Chapter 3
Monetary Policy and Inflation

- In 2015, the Monetary Committee reduced the interest rate for March to the historic low of 0.1 percent, against the background of negative inflation, appreciation of the shekel, a moderate growth rate together with a robust labor market, a reawakening of the housing market, and a global environment characterized by low inflation and growth and by a slowdown in world trade.
- In view of the low interest rate environment and the resumption of home price increases, the Monetary Committee examined unconventional monetary policy tools. In October 2015, it began using forward guidance, and announced its assessment that monetary policy would remain accommodative for a considerable time.
- Inflation in 2015 totaled -1 percent, significantly lower than the price stability target range of 1–3 percent. Since June 2014, annual inflation has been below the target range, and since September 2014, it has been negative. The negative inflation rate is mainly the result of supply factors: (1) declines in global commodity prices, particularly oil, the effect of which on Israeli inflation increased due to the appreciation of the shekel, and (2) price reductions initiated by the government, as well as a reduction in VAT. Excluding the direct effect of the reductions in energy prices and price reductions initiated by the government, inflation in 2015 totaled 0.6 percent.
- One-year inflation expectations ranged below the lower bound of the target range for most of the year, and declined to around zero in December. Inflation expectations for three to five years forward ranged within the lower half of target range for most of the year, and expectations for longer terms remained at the midpoint of the range. These developments indicate that the public's assessment is that inflation will probably not return to the target range in the short-term, but will return to it in the medium and long terms.
- The shekel appreciated by 9.3 percent in 2015 in terms of the nominal effective exchange rate (December average compared to December average), after depreciating by 4.4 percent during 2014. Since the interest rate tool was nearing exhaustion, and since there were assessments that the shekel is over-appreciated, the Bank of Israel increased its foreign exchange purchases in order to moderate the appreciation and to support the tradable industries and inflation.
- The demand for housing, and the resultant price increases, resumed in the fourth quarter of 2014, and even though the weighted interest rate on mortgages increased in the second half of 2015, home prices increased by about 8 percent during the year. The risk profile of mortgages issued in recent years declined due to the measures taken by the Banking Supervision Department in the mortgage market since 2010, but the volume of mortgages continued to increase. These developments again posed a challenge for policy makers in maintaining financial stability.

1. INFLATION

a. The inflation environment 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 by the government as an annual inflation rate of between 1 and 3 percent[1], and when inflation deviates from the target range, the Bank must act to return it to within the range within a period of not more than 2 years; (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 targeting" 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 medium and long terms. There are a variety of tools available to the Bank in achieving its objectives, and the Bank enjoys independence in using those tools.

In 2015, the downward trend that had characterized inflation since mid-2013 continued. In June 2014, inflation declined to below the target range, and in September 2014, it became negative.

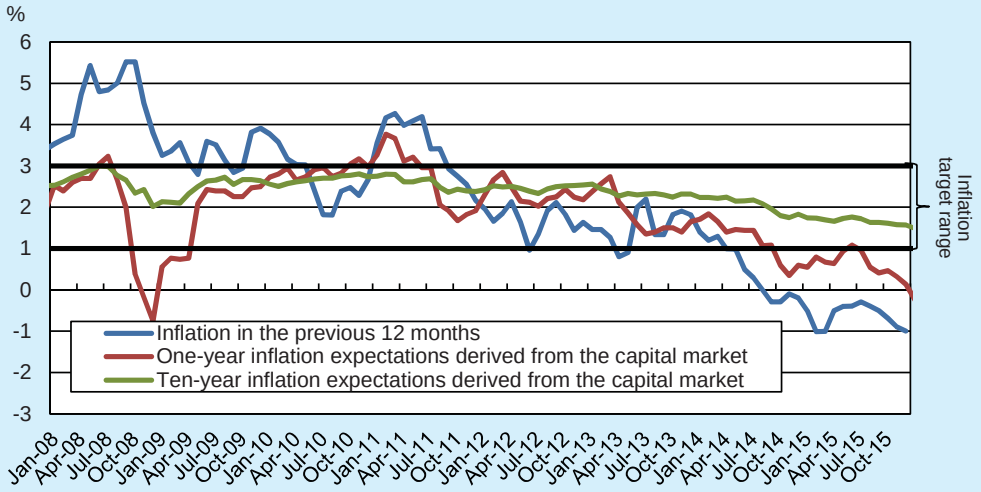
The Consumer Price Index declined by 1 percent in 2015—significantly below the price stability target range (Figure 3.1). Inflation in the past 12 months continued the downward trend that has characterized it since mid-2013, when it was at the center of the target range. After falling below the lower bound in June 2014, and after becoming negative in September 2014, the decline increased in 2015.

One-year inflation expectations derived from various sources (the capital market, professional forecasters and the banks' internal interest rates) ranged below the lower bound of the target range for most of the year: At the beginning of the year, they were below it, increasing to around the lower bound between March and July, and declining since August to an average of 0.3 percent in December (Table 3.1). Expectations for three to five years forward ranged slightly below the midpoint of the target range in 2015, declining between March and the end of the year to about 1.6 percent on average. The parallel 4–5 years forward inflation expectations in the US developed in similar fashion, with a downward trend from the fourth quarter of 2013, declining

[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. From October 2014, the Committee consisted of only five members, and since November 2015, it consists of only four members, as the government has not appointed replacements for members whose terms have 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.

Figure 3.1
Inflation in the Previous 12 Months, Inflation Expectations, and the Inflation Target Range, 2008–15 (monthly averages)



SOURCE: Based on Central Bureau of Statistics.

in September 2015 to an environment similar to that in Israel. Long-term inflation expectations—expectations that reflect the extent of the public's confidence in the inflation targeting regime—remained around 2 percent, the midpoint of the inflation target range in Israel.

In order to formulate the appropriate monetary policy in a low inflation environment, it is important to distinguish between two types of price declines. The first is a decline resulting from increased supply, such as derived from an increase in productivity, a decline in input prices[3] or increased competition. Such a decline supports economic activity. The second is a decline resulting from a decline in demand. For the most part, this type of decline is more prolonged (deflation), and presents risks to economic activity. This type of decline may lead to recession through two channels: (1) reduced consumption and investment in the economy, both real and financial[4], and (2) reduced employment, since when there is downward nominal wage rigidity, deflation increases real wages, and the increase in the cost of labor may lead to dismissals and a standstill in the creation of new positions. This channel is less relevant for the Israeli economy, because the domestic labor market is characterized by wage elasticity, as shown by the wage declines in 2003 and 2009.[5] Moreover, a deflationary process may lead to an increase in the current debt ratios—a credit crunch and an increase in the public debt ratios—and through it to fiscal consolidation. This channel is also less relevant to the

[3] For instance, a decline in the price of oil supports economic activity among oil importers, while a negative effect can be expected among exporters. More discussion appears in Bank of Israel (2015), Monetary Policy Report for the second half of 2014.

[4] See Bank of Israel Annual Report for 2014, Chapter 3.

[5] See Bank of Israel Annual Report for 2014, Chapter 1.

Table 3.1
Main indicators of inflation and monetary policy, 2011–15

	2011	2012	2013	2014	2015	2015 Q1	2015 Q2	2015 Q3	2015 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]	2.2	1.6	1.8	-0.2	-1.0	-1.3	1.1	-0.4	-0.4
3. Seasonally adjusted quarterly inflation[b]						-2.7	0.9	-1.6	-0.6
4. One-year inflation expectations derived from capital market[c]	2.7	2.3	1.8	1.2	0.6	0.7	0.9	0.6	0.3
5. Ten-year inflation expectations derived from capital market[c]	2.4	2.3	2.3	2.3	2.1	2.1	2.2	2.0	2.1
6. Forecasters' one-year inflation forecasts[c]	2.8	2.3	1.8	1.3	0.8	0.8	1.1	0.8	0.6
B. Yields (percent)[c]									
1. Bank of Israel declared interest rate	2.9	2.3	1.4	0.6	0.1	0.2	0.1	0.1	0.1
2. One-year real yield to maturity on government bonds[d]	0.6	0.2	-0.3	-0.7	-0.5	-0.5	-0.8	-0.5	-0.2
3. Ten-year nominal yield to maturity on government bonds[e]	5.1	4.6	4.0	3.1	2.2	2.0	2.1	2.4	2.2
4. Ten-year real yield to maturity on government bonds[e]	2.5	2.1	1.7	1.0	0.5	0.3	0.3	0.7	0.6
C. Change in the shekel exchange rate (percent)[f]									
1. Nominal effective	3.3	0.8	-7.8	4.4	-9.3	-4.2	-3.0	-0.2	-2.2
2. Vis-à-vis the dollar	4.7	0.1	-7.2	12.3	-1.4	1.6	-4.3	2.3	-0.8
3. Vis-à-vis the euro	4.2	-0.3	-3.1	1.1	-13.1	-10.8	-0.9	2.4	-4.0
D. Asset prices (percent)									
1. Overall yield on shares (nominal)[f]	-22.1	4.5	15.3	11.5	6.8	10.4	-1.6	-5.9	4.5
2. Home prices	4.0	8.7	7.3	4.3	7.8	2.3	2.1	0.8	2.3
E. The monetary aggregates (nominal rates of change)[f]									
1. M1 money supply	1.6	8.7	15.2	35.6	40.7	14.3	9.3	9.9	2.4
2. M1 + SRO[g] + unindexed deposits of up to one year (M2)	10.5	8.2	6.6	8.4	13.6	4.8	3.0	3.4	1.7
F. Other background data (percent, seasonally adjusted quarterly data)									
1. Unemployment rate	7.1	6.9	6.2	5.9	5.3	5.4	5.1	5.3	5.3
2. GDP growth rate[h]	5.0	2.9	3.3	2.6	2.5	2.5	0.3	2.4	3.9

[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] Self-Renewing Overnight Deposit (Current Credit Deposit).
[h] Annual average compared with average of previous year.
SOURCE: Bank of Israel Research Department, Ministry of Finance and Central Bureau of Statistics.

Israeli economy since GDP is still growing at a reasonable rate, and the debt ratios are therefore not increasing. Finally, a deflationary process may weaken the belief in the inflation target regime, but inflation expectations in Israel for three years and longer remain within the target range.

