rate. In 2007 there was a shift in the pricing of rental contracts so that the share of dollar-denominated contracts fell from 90 percent to 60 percent, and rents rose in dollar terms. For those reasons the link between the exchange rate and the housing index, and hence between it and the CPI, became weaker in 2007. Thus, although there was local-currency appreciation in 2007 as a whole, the housing index rose by 1.9 percent, contributing 0.4 percent to the rise in the CPI. In 2006, however, local-currency appreciation against the dollar led to a 6 percent decline in the housing index, contributing 1.2 percent to the decline in the CPI (Figure 3.9).

The link between the exchange rate and the housing index weakened in 2007.

Furthermore, the erratic development of the housing component during the year contributed to the increased volatility in both the development of the CPI and inflation assessments in the course of the year: from June to August, in the wake of the sharp local-currency depreciation, the housing index rose, contributing 1.4 percent of the

[6] The seasonal path of the CPI is calculated by the Central Bureau of Statistics (CBS) and reflects the rate of change of the monthly index that is consistent with the inflation target. This path serves as a criterion for assessing the development of the monthly CPI vis-à-vis the target.

Figure 3.9
Rates of Change in the Components of the CPI, 2007 (percent)



SOURCE: Central Bureau of Statistics.

2.5 percent increase in the CPI. In the other months of the year, most of which were characterized by local-currency appreciation, the housing index contributed 1 percent to the decline in the CPI.

The energy components in the CPI were affected mainly by the steep rise in world prices of oil and coal.

The *energy components* of the CPI (oil and automobile fuel, heating and diesel fuel, electricity and gas) were influenced primarily by soaring world prices of oil and coal. Local-currency appreciation offset only a small part of the increase in dollar prices of oil, so that in 2007 the energy component rose by 14 percent, with the 17 percent hike in the price of automobile fuel and 30 percent increase in the price of heating and diesel fuel being particularly prominent. Thus, total energy components contributed 1 percent to the rise in the CPI in 2007—almost one third of its annual increase.

The backdrop to the rise in food prices consisted mainly of the upward trend in global prices of food and goods.

The *food component* of the CPI rose by 6.3 percent in the course of 2007, with the *fruit and vegetables* component increasing by 7 percent to contribute 0.2 and 0.9 percent to the rise in the CPI in this period. Particularly prominent were the increases in the price of bread (14.4 percent), flour (32.3 percent), eggs (10.1 percent), oil (9.6 percent), and milk products (12.7 percent). The rise in food prices stemmed mainly from the upward trend in world prices of food and goods. Thus, import prices of foodstuffs, which constitute factor inputs, rose by 27 percent in dollar terms. The food component in the wholesale price index also soared in 2007, increasing by 11.5 percent, and can explain the rise in the food index as well as constituting an indication of a future increase in it. An examination of the statistical relation between these two components indicates that there is a 0.38 percent correlation (both immediate and with a lag) between the wholesale price of food and the price of food in the CPI.

The wholesale price index rose sharply, by about 11 percent.

The wholesale price index of manufacturing production (excluding fuel)[7] soared by 11 percent in 2007, which is a very steep rise relative to 2006 (when it rose by 2.7 percent), while the wholesale price index of crude oil and natural gas rocketed by 18 percent. In effect, the wholesale price index represents the price obtained by the manufacturing sector for output sold domestically. Since prices in the manufacturing sector affect consumer prices, the wholesale price index can also serve as a leading indicator of consumer prices: a steep rise in this index should be expressed in a future increase in the CPI, and vice versa. The relatively high rates of change of the wholesale price index of manufacturing production apparently derive from the relatively high

[7] This index is not part of the consumption items in the CPI but it serves as an indication of price developments.

costs facing the manufacturing sector in 2007, as is also indicated by the rise in the price of imported raw materials in spite of the local-currency appreciation which reduced the price in NIS of imported raw materials.

b. The variance of the CPI

The variance of the CPI is also important for assessing price stability because it is also gauged by the distribution and fluctuation of prices, not only their rates of change over a given period. One of the ways of measuring the extent of fluctuation in the CPI is to calculate its inter-monthly movements, i.e., its variance over time.

