Chapter 3
Monetary Policy and Inflation

- Inflation declined in 2014, reaching -0.2 percent, below the price stability target range (1–3 percent). The decline was mainly the result of the appreciation of the shekel prior to July, the drop in global oil prices in the second half of the year, and domestic supply factors such as increased competition, mainly in the communications market.
- One-year inflation expectations ranged in the lower portion of the target range for most of the year, and declined to below the range toward the end of the year. Expectations for longer terms ranged around the midpoint of the target range.
- Monetary policy acted to support activity and exports, and to return inflation to the target range, as the global economy—excluding the US—continued its slow growth, various indicators in the first half of the year caused concern that domestic demand had declined, and the shekel continued to appreciate. In view of the low interest rate environment, the Monetary Committee examined unconventional policy tools, some of which have already been implemented in a number of countries.
- The exchange rate developed unevenly during the year. The shekel continued to strengthen through July; the Bank of Israel continued to purchase foreign exchange until June as part of a program intended to moderate fluctuations in the exchange rate that are not in line with economic fundamentals, and in order to support activity in the tradable sector. From August to November, there was a significant depreciation of the shekel, after the Bank of Israel further lowered the interest rate and the dollar strengthened globally. The shekel's appreciation resumed in December. Throughout the year, the Bank of Israel continued to purchase foreign exchange based on the purchasing program intended to offset the effects of natural gas production on the current account and, through it, on the exchange rate.
- The Monetary Committee maintained the policy it adopted in late 2011, and lowered the interest rate—from 1 percent at the beginning of the year to 0.25 percent for September. In February 2015, the Monetary Committee reduced the rate for March to a historic low of 0.1 percent, because inflation and inflation expectations were below the target, and because the shekel's appreciation resumed at the end of 2014. The policy decisions reflected the thinking that the interest rate tool is intended to support activity in the economy and price stability, while macroprudential tools work to reduce the risks to financial stability from developments in the housing market.
- The housing market was characterized for most of the year by a large extent of uncertainty due to the wait for the "Zero VAT for first-time home buyers" bill, and activity in the market moderated. The fourth quarter of the year saw renewed demand and price increases, which intensified in December as elections were brought forward and legislation of the Zero VAT bill was frozen. Since housing credit continued to expand, in September the Supervisor of Banks increased the capital buffers that banks are required to allocate against it in order to increase the banks' capacity to absorb losses in the event the risks to borrowers' repayment capabilities for these loans are realized.

1. MONETARY POLICY

a. Summary of developments and policy measures

Inflation as measured over the past 12 months ranged in the lower portion of the price stability target during the first half of 2014. Starting in June, it declined to below the target range, and it reached -0.2 percent at the end of the year. The decline was the result of the appreciation of the shekel during the first half of the year, lower prices in the communications market, the sharp decline in oil prices during the second half of the year, and low global inflation. It was also the result of the dissipation of the effects of the increase in VAT and increased taxation on tobacco and on alcoholic beverages that were instituted in 2013. The development of inflation in 2014 reflected a decline in the tradable component of the Consumer Price Index and moderation of the increase of the nontradable component. One-year inflation expectations also declined during the year, ranging in the lower portion of the price stability target until October, and then declining to below the target range thereafter, affected by declines in water and electricity prices that were expected to take place at the beginning of 2015, among other things. Expectations for longer terms, which also include liquidity and risk premia, declined slightly during the year, but remained around the midpoint of the target range.

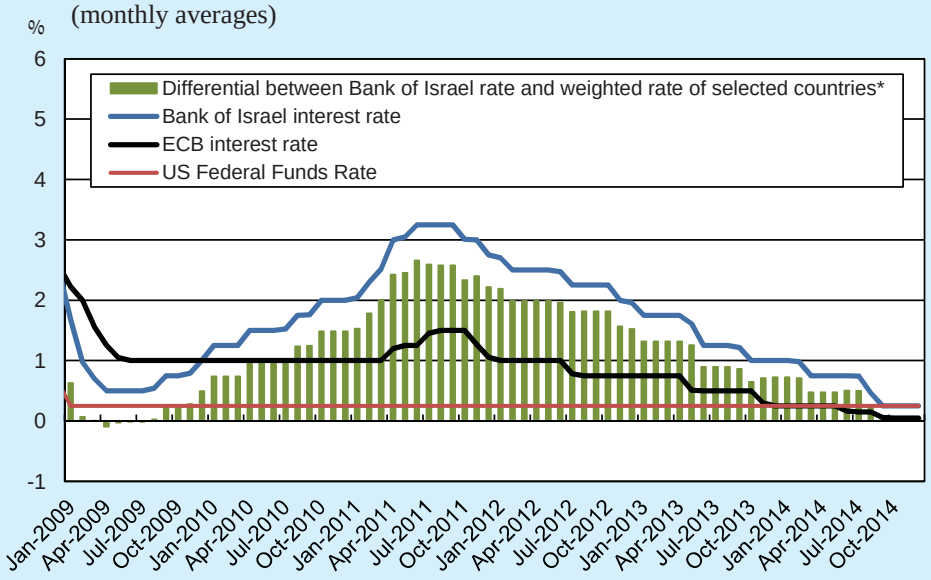
The global economy continued to develop unevenly this year: The US economy continued to recover, while activity in Europe reached a standstill, activity in Japan contracted, and activity in China and other emerging markets slowed. As the US economy continued to recover, the Federal Reserve tapered its quantitative easing program, and ended it in October. In contrast, the European Central Bank (ECB) expanded its accommodative policy due concern of expected deflationary pressure. It lowered its monetary interest rate to near-zero, lowered the interest rate on the commercial banks' surplus reserves to a negative level for the first time, and began purchasing asset-backed securities and covered bonds. Japan declared further rounds of significant fiscal and monetary expansion, and China's central bank adopted monetary accommodation in order to maintain its growth rate.

Israel's economy grew at a similar rate in each of the past three years, and reflected a slowdown in relation to previous years, against the background of moderating demand abroad and the continued appreciation of the shekel through July. Operation Protective Edge also had a moderating effect on the growth rate in 2014 (Chapter 2).

Activity in the housing market slowed between March and September, mainly due to the wait for the Zero VAT bill (Chapter 7A). The volume of transactions declined significantly, and prices stabilized between June and October. The fourth quarter of the year saw renewed demand and price increases, as the Knesset dissolved and the legislative process for the Zero VAT bill was stopped. Since total housing credit continued to expand, in September the Supervisor of Banks increased the capital buffers that commercial banks must allocate against it (Chapter 4). The measures imposed by the Supervisor of Banks in recent years improved the risk characteristics

of new mortgages and gave the Monetary Committee more room to maneuver in using the interest rate tool.

Figure 3.1
Short-term Interest Rates in Israel, the US and the Eurozone, 2009–14
(monthly averages)



* The calculation of the weighted interest rate gives the US a weight of 0.49, the eurozone a weight of 0.32, the UK 0.13 and Japan 0.06.

SOURCE: Bank of Israel, European Central Brank, US Federal Reserve, Bank of Japan.

In view of these developments, the Monetary Committee reduced the interest rate during the year from 1 percent in January to 0.25 percent in September (Table 3.A.1 and Figure 3.1). The interest rate reduction for September, and to a lesser extent the reduction for August, surprised the markets and supported the depreciation of the shekel—a process that began in August and was supported by the strengthening of the US economy (Chapter 1). The fact that the inflation environment declined to below the price stability target range posed an additional challenge for policy makers, in view of the possibility that the interest rate tool was nearing exhaustion. This challenge led policy makers to examine unconventional monetary policy tools, though they were not utilized in 2014. The Monetary Committee's assessment was that a significant portion of the decline in inflation and inflation expectations during the year derived from temporary supply factors and from structural changes, the American economy has recovered and expectations were that the interest rate in the US would increase, and the sharp depreciation of the shekel from August to November supported economic activity. In addition, the Research Department projected that inflation would return and converge to the target range toward the end of 2015. Since the sharp appreciation resumed in December, the inflation environment remained low, and central banks

around the world lowered their monetary interest rates (sometimes to negative territory), the Monetary Committee lowered the interest rate for March to 0.1 percent.

b. The fundamentals and their effect on monetary policy

(1) Inflation and the monetary regime

The Bank of Israel's objectives, as listed in the Bank of Israel Law, 5770–2010, are: (1) to maintain price stability—its central goal—which is defined as an annual inflation rate of between 1 and 3 percent[1]; (2) to support other objectives of the government's economic policy—particularly growth, employment and the reduction of social gaps—provided that this support will not endanger price stability within two years; and (3) to support the stability and proper functioning of the financial system. As of October 2011, monetary policy is determined by the Monetary Committee.[2]

The generally accepted framework that the central bank has several goals, with the main one being to maintain price stability, is referred to globally as a "flexible inflation target" regime. In such a regime, when short-term inflation deviates from the target, policy makers act to gradually return it to the target range. This enables policy makers to achieve the Bank's other goals in parallel to maintaining price stability over the intermediate and long terms.

Both the inflation rate over the previous 12 months and the one-year inflation expectations deviated to below the target range in the second half of 2014 (Figure 3.2), which posed a challenge for the Monetary Committee toward the end of the year, particularly in view of the low interest rate environment and the possibility that the interest rate tool has drawn close to exhaustion. However, long-term expectations remained within the target range and near the midpoint, indicating credibility of the policy makers' commitment to maintain price stability (Figure 3.2).

In order to formulate the appropriate monetary policy, it is important to distinguish between a temporary decline in prices and a prolonged decline—deflation. A temporary decline does not have a negative impact on economic activity, and may support it if it is the result of increased supply, such as a temporary increase in productivity or a

[1] This range came into effect in 2003 (pursuant to Government Decision 2183 of August 16, 2000). The target range was first set in 1992, in coordination between the government and the Bank of Israel, and declined gradually during the disinflation process that lasted roughly a decade.

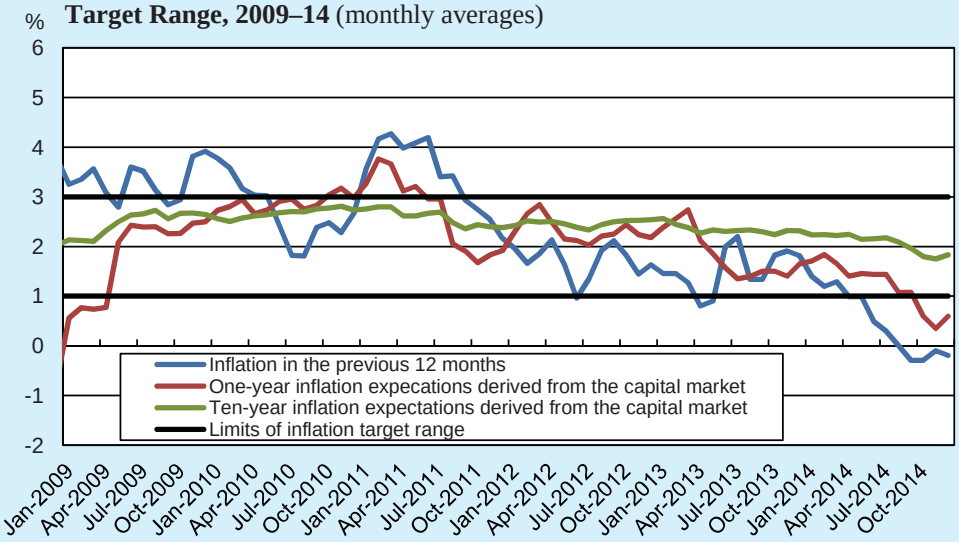
[2] Until October 2011, interest rate decisions were made by the Governor alone. Since October 2011, they are made by the Monetary Committee. The Committee consists of six members, led by the Governor, and its decisions are made by majority vote. In the case of a tie vote, the Governor has an extra vote. (At the time of writing this Report, the Monetary Committee consists of just five members, since the government has not appointed a replacement for a member whose term has ended.) Box 3.1 of the Bank of Israel Report for 2011 presents a discussion of the composition of the Monetary Committee, its method of decision making and the advantages and disadvantages of decision making by committee in comparison to a single decision maker.

