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Letter of the Governor, Professor Stanley Fischer

Jerusalem January 2006

The Inflation Report for the second half of 2005^{*} is submitted to the government, the Knesset and the public as part of the process of periodic monitoring of the course of inflation and adherence to the inflation targets set by the government. The Report was prepared in the Bank of Israel within the framework of the Senior Monetary Forum, headed by the Governor, the Forum in which the Governor makes decisions on the interest rate.

The Consumer Price Index (CPI) rose by 1.9 percent in the second half of 2005 (an annual rate of 3.8 percent), after rising by 0.5 percent in the first half (1 percent annual rate). During the year as a whole the index rose by 2.4 percent, within the long-term target range of price stability set by the government (inflation between 1 percent and 3 percent a year).

The main reasons for the rise in prices in 2005 were the relatively rapid 6.8 percent rise in the NIS/\$ exchange rate in 2005; this rise occurred mainly in the second half of the year, and was partly due to the narrowing of the interest-rate differential between the NIS and the dollar, and the global increase in oil prices. The rise in the exchange rate acted to raise housing prices and the prices of the imported goods in the CPI, which went up faster than did domestic prices. The relatively modest increase in prices of nontradables (excluding housing) supports the assessment that in 2005 domestic factors—demand and pay increases—did not exert upward pressure on prices, although the moderating influence that these factors had exerted in 2003 and 2004 came to an end. The ongoing process of globalization also contributes to the moderation of the rise in wage and price increases: potential competition from the 1.9 percent fall in prices in 2003 to rises of 1.4 percent in 2004 and 2.4 percent in 2005 despite the effect of globalization proves that the cyclical process of emerging from the recession has an important effect on prices in the medium term. In particular, it appears that the surplus production capacity of previous years that served to lower prices continued to contract in 2005.

Turning to monetary policy in 2005, after continuing to reduce the interest rate at the beginning of the year, a process that started in 2003 and persisted in 2004 as well, the Bank of Israel kept the rate at the low level of 3.5 percent from March to October 2005. It did this in the absence of clear evidence of a build-up of inflationary pressure. The picture changed in the last quarter of the year: against the background of the Bank of Israel's assessments of the probability that inflation would be above the upper limit of the target range in the course of 2006, it started to raise the interest rate, reaching 4.75 percent in February 2006.

In these conditions, the continued growth of GDP and demand in 2006, which would be reflected in further contraction of the output gap, is expected to lead to a further rise in the Bank of Israel's interest rate. This scenario emerges from the assessments crystallizing in the capital market and among the professional forecasters: while forecasts of inflation in the next twelve months indicate a return to the middle of the target range, this will require a further increase in the interest rate.

^{*} This report incorporates the Report on the Expansion of the Money Supply, in accordance with section 35 of the Bank of Israel Law, 5746– 1985. This is the case because in each month from July to December 2005 the money supply exceeded that in the preceding twelve months by more than 15 percent. The changes in the money supply are discussed in section IIc(iii) below.

Continued adherence to the fiscal targets—restricting the rise in government expenditure to 1 percent a year, maintaining a low budget deficit as planned, and persisting in the reduction of the government-debt/GDP ratio— —will help preserve the favorable financial environment that existed in 2005. Continued implementation of the planned structural reforms is also of importance, including changes in taxation in accordance with decisions taken by the government, reforms in the financial system, including the adoption of the system of market-makers for government bonds, launching repurchase agreements (Repo) and securitization transactions, as well as the reform of the payment systems by the introduction of a Real Time Gross Settlement (RTGS) system.

The major potential causes for deviation from the main forecast above are the possibility that the growth in the US and/or East Asia will start to weaken, the implications of which would be a weakening of Israel's growth too; a change in the global financial environment that would lead to the withdrawal of capital from emerging markets, Israel among them; and the economic implications of the possible aggravation of the geopolitical situation. On the other hand, there is a high probability that significant quantities of long-term capital will continue to flow into Israel if the rapid growth in the high-tech industries persists.

The Bank of Israel will continue to monitor economic developments, and will act to achieve the price-stability target, support growth and employment long term, and preserve financial stability.

Stanley Fischer

Stanley Finder

Governor, Bank of Israel

Summary

- In the second half of 2005 the Consumer Price Index (CPI) went up by a 1.9 percent (an annual rate of 3.8 percent), significantly faster than in the first half of the year (when the CPI rose by 0.5 percent, 1 percent annual rate). Thus in the whole of 2005 the index rose by 2.4 percent, in the upper part of the target inflation range of between one percent and three percent a year.
- The strengthening of the US\$ against the other major currencies, particularly against the euro, and the persistent rise of oil prices were the main immediate causes of the rise in the CPI in Israel in the period under review.
- The economy's continued recovery from the recession, expressed in strong growth for the third consecutive year, was reflected by prices: companies did not absorb increased production costs but maintained a high level of profitability. Nonetheless, surplus capacity that still exists despite its reduction moderates the rise in wages, and thus prevents upward domestic pressure on prices.
- The Bank of Israel cut the interest rate again in January and February, and then halted the process, holding the rate at the low level of 3.5 percent until September. This took place against the background of assessments that at this interest rate, inflation over a one-year horizon was expected to be at the middle of the price-stability target range.
- During the third quarter indications of the creation of upward pressures on prices became evident, and these increased in number and strength in the last quarter. The NIS depreciated, and there were signs of continued rapid growth. Although inflation expectations and forecasts were close to the middle of the target range, they incorporated expectations that a rise in the interest rate was getting closer and closer, and the extent of the expected rise kept increasing. The probability of a rise in global inflation also increased due to the rise in energy and commodity prices. These developments supported a hike in the interest rate, and at the end of the year it stood at 4.5 percent.
- In 2005 fiscal policy supported price stability both through the moderate increase in government expenditure while keeping the deficit level, enabling the public debt to fall, and via the direct effect on consumer prices of the cut in the VAT rate.
- The NIS/\$ exchange rate during the second half of the year was affected by global trends in exchange-rates and capital flows to emerging markets, inter alia. It was also affected by a number of domestic developments, some of which tended to weaken the sheqel, and others, to strengthen it. Among the former were the continued narrowing of the interest-rate differential, and the equalization of the rates of tax on investment abroad with those on domestic investments. Acting in the opposite direction were the surplus on the current account, privatization, and the attractiveness of investing in Israel's high-tech industries that gave support to nonresidents' direct investments in Israeli companies.

I. INFLATION AND MONETARY POLICY

a. The evolution of the CPI and their causes

The CPI increased by a rate of 1.9 percent (an annual rate of 3.8 percent) during the second half of 2005 (hereinafter: the period under review) which was substantially larger than the 0.5 percent (1 percent annual rate) increase in the first half of the year. Thus, for the whole year, the CPI rose by 2.4 percent which was above the middle of the inflation target range (of 1-3 percent; Figure 1). Net of the more volatile components of the index (for example, clothing and footwear and fruits and vegetables), the index increased at rates within the upper region of the inflation target range during the period under review and for 2005 as a whole (Table A.1). In terms of monthly rates of change, the relatively high level of volatility in the CPI continued but there were indications of a drop in monthly inflation inertia (Figure 2). Among the more prominent components of CPI inflation during the second half of the year (Figure 3) were the increase in housing prices (which contributed about 1.2 percent of the index's rise), the increase in the prices of fruits and vegetables (which contributed about 0.2 percent) and the price of housing maintenance (which contributed about 0.3 percent). In contrast, there was again this year a substantial decrease in the prices of clothing and footwear (which reduced the index by about 0.1 percent). The increase in the index of housing maintenance and the indexes for transportation and communication during 2005 also reflected the sharp increase in global oil prices.¹ The increase in inflation in 2005 was manifested in the increase in consumer prices in a wide variety of sectors (excluding agriculture), some of which rose by more than 2 percent (Figure 4) and also in a relatively large increase in the Wholesale Price Index (of 5.2 percent).² The increase in inflation in 2005 followed a more moderate increase last year and a decline of the CPI in 2003.

The surge in CPI inflation is the result of a combination of factors which includes an increase in the shekel/dollar exchange rate, the increase in fuel and energy prices (Figure 5) and the continuing recovery of the Israeli economy from the recent recession. The increase in the shekel/dollar exchange rate by 6.8 percent in 2005 (Figure 6), almost all of which occurred from May onward, partly reflected the strengthening of the dollar against the euro and led to price increases for imported goods and

¹ During 2005, the direct contribution of the 45% increase in world oil prices to the CPI (through the fuel, electricity and gas components) totaled about 0.6 percent.















housing. The recovery, which is in its third year and has yet to run its course, has had an effect on prices through two channels: on the one hand, the increase in product demand has enabled firms to avoid the need to absorb increases in production costs and to adjust their return on capital through the raising of prices to whatever extent possible; on the other hand, excess productive capacity which still exists is moderating the adjustment of prices as reflected both in the small increase in the GDP deflator (of about one percent relative to the third quarter in the previous year; Figure 7) and in the moderate wage hikes in the business sector. Additional factors which contributed to price stability during the period under review include: (1) fiscal policy – both through a moderate increase in government expenditure while maintaining a deficit, thus enabling the reduction of the public debt, and through the direct influence of the reduction in the rate of value added tax on consumer prices. (2) The mark-up which producers and importers charge is pro-cyclical and therefore during this period of recovery exerts upward pressure on prices. The continuing effect of globalization and liberalization processes,³ which are reflected in the larger share of tradable goods in the CPI consumption basket,⁴ continued to enhance competition⁵ and partially offset these inflationary pressures.

In view of the aforementioned inflationary pressures, monetary policy during the period under review (which is described below) utilized interest rate policy in order to achieve the inflation target. Accordingly, the interest rate was maintained at the level of 3.5 percent at the beginning of the period under review, following reductions in late 2004 and early 2005. The interest rate was raised to 4.5 percent in the last quarter of 2005 in reaction to the processes described above which were manifested in an increase in inflation expectations.

b. Monetary policy during the period under review

Monetary policy during the period under review was carried out against the background of changing trends in the economic environment. These included an increase in the actual inflation

⁵ The return on capital in the manufacturing sector indeed rose during the last two years (to almost 10 percent) in comparison to 2001-3 but is still lower than the average return on capital (of about 13 percent) recorded in the 90s.

³ Which exposed the Israeli consumer already in the previous decade to a wide variety of imported goods produced at relatively low cost in world markets, particularly in the Asian countries and especially China. The share of Israel's imports from Asia almost doubled in comparison to the early 90s and the share of the Eastern European nations has also increased at a similar rate.

 $^{^4}$ The weight of tradable goods in the consumption basket which is used to calculate the Consumer Price Index rose in 2005 from 37.63 percent to 38.33 percent.

rate to close to the upper boundary of the price stability target range from its starting point at the lower boundary at the beginning of the period; inflation expectations that remained near the center of the target range for most of the period and which incorporated expectations of interest rate increases that became increasingly imminent and larger in magnitude; the decrease in the expected real rate of interest to a low level together with the continuing expansion of real activity with the closing of the output gap; and a depreciating foreign exchange rate which ended a trend of appreciation that started in mid-2004. Based on these developments, the expectation of increasing upward pressure on prices strengthened during the period under review.

Following a policy of interest rate reductions adopted by the Bank of Israel in recent years, whereby the interest rate was reduced from 9.1 percent at the end of 2002 to a low rate of 3.5 percent in February 2005, the interest rate was left unchanged from February until September. Towards the fourth quarter of the year, in the light of increased assessments of an intensification of forces that would raise expected inflation, the interest rate was increased in each of the months of October and November by 0.25 percentage points and in December by another 0.5 percentage points, thus bringing it to a level of 4.5 percent.

