

## Chapter 2

# Monetary Policy, Inflation, and Prices

The consumer price index rose by 1.4 percent in 2001, one percentage point below the lower limit of the 2.5 to 3.5 percent inflation target for the year, and within the long-term target of price stability of 1 to 3 percent.

Monetary policy during 2001 must be seen against the background of two main forces that had totally differing effects on inflation. (1) The considerable slowdown in real activity and demand, which was mainly apparent in the second half of the year, held down prices. (2) The financial and security-related shocks at home and abroad and the growth in the budget deficit led to fears that financial stability would be undermined, thereby making it necessary to adopt a cautious and gradual approach to the implementation of interest-rate policy.

The year 2001 can be divided into three periods with respect to the development of inflation and inflation expectations: the first half of the year was notable for relative stability in prices, inflation expectations and the exchange rate. In the third quarter, the uncertainty in local and international markets increased, concurrent with a depreciation of the NIS and a rise in prices and inflation expectations, undermining confidence in financial stability. In the last quarter, the markets calmed down. This was apparent *inter alia* from the appreciation of the NIS and the low, even negative, price indices, and inflation expectations reverted to the range of the long-term inflation target. Also in the last quarter it became fully apparent that the recession was worse than forecast.

In line with assessments regarding inflation and developments in the markets, the Bank of Israel reduced the interest rate by a cumulative 2.4 percentage points during 2001, consistently throughout

most of the year, in cuts of 0.2-0.3 percentage points. Towards the end of the year, the Bank of Israel decided to make a one-time exception to its policy of gradual adjustment in the interest rate, and cut the interest rate by two percentage points. This decision was based on the assessment that it would be possible to lower the interest rate without endangering attainment of the inflation target. This was in view of the new trend in fiscal policy, and the decision to implement a number of economic measures and structural changes in the financial markets.

## 1. MAIN DEVELOPMENTS

The consumer price index rose by 1.4 percent in 2001, one percentage point below the lower limit of the 2.5 to 3.5 percent inflation target for the year, but within the long-term target of price stability of 1 to 3 percent (Table 2.1). This was the third consecutive year in which the actual rate of inflation was lower than the inflation target, although the deviation in 2001 was smaller than in previous years. The reduced deviation was achieved by means of a monetary policy that was directed at raising the course of inflation to within the target range. While the course of short-term inflation expectations during 2001 fell below the target range, it came within the range in the medium and long terms. Monetary policy during 2001 must be seen against the background of two main forces that had totally differing effects on inflation: the first was the considerable slowdown in real activity and demand, mainly apparent in the second half of the year, which held down prices; the second was the financial and security-related shocks at home and abroad and the growth in the budget deficit, which led to fears that financial stability would be undermined, thereby making it necessary to adopt a cautious and gradual approach to the implementation of interest rate policy.

The year 2001 can be divided into three periods with respect to the development of inflation and inflation expectations: the first half of the year, the third quarter and the last quarter. During the first half of the year prices rose at an annualized rate of 2.2 percent, and this period was notable for relative stability in the exchange rate, and inflation expectations for twelve months ahead were lower than the annual inflation target. In the third quarter, the uncertainty in the local markets increased, due to the expectations that the budget deficit would exceed its targeted level to a considerable extent. These expectations were accompanied by a depreciation in the exchange rate that intensified at the end of the quarter, following the terror attacks in the US. In that quarter, prices rose by an annualized rate of 3.6 percent and inflation expectations increased. These developments increased the probability that the actual inflation rate would be higher than the target for 2001 and for the coming years as well, leading to fears that financial stability would be undermined. In the last quarter, the markets became

**Table 2.1**  
**Nominal and Real Interest Rates, Inflation Expectations and Price Increases, 1995–2001**

	Nominal monetary interest rate <sup>a</sup>	Inflation expectations <sup>b</sup>	Real interest rate <sup>c</sup>	Real yield on CPI-indexed bonds <sup>d</sup>	Consumer price index <sup>e</sup>	Consumer price index <sup>f</sup>
1995	15.6	10.6	4.5	4.3	8.1	
1996	16.3	11.6	4.2	4.5	10.6	
1997	14.7	9.1	5.1	4.0	7.0	
1998	12.6	6.2	6.0	4.9	8.6	
1999	13.0	5.3	7.4	5.1	1.3	
2000	9.8	2.5	7.2	5.4	0.0	
2001	7.1	1.9	5.1	5.0	1.4	
2000						
January	11.4	2.6	8.6	5.2	1.3	-5.5
February	10.9	2.9	7.8	5.2	1.6	-5.5
March	10.5	2.5	7.8	5.1	1.5	-3.4
April	10.1	2.9	7.0	5.1	1.7	5.9
May	9.9	3.7	6.0	5.1	2.1	10.7
June	9.9	3.6	6.1	5.2	2.1	3.4
July	9.8	2.5	7.1	5.4	2.1	3.4
August	9.6	2.2	7.3	5.6	1.0	-6.5
September	9.4	2.3	7.0	5.7	0.0	-6.5
October	9.1	2.2	6.9	5.6	-0.1	7.0
November	8.9	1.8	7.0	5.6	0.1	0.0
December	8.6	0.8	7.8	5.8	0.0	-1.1
2001						
January	8.5	1.4	7.0	5.6	-0.1	-6.8
February	8.1	2.0	6.0	5.3	0.3	-1.2
March	7.9	2.0	5.8	5.1	0.7	2.4
April	7.6	1.3	6.2	5.0	1.2	11.4
May	7.6	1.2	6.3	4.7	0.7	4.9
June	7.3	1.8	5.5	4.3	0.7	3.6
July	6.8	2.1	4.6	4.4	0.8	4.8
August	6.6	2.9	3.6	4.5	1.7	3.6
September	6.6	3.5	2.9	4.6	2.5	2.4
October	6.6	2.3	4.1	4.7	2.0	1.2
November	6.4	1.3	5.0	4.7	1.4	-6.8
December	5.7	1.6	4.1	4.3	1.4	-1.2

<sup>a</sup> In effective annual terms.

<sup>b</sup> During the next 12 months.

<sup>c</sup> Nominal interest rate on Bank of Israel tenders less inflation expectations.

<sup>d</sup> Yield-to-maturity on 10 year bonds, gross.

<sup>e</sup> During the period. The change in monthly data represents an increase compared with the same month of the previous year.

<sup>f</sup> Monthly, in annual terms.

SOURCE: Based on OECD Economic Outlook, 70, December 2001, and CBS data.

calm. This was apparent *inter alia* from the appreciation of the NIS and the low, if not negative, price indexes (a price decrease of 2.3 percent in annual terms), and inflation expectations reverted to within the range of the long-term inflation target. Also in the last quarter it became apparent that the recession was worse than forecast.

In line with assessments regarding inflation and developments in the markets, the Bank of Israel reduced the interest rate by a cumulative 2.4 percentage points during 2001, consistently throughout most of the year, in cuts of 0.2-0.3 percentage points. Towards the end of 2001, the extent to which the slowdown in activity had intensified as a result of the terror attacks in the US became apparent, and it also seemed that actual inflation would fall below the lower limit of the inflation target. The Bank of Israel therefore decided to make a one-time exception to its policy of gradual adjustment in the interest rate, and cut the rate by two percentage points. This decision was based on the assessment that it would be possible to lower the interest rate without endangering the attainment of the inflation target. This was in view of the switch in fiscal policy, and the decision to implement a number of economic measures and structural changes in the financial markets (see below). Following these interest rate cuts, the Bank of Israel's interest rate at the end of 2001 was 3.8 percent.

In order to examine monetary policy in 2001 we will begin by reviewing the background economic conditions prevailing during the year, conditions that were affected by factors unique to the Israeli economy and by developments in the world economy.

The worldwide economic slowdown intensified during 2001 following rapid growth in the previous years. This was mainly due to the growing recession in the high-tech industries, which encroached on other sectors that are allied to these industries. The slowdown was accompanied by price slides in the world's equity markets and by a large drop in investment. The slowdown worsened following the terror attacks in the US in September, which led to a high level of uncertainty in the financial markets and especially in the equity and currency markets, posing a threat to financial stability in many economies, and the world's aviation and tourism industries suffered from a slump in activity. These developments led to growing expectations that any recovery in activity would be long in coming, prompting many countries to adopt an expansionary monetary policy in order to encourage real activity and to extricate their economies from the recession. These policy decisions were taken due to assessments that monetary expansion would not undermine price stability.

Against the background of the worldwide slowdown, a recession was apparent in the Israeli economy as well, which suffered from a fall in exports and from a drop in investment due to the decline in world trade. Israel's high-tech industries were seriously affected by the world recession, and experienced reduced demand for their products and, in particular, difficulties in raising capital concurrent with a large drop in the foreign investment on which they relied for financing their activity. The recession in these industries, which had previously fueled the growth in the economy during the year 2000, also aggravated the slowdown in other sectors of the economy.

The geopolitical and security situation also affected economic activity. The worsening confrontation with the Palestinians (the *intifada*) in the course of the year led to a large drop in incoming tourism, to a fall in demand in allied industries, and also harmed unskilled labor-intensive industries that rely heavily on Palestinian workers. The tense security situation was accompanied by geopolitical uncertainty: elections for the office of Prime Minister were held during the first half of 2001, and a national unity government was established. It should be noted that the extent of geopolitical and security-related stability affects economic stability, and is therefore one of the considerations that guides foreign investors in their investment decisions.

As regards fiscal developments, the budget deficit reached 4.6 percent of GDP in 2001, compared with a planned deficit of only 1.75 percent. The growth in the deficit was accompanied by a large increase in government borrowing in the domestic bond market, which led to a rise in long-term yields during the third quarter of the year. The fiscal expansion was also reflected by a large increase in the government debt, from 91 to 96 percent of GDP following a downtrend since 1985. The budget for 2002 that was approved by the government in September showed that the deficit would continue to exceed its target. This was due to the non-adjustment of the budget framework to the increasing slowdown in the second half of the year, which is expected to continue during 2002 as well. Only towards the end of December did the government make adjustments in the budget in order to resume the pattern of a falling deficit in the budget. This change was one of the background conditions that made it possible for the Bank of Israel to make an exceptionally large interest rate cut at the end of December.

