Bank of Israel

MONETARY POLICY REPORT

July–December 2016

46

February 2017

CONTENTS

According to the Bank of Israel Law, 5770–2010, the Bank of Israel has three objectives: (1) to maintain price stability, as its central goal; it was established that price stability is defined as an annual inflation rate of between 1 percent and 3 percent; (2) to support other objectives of the Government's economic policy, especially growth, employment and reducing social gaps, provided that this support shall not prejudice the attainment of price stability, and (3) to support the stability and orderly activity of the financial system. In order to attain these objectives, the Bank of Israel employs various tools, chief among them the monthly decision on the appropriate level of the short-term interest rate. In addition, the Bank intervenes in the foreign exchange market.

Section 55(a) of the Bank of Israel Law, 5770–2010, establishes the publication of this report, which is submitted to the government and the Knesset Finance Committee twice a year. The report surveys the economic developments that took place during the period covered by the report. It also surveys the policy required, in the view of the members of the Bank of Israel's Monetary Committee—the forum in which monetary policy decisions are reached—for the inflation rate to be within the range set by the government and to achieve the other objectives of the government's economic policy. A survey of financial stability appears in the Financial Stability Report for the period covered.

In accordance with Section 55(b) of the Law, this report explains why the inflation rate deviated from the target range set by the government for more than six consecutive months, beginning with the publication (on July 15th, 2014) of the Consumer Price Index (CPI) for June 2014. The rate of inflation during this period declined to below the lower bound of the target range, and explanations appear in Section A (Policy and Targets) inside.

The Monetary Policy Report for the second half of 2016 was prepared by economists in the Research Department, within guidelines set by the Bank of Israel Monetary Committee.[1] This report is based on data that were published up to January 23, 2017, the date of the decision on the interest rate for February 2017.

[1] Since October 2014, the Monetary Committee has been operating with a smaller composition than warranted in the Bank of Israel Law. It currently includes four members.

- **Monetary policy:** In the second half of 2016, the Monetary Committee left the benchmark rate unchanged at 0.1 percent, and continued to assess that monetary policy would remain accommodative for a considerable time. During the reviewed period, however, the Committee expressed the view that it is no longer needed to examine the use of various monetary tools. Within the framework of monetary policy, the Bank of Israel continued to purchase foreign currency, buying $2.6 billion during the reviewed period. The Committee preferred to make use of foreign exchange market intervention, rather than a further reduction in the interest rate, because of the risks inherent in a negative interest rate policy. In September, the Committee decided to reduce the frequency of interest rate decisions from twelve to eight per year, from 2017 onward.

- **Inflation and inflation expectations:** In the twelve months ending in December 2016, the Consumer Price Index declined by 0.2 percent. During the review period, the annual inflation rate increased, as the direct effect of declines in energy prices and of government-initiated price reductions dissipated. One-year inflation expectations and one year, one-year forward expectations (that is, second year forward expectations) continued to range below the lower bound of the inflation target. Forward expectations for medium terms were above the lower bound, and forward expectations for longer terms (5–10 years) remained anchored at around the midpoint of the target range.

- **Domestic real activity:** Revised National Accounts data for the second and third quarters indicated that the economy is growing by a more rapid rate than had been previously published, driven by private consumption and fixed capital formation—components that continued to be supported by low interest rates. Throughout the second half, growth data were adjusted upward markedly, and the first estimate of full-year year data from the Central Bureau of Statistics showed 3.8 percent growth in 2016. In discussions on the interest rate for September, the committee members expressed the view that given the large increase in the first-quarter growth estimate, the risks to growth had diminished. The labor market continued to display resilience and the unemployment rate remained low; these developments were reflected in wage increases and in the number of job vacancies.

- **Exchange rate:** During the review period, the shekel appreciated in nominal effective exchange-rate terms, primarily due to depreciation against the euro against the background of the eurozone's continued monetary accommodation and low growth environment. Conversely, the dollar maintained its value against the shekel and appreciated against most currencies worldwide. For the period overall, the shekel appreciated by 5.2 percent against the currency basket (June average vs. December average). The appreciation continued to weigh on the continued growth of goods exports. Various equilibrium exchange-rate models that were presented to the Monetary Committee indicate that the shekel is overvalued. The Monetary Committee assesses that a significant share of the appreciation is based on enhanced monetary accommodation worldwide, particularly negative interest rates and quantitative easing programs in Europe and Japan. This accommodation forced several countries (such as Sweden and Switzerland) to adopt similar policy, and in other countries central banks had to reduce the interest rate and intervene in the foreign exchange market to prevent further currency appreciation that would negatively impact exports. The main objective of the intervention policy is to moderate the effect on the economy of the atypical monetary accommodation of Israel's trading partners, without necessitating the extreme means adopted by Europe and Japan.

- **Global economy:** The growth rate of global economic activity remained moderate during the second half of 2016; concurrently, the forecasts of leading international entities, for both global growth and world trade, were revised downward. These entities also assessed that the risks to the forecasts tended to the downside. The revision of these forecasts was influenced by unforeseen developments in the global economy: the results of

Britain's referendum in favor of Brexit and the increase in political uncertainty. Oil prices held steady during most of the period after rising sharply in the previous half-year, and they moved up again toward year's end. In parallel, bond yields increased sharply in major bond markets and inflation expectations increased in the medium to long terms. Monetary policy remained markedly accommodative in most major markets, and became even more accommodative in most of them. Conversely, the US Federal Reserve decided in December to raise its benchmark rate to 0.5–0.75 percent. According to the median estimate among members of the FOMC, the pace of rate-hiking will be slightly faster than previously assessed.

- **Housing market:** Home prices continued to rise in the second half of 2016. New mortgage volume declined from the record reached at the beginning of the year but the number of transactions remained high. Mortgage interest rates continued to increase and the spread over government-bond interest rates continued to widen in view of the upturn in risk in the banking system's housing-credit portfolio, an increase in the cost of the sources that the banks raise, and previous measures by the Banking Supervision Department to mitigate risk to borrowers and banks. The stock of homes available for sale continued to grow in the half-year reviewed, reaching a record level. The annual rate of increase in housing rent declined slightly toward the end of the review period.

- **Financial markets:** Domestic equity indices remained essentially unchanged during the review period (in dollar terms, December average vs. June average), similar to the leading indices in Europe and in emerging markets and in contrast to US indices, e.g., the S&P 500, which continued its rally seen in the preceding half year. Domestic nominal and real yield curves increased for medium and long terms, as did curves abroad—consistent with the stability that medium- and long-term inflation expectations have been displaying. The spreads between corporate bonds and similar government bonds remained stable in the second half of 2016.

- **Fiscal developments:** The cumulative domestic deficit (excluding net provision of credit) was NIS 20.7 billion in July–December 2016, compared with NIS 18.8 billion in the corresponding period a year earlier (constant prices). The annual deficit was 2.1 percent of GDP, markedly lower than the target (2.9 percent) and similar to the 2015 deficit. The deviation from the original budget forecast reflects higher revenues—from taxes and from surpluses on National Insurance Institute activity—as total expenditures largely adhered to the original budget. Total tax revenues in 2016, net of legislative changes and timing differentials in respect of vehicle imports, increased by 5.5 percent relative to the previous year, similar to the growth rate of nominal GDP. The share of public debt in GDP declined to 61.9 percent.

- **Research Department forecasts:** In the forecasts that it formulated toward the end of December 2016 (before the Central Bureau of Statistics released its full year estimate), the Research Department estimated GDP growth in 2016 at 3.5 percent (as against 2.8 percent in the previous forecast), and projected growth of 3.2 percent in 2017 and 3.1 percent in 2018. According to the forecast, inflation is expected to converge gradually to within the target range in the next few quarters, reaching 1 percent of the end of 2017 and 1.5 percent in 2018. The Bank of Israel benchmark rate, according to the forecast, is expected to stay at its current level until the third quarter of 2017 and to increase to 0.5 percent at the end of 2018.