Box 1

The Monetary Regime Within Which the Bank of Israel Functions

Central banks which operate within the framework of inflation targets publish periodical inflation reports as the main way of keeping policy transparent. The link between the changes in the central bank's interest rate and inflation is characterized by large lags; consequently, without an adequate explanation of policy measures the public might find it difficult to understand the reasons for them. Thus, an inflation report is not merely a review of developments but an integral part of the monetary regime. Each inflation report should therefore include information about the regime to which it refers, or direct readers to publications which contain the relevant information. This box reviews the main points of the monetary regime currently prevailing in Israel; subsequent inflation reports will contain shorter summaries of the regime, with references to the appropriate literature.

Since 1992 the Bank of Israel has determined monetary policy in the framework of inflation targets which are set by the government. The decision about the inflation targets is not anchored in law, and the targets are determined by government resolutions. From 1992 to 2000 inflation targets were set each year, generally towards the end of the year, for only one calendar year, at declining rates. Thus, the inflation target for 1992 was set at 14.5 percent, and for 2000 at between 3 and 4 percent. In August 2000 the government decided for the first time to determine a long-term target. As part of this strategy the inflation targets for 2001 and 2002 were determined, and it was also decided that

from 2003 onwards the inflation target would be between 1 and 3 percent annually, a range that was defined as price stability. That target was not set for a specific calendar year but for an indefinite period. Consequently, at any point in time policy is aimed at attaining it within the next twelve months, while permitting temporary and short-term deviations in either direction, in order to limit interest-rate fluctuations.

The policy instrument used by the Bank of Israel for attaining the inflation target is its key interest rate, which is announced each month. The public's demand for the monetary base is derived from this interest rate, and the Bank of Israel meets the demand by means of the monetary instruments available to it. These include the interest the Bank of Israel pays the commercial banks for their deposits with it.¹

The backdrop to the monetary policy is the completely free-floating exchange rate of the local currency against the basket of currencies. This was attained in the wake of the cancellation of the crawling band² in June 2005, decided jointly by the Prime Minister's Office, the Ministry of Finance, and the Bank of Israel. In effect, since mid-1997, with the exception of a few days at the beginning of 1998, the Bank of Israel has not had to intervene directly in foreign-currency trading in order to defend the crawling band, so that in effect the exchange rate evolves freely.

Within the framework of the new Bank of Israel Law, the principles of which have been accepted by the government, the objectives of the Bank of Israel will be defined such that its principal aim will be to maintain price stability in the long run, and the range of price stability will be determined by the government in consultation with the Governor of the Bank of Israel. Additional objectives of the Bank are to support the ongoing activity and stability of the financial system, and to attain other goals of the government's economic policy, especially in economic expansion and employment, provided this does not have an adverse effect on the efforts to attain the objectives mentioned earlier.

¹ These deposits are implemented via an inter-bank auction for periods of one day and one week.

² For a description of the crawling band and the changes in its characteristics over time, please see Box 3 in Inflation Report 16.



The developments in the Israeli economy this year, particularly during the period under review, were also influenced to a large extent by developments in global markets. These included the increases in the US interest rate and the expectations of continuing increases as a result of the increase in US inflation; the increase in long term yields in the US and the sharp and continuing increases in the prices of imported commodities, including those of energy.

During the period under review, monetary policy continued to work towards the achievement of price stability within the framework of the price stability target. The target range was determined by a government decision as a rate of inflation of 1-3 percent. Monetary policy worked in tandem with fiscal policy which sought to achieve a deficit target together with a relatively moderate increase in government expenditure. This made it easier for the Bank of Israel to maintain a low rate of interest in the short run which in turn provided support for continued growth. Because the government deficit was particularly low during the course of the year and as a result of the privatization that was carried out, the government's need to raise capital was significantly reduced. This development, together with the increasing confidence in fiscal policy, supported a decline in bond yields.

Monetary policy during the period under review was influenced by, among other things, the developments in the economy at the end of 2004 and the beginning of 2005. These included the moderate increase in actual prices together with a reinforcement of inflation expectations for the next year to two years near the center of the target range; stability in the foreign exchange market; expectations that the expansion in real activity did not yet embody inflationary pressures; and a decline in Treasury Bill yields as well as in nominal and real yields at all maturities. In view of these trends, the Bank of Israel reduced the rate of interest during this period such that by February it had reached a level of 3.5 percent. As a result of the continued stability in the capital and financial markets during the second quarter of the year, the Bank of Israel left the rate of interest unchanged from March until June.

Towards the end of the first half of the year, there were changes in some of the trends that had characterized the first six months of the year. The shekel's foreign exchange rate was depreciated by 4.7 percent against the dollar and exchange rate risk, as derived from the options market, increased. These developments in the foreign exchange market began primarily as a result of the strengthening of the dollar worldwide and the increased concern over possible difficulties in carrying out the Disengagement Plan. Following the depreciation towards the end of the period, inflation expectations for the short term increased to somewhat above the center of the target range while longer term expectations remained stable. Despite these changes, the Bank of Israel assessed that inflation could be expected to remain within the target range and therefore left the interest rate unchanged at 3.5 percent in July. During the month of July there was a significant improvement in the markets. Thus, the exchange rate appreciated by about one percent against the dollar although exchange rate risk continued to rise; the expectations of one-year-ahead inflation stabilized in the center of the target range; and nominal and real bond yields stabilized at a low level. These developments were accompanied by the assessment that the rate of expansion in real activity still did not embody inflationary pressures which could endanger the achievement of the price stability target. However, uncertainly







expected increase in prices in July. In addition, it was found that the level of real activity was substantially higher than previously estimated which reflected an increase in local demand. The concerns regarding an increase in future inflation were reinforced by developments in world markets, including the increased expectations of a continuing rise in the US interest rate to a level higher than previously forecast and the continuing increase in the price of oil. On the other hand, there was a large measure of stability in the local capital market, the yields on Treasury Bills remained unchanged and bond yields even declined somewhat. In view of the aforementioned, it was still too early to judge whether this development indeed indicated an ongoing process of inflation, and the Bank of Israel therefore decided to leave the level of interest unchanged in September.

still existed regarding the possible economic consequences of the approaching implementation of the Disengagement Plan although it appears that the uncertainty had lessened and in itself did not bring about a change in the view of future inflation. The developments in international markets, including the expected changes in the rate of interest and the sharp increase in oil prices, did not manifest themselves in an increase in expected inflation. In taking all these factors into account, the Bank of Israel left the

In August, there were a number of strong signs that pointed to the possibility of the creation of inflationary forces. These included increased expectations of inflation one-year ahead, as derived from the capital market, together with a larger-than-

interest rate unchanged again in August.

During the months of September and October, indications of the creation of inflationary pressure grew stronger. These included inflation expectations derived from the capital market which were above the middle of the target range and increased expectations among forecasters, as well as an increase in the range of their expectations which is an indicator of increased inflation uncertainty. It is important to mention that these expectations and forecasts of inflation embodied expectations of cumulative increases in the rate of interest of about one percentage point during the coming 12-month period, of which 0.5 percentage points were expected already in the coming quarter. The short term interest rate gap in relation to the US had declined and even became negative (Figure 8) and the exchange rate of the shekel depreciated against the dollar by 3 percent which was liable to contribute to a rise in the rate of inflation. Furthermore, the likelihood of higher world inflation increased following a rise in energy and commodity prices and the subsequent upward



adjustment of interest rates. The view that inflationary pressure existed was also supported by the level of the short term real interest rate which had fallen to 1.1 percent and was below the level compatible with accelerated economic growth and a gradual closing of the output gap. For this reason, among others, the models of the Bank of Israel also indicated that an increase in the rate of interest was needed in order to maintain price stability. These aforementioned factors led the Bank of Israel to raise the monetary rate of interest in each of the months of October and November by 0.25 percentage points to a level of 4.0 percent.

Despite the two increases in the rate of interest by an accumulated 0.5 percentage points and in the light of the increased politicaleconomic uncertainty due to the calling of early elections, the various indicators showed that inflation during the coming year was expected to be close to the upper limit of the price stability target range and even to exceed it. The inflation expectations derived from the capital market and the views of private forecasters in fact fell somewhat but continued to embody expectations of continuing increases in the rate of interest similar to those of the previous month. The shekel depreciated against the dollar by an additional 2 percent, due to, among other things, the worldwide strengthening of the dollar. Yields on indexed and unindexed bonds, which had fallen during most of the period under review. increased substantially for all maturities (by 0.5 and 0.3 percent on average, respectively). The real expected interest rate in fact increased somewhat but remained at the low level of 1.9 percent. Furthermore, the statistics on real activity for the third quarter of the year continued to indicate strong growth in the economy. The models used by the Bank of Israel also indicated that an increase in the interest rate was needed in order to achieve the one-yearahead price stability target. On the basis of these factors and the expectation of continuing increases in interest rates abroad, the Bank of Israel decided to raise the interest rate in December by 0.5 percentage points to 4.5 percent.

Following the increase in the rate of interest, there was a large measure of calm in the markets. The shekel exchange rate appreciated by about 2 percent due to, among other things, the weakening of the dollar worldwide while one-year-ahead inflation expectations declined to below the center of the target range. In addition, the fall in energy prices and the expectation that they would continue to fall were reflected in a decline in the November CPI and the downward adjustment in the forecasts of the CPIs for coming months. In light of these developments, the Bank of Israel left the interest rate unchanged in January.





II. THE ECONOMIC AND FINANCIAL ENVIRONMENT

In order to achieve its goals, the Bank of Israel monitors the development of real economic activity and the changes in the various economic indicators in the capital, financial and foreign exchange markets. In addition, it uses econometric models for the forecasting of inflation in order to assess the development of prices under various scenarios of monetary policy and economic trends. Monitoring these indicators enables the Bank of Israel to assess the reaction of the markets and its effect on expected inflation on an ongoing basis and to set the rate of interest at an appropriate level for the achievement of the price stability target for the next year to two years while maintaining stability in the financial markets.

Following is a list of indicators and a description of their movements during the second half of the year.

a. Economic activity

Developments in economic activity influence **inflation in the GDP deflator** through three main channels: the demand for goods as reflected in the output gap;⁶ the costs of production as reflected in the unit labor cost; and the cost of imported inputs which are manifested in inflation abroad and changes in the foreign exchange rate. Inflation in the GDP deflator together with the prices of imported goods (in shekels) are weighted to arrive at **inflation in the CPI**. As mentioned, the increase in the foreign exchange rate during the period in review (to be discussed in the next section) was the dominant factor affecting inflation both via the prices of imported inputs and via the prices of imported goods (in shekels).

The **business sector output gap** during the period under review and since the second half of 2003⁷ narrowed continuously– –reflecting the recovery of the Israeli economy (Figure 9). The narrowing of the output gap in 2005 was the result of a growth rate in business sector output of 2.5 to 3 percent beyond the growth in potential output and contributed (according to our estimate) about 0.5 percent to the GDP deflator this year relative to last

⁶ The output gap is the gap (in percent) between the actual output of the business sector and potential output. A negative gap indicates a slowdown in economic activity. The growth of potential output is calculated according to the level of economic activity in the absence of price and wage rigidity.

⁷ In a macroeconomic model estimated at the Bank of Israel (see Barnea and Djivre, 2004, Bank of Israel Research Department Discussion Paper 04.13), it was found that on average since the beginning of the 90s an output gap of 1 percent leads (with a gap of 1-2 quarters) to a reduction in annual inflation of the output price index of about 0.2 percent.

year. Indeed, Figure 7 shows that at the end of the first quarter of 2005, the deflator recorded a decline which had accumulated to about two percent during the previous twelve months. This trend also characterized the index in 2003 and part of 2004. However during 2005, the downward trend was halted and there was even a moderate upward movement. Towards the end of the year, the exit from the recession was also reflected in the rate of unemployment which fell to about 8.9 percent over the course of the year (as compared to 9.8 percent at the end of 2004; Figure 10).