The exchange rate of the NIS depreciated by 4.8 percent against the dollar in 2001 (December 2001 average compared with December 2000). The development of the exchange rate was not uniform throughout the year: following a slight depreciation of only 2 percent during the first half of the year, the NIS depreciated by 6 percent in the third quarter. The depreciation continued throughout that quarter and intensified in September due to the increased uncertainty resulting from the terror attacks in the US. In the last quarter of the year, calm was restored and the NIS appreciated, but depreciated again following the announcement of the interest rate cut. During the whole of the last quarter, the NIS appreciated by one percent. The importance of the exchange rate in an open economy with free capital movements is increasing because of its strong (direct and indirect) impact on prices.

## 2. MONETARY POLICY IN 2001

The principal instrument that the Bank of Israel uses to attain the inflation targets is the monetary interest rate that it pays to the banks on their deposits. This interest rate affects inflation via several channels—aggregate demand, inflation expectations and the exchange rate, the latter by means of the interest-rate differentials. The interest rate has a delayed effect on prices the intensity and timing of which is not always

possible to predict. It should also be remembered that external shocks affect inflation in an open economy (see Box 1.1 and Chapter 1).

Monetary policy operates within the framework of long-term inflation targets, and is directed at attaining the targets for the coming two years—the span of time in which it has an impact—and also takes into account developments that are expected in the longer terms. If a mismatch arises between short-term and long-term developments, a flexible policy approach is adopted and consideration is given to financial stability. As a result, in periods when a temporary deviation in the short-term occurs but a reconvergence in the longer term is apparent, policy is directed at restoring inflation to its targeted course and an attempt is made to reduce the long-term impact as far as possible. This is in order to maintain financial stability and to prevent the creation of circumstances in which frequent changes of direction in policy are required.

During 2001 the Bank of Israel cut its declared interest rate 10 times by a cumulative rate of 2.4 percentage points, and at the end of the year made an additional one-time cut of two percentage points. The interest rate cuts were part of a process that has continued for three years, in the course of which the interest rate was reduced from 13.5 percent in December 1999 to 8.2 percent in December 2000 and to 3.8 percent in December 2001 (Table 2.1).

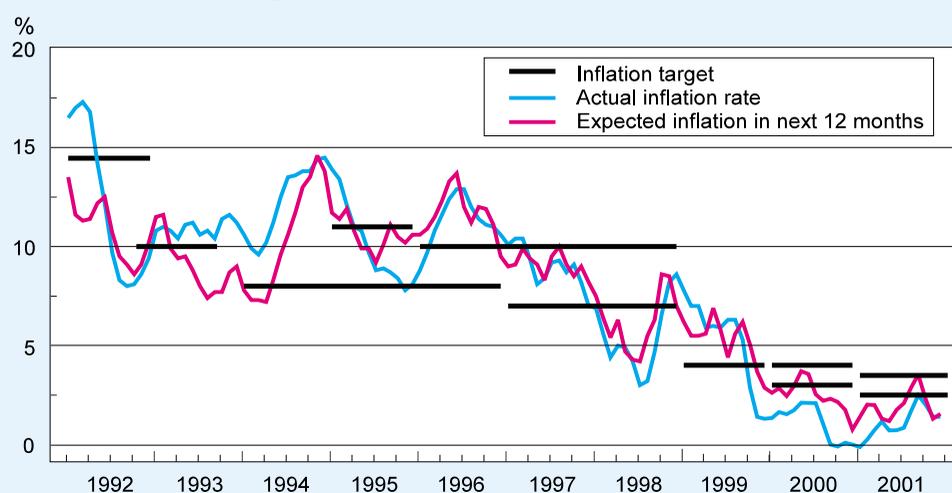
In order to examine the monetary policy that the Bank of Israel adopted in 2001 and in particular, the pace of the interest rate cuts, given the low inflation of the previous two years, attention must be focused on different indicators of inflation, macroeconomic conditions and the situation in the financial markets, since all these factors guided policymakers. We should also remember that interest rate decisions are made on the basis of a policy that looks to the future, meaning that the decisions are adapted to the future developments that are expected in the markets. Past developments are relevant only to the extent that they affect the assessment of future developments. Monetary policy decisions are made, *inter alia*, on the basis of an examination of inflation expectations relative to the inflation target: Usually, when assessments regarding inflation are below the inflation target, the Bank of Israel reduces the interest rate in order to adhere to the target, and when the forecasts are higher than the inflation target, it raises the interest rate. Although the Bank of Israel publishes its decision regarding the interest rate for the coming month, this interest rate is part of an assessed interest-rate course that is intended to bring the inflation expectations for 1-2 years close to the target ranges of inflation. The entire range of indicators is analyzed again before the interest-rate decision is made, and the interest-rate course is adjusted on the basis of this new analysis (see Box 1.1).

Since all the relevant information available is incorporated in inflation expectations, these expectations are based on numerous indicators (the main indicators are detailed in section 3 below): inflation expectations for the different terms that are derived from the capital market and from forecasts, exchange rates, the monetary and credit aggregates, real activity, fiscal policy, and the scenarios that are calculated on the basis of the econometric models developed in the Bank of Israel. All these indicators are

taken into account and the appropriate considerations are made. Due discretion needs to be employed in these considerations, also because the expectations of the development of inflation that are derived from the different indicators are inherent in the different interest-rate courses.

During the first half of the year, the majority of indicators showed that inflation expectations were slightly lower than the inflation target for the years 2001 and 2002,

**Figure 2.1**  
Inflation Rate: Targets, Expectations,<sup>a</sup> and Actual,<sup>b</sup> 1992–2001



<sup>a</sup> Capital market based expectations.

<sup>b</sup> Price increase during previous 12 months.

and were converging in the direction of the long-term target (Figure 2.1, Table 2.2). Inflation expectations and forecasters' assessments were low but close to the lower limit of the inflation targets for the years 2001 and 2002; the exchange rate was stable, and real activity was in a state of recession. In view of the assessment that the annual rate of inflation would be lower than the inflation target, the Bank of Israel cut the interest rate several times during the months January to June, by an overall amount of 1.7 percentage points, from 8.2 percent in December 2000 to 6.5 percent at the end of June 2001.

But despite this assessment, a number of factors led to increased uncertainty in the economy, in the area of real activity, and in the financial area, and apprehension over future developments affected the pace of reduction in the interest rate. These factors included shocks in the world's capital markets and especially on the Nasdaq, with all their implications for the financial markets in Israel, and geopolitical factors such as the worsening security situation and the political uncertainty surrounding the elections and the establishment of a new government. These shocks from home and abroad contributed to a slowdown in the Israeli economy following a high rate of growth in

**Table 2.2**  
**Indicators of Inflation, 2000–2001**

	Consumer price index <sup>a</sup>	Inflation expectations derived from capital market			Forecasters' average	Shekel-dollar exchange rate	Real interest rate <sup>c</sup>	Money supply M1 <sup>a</sup>
		For coming year <sup>b</sup>	For second year	3–10 years				
	(annual change)	(percent)(monthly averages)				(NIS to \$)	(percent)	(annual change)
2000								
January	1.3	2.6	3.1	4.6	3.7	4.10	8.6	14.0
February	1.6	2.8	2.6	3.2	3.7	4.05	7.8	13.3
March	1.5	2.5	2.5	3.0	3.4	4.00	7.8	9.9
April	1.7	2.9	2.5	3.6	3.6	4.04	7.0	13.3
May	2.1	3.7	2.7	3.0	3.9	4.15	6.0	12.1
June	2.1	3.6	2.6	3.4	4.0	4.11	6.1	13.0
July	2.1	2.5	2.0	3.0	3.6	4.09	7.1	9.6
August	1.0	2.2	1.8	2.8	3.0	4.05	7.3	9.9
September	0.0	2.3	1.8	2.4	2.5	4.04	7.0	8.7
October	-0.1	2.2	2.4	2.8	2.8	4.11	6.9	11.8
November	0.1	1.7	2.5	2.8	3.0	4.11	7.0	9.9
December	0.0	0.8	1.7	2.2	2.5	4.08	7.8	7.5
2001								
January	-0.1	1.4	1.3	2.0	2.2	4.12	7.0	6.5
February	0.3	2.0	1.0	2.0	2.5	4.12	6.0	11.2
March	0.7	2.0	1.1	2.1	2.5	4.16	5.8	13.9
April	1.2	1.3	1.9	1.9	2.5	4.18	6.2	12.5
May	0.7	1.2	1.7	1.9	2.2	4.14	6.3	13.7
June	0.7	1.8	1.8	2.0	2.0	4.16	5.5	13.4
July	0.8	2.1	2.8	2.1	2.0	4.20	4.6	14.9
August	1.7	2.9	2.0	2.7	2.2	4.23	3.6	16.3
September	2.5	3.5	3.7	3.2	2.7	4.32	2.9	18.6
October	2.0	2.3	2.8	2.7	2.6	4.31	4.1	16.7
November	1.4	1.3	1.6	2.2	1.8	4.24	5.0	16.3
December	1.4	1.6	1.1	2.4	1.6	4.28	4.0	16.0

<sup>a</sup> Annual rate of change, month compared with same month in previous year.

<sup>b</sup> During the next 12 months.

<sup>c</sup> Nominal interest rate on Bank of Israel tenders less inflation expectations.

SOURCE: Monetary Department, Bank of Israel, and CBS data.