MONETARY POLICY

In accordance with the Bank of Israel Law[2], Section A of this Report explains why the inflation rate has deviated from the target range set by the government for more than six consecutive months. In addition, it describes the policy adopted by the Monetary Committee to return the rate of inflation to within the target range, and presents its assessment of the time required to do so. Section B describes the background conditions that prevailed at the time the interest-rate decisions were made and presents the Committee's point of view.

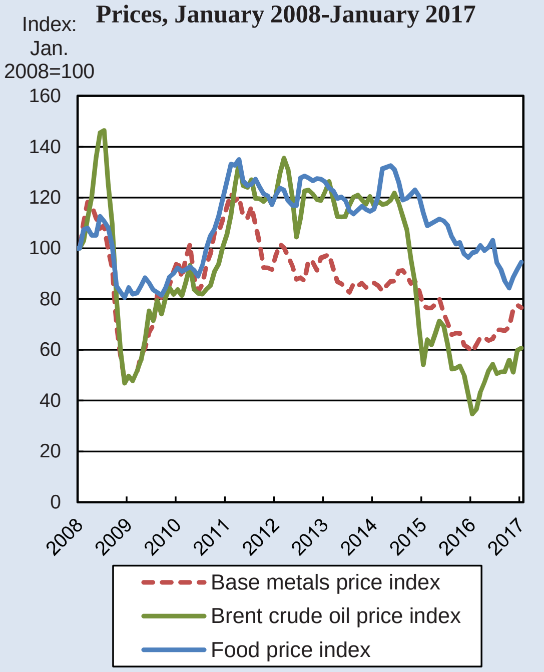
A. POLICY AND TARGETS

Several main developments underlay the decisions to leave the benchmark interest rate at its low level during the review period: The inflation environment remained negative and markedly below the price-stability target range; most central banks in leading markets continued to apply very accommodative monetary policy; the level of the exchange rate and the moderation of global activity weighted on exports; and home prices continued to rise swiftly.

In the second half of 2016, the Monetary Committee left the benchmark rate at its previous low level of 0.1 percent. During this time, the Committee continued using a measure that it had first adopted in its interest announcement for November 2015—forward guidance. Thus, the Committee noted in its announcements its assessment that monetary policy would remain accommodative for a considerable time. During the review period, however, it also estimated that the use of various monetary tools was no longer necessary. In addition, foreign exchange purchases were made during the review period in accordance with policy guidelines that had been set forth.

The factors in continued below-target annual inflation during the review period: During the review period, the CPI still reflected some of the effect of the dramatic decrease in oil prices from mid-2014 to early 2016 (75 percent in cumulative terms—Figure 1). The decrease also appears to have had an indirect effect, by lowering production costs and, in turn, prices of various goods and services. During the review period, oil prices stabilized at a level characteristic of the first half of 2016 and even increased toward year end. As a result, the direct effect of oil prices on inflation waned at the end of the review period and the annual inflation rate increased, albeit not up to the lower bound of the target. Additional factors helped to keep the inflation rate under the bound. First, government

Figure 1
Indices of Base Metal, Energy and Food Prices, January 2008-January 2017

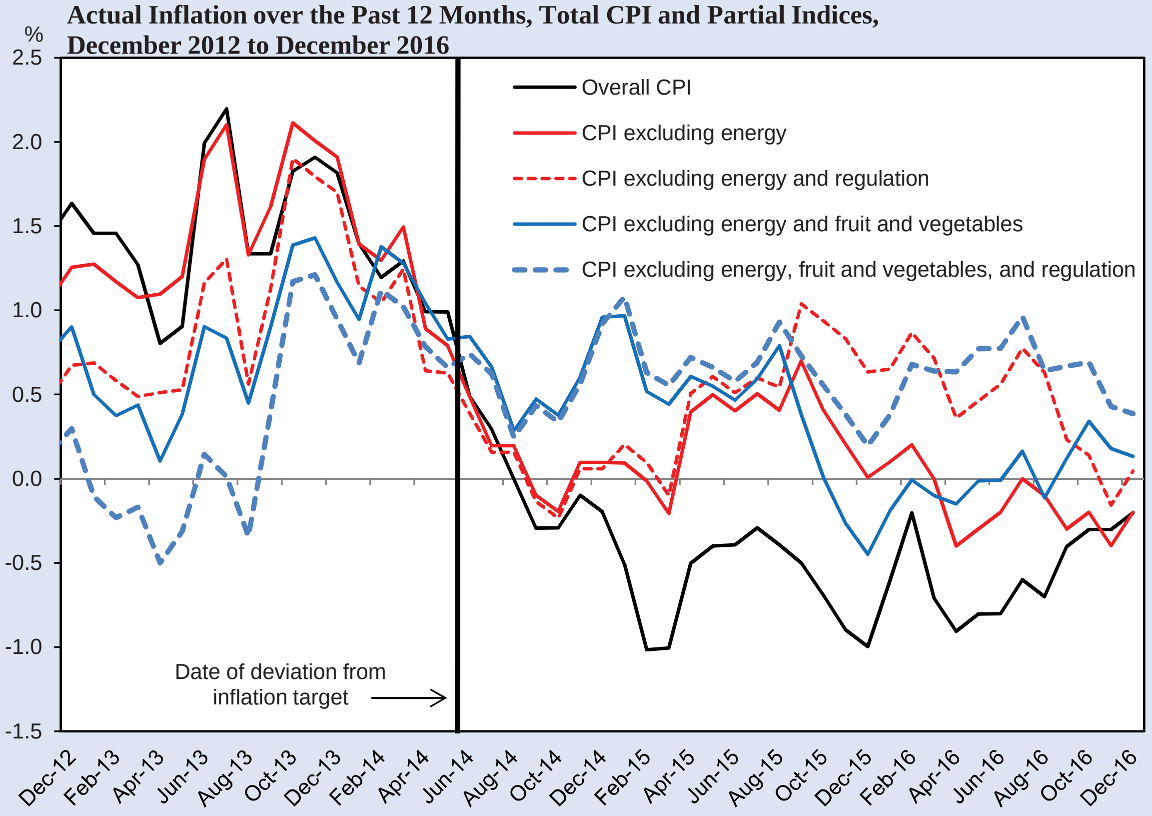


SOURCE: Based on Bloomberg.

[2] See details at the opening of this Report.

administrative decisions since September 2015, designated to reducing the cost of living[3] continued to contribute negatively to the CPI during the review period, although less so as the period neared its end. Net of energy prices, government intervention, and the volatile prices of fruit and vegetables the CPI increased by 0.4 percent (Figure 2). Second, the shekel appreciated in nominal effective exchange rate terms, chiefly due to weakening of the euro abroad. On top of these factors, evidently, was an acceleration of domestic competitiveness. The Bank of Israel intervened in the foreign-exchange market on the basis of policy guidelines that were set forth for this purpose—namely, when the exchange rate shows exceptional volatility that is not in line with economic fundamentals or when the foreign-currency market is not functioning properly—and in accordance with a program intended to offset the effects of natural gas production on the exchange rate.

Figure 2
Actual Inflation over the Past 12 Months, Total CPI and Partial Indices, December 2012 to December 2016



SOURCE: Based on Central Bureau of Statistics.

[3] Reducing water and electricity rates, prices of supervised food products, and public-transport fares.

The Monetary Committee was of the opinion that the decline in inflation during the review period was a result of the factors reviewed above and not of weakness in domestic demand. It also believes that conditions have not come about requiring the use of unconventional tools such as bond purchases or negative monetary interest, in view of the unexpectedly strong growth data, strength of the labor market, increase in medium-term inflation expectations, and long-term expectations that remained in the middle of the target range. To formulate an appropriate monetary policy, policymakers need to distinguish between two types of price declines: (1) a decline deriving from supply-side shocks, e.g., the dramatic decline in oil prices that began in mid-2014, and (2) a protracted downturn deriving from moderate demand that is liable to develop into recession (deflation). While the deflationary mechanism brings on a recession, price declines from the supply side support expansion of activity. Therefore, in such a situation policymakers do not need to lower the interest rate to stimulate consumption and investment, as long as inflation expectations do not indicate a negative impact on credibility of monetary policy and the inflation target regime.