As demand increases during the exit from a recession, producers generally raise prices at the outset only to avoid absorbing further increases in costs, but not yet to maximize currrent profits. Only at a later stage do they fully update the prices of their products. At this later stage, therefore, the increase in prices is even larger than that required by the increase in demand. The stability of the GDP deflator in 2005 indicates that firms in most of the sectors have not yet fully adjusted their return on capital. However, there was an acceleration in the rate of increase in some of the sectors' product prices (Figure 4) which was the result of both the increase in dollar imported input prices and the rise in the foreign exchange rate. This development in fact is evidence that producers this year no longer absorbed the increases in production costs.

Box 2

The Real Interest Rate at Steady-State Equilibrium: the Natural Rate of Interest

Real interest rates are determined by many factors, including technological changes which affect total factor productivity (TFP), demographic changes, shifts in the public's preferences for current vis-à-vis future consumption (time preferences), and interest rates abroad. They also depend on fiscal and monetary economic policies. Within the framework of its monetary policy, the Bank of Israel responds to deviations of inflation and inflation expectations from the long-term (price-stability) target. The short-term interest rate is set according to these deviations, as a deviation from the long-term interest rate, i.e., from the "natural rate of interest"—the rate that is consistent with the price-stability target. Hence, in order to achieve the objectives of monetary policy, the Bank of Israel must take into account, as part of the range of indicators, changes in the natural rate. There are various views regarding the characteristics of this natural interest, which, as stated, serves as a cornerstone of the monetary interest rate. One view is that it is the long-term real interest at steady-state equilibrium, characterized by full employment and constant real growth rates. This box discusses theoretical and empirical aspects associated with this interest rate.

Most of the indicators of economic activity show that Israel's economy is on a path of emergence from the recession that prevailed until mid-2003, and that it is experiencing rapid growth. Therefore, assuming there are no negative shocks, it is expected in the near future to attain a situation of full

employment with sustainable growth. In the framework of this process, two questions arise: what is the level of real (natural) interest which is expected to prevail in Israel as it converges towards this equilibrium? And how far away from that level is the current interest rate?

Israel's economy is a small and open one, with efficient money and capital markets, no administrative restrictions on international capital flows, and a floating-exchange-rate regime. In this framework, investors in Israel and abroad compare the yields on their financial investments in foreign markets with those on their investments in Israel. If a financial market is found that provides a better yield on investment, capital will flow into that market until the advantage of investing there disappears. Since in the short run these yields depend on the interest on financial assets, the differential between domestic and foreign interest rates has assumed greater importance in investors' investment decisions and the decisions of monetary-policy-makers. In the short run the continued existence of the interestrate differential depends on differences in inflation rates between the countries, expected changes in the exchange rate, and the degree of each country's economic stability as expressed in its risk premium. At steady-state equilibrium, however, where on average (the expectancy of) the real exchange rate remains unchanged,¹ the difference in inflation rates between countries becomes equivalent to the expected changes in the exchange rate.² This leads to the result that at this equilibrium, the principle applies that Israel's real interest rate at steady-state equilibrium is identical with the interest rate in financial markets abroad *plus* the risk premium for the risk inherent in investing in Israel. Any deviation from this equilibrium will cause domestic and foreign investors to respond in such a way as to restore the interest rates' equality. Hence, at steady-state equilibrium, the domestic interest rate, r, will satisfy the following equation,

 $(1) r = r^f + pr,$

where r^{f} is the long-term real interest rate abroad, and pr is the risk premium.

Although the risk premium does change from time to time, from a long-term point of view, especially in steady-state equilibrium, it may be assumed to remain constant. According to the insurance premiums that Israel has to pay on the international markets to hedge 10-year credit risks, this premium has averaged about 0.7 percentage points in the last two years.³ Thus for the calculations below, it was assumed that pr = 0.7.

Since Israel's economy is small, it is reasonable to assume that decisions about capital flows into and out of Israel have no effect whatsoever on the interest rate, r^{f} , in foreign markets, so that it serves as an anchor for the domestic interest rate, r.

In order to examine long-term interest rates abroad, Figure a gives the real yields on 10-year bonds in the US, the UK, and Israel in the period from 1992 till today. It can be seen that real long-term yields in the US and the UK declined to a new level in 1999. In the UK 10-year yields dropped from an average of 3.5 percent up to 1998 to about 2.2 percent subsequently. In the US there was a sharp decline

¹ An economy with a technological advantage of the tradable segment compared to the nontradable, may undergo an extended period of real appreciation. An estimation made by Djivre and Ribon (Bank of Israel Research Department Discussion Paper 00.09, 2000) shows that Israel has indeed been characterized by a technological advantage of this kind since the 1990s, and this has been expressed in an annual rate of real appreciation of 0.7 percentage points

² The regime involving a floating exchange rate within a crawling band that was introduced in Israel in 1992 was based on this principle.

³ Since the beginning of 2004 the risk premium has been between half a percentage point and one percentage point.

in real 10-year yields⁴ from an average of 4.4 percent in up to 1998 to an average of 3 percent up to 2002, and a further decline to an average of 2 percent from 2003 till today. In Israel, on the other hand, the real yield on *Galil* 10-year bonds showed an upward trend, from about 3 percent at the beginning of 1992 to 5–6 percent in 1998. Subsequently the yield stabilized at an average of 5 percent, starting to decline in 2005.

A similar picture to these developments in long-term yields in the UK and Israel may also be identified in future 5-year yields to be expected in five years, derived from the yields on 5- and 10-year bonds (Figure b). Since these yields are less sensitive to short-term effects and monetary policy, this indicates that the developments in long-term yields stem primarily from the long part of the term structure (i.e., from medium- and long-term developments or on the public's assessments of them, rather than from short-term developments or current monetary policy in the UK and Israel). This distinction is important for identifying yields which are maintained at long-term equilibrium and neutralizing a decline in yields which stems from short-term factors Nonetheless, between 2001 and 2003 the UK and US markets were slack, as expressed in the decline in the growth rates in those countries, and this slackness may have affected the decline in long-term yields. In view of these findings, we chose the yields between 1999 and 2001 as representing those likely to prevail at steady-state equilibrium. Thus the real long-term yields expected at steady-state equilibrium in Israel (in accordance with equation 1) will be between 2.9 and 3.7 percent (after adding 0.7 percentage points for the risk premium).

Since international capital flows are highly sensitive to Israel's political and geopolitical environment, there is a low but not negligible likelihood that a high level of uncertainty regarding investment in Israel will fully or partly prevent capital flows to Israel from balancing interest rates

in Israel and abroad. The question which then arises is, what will be the level of the interest rate at steadystate equilibrium in an economic environment where the interest rate abroad is not an anchor for the domestic interest rate? In this case the interest rate and capital stock will be determined such that the interest rate will be equivalent to the marginal product of capital and the rate of consumers' time preferences between current and future consumption.⁵ Since in this case the restriction on capital flows is effective, it reduces the supply of capital available to the economy and acts to raise the marginal product of capital (relative to the situation with free flows of capital), and hence the real interest rate will also be higher in this instance.⁶

To summarize, it can be assessed that at steadystate equilibrium Israel's real long-term interest rate is between 2.9 and 3.7 percent, and will be higher if there



⁴ The real yields in the US were calculated on the basis of nominal yields and the inflation rate there.

⁵ According to Solow's neo-classical model, this case would lead to equilibrium in which the interest rate is affected positively by the rise in productivity and the labor supply, and negatively by the rise in the saving rate.

⁶ We calculated the real interest rate at steady-state equilibrium for an economy with limited capital flows, under the neo-classical assumptions regarding the production function and using average values found in western economies and in Israel for the saving rate, the amortization rate, the growth rate of the labor supply, and the rate of increase of labor productivity. The calculation yielded an estimate of the real long-term interest rate of 5.4 percent.

are restrictions on international capital flows. A higher risk premium (than that assumed above) on investment in Israel will also raise the real interest rate. The average expected real interest on 5-year bonds in Israel 5 years hence was 3.8 percent at the end of 2005 (Figure b), at the upper end of the range of yields obtained for steady-state equilibrium. Assuming that expected inflation in Israel will remain at the mid-point of the inflation target range (i.e., 2 percent), the nominal long-term interest rate will be between 4.9 percent and 5.7 percent. Nominal short-term interest, including the Bank of Israel's key interest rate, which is derived from this nominal interest rate, depends on the term structure of yields prevailing in the economy (which connects long- and short-term interest rates), a structure which is affected by short-term factors.



These short run developments in the output gap and unemployment reflected the relatively rapid growth of GDP and of **business sector output** during the last two and a half years (Figure 9). Aside from the first quarter of the year, there have been 8 continuous quarters of high growth rates of 6-9 percent in business sector output. This continued in the second half of 2005 during which GDP and business sector output grew by 5 and 6.7 percent, respectively. Growth this year, as opposed to last year, was based on the increase in domestic demand in addition to exports. To the extent that growth in economic activity is based on local demand, the pressure on prices is greater. The absence of negative macroeconomic developments in the markets abroad, the success of the Disengagement process and the relatively calm security situation-reflected in the substantial increase in incoming tourism, among other things⁸—have created a strong foundation for recovery and convergence to full employment equilibrium. The **Companies Survey** also shows that activity in the business sector continued to expand during the last quarter of 2005 at a rapid rate (though slower than in the third quarter). Most of the other indices in the Companies Survey also indicate a rapid expansion of activity: Firms in the **manufacturing** sector reported a continuing expansion of production in the last quarter of 2005 and an increase in orders from local and foreign markets in the first quarters of 2006; there was a continuation of the increase in the sale of services in Israel and in markets abroad;

⁸ During the first ten months of 2005, an increase of 12 percent was recorded in hotel occupancy (the figure for Israeli tourists remained stable while the figure for foreign tourists grew by 42 percent).

and there were optimistic forecasts of hotel occupancy by tourists in the first quarter of 2006 and of orders for **transportation and communication** services (despite the slowdown in the sale of services in this sector at the end of 2005). The **leading index** of the *Companies Survey* points to an increase in the activity of the business sector in the first quarter of 2006.

Figures on **business sector product** indicate that there was rapid growth in the second half of 2005 (similar to that in the first half), particularly in the output of the financial and business services sectors. It is possible that these figures point to structural change in the Israeli economy involving an increase in the share of services in business sector output. This trend can be seen in the export figures for last year which showed that the growth in exports was principally due to the increase in the export of services. Similarly, the fact that the rapid growth in business sector output this year was not accompanied by a significant increase in imports is also an indication of this trend (since the service sectors use relatively less imported inputs). The index of manufacturing product showed a substantial increase of about 6.3 percent in the third quarter of 2005 following a slowdown in the first half of the year. The recovery of the economy has not yet been felt in the construction sector. The demand for housing services continued to shrink this year but this was primarily due to the decline in public construction in contrast to the recovery in private construction. The results of the Companies Survey indicate a decline in the activity of this sector in the last quarter of 2005 and expectations of a further decline in the first quarter of 2006. The number of housing starts also remained lower than that derived from the rate of growth in the number of households. On the other hand, since the beginning of the year, there was an increase in the sale of new housing units and a decline in the stock of housing for sale. The figures for investment in housing showed an decrease of 0.4 percent during the period under review (similar to that during the first half of the year) following a sharp decline last year. The developments in this sector have a significant effect on short term inflation since housing prices have a large weight (about 20 percent) in the CPI. The apparent increase in the demand for housing services this year along with the decrease in the supply of new housing for sale (due to the slowdown in the rate of construction) is liable to accelerate the increase in the prices of housing services and of housing itself which until now had been relatively moderate due to the recession. The change in the foreign exchange rate was the dominant factor determining the influence of the price of housing services on the CPI during the period under review.

