

Chapter 3

Inflation and Monetary Policy

- ◆ The Consumer Price Index (CPI) increased by 2.7 percent in 2010, reaching the upper section of the inflation target band (1-3 percent). At the beginning of the year the annual inflation rate exceeded the upper limit of the band, and since June it has remained within the target range.
- ◆ A major factor pushing the inflation rate above the mid-point of the target range was the housing component, which primarily reflects rents. This rose by 4.9 percent in 2010, while the CPI without housing rose by 1.9 percent. The CPI excluding housing and fruit and vegetables increased by 1.3 percent in 2010.
- ◆ A major factor moderating price increases in 2010 was local currency appreciation, which derived inter alia from the interest rate differential between Israel and other countries. There was effective local currency appreciation of 7 percent in 2010.
- ◆ There was a rise in the inflation environment during the year, due in part to world commodity price increases as well as to Israel's economic growth, which was supported by expansionary monetary policy, and which acted to narrow the economy's excess capacity.
- ◆ Monetary policy in 2010 faced challenges associated with the recovery from the economic crisis alongside the relatively slow recovery of the leading developed countries. The fact that inflation was expected to lie in the region of the upper limit of the target range, together with the rapid increase in house prices alongside the expansion of housing credit, supported a rise in the interest rate from its previous low level. The persistence of the slack economic situation of the US and Europe, their remarkably low interest rates, and the trend of local currency appreciation in Israel served to moderate the rise in the domestic interest rate.
- ◆ In view of the challenges confronting it, the Bank of Israel acted to attain its objectives by employing a number of tools: In addition to adjusting the interest rate—the principal instrument of monetary policy—the Bank continued to intervene in the foreign-exchange market, and implemented macro-prudential measures in the housing credit market.
- ◆ The Bank of Israel raised the interest rate from 1 percent at the end of 2009 to 2 percent in December 2010—continuing the gradual upward trend which began in September 2009.
- ◆ In view of the pressures for excess appreciation, deriving from large short-term inflows of capital against the backdrop of the expansion of interest rate differentials between Israel and the developed economies, the Bank of Israel continued to buy foreign currency in the market, in order to support the export sector, and hence economic growth and employment. The increase in short-term investments by nonresident investors led the central bank to adopt additional measures pertaining to the foreign exchange market in January 2011.
- ◆ The Bank of Israel implemented macro-prudential measures in the housing credit market in order to support financial stability in view of the risks deriving from the rapid rise in house prices and the expansion of housing credit.

1. MONETARY POLICY

a. Introduction

The Bank of Israel's primary objective is to maintain price stability. Other objectives are to support the government's economic policy and the stability of the financial system.

The challenge facing the Bank of Israel was to maintain price stability and support financial stability, and at the same time to continue supporting activity—against the backdrop of the slow recovery and low interest rates in the United States and Europe.

In order to achieve its objectives, the Bank of Israel employed several instruments: alongside the gradual increasing of interest, the Bank continued to purchase foreign currency, and also adopted macro-prudential measures in the housing credit market.

In June 2010, the new Bank of Israel Law went into effect. The law, which was passed by the Knesset in March, defines the objectives of the Bank of Israel and provides the legal basis for the central bank's independence in determining its policy tools for attaining them. The law defines and ranks the Bank of Israel's objectives as follows: its primary goal is maintaining price stability; other goals are supporting other objectives of the government's economic policy, especially economic growth, employment, and the reduction of social inequality, provided this does not impair the attainment of long-term price stability; and supporting the stability and efficient functioning of the financial system.

In the context of Israel's recovery from the global economic crisis, the Bank of Israel faced a challenge in attaining its objectives. On the one hand, raising the interest rate from its low level during the crisis was needed in light of the economy's recovery that was accompanied by an improvement in the labor market, an expected inflation rate which was near the upper limit of the inflation target range, and a rapid rise in asset prices, particularly of housing, together with the expansion of housing credit. On the other hand, there was a prolonged slack economic situation in the US and Europe, both of which continued to confront grave problems as a result of the financial crisis, posing a risk to Israel's economic expansion because of their effect on the country's exports. Moreover, interest rates in those countries remained very low, and were expected to remain so for a long time, while Israel's interest rate was higher. This differential generated pressure for local currency appreciation, on top of forces for appreciation deriving from surpluses in the current account of the balance of payments. A further interest rate hike would have aggravated the pressures for appreciation. Local currency appreciation impairs the profitability of Israel's exports and their competitiveness, thereby augmenting the harm to exports deriving from the moderation of global demand.

In view of these challenges, the Bank of Israel acted to attain its objectives as defined by law by deploying several policy tools. Thus, in addition to adjusting the interest rate—the main instrument of monetary policy—the central bank continued its policy of discretionary intervention in the foreign exchange market which began in August 2009, in order to moderate the short-term effects on the shekel, thereby supporting economic growth and employment. The Bank also adopted macro-prudential measures in the housing credit market in order to support financial stability.

Interest rate policy in 2010 was characterized by the gradual increase in the interest rate in the context of Israel's recovery from the recession at the end of 2008 and the beginning of 2009. The process of raising the interest rate from its unprecedented low level of 0.5 percent began in September 2009 and continued throughout 2010. Thus, in December 2010 the interest rate was 2 percent, a level that was still expansionary.

Table 3.1
Main Indicators of Inflation and the Monetary Policy, 2005 - 10

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2010 | | | |
|---|------|------|------|-------|------|-------|------|-------|------|------|
| | | | | | | | I | II | III | IV |
| A. Inflation (percent) | | | | | | | | | | |
| 1. Inflation target | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 |
| 2. Actual inflation ^a | 2.4 | -0.1 | 3.4 | 3.8 | 3.9 | 2.7 | -0.9 | 1.5 | 1.2 | 0.7 |
| 3. One-year inflation expectations derived from the capital market ^b | 2.0 | 1.8 | 1.4 | 1.9 | 1.8 | 2.9 | 2.8 | 2.8 | 2.8 | 3.1 |
| 4. Ten-year inflation expectations derived from the capital market ^b | 2.5 | 2.5 | 2.4 | 3.0 | 2.3 | 2.5 | 2.4 | 2.7 | 2.6 | 2.5 |
| 5. Forecasters' one-year inflation forecasts ^b | 2.1 | 1.9 | 1.9 | 2.4 | 1.8 | 2.7 | 2.3 | 2.7 | 3.0 | 2.9 |
| B. Yields (percent)^b | | | | | | | | | | |
| 1. Bank of Israel key interest rate | 3.7 | 5.1 | 3.9 | 3.7 | 0.8 | 1.6 | 1.3 | 1.5 | 1.7 | 2.0 |
| 2. Expected real interest rate ^c | 1.7 | 3.4 | 2.6 | 1.8 | -1.0 | -1.2 | -1.5 | -1.2 | -1.1 | -1.0 |
| 3. Nominal yield to maturity on government bonds ^d | 5.7 | 6.1 | 5.5 | 5.8 | 4.8 | 4.6 | 4.8 | 4.8 | 4.5 | 4.5 |
| 4. Real yield to maturity on government bonds ^d | 3.5 | 3.8 | 3.4 | 3.4 | 2.8 | 2.3 | 2.6 | 2.4 | 2.1 | 2.0 |
| C. Depreciation of the NIS (percent)^e | | | | | | | | | | |
| 1. Effective nominal | 0.0 | -3.4 | -1.4 | -8.3 | 3.5 | -7.1 | -3.9 | -1.8 | 1.2 | -2.7 |
| 2. Against the dollar | 6.2 | -8.9 | -7.1 | -0.9 | -2.1 | -4.9 | -1.2 | 2.9 | -3.0 | -3.6 |
| 3. Against the euro | -6.1 | 1.5 | 2.4 | -8.4 | 6.3 | -13.9 | -8.2 | -7.5 | 3.9 | -2.4 |
| D. Change in asset prices (percent)^e | | | | | | | | | | |
| 1. Total (nominal) return on shares | 32.8 | 5.8 | 22.9 | -46.4 | 78.8 | 12.6 | 10.4 | -13.7 | 10.8 | 6.7 |
| 2. House prices ^f | 4.4 | -4.3 | 3.2 | 10.6 | 19.9 | 16.3 | 2.8 | 3.7 | 3.0 | 6.0 |
| E. The monetary aggregates (nominal rate of change, percent)^e | | | | | | | | | | |
| 1. Money supply (M1) | 23.9 | 8.3 | 17.4 | 17.4 | 52.3 | 4.8 | -1.5 | 2.3 | 3.2 | 0.9 |
| 2. Total credit (C3) | 4.0 | 2.3 | 6.0 | 6.6 | -0.5 | 2.7 | 0.4 | 2.3 | 0.9 | -0.9 |
| F. Actual budget deficit (percent of GDP) | | | | | | | | | | |
| 1. Domestic deficit excluding credit granted | 1.0 | 0.2 | -0.9 | 1.3 | 4.8 | 3.6 | | | | |
| 2. Total deficit excluding credit granted | 1.8 | 0.9 | 0.1 | 2.1 | 5.6 | 4.1 | | | | |
| G. Other background data (percent) | | | | | | | | | | |
| 1. Rate of unemployment ^b | 8.9 | 8.3 | 7.3 | 6.0 | 7.5 | 6.7 | 7.0 | 5.9 | 7.2 | 6.5 |
| 2. Rate of GDP growth ^g | 4.9 | 5.7 | 5.3 | 4.2 | 0.8 | 4.6 | 5.1 | 5.4 | 4.6 | 7.7 |
| 3. Share of total government debt in GDP ^h | 93.5 | 84.5 | 78.2 | 76.7 | 79.2 | 76.2 | | | | |

^a Change in CPI during the period.

^b Period average.

^c Nominal rate of interest on Bank of Israel auctions minus one year inflation expectations.

^d Average gross yield to all terms.

^e Average of last month in period vis-à-vis average of last month in period in previous year.

^f According to the House Prices Survey.

^g Period average vs. previous period average.

^h End of year data.

SOURCE: Bank of Israel, Ministry of Finance and Central Bureau of Statistics data.

The inflation rate in 2010 was 2.7 percent—within the inflation target range. GDP growth was 4.6 percent, and the unemployment rate fell to 6.6 percent (at the end of the year). These developments occurred against the backdrop of the continued adverse effect of the economic crisis in the leading developed economies of the US and Europe, as expressed, for example, in their unemployment rates, which remained high, and their low GDP growth rates.

In view of the rise in short-term capital flows, in January 2011 the Bank of Israel adopted additional measures regarding the foreign exchange market.

The increase in short-term capital flows at the end of the year led the Bank of Israel and the government to consider additional measures for dealing with short-term investments by non-resident investors, with their attendant risks. Hence, in January 2011 the Bank of Israel imposed an obligation on Israeli residents to report their activities in foreign exchange derivatives, and on nonresidents to report their activities in foreign-exchange derivatives and *makam* and short-term government bonds. The central bank also imposed a reserve requirement on banking corporations in Israel for transactions in foreign-exchange derivatives vis-à-vis nonresidents. Furthermore, the Ministry of Finance announced that it was considering abolishing the tax exemption extended to foreign investors on profits arising from investment in *makam* and short-term government bonds.

The new Bank of Israel Law changes the way decisions are made within the Bank by setting up two entities—a Monetary Committee and an Administrative Council—which are authorized to make decisions on monetary policy and the management of the bank, respectively. These entities will also include external appointees with appropriate qualifications. This contrasts with the situation which has prevailed since the Bank of Israel was first established, when only the Governor had the authority to make decisions about the Bank's policy and management. The Monetary Committee and the Administrative Council had not yet begun to operate in 2010. In accordance with the Law, a committee was set up to find candidates from the public for the Committee and the Council, and the Bank is making the necessary arrangements for the beginning of their operation.

b. The interest rate policy

The interest rate policy from September 2009 and during 2010 was characterized by the process of a gradual increase in the interest rate—from a minimum level in response to the global financial crisis and the risks this presented for Israel's economy, to a level that was in line with the improvement in the economic environment. Thus, in the sixteen months from September 2009 to December 2010 the interest rate was raised from 0.5 to 2 percent in six measured steps of 0.25 percentage points each, four of them in the course of 2010: in January (the second consecutive hike after December 2009), April, August, and October (Figure 3.1 and Table 3.2). The process of raising the interest rate continued in 2011.

The Bank of Israel raised the interest rate from 1 percent at the end of 2009 to 2 percent in December 2010.