Israel's macroeconomic data indicate that the low inflation rate was induced by supply-side shocks. As stated, annual inflation was still affected throughout the period by the dramatic decrease in oil prices and by government-initiated price cuts, i.e., demand-side factors. The impact of these factors dissipated toward the end of the review period and the annual inflation rate increased. Also contributing to low inflation were additional factors unrelated to the supply side—currency appreciation in nominal effective exchange-rate terms and also, evidently, an upturn in domestic competition. Furthermore, the economy has been typified by favorable developments in view of the accommodative monetary policy: the labor market has continued to display resilience, wages and the employment rate increased, private consumption increased markedly, and medium and long term inflation expectations indicated throughout the review period that the financial markets also expect monetary policy eventually to lead the inflation rate back to the target.

In the Committee's estimation, the use of unconventional measures for monetary accommodation, such as a negative interest rate, is risky. Furthermore, in view of the Committee's conviction that the low inflation rate is not the result of a slump in demand, and since the growth and labor-market data point to a strong economic environment, the Committee did not believe it correct to take such steps. Furthermore, the Committee noted that no experience has been amassed abroad on a scale that would make it possible to determine whether the use of such tools abets the attainment of monetary targets.

The Monetary Committee stresses that monetary policy remains accommodative, as evidenced in a low interest rate by historical standards and continued intervention by the Bank of Israel in the foreign-exchange market. In all of its interest rate discussions in the review period—and at the beginning of the first half of 2017 (January and February)—the committee decided to make no change in interest and continued to use forward guidance by informing the public that it expects monetary policy to remain accommodative for a considerable time.

The Committee believes that the accommodative monetary policy that it has adopted—protracted, historically low interest rate and foreign-exchange purchases—will help to return inflation to the target range toward the end of 2017. This estimation is predicated on the dissipation of the nonrecurring effects of government-initiated price cuts and the premise that oil and other commodity prices will stabilize. The accelerating growth rate of nominal wages in the business sector in the past year and a half, occasioned by the resilient labor market, is also likely to help move inflation back into the target range. In this context, it is important to note that by law, monetary policy is forward-looking and does not act to offset price declines that have already occurred.

In sum, the Committee members are of the view that leaving the interest rate at its current level for a lengthy time, along with the economic forces—particularly continued economic growth, low unemployment, and rising wages—will help to return inflation to the target range by the end of 2017, provided the global economy does not worsen further and commodity prices remain stable.

B. BACKGROUND CONDITIONS AND THEIR EFFECT ON INTEREST-RATE POLICY[4]

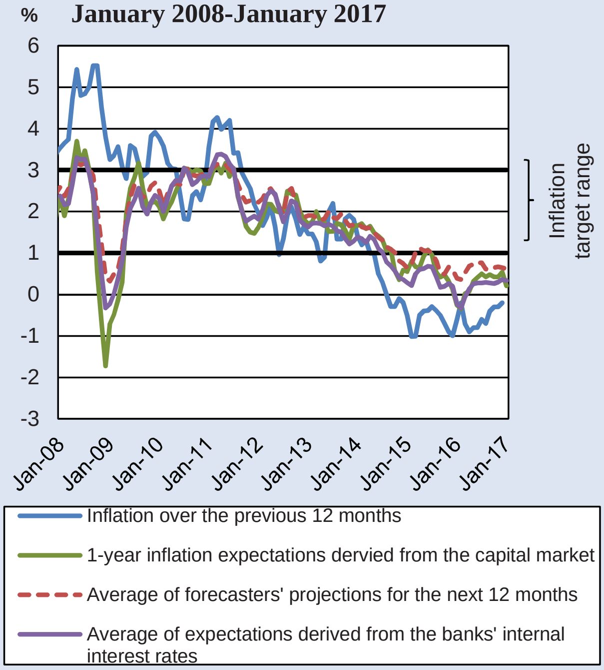
Inflation as measured by the change in the CPI over the twelve months ending in December 2016 was negative, at -0.2 percent. One-year inflation expectations and one year, one-year forward expectations (that is, second year forward expectations) continued to range below the lower bound of the inflation target. Forward expectations for medium terms were above the lower bound, and forward expectations for longer terms (5–10 years) remained anchored at around the midpoint of the target range. At the beginning of the review period, annual inflation was -0.9 percent, largely due to the protracted—and surprisingly strong—decline in commodity

[4] Table 1 itemizes the National Accounts data that were available to the members of the committee.

prices, particularly oil, in the past two years. In addition to this were the effect of government administrative measures and also, evidently, enhanced domestic competition. Although negative throughout the review period, the annual inflation rate trended upward during the period (Figure 3) as the impact of the decreases in energy and government-controlled prices dissipated. In the Committee members' estimation, several factors may be supportive of a continued increase in inflation and convergence to the target range going forward. (a) The trend in some commodity prices, oil in particular, turned around during the first quarter of 2016 and rose throughout the review period. In the Committee members' assessment, if commodity prices plateau at their current level, they may continue supporting upward movement of inflation. (b) Private consumption continued to expand with support from the robust labor market. (c) Domestic wages increased. The committee noted that the last-mentioned factor had no immediate effect on the annual inflation rate. It also mentioned several domestic factors that are damping inflation—such as an upturn in competition in some industries—and additional risks, foremost the low global inflation environment. Together with the upturn in annual inflation, one-year inflation expectations increased relative to the first half of 2016 but remained below target (Figure 3). Medium term (3–5 years) expectations hovered over the lower bound of the target and trended upward. Long-term forward expectations (5–10 years) remained anchored around the midpoint of the target range (Figure 4).

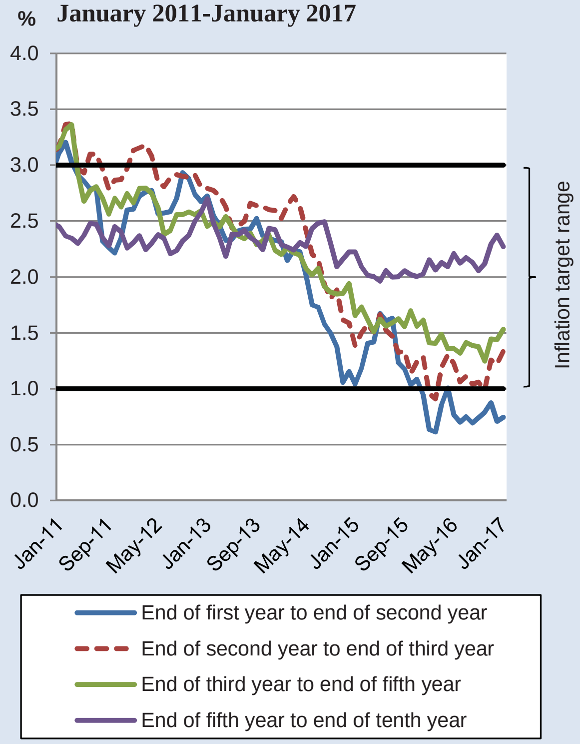
National Accounts data for the second and third quarters indicate that the economy grew more rapidly than had been estimated in previous publications. Since the first-quarter growth estimate was revised considerably in August 2016, the Committee believed that the risks to growth had diminished. (Table 1 describes the growth data available to the Committee members when they made their interest rate decisions.) The second estimate of the first-quarter growth rate, published at the beginning of the review period, reflected an upward adjustment, to 1.3 percent, after the first estimate (May 2016) showed a surprising slowdown, to 0.8 percent; it also indicated an 8 percent contraction in exports (excluding start-up companies and diamonds). The Committee members believed at that time—on the basis of the data available to them—that the growth rate had temporarily declined to 0.8 percent and would rebound in the second quarter to the rate typical of the past two years. The continued decline in unemployment, the increase in employment and wages, and the Companies Survey supported this assessment. In the ensuing months, the first-quarter growth data was revised markedly upward. In the interest rate decision for September, too, the first estimate for the second quarter showed a surprisingly strong growth rate of 3.7 percent. The Committee members

Figure 3
Inflation and 1-Year Inflation Forecasts, January 2008-January 2017



SOURCE: Based on Central Bureau of Statistics.