Figure 11 **The Electronics Industry: Israel's** Exports, and US Trade, 1996-2005 260 240 Israel's export 220 index 200 180 160 140 120 Weighted index of US trade 100 80 96 97 98 99 00 01 02 03 04 05 SOURCE: Israel's exports based on Central Bureau of Statistics data; US data-United States International Trade Commission



There was an increase of 3 percent in **domestic uses**⁹ during the second half of 2005, following an increase of 4.7 percent in the first half. Private consumption grew faster than in the first half of the year (about 4.7 percent compared to about 4.2 percent). Despite the successful implementation of the Disengagement Plan, there was a slowdown in the rise in domestic public consumption during the period under review—an increase of 2.3 percent (relative to 2.6 percent in the first half of 2005). Domestic gross investment grew in 2005 by a rate of about 5.6 percent which primarily reflected the increase in inventories while investment in fixed assets rose this year by only a moderate rate. Exports recorded a moderate increase of about 4 percent during the period under review. This followed the slowdown in export growth during the first half of 2005 relative to 2004, when exports led the economy's growth. This trend in Israel's exports during the period under review and for the year as a whole is consistent with the trend in US trade figures for the electronics sector (Figure 11). The slowdown in this year's upward trend may reflect the slowdown in the growth of world trade in 2005 (Figure 12).

As mentioned above, inflation is also influenced by production costs which are in turn affected to a large extent by the cost of wages as determined in the labor market. This year, the rapid rate of growth was also manifested in the figures for the labor market. This market was characterized during the period under review by an increase in employment together with a sharp increase in the proportion of fulltime employees. The total number of Israeli employees rose by about 3.9 percent (following a similar increase in the first half of the year). The total number of workers from the territories employed in the business sector also grew while in contrast the number of foreign workers fell in the third quarter. At the same time, the rate of employment passed the 50 percent mark (Figure 10) and there was a decline in the rate of unemployment. Following an increase in the labor force participation rate in the first half of the year, which is characteristic of periods of recovery and which led to somewhat of a slowdown in the rate of decline in unemployment, the participation rate stabilized at a level of about 55.2 percent of the civilian labor force during the period under review. About 60 percent of the new workers in 2005 were absorbed in the business sector – more than two thirds of them in the service and commerce sectors. Employment also increased in the public sector following a decline last year

⁹ The rates of change in this paragraph are all annualized.

(Figure 13). At the same time, the real wage per employee post rose by 2.1 percent (1.6 percent in public services and 2.3 percent in the business sector) relative to the previous year. These trends, along with the increase in worker productivity, were reflected in the stabilization of nominal unit labor cost (Figure 14) following a downward trend during the previous two years. The index of productivity (output per employee post) increased during the first three quarters of 2005 by about 6.6 percent while the nominal wage per employee post increased by only 5.1 percent during the same period. Therefore, increases in salary costs (less productivity increases) during the period under review have not yet led to inflationary pressures though in contrast to previous years neither have they declined significantly.

Fiscal policy: Despite the cost of the Disengagement and the statutory reduction of tax rates in Israel, the government has maintained a contractionary fiscal policy during the last two years (which was aimed at gradually reducing the share of the public sector in output) by maintaining the limit of a one percent increase in real public expenditure and the cap on the budget deficit. This policy provided direct support for the achievement of price stability by controlling public expenditure and limiting the government's need to raise capital (which works to reduce short term yields) as well as indirect support through the reduction of the public debt (which works toward the reduction of the long-term interest rate). The implementation of the budget this year was compatible with an annual deficit of 1.9 percent of GDP (which is below the target of 3.4 percent; Figure 15). In order to assess the influence of the developments in the public sector deficit on the long term rate of interest, and through it on inflation, cyclical changes¹⁰, which are temporary in nature, must be discounted from the deficit. Fiscal restraint was indeed indicated by the decrease in the cyclicallyadjusted deficit of the public sector this year to 0.3 percent of potential output (as compared to 1.4 percent last year and 1.7 percent in 2003). Domestic expenditure (net of credit) was lower than the seasonal path of budget expenditure planned for 2005 but was higher in real terms by about 2 percent than during the same period last year. Due to the acceleration in the collection of taxes in the third quarter of 2005, the government will apparently meet the forecast tax revenue. This is the net result of higher than forecasted revenues from the taxation of labor and a decline in the revenues from consumption taxes (including the effects of statutory tax reductions).

Figure 13 **Percentage Increase in the Number** of Employed Israelis, by Industry, to September 2005 (last four quarters vis-à-vis equivalent period previous year) % 16 12 9.9 8 64 4.0 4 3.2 1.9 0 -1.2 Conmerce and Venier of the Transport and communication Holds and catering Business services Agriculture

SOURCE: Labour Force Surveys.



¹⁰ Thus, for example, tax revenues decline during a recession and increase during a boom.

Figure 15 The Government Deficit (percent of GDP), Targets and Actual,^a 1997-2006 % 7 Deficit target 6 Actual 5.6 5 4.4 4.0 4 3 2 0 98 99 00 01 02 03 04 05 06 97 ^a From 1997 to 2000 the government deficit ceiling included Bank of Israel profits. From 2001 the ceiling relates to the actual government deficit (excluding Bank of Israel profits) SOURCE: Based on Bank of Israel Annual Reports.



As a result of these developments, the domestic financing required by the deficit was about NIS 9.5 billion less than forecast in the budget and as a result the net capital raised domestically in 2005 will even be negative. In this context, it is worth mentioning the surplus of NIS 4.5 billion in revenues from privatization (of Bezek, Discount Bank and Bank Leumi) relative to the budget forecast all of which was used to reduce public debt. This budget policy worked effectively toward the achievement of policy targets and resulted in the reduction this year of the public debt to about 101.6 percent of output (as compared to 105.2 percent last year and 106.2 percent in 2003). The government debt also dropped from 103 percent of output last year to only 99.6 percent this year. In this way, policy credibility was maintained which was reflected in the decline of the future yield on 4-year bonds 5 years hence which is derived from the yields on indexed bonds for those periods (Figure 16).

b. Developments in the exchange rate and the activity of various sectors in the foreign currency market

(i) Changes in the exchange rate and its level of risk

During the period under review the shekel depreciated by about 0.7 percent against the dollar and appreciated by about 0.4 percent against the currency basket (Figure 6). The trend of the shekel's foreign exchange rate against the dollar was not uniform during the period under review and was determined primarily by the global trends in foreign exchange rates. Thus, when the dollar weakened worldwide it also weakened against the shekel and conversely when it strengthened (Figure 17). The strengthening of the dollar worldwide during the period September-November was influenced by, among other things, the increase in long term yields in the US which, together with the decrease in global liquidity, led to a slowing of the flow of international investment to the emerging economies. This development was manifested in a significant slowdown in investment by foreign residents in traded securities on the local stock exchange following an unprecedented volume of investment in the first half of the year.

Apart from these trends, the foreign exchange rate during the period under review was influenced by a number of local factors, some of which worked to weaken the shekel while others worked to strengthen it. The main factors in the weakening of the shekel were the narrowing of the interest-rate differential (Figure 18) and the tax reform, which supported the continued export of capital by local residents, and factors related to short term uncertainty, the most important of which was the Disengagement whose influence

was felt primarily at the beginning of the period. The main factors in the strengthening of the shekel were the surplus in the current account and a number of developments with long term effects that provided support for the continuation of direct investment by foreign residents in Israeli companies. The latter included the expansion of real economic activity, which was reflected in, among other things, the improvement in firms' financial reports; the improvement in the security situation, the strengthening of confidence in the management of macroeconomic policy as a result of the government's perseverance in maintaining a downward path for the deficit and in the implementation of reforms and structural changes in the capital market and the confidence in monetary policy; and the surplus of external debt assets and the stability in their composition. The continuation of direct investment along with the surplus in the current account partially offset the processes that encouraged the export of capital by Israeli residents.



Box 3

The Connection Between Monetary Policy in Israel and in the US

Can monetary policy in Israel, which is a small, open economy with a floating exchange rate, extensive capital flows, and high passthrough between the exchange rate and inflation, be conducted separately from monetary policy in the US? This question has assumed particular importance recently, in view of the correlation that has emerged between domestic and US interest rates. It is no accident that the discussion focuses on the US interest rate; it stems from the pre-eminence of the dollar in capital flows to and from Israel, and from the intensity of its effect on prices in Israel.

The link that has existed of late between interest rates in Israel and the US is due inter alia to the relatively large correlation between the situations of the two economies in the business cycle. Against the backdrop of these developments it has been claimed that the US interest rate should serve as an anchor in determining Israel's interest rate, thereby diminishing the importance of having an independent monetary policy. Although many economists adhere to this view, it is nonetheless mistaken in several respects. First, in spite of the relatively high correlation currently prevailing between the situations of the two economies in the business cycle, circumstances may arise which require a different monetary policy in Israel from that in the US—because Israel has some unique characteristics, especially the high passthrough between the exchange rate and inflation. Thus, for example, in the case of steep local-currency appreciation—such as might occur in the wake of increased investment by nonresidents in the domestic stock market following a global trend of investment in emerging markets—it might be necessary to reduce interest rates in order to attain the price-stability target, even if the interest rate continued to rise in the US. Second, there is no guarantee that the correlation in the business cycle will persist, and so it is very important to maintain the ability to conduct an independent monetary policy in the case of a lack of correlation. However, if there was a discrepancy in the location of the

two economies in the business cycle, it could become difficult to conduct a different monetary policy, especially due to constraints arising from capital flows. Thus, for example, there could be a slowdown in real activity in Israel, requiring the lowering of the interest rate, alongside the expansion of such activity in the US, as a result of which the Fed would raise the interest rate. On the one hand, expansionary monetary policy in this situation would increase apprehensions of accelerated capital outflow, leading to accelerated local-currency depreciation against the backdrop of the narrowing of the interest-rate spread—apprehensions which become greater as the spread narrows—at a time when Israel cannot be said to be benefiting from long-term capital inflows, because of the low level of attractiveness of the domestic capital market. Nevertheless, nominal local-currency depreciation in this scenario could help to attain the price-stability target. On the other hand, tight monetary policy involves a heavy economic price because it could exacerbate the recession. Moreover, a nominal depreciation of the shekel in such a scenario could help achieve the price-stability target.

Beyond the issue of the correlation between the two economies with respect to monetary policy, the level of the interest-rate spread between Israel and the US should be consistent with Israel's relative risk level. Throughout the last decade we have seen how similar levels of interest-rate spreads have led at different times to differing extents and even divergent directions of capital flows, giving rise to different developments in the exchange rate. The main explanation for the differences in the impact of the interest-rate spread lies in risk-factor developments in Israel at different periods, due mainly to the geopolitical situation, the credibility of macroeconomic policy, and its correspondence with the background conditions. Developments in these factors affect the assessment of Israel's risk by foreign investors, and this, together with the relative attractiveness of the domestic capital market, constitutes an important consideration in the readiness to invest in Israeli firms. Past experience in Israel and other emerging economies has shown that this high level of investment makes it possible to maintain a relatively low interest-rate spread without creating pressures for accelerated local-currency depreciation. Moreover, the greater involvement of international financial elements in the foreigncurrency market and the domestic financial markets in recent years has led to a rise in the relative effect of global developments in exchange rates and the financial markets on the management of domestic exchange rates. Thus, for example, uneven development in the trend of investment by international investors in emerging markets in 2005 led to uneven developments throughout the year in investments by nonresidents in the domestic capital market, despite the fact that Israel's basic economic variables remained substantially unchanged throughout the period. Hence, apart from adapting the level of the interest-rate spread to risk factors in the economy, it is necessary to adapt it to the background conditions in global financial markets.