Table 3.2

Nominal and Real Interest Rates, Inflation Expectations and Actual Inflation, 2005–10

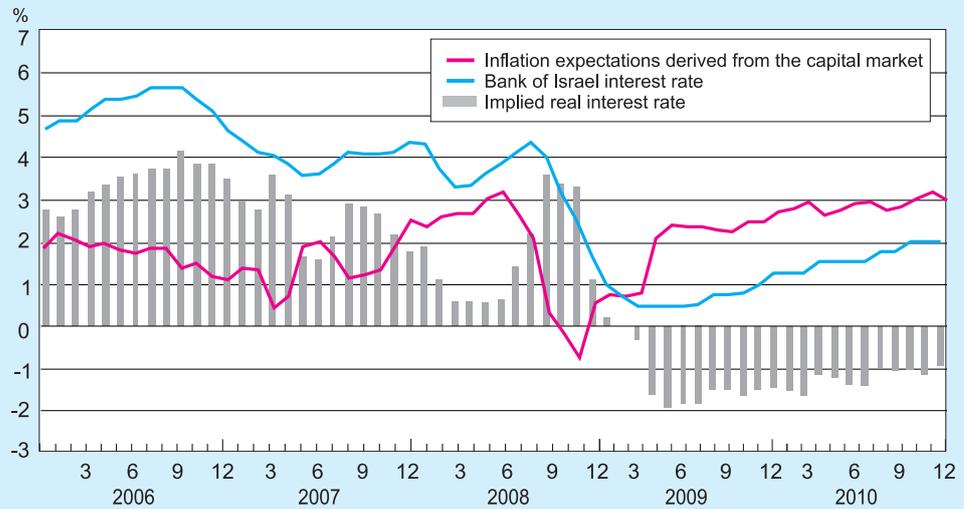
(period average, percent)

| | Bank of Israel key interest rate | The Bank of Israel's effective interest rate ^a | Effective interest on overdrafts | Difference between interest on overdrafts and Bank of Israel effective interest rate | 1-year inflation expectations | | | 10-year CPI - indexed bonds ^d | CPI inflation in previous 12 months ^e | |
|-------------|----------------------------------|---|----------------------------------|--|----------------------------------|----------------------|------------------------------------|--|--|------|
| | | | | | From capital market ^b | Forecasters' average | Derived real interest ^c | | | |
| 2005 | 3.66 | 3.73 | 9.6 | 5.7 | 2.0 | 2.1 | 1.7 | 2.3 | 3.7 | 2.4 |
| 2006 | 5.13 | 5.26 | 11.0 | 5.4 | 1.8 | 1.9 | 3.4 | 3.7 | 3.8 | -0.1 |
| 2007 | 3.94 | 4.02 | 9.9 | 5.7 | 1.4 | 1.9 | 2.6 | 2.9 | 3.4 | 3.4 |
| 2008 | 3.67 | 3.72 | 9.8 | 5.9 | 1.9 | 2.4 | 1.8 | 1.9 | 3.5 | 3.8 |
| 2009 | 0.77 | 0.77 | 8.0 | 7.2 | 1.8 | 1.8 | -1.0 | -0.4 | 2.9 | 3.9 |
| 2010 | 1.60 | 1.62 | 9.2 | 7.5 | 2.9 | 2.7 | -1.2 | -0.7 | 2.2 | 2.7 |
| 2009 | | | | | | | | | | |
| January | 1.75 | 1.69 | 8.3 | 6.5 | 0.6 | 0.3 | 1.1 | 1.0 | 3.2 | 3.3 |
| February | 1.00 | 0.98 | 8.0 | 6.9 | 0.8 | 0.5 | 0.2 | 0.3 | 2.9 | 3.4 |
| March | 0.75 | 0.70 | 7.8 | 7.1 | 0.7 | 0.6 | 0.0 | 0.3 | 2.8 | 3.6 |
| April | 0.50 | 0.50 | 7.8 | 7.3 | 0.8 | 1.1 | -0.3 | 0.1 | 2.7 | 3.1 |
| May | 0.50 | 0.50 | 7.9 | 7.4 | 2.1 | 1.9 | -1.6 | -0.9 | 3.1 | 2.8 |
| June | 0.50 | 0.50 | 7.8 | 7.2 | 2.4 | 2.3 | -1.9 | -1.1 | 3.2 | 3.6 |
| July | 0.50 | 0.50 | 7.9 | 7.4 | 2.4 | 2.6 | -1.8 | -1.1 | 3.0 | 3.5 |
| August | 0.50 | 0.54 | 7.7 | 7.1 | 2.4 | 2.4 | -1.8 | -0.7 | 2.9 | 3.1 |
| September | 0.75 | 0.75 | 7.9 | 7.1 | 2.3 | 2.3 | -1.5 | -0.5 | 2.9 | 2.8 |
| October | 0.75 | 0.75 | 8.2 | 7.4 | 2.2 | 2.4 | -1.5 | -0.7 | 2.7 | 2.9 |
| November | 0.75 | 0.79 | 8.3 | 7.5 | 2.5 | 2.6 | -1.6 | -0.8 | 2.5 | 3.8 |
| December | 1.00 | 1.01 | 8.4 | 7.3 | 2.5 | 2.7 | -1.4 | -0.6 | 2.6 | 3.9 |
| 2010 | | | | | | | | | | |
| January | 1.25 | 1.26 | 8.8 | 7.5 | 2.7 | 2.4 | -1.4 | -0.7 | 2.6 | 3.8 |
| February | 1.25 | 1.26 | 8.8 | 7.5 | 2.8 | 2.1 | -1.5 | -0.8 | 2.6 | 3.6 |
| March | 1.25 | 1.26 | 8.7 | 7.4 | 3.0 | 2.4 | -1.6 | -0.9 | 2.4 | 3.2 |
| April | 1.50 | 1.51 | 9.1 | 7.5 | 2.7 | 2.6 | -1.1 | -0.5 | 2.5 | 3.0 |
| May | 1.50 | 1.51 | 9.1 | 7.5 | 2.7 | 2.7 | -1.2 | -0.6 | 2.4 | 3.0 |
| June | 1.50 | 1.51 | 9.2 | 7.6 | 2.9 | 2.7 | -1.4 | -0.8 | 2.2 | 2.4 |
| July | 1.50 | 1.54 | 9.1 | 7.5 | 3.0 | 3.0 | -1.4 | -0.8 | 2.1 | 1.8 |
| August | 1.75 | 1.77 | 9.4 | 7.5 | 2.7 | 3.0 | -0.9 | -0.5 | 1.9 | 1.8 |
| September | 1.75 | 1.77 | 9.3 | 7.4 | 2.8 | 2.9 | -1.0 | -0.5 | 1.8 | 2.4 |
| October | 2.00 | 2.02 | 9.6 | 7.5 | 3.0 | 2.8 | -1.0 | -0.6 | 1.7 | 2.5 |
| November | 2.00 | 2.02 | 9.8 | 7.6 | 3.2 | 2.9 | -1.1 | -0.8 | 1.8 | 2.3 |
| December | 2.00 | 2.02 | 9.5 | 7.4 | 3.0 | 2.9 | -0.9 | -0.5 | 2.1 | 2.7 |

^a Effective interest; in annual terms.^b Based on gross returns.^c Nominal interest rate on Bank of Israel auctions *minus* one year inflation expectations.^d Smoothed zero curve of *Galil* yields.^e The full year figures relate to inflation during the year.

SOURCE: Bank of Israel and Central Bureau of Statistics.

Figure 3.1
Bank of Israel Interest Rate,^a Inflation Expectations,^b and Implied Real Interest Rate, 2006-10
 (monthly averages)



^a Effective interest rate in Bank of Israel auctions.

^b For next twelve months; derived from the capital market.

SOURCE: Bank of Israel.

(i) A 'normal' interest rate environment

The interest rate policy employed by the Bank of Israel in 2010 was in line with a gradual process of restoring the interest rate to a 'normal' level, a process which was intended to confine inflation within the target range and contribute to continued economic growth while supporting financial stability. The 'normal' level of interest is the level which is compatible with 'normal' conditions, i.e., with the conditions that are expected to prevail after the effect of the significant shocks associated with the global economic crisis has abated, assuming that the expected effect of new shocks is negligible.¹ In such a (theoretical) situation, the economy is expected to expand at its potential rate, the inflation rate is expected to remain around the mid-point of the target range, and monetary policy is expected to be neither expansionary nor contractionary.

What, then, is the level of Bank of Israel's key interest rate which accords with a 'normal' situation? It is convenient to think of the nominal interest rate as being equivalent to the sum of the real interest rate *plus* the inflation rate, the 'normal' inflation rate being equivalent to the mid-point of the inflation target. The question then arises as to what is the real short-term interest rate which corresponds to a 'normal' situation. There are various theoretical relations which this interest rate should satisfy.

¹ The effect of future shocks can be either positive or negative, so that the average expected effect is close to zero.

Various models can be used to assess the "normal" environment of the interest rate.

It is related, among other things, to the potential growth rate of the economy, world interest rates, and country risk.²

One of the ways of assessing what the ‘normal’ level is for the real short-term interest rate is to derive the expected real short-term yield in several years’ time from CPI-indexed government bonds. Assuming that within several years the effect of recent shocks will abate, and the expected effect of new shocks is negligible on average, this yield is expected to be close to the ‘normal’ interest rate. Figure 3.2 presents the forward real yield for a period of between five and ten years. Beyond the expected real interest rate within a period of five to ten years, the forward yield also includes several premiums (risk, liquidity), which vary over time. Various models may be used to adjust for the premiums and estimate the expected real short-term yield.³ Recent estimates of this yield for Israel (as of 2010) range from 2 to 3 percent.⁴ Hence the corresponding Bank of Israel key interest rate is assessed to be between 4 and 5 percent (the real interest rate *plus* the mid-point of the inflation target).

As Figure 3.2 shows, the real yield for the period of 1 year declined sharply because of the global crisis (falling from 3 percent at the end of 2008 to minus 1 percent in 2009), and remained at a very low level—between minus 1 percent and minus 0.5 percent—in 2010, too. The fact that the monetary interest rate remained lower than its ‘normal’ level as of the end of 2010 reflects the economic environment that was still affected by the crisis. In particular, interest rates in the US and the EU remained very low and economic activity there was below potential, as indicated by their high unemployment rates.

Figure 3.2
Real Annual Yield^a and Real 5-10-Year Forward Yield, 2000-10
(monthly averages)



^a Yield to maturity on CPI-indexed government bonds according to the zero curve.
SOURCE: Bank of Israel.

The monetary interest rate during 2010 remained below the “normal” level.

² Hence, the ‘normal’ interest rate is not constant, but changes over time with these variables.

³ Stein (2011) uses a model of the yield curve to estimate the ‘natural’ real interest rate from the returns on CPI-indexed government bonds, taking into account premiums, which change over time. See Roy Stein (2011). “Estimating the Expected Natural Interest Rate Using Affine Term-Structure Models: The Case of Israel,” Bank of Israel, Research Department, Discussion Paper no. 2011.3, March 2011. Another estimate is derived from a structural macroeconomic model used by the Bank of Israel Research Department for analysis and forecasting. A presentation of the model, which was presented at an international conference held in Israel in 2009, can be viewed at http://www.bankisrael.org.il/modelworkshop/ws_info.htm.

⁴ The estimates for Israel are similar to those reported for other countries. For example, the Bank of Norway estimated the normal real interest rate for Norway (as of 2010) to be in the range of 2 to 3 percent. See: “What is the Normal Interest Rate Level?” Economic Commentaries, no. 1, 2010, Norges Bank.

(ii) Background conditions and their effect on the interest rate policy

The challenge facing policymakers in 2010 was to determine the interest rate as well as the use of additional instruments—intervening in the foreign exchange market and implementing supervisory measures in the housing credit market—so as to achieve policy objectives, i.e., maintaining price stability, and supporting GDP growth, employment, and financial stability. Below we describe the developments which were the main considerations in determining the interest rate in 2010.

Global developments

World developments in 2010 were characterized by the continuation of the process of recovery from the recession that was caused by the financial crisis in the end of 2008. The recovery of economies world wide began in the second half of 2009. In the process of recovery there were significant differences between developed economies, particularly the US and the EU, which continued to suffer from the effects of the crisis at the end of 2010, too, and emerging and other economies, which were less profoundly affected by the crisis and rallied more quickly.

While fears of the possibility of a double-dip recession in the developed economies, led by the US, abated during 2010,⁵ assessments regarding the expected pace of their recovery were revised downwards in the course of the year, as expressed in revised, lower forecasts of GDP growth rates by various entities for 2011.⁶ The slackness of these economies was expressed in unemployment rates that remained high, the sluggish housing market and financial sector, and the reliance of economic growth primarily on substantial monetary and fiscal measures. Expanding public debt stressed the need to reduce fiscal stimuli, raising fears regarding the ability of these economies to continue growing nevertheless.