Figure 4
Forward Inflation Expectations Derived from the Capital Market, January 2011-January 2017

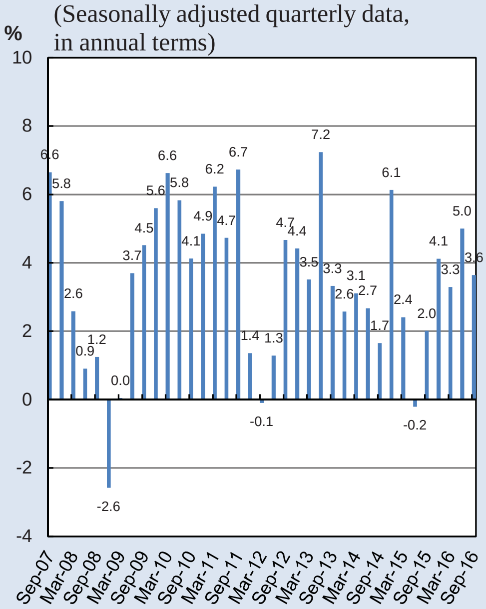


SOURCE: Bank of Israel.

believed that the revised growth rate in the first half of the year—3 percent—was consistent with the strong labor market data. The members also noted the persistent increase in the number of job vacancies and the growing difficulty in filling them. In view of the revised growth data and the robustness of the labor market, the Committee members were of the view that the risks to growth had diminished and that the main risk to continued growth would emanate from adverse developments abroad.

In the last quarter of 2016, the growth data for the first and second quarters were revised upward again, pointing to a strong 3.8 percent increase in the first half of the year. The factors driving this development included continued rapid increases in private consumption and in fixed capital formation. Although household debt grew, the Committee members attributed the upturn in private consumption mainly to labor income and only slightly to more borrowing, noting that over-leveraging of households did not come about. Exports, as noted, contracted in the first quarter but rebounded in the second. The Committee members, however, noted that it remains unclear whether this marks a change in trend, adding that services exports grew rapidly relative to the global growth rate while the rate of increase in goods exports was lower than the corresponding development in global trade.

Figure 5
GDP Growth Rates,
September 2007- September 2016
(Seasonally adjusted quarterly data, in annual terms)



SOURCE: Based on Central Bureau of Statistics.

According to the first estimate for the third quarter, GDP growth continued at the rapid pace that characterized the previous half-year—3.2 percent—again supported by rapid expansion of private consumption and fixed capital formation (Figure 5). However, exports (excluding start-up companies and diamonds) contracted again, this time by 6.3 percent. The brisk growth data and the robustness of the labor market reinforced the assessment that the economy was near to full employment.

The current data published in the fourth quarter indicated that GDP is expected to have continued to expand at a stable rate, with continued growth in private consumption and investment. These estimates are reinforced by strong data from the labor market, an increase in the Composite State of the Economy Index, and an increase in the Consumer Confidence Index.

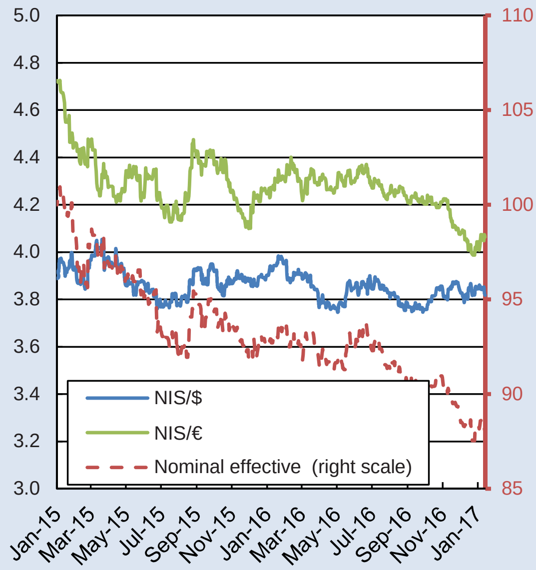
The currency appreciated in effective nominal exchange-rate terms during the review period—primarily due to the depreciation of the euro against the shekel—and the appreciation continued to weigh on the continued growth of exports. The nominal effective exchange rate appreciated during the review period (July average vs. December average) by 4.4 percent (Figure 6). The main factor in the appreciation was the euro weakening worldwide, against the background of continued monetary accommodation and a low growth environment in the eurozone. Also contributing to the appreciation were the weakening of the pound Sterling after the Brexit decision, and the weakening of currencies of high-inflation countries that are less important for Israeli trade, such as Turkey. The dollar appreciated notably around the globe during the review period but held its value against the shekel. Various equilibrium exchange-rate models indicate that the shekel is overvalued.

Throughout the review period, the Committee members stressed that the level of the currency was continuing to weigh on the export and tradable sectors, particularly in view of the weakness of world trade. For this reason, the Bank of Israel continued to purchase foreign exchange in accordance with its guidelines for such intervention (i.e., when the exchange rate shows exceptional volatility that is inconsistent with underlying fundamentals, or when the foreign exchange market is not functioning properly) and in accordance with the program intended to offset the effects of natural gas production on the exchange rate. These purchases are an integral part of the monetary policy. In the review period (July–December), they added up to $2.6 billion, of which $0.9 billion was bought under the program that aims to offset the impact of gas production on the exchange rate.

Global activity remained moderate and forecasts for global growth and world trade were revised downward. At the beginning of the review period, after the results of the referendum in the UK indicated the decision to separate from the EU, high uncertainty built up in the financial markets, with the pound Sterling and the euro depreciating against the dollar and bond yields in major economies declining to historical lows (Figure 7). The IMF slightly lowered its forecasts for global growth (Figure 8) and world trade. The volatility that was evident in the financial markets diminished during the review period but political uncertainty persisted. Toward the end of the period, oil prices stabilized and even headed upward, and there was an increase in bond yields and inflation expectations in major economies. Advanced economies continued to grow moderately. The eurozone continued to expand slowly through the half-year amid growing risks abetted by the political uncertainty. In the US, sluggish growth in the first half of the year was followed by relatively vigorous expansion in the third quarter and by upturns in business and consumer sentiment indices after the election results became known. As for emerging markets, growth in 2017 is expected to accelerate in view of the recovery of growth in Brazil and Russia.

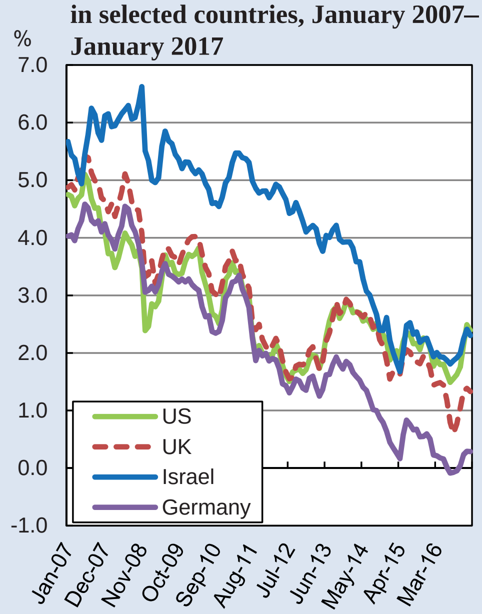
Throughout the review period, the Committee members mulled the possible implications of continued moderation of world trade growth in view of the strengthening of forces that seek to backtrack from liberalization in this area of activity. In the

Figure 6
Selected Exchange Rates, January 2015-January 2017
(daily data)



SOURCE: Bank of Israel.

Figure 7
Ten-year nominal return on bonds in selected countries, January 2007–January 2017



SOURCE: Bloomberg.