In conclusion, Israel's monetary policy cannot be maintained without regard to US monetary policy, but it need not run in tandem with it.

The trend in foreign exchange rate risk, which is measured by the implicit standard deviation in shekel-dollar options traded overthe-counter and on the stock exchange, was not uniform during the period under review (Figure 19). Thus, at the beginning of the period there was a continuation of the upward trend in exchange rate risk, which began in early May against the background of the increasing uncertainty surrounding the Disengagement Plan. The increase in the level of risk that characterized all local financial markets was manifested primarily in short term contracts and therefore market players viewed the uncertainly as a short term phenomenon. With the resolution of the uncertainty, exchange rate risk declined moderately and leveled off at an average level of 5.5 percent. The stabilization of the shekel's exchange rate risk at a low level relative to other currencies is particularly significant in view of the structural changes that have taken place in recent years in the foreign exchange market. These include primarily the adoption of a more flexible exchange rate regime and the completion of the liberalization process which provided a foundation for the increase in risk to levels which exist in developed countries.

(ii) Analysis of the activity of various sectors in the foreign exchange market

The analysis of the activity in the foreign currency market is based on the segmentation of market players according to the characteristics of their activity and the considerations that they take into account. It can be assumed that foreign residents who manage global investment portfolios react to global financial developments more rapidly and with greater intensity than Israeli residents. The assessment of the various forces affecting the exchange rate will allow us to understand its movements and thus to evaluate its influence on inflation. The activity of **Israeli residents** in the foreign currency market during the period under review was influenced by a number of local factors: the narrowing of the interest rate gap, the tax reform and short term factors of uncertainty, particularly the Disengagement Plan.

The narrowing of the interest rate gap, which began in 2003, primarily affected the business sector which since then has substantially increased its surplus of assets in foreign currency, primarily through the redemption of credit and accumulation in foreign currency accounts. The analysis of patterns of activity in this sector over time shows that when substantial pressure for a depreciation of the shekel originates from sectors other than the business sector, the business sector behaves as a stabilizing agent in the market in that it satisfies most of the demand for foreign currency as the exchange rate rises. Evidence of this can also be seen in the sector's behavior during 2005. Thus, the purchase of foreign currency by the business sector during the period June-December, during which the trend in the shekel was generally one of depreciation, was substantially lower than during the months January-May, during which the shekel traded within a limited

Figure 18 The NIS/\$ Interest-Rate Differential and the Long-Term Yield Gap, June 2000 to December 2005











horizontal range, and during part of the period it even switched to the sale of foreign currency even though the interest rate gap remained small (Figure 20).

From the beginning of 2005, the rates of taxation on investment abroad were equalized to those on domestic investment households, mutual funds and some institutional investors (i.e. provident funds and pension funds). The main influence of this step, which was meant to encourage these investors to increase their investments abroad, was on institutional investors, who indeed increased the proportion of their investments in foreign assets by 3.5 percent since the beginning of the year. This was part of their long term strategy to increase the international diversification of their investment portfolio (Figure 21). However, the rate of institutional investment abroad, which is currently 7.2 percent, is relatively low compared to the developed countries, even taking into account home bias. The implication is that the transfer of investment abroad will continue in the future. The flow of institutional investment abroad was not uniform over the course of the year and was influenced by a number of factors. These included the attractiveness of the local capital market relative to foreign markets, the expectation of developments in the foreign exchange rate and the reorientation of the system towards investment abroad.

During the first few months of the year, there was only a weak reaction among households to the narrowing of the interest-rate differential and to the tax reform. Starting in June, households accelerated their purchase of foreign currency. The motives for the purchase of foreign currency changed over the course of the period under review as can be seen from the instruments used. Thus, during the month of June purchases of foreign currency increased mainly through accumulation in mutual funds that specialize in reducing foreign exchange risk and in foreign currency deposits. This was apparently due to the uncertainty surrounding the Disengagement Plan and the expectation of a weakening of the shekel following the global strengthening of the dollar. Later on in the period under review, households primarily increased their investment in mutual funds that specialize in foreign securities while reducing investment in funds specializing in the reduction of exchange rate risk. This was apparently in order to increase the international diversification of their investment portfolios following the tax reform which increased the relative profitability of investment in foreign securities.

The activity of **foreign residents** this year focused on long term instruments with a low volume of activity in short term instruments relative to previous years. In general, the rate of long term investment by foreign residents slowed relative to the first half of the year. Long term investment by foreign residents totaled about \$3.8 billion in the second half of the year as compared to about \$5 billion in the first half. However, changes in the components of the investment were not uniform (Figure 22). On the one hand, direct investment by foreign residents in Israeli companies continued as a result of the improved performance of the economy. The volume of investment was unprecedented despite a number of large profit-taking transactions. On the other hand, there was a reduction in the flow, and even an outflow, of investment by foreign residents on the local stock exchange during the period which was part of the slowdown in the flow of international investment to emerging economies.

In summary, the decline in the import of long term capital into the economy which was one of the main factors in the relative stability of the shekel's exchange rate in the first half of the year led to the increase in the relative influence of short term factors on the foreign exchange rate, particularly the narrowing of the interest rate gap and the global trends in the cross-exchange rates of the dollar.

c. Indicators of monetary and financial developments

(i) Indicators of expected inflation

Expected inflation is an important variable in the determination of monetary policy for two main reasons: First, expected inflation influences the development of actual prices through firms' price adjustment mechanisms and the determination of wages in the labor market. Since the adjustment of prices involves a cost for suppliers of goods and services, they do not update prices on a continuous basis. Therefore, when they do update prices they also take into account the expected future increase in prices during the period in which they will not be adjusting prices. Second, the influence of the monetary rate of interest on prices is partly expressed with a lag and therefore decisions regarding the rate of interest are made with a view to the future, that is, they take into account the expectations and forecasts of future inflation.

The **inflation expectations derived from the capital market**, which are measured by the difference in yields between unindexed securities (Treasury Bills) and CPI-indexed Galil bonds, were for most of the period under review near the center of the target range (Figure 23). While in July and August expectations stood at 2.1 percent, they rose in September to 2.5 percent. This occurred simultaneously with the depreciation that occurred following the global strengthening of the dollar and the increase in political



Direct investments

Public issues abroad

2003 2004 2005 1/2005 11/2005

Investment in shares on the TASE

-1,000

2002

SOURCE: Bank of Israel.





SOURCE: Private forecasters' reports and the Bank of Israel Monetary Department.

uncertainty due to the implementation of the Disengagement Plan. In the last quarter of the year, with the increases in the Bank of Israel interest rate, expectations gradually declined to the center of the price stability range. However, the expectations still incorporated the view that there would be additional increases in the interest rate amounting to about one percent during the coming year. The reduction in inflation expectations to the center of the price stability range following the increases in the interest rate provided evidence of public confidence in the commitment of the Bank of Israel to achieving the inflation target. In other words, the public held the view that the Bank would take the necessary steps to achieve the target if inflationary pressures appeared. During December, expectations continued to decline to an average level of about 1.7 percent.

The one-year-ahead inflation expectations of private forecasters¹¹ stabilized during the year near the center of the price stability target range. During the period under review their forecasts remained within the boundaries of the target range while the spread of the forecasts, which serves as an index of inflation uncertainty, narrowed relative to the first half of the year and never exceeded 0.8 percent (except in December; Figure 24). The forecasters' inflation expectations at the beginning of the second half of the year were accompanied by expectations of interest rate increases during the coming year at a cumulative rate of up to about one percent. However, the forecasted timing of the increases was delayed from month to month several times until October when the Bank of Israel began raising the rate of interest. In December, when the rate of interest had been raised by a cumulative rate of one percent, the average of their inflation expectations fell while the range of the forecasts increased to one percentage point. These forecasts were accompanied by expectations of additional increases in the rate of interest during 2006 at a cumulative rate of about 0.7 percentage points.

The **one-year-ahead inflation expectations from the Companies Survey**¹² increased on average during the year to 2.6 percent at the end of the fourth quarter, similar to the level in the third quarter, compared to 2.1 percent in the first quarter. The increase in the average of the expectations was accompanied by a substantial increase in the proportion of firms which expect that inflation in the coming year will be above the upper boundary

¹¹ A sample of seven forecasters from the financial sector, mainly banking.

¹² The Bank of Israel Survey of Companies asks those surveyed what their forecast of inflation is for the next 12 months. The answers for each quarter are submitted during the last two weeks of the quarter and during the first week of the following quarter. The number of answers to the question relating to the forecast of inflation varies from 500 to 600 in each survey.

of the price stability range. This proportion reached 18 percent during the fourth quarter in comparison to 14 percent in the second quarter. Seventy-eight percent of the firms surveyed expected that inflation during the coming year would be within the range, while 4 percent expected it to be below the lower boundary of the range (Figure 25).

The **expectations of inflation for more than one year** (2-9 years), which are measured by the yield spread between unindexed Shahar shekel bonds and indexed Galil bonds, moved within the upper portion of the price stability range during the period under review as compared to the first half of 2005 when medium and long term expectations were somewhat above the upper boundary. The short term (2 to 3 years) and medium term (4 to 6 years) expectations increased during the third quarter to 2.7 and 3.0 percent, respectively, and towards the end of the year declined to 2.1 and 2.6 percent, respectively. Long term expectations (7 to 9 years) declined somewhat to an average rate of 2.9 percent (Figure 26). We would mention that the measured expectations include an inflationary risk premium which can reasonably be assumed to increase with the term of the expectations.

The econometric models developed by the Bank assist in the assessment of expected inflation and the determination of the rate of interest required to achieve the inflation target. Models, which are an accepted tool used by almost all the central banks in the world for economic analysis and forecasting, are used by policymakers to build forecasts that are conditional on the alternative assumptions of the future paths of a variety of variables. The models are based on the theoretical relations between the relevant variables and thus provide a structured and convenient framework for analysis. However, models are not necessarily appropriate for all economic situations and developments, particularly when the economy is undergoing considerable and unexpected changes. Therefore, the models constitute only one of the tools used in assessing expected inflation alongside other tools of analysis and the use of judgment in the evaluation of all the relevant indicators combined.

During the period under review, the models showed that the actual Bank of Israel rate of interest was lower than that required to achieve the inflation target and indicated the need for an increase. There were two main reasons for this: first, the depreciation and increase in import prices (particularly energy prices) which led to an increase in inflation expectations during the third and fourth quarters beyond the seasonal increase that was compatible with the achievement of the target and second, the fact that the Bank of Israel rate of interest was lower than that

Figure 25 Probability of Being Within the Inflation Target Range in a One-Year Horizon, from the Bank of Israel Companies Surveys, 2003–05 (percent of respondents)









which was compatible with price stability in the long run ("the natural rate of interest").

(ii) Additional indicators from the capital market

The yields on Treasury Bills, which fell during the first half of 2005 following the reduction in the rate of interest during the first few months of the year, and the one-year-ahead expectations during the same period of moderate increases in the rate of interest stabilized at the end of the period at the low levels of 3.7 percent in the short term and 4.1 percent in the long term (Figure 27). During the third quarter, the Treasury Bills yield curve shifted upward along its whole length and its positive slope increased, thus expressing expectations of an increase in the rate of interest by the Bank of Israel both in the short run and one year ahead. During the last quarter of the year, when the monetary rate of interest was raised, the yields on Treasury Bills for all maturities rose by about one percent and the slope of the curve embodied expectations of additional increases in the rate of interest at a cumulative rate of 0.7 percent during 2006, primarily during the first half of the year.