2000. The slowdown had a moderating effect on the level of prices, although it also led to increased uncertainty and financial vulnerability. Since the level of the monetary interest rate has a delayed effect on the economy, it is sometimes difficult to estimate the required extent of the adjustment necessary in the interest rate, and the extent of this adjustment's effect on the economy in the short term—all the more so indeed, when the low inflation of the past two years represented a new reality for the Israeli economy, which had a long history of inflation. It is therefore necessary, principally in

periods of uncertainty, to reduce the interest rate moderately and gradually in order not to undermine financial stability. These considerations affected the rate of reduction in the interest rate during the first half of the year, when the rate was cut six times by a moderate 0.2-0.3 of a percentage point each time.

During the third quarter of the year changes occurred in certain of the previously mentioned indicators, showing that inflation expectations were rising and approaching the limits of the target range of inflation. These changes resulted partly from local factors and partly from the impact of the terror attacks in the US and their implications on the financial markets. The exchange rate of the NIS depreciated by 6 percent during the third quarter and the depreciation intensified at the end of the quarter following the terror attacks in the US, as the result of increased uncertainty in the world's currency markets. The terror attacks also affected the capital markets, causing large price slides in American and European stock markets and as a result, in most of the world's markets; the Israeli economy was not spared either. Apart from the direct effects of uncertainty in the world's capital markets, fears arose of a change in foreign investors' investment policy, which could undermine the capital and currency markets in Israel even more and threaten financial stability. Also in the third quarter the forecast extent to which the budget deficit would exceed its planned level increased. Although the extent of the higher than planned level of spending was not yet known, it was clear that the actual deficit would be considerably higher than planned. Since privatization receipts in 2001 were minimal and the situation in international markets, which worsened during the third quarter, made it difficult to raise capital there, the higher than planned level of the budget deficit was reflected by a substantial increase in domestic borrowing and by a large growth in the government debt. These developments had the effect of presenting fiscal policy and therefore the entire Israeli economy in a negative light in the eyes of foreign investors at a time when the world's capital markets were operating on fragile ground. The security situation also deteriorated during this period, and this affected activity in the markets. All these developments led to a rise in inflation expectations to within the limits of the inflation target for 2001 and 2002, and even above the target.

While in the first half of the year it was generally believed that inflation would remain below its targeted level in the short term, in the third quarter the previously mentioned factors led to a rise in inflation expectations. During the third quarter, it was noted that inflation expectations for both the short and the long term would be close to the upper limit of the inflation target or even above it, and it was feared that financial stability would be undermined. Accordingly, the Bank of Israel's interest rate was cut by only 0.3 and 0.2 percentage points in the months July and August. As the level of uncertainty increased, monetary policymakers left the interest rates for September and October unchanged.

In the last quarter of the year, when world markets became calmer, calm also prevailed in the domestic markets. This was apparent from the appreciation of the NIS, the low or even negative price indexes, and the decline in inflation expectations. At the same time, an increasing number of indicators showed that the recession was deepening. The Bank of Israel responded to the calmer state in the markets and the reduced level

of uncertainty by cutting its interest rate in November and December by 0.2 and 0.3 percentage points respectively.

At the end of December, the Bank of Israel decided to make a one-time exception to its policy of gradual adjustment in the interest rate, and cut the interest rate by 2 percentage points. This measure was based on the assessment that it would be possible to attain the inflation target at a lower interest rate, in view of the changes in background economic conditions: (1) The government's decision to return to fiscal discipline and to ensure that its debt would once again be reduced, by cutting its spending relative to the original budget for 2002 and by determining that the budget deficit would be cut from 3 percent of GDP in 2002 to 1 percent of GDP in 2005; (2) The joint decision of the Minister of Finance and the Governor of the Bank of Israel, with the approval of the Prime Minister, to make a number of structural changes in the financial markets, including a removal of the Treasury bill ceiling (as detailed in section 5 below) and further increasing the flexibility of the exchange-rate regime (as detailed in Chapter 1).

### 3. INDICATORS OF INFLATION EXPECTATIONS

As was described previously, monetary policy is managed on the basis of assessments regarding the development of inflation expectations: as long as the working assumption is that inflation expectations will be lower than the inflation target, the Bank of Israel acts to reduce the interest rate. The expected inflation environment is assessed every month by means of a range of indicators that are available to the bank, including models developed in the Bank itself, its own considerations and judgment. The indicators available do not always point in the same direction, nor is their importance in the assessment of inflation necessarily uniform, and may change from time to time in line with the changing economic environment. The development of actual inflation has more than once differed from forecast inflation due to unexpected factors and developments. Nevertheless, the best forecasting tool available to monetary policymakers is the assessment regarding the development of inflation expectations, and this assessment is based on several indicators. We will present these indicators below, and will describe their development during 2001.

#### a. Twelve-month inflation expectations

One of the main indicators used for assessing inflation expectations is the level of inflation expectations for twelve months ahead that is taken from the capital market. These expectations are derived from the difference between the yields on unindexed securities (Treasury bills), and yields on CPI-indexed bonds (*Galil* and *Sagi* bonds). During the first four months of the year inflation expectations were within the range of 1 percent to 2.5 percent, which was below the inflation target for the coming year but within the limits of the long-term target. From May onwards inflation expectations

rose: from a level of 1 percent, which was below the lower limit of the inflation target, they came into the target inflation range, and continued to rise even above the upper limit. The rise in expectations resulted from the increased uncertainty in the economy concurrent with the depreciation of the NIS, against the background of the higher than planned deficit apparent in the budget deficit and the deterioration in the security and political situation. The rise in expectations peaked at 4 percent in September at the time of the terror attacks in the US, and was accompanied by depreciation of the NIS and fluctuations in the capital markets in Israel as a result of developments in world markets. Relative calm was restored to the capital markets in Israel and abroad as early as

October, and this was reflected by a decline in inflation expectations back down to within the limits of the long-term target. In the last quarter of the year inflation expectations were within the range of 1.3 to 2.3 percent (Figures 2.1 and 2.4).

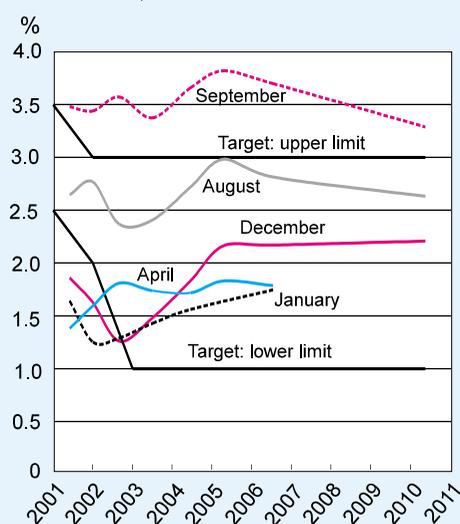
Although the level of inflation expectations at the end of 2001 was similar to that at the beginning of the year, the expectations at the end of the year were derived from levels of nominal and real interest rates that were considerably lower than those prevailing at the beginning of the year. This was due to the continued consolidation of inflation at a low level and to the credibility of monetary policy, which made it possible to cut the interest rate during the year without raising inflation expectations. The economy thereby took one more step towards the situation in other developed economies, in which price stability prevails at an interest rate lower than that typical of the Israeli economy during recent years.

### b. Long-term inflation expectations

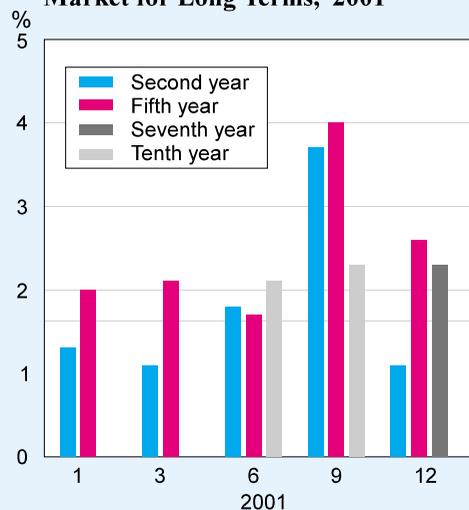
Long-term inflation expectations (up to 10 years) are derived from the yield differential between *Shahar* unindexed bonds, and *Galil* and *Sagi* CPI-indexed bonds (Figures 2.2 and 2.3).

From the beginning of the year and until July long-term inflation expectations were within the limits of the long-term inflation target; short-term expectations (a year to three years) ranged between 1.4 and 1.9 percent; expectations for medium terms (four to six years) ranged from 1.9 to 2.5 percent; and expectations for long terms (seven to

**Figure 2.2**  
**Inflation Expectations**  
**Derived from Capital**  
**Market, 2001–2011**



**Figure 2.3**  
**Inflation Expectations from Capital Market for Long Terms,<sup>a</sup> 2001**



<sup>a</sup> Expectations for the tenth year can only be measured from May 2001, when the 10 year Shahar bond was first issued.

ten years) ranged between 2 and 2.4 percent. The location of expectations for all terms within the limits of the long-term inflation target and in particular their stability were indicative of the public's confidence in monetary policymakers' commitment to attaining the government's defined objectives. This stability was maintained in the long term as well, and reflected investors' confidence that inflation rates had become consolidated at low levels and would remain at these low levels. In August, inflation expectations rose among all terms and rose more strongly in September, when the uncertainty in the markets increased. Expectations for short and medium terms rose above the limit of the inflation target and reached an average level of 3.4 percent (short-term)

and 3.9 percent (medium-term). Long-term expectations also rose, to an average of 2.6 percent, although they did not exceed the limit of the inflation target despite the growing uncertainty in the international and local capital markets. As a result, a 'hump' arose on the medium-term expectations curve, reflecting the rise in expectations for these terms and the convergence of expectations to within the limits of the target in the longer term. The moderate rise in long-term expectations, principally due to the vagaries of the capital markets in that period, is evidence of investors' credibility in the attainment of the inflation targets even in the midst of the shocks that hit the financial markets. In October, when calm was restored to the markets, expectations for all terms reverted to the ranges of the annual targets and ranged between 1.7 and 2.5 percent at the end of 2001, which was within the long-term target.