The pace of recovery in the US was faster than that in the EU (with wide variation among the various member countries). Europe's recovery was hampered by the debt crises of several countries—including Greece, Ireland, Portugal, and Spain—which were aggravated in the second quarter of 2010 and threatened to affect other countries, too. The exacerbation of the fiscal debt crisis of European countries, and its repercussions, were evident in the sharp fall in prices in the financial markets in the second quarter of 2010 (as indicated by Figure 4.1 in Chapter 4, Share Price Indices), as well as by the decline in commodity prices in that period (Figure 3.10). However, the downward trend was checked thanks to aid packages provided by the EU and the IMF, and prices began rising again. Despite the aid packages, the uncertainty regarding those countries' ability to overcome their difficulties, and the implications that this might have for the entire EU, persisted, casting a shadow over Europe's recovery throughout the year. The weakening of the euro against the backdrop of the debt crises

⁵ GDP growth figures in the US for 2009:Q4 and 2010:Q1 were even better than expected.

⁶ In December 2010, on the other hand, assessments regarding the US (but not Europe) improved, and the forecasts were revised upwards.

In the process of recovery from the global crisis there were differences between developed countries, which recovered slowly, and other economies, which recovered more rapidly.

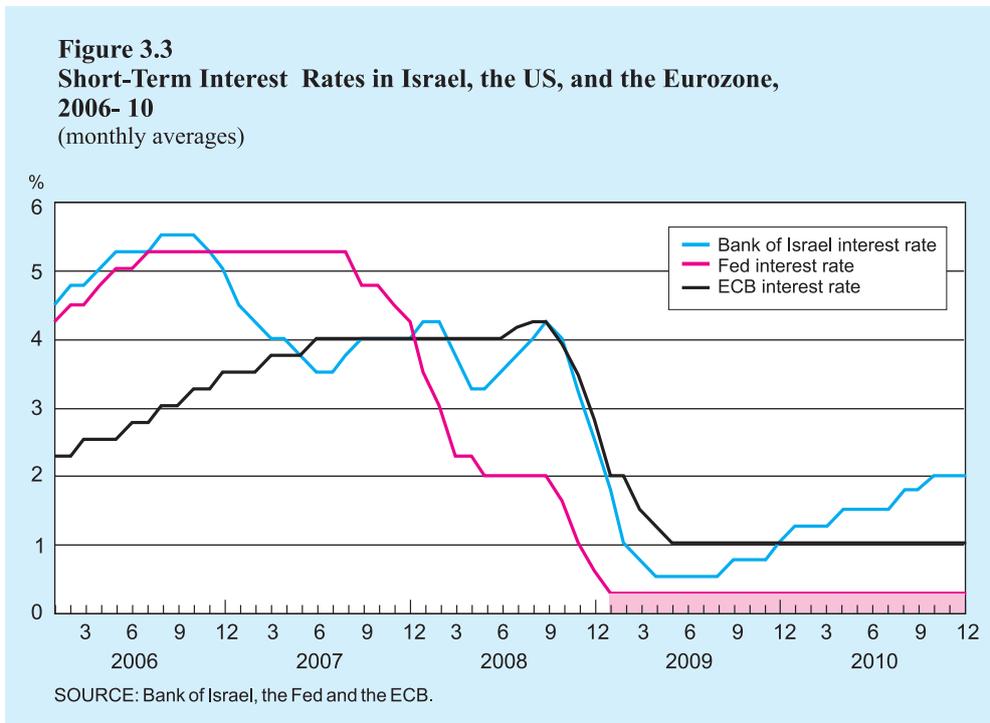
Debt crises of several European countries raised concerns regarding the global recovery from the crisis.

had an adverse effect on the profitability of Israel’s exports to Europe and their ability to compete with European rivals. The worsening of the fiscal debt crisis, the risks it posed for global economic growth and Israel’s exports, and the ramifications it had on global monetary policy affected the decisions to leave the interest rate in Israel unchanged from May to July, remaining at 1.5 percent for the four months from April to July.

Growing pessimism about the expected pace of recovery of the leading developed economies was reflected in the deferment of the expected date on which these economies would start raising their interest rates from their historically low levels. At the beginning of 2010, the expectations derived from the financial markets and the forecasts of international organizations and other entities were that interest rates in the developed economies would start rising in the second half of 2010, but later in the year the forecasts were revised and the interest rates were expected to start rising at the end of 2011 at the earliest. The downward revisions of the assessments regarding the recovery were also expressed in additional measures of quantitative easing adopted by the central banks of the leading economies, particularly the US and Europe, in an attempt to affect long-term interest rates and improve liquidity in the markets. In addition, fiscal measures were adopted (in the US) in order to provide further support for recovery, despite the need for fiscal consolidation.

The slow recovery from the crisis was reflected in the postponement of the expected date of raising the interest rate in leading developed economies.

The postponement of global interest rate hikes served to moderate interest rate increases in Israel. As the domestic interest rate moved away from the low levels prevailing in leading global economies, the pressure of capital flows from those



countries to Israel grew, and consequently pressure for local currency appreciation increased. This was one of the considerations in the decisions to leave the interest rate unchanged towards the end of the year, so that in the four months from October 2010 to January 2011 it stood at 2 percent (for more about capital flows and the exchange rate, as well as the intervention in the foreign-exchange market, see Section c below).

In contrast with the leading developed economies—primarily the US and the EU—developing, and other economies which were less deeply affected by the financial crisis, recovered more quickly. Accordingly, several central banks (in Canada, Sweden, Norway, Australia, New Zealand, Chile, South Korea, etc.) began to raise interest rates as part of a process towards normalization.

The interest rate differentials created as a result of the discrepancies between the rates of recovery from the crisis encouraged short-term capital flows to those economies with higher interest rates, thereby creating pressure for local currency appreciation in those countries and impeding their recovery from the crisis. In addition, there was an increase in the financial risk associated with large short-term capital flows and the wide fluctuations in asset prices (including in the exchange rate) that this might cause.

An increasing number of countries began to take steps to contend with the difficulty posed by capital flows from the large, developed economies. These involved intervening in the foreign-exchange market, imposing restrictions on capital flows, and adopting taxation measures.⁷ As long as the various measures were introduced in just a few small economies their effect on other countries was not great. However, in view of the situation resulting from the financial crisis, and particularly the significant monetary expansion in the US, an ever-growing number of countries, including large ones, endeavored to protect their economies by taking steps to weaken their currency. Claims to this effect have already been made before with regard to China, but in 2010 the subject has featured more prominently in the international debate. The impairment of international capital flows and even of international trade as a result of unilateral action taken by various countries could eventually harm all concerned. Therefore, a need for international coordination of the approach to global imbalances has arisen. By the end of 2010, no agreement had been reached as to how to tackle this problem, and it will apparently continue to be a subject of global concern in the future, too.

Despite the difficulties in the US and Europe, the emerging economies of east Asia, especially China and India, displayed rapid growth, and this pushed commodity prices up (see Section 2). This gave rise to concerns of inflationary risks in these countries and the rest of the world, especially in the second half of 2010.

Economic activity in Israel

Real economic activity in Israel recovered from the financial crisis at a decent pace alongside a marked improvement in the labor market, so that excess capacity in the

⁷ For a review of the measures adopted by various countries, see Box no.1 in the Bank of Israel's Inflation Report for 2010:IV.

The interest rate differentials resulting from the discrepancies between the rates of recovery from the crisis created pressures for appreciation on the currencies of countries with higher interest rates. Consequently, several countries adopted various measures in the foreign-exchange markets.

Real activity in Israel recovered from the crisis at an encouraging pace. However, the growth was accompanied by uncertainty about its perseverance, against the backdrop of the slow recovery in the developed countries.

economy was narrowing. In 2010, GDP expanded by 4.6 percent and unemployment fell to 6.6 percent (at the end of the year). This recovery supported an increase in the interest rate, bringing it into line with the improvement in the economic conditions. However, the decent GDP growth rate was accompanied by considerable uncertainty as regards both present and future expansion—a situation which required a gradual and cautious approach in the process of raising the interest rate. As stated, the uncertainty regarding the economy's ability to maintain the decent growth rate stemmed primarily from the uncertainty with regard to the expansion of world trade and economic growth in the US and Europe—two principal markets for Israel's exports.⁸

With regard to ongoing assessments of the current situation, since quarterly data (for GDP and its components) are published with a lag and updated—sometimes substantially—in the subsequent months, policymakers have to rely on current indicators for assessing the state of the economy when making their decisions. Alongside encouraging figures for economic activity, indicators were published during the year which raised concerns that the growth rate was slowing (alongside other, more encouraging indicators). Indicators of a slowdown in economic expansion, against the backdrop of fragile global economic growth and its potential repercussions for Israel's economy, were a consideration in the decisions to leave the interest rate unchanged.

After the rapid growth of exports, supported by the rapid recovery of global trade in 2009, data published in 2010 indicated that export growth had slowed, and exports even declined. This, while the world trade growth rate leveled off in the second half of the year. These indications raised concerns regarding the persistence of Israel's economic expansion in view of the ongoing slack in the developed countries and the trend of local currency appreciation, endorsing the view that monetary policy should continue to support economic activity in general, and exports in particular. This included continuing to intervene in the foreign-exchange market.

An important manifestation of Israel's emergence from the economic crisis was the improvement in the labor market, as indicated by the marked decline in the unemployment rate (from 7.9 percent in the second quarter of 2009 to 6.5 percent in the second quarter of 2010), and the increased demand for workers (Chapter 5). An improvement in the labor market is an important consideration in interest rate decisions, both because it serves as an indicator of expected persistence of economic expansion (in contrast with growth which depends on fiscal and monetary incentives, as was the case in other countries), and because it may signal the development of inflationary pressures.

Actual and expected inflation

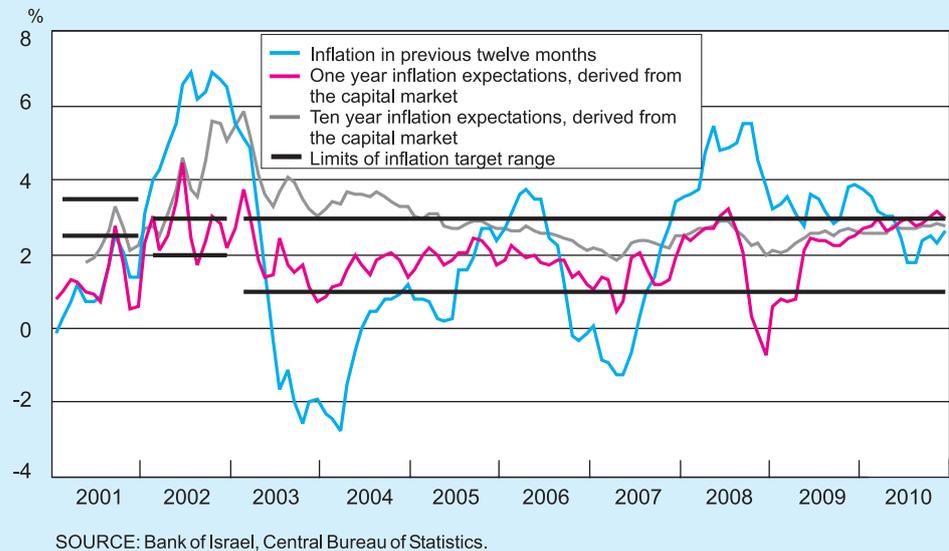
The main objective of monetary policy is to maintain price stability. Hence, the development of actual and expected inflation plays an important role in interest rate decisions.

⁸ Regarding the dominant role of world trade in accounting for Israel's exports, as well as the large share of the US and Europe in Israel's total exports, see Chapter 7.

The risks to Israeli exports in view of the weakness of the developed economies and the appreciation trend of the shekel endorsed the continued support of economic activity by monetary policy.

The recovery of the economy was reflected in a marked improvement in the labor market.

Figure 3.4
Inflation in Previous Twelve Months, Inflation Expectations, and the Inflation Target, 2001-10
 (monthly averages)



The actual inflation rate (in the previous 12 months) was above or close to the upper limit of the target range from the end of 2007 to mid-2010 (Figure 3.4). In the framework of flexible inflation-targeting, policy is aimed at restoring inflation to within the band in a reasonable period of time, i.e., up to two years.⁹ The gradual restoration of inflation to within the target range derives from the concern for the other policy objectives, namely, supporting economic activity, employment, and financial stability.

In order to bring the inflation rate to within the target range, policy must take into account the factors which determine actual inflation and those which are expected to affect prices in the medium term. The Bank of Israel uses macroeconomic models to assess the effect of current and expected economic factors on inflation, and accordingly to evaluate the required interest rate path so that expected inflation will be within the target range within no more than two years.

At the beginning of 2010 the annual inflation rate (i.e., inflation in the previous twelve months) was above the upper limit of the target range, but this deviation derived to a great extent from the temporary effect of the government's measures (an

In the first half of 2010 inflation in the previous twelve months was above the upper limit of the price stability target, but was expected to converge to within the target range later in the year. In the second half of the year, inflation was within the target range.