The CPI fluctuated more widely in Israel than in the rest of the world.

The standard deviation of the changes in the seasonally-adjusted CPI was 0.34 percent in 2007, similar to its level in 2006 and 2005. By reviewing volatility over time it can be seen that the standard deviation of the monthly change in the CPI has not declined significantly since the 1990s despite the lower inflation environment.

A comparison of the standard deviation of price changes in Israel with that of world prices shows that it was higher in Israel than in many other countries: since 2000 its level in Israel[8] has averaged 0.50 percent, higher than that of developed economies such as the UK, Canada, the US, and Sweden, and also above that of developing economies such as Chile, Mexico, Poland, and Korea, whose standard deviation ranged between 0.35 and 0.42 percent in the equivalent period. One of the main reasons for this is the passthrough from the exchange rate to prices, which remained high in Israel (see Box 3.3).

Box 3.3
Pass-through effect from the exchange rate to inflation—comparison with emerging and advanced economies that adopt inflation targeting

In economies that are open to international trade, local prices are affected by the exchange rate primarily through import and export prices, which are converted to local currency at the exchange rate, and by way of linkage to the rate. Two factors contribute to this price change effect—changes in the exchange rate and the strength of the pass-through effect to prices.[1] The strength of the pass-through effect reflects that part of the cumulative change in the exchange rate that is translated to inflation. The scope, character and speed of the pass-through effect vary from one country to another. Similarly, the volatility of the exchange

[1] Exchange Rate Pass-through Effect.

[8] This comparison is based on the CPI which is not seasonally adjusted, so that the standard deviation is slightly higher than that of the seasonally adjusted CPI.

rate in each country, which is usually higher than its fluctuating rate of inflation, also affects the development of inflation.

In most **emerging markets**, positive processes occurred in the realm of prices during the 1990s – a substantial decline in inflation to low, single digits, similar to the rate of inflation in advanced economies (see Figure A), and a less volatile inflation rate, dropping to a slightly higher level than that in the advanced economies (see Figure B). At the same time, in most countries, the frequency of sharp changes in the exchange rate has diminished, and the exchange rate has stabilized at a low level. Moreover, according to studies that estimate the strength of the pass-through effect from the exchange rate to prices, it has weakened considerably (for example: Ca'Zorzi, Hahn and Sanchez , 2007, and Bailliu and Eiji, 2004).

A key background factor, [2] that is common to these processes in all countries, is that they take place after significant changes in monetary policy: during the 1990s, many countries began to manage their monetary policy through inflation targeting, at the same time abandoning the managed exchange rate regime, in an effort to enhance the effectiveness of interest as a policy instrument to achieve the inflation target. This was all part of an effort to lower and stabilize high inflation rates, and to moderate the dangers resulting in financial crises that may be created, in part, due to speculative attacks, resulting from a managed exchange rate.

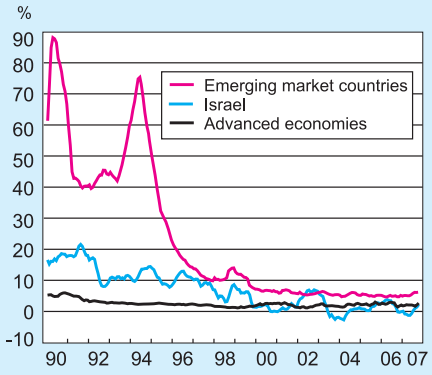
Policy makers internalized the importance of the effect of devaluation on inflation, despite the decline in the strength of the pass-through effect: sharp increases in the exchange rate push prices up and endanger the ability to achieve the inflation target (Calvo and Reinhart, 2004). Against this backdrop central banks became more sensitive to changes in the foreign currency market and consequently, less volatility of exchange rates is also attributed to intervention by policy makers attempting to prevent sharp fluctuations in the exchange rate:[3] the policy worked to smooth the fluctuations in the foreign exchange market (Mayes, 2000)—in some instances by direct, declared intervention in the foreign exchange market, and in others by changing the monetary interest rate. It is worth noting that the sole purpose of intervention in the foreign exchange market was to achieve the inflation target—without any intention of managing the exchange rage exactly, of returning to a regime of foreign currency regulation, or achieving other goals.