### c. Private forecasters' assessments

Private forecasters' assessments for twelve months ahead were stable and remained largely unchanged during the first eight months of the year at between 2 and 2.5 percent. In September, as the result of developments in the local and international capital markets, their forecasts rose to 2.7 percent but still did not exceed the limits of the short- and long-term targets. When relative calm was restored to the capital markets, forecasters' assessments fell again to a level of 1.6 percent in December.

A similar development was apparent in forecasters' assessments for the year 2001. During the first 8 months of the year, their forecasts ranged between 1.9 and 2.5 percent—close to the lower limit of the inflation target for 2001 (2.5 percent). During

the months September and October, their expectations rose to 3.1 percent, which was within the target range of inflation for the year, and when the markets became calmer these expectations went back down to 2.5 percent in November and 1.4 percent in December.

Forecasters' expectations for 2002 were also stable throughout the year, and ranged between 1.9 and 2.3 percent, within the target range of inflation for that year. These forecasts remained stable in the third quarter of the year as well despite the volatility in the local and international capital markets, and thereby reflected the assessment that the exceptional events would not affect inflation in the longer terms. This was evidence of the credibility of monetary policy.

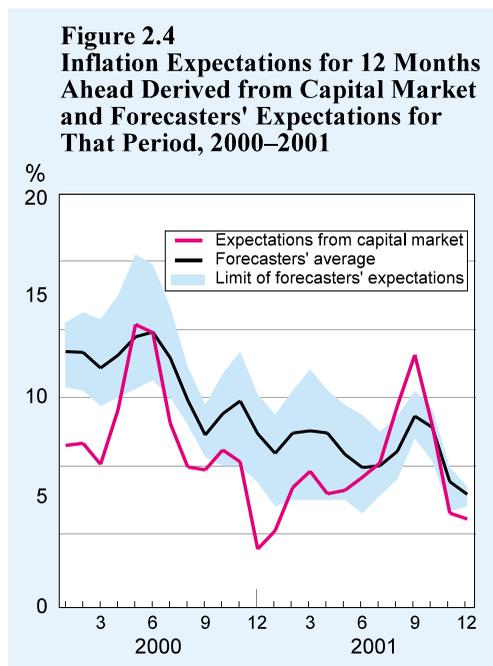
An examination of the variability<sup>1</sup> of forecasters' expectations for twelve months shows a decline in the their forecasts' variability from April onwards. Their forecasts'

variability also fell during periods when their forecasts increased, in contrast to previous years when higher forecasts were usually characterized by a higher degree of variability as a result of increased uncertainty. The decline in the forecasts' variability could be indicative of a wider degree of consensus among the different forecasters, and of greater certainty regarding the development of inflation.

A comparison of forecasters' assessments with the inflation expectations derived from the capital market for twelve months ahead, which are measured using various methods, shows that the expectations derived from the capital market were far more volatile during the year than forecasters' assessments (Figure 2.4): during the early

months of the year, when the markets were calm and relatively stable, these expectations were lower than forecasters' assessments. During the third quarter, the expectations derived from the capital market exceeded the assessment compiled by private forecasters. This was due to the rise in prices during the second quarter and to increased uncertainty, especially after September's events. In the last quarter of the year, when the markets became calmer, the inflation expectations derived from the capital market fell below private forecasters' assessments. It therefore appears that the capital market reacts more rapidly and sometimes more intensely to new information and to situations of uncertainty.

<sup>1</sup> The concept of variance is the normalized variance (also known as the coefficient of variation), in order to allow for differences in the average levels of inflation between periods.



#### **d. Fiscal policy**

The total budget deficit in 2001 amounted to 4.6 percent of GDP compared with the much lower planned deficit of 1.75 percent of GDP. The higher than planned deficit largely derived from the revenue side, from a fall in revenue from tax receipts that resulted from the slowdown in economic activity. But despite the drop in revenue, which was already observed in the middle of the year, the government did not reduce its expenditure accordingly, thereby leading to a large fiscal expansion. This expansion was reflected by a deficit of NIS 21.3 billion compared with a planned deficit of NIS 8.4 billion, an addition of NIS 13 billion that had to be financed during the same year. The principal methods used by the government to finance its deficit are domestic borrowing, borrowing abroad and privatization. Overseas borrowing during 2001 was some NIS 2 billion lower than planned due to the government's difficulty in raising capital during a period of recession in the international markets, and due to the deterioration in the situation of Israel's economy in that period. In addition, privatization receipts during the year were minimal, compared with planned privatization receipts of some NIS 3 billion. The lower than planned level of finance that was derived from these two channels, as well as the much higher than planned budget deficit forced the government to make up for the shortfall by means of domestic borrowing. As a result, domestic borrowing by means of tradable bonds<sup>2</sup> totaled NIS 12 billion in 2001 compared with planned borrowing of only NIS 4 billion. Such a large growth in domestic borrowing exerts an upward pressure on yields, and increases the cost of the government borrowing, the government debt and the government's future interest payments. Since real yields on government bonds serve as a benchmark for the pricing of loans in the economy, a rise in these yields increases the private sector's financing costs.

The large upward deviation in the budget deficit and the resulting large growth in government borrowing during the second half of 2001, together with the low rate of increase in nominal GDP, led to a substantial increase in the government debt, which reached 96 percent of GDP at the end of 2001 compared with 91 percent in 2000 and at the end of the first half of 2001 (Table 2.3). This was after the debt/GDP ratio had fallen by 15 percentage points from the end of 1995 until the first half of 2001, in a continuation of the consistent downtrend since the economic stabilization program of 1985 (apart from a temporary exception at the end of 1998 that resulted from rises in the exchange rate and prices, which were subsequently offset).

Such a large government debt involves high interest payments for the economy. In 2001 these payments totaled NIS 23 billion, an amount equivalent to five percent of GDP. The large growth in the government debt harms the nation's fiscal credibility, because the debt/GDP ratio is one of the most important indicators of an economy's stability in the eyes of foreign investors. Under the Maastricht Treaty, one of the main

<sup>2</sup> The government also raised funds via earmarked bonds for some institutional investors; it cannot control the quantity raised of these earmarked bonds.

**Table 2.3**  
**Total Government Debt, 1995–2001**

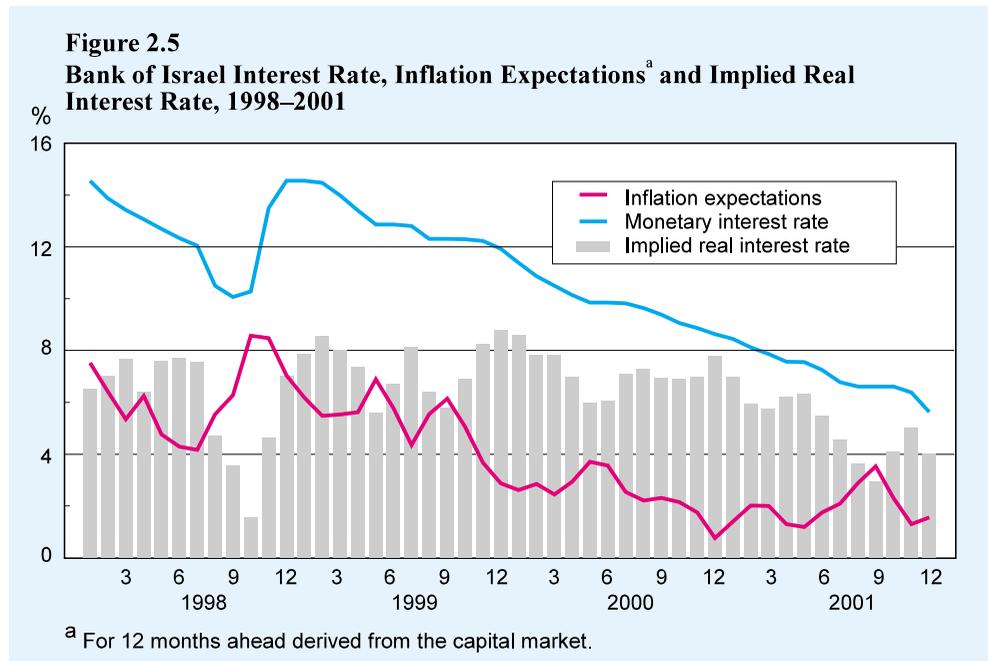
	(percent of GDP)						
	1995	1996	1997	1998	1999	2000	2001
<b>a. Reserves at end of period</b>							
	<i>NIS billion, current prices</i>						
1. Internal debt	213.6	245.2	268.3	295.9	307.7	305.2	326.2
2. External debt	73.0	81.1	91.2	112.7	112.8	111.2	121.1
Total government debt (1=2=3)	286.6	326.3	359.5	408.7	420.5	416.4	447.3
<b>b. Debt/GDP ratio</b>							
	<i>Percentage of GDP</i>						
1. Internal debt	79	78	76	76	73	67	70
2. External debt	27	26	26	29	27	24	26
Total government debt (1=2=3)	106	104	102	106	99	91	96
<b>c. Total government debt by type of indexation</b>							
	<i>Percent</i>						
1. CPI-indexed	68	65	65	61	60	58	54
<i>of which: Nontradable debt</i>	38	37	37	35	35	34	33
2. Unindexed	3	7	7	7	9	11	15
3. Dollar indexed	4	4	3	4	5	4	4
4. External debt-foreign currency denominated	25	25	25	28	27	27	27
5. Total	100	100	100	100	100	100	100
<b>d. Average term-to-maturity of government debt</b>							
	<i>Years</i>						
1. Internal debt	6.7	6.5	6.4	6.4	6.3	6.2	6.6
2. External debt	8.1	8.1	7.8	8.1	7.7	7.2	6.9
3. Total debt	7.1	6.9	6.8	6.8	6.7	6.5	6.7

SOURCE: Monetary Department, Bank of Israel, and CBS data.

conditions for economies joining the European Monetary Union is a debt that does not exceed 60 percent of GDP, or is on a clear downward course towards this ratio.