⁹ The new Bank of Israel Law, which was passed by the Knesset in March 2010 and went into effect in June that year, defines the attainment of price stability over the course of time as a situation in which the Monetary Committee expects—on the basis of the monetary policy that it established—that the inflation rate will be within the price-stability range within no more than two years. Lars Svensson has coined the term 'inflation forecast targeting,' which describes monetary policy that is aimed at maintaining the inflation forecast within the target range.

increase in indirect taxes and levies) on the rate at which prices rose. Hence, inflation was expected to converge to a rate that was within the target range in the following months, as did in fact occur in the second half of the year (Table 3.2 and Figure 3.4). According to Bank of Israel estimates, in view of the moderating influence of the factors underlying inflation, a judicious increase in the interest rate was consistent with the consolidation of inflation within the target range. These factors included the economy's surplus capacity, which resulted from the global crisis and was reflected in an unemployment rate above full employment, forces for local currency appreciation, and constrained inflation abroad. The moderate development of the actual CPI in 2010:Q1 seemed in line with these factors.¹⁰

Later in the year, due to the continued expansion of economic activity and the improvement in the labor market, accompanied by wage increases,¹¹ the moderating effect of domestic factors on inflation abated. However, since the wage increases followed marked reductions during the crisis and were accompanied by a rise in labor productivity, the assessment at that time was that there were still no significant inflationary pressures stemming from domestic production costs. The increase in global commodity prices also contributed to the rise in the inflation environment in the second half of 2010. By contrast, because of the slow recovery in the US and Europe and the low interest rates there, pressure from global prices of consumer goods remained moderate, and pressures for the appreciation of the NIS acted to moderate inflation. This endorsed the assessment supported by the Bank's models, that a moderate interest rate hike was in line with attainment of the inflation target.

An important factor acting to increase inflation since 2008 and which, according to assessments, was expected to continue operating in that direction, was the increase in the price of the housing component in the CPI (consisting mainly of rental prices). From December 2009 to February 2010 this component declined, indicating that its rate of increase might be moderating,¹² but this moderation turned out to be temporary, and from March to September prices rose rapidly again. An additional moderation was evident at the end of the year, together with considerable uncertainty regarding its persistence.

In the assessment of the inflation environment an important role is played by indicators of the inflation rate expected by the public—inflation expectations derived from the capital market and forecasts by private entities. Figure 3.4 shows the inflation expectations derived from the capital market (breakeven inflation) alongside the annual inflation rate. At the end of 2008 inflation expectations one year ahead plunged

In view of the moderating influence of several factors underlying inflation, the Bank of Israel assessed that a gradual increase in the interest rate was consistent with the achievement of the inflation target.

Inflation expectations one year ahead derived from the capital market were in the vicinity of the upper limit of the target in 2010. The forecasts of various entities rose in the second half of the year from near the mid-point of the target range at the beginning of 2010, to the vicinity of the upper limit of the range.

¹⁰The moderate development of the CPI in 2010:I was due in part to the reduction of V.A.T. and the abolition of the drought levy on water, but also taking these factors and seasonal adjustment into consideration the rate at which prices rose was moderate.

¹¹The real wage per employee post in the business sector in terms of producer prices rose in the second half of 2009, and by the middle of 2010 it had returned almost to its pre-crisis level. See Chapter 5, The Labor Market.

¹²The development of the owner-occupied housing item reflected a cumulative decline of 0.6 percent in those three months, seasonally adjusted (seasonal adjustment by the Research Department of the Bank of Israel).

below the lower limit of the price stability target, even becoming negative, because of the global crisis and its expected economic repercussions for Israel. This development reflected the danger of slipping into a recession accompanied by deflation, a danger which led monetary policymakers to respond in a forceful manner by vigorously reducing interest in addition to deploying other policy instruments. In the course of 2009, as assessments regarding the state of the economy and its expected recovery improved, inflation expectations rose, and in mid-2009 they were near the mid-point of the target range.¹³ In the second half of 2009 expectations crept up, and during 2010 they ranged around the upper limit of the target range, sometimes even exceeding it. Table 3.2 shows the average of the inflation forecasts for the coming year by various private forecasters alongside the expectations which are derived from the capital market. In the first quarter of 2010, the average of the inflation forecasts was lower than the market-based expectations, and closer to the mid-point of the target range. A rise in the inflation environment during the year was reflected by a commensurate increase in the forecasts, so that in the second half of the year they were near the upper limit of the inflation target.

Expected inflation in the vicinity of the upper limit of the target, alongside expectations of an interest rate hike, supported an increase in the interest rate in order to maintain price stability.

The fact that one-year inflation expectations were near or even above the upper limit of the price-stability target range, alongside expectations of an interest rate hike, supported the assessment that an increase in the interest rate was required in order to establish inflation within the target range. In the framework of flexible inflation-targeting policy, inflation may deviate from the target temporarily in order to support other objectives—in this case the stimulation of economic activity, in view of the global conditions. However, a significant deviation of inflation expectations from the target range, especially expectations for periods of more than a year forward, could signal the weakening of the credibility of monetary policy as aimed first and foremost to ensure price stability, and might imperil the attainment of the objective of price stability. Hence, the Bank of Israel monitors expectations and forecasts in order to avert a situation of this kind.¹⁴ Figure 3.4 shows that ten-year inflation expectations remained stable in 2010 in an environment similar to that of the last few years (breakeven inflation including various premiums). It would seem, therefore, that the credibility of monetary policy has been maintained.

During 2010, assessments of expected inflation by the Bank of Israel's Research Department were somewhat lower than those of private entities as well as of the

¹³The rise in expected inflation also stemmed from the government's increase of indirect taxes in the second half of 2009, see Chapter 3 in Bank of Israel, Annual Report 2009.

¹⁴The expectations derived from the capital market (breakeven inflation) provide an accessible and ongoing estimate of expected inflation. However, in addition to expected inflation this estimate also includes various premiums, which fluctuate over time, and at times it may also be biased due to various market conditions. Every method for assessing the inflation environment has its advantages and its disadvantages, so the Bank of Israel relies on several indicators of expected inflation, among them the forecasts of various entities, and also employs a number of models for assessing the inflation environment.

expectations derived from the capital market.¹⁵ Differences in the assessments could stem from differing views regarding the expected development of the factors affecting inflation or the pass-through from these factors to inflation. An examination of forecasters' predictions of the expected interest rate path showed that these were generally similar (on average) to those of the Bank of Israel. Thus, their assessments of higher expected inflation were not due to a disparity in the expected interest rate path, but rather stemmed from their assessments that that path would correspond to a higher inflation rate. The expectations and forecasts of inflation have their own intrinsic value even if they do not match those of the Bank of Israel. There are several reasons for this: inflation expectations can affect actual inflation, they can signal the erosion of the central bank's credibility as the entity concerned primarily with price stability, and they can also indicate that the central bank should examine its assessments more rigorously.

Table 3.2 shows that despite the rise in the nominal interest rate, real interest as expressed in the yield on one-year CPI-indexed government bonds remained very low, and was even negative (minus 0.6 percent in 2010:Q4, similar to its level in 2009:Q4). This was because inflation expectations rose alongside the rise in the nominal interest rate. A similar picture is reflected by the ex-ante real interest rate on the Bank of Israel sources (the Bank of Israel key interest rate adjusted for one-year inflation expectations), which was approximately minus 1 percent at the end of 2010 (Figure 3.1). The yield on indexed bonds for longer terms even continued to decline in the course of the year (Table 3.2 and Figure 4.4 in Chapter 4). The low real interest rates despite the rise in the Bank of Israel's key interest rate reflected the fact that monetary policy remained expansionary.

During the year real interest remained low and even negative, reflecting the fact that monetary policy remained expansionary.

The capital market and asset prices

Low risk-free interest encourages the search for higher yields while taking greater risk (search for yield).¹⁶ The low interest rate environment in 2010 contributed to the rise in asset prices, including shares, corporate bonds, and real estate, as well as to the increased share of relatively risky assets (shares and corporate bonds) in the public's financial portfolio. See the extensive account of the financial markets in Chapter 4, and the discussion of house prices and the measures adopted by the Bank of Israel in the housing credit market in Section d below.

The low interest rate contributed to the rise in asset prices, particularly housing.

¹⁵The Bank of Israel's staff forecasts were lower than the average of the forecasters' predictions, but within the range of those predictions. See the section on assessments of the development of inflation in the Bank of Israel's four quarterly Inflation Reports for 2010.

¹⁶On the link between monetary policy and risk-taking, see, for example, Geert Bekaert, Marie Hoerova, and Marco Lo Duca (2010) "Risk, Uncertainty and Monetary Policy," NBER working paper 16397, September 2010.

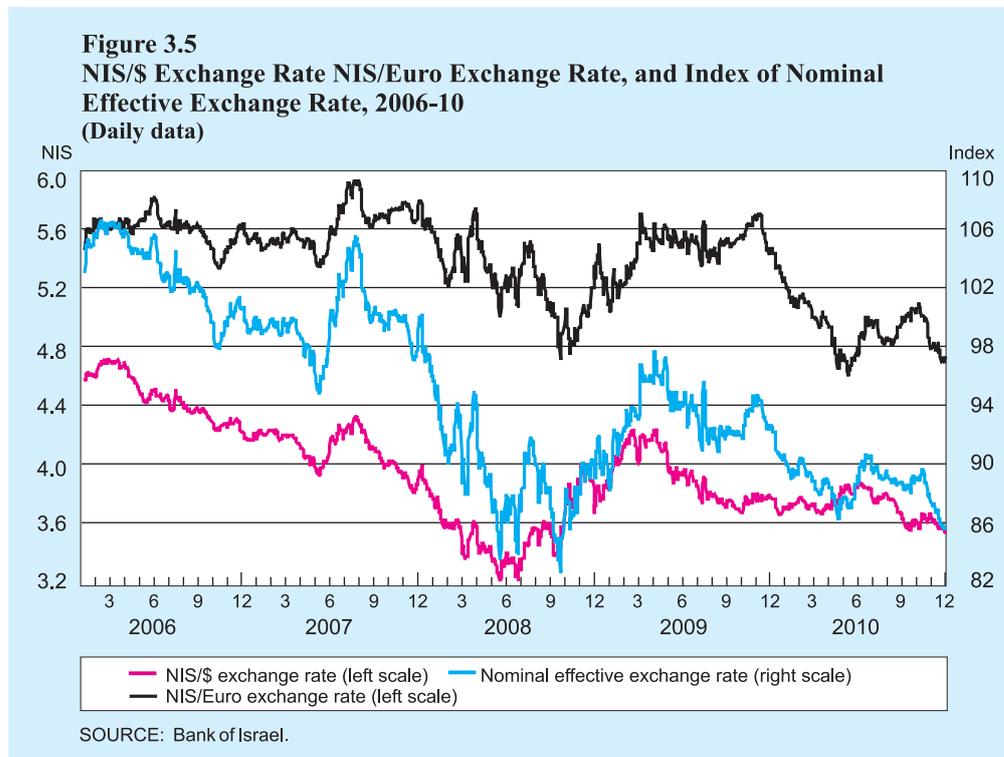
c. The exchange rate and intervention in the foreign-exchange market

The effective exchange rate of the shekel appreciated by 7 percent in 2010.

The appreciation of the shekel derived from the surplus in the current account of the balance of payments, as well as from interest rate differentials between Israel and the leading developed economies, which attracted short-term capital inflows into the economy.

As presented in Figure 3.5, the trend of effective nominal local currency appreciation, which had begun in May 2009,¹⁷ persisted in 2010, albeit with fluctuations during the year.¹⁸ During 2010 there was an effective (nominal and real) appreciation of the shekel of 7 percent, and in the period from May 2009 to December 2010 this was 11 percent (in both real and nominal terms).

Alongside forces for real appreciation which derived from the surplus in the current account of the balance of payments,¹⁹ pressure for appreciation stemmed also from the interest rate differentials, which encouraged short-term capital inflows. This constituted part of global flows of short-term capital from the developed economies—where interest rates remained low because of their slow emergence from the crisis—to economies which were affected to a lesser extent by the crisis, recovered more rapidly, and hence had higher interest rates (global developments are described in Section b above).



¹⁷As may be seen in the figure, the trend of nominal (and real) local-currency appreciation had begun in effect back in 2006.

¹⁸Sharp appreciation from December 2009 to May 2010 followed by depreciation in June and July, against the backdrop of aid packages to countries in distress in Europe. These packages acted to strengthen the euro, after it was considerably weakened because of the risks associated with the debt crises. Sharp appreciation of the NIS resumed in December, 2010.