Concern over moving into a recession leads monetary policy makers to lower the interest rate in order to encourage activity. However, there is an area in which the effectiveness of interest rate reductions is unclear, and where such a reduction even presents risks (Section 3.c.2). Under these circumstances, there are unconventional monetary policy tools available to policy makers, but they are less effective in increasing demand and activity than the interest rate tool during normal times. In this context, it is important to emphasize that while the objective of monetary policy is to maintain price stability within a flexible inflation targeting regime, it does not need to offset price declines as a result of structural reforms intended to reduce price levels (the cost of living).[6]

The negative inflation in 2015 was mainly the result of temporary supply factors, namely global price reductions and price reductions initiated by the government.

The negative inflation in 2015 was mainly the result of temporary supply factors and of price reductions initiated by the government, and does not reflect a decline in domestic demand, since private consumption continued to increase at a high rate, and the labor market remained robust (Chapter 2). It occurred against the background of interest rate reductions, which affect economic activity and prices with a lag.

b. The background conditions and analysis of the development of prices

The main factors affecting prices are economic activity, labor market conditions, commodity and energy prices, the exchange rate, changes in indirect taxation and in prices set by the government, the response of monetary policy to these developments and to expected developments, and the public's expectations of future inflation.

Inflation in Israel in 2015 was lower than global inflation because of government-initiated price reductions and because of the appreciation of the shekel.

The negative inflation recorded in Israel in the past two years is mainly the result of supply-side factors. First, global inflation was low due to the decline in commodity prices, particularly the sharp and surprising decline in the price of oil since mid-2014. The effect of this process on inflation in Israel was intensified because the shekel strengthened (in terms of the nominal effective exchange rate) since the end of 2012—except for the period from August to November 2014, when it depreciated. The advanced economies, a category that includes Israel, showed a similar picture, with inflation gradually declining in recent years, returning in 2015 to its level from 2009 at the height of the financial crisis (Chapter 1). However, with the exception of inflation in Switzerland—a country whose currency appreciated at a rate similar to that of the shekel—inflation in Israel in 2014 and 2015 was the lowest among the advanced economies. Second, the government initiated price reductions with the objective of reducing the cost of living, including a reduction of the VAT rate[7] and the cancellation of the television levy. In addition to the appreciation, these measures explain why

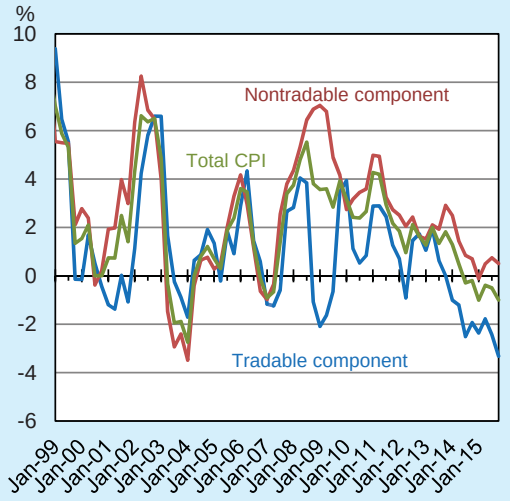
6 See Bank of Israel Annual Report for 2014, Chapter 3.

7 A discussion of the characteristics of price setting in Israel and the effect of VAT appears in the Bank of Israel Annual Report for 2013, Box 3.1

inflation in Israel is lower than global inflation. Excluding the direct effect of the decline in energy prices and of government-initiated price reductions, inflation totaled 0.6 percent.

The negative inflation deepened in 2015 relative to its level in 2014, mainly due to the decline in prices of the tradable component in the Consumer Price Index—prices that are also affected by a change in the exchange rate (Figure 3.2). This component declined by 3.3 percent in 2015, and by 1.9 percent in 2014 (after remaining unchanged in 2013), while the nontradable component—about two/thirds of the Consumer Price Index[8]—increased by an average of 0.6 percent during those years. This phenomenon is characteristic of the Israeli economy over the past decade: The rate of increase in prices of the tradable component has been lower than the rate of increase of prices in the nontradable component since mid-2005[9], reflecting the continued real appreciation of the shekel in recent years, particularly since the outbreak of the Global Financial Crisis[10] (Chapter 2). The Bank of Israel Research Department found that about two-thirds of the decline in the tradable component in 2015 was the result of the continuing decline in oil prices, further to the sharp decline of the second half of 2014. The rest of the decline in the component was a result of the significant appreciation of the shekel in terms of the nominal effective exchange rate, and of the decline in commodity prices (excluding energy). A smaller portion of the deepening of negative inflation resulted from the moderation of the increase in housing prices (rent, December compared to December; Figure 3.3a).

Figure 3.2
The CPI and the Tradable and Nontradable Components, 1999–2015 (annual rates of change, end of quarter data)



SOURCE: Based on Central Bureau of Statistics.

Accelerated growth of private consumption, alongside a robust labor market, contributed to the assessment that domestic demand remained high.

Since the inflation rate continued to decline and is in negative territory, the discussions held by the Monetary Committee focused on an attempt to gauge whether the decline in the inflation rate reflects a slowdown in economic activity. The Israeli

[8] The breakdown of the CPI into tradable and non-tradable components is based on Ben Bassat, E., "Price Indices for Tradable and Non-Tradable Goods", Bank of Israel, Research Department, Discussion Paper No. 89.11, 1989. Another calculation of the two components showed similar results, and is based on D. Orfaig (Flikier), "Transmission Channels from the Exchange Rate to the Consumer Price Index: The Tradable Component of the CPI by Industry", Bank of Israel, Research Department, Discussion Paper 2015.04 (in Hebrew). It should be noted that part of the prices of tradable goods is also affected by nontradable factors, such as the cost of storage, rental, shipping, and so forth.

[9] This result remains in place even if examining the nontradable component excluding housing.

[10] See Bank of Israel Annual Report for 2014, Chapter 7B.

economy grew by 2.5 percent in 2015, a moderate rate that is similar to the rate from 2014 (Table 3.1). Growth was led by private consumption—which expanded markedly during the entire year, while investment stagnated and exports contracted due to the continued moderation of growth of global trade and the real appreciation of the shekel. This led monetary policy makers to assess that domestic demand continued to expand at a high rate.

Figure 3.3a
Development of the Nontradable Component of the CPI and its Constituent Contributions, 2012–15 (end of quarter data)

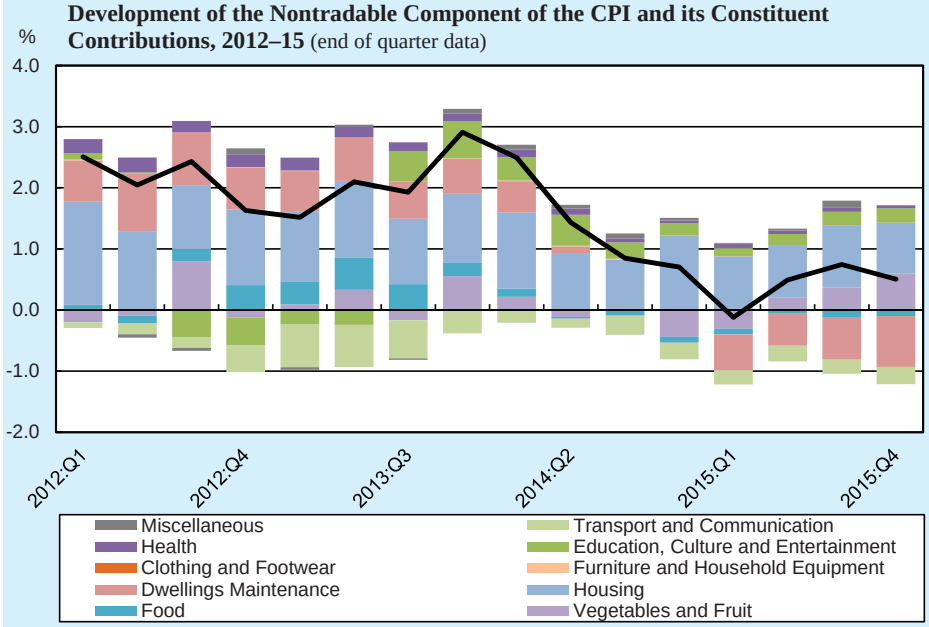
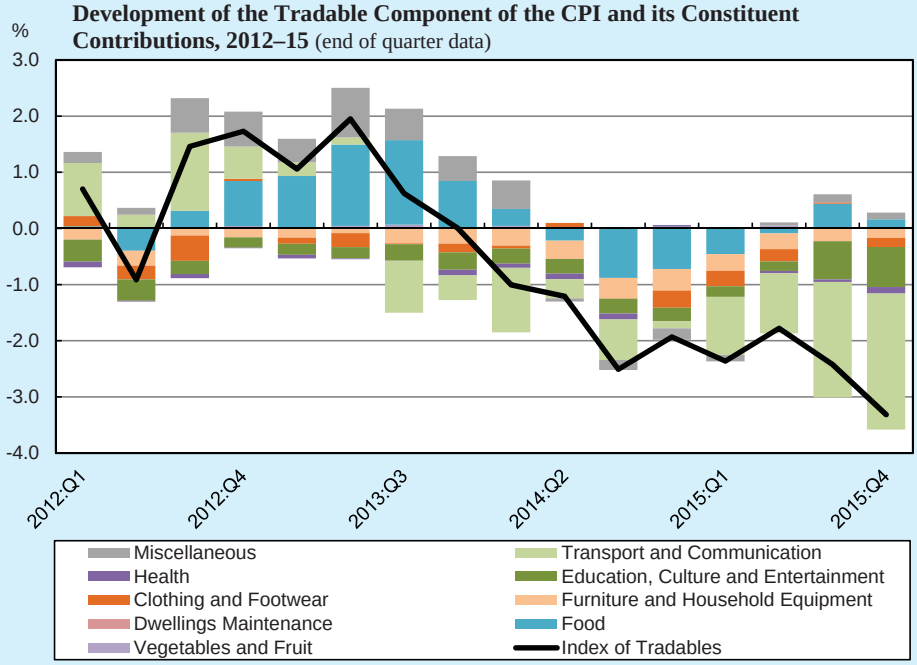


Figure 3.3b
Development of the Tradable Component of the CPI and its Constituent Contributions, 2012–15 (end of quarter data)



SOURCE: Based on Central Bureau of Statistics.

This assessment was also supported by the labor market, which continued to exhibit strength in 2015. The unemployment rate declined to a historically low level—supported by structural factors, particularly the decline in the structural unemployment rate over the past decade[11]—and the employment rate continued to climb (Chapter 2). In contrast with previous years, the decline in unemployment in 2015 resulted in an increase in wages. The real wage increased both due to negative inflation and due to an acceleration of the increase in nominal wages, which took place due, inter alia, to the increase in the minimum wage in recent years (Table 2.5). However, developments in the labor market did not lead to inflationary pressure in 2015 (Chapter 2), because the decline in the price of imported inputs (mainly oil) and in work hours per employee was translated into an increase in company profits, and enabled them to increase wages without changing the unit labor cost.