The government made an upward adjustment in the budget deficit for 2002, with the result that the planned deficit for the year amounts to 3 percent of GDP compared with a planned deficit of 1.5 percent of GDP before the adjustment. This was the fourth time that a planned deficit was changed since the Budget Deficit Reduction Law was first presented in 1991. The importance of maintaining the credibility of fiscal policy has grown as a result of the worldwide economic slowdown and the crises that have hit emerging economies such as Turkey and Argentina—crises that have been reflected by reduced foreign investment and by an increase in the risk premiums demanded on these investments. A fiscal expansion or adjustment in the budget deficit at a time when the government is having constant difficulty in fulfilling its commitments could harm the credibility of fiscal policy. This could lead to a reduction in the Israeli economy's credit rating, and undermine financial stability and price stability.<sup>3</sup>

<sup>3</sup> Although Israel's credit rating remained unchanged in 2001, forecasts relating to a possible reduction in the rating were published during the year.



#### e. The expected real interest rate on Bank of Israel sources and the real yield curve

The expected real interest rate on Bank of Israel sources is derived from the difference between the Bank of Israel's headline interest rate (the nominal interest rate) and inflation expectations for twelve months ahead that are derived from the capital market. This real interest rate is one of the indications of the intensity of monetary restraint. In 2001, it fell to an average rate of 5.2 percent, and to an average of 4 percent in the second half of the year compared with 7.2 percent in 2000 and 7.4 percent in 1999 (Table 2.1, Figure 2.5). This decrease, which reflects a decline in the level of monetary restraint, derives from the consistent reduction in the Bank of Israel's interest rate concurrent with a rise in inflation expectations during some months of the year.

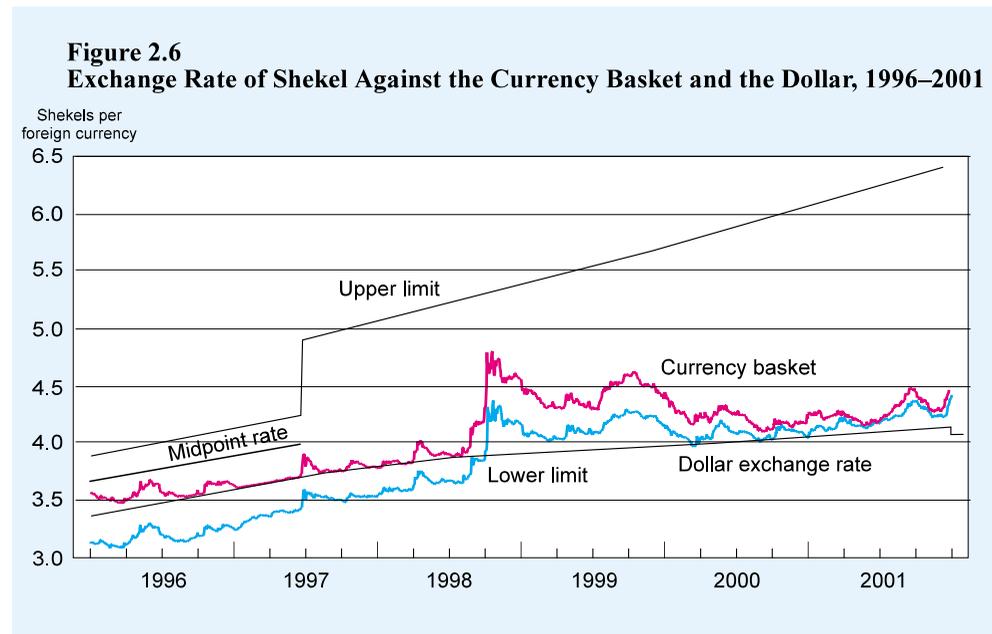
Another indicator of the extent of monetary restraint is the slope of the real yield curve. Real yields for short terms are mainly affected by the Bank of Israel's interest rate, that is by monetary policy, while yields for the long terms are mainly affected by fiscal policy and the rates of growth in the economy. Following several years when the slope of the real yield curve was negative, reflecting a relatively high degree of restraint and expectations of a decline in the real interest rate, the slope of the curve changed. During the first half of the year the negative slope became more moderate until it flattened out, reflecting an easing in monetary restraint. The flattening out of the slope of the curve reflected a decline in real yields for all terms, and especially a large decrease in yields for the short term. The decline in yields was also an expression of the economic forces that were acting towards a fall in the real interest rate due to the drop in demand resulting from the recession. Although short-term yields continued to fall during the

third quarter, long-term yields rose. As a result, for the first time for many years, the slope of the yield curve was positive, reflecting an even lower level of monetary restraint. A positive slope in the yield curve is most common worldwide, mainly because the risk premium rises as the investment horizon increases. In Israel, this form of the curve arose due to the combination of the Bank of Israel's cut in the short-term interest rate, which had the effect of reducing short-term yields, and the growth in the government's domestic borrowing, which had the effect of increasing long-term yields. Long-term yields are regarded as highly important due to their impact on the cost of investments in the economy. In the fourth quarter, as the capital markets became calmer, short-term yields rose again, and the slope of the yield curve was moderately positive (see Chapter 4 for details).

**f. The exchange rate, capital movements, and import and export prices**

Due to the pass-through from the exchange rate to prices, the exchange rate is important in an open economy with unrestricted capital movements. An increase in the gap between the local interest rate and the interest rate abroad increases the relative feasibility of investing in local assets and leads to an import of capital to the economy, which is reflected by an appreciation of the exchange rate – and *vice versa*. A change in the exchange rate affects prices via the prices of imports, the demand for exports and the prices of tradable goods that are denominated in foreign currency or indexed to foreign currency (for further details, see Box 1.1).

The exchange rate of the NIS depreciated by 4.8 percent against the dollar and by 3.7 percent against the currency basket during 2001 (December 2001 average compared



with December 2000). However, the development of the exchange rates were not uniform in the course of the year (Figure 2.6). After remaining practically unchanged during the first two quarters of the year (a depreciation of 2 percent against the dollar and no change against the currency basket), the exchange rate depreciated by 4 percent against the dollar and by 6 percent against the currency basket. This depreciation was partly offset by an appreciation of 1.1 percent and 1.9 percent respectively in the fourth quarter.

The depreciation during the third quarter of the year resulted from the increased uncertainty in the markets. The uncertainty derived *inter alia* from the growing expectations that the budget deficit would exceed its planned level, and that foreign investment in Israel would decline concurrent with the heavy price slides in the world's equity markets and the deterioration in the security situation. The depreciation intensified at the end of the quarter when the uncertainty in the financial markets in Israel and abroad increased, due to the terror attacks in the US in September.

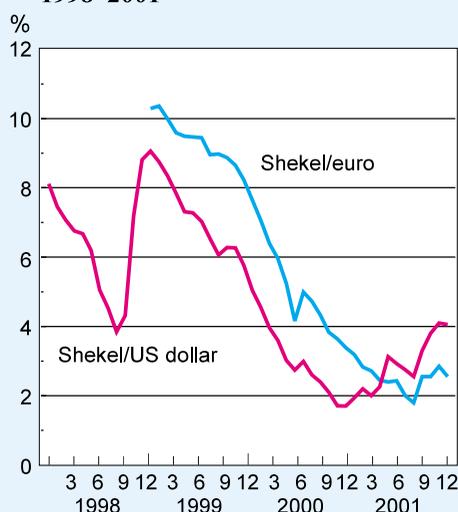
During the fourth quarter of the year, the world's capital markets calmed to some extent as a result of the economic and defense measures taken by the US and other countries, and this situation was also reflected by rises in equity prices. The NIS appreciated due to the calmer situation, and the appreciation was supported by the larger interest-rate differentials between the NIS, and between the dollar and the euro that resulted from the expansionary monetary policy of the central banks in the US and Europe and the lack of change in the Bank of Israel's interest rate during September and October. When the 2 percentage-point cut in the Bank of Israel's interest rate was announced at the end of the fourth quarter, the exchange rate rose again. The overall adjustment in the exchange rate during the fourth quarter therefore amounted to an appreciation of one percent.

Despite the high degree of economic, security-related and political uncertainty that made its mark in the financial markets, including the foreign currency market, against the background of the crisis in the world's capital markets and forecasts of a reduction in Israel's credit rating, this rating was actually left unchanged—further evidence of the importance of maintaining financial stability. Most of the capital movements during the year that led to a change in the exchange rate derived from foreign residents' foreign exchange futures transactions—activity that has been permitted since October 2000, when the liberalization for foreign residents was completed (for further details, see the Controller of Foreign Exchange, Annual Survey, 2001). As a result, foreign residents' activity became more sensitive to the differential between the local currency interest rate and foreign currency interest rates, and to exchange rate risks. During the third quarter of the year, foreign residents purchased foreign currency via futures transactions with the banks, and thereby contributed to a rise in the exchange rate. Since these transactions were not accompanied by a concurrent change in foreign residents' local-currency assets, it can be assumed that the transactions were not made for hedging purposes alone, and may have derived from the assessment that the risk of a depreciation had grown. Israeli residents also operated in the market by depositing considerable sums in the foreign currency mutual funds. Israeli residents therefore also contributed

to a rise in the exchange rate, because the funds purchased foreign-currency-indexed assets against the NIS deposits. During the third quarter, it was the banks that sold foreign currency amidst a depreciation and thereby stabilized the rising exchange rate. When the situation became calmer in the fourth quarter of the year (except for the last week of December), foreign residents sold foreign currency by means of futures transactions, and Israeli residents withdrew money from the foreign currency mutual funds. These transactions led to an appreciation of the NIS.