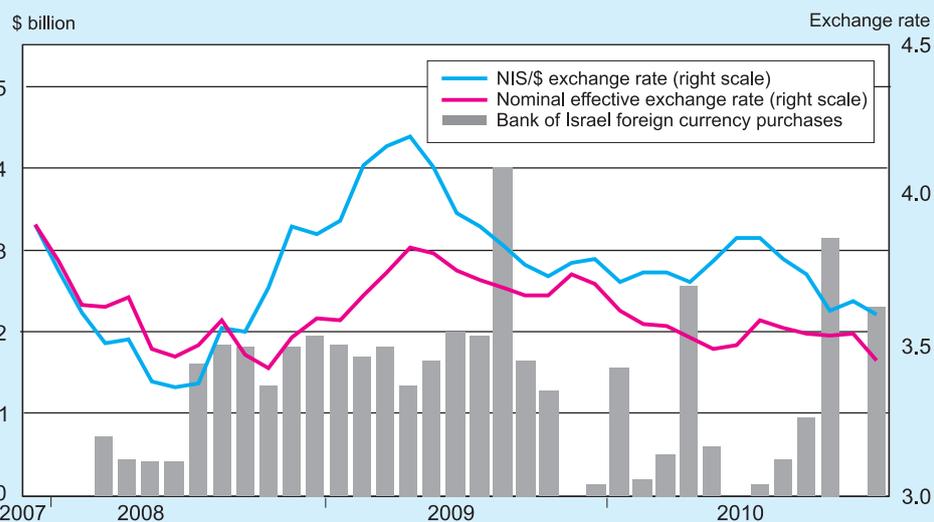
¹⁹For a discussion of the real exchange rate, see Chapters 2 and 7.

Short-term capital inflows to the Israeli economy were manifested in extensive purchases of *makam* by nonresident investors,²⁰ while the extent of direct investment was not large (see Chapter 7, The Balance of Payments). As stated, these flows created pressure for excess appreciation of the NIS which, although temporary, embodied the risk of long-term damage to exports—one of the economy's main growth engines.²¹ Hence, alongside the process of raising the interest rate which was required in order to pursue price stability and the stability of financial markets, the Bank of Israel continued to intervene in the foreign-exchange market, doing so in accordance with the policy it had instituted in August 2009, when it shifted from regular daily foreign-currency purchases to intervention as and when needed, in cases of exceptional exchange-rate fluctuations which are not in line with the economic fundamentals.

The policy shift—from regular purchases to occasional purchases as and when needed—is reflected in the data on purchases, which are presented in Figure 3.6. In most months since the change the extent of purchases was relatively low.²² However,

In view of the pressures for excess appreciation deriving from short-term capital inflows, and against the backdrop of the risks to growth resulting from the slow recovery worldwide, the Bank of Israel continued to buy foreign exchange on the market in order to support exports, and therefore growth and employment.

Figure 3.6
Bank of Israel Foreign Currency Purchases, the NIS/\$ Exchange Rate, and the Nominal Effective Exchange Rate^a (Index), December 2007 to 2010
 (monthly purchases, monthly average exchange rate)



^a The trade-weighted average shekel exchange rate against 28 currencies (representing 38 of Israel's trading partners).
 SOURCE: Bank of Israel.

²⁰The share of nonresidents' holdings of *makam* rose sharply in 2010, and in December 2010 it was 28 percent compared with 5 percent at the end of 2009 and 1 percent at the end of 2008.

²¹Temporary pressure for appreciation could have long-term implications on the export sector by causing the loss of global market share to competitors—a damage which is difficult to repair.

²²All in all, purchases in 2010 amounted to a cumulative \$12 billion, compared with \$19 billion in 2009. The extent of purchases in October was particularly high (\$3 billion), and this figure reflects the increase in short-term capital flows at the end of the year.

the extent of purchases changed in the course of the year, reflecting the Bank of Israel's activity in the market in response to pressures on the exchange rate. As the figure shows, relatively large purchases were made in January, April and October 2010, three of the four months in which the Bank of Israel raised the interest rate, and this may point to a pressure for local currency appreciation associated with the interest rate hikes. On the other hand, in August 2010 the Bank of Israel did not buy large amounts of foreign currency despite the interest rate rise in that month, and the same occurred in December 2009. There were relatively large foreign-exchange purchases also in December 2010 even though the interest rate for that month was not increased—in view of pressures for appreciation deriving inter alia from announcements regarding large gas deposits found off Israel's coast.

In 2010, too, as has been the case since the Bank of Israel began to operate in the foreign-exchange market in 2008, the Bank of Israel sterilized its purchases, i.e., it absorbed the excess liquidity created as a result so that the short-term interest rate in the money market was consistent with the interest rate set by the Bank (see also Section 4 below).

The pressures associated with the widening of the interest rate differentials, against the background of the continuation of highly expansionary monetary policy in the US and Europe, caused the Bank of Israel and the government to consider deploying additional instruments in the area of foreign exchange. In view of the rise in short-term capital flows, particularly towards the end of 2010, and their implications for the exchange rate and financial stability, in January 2011 the Bank of Israel issued new orders regarding the foreign exchange market. The first of these imposed a reporting requirement on NIS/foreign-currency swaps and foreign-exchange derivatives as well as on transactions by nonresidents in *makam* and short-term government bonds. The second imposed a reserve requirement on banking corporations in Israel against transactions with nonresidents in foreign-exchange derivatives.²³ The object of the latter measure was to reduce the risk to banks as well as to make these transactions more expensive for nonresidents, thereby making their short-term activity in Israel less attractive. In addition to these instructions, the Ministry of Finance announced that it was considering abolishing the tax exemption for nonresident investors on profits deriving from investment in *makam* and short-term government bonds.

d. The housing market and macro-prudential measures

One of the main factors supporting the increase in the interest rate in 2010 was the rapid rise in house prices alongside the expansion of housing credit. From 2008 to 2010, house prices went up by a real 39 percent—an annual average rate of about 12 percent, far above their long-term rate of increase (Figure 3.7). As can be seen from Figure 3.7,

²³For further elucidation, see the press releases issued by the Bank of Israel on 19th and 20th January 2011.

In view of the rise in the short-term capital flows, in January 2011 the Bank of Israel issued directives pertaining to the foreign exchange market, and in addition the Ministry of Finance announced that it was considering taxation measures.

House prices continued to rise rapidly in 2010, alongside expansion of housing credit.

the real price of houses has risen since 2008 after falling in the decade ending in 2007 (by 24 percent in real terms).

The rapid rise in house prices in 2009-10 is explained to a great extent by the decline in domestic interest rates in the context of the financial crisis, in particular by the contraction of mortgage interest rates, and the shortage of houses relative to population size.²⁴ The increased demand for houses associated with the low interest rates, alongside the slow response in the supply of houses, induced a rise in prices. The extent of mortgages taken soared alongside the reduction of the interest rates on mortgages—reflecting both the increased demand for mortgages due to their low cost and the rise in house prices due to the increase in demand (for further expansion on the mortgage market, see Chapter 4).

A rise in asset prices could potentially develop into a bubble in which an increase in prices is triggered by expectations that they will continue to expand, rather than by economic fundamentals. An analysis of the development of house prices in Israel showed that prices have not deviated significantly from the environment that was in line with the fundamentals affecting the housing market.²⁵ However, the continued rapid rise of house prices, supported by the expansion of housing credit in view of the low interest rates, increased the risk of departure from this environment. The development of a house price bubble and the consequent steep drop in prices later on could have serious repercussions for financial stability, economic activity, and society in general. These apprehensions illustrate the potential risks involved in a low interest rate over a long period. Since the macroeconomic conditions, and the global environment in particular, justified a moderate rate of interest rate hikes, and in view of the risks embodied in the rapid rate of house price increases and the expansion of housing credit, the Bank of Israel reacted to the developments in the housing market by

Figure 3.7
Real House Price Index (Relative to the CPI), 1973-2010
(monthly data, January 2000 = 1)



The Bank of Israel assessed that house prices have not deviated significantly from the environment that matched fundamental factors, but the continued rapid increase of prices raised the risk of departure from this environment.

²⁴Studies undertaken in the Bank of Israel show that the effect of the interest rate accounted for between one third and a half of the increase in house prices during this period.

²⁵As stated, house prices have risen rapidly since 2008 after declining by over 20 percent cumulatively in real terms in the preceding decade. An examination of the ratios of house prices to rentals and of house prices to the average wage over time, as well as a comparison with those ratios in countries where bubbles were created and then burst, supports the assessment that in 2010 the level of house prices in Israel was not significantly different from the environment consistent with the economic fundamentals. For a more detailed description of the various indicators, the methods of analysis and the results, see Box 3.2 in the Bank of Israel Annual Report for 2009, and a presentation presented at a conference organized by the Bank of Israel Research Department in December 2010, which may be viewed at <http://www.bankisrael.org.il/deptdata/neumim/neum382h.htm> (in Hebrew).

deploying another instrument—supervisory macro-prudential measures with respect to housing credit.²⁶

In view of the risks to financial stability associated with the rapid increase of house prices and the expansion of housing credit, the Bank of Israel adopted specific measures pertaining to the housing credit market.

The macro-prudential measures taken by the Bank of Israel in the housing credit market were aimed at reducing the banks' credit risk as well as the risks to mortgage borrowers—especially of floating-interest mortgages—and preventing the development of a bubble in house prices. These measures included: changing the definition of housing credit extended to organized purchasing groups to credit to the construction and real-estate industry; increasing the capital provision requirement against high loan-to-value mortgages, requiring the re-examination of risk management in the housing credit portfolio, and demanding a higher capital provision against floating interest loans. The higher capital provision reduces banks' risk and also makes the credit they extend more expensive, thus serving to cool demand.

The steps taken by the Bank of Israel were directed at the demand for houses. Concurrently, the government implemented fiscal and other measures aimed at the supply side—stimulating construction, the sale of land, etc.—in order to tackle the shortage of housing in relation to population size. Additionally, measures in the sphere of taxation were undertaken with the aim of increasing the supply of houses and restraining demand in the short term.²⁷

The measures undertaken by the Bank of Israel in the housing credit market in 2010 were moderate. However, the Bank has made it clear that it will be prepared to adopt sterner measures should this be necessary.

2. PRICES

The inflation rate measured by change in CPI was 2.7 percent in 2010, within the target range.

Since 2003 the inflation target has been defined as a range of between 1 and 3 percent. The inflation rate as measured by change in the CPI was 2.7 percent in 2010, namely, within the target range. The inflation rate in the previous twelve months, which has been above or very near the upper limit of the target range since the end of 2007,²⁸ returned to within the target range in June 2010 and remained within it until the end of the year (Figure 3.8).

²⁶The objective of macro-prudential policy is to reduce the level of systemic risk as well as to reinforce the financial system and its ability to withstand shocks, focusing on the system as a whole while taking into consideration the relations between the various entities within it and the way they influence one another (see the box on macro-prudential policy and the details of the measures adopted by the Bank of Israel in Chapter 4 below).

²⁷These included exemption from land betterment tax and an increase in purchase tax for a limited period (two years), measures that were intended to stimulate the sale of houses bought for investment purposes and cool demand for houses for investment purposes (for further expansion, see the section on the construction industry in Chapter 2 above).

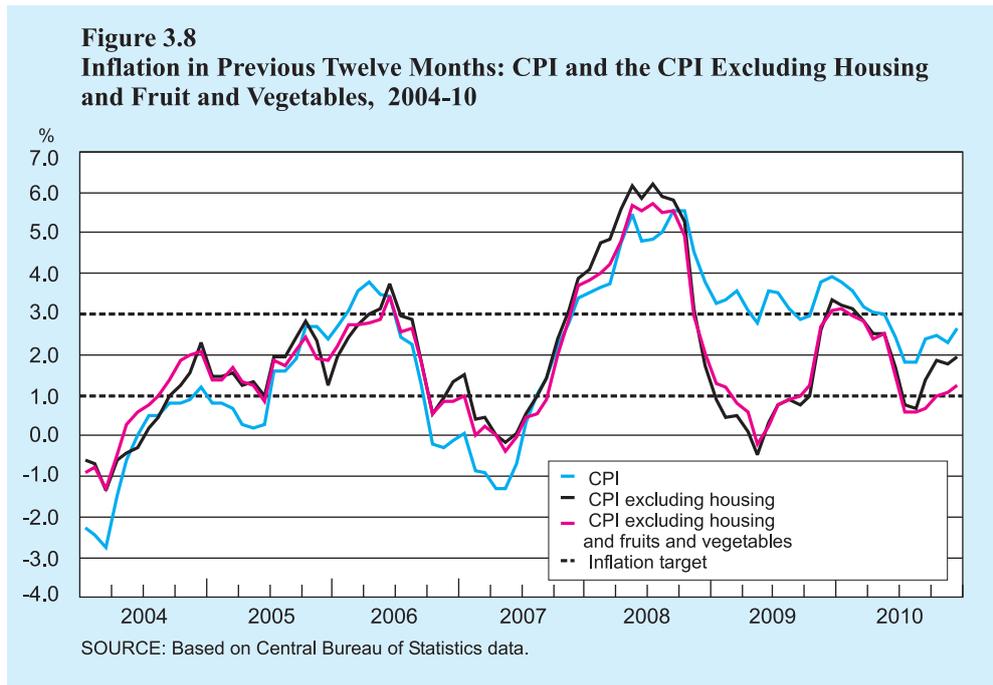
²⁸In 2008 the inflation rate exceeded the upper limit of the target range due primarily to the rise in world prices of energy and commodities as well as in the housing item (rent). In 2009 the main reasons were the increases in indirect taxes, as well as in housing and energy prices (see previous editions of the Bank of Israel's Annual Report).