Table 3.1
Main indicators of inflation and monetary policy, 2010–14

	2010	2011	2012	2013	2014	2014 Q1	2014 Q2	2014 Q3	2014 Q4
A. Inflation (percent)									
1. Inflation target	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
2. Actual inflation[a]	2.7	2.2	1.6	1.8	-0.2	-0.5	0.5	-0.3	0.1
3. Seasonally adjusted quarterly inflation[b]						0.5	-1.6	-1.2	1.5
4. One-year inflation expectations derived from capital market[c]	2.9	2.7	2.3	1.8	1.2	1.7	1.4	1.2	0.5
5. Ten-year inflation expectations derived from capital market[c]	2.3	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.3
6. Forecasters' one-year inflation forecasts[c]	2.7	2.8	2.3	1.8	1.3	1.6	1.5	1.2	0.9
B. Yields (percent)[c]									
1. Bank of Israel declared interest rate	1.6	2.9	2.3	1.4	0.6	0.9	0.75	0.5	0.25
2. One-year real yield to maturity on government bonds[d]	-0.4	0.6	0.2	-0.3	-0.7	-0.8	-0.8	-0.7	-0.3
3. Ten-year nominal yield to maturity on government bonds[e]	4.9	5.1	4.6	4.0	3.1	3.8	3.3	2.8	2.5
4. Ten-year real yield to maturity on government bonds[e]	2.2	2.5	2.1	1.7	1.0	1.5	1.1	0.7	0.7
C. Shekel depreciation (percent)[f]									
1. Nominal effective	-7.1	3.6	0.6	-7.8	4.2	-1.1	-0.8	2.1	4.0
2. Vis-à-vis the dollar	-4.9	4.7	0.1	-7.2	12.3	-0.7	-0.8	5.0	8.5
3. Vis-à-vis the euro	-13.9	4.2	-0.3	-3.1	1.1	0.1	-2.4	-0.1	3.5
D. Asset prices (percent)									
1. Overall yield on shares (nominal)[f]	12.6	-22.1	4.5	15.3	11.5	9.0	-1.5	4.1	-0.3
2. Home prices	14.1	4.0	8.7	7.3	4.5	2.5	0.3	0	1.5
E. The monetary aggregates (nominal rates of change)[f]									
1. M1 money supply	4.6	1.6	8.7	15.2	35.5	4.4	4.4	13.3	9.7
2. M1 + SRO + unindexed deposits of up to one year (M2)	3.6	10.5	8.2	6.6	8.4	1.3	1.2	2.5	3.1
E. Other background data (percent, seasonally adjusted quarterly data)									
1. Unemployment rate	8.4	7.1	6.7	6.0	5.7	5.5	5.8	6.2	5.6
2. GDP growth rate[g]	5.8	4.2	3.0	3.2	2.7	2.8	1.9	0.2	

[a] Change in CPI during the period. Quarterly rates shown in annual terms.
[b] In annual terms. As calculated by the Bank of Israel (see article on page 20 of Inflation Report No. 30, January to March 2010).
[c] Period average.
[d] Based on the zero curve. Period average.
[e] Gross yield, based on the zero curve. Period average.
[f] Average of last month in period compared with average of last month in previous period.
[g] Annual average compared with average of previous year.
SOURCE: Based on Ministry of Finance and Central Bureau of Statistics data.

Figure 3.2
Inflation in the Previous 12 Months, Inflation Expectations, and the Inflation Target Range, 2009–14 (monthly averages)



SOURCE: Based on Central Bureau of Statistics.

decline in the price of oil resulting in lower energy prices.[3] However, deflation results, for the most part, from a prolonged decline in demand, and presents risks to economic activity.

Deflation and expectations of deflation may lead to deferred consumption, since consumers believe that purchasing a product or service today is not justified if its price will be lower tomorrow. As a result, demand decreases, expectations of lower prices become self-fulfilling, leading to declines in investment, and there is increasing concern that economic activity will enter into a recession.[4] This concern leads monetary policy makers to lower the interest rate in order to stimulate economic activity. However, there is a level below which the interest rate cannot be lowered.[5]

[3] A decline in the price of oil supports activity among oil-importing economies. Among exporters, negative effects can be expected. More information appears in the Monetary Policy Report for the second half of 2014.

[4] In addition, when there is a downward nominal wage rigidity, deflation increases real wages, and the increase in the cost of labor may reduce the number of employed people. However, this channel does not have a great effect on the Israeli economy, since the domestic labor market is characterized by wage elasticity (Chapter 1), as attested to by the declines in wages that took place in 2003 and in 2009.

[5] Until 2009, everyone agreed that the effective barrier to the monetary interest rate was zero—"zero lower bound"—with such agreement being influenced by the interest rate level that was prevalent in Japan since 1990. In 2009, as a result of the global economic crisis, the Swedish central bank (Riksbank) lowered the interest rate on deposits to a negative level, meaning that interest is charged on making a deposit. In this case as well, there is a barrier to the interest rate—it seems that there is no benefit to lowering the interest rate to the cost of holding cash. In 2014, the European Central Bank (ECB) lowered the interest rate on banks' reserves to a negative level, as did the Swiss National Bank and other banks in Europe.

Under these circumstances, unconventional monetary tools are available to policy makers, but the extent of their transmission to activity and to prices is less clear.

Moreover, when deflationary conditions and a low interest rate environment prevail, the cost of financing weighs on economic activity. By way of illustration, in a zero interest rate environment, the real interest rate on loans is equal to the rate of deflation (in absolute value), and the borrower's purchasing power is eroded by the rate of deflation. If prices decline, for instance, by 3 percent per year, repaying the loan after one year[6] results in a real cost of 3 percent. The cost of financing is even higher in the case of old loans taken out with positive nominal interest rate (debt deflation).[7] The rising cost of financing lowers demand for loans, and this in turn reduces the level of both real and financial investment.

In the first half of 2014, concern arose that the price declines reflected weakness in domestic demand, but this concern waned later in the year following upward revisions of the data.

In the first half of 2014, concern arose that part of the price declines reflected weakness in domestic demand, and this concern increased as a result of Operation Protective Edge. However, National Accounts data for the first and second quarter were revised upward during the year, and third quarter data indicated that private consumption grew substantially and that exports also grew (Chapter 2). In addition, labor market data continued to indicate robustness. These developments took place against the background of the interest rate reductions during the reviewed year, and reinforced the assessment that domestic demand did not decline during the course of the year.

Moreover, while inflation in 2014 reached a negative rate, and the law mandates the Bank of Israel to maintain price stability, a temporary decline in prices that is reflected by a temporary decline in inflation does not conflict with the flexible inflation targeting regime. First, this regime enables flexibility in the short term. Second, it requires a return to the rate of inflation, and not to the price level that would have existed had it remained within the target range.

The monetary interest rate affects prices with a lag, through its lagged effect on consumption and savings by individuals, the volume of investment in the economy, and on the exchange rate—and through it on activity in the export sector and in import substitutes, on the economy's competitive ability, and on the balance of trade. This is the main reason that monetary policy acts in a forward-looking manner.[8] Monetary policy makers therefore act as risk managers: They evaluate what risks exist and/or will exist in the future and what the implications of those risks will be, and they act to

6 Since the interest rate is zero, the repayment includes only principal.

7 See: Fisher, I. (1933), "The Debt Deflation Theory of Great Depressions", Econometrica, 1(4), 337–357. It should be noted that in the Israeli economy, lower cost can be expected since 31 percent of business sector debt and 40 percent of household debt is indexed to the CPI.

8 For example, see: Batini, N. and A.G. Haldane (1998), "Forward-Looking Rules for Monetary Policy", NBER working paper no. 6543; Svensson, L.E.O. (1996), "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets", Institute for International Economic Studies, Stockholm University.

neutralize or minimize those risks in advance—in an environment that is constantly characterized by uncertainty.[9]

Since policy makers are forward-looking, and since they act within a flexible inflation targeting regime, they have maneuvering space in a situation in which inflation falls temporarily but does not affect medium and long terms inflation expectations. They are not required to act in order to cause inflation to exceed its upper bound with the aim of raising price levels to levels consistent with the inflation target. In other words, they are not required to engage in price level targeting.[10] Figure 3.3 relates to a one-time decline in prices, and illustrates the difference between policy intended to return the pace of inflation to its target in the short term and policy intended to maintain a price level that is consistent with the inflation target. In contrast, when prices decline over time, policy makers must respond to the decline since it lowers inflation expectations, and if inflation in the long term remains below the target range, it could have a negative impact on the credibility of the target regime.

The analysis above shows that it is necessary to understand the causes for the decline in prices when such a decline takes place. If the decline is not the result of a decline in demand, is not accompanied by a prolonged decline in inflation, and its expected return to the target remains within the time frame set out in the law, monetary policy makers are not required to act against it. For example, when the economy undergoes structural reforms intended to lower price levels (Chapter 1)—such as the reforms included in the recommendations of the Committee to Reduce Concentration in the Economy, it does not conflict with monetary policy that aims to maintain the price stability target within a flexible inflation targeting regime.

(2) Domestic economic activity

The moderate growth observed in the past two years was mainly the result of moderation in global trade, the prolonged appreciation in the real exchange rate, and the decline in the growth rate of investments.

The Israeli economy grew by 2.8 percent in 2014, similar to its growth rate in the previous two years, and lower than the rate prior to that. Economic growth slowed in the past two years due to (1) moderation in global trade and the prolonged appreciation of the real exchange rate—with the appreciation declining since August 2014; and (2) the decline in the growth rate of investments (Chapter 2).