[2] Other factors are the credibility of the monetary regime, the inflation environment, and the composition of the country's imports.

[3] The volatility decreases without intervention when changes in the exchange rate are perceived as less permanent, and therefore does not result in frequent changes in local prices (Taylor, 2000).

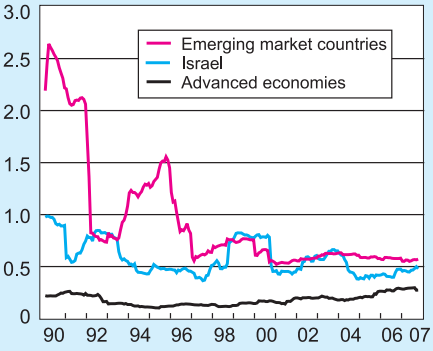
The development of inflation and of its volatility in Israel are in line with the trend of declining levels in emerging countries. At the height of this process, inflation in Israel was even lower than that of advanced economies (see Figure A). The volatility of the exchange rate remained similar to that of advanced economies, but the volatility of inflation—despite its decline—did not fall to the low levels prevalent in those countries (see Figure B).

Figure A
Annual Inflation, 1990-2007



SOURCE: Based on IFS data.

Figure B
Standard Deviation of Monthly Changes in the CPI, Over Two-Year Period



SOURCE: Based on IFS data.

The high volatility of inflation that persists in Israel stems, among other things, from the strength of the exchange-rate pass-through effect, which remains high, despite its decline (particularly during 2007; see Box 3.2). In other words: at least until mid-2007, marked changes in the exchange rate continue to be translated, within a short period, into changes in local prices. One of the reasons for this is the history of high inflation in Israel which resulted in the widespread linkage of prices to the dollar, particularly in the owned housing market which has a high weighting in the general index.

The pass-through effect in Israel,[4] estimated one quarter and one year ahead at 0.3 and 0.52 respectively, indicates a level that is higher than the average for the advanced economies, 0.05 and 0.1, and also higher than that for the emerging economies, –0.15 and 0.2 (Choudhri and Hakura, 2003). It is possible that in 2007 the strength of the pass-through effect in Israel declined, mainly due to a decline in the pass-through effect from the exchange rate to the price of housing, and subsequently to the general price index. Even assuming that there is no pass-through effect via the housing item, and that the pass-through effect

[4] The estimates for Israel are prepared by the Bank of Israel's Monetary Department. The estimates for other countries are based on comparative studies, and they are less up to date.

to the other items remains unchanged, we can see that the pass-through effect to the general price level is lower, but it is still high relative to other countries –0.18 and 0.4 for the one quarter and one year ranges respectively. In any event, it is still too early to gauge the extent to which the pass-through effect has declined, and to what extent this decline will persist.

A further explanation for the high pass-through effect in the Israeli economy is the nature of the change in Israel's monetary regime: the change was implemented gradually, and initially did not entail an abandonment of the managed exchange rate regime; this was partially due to the fact that in Israel it was not the result of a crisis. Consequently, inflation and its volatility declined more slowly and at a later stage in Israel than in other countries, so that they have still not been fully reflected in a significant decline of the strength of the pass-through effect.

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5. THE MONETARY AND CREDIT AGGREGATES

a. The narrow money supply (M1)

In 2006:IV and at the beginning of 2007 the annual rate of change of the *narrow money supply* (M1) declined to an average of 8 percent, but as of 2007:II it began to rise, and in the year as a whole it expanded by 20 percent (Table 3.7). In 2007, too, the rate of growth of the current account component of the money supply was faster, rising to 20 percent in the course of the year, while the cash in hand component grew by 15 percent. During the year, as was the case in previous years, the growth rate of the money supply rose considerably faster than that of GDP *plus* price increases.