One of the main reasons why the inflation rate in 2010 was above the mid-point of the target range was the housing item, which consists primarily of rental prices. This component rose by 4.9 percent in 2010, contributing one percentage point to the rise in the CPI (for further elucidation, see below). The inflation rate excluding the housing component was 1.9 percent.

Another component making a significant contribution to inflation in 2010 was that of fruit and vegetables. This component rose by 16 percent in 2010, contributing 0.6 percentage points to the increase in the CPI (Figure 3.11). The fruit and vegetables item is relatively small (3.6 percent of the CPI) and volatile. Since shifts in prices of fruit and vegetables reflect mainly temporary supply shocks rather than economic fundamentals with an ongoing effect, in order to analyze the forces which affect inflation it is helpful to analyze the CPI without this component. The inflation rate measured by the change in the CPI excluding housing and fruits and vegetables was 1.3 percent in 2010—in the lower section of the target range (Figure 3.8).

Price changes due to government decisions about indirect taxes and levies had only a limited effect on the inflation rate in 2010. According to estimates made at the Bank of Israel, the 0.5 percentage-point reduction of V.A.T. in January reduced the annual inflation rate by 0.2 percentage points, and the increase in the tax on cigarettes in July added 0.1 percentage point to the rate of inflation. The annulment of the water levy

Major components contributing to inflation in the CPI are housing (consisting primarily of rental prices) and fruit and vegetables. The inflation rate in 2010 excluding housing and fruit and vegetables was 1.3 percent.



reduced inflation but on the other hand water rates were increased. All in all, the price

of water was reduced by only 1.6 percent in 2010,²⁹ so that its contribution to total inflation was negligible (water accounts for about 1 percent of the total consumption basket).

A major factor moderating inflation in 2010 was the appreciation of the shekel.

The moderate inflation rate of the CPI excluding housing and fruit and vegetables reflects several factors which served to modify price increases. A principal moderating factor was local currency appreciation, which began in mid-2009, continuing the trend that had begun back in 2006 (Figure 3.5). During 2010, effective local currency appreciation was about 7 percent, in both nominal and real terms, following a 4 percent appreciation from May to December 2009.

An important channel through which the exchange rate influences inflation is its effect on imported goods prices, as local currency appreciation reduces importers' costs in local currency terms. Prices of imports are also affected by world prices. Inflation in the developed economies, especially the US and Europe, was moderate in 2010, against the backdrop of the excess capacity there, which served to moderate inflation in the prices of Israel's imports. On the other hand, prices of oil and other commodities soared in 2010 (see below). As Table 3.3 shows, the development of the prices of imports other than oil in dollar terms was moderate in the first half of 2010, and prices even declined. In the second half of the year, prices increased in dollar terms, but their development in local currency terms was moderate due to a sharp local currency appreciation in the fourth quarter.

Appreciation of the shekel and restrained inflation in the developed countries, due to the crisis, moderated the rise in prices of imported goods.

Local currency prices of imported goods are not directly observable. The pass-through from changes in the nominal exchange rate and global prices to prices of imported goods in Israel is usually gradual, and it probably depends on the degree of competition in the relevant markets, as well as on the extent to which exchange-rate shifts are perceived as permanent or temporary by the agents who determine prices. A structural macroeconomic model used by the Bank of Israel for forecasting and for assessing the inflation environment makes it possible to assess the quantitative effects of the changes in world prices and the exchange rate on the prices of imported goods. In the model, the CPI is divided into an imported component and a domestically produced component (using capital and labor), and estimates of the development of each component may be derived by using data on observed variables and assuming specific relations between the different variables in the model.³⁰ The general CPI without fruit and vegetables rose by 1.9 percent in 2010 (last-quarter average vis-à-vis the equivalent average in the preceding year). According to estimates derived from the model, this increase comprises a 0.1 percent decline in the import component, a 4.4 percent rise in the housing component, and a 2.4 percent rise in the domestic component excluding housing. The moderate rate of import price inflation stemmed primarily from local currency appreciation.

²⁹This came after the water rate had been increased by over 60 percent, cumulative, in 2008 and 2009.

³⁰A presentation of the model given at an international conference held in Israel in October 2009 may be found on the Bank of Israel's website: http://www.bankisrael.org.il/modelworkshop/ws_info.htm.

Table 3.3
The Exchange Rate, Import Prices and Consumer Prices, 2004-10

(percentage changes)

| | Import prices (\$) | | | | Dollar exchange rate | Import prices ^a (NIS) | | | | CPI |
|---|--------------------|---------------------|-------------------|-------|----------------------------|----------------------------------|---------------------|-------------------|-------|------|
| | Consumer goods | Investment goods | Production inputs | | | Consumer goods | Investment goods | Production inputs | | |
| | | | Excl. fuel | Fuel | | | | Excl. fuel | Fuel | |
| (Change from to previous period, annual averages) | | | | | | | | | | |
| 2004 | 4.2 | 2.1 | 8.1 | 28.9 | -1.5 | 2.7 | 0.6 | 6.5 | 26.8 | -0.4 |
| 2005 | 1.0 | -2.4 | 3.0 | 36.7 | 0.1 | 1.1 | -2.3 | 3.1 | 37.3 | 1.3 |
| 2006 | 1.4 | -1.2 | 3.7 | 17.6 | -0.7 | 0.7 | -1.8 | 2.9 | 16.5 | 2.1 |
| 2007 | 3.4 | 3.7 | 8.7 | 13.1 | -7.8 | -4.6 | -4.4 | 0.3 | 3.9 | 0.5 |
| 2008 | 8.8 | 2.7 | 10.8 | 43.1 | -12.7 | -5.0 | -10.4 | -3.3 | 24.4 | 4.6 |
| 2009 | -3.5 | -2.1 | -12.0 | -37.4 | 9.6 | 5.7 | 7.3 | -3.5 | -31.2 | 3.3 |
| 2010 | 3.0 | -1.2 | 4.2 | 25.4 | -5.1 | -2.2 | -6.2 | -1.1 | 19.5 | 2.7 |
| (Change from last quarter in previous year) | | | | | | | | | | |
| 2004 | 2.7 | 0.9 | 8.5 | 45.7 | -1.0 | 1.7 | 0.0 | 7.4 | 44.3 | 1.0 |
| 2005 | -2.1 | -5.7 | -1.8 | 25.4 | 5.5 | 3.3 | -0.5 | 3.6 | 32.3 | 2.6 |
| 2006 | 4.4 | 2.5 | 9.0 | 3.2 | -8.3 | -4.3 | -6.0 | -0.1 | -5.4 | -0.2 |
| 2007 | 4.7 | 4.5 | 10.2 | 48.1 | -7.4 | -3.1 | -3.2 | 2.0 | 37.2 | 2.8 |
| 2008 | 5.5 | -2.5 | 2.3 | -21.5 | -3.2 | 2.1 | -5.7 | -1.0 | -24.0 | 4.6 |
| 2009 | -1.6 | 3.0 | -5.9 | 8.5 | -1.3 | -2.9 | 1.6 | -7.1 | 7.0 | 3.6 |
| 2010 | 4.9 | -1.1 | 4.6 | 15.0 | -3.9 | 0.9 | -4.9 | 0.5 | 10.6 | 2.5 |
| (Change from previous quarter) | | | | | | | | | | |
| 2009 | | | | | | | | | | |
| I | -3.7 | -0.1 | -9.9 | -23.9 | 6.4 | 2.4 | 6.3 | -4.2 | -19.1 | -0.7 |
| II | -0.5 | 0.9 | -1.6 | 10.7 | 0.5 | -0.1 | 1.4 | -1.1 | 11.2 | 1.9 |
| III | 1.5 | 1.6 | 3.3 | 21.7 | -6.1 | -4.7 | -4.6 | -3.0 | 14.3 | 2.0 |
| IV | 1.3 | 0.6 | 2.8 | 5.8 | -1.7 | -0.5 | -1.1 | 1.1 | 4.0 | 0.4 |
| 2010 | | | | | | | | | | |
| I | 0.3 | -2.0 | -0.6 | 3.8 | -0.8 | -0.5 | -2.8 | -1.4 | 3.0 | -0.7 |
| II | -0.9 | -2.3 | -0.2 | 1.9 | 1.3 | 0.4 | -1.1 | 1.1 | 3.3 | 1.2 |
| III | 1.8 | 1.3 | 1.0 | -1.2 | 0.3 | 2.1 | 1.6 | 1.3 | -0.9 | 1.2 |
| IV | 3.7 | 2.1 | 4.4 | 10.0 | -4.6 | -1.1 | -2.6 | -0.4 | 4.9 | 0.8 |

^a The dollar import prices of goods multiplied by the NIS/\$ exchange rate.

SOURCE: Based on Central Bureau of Statistics data.

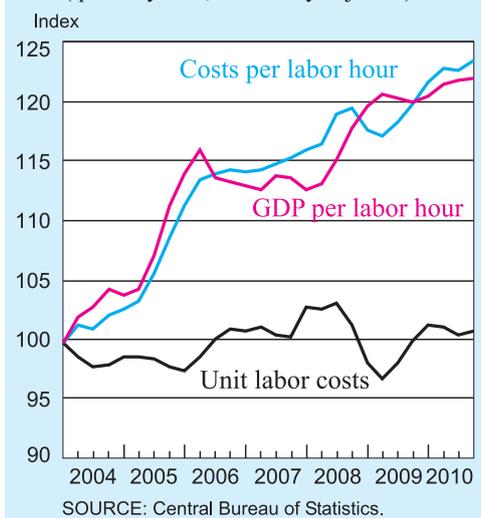
Nominal local currency appreciation can also serve to moderate domestic prices via the effect of the real exchange rate on the demand for domestic products: the relative increase in the price of domestic goods relative to foreign competitors reduces demand for domestic products, thereby serving to moderate their price (via production costs, see below).

With regard to domestic inflationary pressures against the backdrop of the recovery from the crisis: an important channel by which real economic activity influences prices is the effect of the demand for factor inputs on their cost. The expansion of the demand for factor inputs induced by an increase in the demand for GDP raises production costs, and this in turn exerts upward pressure on consumer prices. As can be seen from Figure 3.9, unit labor cost fell in the fourth quarter of 2008 and the first half of 2009. Because of the global economic crisis and its implications for Israel the demand for labor fell, the unemployment rate rose, and labor inputs declined, as did labor costs (wages). The rise in labor productivity also contributed to the decline in unit labor costs during the crisis. These developments served to moderate inflation during the crisis. The economy's recovery from the financial crisis and the associated improvement in the labor market were reflected in the rise in unit labor costs in the second half of 2009 and 2010:Q1, but this rise was checked later in 2010. All in all, while unit labor costs rose in 2010 from their low level in the first half of 2009, they remained below what they had been in 2008, prior to the crisis. Consequently, the rise in domestic production costs, which accompanied the expansion of economic activity starting in the second half of 2009, would appear not to have generated inflationary pressures in 2010. Nevertheless, as the economy continues to expand and its excess capacity is diminishing, the forces acting to moderate inflation which stemmed from the excess capacity are reduced, hence the counterbalance of inflationary factors (in 2010 these were primarily housing and commodity prices) is reduced and inflationary risks increase.

The rise in the Bank of Israel's key interest rate served to moderate inflation, inter alia through the effect of the interest rate differentials on the exchange rate of the shekel. Notwithstanding, monetary policy remained expansionary in order to support the continued recovery of economic activity in the wake of the crisis, and in this regard its effect on inflation was expansionary. Also, the central bank's intervention in the foreign-exchange market, which prevented sharper local currency appreciation, to

Labor costs per unit of GDP fell considerably during the crisis. With the economy's recovery from the crisis, unit costs rose, but were still lower in 2010 than in 2008, on the eve of the crisis.

Figure 3.9
Unit Labor Costs in the Business Sector, 2004-10
(quarterly data, seasonally adjusted)



some extent counteracted the moderating effect on inflation of the forces for local currency appreciation.