The **yields on unindexed Shahar bonds**¹³ fell during the first half of the year at all maturities, particularly in the medium and long term, thus reducing the positive slope of the curve. The decline in yields occurred during the first few months of the year, simultaneously with the reductions in the monetary rate of interest. This occurred again towards the end of the period following the expectation of a reduction in the issue of government bonds due to the relatively large privatizations implemented and the decline in long term US bond yields during the same period. During the third quarter, long term yields declined somewhat while short term yields increased somewhat. The increase in short term yields was accompanied by an increase in inflation expectations and the expectations of an increase in the monetary rate of interest. During the fourth quarter of the year, yields increased at all maturities, a trend which strengthened in mid-November as a result of expectations of additional increases in the Bank of Israel rate of interest. These expectations stemmed from the continuing increase in US yields and the political-economic uncertainty as a result of the calling of early elections. Short term yields reached

¹³ The nominal and real yields on bonds are calculated using the zero curve method or in other words according to a zero coupon yield curve. These curves are presented in Figures 11 and 12. For a description of the method, see Zvi Wiener and Elena Pompushko, "Deriving Smooth Zero-Yield Curves from Bond Market Data", Monetary Department, Bank of Israel, unpublished memorandum forthcoming as a discussion paper, 2006.

5.2 percent at the end of the year and long term yields reached 6.3 percent (Figure 28).

The yields on CPI-indexed bonds fell during the first quarter of the year at all maturities. In the short term, they fell by one percent and in the long term by 0.3 percentage points. Thus, the positive slope of the yield curve increased which is an indication of monetary expansion. During the second quarter, short term yields rose somewhat while long term yields remained almost unchanged. Thus, the slope of the yield curve decreased. As a result of the reduction in the issue of bonds by the government and the increase in demand due to, among other things, the large volume of bond redemptions at the end of the first half of the year and against the background of Israel's low risk premium, the real yields at all maturities fell by 0.4 percentage points. Thus, long term yields fell to the low level of 3.4 percent (Figure 29). In the fourth quarter, with the increase in short term yields as a result of the hikes in the rate of interest by the Bank of Israel, the decrease in inflationary risk as perceived by the public and the increase in medium and long term yields resulting from increased uncertainty in the markets, the curve flattened which was an indication of monetary restraint.

The **real rate of interest expected on Bank of Israel funds** is derived from the difference between the Bank of Israel rate of interest and the one-year-ahead expectations of inflation and is viewed as an indicator of the extent of monetary restraint. The real expected rate of interest fell from 2.7 percent at the end of 2004 to 1.8 percent at the end of the first half of 2005. In the third quarter of the year, the rate of interest continued to fall to the low level of 1.1 percent which was totally due to the increase in expectations. Towards the end of the year, the real expected rate of interest reached a level of 2.8 percent as a result of the increases in the Bank of Israel rate of interest and the fall in inflation expectations during that same period (Figure 30). The low level of the real rate of interest was possible due to the stability of prices and the stability in the financial markets and was a contributing factor to the expansion of economic activity.

(iii) Money and credit aggregates and the public's asset portfolio

The **means of payment** expanded during the year by about 23 percent which was a continuation of the 18 percent expansion in 2004 (Figure 31). The main source of the growth was the 29 percent expansion in demand deposits. Cash balances in the hands of the public grew by a more moderate rate of 17 percent. The growth in the means of payment was influenced by the low rate

Figure 29 Yield-To-Maturity Curve of CPI-Indexed Bonds, December 2004-**December 2005 (monthly averages)** % 4.5 3.5 2.5 1.5 5 6 8 9 10 3 4



0

2001

auctions

2002

2003

Bank of Israel interest rate

Implicit real interest rate Inflation expectations

^a The effective interest rate in the Bank of Israel

^b For 12 months, derived from the capital market.

SOURCE: Bank of Israel Monetary Department.

2004

2005



of interest, the continuing real expansion in economic activity and the tax reform.

It is worth mentioning that in an inflation target regime, the nominal anchor is the inflation target and the monetary policy tool for achieving it is the rate of interest. In this type of regime, changes in the means of payment are less of an indicator of expected price increases since the quantity of money in the economy is determined by the demand of the public. Nonetheless, it is important to monitor changes in the quantity of the means of payment since in certain cases they are liable to play an important function in warning of a crisis situation. Thus, for example, a large and persistent unexplained deviation in these aggregates beyond the magnitudes derived from an econometric analysis¹⁴ is liable to indicate a lack of stability in demand and/or the breakdown of macroeconomic relations that provide guidance in the determination of the rate of interest.

The wide monetary aggregate (M2), which also includes unindexed shekel deposits of up to one year, grew by about 5 percent during the year which was similar to its growth rate in 2004. Its rate of growth has slowed considerably in recent years as a result of the cancellation of the tax advantage on shekel deposits in 2003. It was also the result of low rates of interest which caused the public to search for alternative investments that provide higher yields, thus leading to an increase in the share of tradable assets in the public's asset portfolio. This trend was also supported by the relatively rapid expansion of the Bank of Israel's supply of Treasury Bills which serve as a substitute for the public's deposits with the banks.

The **total bank credit aggregate** expanded this year by a moderate 2 percent which followed an increase of 1.5 percent in 2004 (Figure 32). The moderate growth in credit in recent years, despite the recovery in economic activity, is explained by, among other things, the reduction in bank credit together with an increase in regulatory restraints on borrowers. This development has led large borrowers to find alternative sources of credit which together with the low rates of interest and reduced capital needs of the government has contributed to the development of a non-bank credit market. Thus, the share of bank credit in the total sources of credit for the financing of the business sector continued to shrink while the alternative market for private bonds, both tradable and non-tradable, continued to grow. In 2005 (up

¹⁴ The estimate of demand for a money aggregate is determined by the developments in real activity, the level of prices and relative yields. For a detailed description of the demand equations as estimated econometrically, see Box 2 in Inflation Report 15.

until October), the capital raised through the issue of private bonds grew significantly to a volume of NIS 54.9 billion which was significantly higher than its volume of NIS 33.1 billion in 2004. It is worth mentioning that despite the expansion of this market, its level of activity, which is reflected in the volume of trade, is still low compared to the market for government bonds. Furthermore, companies also raise capital on the stock exchange. The raising of capital on the stock exchange through the issue of shares and convertible bonds totaled about NIS 10 billion this year as compared to NIS 6 billion in 2004.

Box 4

Changes Made in the Monetary Instruments in the Second Half of the Year

Every month the Bank of Israel announces the interest rate it is prepared to pay the banks on their deposits with it.¹ The public's demand for the monetary base is derived from this interest rate (henceforth 'the key interest rate'), and the Bank of Israel meets it by means of the instruments at its disposal. The change in the monetary base currently stems from two main sources—the government injection and the Bank of Israel's injection.² Given the extent of the government injection, the Bank of Israel decides the extent of its injection or absorption, so that the demand for the monetary base is fully met at the interest rate it has set.

Every day the Bank of Israel deploys its monetary instruments, enabling it to maintain the level it has set for its key interest rate. In the second half of 2005 several changes were made in these instruments. The new arrangements, which are described below, are used by the European Central Bank as well as by other central banks.

The Bank of Israel makes a non-quota 'monetary loan window' available to the banks at an interest rate of one percent above its key interest rate. As in the past, the loan is provided against full collateral so that the amount of collateral put up by each bank determines the extent of the loan it can utilize. These loans are intended to enable each bank to withdraw liquidity in accordance with its immediate needs towards the end of the business day. This contrasts with the system of quota monetary loans, which was previously in place, in which the Bank of Israel made loans available to the banks at quotas which ranged from an interest rate of 0.7 percent below its key interest rate to two percent above it, where quotas were allocated to the banks in accordance with each bank's share in the reserve requirement of the banking system.

In addition to the monetary loans, the Bank of Israel deploys a new monetary instrument, its 'deposit window,' at an interest rate which is one percent lower than its key interest rate. The 'deposit window' enables the banks to deposit excess liquidity with the Bank of Israel, as compared with the previous arrangement in which banks could not deposit excess liquidity on an ongoing basis (not by means of an auction), but were paid an interest rate on their excess liquidity of 3.2 percent below the Bank of Israel's key interest rate.

¹ These deposits are implemented via an inter-bank auction for periods of one day and one week.

 $^{^{2}}$ Since the Bank of Israel has not intervened in foreign-currency trading since mid-1997, with the exception of a few days at the beginning of 1998, foreign-exchange conversions on the trading-room floor have not contributed since then to the change in the monetary base.

The changes in the monetary loans, and the opening of the 'deposit window' in the Bank of Israel provide an 'interest-rate corridor' of 2 percent on either side of the key interest rate, its upper limit being the interest on the monetary loans and its lower limit the interest on the 'deposit window.' The inter-bank interest rate on transactions between the banks can move between these two limits.

Further to these changes in the monetary instruments, the arrangement permitting the banks to undertake inter-bank transfers at the preceding day's value has been cancelled. This was done in the context of the Bank of Israel's planned reform of Israel's payments system, principally the establishment of a real time gross settlement (RTGS) system. In accordance with the arrangement made in 1982, the Bank of Israel allowed the banks to make inter-bank transfers at the clearance-day value, namely, at the value of the day preceding the transfer. The purpose of this arrangement was to enable the banks to take into account the costs of clearing inter-bank checks, which were due to be paid only on the day after clearance. Over the years, the banks tended to implement inter-bank transfers of larger amounts than were required in order to smooth the results of clearing and settlement, and this arrangement became an instrument whereby the banks in effect traded in liquidity and, inter alia, 'adjusted' the results of the deposit auction.³

In the framework of the preparations for implementing the RTGS, which is expected to begin in the first quarter of 2007, and in which inter-bank transactions at the preceding day's value will not be permitted, it was decided, as stated, to cancel this possibility at the current stage, thus annulling the Bank of Israel's guarantee for these transactions. These changes will bring about a situation in which the inter-bank market will operate at smaller extents and at interest rates which will express the risk inherent in these transactions. This contrasts with the previous situation, in which inter-bank trading was perceived by the banks as riskless, enabling them to buy or sell any amount at the auction interest rate (the deposit auction).

The measures introduced and planned in the sphere of the monetary instruments and the payments system, will work together with additional reforms of the financial markets which have recently been introduced or are in the process of being introduced. These include: making changes in the business structure of financial intermediation on the basis of the recommendations of the Behar Commission, introducing market-makers in trading in government bonds, introducing legislation that supports repo transactions, and other kinds of securities lending, legislation in the sphere of the securitization of assets, etc. The various reforms are intended to create a modern financial market in Israel which will enable the efficient and reliable transfer of savings to investors, while stimulating sustainable growth.

³ The banks estimated the percentage of the expected allocation at auction and asked for an appropriate amount. If a bank was awarded a larger or smaller amount than it required it bought or sold liquid assets at the subsequent inter-bank trading.

The value of the public's financial assets portfolio¹⁵ increased during the year by a rate of 17 percent which was a result of the continuing price increases in the share market and the increase in the value of indexed assets, whether indexed to the CPI or to foreign currency. An analysis of the composition of the portfolio, ignoring shares, by type of indexation shows that the trends which characterized the composition of the portfolio during

¹⁵ Data to November 2005.

recent years, i.e. the increasing share of unindexed assets and the downward trend in the share of indexed assets, have leveled off and even reversed. The share of unindexed assets fell by 2.9 percentage points to 39.1 percent while the share of indexed assets rose by 1 percentage point to 41.3 percent and the share of assets indexed to foreign currency rose to 19.7 percent. The increase in the share of CPI-indexed assets was mainly the result of the increase in the issue of private bonds, most of which were indexed to the CPI. The increase in the share of assets indexed to foreign currency was the result of both a positive accumulation in these assets, particularly the growth of investment abroad, and the depreciation of the shekel against the dollar during the year. This year, the increase in the share of tradable assets at the expense of non-tradable assets continued and reached 52 percent of the portfolio as compared to 35 percent in 2002. This is the result of the tax reform and the reform of the pension funds whose implementation began in recent years.

d. Global developments

Inflation in a small open economy such as Israel's is influenced in the short run by global developments. This occurs through a number of channels: through word trade and the demand abroad for Israeli products; through the prices of imported consumer goods which directly influence the CPI; through imported production inputs which influence local production costs and through them the CPI; through the foreign exchange rate which is influenced by changes in the cross-exchange rates; and through the influence of interest rates abroad on international capital flows and through them on the local rates of interest and the foreign exchange rate.