Price rigidity is a necessary condition for the existence of a trade-off between activity and inflation and the effect of the monetary interest rate on inflation. When this condition exists, an increase (decrease) in the nominal interest rate increases (decreases) the real interest rate. Some of the components in the Consumer Price Index include items that are very volatile and are not characterized by price rigidity, and monetary policy does not affect activity in industries characterized by such prices. It is therefore sometimes customary to exclude these components from the overall CPI in order to analyze the causes of inflation. In addition, external factors that are not affected by domestic monetary policy, such as supply shocks from abroad, structural changes, and so forth, should also be excluded. From here on, the narrower indices will be referred to as "core inflation indices".[12]

While many countries, including the US, have formulated an official core inflation index, Israel has not done so mainly because there are no components in the CPI that should always be excluded. Instead of using a core index, developments in each of the components of the CPI are generally analyzed by relevance at any time. Even so, we present below two alternative indices for core inflation. The first is the CPI excluding energy, food, vegetables and fruit, and excluding price reductions initiated by the government. This index ranged below the lower bound of the price stability target since July 2014, with the exception of January 2015. During 2015, it increased to near the lower bound of the target range—registering an annual increase of 0.9 percent in

[11] The structural unemployment rate in Israel declined in the past decade both according to an estimate made based on the distinction between cyclical factors and structural factors in the labor market, and according to the Non-Accelerating Inflation Rate of Unemployment (NAIRU), an unemployment rate that is consistent with the non-accelerating 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." Bank of Israel, Research Department, Discussion Paper 2013.05, 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.

[12] A discussion of the core inflation indices and the considerations in favor of deducting various items from the general CPI appears in Ribon, S. (2010), "Core Inflation Indices for Israel," Bank of Israel, Research Department, Discussion Paper 2009.08. See also the discussion of prices in Bank of Israel Annual Report for 2013.

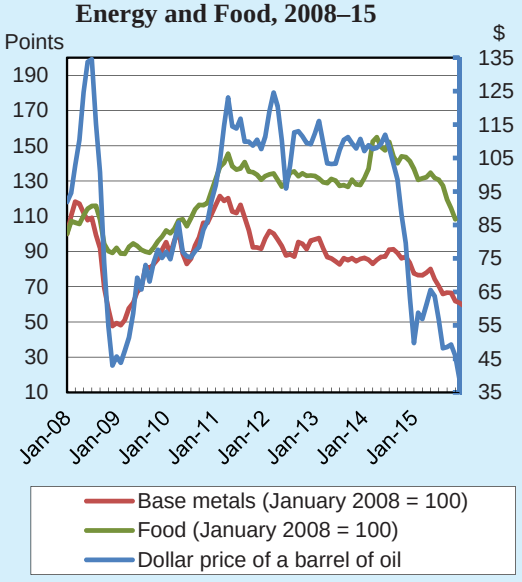
August. But since September, it retreated again, and for 2015 as a whole, it increased by 0.3 percent.[13] A similar picture is obtained when the vegetables and fruit item is not excluded, in which case the increase was 0.6 percent in 2015.

The second alternative index is the nontradable component of the Consumer Price Index, excluding the direct effects of supply factors and volatile prices, particularly the electricity, water, communications, vegetables and fruit and food components. This index serves as an estimate of the inflation trend derived from domestic demand. It reflects about half of the Consumer Price Index, and the housing (rents) index comprises about half of it. Over the past six years, this index has shown a trend of moderation in its rate of increase, and the picture is similar when the food item is not excluded (Table 3.2).

The trend of the second alternative index supports two conjectures. First, the level of domestic demand in the Israeli economy was consistent with the price stability target range over the past four years. Second, there was a further moderation in this index in 2015, and it is possible that this is partly the result of a moderation in the expansion of demand. Additional indicators also support the assessment that the expansion of aggregate demand moderated to some extent: (1) The negative output gap expanded in 2015 because aggregate demand expanded more moderately than potential supply[14] (Chapter 2); and (2) an examination using the Research Department's structural model[15] indicated the possibility that some of the decline in inflation in 2015 was a result of moderation in the expansion of aggregate demand, beyond the decline resulting from the decline in external demand and the decline in commodity prices.

Commodities serve as raw material for manufacturing, and their prices therefore affect the cost of production, and through it, market prices. The downward trend in global commodity prices continued in 2015 (Figure 3.4). In the second half of 2014, the sharp and surprising decline in oil prices (a price that directly affects the

Figure 3.4
Global Indices of Base Metals, Energy and Food, 2008–15



SOURCE: Based on Bloomberg.

[13] See Bank of Israel (2016), Monetary Policy Report no. 44, for the second half of 2015, Figure 3.
[14] Aggregate demand also grew more moderately than in past years.
[15] See: Argov, E., A. Barnea, A. Binyamini, E. Borenstein, D. Elkayam, and I. Rozenshtrom (2012): "A DSGE Model for Analysis of the Israeli Economy (MOISE)", Bank of Israel, Research Department, Discussion Paper No. 2012.06

Table 3.2
Development of prices, by various components, 2011–15

Period	Consumer Price Index	Vegetables and Fruit	Food	Housing	Dwellings Maintenance	Furniture and Household 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	Index excluding energy and government-initiated price changes	Nontradable components excluding electricity, water, communications, food, and vegetables and fruit	Nontradable components excluding electricity, water, communications, and vegetables and fruit	Seasonally adjusted index[b]
									(end of period, rate of change, percent)									
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	1.9	3.6	3.4	
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	0.7	2.0	2.3	
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	1.7	3.0	2.8	
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	0.1	2.2	1.8	
2015	-1.0	13.2	-0.1	2.2	-5.5	-1.6	-1.7	-0.8	-0.3	-5.4	0.1	-13.7	0.0	-0.4	0.6	1.6	1.2	
									(monthly rate of change, percent)									
2015																		
January	-0.9	1.2	-0.2	-0.9	-0.8	0.6	-6.0	-0.6	0.4	-1.9	0.0	-4.9	-0.6	-0.7	-0.5	-0.5	-0.5	-0.5
February	-0.7	0.9	0.2	0.0	-3.1	-0.1	-5.4	-0.3	0.0	-1.4	0.6	-5.9	-0.4	-0.5	-0.4	-0.1	-0.1	-0.4
March	0.3	-1.8	-0.1	0.7	0.1	0.1	-2.0	0.6	-0.3	1.3	-0.4	3.3	0.1	0.3	0.1	0.5	0.5	0.3
April	0.6	7.8	0.2	-0.1	0.3	-0.5	5.2	0.9	-0.3	0.5	0.1	0.5	0.7	0.4	0.7	0.3	0.2	0.0
May	0.2	3.9	0.1	0.3	0.2	0.0	0.1	0.6	0.0	-0.2	-0.1	0.8	0.2	0.0	0.2	0.3	0.3	0.0
June	0.3	-3.8	0.2	0.4	0.0	-0.4	7.3	0.2	0.1	0.1	-0.1	0.1	0.3	0.5	0.2	0.3	0.3	0.2
July	0.2	1.1	0.2	1.0	0.0	-0.8	-6.6	-0.1	0.3	0.5	0.5	-0.1	0.2	0.2	0.2	0.6	0.4	0.0
August	-0.2	-1.5	-0.2	0.7	-0.2	-0.2	-3.7	1.0	0.1	-1.3	0.4	-2.2	0.0	0.1	0.0	0.6	0.5	-0.3
September	-0.4	7.6	-0.1	0.1	-1.2	-0.2	-1.2	-1.9	0.1	-1.2	0.0	-3.7	-0.2	-0.6	0.1	-0.1	-0.1	-0.1
October	0.1	5.0	0.8	-0.4	-0.8	0.7	3.2	0.3	-0.2	-1.0	0.1	-1.5	0.1	-0.1	0.3	-0.1	0.0	0.0
November	-0.4	-1.8	-0.8	0.0	-0.1	-0.2	2.6	-0.7	-0.1	-0.6	-0.4	-1.0	-0.3	0.0	-0.2	-0.2	-0.2	-0.1
December	-0.1	-5.3	-0.4	0.4	0.1	-0.6	6.2	-0.8	-0.4	-0.1	-0.6	0.2	-0.1	0.1	-0.1	0.1	0.1	-0.1

[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: Based on Central Bureau of Statistics.

Table 3.3
The Consumer Price Index, its main components, and their percentage point contribution to inflation, 2014 and 2015

Component	Contribution to the CPI in 2014	Contribution to the CPI in 2015	Comments
Consumer Price Index	-0.2	-1.0	
Dwellings Maintenance Housing	0.0	-0.54	This component includes, among other things, expenses for water, electricity, gas, and home heating fuel. The main part of the decline in 2015 was a result of the reduction in water prices in January[a] and reductions in electricity prices in February and in September. The reduction in electricity prices stands in contrast to increases in 2012 and 2013[b], and was made possible by lower coal costs in February and September, as well as due to the appreciation of the shekel in September.
Health	0.04	-0.02	
Housing	0.78	0.53	The housing component mainly reflects rents, and it increased in 2015 by 2.2 percent, similar to the rate of increase between April and October 2014, and lower than the rate in previous years.
Clothing and footwear	0.11	-0.05	
Education, culture and entertainment	0.05	-0.10	The components in this item did not develop uniformly over the year. The education component increased by 2.2 percent due to higher costs in the "kindergartens" and "primary schools" sub-components, while the culture and entertainment component declined by 3.9 percent, mainly due to the cancellation of the television levy.
Vegetables and fruit	-0.27	0.37	This component is separate from the food component, and is characterized by a high level of volatility. The component increased by 13.2 percent in 2015, following a decline of 9.3 percent in 2014.
Food	-0.33	-0.02	The food component declined by 0.1 percent in 2014, following a decline of 2.5 percent in 2014, and following increases in excess of the overall CPI in 2011–13. The decline came against the background of declines in commodity prices worldwide and in the prices of imported food products, as well as against the background of the law to promote competition in the food industry. This law came into effect in January 2015, and is concerned mainly with prohibiting large food suppliers from setting consumer prices, price transparency, and the allocation of space for goods from small suppliers. In addition, competition between the marketing chains continued.
Furniture and household equipment	-0.13	-0.06	
Miscellaneous	-0.02	0.0	
Transport and communication	-0.19	-1.07	The transportation component declined by 5.1 percent, contributing -0.8 percent to the CPI, following a decline of 0.1 percent in 2014. The decline was mainly a result of the "private vehicles and maintenance" sub-component, which declined by 6 percent and which constitutes 12 percent of the overall CPI. The communication component declined by 6.8 percent in 2015, similar to the decline in each of the previous three years and similar to the downward trend in this component worldwide, particularly in the US and the eurozone. This decline contributed -0.3 percentage points from the overall CPI, and was mainly a result of lower prices for telephone and Internet services.