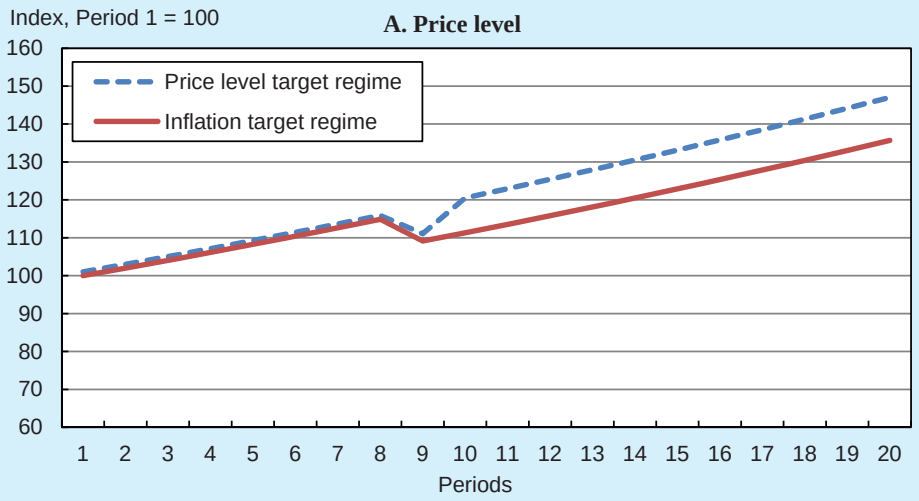
The assessment of the extent of the expansion—or weakness—of domestic demand was at the focus of monetary policy discussions, and this assessment was formulated, as always, under uncertainty.[11] At the beginning of the year, various indicators—led by the first estimate of National Accounts data for the first quarter of 2014—pointed to a further slowdown in activity. This picture worsened during Operation Protective Edge. Against this background, the Bank of Israel purchased foreign exchange in the

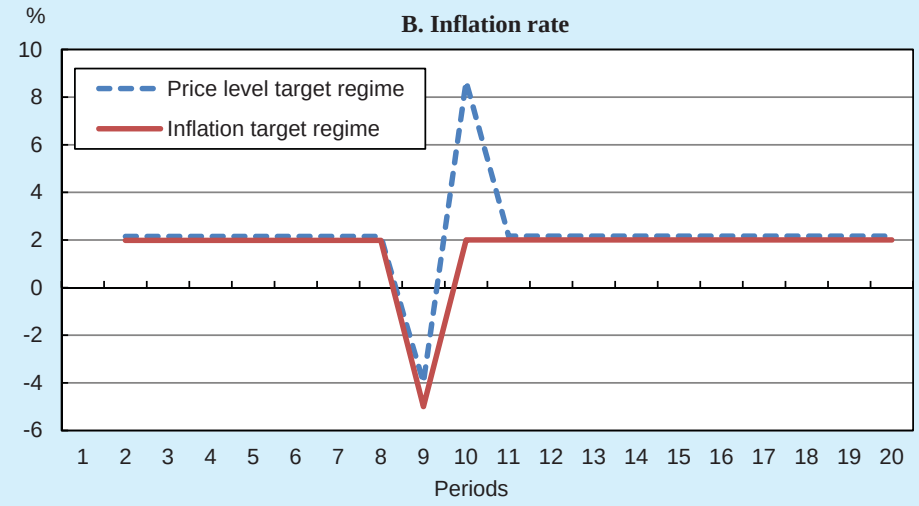
[9] For example, see: "The Formulation of Monetary Policy in Uncertain Conditions", remarks delivered by Bank of Israel Governor Dr. Karnit Flug at the Herzliya Conference, June 9, 2014.

[10] Sweden attempted this policy in the 1930s, and the Bank of Canada led discussion of it during the current period.

[11] See Table 3 ("National Accounts - data available at the time of decisions on the interest rate") in the Bank of Israel Monetary Policy Report, nos. 41 and 42 for the first and second halves of 2014.

Figure 3.3
Difference in Response of Price Level Target and Inflation Target Regimes to a One-Time Decline in Price Levels





SOURCE: Bank of Israel.

first half of the year, outside the purchase program intended to offset the effect of natural gas production on the current account, in order to moderate extreme volatility in the exchange rate that was not consistent with the fundamental economic conditions, and to support the tradable sector. However, National Accounts data for the first and second quarters were revised upward during the year, and third quarter data published toward the end of the year showed that private consumption continued to grow and that imports grew (Chapter 2).

These developments supported the assessment that, with monetary policy's contribution to activity, the growth rate of domestic demand did not decline, even

though the global slowdown continued. This assessment was further supported by the improvement in the labor market. The unemployment rate[12] has ranged at low levels in the past two years, the employment rate increased, and with it the number of employee posts in the public services. Due to the expansion of labor supply, no pressure for wage increases was apparent in the economy, since the increase in the nominal wage did not accelerate (Chapter 2).

(3) Developments abroad

As the Israeli economy is a small and open economy, monetary policy in Israel is affected by monetary policy abroad, and reacts to it. The global crisis that began in 2007–08 and the moderation of demand that followed, led to highly accommodative monetary policy worldwide. This policy was pursued through conventional tools—meaning the reduction of central bank interest rates—where possible, and through unconventional tools, including quantitative easing programs, credit easing programs, intervention in the foreign exchange market, and the use of forward guidance.[13] Since global inflation declined in 2014 and the concern of deflation arose, some central banks lowered their monetary interest rates into negative territory.

The US economy continued to recover, while activity in Europe was at a virtual standstill, activity in Japan contracted, and growth in China and the developing economies slowed.

Similar to recent years, the global economy was characterized in 2014 as well by uneven development. Since the US economy recovered during the year, the Federal Reserve tapered the quantitative easing program that it had started about two years earlier, drawing it to a close in October 2014. The recovery was accompanied by uncertainty regarding the date on which the Fed would begin raising interest rates; expectations and forecasts from December 2014 pointed to a period ranging from June to September 2015.

Growth in the eurozone recovered slightly in the second quarter of 2014, following six quarters of recession, but the unemployment rate remained high (11.5 percent) and the annual inflation rate in the past two years declined below the temporary short-term target of slightly less than 2 percent. The ECB revised activity and inflation forecasts downward, lowered the monetary interest rate to 0.05 percent (Figure 3.1), and—for the first time—lowered the interest rate on commercial banks' surplus reserves to negative levels, due to concern over deflationary pressures. In October 2014, it also began purchasing asset-backed securities and covered bonds and announced that this program would continue for at least two years.[14]

GDP in Japan contracted in the second and third quarters. With the publication of third quarter growth data, the VAT increase that the government had planned to implement in 2015 with the objective of reducing the government's deficit was

[12] Out of the labor force among those aged 25–64 (the primary working ages).

[13] See, "Unconventional Monetary Policy: Goals and Means", in the Bank of Israel's Monetary Policy Report number 40, for the second half of 2013, and "Forward Guidance—Experience Accumulated Worldwide", in Recent Economic Developments, 138.

[14] See the declaration issued by the ECB President in parallel with the interest rate announcement from December 2014, http://www.ecb.europa.eu/press/pressconf/2014/html/is131107.en.html.

delayed, and elections were brought forward. At the end of the year, Japan announced an additional program of significant fiscal and monetary accommodation. Activity in China continued to moderate, and the central bank adopted monetary accommodation in order to prop up the growth rate.

The slowdown in global growth, and with it the accommodative monetary policy around the world, supported a reduction in the interest rate in Israel through two main channels: (1) Global economic activity has an impact on demand for exports and on direct investment in Israel by nonresidents; and (2) Interest rate differentials have an impact on short-term capital flows and through them on the exchange rate[15] which, in turn, has an impact on the profitability of exports and on employment in the tradable sector, as well as on the prices of imported goods and on the current account in the balance of payments. Monetary policy around the world has been accommodative relative to policy in Israel since the beginning of the crisis, and the positive background conditions in the economy supported an appreciation of the shekel. The appreciation, and the decline in demand for Israeli exports, had a negative impact on the profitability of exporters and on their volume of activity. Reducing the monetary interest rate and bringing it in line with the low global interest rate environment, alongside the depreciation that took place in the second half of the year, supported the tradable sector, the employment rate and real economic activity.

(4) The exchange rate and the foreign exchange market

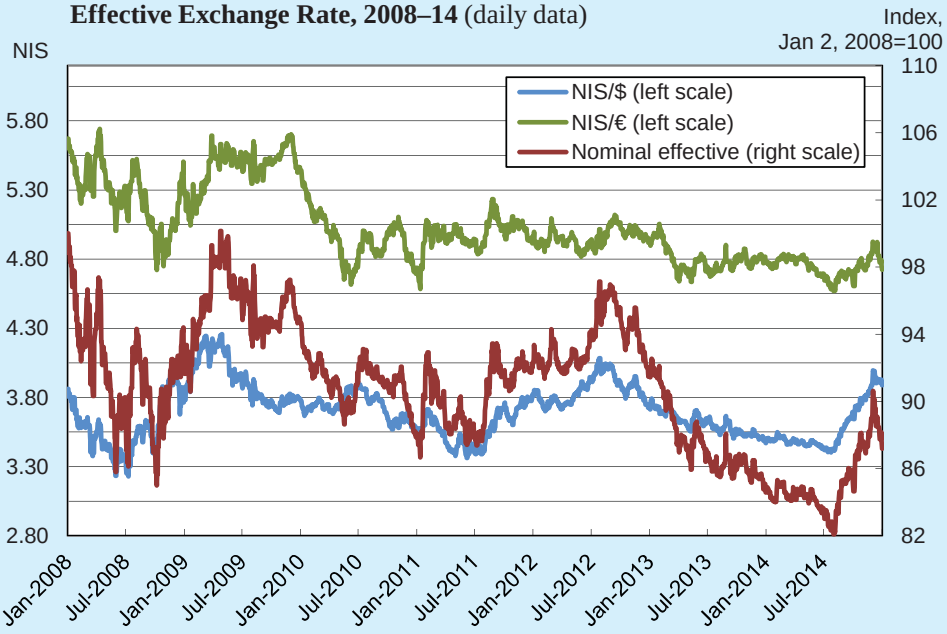
In 2014, the shekel depreciated by 4.2 percent (in terms of the nominal effective exchange rate)[16], but the exchange rate developed in an uneven manner (Figure 3.4). The trend of appreciation that began in September 2012 continued through July 2014, and in terms of the nominal effective exchange rate, the shekel appreciated by about 3 percent from the beginning of the year.

There were a number of basic forces behind the appreciation of the shekel, including the relatively good state of the economy and the large surplus in the basic account created in the past two years (Figure 3.5). The basic account includes the current account of the balance of payments and net foreign direct investment (FDI). The surplus in the current account continued to grow this year, and reflected an increase in the revenue account and in current transfers to Israel, alongside a surplus in the services account that offset a deficit in the goods account. In the latter, the production of natural gas from the Tamar reservoir reduced expenditure on the import of energy products, and the drop in the price of oil is expected to reduce it even more. In order to offset the effect of natural gas production on the current account—and through it on the exchange rate—the Bank of Israel purchased $3.5 billion as part of a purchasing

[15] When the domestic interest rate—after adjustment for the risk premium—is higher than the global interest rate, it attracts capital inflows, which creates pressure for appreciation. When the domestic interest rate is lower than the global rate, it acts to encourage capital outflows and pressure for depreciation.

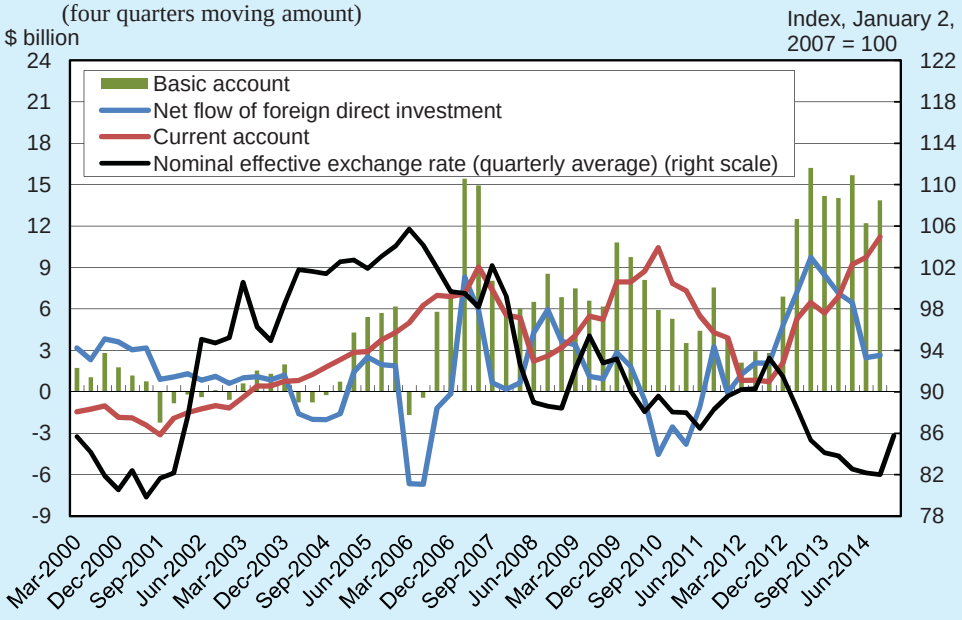
[16] The average in December 2014 compared to the average in December 2013.