During the period under review, there were a number of developments which had a major influence on inflation in Israel:

- The continuing increase in oil prices which recently accelerated due to the hurricane that caused major damage to the oil infrastructure in the Gulf of Mexico.
- The strengthening of the US dollar against other major currencies, particularly the euro whose value dropped from 1.35 dollars at the beginning of 2005 to 1.20 at the end of 2005. This was a result both of the growing gap between the interest rate in the US and those in Europe which was created by the series of increases in the rate of interest by the US Federal Reserve during the period under review and by the low growth rates in the euro bloc (relative to the US economy; Table 1 below) which creates a preference among investors for the US economy and demand for the US dollar.





This is in spite of a limited economic recovery in the euro bloc where unemployment rates during the period April-July 2005 declined and industrial production increased.

• Narrowing of the interest rate gap between Israel and the US as a result of the monetary policies in the two countries. The narrowing of the gap worked to increase the export of capital from Israel, primarily through the redemptions of credit in foreign currency by local residents.

The slowdown in the rate of growth in the demand for Israeli exports in general, and the fall in exports of mixed technology and traditional products in particular, which were partly due to the slowdown in the growth of world trade, worked to slow the growth rate of GDP in Israel. The increase in the share of the Asian countries in world trade, and in particular those of China, India and Japan worked to increase the supply of imported lowcost goods. This development has slowed the increase in prices worldwide, including those in Israel. Nevertheless, the rates of inflation in the US and the euro bloc rose this year (Figure 33), primarily as a result of the increase in the prices of oil and other raw materials. This was also reflected in the prices of Israeli imports which grew this year by 5.4 percent.

III. EXPECTED DEVELOPMENTS IN INFLATION, AND PROJECTION FOR NEXT FEW YEARS

a. Expected changes in the main variables affecting inflation

(i) Real activity and fiscal policy

Although the process of economic growth is expected to continue in 2006, its rate of expansion is expected to moderate somewhat, and the projection is that GDP will grow at an annual rate of 4.3 percent. The growth rate of business-sector product is also expected to moderate, to 5.4 percent (compared with over 6 percent in the last two years). This projection is based on several assumptions: that the relative calm in the security situation will persist, that the growth rates of world trade and the GDP of the advanced economies will remain similar to those of 2005, that oil prices will stabilize, that fiscal policy in 2006 will attain the expenditure and deficit targets approved by the government, and that real interest rates will rise in accordance with the convergence of Israel's economy to full-employment equilibrium. The expected decline in Israel's growth rates is due to the gradual narrowing of the output gap and decline in the unemployment rate. Private consumption, whose growth rate

slowed in 2005, is expected to rise in 2006 by the same relatively high rate as in 2004—a development which is supported by tax reductions and the ongoing improvement in the labor market. To date, the recovery process has been accompanied by only a moderate increase in nonresidential investment, while residential investment has declined. Consequently, a positive turnaround is expected in this sphere in 2006, and the projection also includes a rise in residential construction. These expected developments will operate during the year to increase the upward pressure on prices, as excess production capacity will continue to contract.

According to the national budget proposal for 2006, the government is expected to meet the budget targets, as it has done in the last two years. The macroeconomic assumptions underlying the planned 2006 budget are consistent to a great extent with recent economic developments: the budgeting of expenditure is in line with the long-term growth ceiling of one percent in real terms, and forecast income is also in harmony with expected macroeconomic developments. The 2006 budget proposal enables the deficit to be reduced (excluding credit) to 3 percent of GDP, alongside the reduction of the share of public expenditure in GDP and the contraction of the public sector debt to 99.6 percent of GDP in 2006. However, since the coming year is an election year and the current Knesset has not yet approved this budget proposal, the budget will not be approved before mid-2006. Under law, the government may utilize one twelfth of the 2005 planned budget expenditure, and this will enable it to increase its expenditure over 2005, when there was underutilization of the budget. Thus, there is uncertainty regarding the ability of the government which will be elected to remain within the limits of the 2006 budget proposal, which has been approved by the current government.

(ii) Expected developments in economic activity in foreign currency and capital flows

According to the Bank of Israel's assessments, the extent of longterm capital inflow in 2006 is expected to fall below its 2005 level,¹⁶ largely because of the expected fall in direct investment in the framework of the privatization process and the slowing of capital inflows to emerging economies indicated by most estimates given by experts in global investment. On the other hand, the Bank assesses that the trend of improvement in the current account will persist.

¹⁶ This projection does not include the purchase by Teva of Ivax, which is expected to affect long-term capital flows in both directions because a large part of the transaction will be financed through the issue of shares and bonds abroad.

Alongside the expected slowdown in long-term investment by nonresidents, according to the Bank's assessment, institutional investors are expected to accelerate the pace of investment abroad. This view is borne out by a series of developments, chief among them: a) the veteran pension funds, which are estimated to account for \$ 30 billion, are henceforth to be permitted to invest abroad; b) the marked contraction in public-sector borrowing and the dearth of long-term financial instruments in the domestic capital market could cause excess demand to be diverted abroad; c) most assessments expect long-term yields in the US to stabilize towards the end of the first half of 2006. According to this scenario, institutional investors, who till now have refrained from investing in the US bond market for fear of capital losses, are expected to increase their investments abroad.

The structural reforms in the economy are expected to affect capital flows and their composition in opposite directions: on the one hand, enabling foreign banks to be market-makers in the government bond market is expected to lead to the increased involvement of foreign financial entities in the domestic bond market. On the other hand, separating the provident and mutual funds from the banks, in accordance with the recommendations of the Bachar Committee, is expected to increase investment abroad, whether the funds are managed by insurance companies or by foreign financial entities. This is because their general organization and infrastructure inclines more towards investing abroad than does that of the domestic banks.

The anticipated slowdown in long-term investment by nonresidents and the acceleration of the pace of investment abroad by institutional investors are expected to bring about a decline in the supply of long-term foreign currency in Israel. This means that short-term capital flows will play a greater role in the conduct of the local-currency exchange rate; these flows are inevitably more volatile as they are affected inter alia by short-term uncertainty factors, including changes in the cross rates of the major currencies, so that it is difficult to predict their development.

(iii) Expected global developments

According to the projections of the IMF published in *World Economic Outlook*, *global economic growth* is expected to remain 4.3 percent in 2006 (similar to the 2005 rate). However, uncertainty with regard to the trend of oil prices and a possible increase in inflation rates in the wake of the narrowing output gap will almost certainly make it necessary to raise interest rates and adopt an economic policy that will avert global imbalances. In the US economic growth is expected to persist at an annual rate of 3.5 percent in 2006, and to moderate slightly in 2007 (Table 1). The US Federal Reserve raised its interest rate in 2005, and it stood at 4.25 percent at the end of the year. This monetary policy was a response to several macroeconomic developments in the US—rapid economic expansion after several years of slack growth at the beginning of the decade, when interest rates were slashed; the high fiscal deficit, and the deficit in the US balance of payments. A continued rise in interest rates there in 2006 will require monetary policymakers in Israel to act to prevent the development of massive capital outflow.

Although the rate of economic growth in the *Eurozone* is expected to accelerate in 2006 (to about 2.1 percent), this is still low compared with other advanced economies.¹⁷ Inflation rates are expected to remain at their 2005 level. In November the European Central Bank (ECB) raised the interest rate to 2 percent, but noted that it was doubtful that the trend of interest-rate increases would continue in 2006. The economic recovery evident in *Japan* in the second half of 2005 is expected to persist and become entrenched in 2006, although no increase is expected in inflation and interest rates.

Data and Estimates of Macroeconomic Developments in Selected Countries, 2005–07

			(year on year	percent change)
		2005	2006	2007
Growth	U.S.	3.6	3.5	3.3
	Eurozone	1.4	2.1	2.2
	Emerging markets	6.4	6.1	
	China	9.3	9.4	9.5
	India	7.1	6.3	
Inflation	U.S.	3.4	2.8	2.5
	Eurozone	2.2	2.1	1.6
	Emerging markets	5.9	5.7	
	China	4.2	3.5	3.7
	India	3.9	5.1	

Source: estimates and outlooks from OECD *Economic Outlook*, December 2005, and IMF *World Economic Outlook*, September 2005.

b. Assessments of future inflation and the balance of inflation risks

(i) Assessments of future inflation

Inflation in 2006 is expected to be in the middle of the target range of price stability; this is indicated by assessments of inflation derived from the capital market and private forecasters.

 $^{^{\}rm 17}$ For example, GDP growth in the G7 countries is expected to be 2.5 percent in 2006.

According to the Bank of Israel's *Companies Survey* (Table 2), inflation will reach 2.6 percent. Most of the assessments are based on expectations of a continued rise in the Bank of Israel's key interest rate by a cumulative one percentage point during 2006, mainly in the first half of the year, on stability in the local-currency exchange rate against the dollar, and on the continued expansion of real activity.

The path of private forecasters' projections indicates that in the first quarter of 2006 prices are expected to be below the seasonal level consistent with the inflation target. This should be seen in the context of the expected decline in prices of fruit and vegetables as well as of clothing and footwear (partly seasonal), and is also due to the fall in oil prices and local-currency appreciation against the dollar in 2005:IV. Later in the year, as stated, inflation is expected to rise to a rate near the mid-point of the target range.

Inflation Estimates for 2006

				(percent)
		Capital	Private	Companies
	Target	market	forecasters	Survey
Average	2	1.7	2.0	2.6
Range	1-3		1.3-2.5	

Unlike inflation assessments made by the various factors mentioned above, the Bank of Israel's econometric models indicate that in 2006 the inflation rate will be near the upper limit of the price-stability target range, and may even exceed it in the first half of 2006. Simulations made on the basis of the models show that there are several reasons for the rise in the inflation rate at the beginning of the year: the relatively high inflation rate in the second half of 2005, which is expected to affect price adjustments at the beginning of 2006, the local-currency depreciation against the dollar in 2005:IV alongside the rise in imported intermediates, which served to increase production costs, and Israel's rapid economic expansion in 2005. In view of all these, and since the level of nominal interest rate is lower than the level which would be consistent with long-term price stability, the Bank of Israel will have to raise its key interest rate, primarily in the first half of 2006. Later on in the year, as stated, the inflation rate will dip towards the upper limit of the target range.

These simulations, together with the other indicators mentioned earlier, among them forecasters' and the capital market's predictions, provide the Bank of Israel with a basis for analyzing expected developments, and combined with its judgment, for determining the path of the interest rate required to attain the target. It would appear that as long as there is no unexpected change in the variables it will be necessary to raise the interest rate in order to attain the target of price stability within a year. The extent to which it is necessary to increase the interest rate will be examined each month, as has been the case in the past.