[a] Water prices were also reduced in January 2014.
[b] See Bank of Israel (2014), Annual Report for 2013, Chapter 3.
SOURCE: Central Bureau of Statistics.

transport and dwellings maintenance items in the general CPI) was prominent, after oil prices were stable at around $110 per barrel during the previous year. By January 2015, the price had fallen to about $50, and then recovered slightly until May. But the price then declined again until reaching an average of $39 by December, completing a decline of about 60 percent in a year and a half, and of about 35 percent in 2015. The drop in the price of oil was the result of the increase in global oil supply and the decline in demand, mainly from China (Chapter 7). The prices of food and basic metals also declined in 2015, by about 25 percent in dollar terms relative to 2014.

In order to analyze how global commodity prices affect prices in the Israeli economy, the shekel-dollar 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 partly passed on to consumers, whether through a direct effect on the price of the final product, or through their effect on the costs of production. It is important to note that the changes in the exchange rate affect prices gradually.[16] Import prices in shekels declined in 2015 due to the decline in global commodity prices, a process that began in the second half of 2014 and intensified in the first quarter of 2015 (Table 3.A.2). The shekel's appreciation vis-à-vis the dollar also contributed to the decline in import prices, while the depreciation of the shekel between August and November 2014 offset the decline in dollar import prices.

Inflation has therefore been negative for more than a year, and this trend intensified, while inflation expectations continued to decline, the interest rate tool is close to being exhausted, and economic activity grew moderately. Such developments present a challenge to policy makers striving to achieve the objectives of monetary policy, chiefly the maintenance of price stability.

c. The development of specific components in the Consumer Price Index

In 2015, all components of the Consumer Price Index (CPI) declined except for three: The Housing and Vegetables and Fruit components increased to higher than the midpoint of the price stability target range, and the Miscellaneous component increased by 0.1 percent (Table 3.2). In addition, the contributions of all components in the CPI in 2015 were similar to, or lower than, their contributions in 2014, except for two: The Vegetables and Fruit component led the positive contributions to the CPI instead of the Housing component for the first time in the past eight years, and the Food component declined by 0.1 percent after leading the decline in the CPI in 2014. The energy items—which mainly include vehicle fuels and electricity—declined by about 14 percent in 2015, subtracting 1 percentage point from the general index—0.7 percentage points more than they subtracted in 2014. Table 3.3 summarizes the developments of the main components of the CPI.

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[16] See Bank of Israel Annual Report for 2014, Chapter 3.

In summation, the foregoing analysis supports the main arguments appearing in the preceding sections, particularly the assessment that inflation in 2015 declined mainly due to supply factors with a direct and temporary effect on inflation. This assessment is also supported by National Accounts data, which showed that private consumption continued to expand, as well as by data showing robustness in the labor market.

2. ADDITIONAL BACKGROUND CONDITIONS AND THEIR EFFECT ON MONETARY POLICY

a. Monetary policy around the world

Since the Israeli economy is a small and open economy, monetary policy in Israel is affected by developments in global economic activity and prices and reacts to it. The Global Financial Crisis that began in 2007–08 led to very accommodative monetary policy around the world, using conventional tools such as interest rate reductions by the central banks, alongside unconventional tools such as quantitative easing and credit easing programs, intervention in the foreign exchange market, and the use of forward guidance.[17]

The accommodative monetary policy adopted around the world led to a moderate improvement in growth among advanced economies, but activity remained low. The slowdown in growth in emerging economies and in world trade continued.

Since global inflation declined for the fourth consecutive year—with the inflation rate for 2015 among advanced economies around the level it reached in 2009 at the height of the Global Financial Crisis—and the concern of deflation has arisen, mainly in Europe, some of the central banks lowered the monetary interest rate to negative levels. The accommodative monetary policy adopted around the world over a prolonged period[18] led to a moderate improvement in economic activity in 2015 among advanced economies, but activity remained low. In parallel, the rate of expansion of world trade slowed, and the slowdown in growth in emerging economies continued, with global activity projections being revised downward at the beginning of 2016.

Similar to previous years, the global economy was characterized in 2015 by uneven developments. **The US economy** continued to recover over the year, but annual inflation ranged around zero while the target is 2 percent—mainly due to the decline in energy prices and prices of imported goods—and core inflation was an average of about 1.1 percent during the year. The recovery was accompanied by uncertainty regarding the timing with which the Federal Reserve would begin raising interest rates. The expectations and forecasts from December 2014 indicated a period of between June and September 2015, but during the year they were delayed by a quarter, mainly due to the sharp fluctuations in the global stock markets as a result of sharp declines in

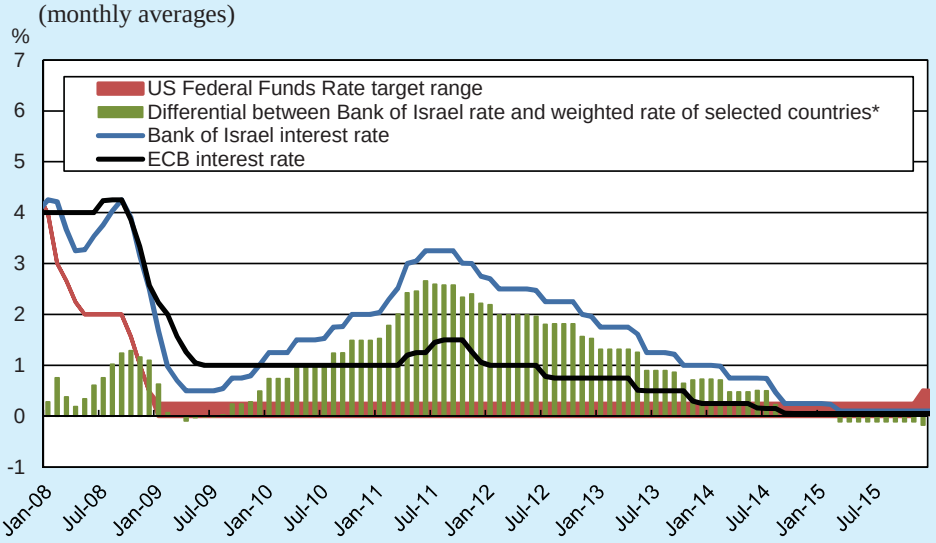
[17] See Bank of Israel (2013) "Unconventional Monetary Policy: Mission and Mechanisms", *Monetary Policy Report* no. 40 for the second half of 2013, and Bank of Israel (2015), "Forward Guidance: Experience Accumulated Worldwide", *Recent Economic Developments* no. 138.

[18] See Figure 4 in Bank of Israel (2014) *Monetary Policy Report* no. 41 for the first half of 2014, and in Bank of Israel (2015) *Monetary Policy Report* no. 42 for the second half of 2014.

China. In December, the Federal Reserve raised the monetary interest rate by a quarter of a percentage point, for the first time in 9 years (Figure 3.5). However, the increasing uncertainty regarding the American economy and the global economy is accompanied by uncertainty regarding the monetary policy the Fed will adopt in 2016.

Growth in the eurozone continued to recover moderately from the second quarter of 2014. The unemployment rate declined by about one percentage point in 2015, but remained high (10.4 percent), and inflation has ranged around zero during the past two years. Concern of deflation led the ECB to reduce the monetary interest rate to 0.05 percent in September 2014 (Figure 3.5), and to lower the deposit rate of the

Figure 3.5
Short-term Interest Rates in Israel, the US and the Eurozone, 2008–15
(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 England, Bank of Japan.

commercial banks to -0.3 percent in December. In March 2016, the ECB reduced the monetary interest (MRO) rate to zero and the deposit facility rate for overnight deposits of the commercial banks to -0.4 percent. In addition to cutting the interest rate, in October 2014, the ECB also began purchasing assets—an unconventional monetary measure—and during the course of 2015, it expanded the program both in terms of its duration and in terms of the types of assets being purchased. In March 2016, it expanded the program again in terms of the volume of bonds purchased and in terms of the types of bonds being purchased. The ECB declared that this expansion will remain in effect as long as inflation remains lower than the target—slightly below 2 percent.

In Japan there was an assessment that the Japanese economy is on the path toward moderate recovery, against the background of the increase in private consumption and in exports during the third quarter, and against the background of very accommodative monetary and fiscal policy, which included the purchase of ETFs tracking the stock market. However, that assessment became pessimistic at the beginning of 2016, and in February 2016 the Bank of Japan lowered the interest rate on banks' deposits to -0.1 percent—negative for the first time.

In China, the moderation in the growth rate continued. Private consumption remained stable but exports showed weakness and investments declined. In the summer of 2015, stock prices dropped by about 40 percent. Due to these developments the People's Bank of China adopted monetary accommodation and lowered the interest rate.

Low global growth and the slowdown in the growth rate of world trade, alongside accommodative monetary policy around the world, supported an interest rate reduction in Israel through two main channels: (1) Global activity affects demand for exports and nonresidents' direct investments in Israel; (2) The interest rate spreads affect short-term capital flows, and through them the exchange rate[19], which for its part affects the profitability of exports and of employment in the export sector, as well as the prices of imported goods and the current account of the balance of payments. Lowering the monetary interest rate in Israel—and bringing it in line with the low interest rate environment worldwide—was required in order to support the tradable sector, employment, and real economic activity. The Monetary Committee examined the possibility of using additional unconventional monetary tools during the period, in addition to the forward guidance it has used since late 2015, but rejected it due to the assessments that the state of the Israeli economy does not warrant it (Section 3c).

The Monetary Committee's assessment was that the state of the Israeli economy does not warrant the use of unconventional monetary tools beyond the forward guidance it has declared since late 2015.

b. The exchange rate and the foreign exchange market

In 2015, the shekel appreciated by 9.3 percent in terms of the nominal effective exchange rate.