Despite the Bank of Israel's interest rate cuts in the course of the year, the gap between the local-currency interest rate and foreign currency (principally the dollar) interest rates expanded due to the larger interest rate cuts abroad. The dollar interest rate was cut from 6.5 percent at the beginning of 2001 to 1.75 percent at the end of the year. As a result, the interest-rate differential between the NIS and the dollar increased from 1.7 percent at the beginning of the year to 4.1 percent at the end of the year, and contributed to a stabilization of the exchange rate. This gap contracted to 2.1 percent at the end of December when the Bank of Israel cut the interest rate by 2 percent (Figure 2.7). The depreciation during the third quarter of the year and the uncertainty regarding the future development of the exchange rate were also reflected by a rise in inflation expectations (see section a. above), leading to fears regarding the development of inflation. The transmission mechanism between the exchange rate and local prices operates via the prices of goods that are indexed to the exchange rate or denominated in foreign currency, and especially via prices of imported goods. Import and export prices are known to exert a major effect on domestic prices because the weighting of imports and exports in GDP and domestic uses is very high. In addition, there are many goods and services that are close substitutes for these goods. Prices of imports,

**Figure 2.7**  
Overnight Interest Gap between  
Israel, the USA and Europe,  
1998–2001



import substitutes and exports are affected by two factors—the exchange rate and the development of world prices. For the purposes of our discussion, we will define tradables prices as the exchange rate of the NIS against the dollar multiplied by the average dollar prices of merchandise exports and imports. A positive correlation exists between the rate of increase in tradable prices and the rate of increase in local prices, with the result that a high (low) rate of increase in tradables prices has the effect of increasing (decreasing) the rate of increase in local prices.

In 2001, the prices of tradable goods rose by one percent after falling by 1.5 percent in 2000. The price increase during 2001 resulted from the rise in the

**Table 2.4**  
**The Exchange Rate, Import and Export Prices,**  
**and Consumer Prices, 1995–2001**

	Basket rate	Dollar rate	Export prices <sup>a</sup>	Import prices <sup>a</sup>	Tradable prices <sup>b</sup>	Consumer price index
Increase or decrease compared with previous period, annual averages						
1995	4.6	0.0	5.6	11.5	8.4	10.0
1996	3.5	5.9	-1.2	-1.8	4.3	11.3
1997	4.3	8.2	-2.9	-5.1	3.9	9.0
1998	9.6	10.2	-3.2	-6.2	5.0	5.4
1999	8.3	8.9	-1.6	-2.3	6.9	5.2
2000	-4.7	-1.5	-2.3	-2.4	-1.5	1.1
2001	1.4	3.1	-1.9	-2.1	1.0	1.1
Increase or decrease compared with previous period, last quarter						
1995	3.6	1.2	4.0	7.8	7.2	8.1
1996	4.0	6.3	-1.6	-3.6	3.5	10.9
1997	4.7	8.7	-3.7	-4.9	4.0	8.1
1998	20.9	19.0	-2.7	-5.8	13.9	7.8
1999	-1.7	0.7	-0.4	0.4	0.7	1.9
2000	-7.8	-3.1	-2.7	-0.7	-4.7	0.0
2001	4.2	4.3	-3.5	-3.5	0.7	1.6
Increase or decrease compared with previous period, annual terms						
2000						
I	-20.2	-15.4	-6.1	3.5	-16.7	-3.7
II	-1.7	4.3	-9.7	-4.4	-3.1	3.2
III	-7.5	-3.7	0.2	3.0	-2.2	0.8
IV	-0.7	4.0	5.5	-4.5	4.4	-0.1
2001						
I	7.4	3.6	-4.2	-0.4	1.2	-2.6
II	-3.9	2.4	-5.4	-3.3	-2.1	5.6
III	11.4	9.1	0.6	-0.1	9.4	4.0
IV	2.6	2.4	-4.9	-9.9	-5.2	-0.4

<sup>a</sup> In dollars.

<sup>b</sup> Average prices of imports and exports multiplied by the exchange rate of the dollar.

SOURCE: Bank of Israel, and CBS data.

exchange rate in the third quarter, while import and export prices fell in dollar terms (Table 2.4). In 2000 as well, the impact of the exchange rate was dominant: an appreciation of the NIS led to a fall in the index of tradables prices, while average import and export prices worldwide remained largely unchanged.

The moderate increase in the prices of tradable goods in 2001 and their decrease in 2000 contributed to a similarly moderate rise in local prices during the last two years. A fall in import and export prices is further evidence of the slowdown prevailing in the world economy. The worldwide slowdown was largely caused by the slump in the

high-tech industries, which caused difficulties in raising capital and therefore led to a slower pace of investment. The terror attacks in the US in September 2001 further aggravated the situation in the capital markets, and led to a downward adjustment in assessments regarding world trade, growth and rises in world prices. Previously, these assessments were already relatively low. Worldwide economic developments combined with security-related developments in Israel during the year also depressed local economic activity and Israel's foreign trade.

#### **g. The monetary and credit aggregates**

The monetary and credit aggregates are another indicator employed in the assessment of inflation expectations (Table 2.5). However, in a regime of inflation targets where the nominal anchor is the inflation target and the monetary policy instrument for obtaining the target is the interest rate, the development of the means of payment is less important than in regimes where the policy instrument is a monetary aggregate. Nevertheless, the development of the means of payment does need to be monitored because it could serve as a warning sign of burgeoning inflationary pressure. The *M1 money supply* expanded by an average of 15.3 percent in 2001. An examination of the development of the components of M1 shows that despite the large increase in this aggregate during the year, no exceptionally large increase was recorded in the deposits component, while the cash component increased greatly. The deposits component expanded by an average annual rate of 12.1 percent, similar to the average rate of increase in 1999 and 2000 (12 percent), and in line with the estimates of the demand for them that are determined by the development of prices, real activity and the nominal interest rate. But the cash component grew by an average annual rate of 18.7 percent, which was higher than the 9 percent average increase recorded in 1999 and 2000. The growth in the amount of cash held by the public may have derived from a change in commercial norms due to the tense security situation, and the move to cash in commerce with traders from the Palestinian Autonomy. A growth in demand for cash is typical of an economy that is suffering from security-related uncertainty.

The *M2* aggregate includes the means of payment (M1) and other unindexed local-currency deposits. This aggregate expanded by 16.8 percent in 2001 compared with 19.2 percent in 2000. From the long-term aspect, the rate of expansion in this aggregate appears to be slowing, following average annual increases of 34 percent in 1995 and 1996. No major increase has been recorded during recent years in the weighting of M2 in the public's financial asset portfolio—2.5 percent of the portfolio. This situation could be taken as indicating that the process of transition to unindexed assets in the asset portfolio is nearing completion.

The composition of M2 reveals the extent of credibility in monetary policy for attaining the inflation target: The longer the term of a deposit, the more the depositor is exposed to inflation risks, especially when the deposit bears a fixed rate of interest. A growth in the weighting of long-term deposits therefore reflects increased credibility

**Table 2.5**  
**Rates of Change in the Monetary Aggregates, 1995–2001**

	Total credit to public C3	CPI- indexed credit to public	Unlinked shekel credit C1	F/c and F/c linked credit		Means of payment M1 <sup>a</sup>	Money supply M2 <sup>b</sup>	Monetary base	Nominal GDP <sup>c</sup>	CPI
				In \$ terms	In NIS terms					
1995	38.8	59.6	7.7	43.4	47.2	16.5	36.1	-2.6	17.7	8.1
1996	19.5	22.8	13.4	14.3	20.0	6.7	32.2	17.7	15.8	10.6
1997	17.3	17.1	10.1	14.7	23.7	13.8	24.1	16.4	12.6	7.0
1998	18.7	14.8	20.3	4.5	23.5	11.7	19.1	26.1	9.9	8.6
1999	12.7	10.7	15.1	13.1	13.6	14.3	28.3	15.4	9.3	1.3
2000	10.3	2.9	28.9	9.3	6.3	7.5	19.2	11.5	8.4	0.0
2001	8.9	7.1	11.0	4.5	9.5	15.3	16.8	16.1	1.4	1.4
1998										
I	10.2	7.6	9.1	8.5	15.0	2.2	24.1	49.7		0.3
II	16.7	11.6	30.1	5.3	14.8	10.9	17.6	16.2		8.9
III	17.2	9.3	13.7	9.6	32.9	46.2	26.3	34.9		7.3
IV	31.9	32.5	29.8	-4.7	32.6	-6.0	9.2	7.6		18.8
1999										
I	6.7	9.7	16.9	9.9	-4.6	4.1	37.8	7.1		-5.5
II	11.6	8.2	9.8	11.8	18.4	3.9	21.1	9.1		4.3
III	18.9	16.3	7.0	14.3	33.0	30.9	23.8	24.0		5.1
IV	13.8	8.7	28.0	16.7	10.8	20.5	31.1	22.4		1.9
2000										
I	5.1	-2.0	54.2	1.3	-15.8	-11.2	15.1	1.1		-4.8
II	14.7	7.4	15.7	12.7	24.8	16.3	10.1	9.0		6.6
III	9.8	7.7	26.3	6.3	-0.6	12.1	24.4	8.9		-3.3
IV	12.0	-1.3	22.5	17.4	22.4	15.3	28.0	29.0		1.9
2001										
I	9.1	-1.2	18.9	5.6	14.6	12.2	22.4	17.2		-1.9
II	11.6	13.6	10.2	10.5	10.3	14.0	16.2	12.6		6.6
III	14.3	11.9	4.5	9.6	27.3	34.1	18.3	30.1		3.6
IV	1.3	4.6	11.0	-6.8	-10.7	2.9	10.6	5.7		-2.3

<sup>a</sup> M1—cash and demand deposits.

<sup>b</sup> M2—M1+NIS term deposits+long term NIS deposits.

<sup>c</sup> Nominal rate of change in GDP during the year.