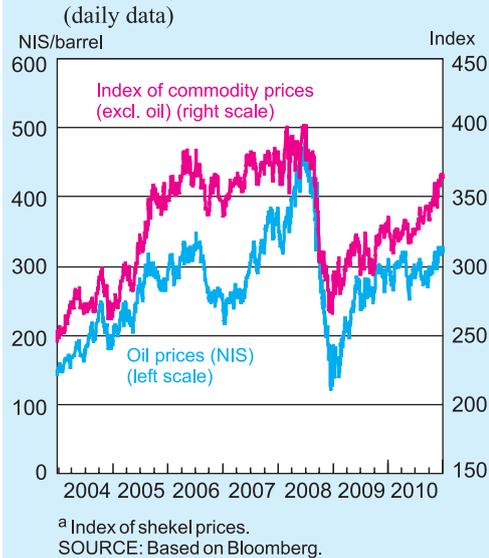
Another factor which served to increase prices in 2010 was the rise in commodity prices. As Figure 3.10 shows, these prices began to go up early in 2009, after plummeting at the end of 2008 because of the global economic crisis. This rise is explained inter alia by improved assessments regarding the emergence of the world economy from the crisis, particularly with regard to the developing countries. A rise in commodity prices is presumed to cause the CPI to rise both directly, via the commodities which constitute part of the consumption basket (such as fuel oils), and indirectly, via the higher cost of raw

materials used in the production of consumer goods. Steep increases in commodity prices in 2010, particularly in the second half of the year—further to their rise in 2009—caused inflation to accelerate in developing economies, where food accounts for a large part of total consumption.³¹ In Israel the food component of the CPI rose by a relatively moderate 2.0 percent in 2010. However, as Table 3.4 shows, food prices accelerated from August to October and this contributed to the acceleration of inflation in that period.

A central component contributing to inflation in the CPI in the last three years (since 2008) has been the housing item, which consists primarily of rent. In 2010, this item, which accounts for some 20 percent of the CPI, rose by 4.9 percent, contributing about 1 percentage point to the rise in the CPI (Figure 3.11). Rents began to rise steeply in the second half of 2008, so that in 2008 the housing item rose by 12.1 percent. In both 2009 and 2010 the rate at which this item rose moderated (to 5.6 percent in 2009 and 4.9 percent in 2010), but its contribution to inflation still remained significant.

The rapid rise of rents which began in 2008 may be explained by supply and demand in the housing services market, as expressed inter alia in the rise in the ratio of population to the stock of housing in recent years (see section on construction in Chapter 2). Several factors were found to explain the moderation of the rate at which rental prices have risen in the last two years.³² One of these was the unemployment

Figure 3.10
Index of Commodity Prices,^a and
Oil Prices, 2004-10



Commodity prices worldwide rose rapidly in the second half of 2010.

The housing component, mainly reflecting rental prices, has contributed significantly to inflation since 2008.

³¹The Bloomberg index of agricultural commodities (in dollars) rose by 40 percent in 2010.

³²For further elucidation, see Recent Economic Developments 125, May to August 2009, part 2: Broader Review of Selected Issues, as well as a presentation given at a conference held by the Bank of Israel Research Department in December 2010, that may be found on the Bank of Israel's website: <http://www.bankisrael.org.il/deptdata/neumim/neum382h.htm> (in Hebrew).

Figure 3.11a
Rates of Change in the Components of the CPI, 2010 (percent)

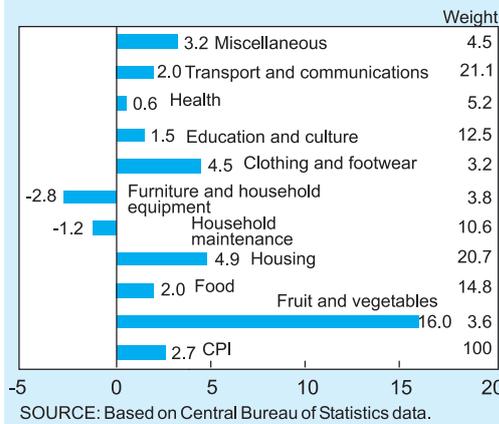
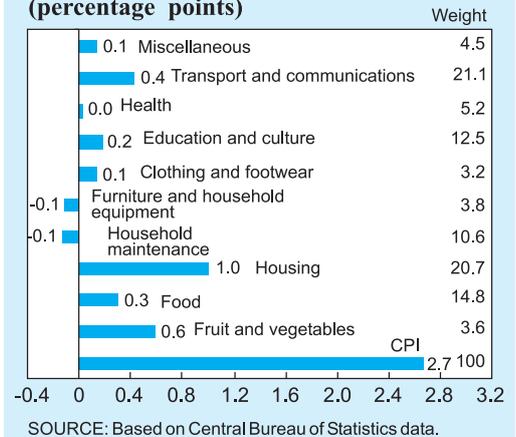


Figure 3.11b
Contribution of the Components of the CPI to Total CPI Inflation, 2010 (percentage points)



rate, which reflects the business cycle (a lagged effect); the upturn of the business cycle, which was expressed in a decline in the unemployment rate from 2004 to 2008: II, was found to have contributed to the rise in rents in 2008 and 2009, while the adverse effect of the financial crisis on economic activity served to moderate the rate at which the housing component rose from the end of 2009. The second factor was the moderation of the upward pressure on prices due to the shortage of housing. This followed the acceleration of construction in response to the increase in demand. An additional factor was the local currency appreciation against the dollar since the second half of 2009, compared with the depreciation in the second half of 2008 and the first half of 2009, although the pass-through from the dollar exchange rate to the housing item in the CPI has abated in recent years, as expressed by the contraction in the share of dollar-denominated rental contracts.

An examination of the development of the seasonally adjusted CPI during the year shows an acceleration of the rate of increase of prices in the course of the year (Table 3.4). This development is consistent with the process of economic recovery in Israel and the world. The pace of price rises in 2010:QI was moderate (even when adjusting for the effect of the change in V.A.T. and the annulment of the levy on water), but accelerated in the second half of the year. This was due inter alia to the rise in food and energy prices as a result of the rapid rise in world commodity prices in the second half of the year.

The clothing and footwear item rose by 4.5 percent in 2010—an exceptional increase compared with previous years, when this item declined (Table 3.4). The downward trend in the relative price of clothing and footwear was due to a great extent to the process of globalization, in the framework of which the share of the developing countries (especially China and India) in the production of these goods

The rate of price increases accelerated in the second half of 2010, due inter alia to the rise in commodity prices worldwide.

Table 3.4
Price Developments, 2002–10

| | CPI | Fruit & vegetables | Food | Housing | Household maintenance equipment | Furniture and household equipment | Clothing and footwear | Education, culture and entertainment | Health | Transport and communications | Miscellaneous | Energy index ^a | CPI excluding food and energy | General CPI seasonally adjusted ^b |
|-----------|------------------------------------|--------------------|------|---------|---------------------------------|-----------------------------------|-----------------------|--------------------------------------|--------|------------------------------|---------------|---------------------------|-------------------------------|--|
| 2002 | 6.5 | -1.2 | 4.9 | 8.2 | 10.7 | 2.2 | -3.5 | 3.5 | 5.7 | 9.3 | 9.7 | 20.1 | 6.0 | |
| 2003 | -1.9 | 4.2 | 0.3 | -6.7 | 0.0 | -2.6 | -4.0 | -0.5 | -0.4 | -0.6 | -1.7 | 3.4 | -9.0 | |
| 2004 | 1.2 | 6.0 | 1.8 | -2.5 | 5.6 | -1.4 | -4.2 | -0.6 | 3.3 | 3.3 | 3.0 | 12.1 | 0.3 | |
| 2005 | 2.4 | -9.6 | 2.0 | 5.9 | 5.1 | -1.4 | -4.3 | 0.7 | 2.2 | 1.4 | 2.4 | 7.1 | 1.5 | |
| 2006 | -0.1 | 12.0 | 3.6 | -6.1 | -1.2 | -0.3 | -1.7 | 1.2 | 1.8 | 0.0 | 2.0 | -2.0 | -0.6 | |
| 2007 | 3.4 | 7.0 | 6.3 | 1.9 | 6.1 | 0.6 | -0.7 | 1.5 | 1.9 | 4.2 | 1.3 | 14.4 | 1.8 | |
| 2008 | 3.8 | -2.0 | 9.1 | 12.1 | 3.9 | -2.5 | -3.0 | 1.6 | 1.8 | -2.0 | 2.2 | -9.5 | 4.2 | |
| 2009 | 3.9 | 8.4 | 1.1 | 5.6 | 5.2 | -1.2 | -4.4 | 1.4 | 2.5 | 6.5 | 4.5 | 13.0 | 0.8 | |
| 2010 | 2.7 | 16.0 | 2.0 | 4.9 | -1.2 | -2.8 | 4.5 | 1.5 | 0.6 | 2.0 | 3.2 | -0.4 | 3.1 | |
| | Year-end, percentage annual change | | | | | | | | | | | | | |
| | Percentage, monthly change | | | | | | | | | | | | | |
| 2010 | | | | | | | | | | | | | | |
| January | -0.7 | -1.8 | 0.0 | -0.6 | -2.0 | 0.6 | -9.0 | -0.2 | -0.1 | 0.2 | -0.1 | -0.3 | -0.8 | -0.3 |
| February | -0.3 | 1.0 | 0.3 | -0.2 | -1.2 | -0.5 | -6.3 | 0.1 | 0.2 | -0.2 | 0.1 | -1.6 | -0.3 | 0.0 |
| March | 0.1 | -1.3 | 0.2 | 0.6 | -1.0 | 0.2 | -4.0 | 0.6 | -0.4 | 0.7 | -0.2 | -0.5 | 0.1 | 0.1 |
| April | 0.9 | 1.9 | 0.4 | 1.0 | 0.3 | -0.2 | 11.4 | 0.2 | 0.2 | 0.4 | 0.1 | 0.6 | 1.0 | 0.2 |
| May | 0.4 | 2.6 | -0.3 | 0.7 | 0.2 | -0.3 | 2.8 | 0.3 | -0.5 | 0.3 | 0.5 | 0.6 | 0.5 | 0.2 |
| June | 0.3 | 0.1 | -0.1 | 0.6 | 0.1 | -0.4 | 11.2 | -0.3 | 0.5 | -0.7 | 0.3 | -2.7 | 0.6 | 0.2 |
| July | 0.5 | 2.0 | -0.4 | 1.0 | 1.2 | -0.3 | -9.0 | 0.6 | 0.5 | 1.3 | 2.4 | 1.6 | 0.5 | 0.2 |
| August | 0.5 | 2.0 | 0.7 | 1.7 | 0.0 | -0.7 | -5.3 | 1.1 | 0.3 | -0.2 | -0.2 | -0.4 | 0.5 | 0.4 |
| September | 0.3 | 10.0 | 0.6 | 0.7 | 0.0 | -0.2 | -2.2 | -0.9 | -0.4 | -0.7 | -0.5 | -0.4 | 0.3 | 0.6 |
| October | 0.3 | 3.8 | 0.7 | -1.1 | 0.7 | 0.1 | 6.1 | 0.6 | 0.2 | -0.8 | 1.5 | 0.3 | 0.2 | 0.2 |
| November | 0.1 | -3.7 | 0.0 | 0.0 | 0.2 | -0.7 | 2.2 | -0.1 | 0.5 | 1.1 | -0.2 | 1.6 | 0.0 | 0.4 |
| December | 0.4 | -0.9 | 0.0 | 0.3 | 0.3 | -0.3 | 9.8 | -0.5 | -0.4 | 0.7 | -0.5 | 0.9 | 0.4 | 0.3 |

^a The energy component includes motor fuel and oils, and electricity, gas and diesel oil for domestic use.

^b Calculated by the Bank of Israel Research Department. (See Box 1 of the Bank of Israel Inflation Report for the first quarter of 2010).

SOURCE: Based on Central Bureau of Statistics data.

rose.³³ At the time this report was written it was still too early to assess whether the increase in prices in 2010 expressed a change of the trend or a temporary deviation.

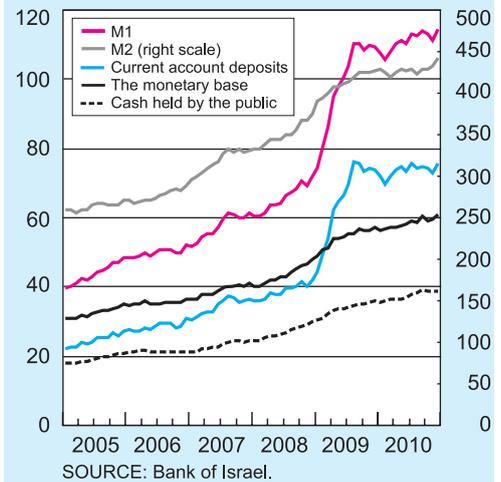
3. THE MONETARY AGGREGATES³⁴

In an inflation targeting regime, where the target is the nominal anchor and the principal policy instrument for attaining it is the interest rate, the money supply is determined by the public's demand. Thus, the development of the monetary aggregates reflects the public's demand for money, given the market interest rates and economic conditions.

As Table 3.5 and Figure 3.12 show, the exceptional economic conditions created by the global crisis were expressed in a sharp rise in the money supply (M1) in 2009. This aggregate, which consists of cash in the hands of the public and local currency demand deposits, rose by a steep 52 percent in 2009. This sharp increase stemmed from the sharp decline of the interest rate in response to the crisis, which served to increase the quantity of money demanded, from the Bank of Israel's foreign-exchange and government-bond purchases in the markets, as well as through the public's use of demand deposits in this period as an alternative to other forms of saving, because of the very low interest on deposits.