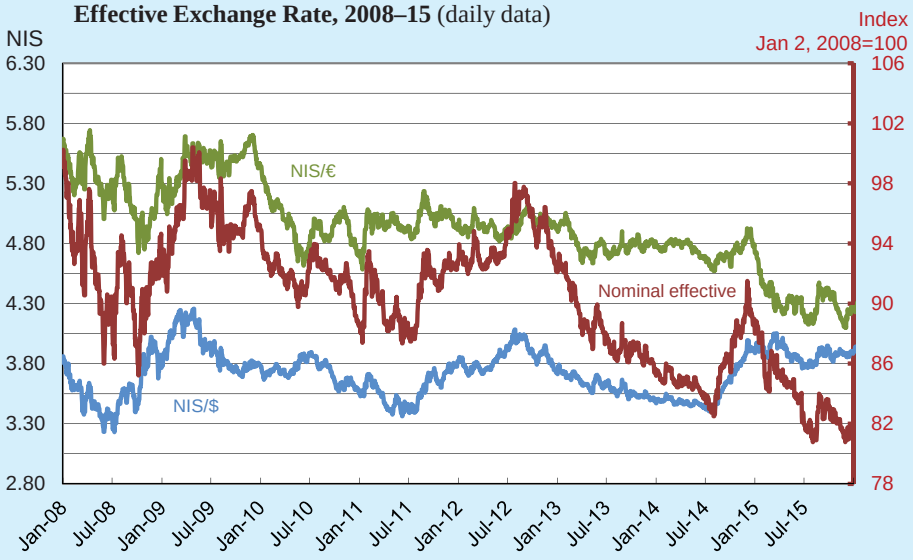
The trend of appreciation that began in December 2014 continued almost throughout the year, with the shekel appreciating by 9.3 percent in terms of the nominal effective exchange rate in 2015 (Figure 3.6).[20] The appreciation mainly reflected the weakness of the euro as a result of the state of the economy in the eurozone and the continued monetary accommodation there—the euro weakened by 13.1 percent against the dollar and the shekel, while the dollar weakened by 1.4 percent against the shekel—and the quantitative easing measures adopted by the ECB. The appreciation also reflected the weakness of the currencies of developing economies.

The fundamental forces for the appreciation of the shekel were the relatively good state of Israel's economy and the fact that in the past three years there has been a

[19] When the domestic interest rate—after adjustment to the risk premium—is higher than the global rates, it attracts capital flows, which create pressure for appreciation. The opposite is also true: When the domestic rate is lower than the global rates, it acts to encourage capital outflows and pressure for depreciation.

[20] The December 2015 average compared to the December 2014 average.

Figure 3.6
NIS/$ Exchange Rate, NIS/€ Exchange Rate and Index of Nominal Effective Exchange Rate, 2008–15 (daily data)



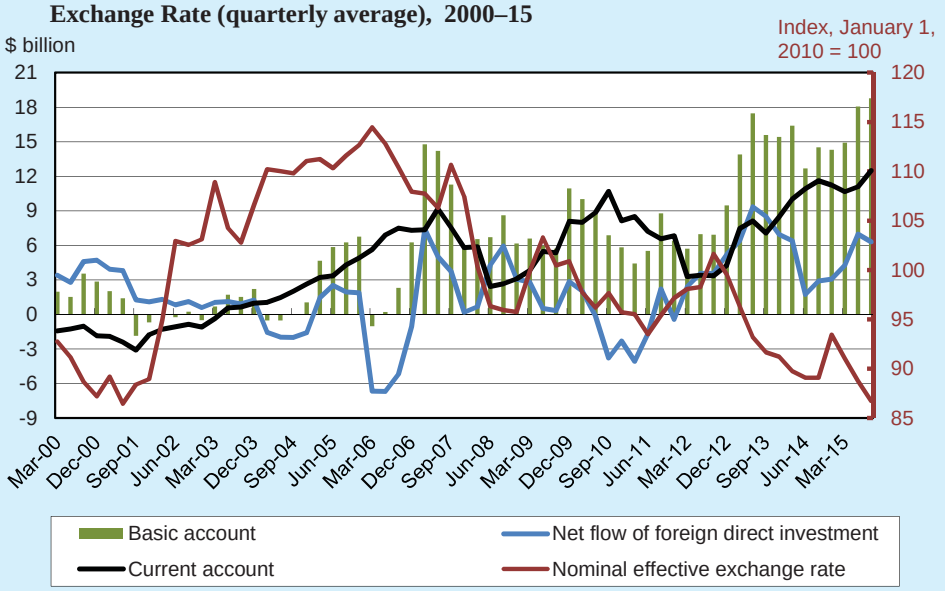
SOURCE: Bank of Israel calculations.

large surplus in the basic account (Figure 3.7). The basic account includes the current account of the balance of payments and the flow of net foreign direct investment (Net FDI), which remained positive for the fourth straight year. The surplus in the current account continued to increase in 2015, further to the trend that began at the end of 2012. Some of the increase in the current account of the balance of payments was the result of the sharp drop in oil prices in the past year and a half, since that reduced expenditure on the import of energy products (Chapter 7). Another basic force that acted for appreciation is the improvement in the current account due to the production of natural gas. This improvement is affecting the flows in the foreign exchange market, and the Bank of Israel purchased foreign exchange totaling about $3.1 billion as part of the program intended to offset this effect.[21] The Bank of Israel estimated that as a result of the sharp decline in oil and natural gas prices, the effect will total $1.8 billion in 2016, and declared that it will purchase foreign exchange reserves in accordance with this assessment.

Since central banks around the world continued to adopt monetary accommodation and to reduce interest rates to an extent that exceeded the reduction in Israel, the gap between the monetary interest rate in Israel and the interest rates in many countries widened again, which supported the continued appreciation of the shekel. However, there were two short episodes of depreciation of the shekel in 2015—at the end of February and during August. At the end of February, it resulted from the fact that

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

Figure 3.7
The Basic Account—the Current Account and the Net Flow of Foreign Direct Investment (four quarters moving amount), and the Nominal Effective Exchange Rate (quarterly average), 2000–15



SOURCE: Based on Central Bureau of Statistics.

the Bank of Israel lowered the interest rate for March to its lowest level ever, which surprised the markets.

In contrast, there are fundamental forces acting for the depreciation of the shekel: Institutional investors in Israel—mainly pension funds—are increasing their flow of investments abroad. While the continued appreciation has led them to hedge their investments in recent years and to reduce their exposure to the exchange rate, in 2015—and particularly in the first half of the year—they slightly increased this exposure and reduce the trend of appreciation (Chapter 4).

Foreign exchange purchases

The Bank of Israel increased foreign exchange purchases during the course of 2015, to complement to monetary policy and to attenuate the decline in inflation.

Most of the foreign exchange purchased by the Bank of Israel in recent years—including most of the foreign exchange it purchased in 2015, about $5.7 billion out of about $9 billion—was intended to moderate the short- and medium-term appreciation pressures that are not in line with economic fundamentals, and to support exports until the recovery of global demand (Chapter 2). Moreover, in a low inflation environment, foreign exchange purchases may also support an increase in inflation or attenuate a decline in inflation, because offsetting the appreciation reduces the price declines of imported goods.

Until the level of the interest rate draws close to zero, foreign exchange purchases are sterilized interventions because the central bank absorbs the quantity of money necessary to leave the monetary interest rate at the level it sets (Section 4.a). There is

no consensus regarding the extent of the effectiveness of sterilized foreign exchange interventions. According to standard theory, monetary policy cannot set the monetary interest rate while at the same time managing the exchange rate with free capital movements. (This is known as "the trilemma".) The trilemma, according to theory, is based on the assumption of perfect international capital markets—where domestic bonds serve as perfect substitutions for foreign bonds, and vice versa. In such a case, the exchange rate is set according to (1) the spread between the domestic interest rate and the foreign interest rate, and (2) the expected exchange rate. This result is known as uncovered interest rate parity. In such an economy, intervention in the foreign exchange market does not affect prices in the economy, including the exchange rate.[22] They may have an effect only through the signaling channel—if policy makers convince the public that, for example, the expected exchange rate will change or the future interest rate path will be different than expected.

Notwithstanding the foregoing, many central banks did intervene in the foreign exchange market in order to influence the exchange rate and through it prices and economic activity. Research suggests that the effectiveness of purchases increases when there are restrictions on capital flows and where the financial markets are not developed.[23] These studies also show that a declaration regarding future purchases has a stronger effect than purchases themselves, and that the effectiveness of purchases increases when they are accompanied by accommodative monetary policy[24], and the more over-appreciated the domestic currency is compared to the equilibrium rate.[25] It is possible that intervention has an effect through the portfolio channel. This channel is obtained when it is assumed that domestic financial assets are not perfect substitutions for foreign assets or vice-versa. In this situation, the central bank's intervention in the foreign exchange market changes the composition of the public's portfolio—increasing the supply of domestic assets and reducing the supply of foreign ones—and the exchange rate reacts in order to re-establish equilibrium.

The Bank of Israel increased foreign exchange purchases during the course of 2015 complementary to monetary policy and reduced the decline in inflation. In parallel, estimates showed that the over-appreciation of the shekel's real exchange

[22] See: Backus, D.K. and P.J. Kehoe (1989): "On the Denomination of Government Debt: A Critique of the Portfolio Balance Approach", *Journal of Monetary Economics*, 23, pp. 359–376.

[23] See: Blanchard, O., G. Adler and I. de Carvalho Filho (2015): "Can Foreign Exchange Intervention Stem Exchange Rate Pressures from Global Capital Flow Shocks?", International Monetary Fund, IMF Working Paper WP/15/159; Devereux, M.B. and J. Yetman (2014): "Globalization, Pass-through and the Optimal Response to Exchange Rates", *Journal of international Money and Finance* (26)3, pp. 1–25.

[24] See: Kamil, H. (2008): "Is Central Bank Intervention Effective Under Inflation Targeting Regimes? The Case of Colombia", International Monetary Fund, IMF Working Paper WP/08/88.

[25] See: Adler, G., and C. Tovar (2011): "Foreign Exchange Intervention: A Shield Against Appreciation Winds?" International Monetary Fund, IMF Working Paper WP/11/165; Disyatat, P., and G. Galati (2007): "The Effectiveness of Foreign Exchange Intervention in Emerging Market Countries: Evidence from the Czech Koruna" *Journal of International Money and Finance* 26(3), pp. 92–123; Daude C., E. Levy Yeyati and A. Nagengast (2014): "On the Effectiveness of Exchange Rate Interventions in Emerging Markets", OECD Development Centre, Working Paper no. 324.

rate decreased (Chapter 1), which may in part have been the result of the foreign exchange purchases.

c. Home prices

In the fourth quarter of 2014, demand for homes resumed and home prices increased. In 2015, home prices increased by about 8 percent.