SOURCE: Monetary Department, Bank of Israel, and CBS data.

of monetary policy. The weighting of long-term deposits for a year and more continued to grow during 2001, from 12.4 percent at the end of 2000 to 14.3 percent at the end of 2001, while the weighting of medium-term deposits (three months to a year) rose slightly, from 12.4 to 12.9 percent. Concurrently, the weighting of short-term deposits (up to three months) fell from 75.2 to 72.8 percent. Nevertheless, these deposits still account for the majority of local-currency deposits (Figure 2.8).

Another indicator of the credibility of monetary policy is the ratio between fixed-rate deposits and floating-rate deposits. Since floating-rate deposits protect investors

from a change in the interest rate, they effectively contain an element of indexation in contrast to fixed-rate deposits, which expose the investor to changes in the interest rate and inflation. The weighting of fixed-rate long-term deposits to total long-term deposits rose to 50 percent in 2001 compared with 45 percent in December 2000, further evidence of investors' credibility in monetary policy.

*Total credit to the public (C3)* expanded by 9 percent in 2001, compared with an average annual rate of increase of 24 percent between the years 1995 to 1998. The slower rate of increase in credit reflects the end of long-term processes, following many years when credit grew rapidly in response *inter alia* to the reforms and changes in the financial markets.

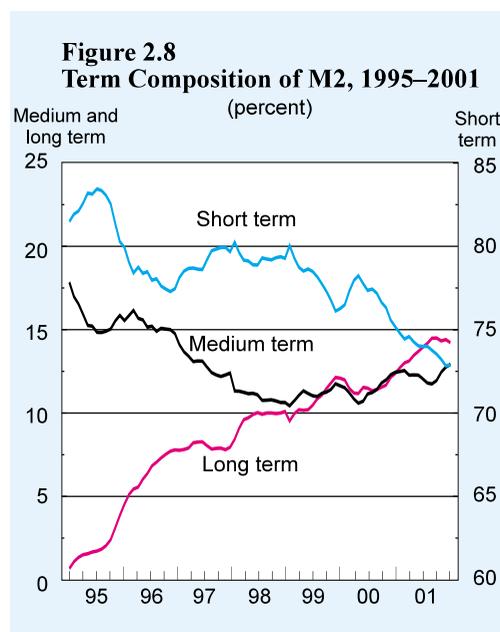
Unindexed credit (C1) increased by 11 percent in 2001 compared with 30 percent in 2000, while CPI-indexed credit expanded by 7 percent in 2001 compared with 3 percent in 2000.

The weightings of the different types of credit changed during the last three years due to the convergence of the inflation environment at a low level. The weighting of unindexed credit to total credit rose from 23.6 percent in the last quarter of 1997 to 29 percent in the last quarter of 2001; the weighting of CPI-indexed credit fell from 46.1 to 40 percent, and the weighting of foreign currency denominated and indexed credit (including direct credit from abroad) rose slightly, from 30.3 to 31 percent.

#### **h. Real activity**

The year 2001 was notable for a slowdown in real activity, which was apparent from the low rate of growth and the rise in the unemployment rate. A recessionary level of real activity reduces the pressure on prices from the demand side, and thereby has the effect of moderating the rise in prices. During 2001 the recessionary level of economic activity did indeed contribute to a low rate of inflation, and supported the reductions in the interest rate even in periods of growing uncertainty in the economy.

The large drop in real activity in the economy during 2001, which was reflected by a negative rate of growth, resulted from a combination of local factors unique to the Israeli economy, and from factors related to the world economy: The worldwide economic slowdown, which was accompanied by the crisis in the equity markets, led to a decrease in stock issues and as a result, in the activity of Israeli high-tech companies,



which mainly relied on foreign markets for financing their activity. After leading the expansion of economic activity during 2000 and making a substantial contribution to the growth in GDP, these companies contributed to the slower pace of activity in 2001, due also to the adverse affect on industries that supply accompanying services to the high-tech industries. Together with the effect of external factors, the deterioration in the security and political situation in Israel led to a large drop in tourism and activity in related commerce sectors, and adversely affected industries that relied on Palestinian workers. The weighting of investments in GDP fell as a result of these developments. The decline in world trade and the slowdown in economic activity in Israel also harmed

**Table 2.6**  
**Nominal Unit Labor Cost per Unit of GDP, Unemployment Rate and Prices, 1995–2001<sup>a</sup>**

	Business sector wage per FTE	Public sector wage per FTE	Business sector GDP	Nominal business sector unit labor cost <sup>b</sup>	CPI	Unemployment <sup>c</sup>
Average annual increase or decrease compared with previous year						
1995	10.8	16.1	8.8	9.2	10.0	6.8
1996	12.7	13.3	5.3	12.5	11.3	6.6
1997	13.0	9.1	3.7	11.4	9.0	7.5
1998	8.6	5.7	2.9	6.2	5.4	8.6
1999	8.9	5.3	2.4	8.4	5.2	8.9
2000	7.8	6.6	8.5	2.9	1.1	8.8
2001 <sup>d</sup>	4.7	3.7	-1.9	7.3	1.1	9.3
Increase or decrease compared with previous year, year-end data						
1995	9.6	7.3	5.8	10.6	8.1	
1996	13.0	13.6	3.4	14.7	10.6	
1997	12.9	8.6	2.7	11.0	7.0	
1998	7.8	5.3	3.5	4.8	8.6	
1999	9.7	8.1	6.2	5.6	1.3	
2000	7.2	1.9	3.6	6.7	0.0	
2001 <sup>e</sup>	0.8	2.5	-5.7	4.9	1.4	

<sup>a</sup> Wage and labor cost data for 2001 do not include December.

<sup>b</sup> Wages per FTE *less* real GDP per labor unit.

<sup>c</sup> Actual figure.

<sup>d</sup> January–November 2001 compared with January–November 2000.

<sup>e</sup> October–November 2001 compared with October–November 2000.

SOURCE: Monetary Department, Bank of Israel, and CBS data.

merchandise exports and import oriented industries, and were reflected by a fall in import and export prices. Since exports fell more than imports, the balance-of-payments current account deficit continued to grow.

As a result of the continued slowdown in economic activity and the fall in domestic demand, the unemployment rate rose to 9.3 percent in 2001. A rise in the unemployment

rate reduces the public's purchasing power, and thereby contributes to a slower rate of price increases.

The nominal labor cost per unit of (real) GDP is an indicator of the extent of the future pressure on prices from the labor market. A growth in labor costs implies an increase in firms' expenses, for which firms try to compensate themselves by raising their prices. The rate of increase in the nominal labor cost per unit of GDP slowed appreciably in 2000, and appears to have supported the moderate extent of inflation in 2001. The moderate rise in labor costs during 2000 derived from the large business sector GDP growth rate in that year rather than from the unemployment rate, which remained relatively stable. In 2001, labor costs rose at a higher rate than in 2000 (partial data, excluding December) (Table 2.6). The increase mainly derived from the negative rate of growth in real GDP during the year. However, quarterly data show a rise in labor costs during the first two quarters of the year, and a decrease in the third quarter, apparently due to the large rise in the unemployment rate in that quarter, which was accompanied by a fall in wages. Since the development of labor costs in the third quarter of the year differed from that in the first half, it is difficult to deduce from it the future course of development of prices.

#### **i. Econometric models**

Concurrent with a judgmental examination of the indicators available to it, the Bank of Israel uses macro-econometric models that it has developed in order to assess inflation expectations. These models express the complex relationships between the economic variables via transmission mechanisms, and thereby make it possible to examine different economy scenarios and obtain forecasts of the development of inflation expectations from these scenarios. The monthly usage of specific economic models provides an additional, clear and consistent framework for the analysis of inflation expectations. However, the models operate in a "mechanistic" and rigid manner, and are not necessarily suited to the entire range of economic situations and developments, especially when structural changes are appearing in the economy. It is therefore important to base decisions on the use of models and judgmental assessments together.

### **4. PRICES**

#### **a. Price developments**

The consumer price index rose by 1.4 percent in 2001. Notable among the items that contributed to the rise in the index were the housing item, which contributed 1.1 percentage points to the rise in the index, and the fruit and vegetable, and the health items, which contributed 0.2 and 0.3 percentage points respectively. However, the large 5.7 percent decrease in the clothing and shoes item offset the rise in the price index by 0.2 percentage points (Table 2.7 and Figure 2.9). Detailed below are selected index items.



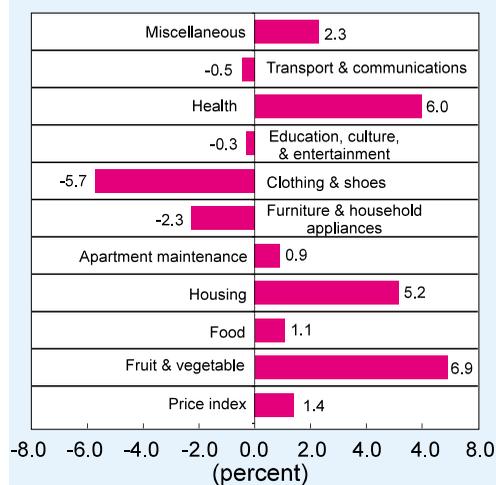
The housing price index rose by 5.2 percent in 2001, after falling by 2.4 percent and 0.9 percent in 2000 and 1999 respectively. In 1999, the method of measuring the housing index was changed and under the new method, the index of owner-occupied housing prices is calculated on the basis of the rental fees for similar apartments (as similar as possible), rather than on the basis of apartment purchase prices because these reflect financial considerations and not only considerations relating to the purchase of housing services. Under this measurement method as previously, the exchange rate affects housing prices in the short term. Changes in the exchange

rate are reflected by the local-currency value of apartment rental prices, and affect the index of housing prices. As a result, the exchange rate fluctuations during the year led to a rise in the housing component, which contributed 1.1 percentage points to the rise in the price index. (The housing index accounts for 21 percent of the consumer price index.) This was in contrast to the appreciation of the exchange rate during the previous two years, which led to a fall in the housing index.