The rate of expansion of the money supply moderated markedly in 2010, as the Bank of Israel gradually raised the interest rate. The money supply expanded at a more modest pace during the year than it had in the years before the financial crisis (Table 3.5). The relatively moderate rate of expansion in 2010 constitutes some correction to the steep rise of 2009. The money supply (especially the amount of demand deposits) still remains significantly greater than it was before the crisis erupted, and at the end of 2010 it had expanded by 60 percent relative to its extent at the end of 2008. This is a steep rise relative to the upward trend that is consistent with the expansion of economic activity and the increase in prices, and is explained inter alia by the level of the interest rate on deposits, which remained low.

Figure 3.12
The Monetary Aggregates, 2005-10
(NIS billion, monthly averages)



The rate of expansion of the money supply was moderate in 2010, after a sharp rise in 2009.

³³ See Box 3.1 in Bank of Israel, Annual Report, 2007.

³⁴ Credit aggregates are discussed in Chapter 4, The Financial System.

Table 3.5
Rates of Change in the Monetary Aggregates, 2004-10
 (end of period, monthly averages, percent change in period, year on year)

| | 1 | 2 | 1+2=3 | 4 | 5 | 6 | 3+4+5+6=7 | |
|------|---------------|---------------------------------|------------------|-----------------|------------------------------|----------------------------|----------------------------------|-----------------|
| | Monetary base | Cash in the hands of the public | Current accounts | M1 ^a | Term deposits up to 3 months | Term deposits up to 1 year | Self-renewing overnight deposits | M2 ^b |
| 2004 | 8.3 | 8.6 | 27.1 | 18.0 | -0.2 | 5.2 | 22.7 | 5.6 |
| 2005 | 14.8 | 17.1 | 29.5 | 23.9 | 2.7 | -10.7 | 8.3 | 5.3 |
| 2006 | 4.0 | 3.0 | 12.3 | 8.3 | 5.0 | 17.2 | 8.7 | 7.2 |
| 2007 | 13.6 | 15.0 | 19.1 | 17.4 | 14.0 | 10.9 | 13.7 | 14.3 |
| 2008 | 16.7 | 21.8 | 14.5 | 17.4 | 12.7 | 12.8 | 13.3 | 13.7 |
| 2009 | 19.9 | 19.6 | 75.6 | 52.3 | -4.4 | 1.0 | 40.2 | 13.5 |
| 2010 | 6.3 | 7.6 | 3.1 | 4.6 | 4.0 | 16.2 | -4.5 | 3.6 |
| 2007 | | | | | | | | |
| I | 6.4 | 1.7 | 19.0 | 11.3 | 11.2 | 21.3 | 17.5 | 13.1 |
| II | 10.6 | 7.1 | 22.1 | 15.7 | 11.9 | 18.9 | 32.6 | 16.2 |
| III | 12.3 | 13.7 | 25.6 | 20.6 | 13.9 | 15.2 | 26.5 | 16.9 |
| IV | 13.6 | 15.0 | 19.1 | 17.4 | 14.0 | 10.9 | 13.7 | 14.3 |
| 2008 | | | | | | | | |
| I | 9.7 | 14.1 | 11.7 | 12.7 | 12.4 | 6.9 | 8.9 | 11.4 |
| II | 10.3 | 15.8 | 9.1 | 11.7 | 11.5 | -1.3 | 1.8 | 8.7 |
| III | 12.5 | 15.4 | 9.4 | 11.8 | 6.3 | -2.8 | 16.1 | 7.9 |
| IV | 16.7 | 21.8 | 14.5 | 17.4 | 12.7 | 12.8 | 13.3 | 13.7 |
| 2009 | | | | | | | | |
| I | 25.0 | 28.6 | 49.3 | 40.9 | 4.2 | 10.6 | 50.6 | 18.3 |
| II | 27.5 | 28.8 | 75.3 | 56.3 | -0.5 | 12.0 | 51.7 | 19.2 |
| III | 25.2 | 24.6 | 87.6 | 61.7 | 0.6 | 7.7 | 41.8 | 19.5 |
| IV | 19.9 | 19.6 | 75.6 | 52.3 | -4.4 | 1.0 | 40.2 | 13.5 |
| 2010 | | | | | | | | |
| I | 11.3 | 12.6 | 32.1 | 24.9 | -1.2 | -1.2 | 2.4 | 5.1 |
| II | 7.2 | 9.6 | 10.3 | 10.1 | 1.9 | 11.8 | -2.2 | 3.9 |
| III | 7.0 | 11.4 | -0.9 | 3.0 | -1.5 | 26.4 | -6.3 | 0.9 |
| IV | 6.3 | 7.6 | 3.1 | 4.6 | 4.0 | 16.2 | -4.5 | 3.6 |

^a M1: cash and demand deposits.

^b M2: M1 plus unindexed term deposits of up to one year.

SOURCE: Bank of Israel.

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

The primary objective of monetary policy is to attain the inflation target, doing so while supporting other aims of the government's economic policy and financial stability. The Bank of Israel's main instrument for implementing monetary policy is its key interest rate, according to which it lends to or borrows from the banking corporations. The Bank of Israel's key interest rate affects market rates, which in turn influence inflation, real economic activity, and the money supply.

The Bank of Israel deploys monetary instruments by means of which it adapts liquidity in the market to the amount demanded at the interest rate it sets. These

Table 3.6
Sources of Change in the Monetary Base, 2005-10

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2010 | | | |
|---|---------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | | | | | | I | II | III | IV |
| 1. Monetary injection, government and the Jewish Agency | -1,452 | -3,789 | -10,809 | -17,371 | -14,195 | 1,418 | -1,855 | 8,573 | -5,799 | 499 |
| of which: Government | -2,679 | -5,236 | -11,977 | -18,470 | -14,949 | 598 | -2,074 | 8,291 | -5,968 | 349 |
| 2. Foreign currency conversions ^a | -1,087 | -1,141 | -870 | 43,034 | 78,216 | 43,064 | 8,240 | 11,422 | 4,728 | 18,674 |
| of which: Bank of Israel | 0 | 0 | 0 | 43,995 | 77,413 | 43,752 | 8,444 | 11,686 | 4,874 | 18,748 |
| 3. Total (1+2) | -2,539 | -4,930 | -11,679 | 25,663 | 64,021 | 44,482 | 6,385 | 19,995 | -1,071 | 19,173 |
| 4. Monetary injection by Bank of Israel | 9,920 | 3,798 | 15,694 | -17,305 | -58,855 | -32,962 | -1,676 | -20,240 | 4,321 | -15,367 |
| of which: Monetary loan | -756 | 7,470 | -7,500 | 0 | 420 | -420 | -420 | 0 | 545 | -545 |
| Makam | -10,508 | -7,360 | 23,729 | 8,847 | -13,040 | -47,269 | -12,290 | -15,306 | -17,096 | -2,577 |
| Swaps | 6,216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Banks' term deposits | 12,440 | 3,560 | -300 | -28,011 | -63,189 | 13,135 | 10,667 | -5,367 | 20,379 | -12,544 |
| Interest ^b | 432 | 133 | 20 | 11 | 420 | 1,253 | 247 | 303 | 335 | 369 |
| Bond purchases | 0 | 0 | 0 | 0 | 18,000 | 0 | 0 | 0 | 0 | 0 |
| Repo | 0 | 0 | -6 | 1,974 | -2,009 | 0 | 0 | 0 | 0 | 0 |
| 5. Total change in monetary base | 7,357 | -1,176 | 3,979 | 8,297 | 5,141 | 11,509 | 4,709 | -249 | 3,220 | 3,829 |

^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.

instruments include loans to and/or deposits from the banking corporations, as well as the market instruments of *makam* and repo.

As Table 3.6 shows, until 2008, when the Bank of Israel was not active in the foreign exchange or government bond markets, changes in the quantity of liquidity, which the Bank of Israel was required to offset by means of its monetary instruments, stemmed largely from the government's injection and/or absorption of money in the framework of its fiscal policy. In 2008, for the first time in approximately ten years, the Bank of Israel resumed its activity in the foreign-exchange market and began to increase Israel's foreign reserves. In 2009, because of the ramifications of the global crisis, the central bank continued to operate in the foreign-exchange market as well as to purchase government bonds. The foreign-exchange purchases continued in 2010

Table 3.7

Monetary Instruments^a - Monetary Deposits, Monetary Loans and *Makam*, 2007–10

(total system, quarterly averages)

| | Utilization of deposit auctions | | | Cost of daily deposit auctions percent | Utilization of loan auctions | | | Cost of loans in daily auc- tions percent | Makam | |
|------|---------------------------------|--------|--------|---|------------------------------|--------|--------|---|-------------|----------------------|
| | Daily | Weekly | Total | | Daily | Weekly | Total | | Total | Held by the banks |
| | NIS million | | | | NIS million | | | | NIS million | |
| 2007 | | | | | | | | | | |
| I | 0 | 0 | 0 | --- | 8,575 | 5,226 | 13,801 | 4.37 | 94,202 | 10,426 |
| II | 0 | 0 | 0 | --- | 9,365 | 7,257 | 16,621 | 3.82 | 87,840 | 10,144 |
| III | 1,914 | 0 | 1,914 | 3.69 | 3,470 | 0 | 3,470 | 3.88 | 81,514 | 13,888 |
| IV | 630 | 0 | 630 | 4.08 | 2,165 | 0 | 2,165 | 4.10 | 77,325 | 9,670 |
| 2008 | | | | | | | | | | |
| I | 859 | 0 | 859 | 4.12 | 3,814 | 698 | 4,512 | 4.11 | 74,414 | 7,038 |
| II | 97 | 0 | 97 | 3.30 | 5,943 | 2,147 | 8,091 | 3.43 | 74,325 | 5,191 |
| III | 27 | 0 | 27 | 3.82 | 4,261 | 1,065 | 5,326 | 4.11 | 75,486 | 5,420 |
| IV | 2,690 | 0 | 2,690 | 3.10 | 1,366 | 0 | 1,366 | 3.51 | 77,918 | 4,889 |
| 2009 | | | | | | | | | | |
| I | 13,948 | 13,463 | 27,411 | 1.12 | 0 | 0 | 0 | --- | 76,987 | 6,149 |
| II | 22,736 | 26,556 | 49,292 | 0.50 | 0 | 0 | 0 | --- | 76,256 | 12,647 |
| III | 35,897 | 40,085 | 75,982 | 0.60 | 0 | 0 | 0 | --- | 77,828 | 16,703 |
| IV | 37,511 | 45,352 | 82,863 | 0.85 | 0 | 0 | 0 | --- | 82,520 | 18,574 |
| 2010 | | | | | | | | | | |
| I | 34,118 | 50,000 | 84,118 | 1.26 | 0 | 0 | 0 | --- | 92,581 | 19,326 |
| II | 31,978 | 50,000 | 81,978 | 1.51 | 0 | 0 | 0 | --- | 108,090 | 18,667 |
| III | 28,466 | 49,667 | 78,133 | 1.68 | 0 | 0 | 0 | --- | 123,103 | 23,831 |
| IV | 33,693 | 40,108 | 73,800 | 2.01 | 0 | 0 | 0 | --- | 133,554 | 25,272 |

^a Monetary instruments in addition to those mentioned are: the credit window, the deposit window, and repo.

SOURCE: Bank of Israel.

(see Section 1 of this chapter). The Bank of Israel sterilized its purchases, i.e., it absorbed the excess liquidity in the banking system as a result of the purchases.

The Bank of Israel absorbed the excess liquidity created as a result of the purchases of foreign currency.

As Table 3.7 shows, in the first three quarters of 2009 liquidity was absorbed from the banking system primarily through monetary deposits, which went up from an average level of less than NIS 3 billion in 2008:IV to over NIS 80 billion in 2009:IV. In contrast, the total balance of *makam* hardly changed in this period. The reduced resort to *makam* issues as an instrument for absorbing excess liquidity was part of a series of monetary measures on which the Bank of Israel embarked in January 2009 in view of the global economic crisis. In the framework of these measures the Bank also reduced the spread between its key interest rate and the rates on discount-window loans and deposits for the commercial banks from 1 percent to 0.5 percent, and in March 2009, when the interest rate approached its lowest level, the spread was narrowed further, to 0.25 percent.

Alongside the gradual process of raising the interest rate, the Bank of Israel reverted to using *makam* issues to absorb excess liquidity from the banking system.

Alongside the gradual process of reducing monetary expansion which began in August 2009, the Bank of Israel reverted to using *makam* issues to absorb excess liquidity from the banking system (Table 3.7). Thus, the balance of *makam* rose from about NIS 84 billion in December 2009 to over NIS 130 billion at the end of 2010. In addition, in November 2010, as part of the process of normalization in view of the emergence from the crisis, the Bank of Israel announced the expansion of the spread in the credit window and the deposit window from 0.25 percent to 0.5 percent.