Figure 3.4
NIS/$ Exchange Rate, NIS/€ Exchange Rate and Index of Nominal Effective Exchange Rate, 2008–14 (daily data)



SOURCE: Bank of Israel.

Figure 3.5
The Basic Account, the Current Account and the Net Flow of Foreign Direct Investment, 2000–14
(four quarters moving amount)



SOURCE: Based on Central Bureau of Statistics.

program intended for that purpose.[17] The Bank estimates that due to the decline in oil and gas prices, the effect will be slightly more moderate in 2015, and will total about $3.1 billion.

Net FDI remained positive, but narrowed during the year because foreign direct investment in Israel declined relative to the previous four years. Israel's five-year CDS spread—an indication of the risk level in the economy—continued to show the downward trend that has characterized it since 2012. The spread declined from an average of 103 basis points in December 2013 to an average of 77 basis points in December 2014, with only a temporary and minor increase during Operation Protective Edge. This process also supported the appreciation of the shekel.

In contrast, institutional investors in Israel—mainly pension funds—are increasing their flow of investment to abroad, which is supposed to support the depreciation of the shekel. However, since the prolonged appreciation led them to hedge their investments and minimize their exposure to the exchange rate, they strengthened the trend of appreciation.

In the first half of the year, the Bank of Israel continued to purchase foreign exchange in order to moderate the excessive fluctuations of the exchange rate that were not consistent with the basic economic conditions.

The members of the Monetary Committee expressed concern in July over further appreciation, due to their assessment that the appreciation rate (which lasted into July) was not consistent with the fundamental economic conditions described above. This was because the various estimates of the real exchange rate indicated overvaluation—meaning appreciation that exceeded what could be explained by the growing surplus in the current account, the high value of direct investments and the relatively good state of the economy. Since (over) appreciation has a negative impact on the profitability of exports and may negatively impact the volume of employment in the tradable sector, the Bank of Israel continued to purchase foreign exchange in the first half of 2014.[18] Between August and November—after the Bank of Israel lowered the interest rate twice and narrowed the differentials (both actual and expected) between the interest rate in Israel and those around the world—the trend of appreciation reversed and the nominal effective exchange rate depreciated sharply by about 5 percent. The effect of the reduction in the interest rate for September was particularly marked, since it surprised the markets. A main factor causing the depreciation was the recovery of the US economy, a development which was accompanied by the continued tapering of quantitative easing and the expectation that the Federal Reserve would increase the federal funds rate during 2015—as well as secondary factors such as Operation Protective Edge and the bringing forward of the Israeli elections. The fact that institutional investors reduced their hedging as a result of the depreciation contributed to its continuation.

The depreciation between August and November was mainly the result of the recovery of the US economy and of the fact that the Bank of Israel lowered the interest rate.

Since central banks around the world continued to lower interest rates and adopt monetary accommodation, the differential between the monetary interest rate in Israel and the rates in many countries again widened, and the nominal effective exchange

[17] Details appear in the Bank of Israel Annual Report for 2013, Chapter 3.

[18] $3.5 billion bought separately from the purchase program intended to offset the effect of natural gas receipts on the current account. Details appear below.

rate appreciated by 1.3 percent in December. It appreciated by a similar rate from the beginning of 2015 until the date on which the Bank of Israel decided to lower the interest rate for March to 0.1 percent.

(5) Home prices

The housing market was characterized by a high level of uncertainty due to the wait for the "Zero VAT" program. Lively demand in the housing market, and with it the increase in prices, resumed in October and increased in December with the dispersal of the Knesset and the stoppage of the legislative process for the Zero VAT program.

Home prices increased by 4.5 percent in 2014.[19] The housing market was characterized by a high level of uncertainty due to the wait for the "Zero VAT" program—an initiative first presented in March 2014. This program was intended to reduce VAT to 0 percent for eligible first-time home buyers. From March—and for about half a year—the housing market entered a virtual standstill. The pace of new mortgages taken out remained constant, the number of transactions declined, and home prices remained virtually unchanged. The assessment was that the Zero VAT program may accelerate home price increases should it be put into effect without the appropriate increase in supply. Lively demand in the housing market resumed in October, and with it the increase in prices. The decision made at the beginning of December to disperse the Knesset and bring the elections forward stopped the legislative process for the Zero VAT program, and demand in the housing market increased.

The real weighted interest rate on new mortgages[20] continued to decline in 2014—from 1.6 percent in December 2013 to 1 percent in December 2014, continuing its trend since the end of 2011—in parallel with the reductions in the monetary interest rate and the decline in long-term yields. In view of the continued increase in housing credit and the concern over the risk it presents to the banking system, the Supervisor of Banks continued the policy he had previously adopted, and in September he increased the capital buffers that the banking system is required to allocate against this credit (Chapter 4).

The awakening of the housing market observed at the end of 2014 again presents the Bank of Israel with the challenge of maintaining financial stability.

The renewal of demand for housing and of the increase in home prices observed at the end of 2014 again presents the Bank of Israel with the challenge of maintaining financial stability.

c. Monetary Policy

(1) Real yields

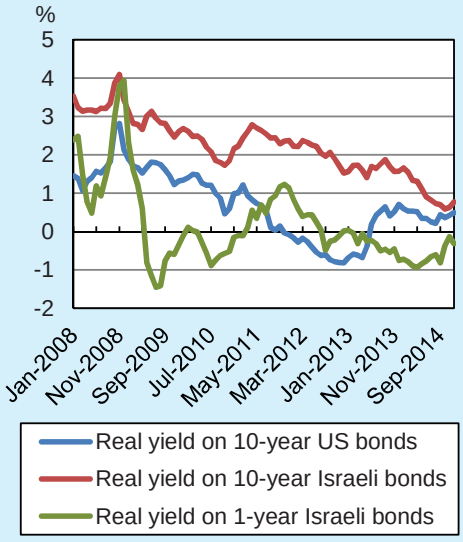
The monetary interest rate is a benchmark for market interest rates , through which it affects consumption and savings by households, the volume of investments in the economy, and the exchange rate—and through the latter, activity in exports and import substitutes, competitiveness, and the current account. Through all these, the interest rate affects prices.

[19] Prices according to the Central Bureau of Statistics Survey of Home Prices. These prices are not included in the Consumer Price Index.

[20] In order to calculate this interest rate, we take the interest rates on various tracks and multiply them by the weight of those tracks in the total mortgage flow. For the purpose of the calculation, we assume an annual inflation rate of 2 percent in the nominal tracks.

The extent of the monetary interest rate's effect also depends on its transmission to market interest rates. There is a high level of transmission between the monetary interest rate and the interest paid by businesses on unindexed credit, and it remained high even in the low interest rate environment that prevailed in 2014 (Chapter 4). As to the transmission from the monetary interest rate to the real yield to maturity on government bonds, such yields are not affected only by the monetary interest rate, but also by the actual and forecast values of a number of other factors, including the global interest rate environment, capital productivity, expected growth, the risk and liquidity premiums, and government debt.

Figure 3.6
Real Yields on 1-Year (Israel) and 10-Year (Israel and US) Government Bonds, January 2008–December 2014
(monthly average)



SOURCE: Bank of Israel.

The real yield to maturity on one-year Israel government bonds has been negative since mid-2012, attesting to the monetary accommodation adopted.

The real yield on bonds with one year to maturity was negative in 2012 and 2013, attesting to the monetary accommodation adopted in order to support economic activity (Figure 3.6 and Table 3.1). The yield continued to fall until April 2014, but began to increase in May, ending the year with a slight increase. In contrast, the yield on 10-year bonds declined—the slope of the yield curve became flatter during the year.

A study conducted by the Bank of Israel Research Department[21] found that (1) the monetary interest rate has a strong effect on real short-term yields, and also affects long-term yields, though to a lesser extent; (2) an increase in the government debt to potential GDP ratio mainly raises long-term yields, and raises short-term yields to a lesser extents; and (3) an increase in real yields in the US raises yields in Israel. The effect of global developments on real domestic yields has increased over the past decade, with the liberalization of foreign trade and capital movements, and with the floating of the exchange rate. This is because in a small and open economy with free capital flows, such as the Israeli economy, capital flows act to equalize domestic and global yields, and the remaining differences between them are derived from differences between risk premia and taxation in the different economies, and from frictions that slow the equalization process.

[21] Brender, A. and S. Ribon, "The Effect of Fiscal and Monetary Policies and the Global Economy on Real Yields of Israel Government Bonds," Discussion Paper No, 2015.02, Bank of Israel Research Department.

According to this study, the increase in yield on a 1-year bond is explained mainly by the decline in 1-year inflation expectations notwithstanding interest rate reductions made during the year, and mainly at year-end. The increase was partly offset by the decline in the ratio of expected government debt to potential GDP. This decline explained most of the decline in yields on 10-year bonds, after the yields remained stable last year (Figure 3.6).

(2) The Taylor rule and the monetary interest rate

In the years preceding the global crisis, a standard Taylor rule appropriately described the actual path of the Bank of Israel interest rate (Bank of Israel Annual Report for 2012, Chapter 3).[22] According to this rule, the monetary interest rate level consistent with market conditions reacts to the deviation of inflation from the target, to the output gap[23] and to the natural interest rate.[24] However, since the start of the crisis at the beginning of 2008, the actual interest rate deviated downward from the interest rate derived from this rule. The Bank of Israel Annual Report for 2013 presented an augmented Taylor rule (Figure 3.7 of that report), which appropriately explains monetary policy in Israel both prior to and since the onset of the global crisis.

In addition to the response to the deviation of inflation from the target and to the output gap in Israel, the augmented Taylor rule also includes a response to the expected growth in the US. This analysis showed that this rule significantly reduces the spread between the actual interest rate and the interest rate derived from the standard Taylor rule. Adding expected activity abroad to the Bank of Israel's response function is consistent with the theory of the natural interest rate in an open economy. According to this theory, the central bank must set the monetary interest rate also according to the natural interest rate, and not just according to the output gap and deviations of inflation from its target. In an open economy, the natural interest rate equals the weighted average of the expected growth rate of potential output[25] in the economy and of the expected growth rate of (actual) output abroad.[26]

[22] See: Taylor, J.B. (1993), "Discretion versus Policy Rules in Practice", Carnegie-Rochester Conference Series on Public Policy 39, pp. 195–214.

[23] The output gap is equal to the difference between output and potential output. There are a number of definitions and estimates of potential output. Details appear in the Bank of Israel Annual Report for 2011, Box 2.2. In this section, we will use the output gap estimate calculated by applying the Hodrick-Prescott filter to the GDP series.