The index of clothing and footwear prices fell by 5.7 percent in 2001 due to respective 6.1 percent and 2.1 percent decreases in the clothing and footwear item. This large decrease offset the consumer price index in 2001 by 0.2 percentage points. The change in the clothing and footwear index was not uniform throughout the year. During the spring and autumn months, there were large seasonal rises in prices, at monthly rates of 1-5 percent, while in the remaining months of the year prices fell even more heavily. During the year as a whole, prices of clothing and footwear fell by 5.7 percent. The decrease in this index during 2000 followed decreases, albeit to a more moderate extent, in this index during the previous two years, by 0.1 and 4.0 percent in 2000 and 1999 respectively. But while footwear prices brought down the index in the previous two years, clothing prices moderated the decrease, while in 2001 clothing prices fell more heavily. The decreases in the prices of these two items came against the background of the slowdown in economic activity and the rise in unemployment, and reflected the growing extent of the recession.

Health care prices rose by 6 percent in 2001. This was the sixth consecutive year when the rates of increase in this item were the highest in the price index. This appears to have resulted from the changes that occurred in the health system in 1995, most notably

**Figure 2.9**  
Development of CPI Items in 2001



the enactment of the government Health Insurance Law that permitted the marketing of health-related products that are not included in the basic health basket. The supplementary and accompanying health insurance market has flourished during recent years, and these forms of insurance have contributed to a growth in the health component of the consumer price index.

*The wholesale price index of industrial production*<sup>4</sup> fell by 1.9 percent in 2001, after rising by 2 and 3.5 percent in 2000 and 1999 respectively. The wholesale price index represents the cost to the productive sectors. Since prices in the productive sectors affect prices to the consumer, the wholesale price index can serve as a leading indicator for the consumer price index: a large rise in the wholesale price index can be expected to lead to a future rise in the consumer price index. The fall in the wholesale price index in 2001 is further evidence of the slowdown in economic activity, which was indeed reflected by a low rate of inflation.

#### **b. The variability of the consumer price index**

In an economy where a low inflation environment prevails, the variability of the consumer price index is an important factor. This is because stability can be examined according to the distribution and extent of price volatility, and not only on the basis of their rates of change during a specific period. The extent of the volatility of the index can be examined in a number of ways including an examination of the month-to-month volatility of the price index (that is, its variability over time) and an examination of the inter-month variability of the components of the index.

*Month-to-month implied volatility:* An examination of volatility over time shows that the implied volatility in the consumer price index fell slightly in 2001, and amounted to 0.40 percent compared with an average of 0.44 percent in 2000 and 1999, even though the inflation rates during those years were lower. The decrease in the implied volatility, which measures the volatility of the index, is indicative of progress in the stabilization of inflation at a low level. However, the implied volatility is still high compared with Western countries with a similar inflation environment.

*Intra-month implied volatility:* One of the reasons for the relatively high variability of the consumer price index is the seasonal element in the components of the index. Many components of the index contain seasonal features. Examples in this respect are clothing and footwear, and fruit and vegetables, which tend to rise at the beginning of a season and fall at the end of a season, and apartment rental prices (which are part of the housing component), which change at the beginning and end of the academic year due

<sup>4</sup> Although this index is not part of the consumer price index, it serves as an indication of the development of prices.

to the rental of apartments by students. A monthly seasonal element is typical of the holiday month (the Jewish New Year and Passover), when prices rise due to pre-holiday shopping, and the summer months, when prices of tourism and vacation activities increase. This gives rise to the seasonal nature of the general index, which has shown low and even negative rates of increase in the first quarter of the year and higher rates of increase in the second and fourth quarters.

The most volatile component of the index during 2001 was the clothing and footwear item, followed by the fruit and vegetables item: the variability of these components was considerably higher than that of the other components of the index. This has occurred throughout the past decade, and derives from the high degree of seasonality in these components, which is also reflected by the seasonality of the entire price index. The seasonality of the different components of the index is also apparent when the intra-month implied volatility of the components of the index are examined. This implied volatility ranged between half a percent and 2 percent during 2001 and averaged 1.5 percent, compared with a larger range of 0.6 to 3 percent and an average of 1.8 percent in 1999 and 2000.

## 5. SOURCES OF CHANGE IN THE MONETARY BASE, AND MONETARY POLICY INSTRUMENTS

Every month, the Bank of Israel announces the interest rate that it is prepared to pay to the banks for their deposits with it. The public's demand for the monetary aggregates is related closely to this interest rate. The demand for the monetary base is derived from the demand for money and the Bank of Israel determines supply conditions for the base via the instruments available to it. A change in the money supply can derive from three sources: government injection, private sector conversions of foreign currency and the Bank of Israel injection. Given the first two sources, the Bank of Israel determines the volume of its injection/absorption that will supply the amount of monetary base required at the rate of interest that the Bank of Israel determines (Table 2.8). The change in the monetary base during 2001 resulted from government and Bank of Israel injections, while private sector foreign currency conversions did not contribute to this change. This was due to the Bank of Israel's policy of nonintervention in the foreign currency market for as long as the exchange rate is within the limits of the exchange-rate band. Since the exchange rate was located within the limits of the band of mobility, there have been no private sector conversions of foreign currency at the Bank of Israel since February 1998, compared with large conversions of NIS 47 billion during the years 1995 to 1997. In 2001, the government absorbed NIS 3.9 billion, mainly due to the increase in net domestic borrowing that resulted from the higher than planned budget deficit.

The monetary base expanded by NIS 4.8 billion in 2001, *inter alia* as an adjustment to the interest rate cuts during the year. As the result of a government absorption in the

**Table 2.8**  
**Sources of Change in the Monetary Base, 1995-2001**

	1995	1996	1997	1998	1999	2000	2001	2001			
								I	II	III	IV
1. Monetary injection, govt. + Jewish Agency	2,207	7,005	1,889	1,901	4,067	-2,729	-2,193	-3,964	-1,184	677	2,278
	1,402	6,096	939	781	3,139	-3,493	-3,878	-4,534	-1,353	486	1,523
2. Conversions of foreign currency <i>of which: Dealing room</i>	18,414	5,753	22,817	1,041	237	286	-679	8	88	-75	-700
	19,160	6,451	23,324	1,746	0	0	0	0	0	0	0
3. Total (1+2)	20,621	12,758	24,706	2,942	4,304	-2,443	-2,872	-3,956	-1,096	602	1,578
4. Monetary injection by Bank of Israel	-21,975	-8,958	-21,036	-2,700	-381	2,754	7,696	6,207	2,377	-2,503	1,615
	-11,002	-3,052	470	-631	-12	-3	20	17	-40	22	21
Treasury bills	-4,648	-1,912	-1,059	-2,794	-1,843	-4,855	-4,866	-226	-470	-2,161	-2,009
Swaps	-5,146	-917	1,111	-892	-20	145	-254	-96	-21	-216	79
Bank's term deposits		-5,000	-27,500	-7,500	-8,700	-1,800	5,500	4,500	1,000	-2,000	2,000
Interest <sup>a</sup>	-920	276	3,420	4,957	5,825	4,492	3,410	969	884	782	775
5. Change in monetary base	-720	3,801	3,670	242	3,927	311	4,828	2,251	1,282	-1,898	3,193

<sup>a</sup> Excluding Treasury bills.  
SOURCE: Bank of Israel.

course of the year, the Bank of Israel injected (that is reduced the absorption by) NIS 7.7 billion. The Bank of Israel uses various monetary instruments in order to inject or absorb money—auctions for the banks' term deposits with it, short-term debt certificates

**Table 2.9**  
**Monetary Deposits, 1999–2001**

	Utilization of deposits				Cost of deposits		
	Daily tender	Weekly tender	Monthly tender	Total	Daily tender	Weekly tender	Monthly tender
1999							
IV	12,816	16,185	17,120	46,121	12.15	12.14	12.26
2000							
I	11,743	17,945	18,297	47,985	10.90	10.89	11.11
II	7,793	16,220	20,000	44,013	9.94	9.94	10.09
III	6,633	15,935	20,000	42,568	9.61	9.61	9.75
IV	9,161	16,967	20,000	46,128	8.84	8.84	9.01
2001							
I	8,598	19,111	20,000	47,709	8.14	8.13	8.31
II	8,998	17,396	20,000	46,394	7.46	7.46	7.63
III	8,733	16,293	20,935	45,961	6.67	6.67	6.81
IV	9,585	11,837	24,000	45,422	6.20	6.24	6.46

SOURCE: Monetary Department, Bank of Israel.

(Treasury bills), swap transactions and monetary loan quotas.

The principal instrument used in the management of the current liquidity system takes the form of the auctions for the banks' term deposit at the Bank of Israel (Table 2.9). The balance of these deposits amounted to NIS 45.4 billion at the end of 2001. The banks' deposits at the Bank of Israel are for periods of a day, a week and a month. Since September 2001, the Bank of Israel has held fixed-rate deposit auctions for a month as well as floating-rate auctions.

The balance of Treasury bills grew by NIS 4.5 billion during 2001 and amounted to NIS 36 billion at the end of the year. As part of the structural changes in the financial markets, it was decided to remove the Treasury bill ceiling that was anchored in the law and that was determined on the basis of the highest of the rate of increase in either inflation or the money supply. Although the issue of Treasury bills to the public serves as a monetary instrument that is similar in its effect to the banks' deposits at the Bank of Israel, while Treasury bills are traded on the stock exchange after being issued and are open to investment by the general public, deposits at the Bank of Israel are permitted only to the banks, and are not tradable. The removal of the Treasury bill ceiling makes it possible to increase their issue at the expense of deposits at the Bank of Israel, with the result that the public can also benefit from this monetary instrument. The expansion of issues increases the tradability of Treasury bills in the stock exchange, enhances the operation of the secondary market, and thereby helps to create the infrastructure that is essential for the development of the money market.