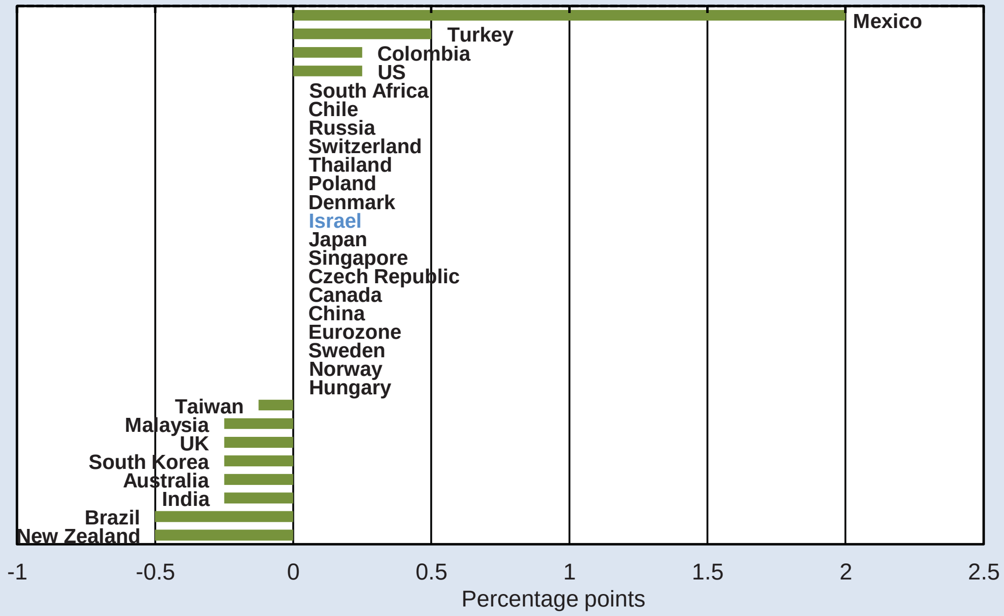
Figure 8
International Monetary Fund Forecasts of Growth Rates and Inflation in Advanced and Developing Economies, 2015, 2016 and 2017

SOURCE: IMF.

members' estimation, the main scenario remained unchanged—continued slow but steady recovery of the global economy—but the downside risks have increased due to the developments presented above.

Most leading markets enhanced their monetary accommodation (Figure 9). Monetary policy in most major markets remained highly accommodative during the review period. In August, the Bank of England cut its benchmark rate to 0.25 percent—after having left it at 0.5 percent for seven years—and announced a quantitative easing program after the outcome of the Brexit referendum became known. The Bank of Japan expanded its equity-purchasing program and then unveiled a "yield-curve control" program—in which it will strive to hold the 10-year government bond yield at around zero. It also undertook to continue monetary accommodation even

Figure 9
Changes in Interest Rates at Central Banks, July 2016–January 2017

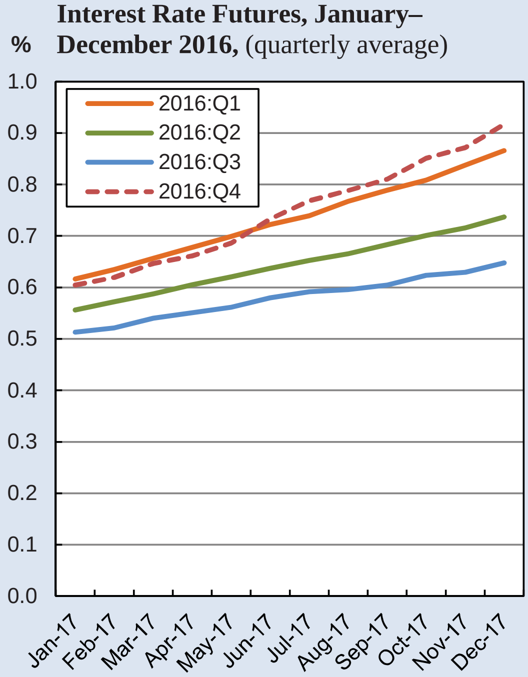


SOURCE: Bloomberg.

after inflation rises to 2 percent. The central banks of Australia and New Zealand lowered their benchmark rates. In December, the ECB announced that it would continue to implement its quantitative easing program at least until the end of 2017 in view of mild growth and low inflation. As for the Fed, after it raised the federal funds rate in December 2015 as expected, the markets expected it to do the same at least once more by September 2016 (Figure 10). However, the probability of a rate hike in 2016 decreased markedly pursuant to the Brexit referendum and the growth data. Since then, volatility in the financial markets has declined perceptibly and annual inflation—expected and actual—has risen. For this reason and due to the continued improvement of the growth and labor-market data relative to those in the first half of the year, the market expected the Fed to raise its rate again in December, as in fact it did. According to the median estimates of the FOMC members, as published in the December decision announcement, the federal funds rate will be increased three additional times in the course of 2017—a slightly faster pace than they had previously predicted. However, the financial markets expect rate-hiking to proceed more slowly—only two increases.

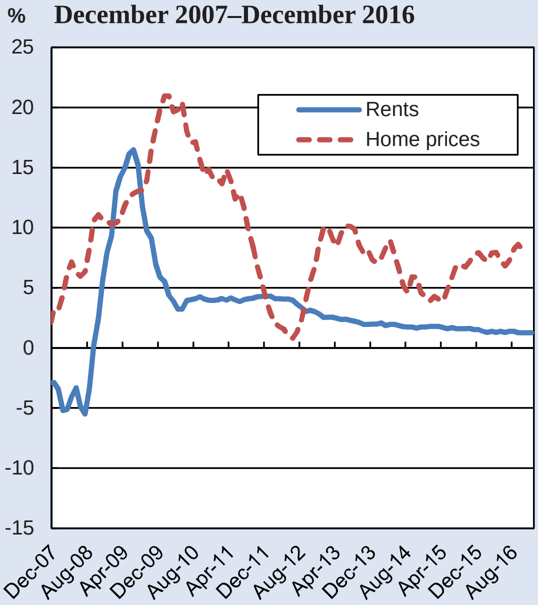
Housing market data continued to show price increases, making this again one of the considerations against further monetary accommodation. During the review period, activity in this market remained lively as reflected in the brisk upward

Figure 10
Federal Funds Rate Forecast for January–December 2017 based on Interest Rate Futures, January–December 2016, (quarterly average)



SOURCE Based on Bloomberg.

Figure 11
Rates of Increase in Home Prices and Rents over the Preceding 12 Months, December 2007–December 2016



SOURCE: Based on Central Bureau of Statistics.

march of home prices, much as in the previous half-year (by 8.1 percent in the twelve months ending in September—Figure 11). The number of transactions also moved ahead vigorously. The stock of new homes available for sale continued to grow in the half-year reviewed, attaining a record level. Cumulative mortgage volume over the past twelve months declined in the review period after having reached a record (of NIS 5.4 billion per month), standing at NIS 4.9 billion per month in the twelve months ending in December. Mortgage interest rates continued to rise[5] in view of an increase in the riskiness of the banking system's portfolio of housing credit, the upturn in banks' cost of raising funds, and previous measures by the Banking Supervision Department in the past to mitigate risk to borrowers and banks.

The Committee members expressed concern about the risks in the housing market, given the continued increase in home prices and the ongoing high level of new housing loans issued. This trend, they noted, has persisted despite protracted increases in mortgage interest rates under most lending programs and despite the ongoing widening of spreads between these interest rates and those on government bonds. In the members' estimation, however, the rising price of housing loans is making it less attractive to invest in dwellings and is damping the pace of housing-loan takeup. They also noted the concurrence of the increase in prices with the upturn in the stock of dwellings available for sale—a process that may slow the pace of price increase in the future.

The growth forecast that the Research Department presented to the Committee was revised upward during the review period. The Department's forecast in late September 2016 expected GDP growth of 2.8 percent in 2016 and 3.1 percent in 2017—an upward revision from the previous forecast (in June) because growth in the second quarter exceeded the estimate that had been made when the forecast was drawn up in June, and because the first-quarter growth data were revised upward. Also, inflation was forecast to be 1 percent in the third quarter of 2017 due to the halt in the decline in commodity prices, and wage growth, and on the assumption that the Bank of Israel interest rate would be left in place until the third quarter of 2017.