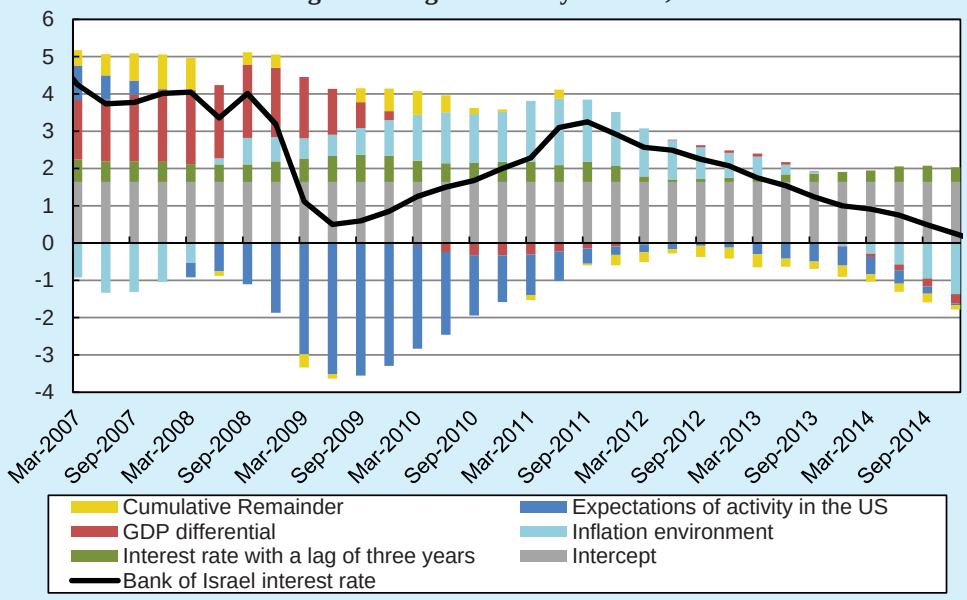
[24] The natural interest rate is equal to the (theoretical) interest rate that would have been set in an economy without price rigidities. The average of the real interest rate for one year forward on 5-to-10-year government bonds serves as the estimate of the natural interest rate in the standard Taylor rule for Israel.

[25] The output that would have existed in an economy with no price rigidities.

[26] See: Clarida, R.H., J. Gali and M. Gertler (2002), "A Simple Framework for International Monetary Policy Analysis", Journal of Monetary Economics, vol. 49(5), pp. 879–904; Gali, J. and T. Monacelli (2005), "Monetary Policy and Exchange Rate Volatility in a Small Open Economy", Review of Economic Studies, 72, pp. 707–734.

Figure 3.7 shows the estimated contributions made by the variables in the augmented Taylor rule to the interest rate path between 2007 and 2014.[27,28] The contributions include the lagged change in the explanatory variables[29], and therefore represent the trends in the contributions of the various variables to the path of the monetary interest rate. Therefore, the contribution presented relates to the environment that preceded the date for which it is presented.

Figure 3.7
Bank of Israel Interest Rate and the Contributions of Macroeconomic Variables According to an Augmented Taylor Rule, 2003–14



SOURCE: Based on Central Bureau of Statistics and Philadelphia Federal Reserve.

The reduction of the interest rate from September 2008 to April 2009 is explained mainly by the global crisis, which is reflected in the fact that expectations of activity in the US made a negative contribution, beyond the contribution of the information inherent in inflation and the output gap. The contributions of growth forecasts in

[27] These contributions reflect partial equilibrium, since they are derived from a single equation (to the monetary interest rate) and not from a complete model. In a complete model, it is possible to derive the structure (external) shocks that explain the paths of the endogenous macroeconomic variables, but such an analysis is beyond the scope of this discussion.

[28] Contrary to the augmented rule presented in the 2013 Report, the rule presented here does not contain an estimate of the natural interest rate, but a constant. Furthermore, it does not include a response to the exchange rate because the estimation found that these two factors are not statistically significant.

[29] The augmented rule also includes an interest smoothing factor. We calculated the contributions according to the rule by reverse iterations in order to break down the contribution of the lagged interest rate to the lag in the other explanatory variables in the rule.

the US[30] reflect the manner in which future changes in activity abroad are expected to affect Israeli exports and the expected path of global interest rates. It should be emphasized that when global economic developments diverge, such as mainly during 2014, expected activity in the US reflects the global environment to a lesser extent.

In 2009, the economy grew by just 1.2 percent, because exports and investments declined sharply as a result of the global crisis. The contribution of the output gap to the interest rate became negative, while the contribution of the inflation environment became positive. This was led by an increase in the housing (rents) and food components of the CPI. Between the fourth quarter of 2007 and the first quarter of 2010—and in the first three quarters of 2011—inflation exceeded the upper bound of the target range and made a strong positive contribution.

The contribution of the output gap to the interest rate was negative and moderate from mid-2010 due to the moderation of activity (Chapter 2). The moderation of domestic activity, together with the trend of decline in inflation since mid-2011, explain the interest rate reductions made by the Bank of Israel in the past two-and-a-half years. In August of 2014, the Bank of Israel lowered the rate (for September) to its lowest level ever to that point—0.25 percent—for a number of reasons: (1) the inflation environment declined below the lower bound of the target range and became negative in the fourth quarter, (2) the slowdown in global activity continued, excluding the US, and (3) the appreciation of the shekel continued. In February 2015, the Bank of Israel lowered the interest rate (for March) to the historic low of 0.1 percent, and narrowed the corridor around the Bank of Israel interest rate in the credit window and the deposit window for commercial banks from ±0.25 percent to ±0.1 percent, due to the increasing pace of appreciation in 2014 and its possible effects on activity and on inflation.

Over the course of the year, the Bank of Israel lowered the interest rate, to a level of 0.25 percent for September, because global activity continued to indicate a slowdown, excluding the US, the domestic inflation environment reached a negative level, and the shekel continued to appreciate until July.

2. PRICES

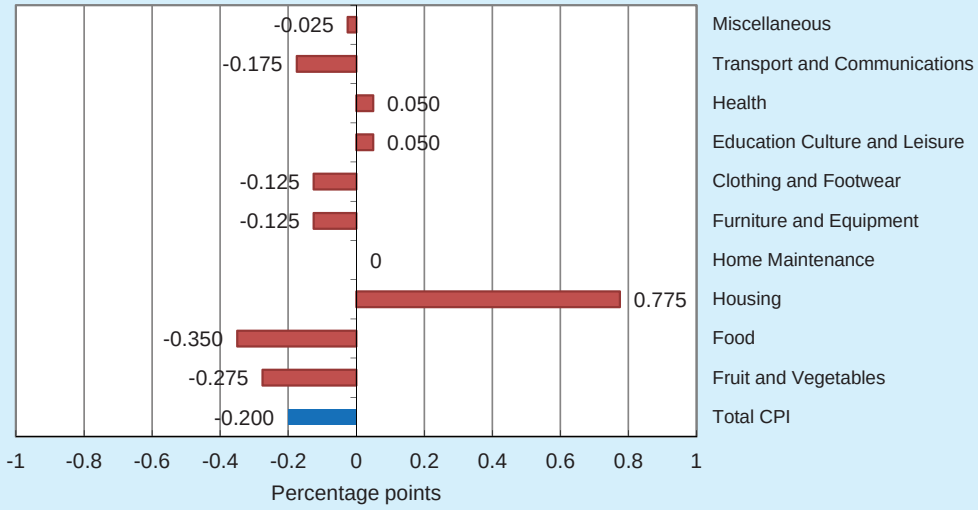
a. The development of prices

The Consumer Price Index declined by 0.2 percent in 2014—below the price stability target range of 1–3 percent (Figure 3.2). Inflation over the past 12 months ranged in the lower portion of the target range until May, fell below the lower bound of the range in June, and became negative since September. The decline is mainly the result of a decline in the food, fruit and vegetables, and transport and communications components (Figure 3.8 and Table 3.2). The moderation in the pace of increase of the housing (rents) component during most of the year also reduced annual inflation

The decline in inflation during the year is mainly the result of a decline in the food, fruit and vegetables, and transport and communications components. In contrast the housing (rents) component had the largest increase in the CPI for the seventh consecutive year.

[30] The forecasts are taken from the Livingston Survey and related to forecasts of the growth rate in the US in the coming six months. In the augmented rule, the interest rate reacts to the deviation of forecasts from the multi-year average. The Bank of Israel Research Department found that including expectations of activity in the eurozone—the main destination of Israeli exports—in addition to expectations of activity in the US results in poorer fit of the rule.

Figure 3.8
Contribution of the CPI Components to Total Inflation, 2014



SOURCE: Central Bureau of Statistics.

compared to 2013, but toward the end of the year rents resumed their previous rate of increase, and had the largest increase in the CPI for the seventh consecutive year. The CPI excluding fruit and vegetables, food and energy[31]—an indicator of trend inflation—ranged below the lower bound of the range throughout the year, except in February and March, and increased by about 0.8 percent during 2014.[32] The energy component—which mainly includes fuel prices for vehicles and electricity prices—declined by 3.9 percent in 2014 and reduced the overall CPI by 0.3 percentage points, after increasing by 1.6 percent in the previous year.

The decline in inflation recorded in 2014 derived mainly from supply-side factors. This assessment is supported by the fact that imports and private consumption continued to expand.

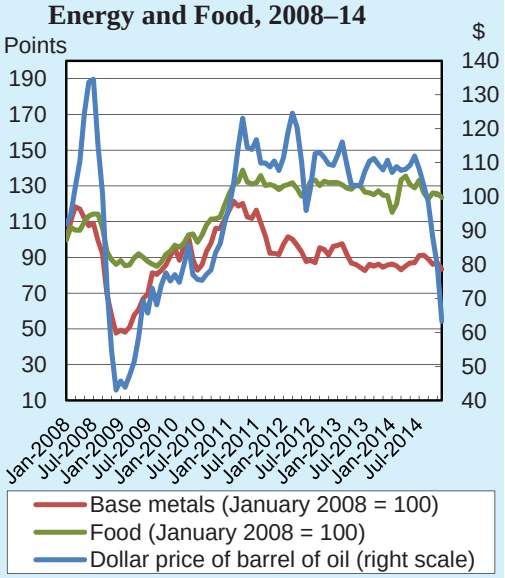
There are a number of factors that have an impact on the development of prices, including real activity, labor market developments, the exchange rate, commodities and energy prices, changes in taxation, structural reforms, and the response of monetary policy makers to these developments and to expected developments. The negative inflation recorded in Israel in 2014 derived mainly from supply-side factors: (1) global inflation was low due to the decline in global agricultural commodities prices and due to the sharp decline in the price of oil in the second half of the year (Figure 3.9); (2) the

[31] In the past, the housing component was also deducted since volatility in that component mainly reflected volatility in the exchange rate, and less so the inflation environment, due to the custom of denominating rents in dollars. This custom waned in recent years with the strengthening of the shekel, and in 2014, 98 percent of rents were denominated in shekels. As a result, the volatility of the housing component waned, and it is therefore reasonable to assume that it better reflects the inflation environment even in the short term.

[32] A discussion of the core inflation indices, and the considerations for deducting various components from the overall CPI, appears in Ribon S. (2010), "Indices of Core Inflation in Israel", Bank of Israel Survey, no. 84, pp. 125–169. See also the discussion of prices in the Bank of Israel Annual Report for 2012.

prolonged appreciation of the shekel from the end of 2012 to July 2014; (3) domestic communications prices continued to decline as a result of increased competition in the industry; and (4) the effect of the increases in VAT[33] and in taxes on tobacco and alcoholic beverages from mid-2013 dissipated.

Figure 3.9
Global Indices of Base Metals, Energy and Food, 2008–14



SOURCE: Based on Bloomberg.

There were also no noticeable pressures in the labor market for price increases—continuing the trend that began in the second half of 2011. The development of labor productivity—a variable estimated through real product per work hour—is an indication of the development of marginal productivity which, for its part, is a basis for determining wages.[34] When labor compensation exceeds productivity, it causes upward pressure on prices. The change in the labor compensation was less than the change in productivity since mid-2012, thus moderating price increases (Chapter 2).[35] While real wages increased in 2014, the increase derived mainly from the unexpected decline in inflation and did not reflect an acceleration in the increase of nominal wages or pressure for price increases due to demand for higher wages. Structural factors in the labor market—and particularly the decline in structural unemployment in the past decade[36]—contributed to the absence of inflationary pressures from the labor market.