In the fourth quarter of 2014, demand for homes resumed and home prices increased, following half a year in which there was a standstill in the market against the background of Operation Protective Edge and the presentation of various government programs (Chapter 9), and even though the weighted real interest rate on new mortgages[26] declined during 2014. In 2015, home prices increased by about 8 percent[27] (in nominal terms), completing a real increase of about 70 percent since 2008.

The expectation that the increase in purchase tax on investors would be brought forward to June 2015 led to a record volume of transactions and of new mortgages taken out prior to the increase. This process was also a result of the fact that the weighted real interest rate on new mortgages declined in the first half of 2015 as well, continuing the trend since the end of 2011 against the background of the reductions in the monetary interest rate and the decline in long-term yields. Following the increase in the purchase tax on investors and the increase in the weighted interest rate on mortgages as a result of the rising real yields, the volume of transactions among all groups of purchasers declined. However, the flow of new mortgages remained high (Chapter 4). The increase in home prices continued even though the government presented the "Buyer's Price" program—a program intended to assist those who do not own a home to purchase a home through a discount in the price of land to contractors, subsidizing development costs, and grants to home purchasers—in the second half of 2015. This is apparently due to uncertainty regarding the timing with which the program will have an effect on home prices as well as the type of effect it will have (Chapter 9).

The resurgence in the housing market and the continuing increase in housing credit again presented policy makers with the challenge of maintaining financial stability.

While the risk characteristics of mortgages declined as a result of measures adopted by the Banking Supervision Department in recent years and as a result of widespread refinancing in the mortgage market, the resurgence in the housing market and the continuing increase in housing credit again presented policy makers with the challenge of maintaining financial stability. The increase in the volume of mortgages increases the risk to borrowers and to the financial system. A future increase in the interest rate against the background of a recovery in activity will raise the payment-to-income ratio (on variable-rate loans) if the increase in repayment is higher than the increase in disposable income, thereby reducing the income remaining for consumption. A prolonged reduction in disposable income for consumption may lead to a slowdown in the growth rate which, for its part, may be reflected in a slowdown in wage increases,

[26] In order to calculate this interest, the interest rates on various tracks are multiplied by the share of the tracks out of the total mortgage flow. For the purpose of the calculation, it is assumed that the expected inflation rate for nominal tracks is 2 percent.

[27] The prices according to the survey of owned home prices conducted by the Central Bureau of Statistics. These prices are not included in the Consumer Price Index.

with an increase in the unemployment rate and risk to the repayment ability of mortgage borrowers.[28] The Monetary Committee took this consideration into account in its interest rate decisions (Section 3.c.3).

3. MONETARY POLICY

This section discusses the Bank of Israel's interest rate policy. It deals with the transmission channel from the declared monetary interest rate to market interest rates, and analyzes the monetary interest rate path and the reasons why the Bank of Israel refrained from lowering it to negative territory in 2015.

a. The transmission from the monetary interest rate to the interest rates in the market and to real yields

The monetary interest rate is a benchmark for market interest rates. Through them, it influences private consumption and savings, the volume of investment in the market, and the exchange rate—and through the latter, activity in exports and import substitutes, competitiveness, and the current account.

The transmission from the monetary interest rate to interest rates on deposits remained high, albeit slightly lower in the low interest rate environment that prevailed in 2015.

The extent of the monetary interest rate's influence depends on its transmission to the market interest rate. The transmission between the monetary interest rate and between the interest rate on deposits and the interest rate paid by business customers on unindexed credit is high. However, because of the low interest rate environment, it was slightly lower in 2015 (Chapters 1 and 4).

The real yield to maturity on government bonds is not affected only by the monetary interest rate, but also by a number of other actual and expected factors, including the global interest rate environment, capital productivity, expected growth, the risk and liquidity premium, and government debt.[29] From the middle of 2012 until December 2015, the yield to maturity on one-year indexed bonds was negative (Figure 3.8 and Table 3.1). In the first half of 2015, the yield declined, but in the second half of the year it increased, mainly due to lower one-year inflation expectations, so that in December 2015, the yield was 0.1 percent. The parallel yield for 10 years declined until April 2015—further to the downward trend that began in April 2011—then increased until June, and remained stable in the second half of the year.

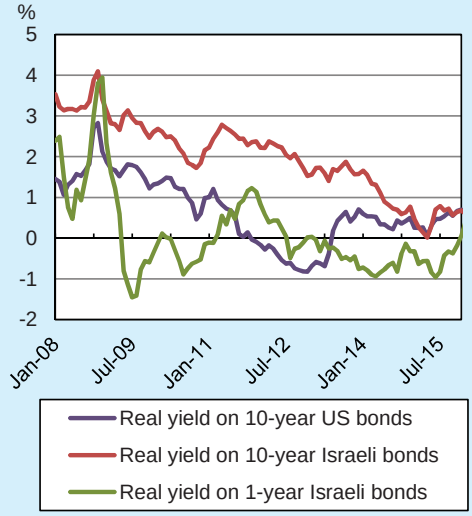
The transmission from the monetary interest rate to the interest rates offered to households (mainly in variable interest rate channels) increased, because the volume of household leverage—the ratio between credit to households and disposable

[28] See Bank of Israel (2015) *Financial Stability Report*, December 2015; Benita G and Z. Naor (2013), "Borrower Risk in the Mortgage Market: Historical Development and Evaluation in a Number of Scenarios", Research Department, Periodic Papers, 2013.08; and Hall, R.E. (2011): "The Long Slump", *American Economic Review*, 101 (2), pp. 431–469.

[29] See Brender, A., and S. Ribon (2014): "The Effect of Fiscal Policy, Monetary Policy and the Global Economy on Real Yields of Israeli Government Bonds: A Reassessment One Decade Later," Bank of Israel Review, 88, 7–51 (in Hebrew).

income—increased in recent years. This development supported activity, as reflected in the increase in private consumption in recent years.

Figure 3.8
Real Yields on 1-Year (Israel) and 10-Year (Israel and US) Government Bonds, 2008–2015 (monthly average)



SOURCE: Bank of Israel calculations.

b. An augmented Taylor Rule and the monetary interest rate

An augmented Taylor Rule—which in addition to the response to the deviation of inflation from the target range and to the output gap in Israel, also includes a response to expected growth in the US—appropriately explains monetary policy both prior to and since the onset of the Global Financial Crisis. Adding expected activity abroad to the Bank of Israel's policy rule is consistent with the theory of the natural interest rate in an open economy—the theoretical interest rate that would have prevailed had prices been fully flexible. According to this theory, in an open economy, the natural interest rate equals the weighted average of the expected growth rate of potential output in the economy and of the expected growth rate of (actual) output abroad.[30]

Figure 3.9 shows the contributions of the variables in the augmented Taylor Rule to the interest rate path in Israel between 2008 and 2015.[31,32] The contributions reflect the trends of the variables and their effects on the path of the monetary interest rate in the environment that preceded the date shown.[33]

The moderation in domestic activity that took place since mid-2010, alongside the downward trend in the inflation environment (actual inflation and inflation expectations) since mid-2011 explain the reductions of the Bank of Israel interest rate since the end of 2011. The contributions even became negative in 2014 and 2015[34],

[30] More discussion can be found in the Bank of Israel Annual Reports for 2013 and 2014, Chapter 3.

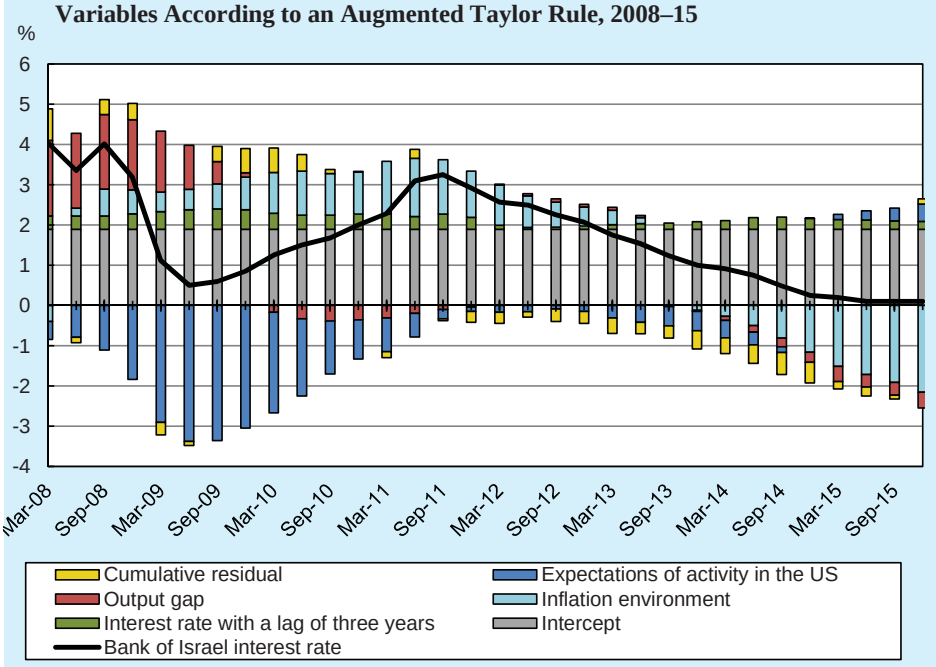
[31] It is important to emphasize that these contributions reflect partial equilibrium, since they are derived from a single equation (of the monetary interest rate) and not from a complete model of the economy. In a complete model it is possible to derive the structural (external) shocks that explain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

[32] In contrast to the augmented rule that was presented in the Bank of Israel Annual Report for 2013, this rule does not include an estimate of the natural interest rate, or a response to the exchange rate, but rather a constant, because these were found to be statistically insignificant.

[33] The augmented Taylor rule also includes an interest rate smoothing factor. We calculated the contributions according to the rule through backward iterations in order to decompose the contribution of the lagged interest rate to the lag in the other explanatory variables in the rule.

[34] An explanation of the development of the various contributions in previous years appears in the Bank of Israel Annual Report for 2014, Chapter 3.