Table 3.7
Rates of Change in the Monetary Aggregates, 2001-07
(end of period, monthly average, percent change from equivalent period in previous year)

	Total credit to public C3	CPI-indexed credit to public	Unindexed NIS credit C1	Credit in and indexed to foreign currency		Monetary aggregates		Monetary base
				In $ terms	In NIS terms	M1[a]	M2[b]	
2001	9.0	6.7	11.1	4.9	9.9	15.4	17.0	16.1
2002	9.8	6.2	5.5	8.1	18.6	4.9	-4.9	4.3
2003	-3.0	-5.6	3.1	1.6	-4.9	7.7	2.0	6.3
2004	2.8	-4.1	8.4	6.7	5.5	17.9	5.6	8.3
2005	3.6	2.0	11.0	-7.4	-1.6	23.8	5.3	14.7
2006	2.5	-4.3	14.2	7.2	-2.3	8.3	7.2	4.0
2007	5.2	2.6	10.6	7.1	-0.5	19.3	14.7	13.6
2004								
I	-1.6	-6.0	5.5	3.7	-2.3	14.1	3.5	4.8
II	2.1	-4.5	3.6	5.3	8.7	21.0	5.4	11.0
III	2.8	-4.6	7.3	6.5	7.3	22.8	4.7	10.6
IV	2.8	-4.1	8.4	6.7	5.5	17.9	5.6	8.3
2005								
I	1.2	-4.6	10.3	3.8	-0.3	15.0	5.3	6.8
II	1.5	-3.6	9.4	0.7	-0.0	16.6	7.8	8.6
III	2.2	-0.7	10.8	-3.1	-2.2	14.9	5.1	9.6
IV	3.6	2.0	11.0	-7.4	-1.6	23.8	5.3	14.7
2006								
I	6.5	2.3	9.9	-0.6	7.6	19.3	4.7	14.9
II	5.6	1.3	12.7	3.7	3.4	15.1	2.8	9.3
III	4.2	-0.5	12.7	4.9	0.6	11.5	6.2	7.2
IV	2.5	-4.3	14.2	7.2	-2.3	8.3	7.2	4.0
2007								
I	2.4	-3.4	18.7	2.9	-7.8	11.3	13.1	6.4
II	3.5	-3.0	16.6	3.2	-3.5	15.7	16.2	10.6
III	4.8	0.4	13.8	5.7	-0.7	20.6	16.9	12.3
IV	5.2	2.6	10.6	7.1	-0.5	19.3	14.7	13.6

[a] M1: cash and demand deposits.
[b] M2: M1 plus unindexed NIS time deposits up to one year.
SOURCE: Bank of Israel and Central Bureau of Statistics data.

The increase in demand for current account balances may have been partly due to the market reforms and reforms related to the financial institutions—the greater participation of nonresident investors and the separation of the domestic institutional investors from the banks.

Note that in an inflation-target regime, in which the nominal anchor is the target while the policy instrument for attaining it is the interest rate, M1 is not significant *per se* as it is determined by the public's demand. However, M1 can constitute a leading indicator of expected price increases. Consequently, the Bank of Israel, in

common with central banks in other countries with inflation-target regimes, continues to monitor the development of the monetary aggregates, and that of M1 in particular. By doing so it is able to recognize the persistence of changes in M1 which do not have a reasonable explanation, as this could attest to the instability of demand and/or the weakening of the macroeconomic links underlying the determination of the interest rate.

b. The wide money supply (M2)

This aggregate, which comprises M1 *plus* unindexed local-currency fixed-term (up to one year) deposits, expanded by 15 percent in 2007, double and more its rate in the previous three years (Table 3.7). There was no significant change this year in the range of the various deposits so that the short-term component (up to three months) continued to constitute the lion's share, while medium-term deposits (between 3 months and a year) accounted for only 9 percent of M2.

c. Total bank credit (C3)

Total bank credit expanded by about 5 percent in 2007, slightly more than in the preceding two years but still quite a moderate rate compared with the past (Table 3.7). The modest increase of outstanding bank credit in recent years is notable in view of the rapid expansion of GDP in this period, as well as the high growth rate of this aggregate during most of the 1990s.