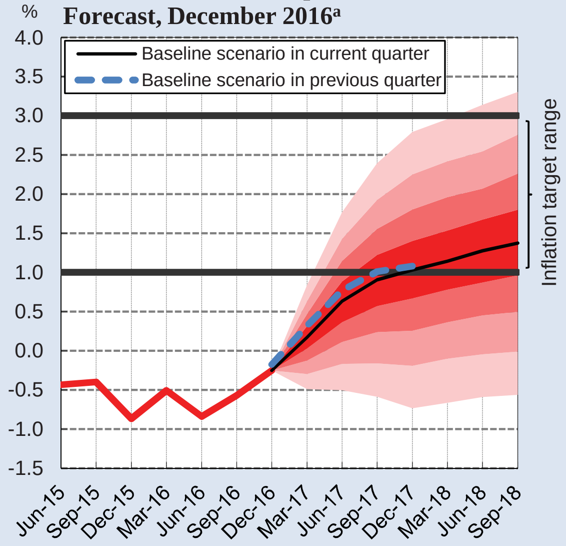
According to the forecast that the Research Department compiled at the end of December 2016,[6] GDP grew by 3.5 percent in 2016. The adjustment was made due to revised National Accounts data showing that growth in the first three quarters of 2016 exceeded the estimate put forth in September. In contrast, the projection

[5] For elaboration on the risks in the housing market and the increase in mortgage interest rates, see the Financial Stability Report for the second half of 2016.

[6] Before the Central Bureau of Statistics published its 3.8 percent estimate of GDP growth in 2016.

for growth in 2017 hardly changed relative to that in the previous forecast. The Research Department expected the Bank of Israel interest rate to remain unchanged in the first three quarters of 2017 and to rise to 0.25 percent in the last quarter, even though monetary interest abroad is expected to go up earlier. The inflation path for 2017 is slightly lower in the December forecast than in the previous forecast because inflation in the fourth quarter of 2016 was slightly lower than had been estimated at the time. According to the forecast, inflation will gradually converge to within the target range and will be 1 percent by the end of 2017, rising to 1.5 percent at the end of 2018.

Figure 12
Actual inflation and Fan Chart of Expected Inflation, Research Department Staff Forecast, December 2016[a]



[a] The full fan covers 66 percent of the expected distribution. Each shade represents 8.25 percent.

SOURCE: Bank of Israel.

EXCHANGE RATE POLICY AT THE BANK OF ISRAEL: REASONS, OUTCOMES, AND DECISION-MAKING PROCESS

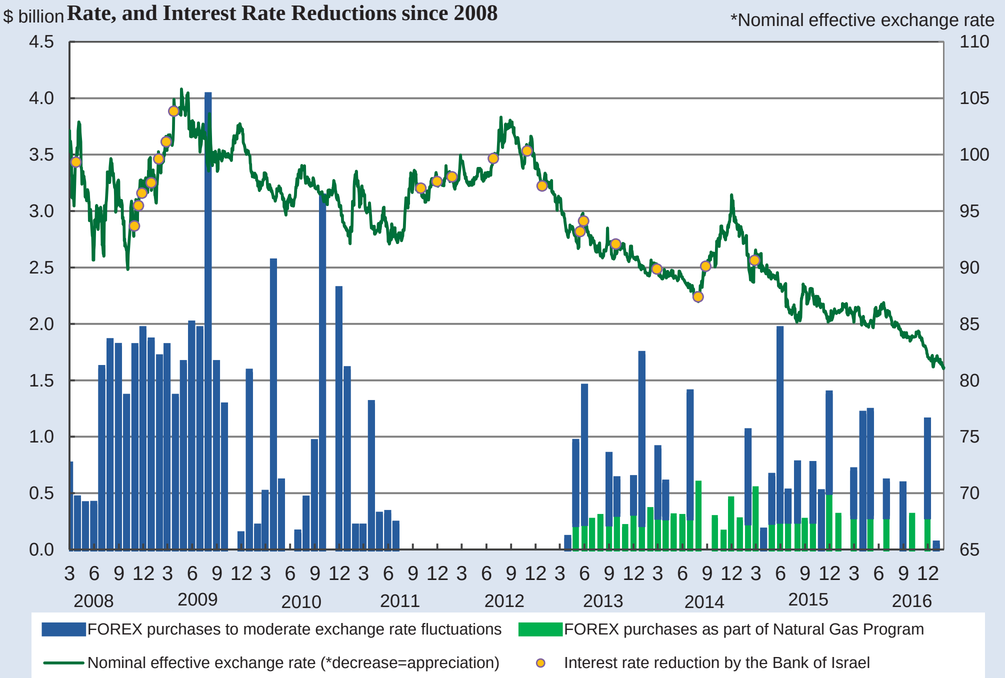
- The Bank of Israel returned to intervening in the foreign exchange market in April 2013, after a period of almost two years in which it had not purchased foreign currency. In total, since the purchases began again, $27.2 billion have been purchased.
- The main goal of the Bank of Israel's policy regarding foreign exchange market intervention is the moderation of the overvaluation deriving from current global economic conditions and the very accommodative monetary policy worldwide.
- The Monetary Committee preferred to intervene in the foreign exchange market rather than further reduce the interest rate, among other reasons due to the risks inherent in negative interest rate policy.
- An assessment by the Bank of Israel found that foreign exchange purchases are effective in terms of their impact on the exchange rate, and that so long as the policy of intervention in the foreign exchange market continues, the actual exchange rate is depreciated by some percent relative to a situation of no intervention. The effectiveness of the market intervention was stable in 2013–16, and higher than that achieved in 2010–11, when intervention was carried out while the interest rate was being increased.
- Since the Bank of Israel interest rate was reduced to its current level, the funding cost of holding the reserves has been negative—the yield on the reserves is currently higher than the interest payments on the liabilities. Furthermore, it is reasonable to assume that if circumstances will come about in which the Bank decides to sell foreign currency, it will do so at a time when the shekel would weaken, and therefore, the sale will not incorporate a loss, but rather even a realized profit.

The Bank of Israel returned to intervening in the foreign exchange market in April 2013, after a period of close to two years in which it had not purchased foreign currency. In total, since the purchases began again, $27.2 billion have been purchased, of which $10.5 billion were purchased within the framework of the "natural gas plan" that was put into effect with the renewal of purchases (Figure 1). All aspects of the intervention policy—its necessity, effectiveness, cost, and possible alternatives—are examined by the Monetary Committee on an ongoing basis, and this box describes the issue, as well as the data presented to the Monetary Committee and its decision-making process.

The purchase policy cannot be understood without the global background to it. With the outbreak of global financial crisis in 2008, interest rates were reduced worldwide to a low level. This led to strong capital flows and to an appreciation of currencies in several countries which had strong background conditions like a stable financial system, Current Account surplus, and reasonable debt to GDP ratio. Israel's economy is completely open to international capital flows and thus monetary policy cannot be set in Israel without consideration of global monetary conditions. And indeed, these developments were manifested in Israel as well, and were one of the factors in reducing the interest rate to 0.5 percent in 2009 and the renewal of the foreign exchange purchases in 2008 after a decade-long period in which the Bank of Israel was not in the market.

In recent years, the global monetary accommodation continued and was even enhanced. After a period of some stability, the monetary accommodation worldwide was enhanced even further. For the first time, major central banks, in Europe and Japan, set interest rates at negative levels, and at the same time, put "quantitative easing" plans into operation, in order to directly reduce

Figure 1
Monthly Foreign Currency Purchases by the Bank of Israel, the Nominal Effective Exchange Rate, and Interest Rate Reductions since 2008



SOURCE: Bank of Israel.

long term yields as well. This development led to further adjustment of monetary conditions at several economies that are small and open to capital flows. In some of them (such as Sweden and Switzerland) the interest rate was even reduced to negative territory.