(ii) The balance of inflation risks

According to the above assessments, the likelihood of overshooting the price-stability target in 2006 is, as stated, greater than the chances of undershooting it. These assessments are supported by a number of factors:

- Rapid economic growth, together with the narrowing of the output gap, is expected to persist in 2006. As the difference between potential and actual GDP declines, upward pressure on prices will grow.
- Inflationary pressures from the labor market: in 2005 (until September) the real wage rose by 3 percent. If the increase in the real wage exceeds the rise in labor productivity, unit labor cost will grow, and this will have a direct effect on price-increases in the future.
- The rise in the demand for housing, inter alia, against the backdrop of continued real growth, concurrent with the reduction in the supply of available apartments, is expected to push housing prices up and hence to accelerate inflation.
- Global risks involved in the possibility of a trend reversal in capital flows to emerging markets. A reversal of this kind could also be expressed in the repatriation of investments in the domestic stock market by nonresidents. If long-term yields in the US stabilize, institutional investors, who till now have refrained from investing in the long-term bond market in the US for fear of capital losses, might also increase the pace of their investments abroad. Developments of this kind are expected to increase pressure for local-currency depreciation, and hence for an increase in prices.
- Greater political uncertainty as the elections set for March 2006 approach, followed by the creation of a new government, could lead to economic uncertainty and be expressed in instability in the financial markets.
- Fiscal discipline might be relaxed in the context of pressures to increase the deficit which could emerge once the new government is formed.

Alongside these risks of overshooting the price-stability target, there is still a possibility—albeit small, in our view—of undershooting it. Undershooting the target will be supported by steep local-currency appreciation, which could develop as a

result of a significant increase in long-term capital inflow or of sharp dollar-euro cross-rate changes.

In accordance with the various possible scenarios, the Bank of Israel will continue to stand ready at all times to contend with all eventualities and adapt the interest rate to the extent we consider is required; our purpose is to attain the price-stability target set by the government, neither overshooting nor undershooting it.

Appendix Table 1 Annual Inflation and the Standard Deviation of the Monthly Change in the CPI, Housing Index and Exchange Rate, 1996 to 2005

			_	_		
			(1	rate of cha	nge during	the period, percent)
			CPI excluding	Index of	NIS/\$	Inter-month
			fruit and vegetables,	housing	exchange	standard deviation
	Cl	Ы	clothing and footwear	prices	rate	of the CPI
	(1)	(2)	(3)	(4)	(5)
			(ann	ual data)		
1996	10	.6	11.2	13.2	5.0	0.4
1997	7	.0	7.7	7.5	7.9	0.5
1998	8	.6	8.6	8.8	18.2	0.9ª
1999	1	.3	1.5	-0.9	0.4	0.4
2000	0	.0	0.2	-2.4	-2.7	0.5
2001	1	.4	1.5	5.2	4.8	0.4
2002	6	.5	7.1	8.2	9.8	0.7
2003	-1	.9	-2.0	-6.7	-6.4	0.4
2004	1	.2	1.2	-2.5	-1.6	0.4
2005	2	.4	3.1	5.9	6.8	0.5
			(semi-a	nnual data	l)	
2004	I 1	.4	2.0	1.4	2.7	0.5
	II –0	.2	-0.8	-3.8	-4.2	0.2
2005	I 0	.5	1.1	0.3	6.2	0.4
	II 1	.9	2.0	5.5	0.6	0.5

^a The marked deviation of this figure from the long-term trend is due to the sharp rise in the exchange rate in October 1998.

SOURCE: Based on Central Bureau of Statistics data.

Appendix Table 2 Interest Rates in Israel and the US, 1998–2005

		C	entral banks'	interest ra		Yield gap	
		Ŧ	1		10	Differential	between 10-year
		IS	rael		72	between	Israeli and US
F 1 C		Interest		Interest	CI	central banks	government
End of y	ear	rate ^a	Change	rate	Change	interest rates	bonds
			Percentage		Percentage	Percentage	Percentage
		%	points	%	points	points	points
1998		13.5		4.75		8.75	
1999		11.2	-2.3	5.5	0.75	5.7	-3.05
2000		8.2	-3.0	6.5	1.0	1.7	-4.0
2001		5.8	-2.4	1.75	-4.75	4.05	1.6
2002		9.1	3.3	1.25	-0.5	7.85	6.8
2003		5.2	-3.9	1.0	-0.25	4.2	3.0
Monthly	data						
2004 Jan	nuary	4.8	-0.4	1.0	0.0	3.8	3.1
Fel	oruary	4.5	-0.3	1.0	0.0	3.5	3.5
Ma	urch	4.3	-0.2	1.0	0.0	3.3	3.8
Ap	ril	4.1	-0.2	1.0	0.0	3.1	3.6
Ma	ıy	4.1	0.0	1.0	0.0	3.1	3.2
Jur	ne	4.1	0.0	1.0	0.0	3.1	3.0
Jul	у	4.1	0.0	1.25	0.25	2.85	3.2
Au	gust	4.1	0.0	1.5	0.25	2.6	3.7
Sej	otember	4.1	0.0	1.75	0.25	2.35	3.8
Oc	tober	4.1	0.0	1.75	0.0	2.35	3.4
No	vember	4.1	0.0	2.0	0.25	2.1	3.2
De	cember	3.9	-0.2	2.25	0.25	1.65	2.7
2005 Jan	nuary	3.7	-0.2	2.25	0.0	1.45	2.6
Fel	oruary	3.5	-0.2	2.25	0.0	1.25	2.6
Ma	urch	3.5	0.0	2.5	0.25	1.0	2.0
Ap	ril	3.5	0.0	2.75	0.25	0.75	2.3
Ma	ıy	3.5	0.0	3.0	0.25	0.5	2.1
Jur	ne	3.5	0.0	3.0	0.0	0.5	1.9
Jul	у	3.5	0.0	3.25	0.25	0.25	1.9
Au	gust	3.5	0.0	3.5	0.25	0.0	1.9
Sep	otember	3.5	0.0	3.75	0.25	-0.25	1.8
Oc	tober	3.75	0.25	3.75	0.0	0.0	1.6
No	vember	4.0	0.25	4.0	0.25	0.0	1.8
De	cember	4.5	0.5	4.25	0.25	0.25	1.8

^a The rate of interest set in the previous month's monetary program for the month indicated in the table. ^b The yield spread between the yields on 10-year unindexed government bonds and the yields on US government bonds for the same term. SOURCE: Bank of Israel.

Appendix Table 3 The Bank of Israel Nominal and Real Rates of Interest, and the Yield on Treasury Bills and on CPI-Indexed and Unindexed Government Bonds

					(mon	thly avera	ge, percent)
					Yield on	Yield	Yield
					12-month	on CPI-	on
					unindexed	indexed	unindexed
		Bank of	f Israel inter	est rate	_ Treasury	10-year	10-year
		Headline ^a	Effective ^b	Real ^c	bills	bonds	bonds
2002	December	9.1	9.6	7.2	8.3	5.7	10.9
2003	December	5.2	5.4	4.6	4.9	4.1	7.0
2004	January	4.8	5.0	4.1	4.7	4.0	7.0
	February	4.5	4.7	3.5	4.8	4.1	7.4
	March	4.3	4.5	3.3	4.7	4.2	7.4
	April	4.1	4.3	2.7	4.8	4.3	7.6
	May	4.1	4.3	2.3	5.2	4.4	7.9
	June	4.1	4.3	2.5	5.0	4.3	7.8
	July	4.1	4.3	2.7	4.8	4.3	7.8
	August	4.1	4.3	2.4	4.8	4.3	7.9
	September	4.1	4.3	2.3	4.7	4.2	7.7
	October	4.1	4.3	2.2	4.8	4.2	7.6
	November	4.1	4.2	2.3	4.7	4.2	7.4
	December	3.9	4.1	2.7	4.3	4.1	7.3
2005	January	3.7	3.9	2.3	4.2	4.0	6.9
	February	3.5	3.7	1.6	4.2	3.8	6.7
	March	3.5	3.7	1.5	4.1	3.7	6.6
	April	3.5	3.7	1.6	4.1	3.8	6.6
	May	3.5	3.7	2.0	4.0	3.6	6.2
	June	3.5	3.7	1.8	4.0	3.7	6.2
	July	3.5	3.6	1.5	4.2	3.6	6.3
	August	3.5	3.6	1.5	4.2	3.5	6.1
	September	3.5	3.6	1.1	4.3	3.3	6.0
	October	3.75	3.9	1.5	4.6	3.3	6.1
	November	4.0	4.1	1.9	5.0	3.6	6.3
	December	4.5	4.6	2.8	5.2	3.7	6.2

^a Announced interest rate in simple annual terms (excluding compound interest). ^b Calculated as the daily compound interest rate, based on the interbank rate.

° The real rate of interest is the effective rate of interest less inflation expectations derived from the capital market. SOURCE: Bank of Israel.

Appendix Table 4 The Differential between Yield on Treasury Bills and Government Bonds and the Bank of Israel Interest Rate

		Differential	Differential	Differential
		between yield	between the yield	between the yield
		on 12-month	on unindexed	on CPI-indexed
		Treasury bills	10-year bonds	10-year bonds
		and the effective	and the effective	and the
		Bank of Israel	Bank of Israel	Bank of Israel
		interest rate	interest rate	real interest rate
2002	December	-1.7	1.2	-1.5
2003	December	-0.5	1.7	-0.5
2004	January	-0.3	2.0	-0.1
	February	0.2	2.7	0.6
	March	0.2	2.8	0.9
	April	0.6	3.4	1.6
	May	0.9	3.6	2.1
	June	0.7	3.5	1.8
	July	0.6	3.5	1.6
	August	0.5	3.7	2.0
	September	0.5	3.4	2.0
	October	0.5	3.3	2.0
	November	0.4	3.2	1.9
	December	0.2	3.2	1.5
2005	January	0.4	3.1	1.7
	February	0.5	3.0	2.2
	March	0.4	2.9	2.3
	April	0.5	2.9	2.1
	May	0.3	2.6	1.7
	June	0.3	2.6	1.9
	July	0.6	2.7	2.2
	August	0.7	2.6	2.0
	September	0.7	2.4	2.2
	October	0.7	2.2	1.8
	November	0.9	2.3	1.7
	December	0.6	1.6	0.9

SOURCE: Bank of Israel.

		Expectations derived from the capital market			Average of
		For first	For second	For third year	12-month inflation
		year ^a	year ^b	and beyond	forecasts ^c
2001	December	0.6	1.3	2.5	1.6
2002	December	2.2	3.8	5.3	2.0
2003	December	0.7	1.7	3.2	1.6
2004	January	0.9	2.1	3.3	1.5
	February	1.1	2.5	3.5	1.7
	March	1.2	2.8	3.4	1.7
	April	1.6	3.0	3.6	2.1
	May	2.0	3.1	3.7	2.6
	June	1.8	2.6	3.7	2.3
	July	1.5	2.2	3.8	2.0
	August	1.9	2.6	3.9	2.4
	September	2.0	2.3	3.7	2.5
	October	2.0	2.5	3.6	2.4
	November	1.9	2.0	3.4	2.2
	December	1.4	1.9	3.5	2.0
2005	January	1.6	2.0	3.3	2.0
	February	2.0	2.4	3.1	2.2
	March	2.2	2.4	3.1	2.1
	April	2.0	2.0	3.1	2.1
	May	1.7	1.9	3.0	2.2
	June	1.9	2.2	2.9	2.0
	July	2.1	2.3	2.9	2.3
	August	2.1	2.4	2.9	2.1
	September	2.5	2.6	2.9	2.0
	October	2.4	2.5	3.0	2.2
	November	2.1	2.5	2.8	2.2
	December	1.7	2.1	2.6	1.9

Appendix Table 5 Expected Inflation

^a Twelve-month inflation expectations. ^b Calculated from yields on *Shahar* and *Galil* or *Sagi* bonds with equivalent terms. ^c Average of inflation forecasts of commercial banks and economic consultancy firms that publish their forecasts on a regular basis. SOURCE: Bank of Israel.