[33] A discussion of the characteristics of setting prices in Israel and the effect of VAT appears in Box 3.1 of the Bank of Israel Annual Report for 2013.

[34] In competitive markets, the real labor compensation equals its marginal productivity. The labor compensation is the cost of employing workers, and includes mainly salary and social benefit contributions.

[35] The pressures for price increases from the labor market in recent years are discussed in Chapter 3 of the Bank of Israel Annual Report for 2012, and in this report.

[36] The structural unemployment rate in Israel declined in the past decade both according to an estimation conducted on the basis of a distinction between cyclical and structural factors in the labor market, and according to an estimation of the non-accelerating inflation rate of unemployment (NAIRU)—an unemployment rate that reconciles with the lack of acceleration of inflation. An analysis of the decline in the structural unemployment rate in Israel appears in Yakhin, Y. and N. Presman (2013), "A Flow-Accounting Model of the Labor Market: An Application to Israel", Discussion Paper no. 2013.05, Bank of Israel Research Department; and in Elkayam, E. and A. Ilek (2013), "Estimating the NAIRU Using Both the Phillips and the Beveridge Curves", Bank of Israel Research Department, Discussion Paper 2013.10.

Table 3.2
Development of prices, by various components, 2010–14

Period	Consumer Price Index	Fruit and Vegetables	Food	Housing	Home Maintenance	Furniture and Equipment	Clothing and Footwear	Education, Culture and Entertainment	Health	Transport and Communication	Miscellaneous	Energy Index[a]	Index excluding energy and food	Index excluding energy, food, fruit and vegetables	Seasonally adjusted index[b]
(end of period, rate of change, percent)															
2010	2.7	16.0	2.0	4.9	-1.2	-2.8	4.5	1.5	0.6	2.0	3.2	-0.4	3.1	2.5	
2011	2.2	-8.1	2.3	5.1	3.9	-0.4	2.1	-0.3	2.6	1.7	1.3	9.2	1.6	2.1	
2012	1.6	-1.7	4.0	3.3	4.7	-1.4	0.4	-2.9	2.5	-0.4	5.4	6.5	0.8	0.9	
2013	1.8	11.8	3.3	2.9	3.9	-2.5	-1.8	2.2	0.8	-2.0	4.5	1.6	1.6	1.3	
2014	-0.2	-9.3	-2.5	3.1	0.0	-3.6	-3.7	0.4	0.8	-0.9	-0.5	-3.9	0.6	0.8	
(monthly rate of change, percent)															
2014															
January	-0.6	0.9	-0.8	-0.6	-0.1	-0.6	-7.7	-0.4	-0.1	0.1	-0.4	0.3	-0.6	-0.8	-0.2
February	-0.2	-2.9	-0.3	0.3	0.0	0.6	-4.8	0.1	0.4	-0.7	0.7	-0.6	-0.1	0.0	0.1
March	0.3	-0.4	0.1	0.9	0.1	-0.1	-1.5	0.3	-0.3	0.3	-0.1	1.1	0.3	0.3	0.3
April	0.1	-1.3	-0.3	0.1	0.0	-1.1	2.3	0.7	0.1	0.6	-0.7	-0.3	0.2	0.2	-0.5
May	0.1	0.1	0.0	0.3	0.1	0.3	-0.6	0.4	0.1	0.0	0.1	0.5	0.1	0.2	-0.1
June	0.3	-2.7	-0.3	0.3	0.1	-0.2	10.0	0.1	0.1	0.0	0.0	-0.3	0.5	0.5	0.2
July	0.1	1.9	-0.4	0.9	-0.1	-1.4	-7.5	-0.3	0.2	0.8	-0.4	0.7	0.1	0.0	-0.1
August	-0.1	4.6	0.1	0.5	0.0	-0.3	-6.1	0.7	0.2	-1.0	0.2	-1.5	0.0	0.0	-0.2
September	-0.3	-3.3	-1.0	0.0	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.5	-0.1	-0.2	-0.2	0.0
October	0.3	0.7	0.7	0.2	0.1	0.3	5.5	0.1	0.1	0.0	0.2	-0.5	0.3	0.4	0.2
November	-0.2	-2.1	-0.2	0.2	0.0	-0.1	2.3	-0.5	-0.3	-0.9	0.6	-2.0	0.0	0.0	0.1
December	0.0	-4.8	-0.2	0.1	0.0	-1.1	6.2	-0.7	0.3	0.1	-0.2	-1.2	0.1	0.3	0.0

[a] The energy component includes vehicle fuels and oils, and household electricity, natural gas and diesel..

[b] As calculated in the Bank of Israel Research Department (see Box 1 in the Inflation Report for the first quarter of 2010).

SOURCE: Central Bureau of Statistics.

When structural unemployment contracts, it is easier to respond to increased demand by expanding employment.

Global commodity prices declined in 2014; the second half of 2014 featured a sharp and surprising drop in the price of oil.

Commodities constitute the raw materials for production. Commodity prices therefore affect the cost of production and, through it, market prices. Commodity prices declined in 2014, but their development was not uniform: Agricultural commodities prices remained volatile, declining in 2014 by about 4 percent (in dollar terms), after increasing by about 15 percent in the first third of the year. The second half of 2014 featured a sharp and surprising drop in the price of oil (which has a direct impact on the transport and home maintenance components of the CPI). Between July 2013 and July 2014, oil prices remained stable at around $110 per barrel. By the end of 2014, the price had fallen by about 50 percent.[37] A number of processes led to the drop: (1) Supply increased because shale oil production increased in the US due to technological change. Oil production in the US is at a 30-year high; (2) OPEC member states, led by Saudi Arabia[38], maintained stable levels of oil production; (3) the supply of oil in OECD countries increased; and (4) demand from China and Europe declined. Base metal prices were about 3 percent lower at the end of the year than in the previous year, after having increased by about 10 percent between April and August.

Import prices in shekels declined during the first half of the year, and increased in the second half (with the exception of the import price of fuel).

In order to analyze how global commodity prices affect prices in the economy, the exchange rate must be taken into account, since commodity prices are denominated in foreign currency. Fluctuations in the exchange rate affect the domestic cost, which for its part affects prices. These prices are passed on to the end consumers, either through the direct effect on the price of the final product, or through the effect on the cost of production.[39] It is important to note that changes in the exchange rate have a gradual effect on prices. According to a Research Department estimate, the direct transmission from the exchange rate to the Consumer Price Index in the following year ranges between 0.15 and 0.25—an appreciation of 1 percent in the exchange rate lowers consumer prices in the following year by between 0.15 and 0.25 percent[40], and depreciation raises prices by the same relative amount.

The development of the exchange rate in 2014—appreciation until July and depreciation from August to November—was the opposite of the development of global commodities prices. Weighting these two factors led to the shekel price of imports declining in the first half of 2014, and increasing—except for the prices of

[37] Discussion of this appears in "The Fall in Oil Prices—Global View and Israeli Perspective" in Bank of Israel, Monetary Policy Report number 42, for the second half of 2014, February 2015.

[38] See the US Energy and Information Administration Report: "The Availability and Price of Petroleum and Petroleum Products Produced in Countries Other Than Iran", December 18, 2014.

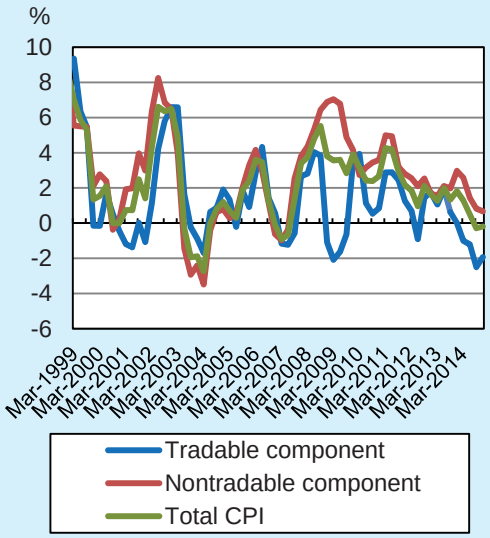
[39] Fluctuations in the nominal exchange rate may also have an indirect impact on domestic prices from the demand side, if the fluctuations are also reflected in the real exchange rate. For instance, as a result of a real depreciation, domestic goods become less expensive than foreign products, which increases global demand for domestic products and leads to upward pressure on domestic prices while eroding the original real depreciation.

[40] The estimate is based on: Argov, E., E. Barnea, A. Binyamini, E. Borenstein, D. Elkayam, I. Rozenshtrom (2012), "MOISE: A DSGE Model for the Israeli Economy", Bank of Israel, Research Department, Discussion Paper no. 2012.06.

fuel imports—in the second half of the year, because the depreciation offset the decline in the dollar price of imports (Appendix Table 3.A.2).

According to Research Department calculations, the nontradable component makes up about two-thirds of the CPI, of which about 40 percent is comprised of the housing component.[41] Prices in the nontradable component increased from mid-2005 at a higher rate than prices in the tradable component (Figure 3.10).[42] This development reflects the prolonged real appreciation in recent years, particularly since the beginning of the global crisis (Chapter 7.2). The negative inflation in 2014 reflected both moderation in the increase of prices in the nontradable component—which increased by 0.7 percent[43] after increasing by 3 percent in 2013—and the decline in the tradable component—1.9 percent in 2014, following no change in 2013.

Figure 3.10
The CPI and the Tradable and Nontradable Components, 1999–2014 (annual rates of change, end of quarter data)



SOURCE: Based on Central Bureau of Statistics.

The Research Department found that prices in the tradable component declined at the end of 2014 mainly because oil prices declined sharply in the second half of the year, even though there was a sharp depreciation of the shekel between August and November. In recent years, the correlation between the change in the exchange rate and inflation has declined.[44] However, a decline in the correlation does not necessarily

[41] The division of the CPI into tradable and nontradable components is based on A. Ben-Bassat (1989), "Indices of Prices of Tradable and Nontradable Goods", Bank of Israel, Research Department, Discussion Papers Series. Another calculation of the two components—based on D. Orfaig (Flikier) (awaiting publication), "Transmission Channels from the Exchange Rate to the Consumer Price Index: A Microindustry View of the Tradable Component of the CPI"—shows similar results. It should be noted that some of the prices of tradable goods are also affected by nontradable factors, such as the cost of storage, rent, shipping, and so forth.

[42] This result remains even when assessing the nontradable component excluding housing.

[43] Excluding the housing component, prices in the nontradable component declined by 0.9 percent in 2014.

[44] Until 2007, rental contracts denominated in dollars constituted about 90 percent of contracts included in the housing unit of the Consumer Price Index. Thereafter, the rate declined to around zero as a result of the extended appreciation of the shekel that began in April 2006. This decline explains some of the decline in the correlation between changes in the exchange rate and inflation; however, the correlation between changes in the exchange rate and the CPI excluding the housing component also declined significantly in recent years.

indicate a change in the transmission from the exchange rate to prices, since the correlation reflects the effects of all shocks that hit the economy, including the direct effect of the exchange rate on prices. Therefore, even though the correlation declined, it is most likely that the effect of the depreciation on prices has not yet been exhausted.

b. The development of specific components of the Consumer Price Index

(1) Components in which the prices declined or moderated significantly

The food component

The food component declined by 2.5 percent during 2014, shaving about 0.3 percentage points from the overall CPI (Figure 3.8). In contrast, in the previous three years this component increased more than the overall CPI. The increase in this component beyond the overall CPI between 2011 and 2013 was completely offset in 2014, and between the social protest in the summer of 2011 and 2014, food prices increased at a similar rate to the increase of the overall CPI. The Research Department found that the decline in the food component in 2014 and the increase in that component in recent years are not fully explained by changes in global prices, the exchange rate or VAT (Chapter 1).