In addition, other central banks also act in the foreign exchange market, with the goal of preventing overvaluation of their currencies. This policy, of many central banks, was termed a "currency war". The idea behind it was that to the extent that the exchange rate in a certain economy is more depreciated, the effect of economic slowdown at other economies on the domestic economy is reduced. This approach is based on the assumption that due to nominal frictions, reflected in prices and wages being updated at low frequencies, an effect on the nominal exchange rate is reflected as well in a temporary effect on the real exchange rate.

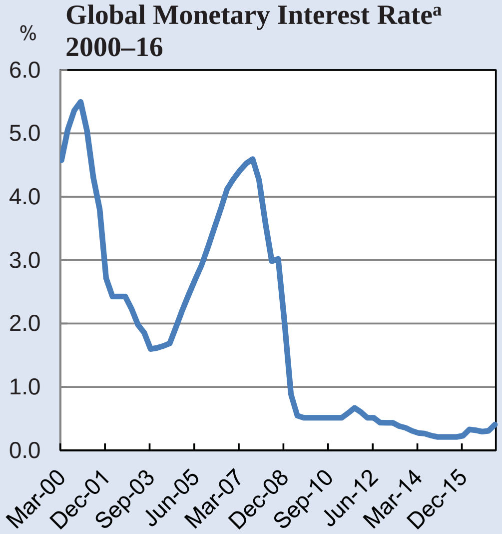
One of the results of the ultra-accommodative monetary policy noted above is overvaluation in small and open economies that have relatively good economic conditions. Overvaluation is appreciation beyond that derived from fundamental and cyclical factors such as growth rates and relative output gaps, external terms of trade, and real interest rate spreads. According to the assessment of the Committee, which is presented with external assessments from leading investment houses worldwide as well as internal assessments updated on a regular basis, the shekel has in fact been overvalued in recent years.

The main goal of the intervention is the moderation of the overvaluation deriving from current conditions in the global economy and the very accommodative monetary policy worldwide. The good state of Israel's economy relative to markets abroad, and the very accommodative monetary policy worldwide, contributed to real appreciation, through which the slowdown in markets abroad is liable to trickle down to the Israeli economy (Figures 2 and 3). The appreciation weighs on exports and negatively impacts domestic industries that are forced to compete with imports that are becoming increasingly less expensive. In recent years, exports, which were traditionally one of the Israeli economy's growth drivers, increased on average by less than the development of demand worldwide. The prolonged appreciation in the exchange rate is one of the factors in that.

Exports are a crucial component in Israel's economy. Until the crisis of 2008, exports were the economy's growth driver, and their share in GDP increased gradually, reaching more than a third of GDP, but since then their share in GDP has declined (Figure 4). As such, it is important to policy makers to prevent, to the extent possible, an unnecessary negative impact to exports. The consistent competition of exports in international markets is one of the factors in the relatively high productivity of the tradable sector and propels the growth of the economy, whether directly or by the trickling down of the productivity to other industries.[1] Appreciation is liable to lead to closing of factories and driving industries out of export markets—markets that are difficult and time consuming to penetrate. The high cost of entry of export industries to markets abroad will weigh on the future return of companies that are forced to exit the industry. Therefore, overvaluation can adversely impact, for a prolonged period of time, factories and services that merit long term viability.

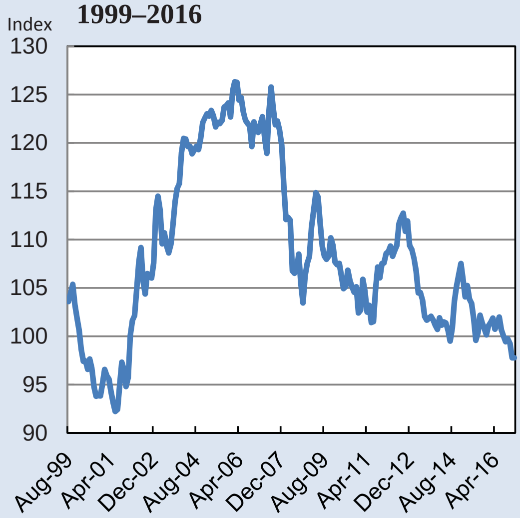
Together with the renewal of purchases, the Bank of Israel reduced the monetary interest rate gradually to a near-zero level. In March 2015, the interest rate reached a low of 0.1 percent and has remained unchanged since then. In such a situation, foreign exchange purchases continued to serve, in effect, as an alternative to further reduction of the interest rate to negative territory, a possibility that was also examined by the Monetary Committee. The Committee chose the alternative of foreign exchange market intervention rather than a further reduction of the interest rate, due to the risks inherent in negative interest rate policy and limited global experience in this area.

Figure 2
Global Monetary Interest Rate[a]
2000–16



[a] Weighted average of central bank interest rates in the US, Europe, Japan, and UK, in accordance with their weight in the Bank of Israel macroeconomic model.
SOURCE: Based on Bloomberg.

Figure 3
Real Effective Exchange Rate[a],
1999–2016

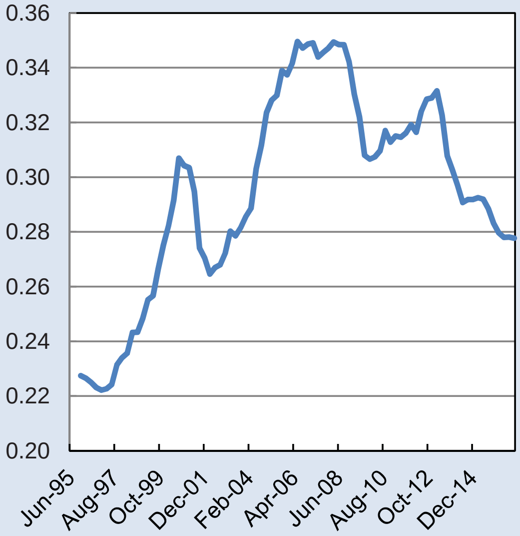


[a] Nominal effective exchange rate net of inflation differentials. (A decrease indicates appreciation.)

SOURCE: Bank of Israel.

[1] The claims here and further in this box are also valid to some extent with regard to domestic manufacturing, which is an alternative to imports and competes with them.

Figure 4
Share of Exports in GDP[a], 1995–2016



[a] Share of exports (excluding diamonds) in total GDP. Four-quarter moving average.
SOURCE: Based on Central Bureau of Statistics.

The additional monetary accommodation is consistent with the development of prices and activity in Israel. The Bank of Israel acts within the framework of an inflation target, set by the government as a range of 1–3 percent. The inflation rate in recent years deviated below the target range, and one-year inflation expectations are still below the target range. The weakening of the appreciation trend through the intervention supports the moderation of the inflation rate's deviation to the downside from the target range. If not for the intervention to support the shekel, the downward deviation from the inflation target range would have been greater.

The Bank of Israel acts with the goal of moderating the appreciation trend, but the policy is flexible enough to allow fundamental forces acting toward appreciation of the currency to materialize. Since the currency purchases were renewed in 2013, the nominal effective exchange rate appreciated by approximately a cumulative 10 percent. This appreciation trickled down to domestic prices of imported products, and its effect could be seen in the decline of prices of the tradable items in the Consumer Price Index in the past year (a decline of 1.6 percent in 2016). This prolonged decline increases the public's purchasing power and supports a decline in the cost of living.

In addition to the global and domestic factors noted above, the renewal of the purchases derived as well from the beginning of domestic production of natural gas. Since the purchases resumed, some of them were carried out as part of a "natural gas program", aimed at sterilizing the effect of domestic natural gas production, which began then, on the Current Account. Within the framework of this program, about $10.5 billion have been purchased to date, and in 2017 about $1.5 billion will be purchased through it.