Figure 3.9
Bank of Israel Interest Rate and the Contributions of Macroeconomic Variables According to an Augmented Taylor Rule, 2008–15



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

and the negativity increased during the year. In February 2015, the Bank of Israel reduced the interest rate (for March) to the historic low of 0.1 percent, due to the increasing pace of appreciation of the shekel since December 2014 and its possible effects on activity and on inflation (see the interest rate announcement for March). The contribution of the recovery of the American economy to the monetary interest rate in Israel became positive over the course of 2015, and was estimated at 0.4 percentage points at the end of the year. The contributions of expected growth in the US[35] reflects the manner in which the future change in activity in the US is expected to affect Israeli exports and the expected path of global interest rates. While global economic developments are not currently uniform as they were in recent years—there has been a decoupling in the world—and expected activity in the US therefore probably reflects the global environment to a lesser extent, the explanatory power of the rule remained high in 2015. The Bank of Israel Research Department found that if expected growth in the eurozone is added to the rule, it lowers the rule's ability to explain the actual path of the interest rate. It is possible that this has to do with the fact that the decoupling between developments in the US and developments in the eurozone is typical of only the past three years and therefore still has no statistical significance.

[35] The projections were taken from the Livingston Survey, and relate to projections regarding the growth rate in the US in the next six months. In the augmented rule, the interest rate reacts to a deviation of the forecasts from the multi-year average.

c. An analysis of the level of the monetary interest rate in Israel in 2015

The Monetary Committee did not lower the monetary interest rate to negative levels because domestic demand remained high, home prices rose, and the Committee's assessment was that such a step entails risks and is of uncertain benefit.

The inflation environment was lower than the target range in 2015. Inflation excluding the food and vegetables and fruit components, and adjusted for the price reductions initiated by the government and the effect of the global decline in energy prices, was also below the lower bound of the price stability target range, but not by far. Inflation expectations up to 5 years declined: In the ranges of up to two years, they declined to below the target range, and in the other ranges they declined to slightly below the midpoint of the range. In addition, activity remained moderate, and in December 2014, the appreciation of the shekel in terms of the nominal effective exchange rate resumed. If so, why did the Bank of Israel not cut the monetary interest rate further? The answer is comprised of considerations concerning three areas: (1) Assessments of the state of the economy and of inflation that were available to policy makers in real time; (2) the monetary interest rate lower bound; and (3) developments in the housing market.

1. Assessments of the state of the economy and of inflation that were available to policy makers in real time

In the first half of 2015, the prevailing assessment was that the economy had recovered from Operation Protective Edge and had returned to the moderate growth that had characterized it in the previous two years. While indicators became available in the second half of the year showed that activity slowed during 2015 (although these were later revised upward at the beginning of 2016), they also showed that the economy continued to grow at a pace similar to that in 2014.

In terms of inflation, the marked drop in oil prices since the middle of 2014 was unexpected. Oil futures traded on the global markets were very close to the price of oil at the time of the forecast. The development of the exchange rate and the reductions of VAT and water prices were also unexpected. Moreover, over the course of the year, there were growing assessments that inflation would return to the price stability target range within a year to a year and a half, without it being necessary to lower the interest rate, since negative inflation was mainly driven by temporary supply factors. The robustness of the labor market in 2015, and particularly the low unemployment rate and wage increases, supported these assessments, as did the recovery of the American economy—alongside the expectations that the Federal Reserve would raise the interest rate over the course of 2015 and would continue to raise it in 2016 if the American economy continues to recover—since these factors support an increase of inflation in Israel through their effects on demand for Israeli exports and on the exchange rate.

As such, the assessments available to policy makers in real time did not indicate an immediate need to lower the interest rate.

2. The monetary interest rate lower bound

Until 2009, it was commonly believed that the zero lower bound was the effective barrier for the monetary interest rate, with that belief influenced by the interest rate level that was prevalent in Japan since 1990. In 2009, as a result of the Global Financial Crisis, Sweden's central bank lowered its interest rate on banks' deposits with it to a negative level, meaning that interest was charged on deposits. In this case as well, there is a lower bound to the interest rate—it seems that there is no benefit to lowering the interest rate to a level at which the cost of a deposit will exceed the transaction cost involved in holding cash. In 2012, the central bank of Denmark also adopted such a policy. In 2014, as a result of concern over falling into recession, the European Central Bank (ECB) lowered the interest rate on banks' reserves to a negative level, as did other central banks in the past two years.

Despite the fact that in recent years, central banks have lowered the interest rate to negative territory, it is still not clear how efficient these measures are. While the channel that passes through the exchange rate and then through prices and the balance of trade—a channel that reflects the uncovered interest parity—also acts when the interest rate is negative, it is not clear how the channel that supports activity by encouraging private consumption and encouraging corporate investment operates. In particular, the signaling channel—which acts when the bank is committed to lowering the interest rate to negative territory—may incentivize consumption, but it also may negatively impact it if the measure reinforces the belief that the current, and particularly expected, state of the economy is deteriorating. Additionally, since financial intermediaries compete for customers, it may be expected that in a negative interest rate environment, they will absorb some or all of the interest they must pay on their deposits, and will avoid charging interest on the public's deposits. As a result, the transmission from the negative monetary interest rate to the market interest rate may decline, and even disconnect (reflecting nonlinearity of the transmission), at least in the short term, and negatively impact the effectiveness of the interest rate reduction. Moreover, since financial intermediaries pay interest on their deposits at the central bank, but are expected to charge lower interest from their customers if at all, it could negatively impact their profitability and, over time, their stability. Only when the consideration concerning a decline in profitability overcomes the consideration concerning the maintenance of market share will there be a transmission from the negative monetary interest rate to the market interest rate. By way of illustration, some financial intermediaries in Denmark absorbed the cost of the negative interest rate for about two years before they began charging interest from the public on its deposits.[36] It therefore seems that a condition for lowering the interest rate to negative territory is an assessment that economic activity is deteriorating and that this is expected to continue for a prolonged period.

It seems that a necessary condition for lowering the interest rate to negative territory is an assessment that the state of the economy is persistently worse.

[36] See: Danmarks Nationalbank, Monetary Review, 3rd Quarter, 2015.

Shadow interest rates

Since monetary interest rates around the world are close to their lower bound, and unconventional monetary policy is being used, a shadow interest rate has been calculated around the world. This calculation translates unconventional policy measures into parallel terms of a negative monetary interest rate. A number of studies have estimated the shadow interest rate in the American economy, and found that it ranges significantly—between 2 and 5 percentage points—below zero. These estimates highlight the extent of monetary accommodation in the American economy.[37]

The Bank of Israel's Research Department estimated the interest rate that would have prevailed given developments in the domestic and global economy had there been no interest rate barrier. It is important to note that this estimate differs materially from the shadow interest rate calculated for the US economy. First, the interest rate in Israel came close to zero only in the past year and a half, while in the US it was close to zero for the past 7 years. Second, the unconventional policy measures adopted in the US in recent years are different in nature and/or in scope than the measures adopted in Israel—foreign exchange purchases (and bond purchases during the short period from February to August 2009, totaling NIS 18 billion), alongside the forward guidance adopted only in late 2015.

The calculation was made as follows: In the first stage, the Research Department's structural model[38] was used to estimate and extract the shocks—the unexpected changes—that affected the economy in 2014–15, including shocks to government consumption, global trade shocks, the decline in oil prices, and more. These shocks also include the residual of the interest rate rule—the gap between the actual interest rate and the interest rate derived from the central bank policy rule used by the model. In the second stage, the model was used to conduct a counterfactual forecast for 2014–15 from the starting point of the fourth quarter of 2013. During the forecast period, all of the shocks estimated in the first stage were reintroduced into the model, except for the residual of the bank's interest rate rule. This simulation is based on the assumption that the various shocks are not dependent on the residual of the policy rule. This is a common assumption which is used for didactic purposes even if it is a strong assumption. The results showed that the interest rate derived from the simulation for 2014 is very similar to the actual interest rate, while the interest rate derived for 2015 is up to 0.7 percentage points lower than the actual interest rate, meaning that according to the model the interest rate should have fallen to -0.6 percent at the most—the interest rate environment of Denmark, Switzerland and Sweden. We therefore conclude that according to the model—and assuming that the transmission

[37] See: M. Lombardi and F. Zhu (2014): "A Shadow Policy Rate to Calibrate US Monetary Policy at the Zero Lower Bound", BIS Working Papers No 452.
Wu. J.C. and F.D. Xia (2015): "Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound", IMF 16th Jacques Polak Annual Research Conference.

[38] See: Argov, E., A. Barnea, A. Binyamini, E. Borenstein, D. Elkayam, I. Rozenshtrom (2012), "A DSGE Model for Analysis of the Israeli Economy (MOISE)." Bank of Israel, Research Department, Discussion Paper No. 2012.06.

from the monetary interest rate to the market is maintained both in amplitude and in duration in the negative territory as well, while a gap developed between the actual monetary interest rate and the derived interest rate in Israel, it is significantly lower than the gap that was estimated in the US, although again, the two shadow interest rates reflect different meanings. The analysis shows that had the interest rate fallen to a rate similar to the interest rates in the small, open economies in western Europe, the inflation rate in Israel—excluding the decline in energy prices and the price reductions initiated by the government—would have been within the target range.

3. Developments in the housing market

In the fourth quarter of 2014, demand for homes and the attendant price increases reawakened (Section 2.c). A study conducted in the Research Department showed that a permanent reduction of the monetary interest rate by one percentage point increases home prices by about 6 percent after two years, assuming that the other variables remain fixed.[39] As both the Monetary Policy Report for the second half of 2015 and the minutes of the Monetary Committee meetings held to decide on the interest rate show, the increase in home prices—about 9 percent in 2015 and about 70 percent since 2008 (in real terms)—was a consideration against lowering the interest rate.

Rising home prices acted as a consideration against lowering the interest rate

*****

In summation, in view of the low inflation environment, the appreciation of the shekel, and moderating growth, the members of the Monetary Committee examined the possibility of using additional unconventional monetary tools in addition to intervention in the foreign exchange market—actions that were expanded in 2015. Since October 2015, the Monetary Committee began using forward guidance and announcing its assessment that the monetary interest rate will remain accommodative for a considerable time. In 2015, the Committee believed that there was no room for using other tools (including negative interest rates or bond purchases) because its assessment was that the state of the economy did not warrant it; because of uncertainty regarding their effectiveness; and due to concern of unexpected effects.