The moderate growth rates of this aggregate are explained *inter alia* by the development of credit alternatives outside the banking system. These substitutes, mainly corporate bonds issued on and off the stock market, have expanded markedly in recent years against the backdrop of the relatively low interest-rate environment, the implementation of structural reforms—among them pension reform—and the relaxation of restrictions on investment by institutional entities. The effective restraints imposed by the Supervisor of Banks on large exposure by individuals or groups contributed to the development of nonbanking credit substitutes, causing large single borrowers to seek financing alternatives outside the banking system. These developments help to reduce the dominance of the banks in financing the business sector while increasing firms' competitiveness and reducing their financing costs. The share of nonbanking credit continued to expand in 2007, amounting to about 48 percent of business-sector financing (up by 4 percentage points over 2006), compared with only 24 percent in 2002 (see Chapter 4).

6. SOURCES OF CHANGE IN THE MONETARY BASE AND THE MONETARY POLICY INSTRUMENT

Every month the Bank of Israel announces its key interest rate, from which the public's demand for the monetary base is derived. The Bank of Israel meets this demand by means of the instruments at its disposal—auctions for monetary loans to the banks, tenders for banks' deposits with the Bank of Israel, and *makam*.

The change in the monetary base derives from three sources—the government injection, foreign-currency transactions by the public, and the Bank of Israel injection. With the exception of a few days at the end off 1998, the Bank of Israel has not intervened in foreign-currency trading since 1997 so that foreign-currency transactions on the trading-room floor have not affected the monetary base since then. Consequently, given the government's fixed injection/absorption, the Bank of Israel has determined the extent of money injected/absorbed so that the additional amount required by the public for the monetary base is provided at the interest rate set.

The monetary base expanded by NIS 4 billion in 2007.

The monetary base grew by NIS 4 billion in 2007 due to the absorption of NIS 12 billion by the government and the national institutions and the Bank of Israel's injection of NIS 15.6 billion (Table 3.8).

During the last decade the Bank of Israel has increased the balance of *makam* in order to absorb money injected into the economy, serving thereby as a substitute for banks' interest-bearing deposits which for many years constituted the principal absorption

Table 3.8
Sources of Change in the Monetary Base, 2001-07

								2007			
	2001	2002	2003	2004	2005	2006	2007	I	II	III	IV
1. Monetary injection, government and the Jewish Agency	-2,611	-6,065	3,479	1,600	-1,452	-3,789	-10,855	-16,208	13,048	-7,290	-405
of which: Government	-4,341	-7,634	1,968	244	-2,679	-5,234	-11,972	-16,523	12,827	-7,493	-783
2. Foreign currency conversions	-723	-1,748	-1,358	-1,751	-1,087	-1,142	-820	-290	-56	-159	-315
3.Total (1+2)	-3,334	-7,813	2,121	-151	-2,539	-4,931	-11,675	-16,498	12,992	-7,449	-720
4. Monetary injection by Bank of Israel	7,697	9,251	1,446	1,117	9,896	3,754	15,656	17,671	-10,924	9,626	-717
of which: Monetary loan	21	68	-237	152	-756	7,470	-7,500	14,000	-18,450	2,950	-6,000
Makam	-4,866	-8,566	-9,386	-17,986	-10,508	-7,362	23,736	3,817	7,749	6,623	5,547
Swaps	-252	-573	379	-53	6,216	0	0	0	0	0	0
Banks' term deposits	5,500	10,500	4,243	14,257	12,440	3,560	-300	0	0	0	-300
Interest[b]	3,411	2,679	2,774	1,104	432	134	20	0	2	17	1
5. Change in monetary base	4,363	1,438	3,567	966	7,357	-1,177	3,981	1,173	2,068	2,177	-1,437

[a] This item includes, inter alia, Bank of Israel and government receipts from and payments to the private sector, such as income tax payments. These payments do not change the monetary base, and appear in the item Government Injection, and with the opposite sign in this item.
[b] Excluding *makam*.
SOURCE: Bank of Israel.