An assessment of the sub-components within the food component shows that the decline in 2014 can be explained by the following processes: (1) Moderation of the rate of increase in the nontradable food component, which fell to zero in the second half of the year following a decline in the prices of milk and milk products (Figure 3.11a); (2) a decline in the tradable food component (Figure 3.11b), which began in the second half of 2013, because prices of meats declined between 3 and 6 percent, even though global livestock prices increased by 18 percent in 2014, and because beverage prices declined by about 4 percent. The decline in these sub-components apparently does not reflect a decline in aggregate demand for private consumption. In addition to these sub-components, the decline in inflation in 2014 also reflects a decline in the prices of fresh fruit and vegetables, which are not included in the food components, and which also contributed to moderating the increase in the nontradable component of the Consumer Price Index (Figure 3.11a).

The communications component

The communications component declined by 5.4 percent in 2014—following a decline of 6.4 percent in 2013, and of 7.1 percent in 2012—and removed about 0.2 percentage points from the overall CPI. This decline was mainly the result of lower telephone service prices, after regulations changed the market structure and increased competition in the industry, which had been among the most concentrated in the economy.[45]

[45] See G. Ben-Naim and A. Suari (2012), "Analysis of Concentration in the Israeli Economy", Appendix to the Report of the Committee to Increase Competition in the Israeli Economy.

Figure 3.11a
Development of the Nontradable Component of the CPI and its Constituent Contributions, 2011–14

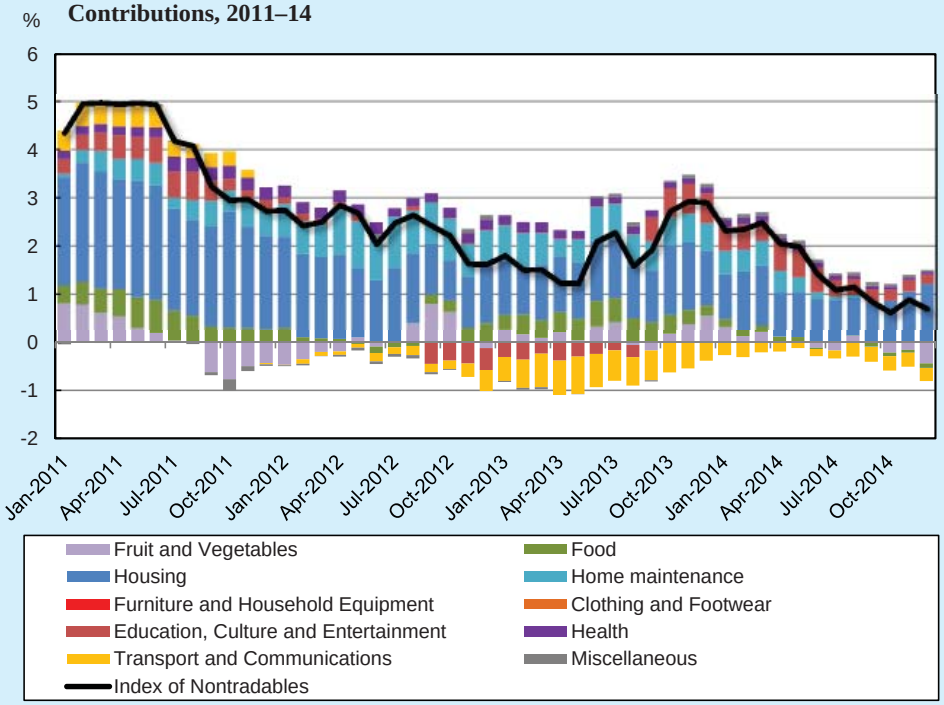
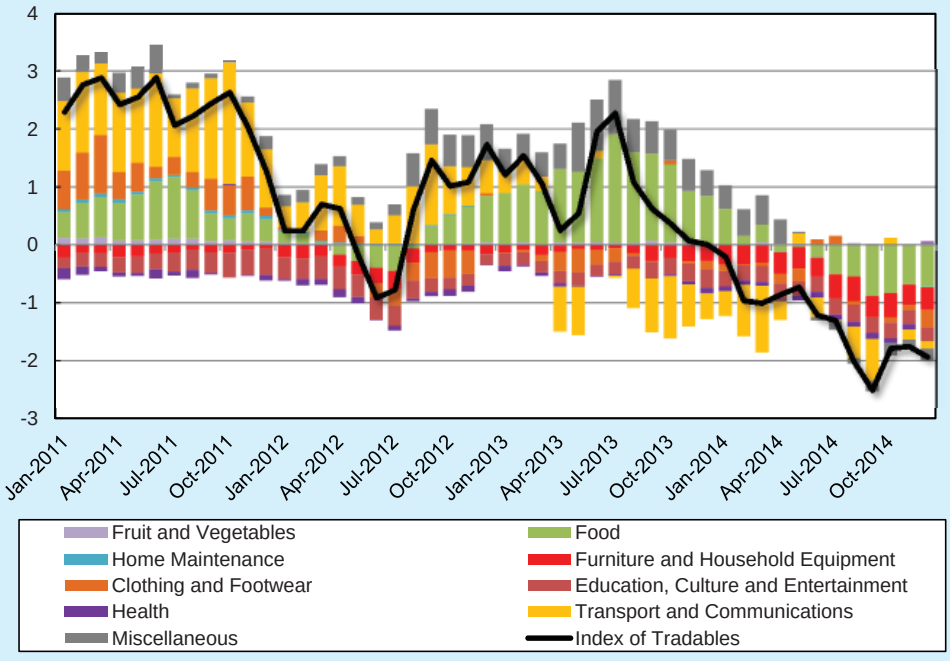


Figure 3.11b
Development of the Tradable Component of the CPI and its Constituent Contributions, 2011–14



SOURCE: Based on Central Bureau of Statistics.

The home maintenance component

The home maintenance component includes expenditures on water, electricity, gas, and home heating oil and fuel, among other things. This component remained unchanged over the year, after increasing by 3.9 percent in 2013. This component removed about 0.4 percentage points from the overall CPI in January and February 2015, after the reductions in electricity and water prices.[46] Electricity prices increased in recent years, after the government's 2011 decision to spread over a number of years the price increase derived from the replacement of natural gas with more expensive oil due to the interruption of gas imports from Egypt and the depletion of the Yam Tethys gas reservoir.

Other factors

The furniture and household equipment component declined in 2014, continuing the long-term trend, and also contributed to a decline in inflation (Figure 3.8). The miscellaneous component contributed slightly to the decline in the inflation rate in 2014, following the dissipation of the effect of the 2013 increase in the tax on cigarettes and tobacco—a policy measure with a one-time effect on inflation (Figure 3.8).

(2) Components with a clear upward contribution to inflation

The housing component

The housing component mainly reflects rents. It increased by 3.1 percent in 2014—similar to its increase of the previous year—and made an upward contribution of about 0.8 percentage points to the change in the overall CPI. Rents developed in a nonuniform manner in 2014. Between April and October, the increase over the past 12 months moderated to an average of 2.2 percent. (See Section 1b(5) and Chapter 7.1.)

The education component

The education component increased by 1.7 percent due to higher prices in the kindergarten item, and made an upward contribution of about 0.1 percentage points to the CPI. This was despite the implementation of the recommendation of the Trajtenberg Committee to provide free education for 3–4 year old children in public kindergartens, which was spread over the years 2012–14. The implementation of the recommendation explains the decline in this item in 2012, and offset increases in the item in the following two years.

***

In summation, the analysis shows that the decline in inflation in 2014 was mainly the result of supply factors that seem to have a temporary direct impact on inflation. This assessment was also supported by National Accounts data, which showed that imports and private consumption continued to expand. However, the decline in inflation in

[46] Water prices were also lowered in January 2014.

2014—continuing the trend that began in 2011—may also partly reflect a decline in demand against the background of the slowdown in global activity.

3. THE MONETARY BASE, SOURCES OF CHANGE IN IT, AND MONETARY AGGREGATES

a. The monetary base

Interest is the price of money, meaning it is the alternative cost of holding liquidity. Therefore, changes in the interest rate have an impact on the demand for liquidity. When the nominal interest rate is the main tool of monetary policy, the central bank operates so that the money supply is completely flexible and the monetary base—meaning the total banknotes and coins in circulation as well as the commercial banks' demand deposits at the Bank of Israel[47]—is determined by the demand for liquidity at a given interest rate.

The monetary base is affected by flows that are not under the Bank of Israel's control, such as government accounts[48], and by flows that are under its control, such as foreign exchange and bond purchases that serve to achieve the various policy objectives. The Bank absorbs liquidity from the markets, or injects liquidity into the commercial banks in order to provide the demand for the monetary base in accordance with the Bank of Israel interest rate. The Bank adjusts the monetary base to the interest rate that it sets by issuing *makam* and through interest-bearing deposits of the banks, which are issued to them in tenders and are not included in the monetary base.[49] The actions taken by the Bank of Israel in relation to the monetary base are not intended to offset an injection or an absorption of liquidity from any particular source. The Bank takes into account total inflows and absorptions that are not in line with the interest rate, and takes action in order that the monetary base demanded by the public is in line with the Bank of Israel interest rate.

The monetary base grew by NIS 11.7 billion in 2014—almost double its growth of the previous year, affected by the interest rate reductions decided upon by the Bank of Israel. The M1 monetary aggregate also increased markedly.

Due to the interest rate reductions and its low level, the monetary base grew by NIS 11.7 billion in 2014—almost double its growth of the previous year (Table 3.4). Until the crisis of 2008, government activity was one of the main factors affecting the monetary base. But since 2008, excluding an interruption between August 2011 and March 2013, the Bank of Israel's interventions in the foreign exchange market created the largest inflow into the monetary base. Since the foreign exchange purchases injected tens of billions of shekels each year, the Bank absorbed them in order to sterilize the effects of its own activities on the monetary base[50] in order to prevent

[47] Demand deposits by the public are also part of liquidity in the economy, but the Bank of Israel has only an indirect effect on their volume, through the reserve requirement imposed on the commercial banks.

[48] Government activities also affect the monetary base, since the government's accounts are managed at the Bank of Israel (pursuant to the Bank of Israel Law).

[49] Because they are not recognized for the purpose of meeting reserve requirements.

[50] In 2009, the Bank was also required to sterilize the effects of government bond purchases.

pressure for the short-term interest rate to decline to a level lower than that set by the Bank. Similar to 2011, the absorption in 2014 was done mainly by increasing the banks' deposits at the Bank of Israel.

b. The monetary aggregates

M1 as a share of M2 increased, indicating that the public replaced interest-bearing deposits with demand deposits.

The M1 aggregate includes cash in the hands of the public and demand deposits. An estimation of basic demand for M1 and its components between 1998 and 2014[51] finds that the development of GDP and *makam* yields explains the path of the development of M1 throughout the sample period. In 2009, it increased sharply—by 52 percent—and this increase is explained mainly by the decline in *makam* yields against the background of the reduction of the monetary interest rate. The interest rate reductions carried out in recent years later supported the increase in means of payment: the amount of money expanded at a higher pace in 2013 and 2014 than in the three previous years (Table 3.3).