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

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

[39] See: Nagar, W. and G. Segal (2014): "What Explains the Developments in Home Prices and Rents in Israel between 1999 and 2010?", *Israel Economic Review* 12 (1), pp. 115–161.

operates so that the money supply is completely flexible at the interest rate it declares, 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[40]—is determined by the demand for liquidity at the Bank of Israel interest rate. However, when the interest rate is near-zero and it is more difficult to analyze its effect and the effect of other monetary tools on the economy (see Section 3.c.2), the developments of the monetary base and the monetary aggregates may shed light on the effect of monetary policy in such an environment. For instance, the accelerated increase of the monetary base may indicate monetary accommodation, while it is difficult to derive this from the level of the interest rate since if there are any changes made to the interest rate at all, they are minor.

a. The monetary base

The monetary base is affected by flows that are not under the Bank of Israel's control, such as government accounts[41], 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.[42] 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.

Due to the interest rate reductions and its low level, the monetary base grew by NIS 8.4 billion in 2015, after increasing by NIS 11.7 billion in 2014 (Table 3.4).[43] Until the Global Financial 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 into the market, the Bank absorbed them in order to sterilize the effects of its own activities on the monetary

[40] 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.

[41] 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).

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

[43] In parallel with the reduction in the interest rate for March, the Bank of Israel narrowed the spread (the corridor) around the interest rate in the credit window and in the deposit window for commercial banks from ±0.25 percent to ± 0.1 percent.

Table 3.4
Source of change in the monetary base, 2011–15

(NIS billion)

						2015			
	2011	2012	2013	2014	2015	Q1	Q2	Q3	Q4
1. Injections from the government and the Jewish Agency	-2.14	-9.13	-10.45	1.17	-14.04	-11.32	-6.73	-3.67	7.69
of which: the government	-2.61	-9.67	-10.45	1.17	-14.04	-11.32	-6.73	-3.67	7.69
2. Foreign exchange conversions[a]	15.90	-0.24	19.19	24.66	33.97	7.28	10.62	5.83	10.23
of which: Bank of Israel	16.17	0.00	19.04	24.63	33.84	7.19	10.62	5.82	10.22
3. Total (1+2)	13.75	-9.37	8.73	25.83	19.93	-4.04	3.89	2.16	17.92
4. Bank of Israel injections	-7.50	10.05	-2.41	-14.19	-11.54	8.64	-3.76	8.13	-24.56
of which[b]: *Makam*	16.65	8.15	-6.35	-3.22	14.14	1.05	6.02	4.03	3.04
Bank term deposits	-27.63	-1.00	2.00	-12.34	-26.66	7.34	-10.00	3.88	-27.88
Interest[c]	2.89	2.30	1.22	0.59	0.16	0.07	0.03	0.03	0.04
5. Total change in the monetary base[d]	6.08	0.75	6.44	11.70	8.43	4.62	0.12	10.32	-6.62

[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] In previous years, injections were also made through monetary loans (until 2010), swap tenders (until 2005), bond purchases (in 2009), and repo tenders (2007 to 2009).

[c] Excluding makam.

[d] The total change in the monetary base includes accounting adjustments due to transfers from abroad by the national institutions that are not presented in the table.

SOURCE: Bank of Israel Accounting Division.

base[44] in order to prevent pressure for the short-term interest rate to decline to a level lower than that set by the Bank. Similar to 2011 and 2014, the absorption in 2015 was done mainly by increasing the banks' deposits at the Bank of Israel.

b. The monetary aggregates

The quantity of money—the M1 aggregate—includes cash held by the public and demand deposits. The interest rate reductions made in recent years supported the continued growth of the means of payment, but it seems that the interest rate's effect on the quantity of money is not linear, and increases as the interest rate nears its lower bound. Moreover, in a negative inflation environment, cash bears a real yield (similar to other unindexed assets).

An estimation of basic demand for M1 and its components between 1998 and 2015[45] finds that the development of GDP and makam yields explains the path of the

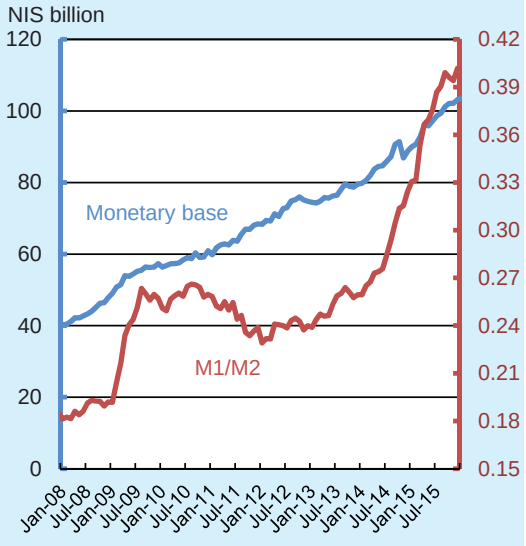
[44] In 2009, the Bank was also required to sterilize the effects of government bond purchases.

[45] 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*.

development of M1 throughout the sample period. Between March and May 2015, M1 increased markedly, by about 15 percent each month, as a result of the reduction in the monetary interest rate to its lowest level ever—0.1 percent. At the end of 2015, M1 had increased by about 40 percent, second only to the increase in 2009, when it increased by 52 percent (Table 3.5), after the Bank of Israel lowered the monetary interest rate from 4.25 percent in September 2008 to 0.5 percent in April 2009—as a result of the Global Financial Crisis—and then increased it gradually to 1 percent at the end of 2009 (Figure 3.5).

Until September 2015, M1 as a share of M2—an aggregate that includes unindexed deposits of up to one year, in addition to M1—increased (Figure 3.10). The increase in this ratio began at the beginning of 2012, and indicated that the public replaced interest-bearing deposits with demand deposits to a significant extent, since the unindexed deposits of up to one year did not generate a yield that would compensate for the loss of liquidity inherent in them.[46] That is also the reason for the decline of M1 as a share of M2 between mid-2010 and the beginning of 2012, in parallel with the process of increasing the interest rate that began at the end of 2009. Thereafter—as the trend reversed and the interest rate was lowered—M1 as a share of M2 again increased and the rate of change was similar to the rate during 2009. This is further evidence of the fact that the monetary interest rate has a nonlinear effect on the monetary base and quantity.

Figure 3.10
The Monetary Aggregates, 2008–15
(monthly averages)



SOURCE: Bank of Israel.

In September 2015, M1 as a share of M2 began to decline, apparently affected by the fact that inflation expectations, including for terms of up to 5 years, declined to below the midpoint of the price stability target range. The decline in expectations enhanced the relative attractiveness of unindexed deposits of up to one year. By the end of 2015, M2 increased by about 14 percent, while it increased by an average of about 8 percent in each of the previous three years.

In October 2014, the government adopted the recommendations of the interministerial committee established about a year earlier to examine the challenges

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

posed by the use of cash and paper-based means of payment (the Locker Committee).[47] The committee examined how to reduce the phenomenon of unreported capital in Israel, struggle against money laundering, and enable the efficient use of advanced means of payment. The main recommendations included: (1) limiting the transaction amount of cash-based transactions; (2) limiting the use of negotiable checks; and (3) advancing the use of advanced electronic means of payment. The recommendations were adopted by the Ministerial Committee on Legislation in May 2015, and their implementation could change the composition of the monetary aggregates in the economy.

Table 3.5
Rate of change in monetary aggregates, 2011–15

	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)							
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
2015	16.3	13.9	51.4	40.7	-16.4	4.6	34.2	13.6
	(Quarterly average compared to average in the previous quarter)							
2015								
Q1	2.4	2.9	15.0	11.5	-1.6	-0.3	8.8	4.6
Q2	5.7	4.8	16.8	13.5	-9.2	0.3	13.3	3.8
Q3	3.4	3.6	10.0	8.4	-5.5	0.6	5.0	2.4
Q4	2.8	2.5	4.6	4.1	-0.2	3.3	4.2	2.8

[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] Term deposits.
[d] Self-renewing overnight deposit - a liquid daily deposit.
[e] M2 = M1+SRO+unindexed deposits of up to one year.
SOURCE: Bank of Israel and Central Bureau of Statistics data.

[47] Government decision number 2115 from Wednesday, October 22, 2014.

Table 3.A.1
Interest rate decisions since 2013

For month:	Interest rate decision (percentage points)	Interest rate (percent)	Distribution of Monetary Committee members' votes in interest rate decisions		
			Increase	Keep unchanged	Reduce
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
January-15[d]	No change	0.25	0	5	0
February-15[d]	No change	0.25	0	5	0
March-15[d]	-0.15	0.1	0	1	4
April-May-15	No change	0.1	0	5	0
May-15	No change	0.1	0	5	0
June-15	No change	0.1	0	5	0
July-15	No change	0.1	0	5	0
August-15	No change	0.1	0	5	0
September-15	No change	0.1	0	5	0
October-15	No change	0.1	0	5	0
November-15[d]	No change	0.1	0	4	0
December-15[d]	No change	0.1	0	4	0

[a] In February 2013, the Monetary Committee decided not to make interest rate decisions in proximity to the Passover and Sukkot holidays. Therefore, the decision at the end of March 2013 was for the months of April and May. On August 26, 2013, the Monetary Committee decided to return to a schedule of 12 decisions per year.

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

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

SOURCE: Bank of Israel.

Table 3.A.2
Import prices, the exchange rate and consumer prices, 2011–15

	Import prices in dollars					Import prices in shekels[a]				
			Manufacturing inputs		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)									
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	-6.2	-5.2	-4.9	-6.0	-8.6	1.5
2014	0.6	1.0	-1.3	-8.0	-2.9	-2.3	-1.9	-4.2	-10.6	0.5
2015	-5.5	-6.6	-9.7	-42.1	-1.2	-6.6	-7.7	-10.7	-42.7	-0.6
	(compared to the same period last year, fourth quarter)									
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	-7.7	-5.6	-4.8	-8.4	-8.8	1.9
2014	-2.1	-2.3	-3.5	-24.8	-1.4	-3.5	-3.6	-4.8	-25.8	-0.2
2015	-4.2	-4.6	-9.6	-41.0	-1.4	-5.6	-6.0	-10.9	-41.8	-0.9
	(compared to the previous quarter)									
2015										
Q1	-3.9	-4.9	-4.9	-25.7	-0.2	-4.1	-5.1	-5.1	-25.8	-1.3
Q2	-0.3	-0.6	-2.0	9.0	-0.5	-0.8	-1.1	-2.5	8.4	0.8
Q3	-0.2	0.1	-0.3	-16.1	-0.3	-0.5	-0.1	-0.6	-16.3	0.2
Q4	0.2	0.8	-2.7	-13.1	-0.5	-0.3	0.3	-3.2	-13.6	-0.5

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

SOURCE: Bank of Israel and Central Bureau of Statistics.