Table 3.9
Monetary Instruments:[a] Time Deposits, Monetary Loans, and *Makam*, December 2006–December 2007 (monthly averages, NIS million)

		Deposits		Loans			*Makam*		
	Total time deposits	Daily	Weekly	Total	Daily	Weekly	Total	*of which* held by banks	Total deposits, loans and *makam*
2006									
December	0	0	0	-12,355	-8,290	-4,065	94,934	9,546	82,579
2007									
January	0	0	0	-8,000	-5,516	-2,484	94,201	8,800	86,201
February	0	0	0	-13,250	-8,250	-5,000	94,991	11,271	81,741
March	0	0	0	-20,153	-11,959	-8,194	93,414	11,206	73,261
April	0	0	0	-16,177	-10,244	-5,933	89,781	9,942	73,604
May	0	0	0	-16,470	-8,566	-7,903	86,965	8,813	70,495
June	0	0	0	-17,217	-9,283	-7,933	86,775	11,677	69,558
July	2,210	2,210	0	-1,995	-1,995	0	83,496	12,953	83,712
August	3,532	3,532	0	-3,544	-3,544	0	80,300	14,556	80,288
September	0	0	0	-4,871	-4,871	0	80,747	14,156	75,877
October	558	558	0	-2,391	-2,391	0	78,410	10,669	76,577
November	833	833	0	-2,100	-2,100	0	77,900	10,551	76,633
December	500	500	0	-2,003	-2,003	0	75,666	7,790	74,163

[a] Other monetary instruments, not shown in this table, include the credit window, the deposits window and repo.
SOURCE: Bank of Israel.

instrument. During 2007, *inter alia* in view of the desire to make it easier to launch the RTGS (Real Time Gross Settlement) system, the Bank of Israel decided to use *makam* as an active monetary instrument, i.e., to inject or absorb liquidity by means of *makam* in accordance with the state of the banks' liquidity. Accordingly, the extent of *makam* issues contracted in 2007 to stand at NIS 76 billion at the end of the year, compared with NIS 95 billion at the end of 2006 (Table 3.9). It is important to note that *makam* are not used as an active monetary instrument on a daily or weekly basis: they are issued monthly in accordance with expected quarterly and yearly developments in the trend of government injection, while bearing in mind their function as an important benchmark in the short-term local currency market.

During 2007 the Bank of Israel decided to use *makam* as an active monetary instrument, and consequently reduced their balance.

In the second half of 2007 the Bank of Israel extended discount-window loans to the banking system while reducing the balance of *makam*, so that in the second half of the year the Bank of Israel absorbed liquidity as needed by means of deposit auctions (Table 3.10).

Table 3.10
Monetary Deposits, Monetary Loans, and their Costs, 2005–07
(total system, quarterly average)

	Utilization of deposit auctions			Cost of deposit auctions		Utilization of loan auctions			Cost of loan auctions	
	Daily	Weekly	Total	Daily	Weekly	Daily	Weekly	Total	Daily	Weekly
	NIS million			percent		NIS million			percent	
2005										
I	7,541	5,121	12,662	3.71	3.71	7,541	5,121	12,662	3.71	3.71
II	5,997	2,352	8,349	3.66	3.66	5,997	2,352	8,349	3.66	3.66
III	7,585	2,336	9,921	3.57	3.56	7,585	2,336	9,921	3.57	3.56
IV	5,833	602	6,435	4.18	4.34	5,833	602	6,435	4.18	4.34
2006										
I	3,500	376	3,876	4.78	4.60	2,310	452	2,761	4.82	4.88
II	3,559	452	4,011	5.30	5.39	839	0	839	5.41	---
III	1,949	0	1,949	5.56	---	2,036	0	2,036	5.61	---
IV	731	0	731	5.52	---	5,990	1,355	7,345	5.35	5.19
2007										
I	0	0	0	---	---	8,575	5,226	13,801	4.37	4.38
II	0	0	0	---	---	9,365	7,257	16,621	3.82	3.83
III	1,914	0	1,914	3.69	---	3,470	0	3,470	3.88	---
IV	630	0	1,914	4.08	---	2,165	0	2,165	4.10	---

SOURCE: Bank of Israel.