Table 3.3
Rate of change in monetary aggregates, 2010–14

	1		2	1+2=3	4	5	6	3+4+5+6=7
	Monetary base[a]	Cash held by the public	Current accounts	M1[b]	Short-term deposits[c] up to 3 months	Short-term deposits[c] up to one year	SRO[d]	M2[e]
	(Average in December compared to average the previous December)							
2010	6.3	7.6	3.2	4.6	4.0	16.2	-4.5	3.6
2011	12.3	11.5	-3.4	1.6	14.5	25.4	4.5	10.5
2012	9.2	13.4	5.9	8.7	7.9	8.5	7.9	8.2
2013	6.5	3.9	22.3	15.2	-1.3	0.3	22.2	6.6
2014	11.6	11.7	48.3	35.6	-8.1	11.6	9.8	8.4
	(Quarterly average compared to average in the previous quarter)							
2014								
Q1	2.2	1.3	5.4	3.9	-1.1	3.1	7.1	2.1
Q2	4.4	3.4	7.1	5.8	-0.8	-3.2	5.4	1.9
Q3	4.3	2.4	12.4	9.0	-3.9	11.0	-1.5	1.5
Q4	1.2	3.1	14.5	10.9	-2.2	0.6	2.0	2.7

[a] Total banknotes and coins in circulation and current deposits by the commercial banks with the Bank of Israel.
[b] M1 = cash and demand deposits.
[c] M2 = M1+SRO+unindexed deposits of up to one year.
[d] Term deposits.
[e] Self-renewing overnight deposit - a daily liquid deposit.
SOURCE: Bank of Israel and Central Bureau of Statistics data.

[51] The estimation was made by the Research Department. In the three aggregates—cash in the hands of the public, demand deposits, and M1—the main variables are the aggregate with a lag of one quarter, the log of the level of real GDP, and the log of yields on one-year *makam*.

Table 3.4
Sources of change in the monetary base, 2010–14

(NIS billion)

	2010	2011	2012	2013	2014	2014 Q1	2014 Q2	2014 Q3	2014 Q4
1. Injections from the government and the Jewish Agency	1.42	-2.14	-9.13	-10.45	1.17	-10.62	-4.05	4.56	11.29
of which: the government	0.60	-2.61	-9.67	-10.45	1.17	-10.62	-4.05	4.56	11.29
2. Foreign exchange conversions[a]	43.06	15.90	-0.23	19.19	24.66	10.41	4.08	6.81	3.37
of which: Bank of Israel	43.75	16.17	0.00	19.04	24.63	10.40	4.07	6.80	3.36
3. Total (1+2)	44.48	13.76	-9.36	8.74	25.83	-0.21	0.03	11.37	14.65
4. Bank of Israel injections	-32.96	-7.50	10.05	-2.41	-14.19	0.69	5.57	-7.40	-13.05
of which: Monetary loan	-0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Makam	-47.27	16.65	8.15	-6.35	-3.22	-2.69	-2.76	1.19	1.04
Swap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bank term deposits	13.13	-27.63	-1.00	2.00	-12.34	3.00	8.00	-9.00	-14.34
Interest[b]	1.25	2.89	2.30	1.22	0.59	0.22	0.18	0.12	0.06
Bond purchases	0	0	0	0	0	0	0	0	0
Repo	0	0	0	0	0	0	0	0	0
5. Total change in the monetary base	11.51	6.08	0.75	6.44	11.70	0.48	5.62	3.78	1.82

[a] This item includes, among other things, receipts (payments) in foreign exchange that the Bank of Israel and the government receive from (transfer to) the private sector, for instance income tax. These payments do not change the monetary base. They appear in the section on government injections and in this section, with the opposite sign.

[b] Excluding *makam*.

SOURCE: Bank of Israel Accounting Division.

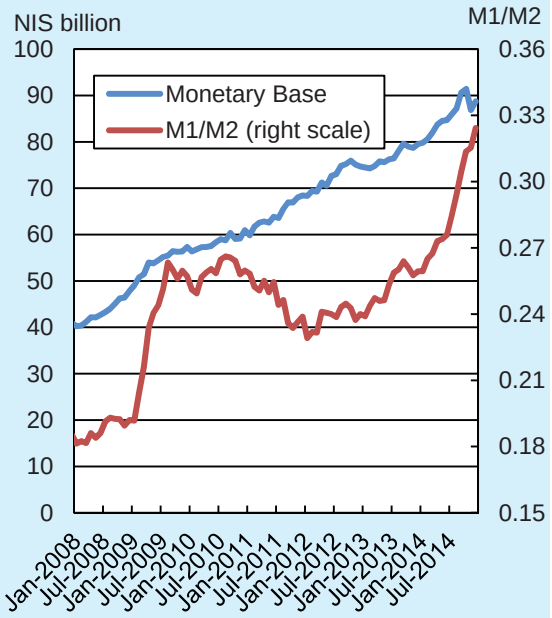
During the reviewed period, M1 as a share of M2—an aggregate that includes unindexed deposits of up to one year, in addition to M1—increased (Figure 3.12). The increase indicates that the public replaced interest-bearing deposits with demand deposits to a certain extent, since unindexed deposits of up to one year do not generate a yield that compensates for the loss of liquidity they entail.[52] This development is not unique to 2009. From mid-2010 until the beginning of 2012, M1 as a share of M2 declined, in parallel with the process of raising the interest rate that began at the end of 2009. Thereafter—with the turnaround in the trend and the process of lowering the interest rate—M1 as a share of M2 again increased, although the rate of change was much more moderate than it had been in 2009. This is reflected in the fact that between 2000 and 2014, there is a correlation of -0.87 between the Bank of Israel interest rate and M1 as a share of M2.

In October 2014, the government adopted the recommendations of the interministerial team established a year earlier with the aim of assessing the problems inherent in

[52] Details appear in Chapter 3 of the Bank of Israel Annual Report for 2012.

the use of cash and paper-based means of payment (the Locker Committee).[53] The team assessed how to reduce the phenomenon of money laundering, and to enable the efficient use of advanced means of payment. Its main recommendations included: (1) limiting the amounts of cash transactions; (2) limiting the use of tradable checks; and (3) promoting the use of advanced electronic means of payment. In January 2015, the relevant draft laws were published for public comments. The Ministry of Finance published the draft law for reducing the use of cash, and the Ministry of Justice published the draft law for electronic check settlement. The legislative processes are expected to be delayed due to the dispersal of the Knesset, but assuming that the other variables remain constant, the implementation of the committee's recommendations is expected to change the composition of the monetary aggregates in the economy.

Figure 3.12
The Monetary Aggregates, 2008–14
(monthly averages)



SOURCE: Bank of Israel.

[53] Government Decision number 2115 of Wednesday, October 22, 2014.

Table 3.A.1
Monetary policy measures since the Monetary Committee was appointed

For month:	Interest rate decision (percentage points)	Interest rate (percent)	Distribution of Monetary Committee members' votes in interest rate decisions		
			Increase	Keep unchanged	Reduce
November-11	No change	3	0	6	0
December-11	-0.25	2.75	0	2	4
January-12	No change	2.75	0	5	1
February-12	-0.25	2.5	0	1	5
March-12	No change	2.5	0	6	0
April-12	No change	2.5	0	6	0
May-12	No change	2.5	0	6	0
June-12	No change	2.5	0	5	1
July-12	-0.25	2.25	0	1	5
August-12	No change	2.25	0	6	0
September-12	No change	2.25	0	6	0
October-12	No change	2.25	0	6	0
November-12[a]	-0.25	2	0	2	4
December-12	No change	2	0	6	0
January-13	-0.25	1.75	0	1	5
February-13	No change	1.75	0	6	0
March-13	No change	1.75	0	5	1
April-May-13	No change	1.75	0	6	0
May-13[b]	-0.25	1.5	0	0	6
June-13	-0.25	1.25	0	1	5
July-13	No change	1.25	0	6	0
August-13[c]	No change	1.25	0	5	0
September-13	No change	1.25	0	5	0
October-13	-0.25	1	0	2	3
November-13[a]	No change	1	0	5	0
December-13	No change	1	0	5	0
January-14[d]	No change	1	0	5	0
February-14[d]	No change	1	0	5	0
March-14[d]	-0.25	0.75	0	1	4
April-May-14	No change	0.75	0	6	0
May-14	No change	0.75	1	5	0
June-14	No change	0.75	0	6	0
July-14	No change	0.75	0	5	1
August-14	-0.25	0.5	0	0	6
September-14	-0.25	0.25	0	1	5
October-14	No change	0.25	0	6	0
November-14[d]	No change	0.25	0	5	0
December-14[d]	No change	0.25	0	5	0

[a] In parallel with the Monetary Committee's interest rate decision for November, the Supervisor of Banks limited the LTV ratio of new housing loans.

[b] A discussion beyond the normal schedule. In addition, the Committee decided to begin a foreign exchange purchasing program to offset the effects of natural gas production.

[c] Between the interest rate decisions for August 2013—March 2014, there were five members of the Monetary Committee.With the appointment of the Deputy Governor in March 2014, there are once again six members of the Committee.

[d] For these discussions, there were five members of the Monetary Committee.

SOURCE: Bank of Israel.

Table 3.A.2
Import prices, the exchange rate and consumer prices, 2010–14

	Import prices in dollars					Import prices in shekels[a]				
			Import prices in dollars		Dollar			Manufacturing inputs		Consumer
Period	Consumer prices	Investment goods	Excluding fuel	Fuel	Exchange rate	Consumer prices	Investment goods	Excluding fuel	Fuel	Price Index
	(compared to previous period, yearly averages)									
2010	3.0	-1.2	4.2	25.4	-5.1	-2.2	-6.2	-1.1	19.5	2.7
2011	7.4	3.3	9.4	39.8	-4.1	3.0	-1.0	4.9	34.0	3.5
2012	-2.7	-2.9	-3.6	-5.3	7.8	4.8	4.7	3.9	2.0	1.7
2013	1.1	1.5	0.2	-2.6	-6.4	-5.3	-5.0	-6.2	-8.7	1.5
2014	0.6	1.0	-1.3	-8.0	-0.9	-0.3	0.1	-2.3	-9.2	0.5
	(compared to the same period last year, fourth quarter)									
2010	4.9	-1.1	4.6	15.0	-3.9	0.9	-4.9	0.5	10.6	2.5
2011	2.5	0.2	4.5	29.8	2.8	5.4	3.0	7.5	33.4	2.5
2012	-1.2	-1.3	-2.3	-5.8	3.2	1.9	1.9	0.8	-2.7	1.6
2013	2.3	3.2	-0.8	-1.2	-8.2	-6.1	-5.3	-8.9	-9.3	1.9
2014	-2.1	-2.3	-3.5	-24.8	8.7	6.4	6.2	4.9	-18.2	-0.2
	(compared to the previous quarter)									
2014										
Q1	-0.2	-0.6	0.4	0.0	-0.8	-1.0	-1.4	-0.4	-0.8	-0.7
Q2	0.2	1.0	0.2	-2.1	-0.9	-0.7	0.0	-0.7	-3.0	0.4
Q3	-0.7	-1.2	-1.1	-4.6	1.5	0.7	0.3	0.3	-3.2	0.2
Q4	-1.4	-1.6	-3.0	-19.5	9.0	7.5	7.3	5.8	-12.2	-0.1

[a] Import prices in dollars are multiplied by the shekel-dollar exchange rate.

SOURCE: Bank of Israel and Central Bureau of Statistics.