The Bank of Israel can impact on the nominal effective exchange rate through foreign exchange purchases. The two channels through which a central bank has potential impact on the nominal exchange rate are the portfolio channel and the signaling channel. The portfolio channel operates through changing the exchange rate risk premium as viewed by the private sector, a change that derives from changes that foreign exchange market intervention creates in the composition of the private sector's portfolio. The signaling channel operates though the impact that a central bank has on the public's expectations regarding the future path of the exchange rate and the future path of the interest rate. There is no simple answer in the literature regarding the extent of the impact of sterilized intervention on the nominal exchange rate. Ultimately, the extent to which a central bank impacts the nominal exchange rate through sterilized intervention in the foreign exchange market and the duration of this impact are empirical questions, and as noted, it depends very much on the changing conditions under which intervention is carried out.[2]

[2] There are many empirical research papers that examine the effect of foreign exchange market intervention. For a survey of earlier literature, see, for example, Edison (1993). A survey of more recent literature can be found in the appendix of Neely (2005). For a survey of literature dealing with the effect of intervention by central banks in developing economies in foreign exchange trading see Menkhoff (2013).

Research conducted at the Bank of Israel indicates that foreign exchange purchases under the current policy regime have an effect on the exchange rate. Ribon (2017, to be published soon) finds that foreign exchange purchases, under the current purchasing regime that began in August 2009—according to which foreign exchange purchases vary when conditions justify it based on the Bank's discretion—have an effect on the exchange rate. Purchases equal to the monthly average (about $800 million) contributed to a depreciation of the nominal effective exchange rate by an average of 0.6 percent in the month of the intervention. It is very difficult to assess the duration of intervention's effect, as it is clear that over time it attenuates, and thus the results noted above cannot be used to assess the macroeconomic effect of the intervention. A separate assessment, which measures the extent of the foreign exchange purchases' effect over time, indicates that the impact of foreign exchange market intervention dissipates after about 6–12 months. Combining the results of the estimates noted above indicates that so long as the foreign exchange market intervention policy continues, the actual exchange rate is depreciated by some percent relative to the situation without intervention. It is emphasized that it is very difficult to estimate the overall and continued effect of foreign exchange intervention. Difficult identification problems turn the issue into a challenge in Israel and worldwide, and there is very high uncertainty, surrounding the outcome.[3]

The effectiveness of the intervention policy is measured and monitored at the Bank of Israel on a continuous basis, in real time. The Bank's Market Operations Department, which carries out the intervention policy in actuality, measures the effectiveness of foreign exchange intervention on a consistent and continuous daily basis (Figure 5). The results indicate that the effectiveness was stable in 2013–16, and higher than what was achieved in 2010–11 (in 2012 the Bank of Israel did not purchase foreign currency). A possible explanation for the higher effectiveness in recent years is that the intervention policy over that time has been consistent with the policy on the interest rate, which was gradually reduced in recent years and is currently very low. The purchases having been conducted when the interest rate spread was low, and the consistency in putting into action the interest rate and purchases policies, acts to strengthen the signaling channel noted above.[4]

The purchase policy led to an increase in the foreign exchange reserves, to about $101 billion. The increase in the reserves, which is sterilized—meaning conducted while maintaining the Bank of Israel's declared interest rate—leads as well to a parallel increase in deposits at the Bank of Israel. The funding cost of holding reserves derives from the difference between the yield on the assets (foreign exchange reserves) and interest payments on the liabilities (*makam* and deposits). Since the Bank of Israel interest rate was reduced to its current level, the funding cost of holding the reserves is negative—meaning the yield on the reserves today is higher than the interest payments on the liabilities. This is also due to the

[3] Sorezcky (2013) examined the impact of Bank of Israel intervention on the exchange rate between March 2008 and December 2009, and found that most of the impact on the exchange rate occurred around the Bank's announcements of starting foreign exchange purchases and of changes in the daily scope of purchases. At its height, the effect on the exchange rate, according to that research, was about 10 percent, but that effect dissipated after several months. In most of the period examined by Sorezcky, the Bank of Israel purchased foreign exchange at a daily amount that was set and known in advance—between March 2008 and July 2008 it was $25 million per day, and from July 2008 until the beginning of Augusts 2009, it was $100 million per day.

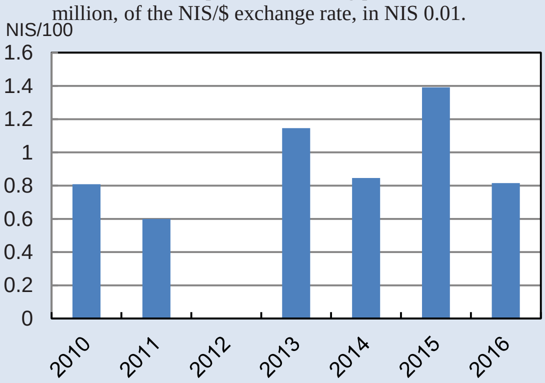
[4] Rozenshtrom and Levintal (2016) show that theoretically, foreign exchange purchases in a near-zero interest rate environment are more effective than currency purchases at a higher interest rate level, to the extent that the interest rate's zero lower bound limits the central bank (Policy Paper 2016.09, Aaron Institute for Economic Policy, IDC Herzliya).

reserves being invested in assets yielding a higher return than the short term interest rate abroad. Note that in addition to this cost, the Bank's balance sheet is affected as well by changes in the shekel's exchange rate, primarily against the dollar and euro. However, it is reasonable to assume that if the Bank decides to sell foreign currency, it will do so at a time when the shekel will weaken, and therefore, the sale will not incorporate a loss, but rather even a realized gain.

All aspects of the intervention policy—its necessity, effectiveness, cost, and possible alternatives—are examined by the Monetary Committee on an ongoing basis. The Monetary Committee examines the general framework of the purchase policy each year, and in particular, held extensive discussions on the issue of the intervention policy in 2016. Within the framework of these discussions, the various perspectives on the issue, advantages, disadvantages, and costs, were presented and analyzed. This included discussing the risks inherent in continuing the current policy, of which one result is the trend of increase in the amount of the foreign exchange reserves over time. This discussion included as well a presentation of alternatives to the current policy. The policy reflected the decisions made in light of these discussions.

Figure 5
The Impact of FX Intervention, 2010–16

The immediate depreciation, during purchases of $100 million, of the NIS/$ exchange rate, in NIS 0.01.



The effect is calculated using intraday data collected around the intervention activity. Part of the immediate effect attenuates within a short time so it cannot be used to calculate the overall effect. As such, this is an indicator of the efficiency of the intervention over time but not of its macroeconomic effect, which is calculated separately. In 2012 there were no currency purchases.

SOURCE: Bank of Israel Market Operations Department.

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Table 1

National Accounts - data available at the time of decisions on the interest rate

(Seasonally adjusted data, quantitative rates of change compared to previous period, in annual terms)

Decsision on rate for:		July	August	September	October	November	December	January	February
GDP	2016:Q1	1.3	1.7	2.2	2.1	2.3	3.2	3.2	3.3
	2016:Q2			3.7	4.0	4.3	4.9	4.9	5.0
	2016:Q3						3.2	3.4	3.6
Business sector product	2016:Q1	0.2	0.8	1.0	0.9	1.2	2.4	2.4	2.5
	2016:Q2			3.3	3.8	4.2	5.2	5.3	5.4
	2016:Q3						3.6	4.0	4.2
Private consumption	2016:Q1	4.8	5.0	6.2	5.9	5.9	6.3	6.3	6.3
	2016:Q2			9.5	10.0	9.9	9.3	9.7	9.5
	2016:Q3						2.9	3.5	3.4
Fixed capital formation	2016:Q1	16.2	14.6	17.4	17.3	17.6	18.5	19.4	19.4
	2016:Q2			4.1	5.1	5.4	7.1	8.0	8.0
	2016:Q3						12.2	15.3	15.3
Exports excluding diamonds and startups	2016:Q1	-8.0	-5.3	-1.0	-2.4	1.2	1.9	1.9	2.3
	2016:Q2			5.7	10.9	13.7	11.8	10.2	11.0
	2016:Q3						-6.3	-2.6	-0.8
Civilian imports excluding ships, aircraft, and diamonds	2016:Q1	-3.1	-3.1	-2.3	-1.9	-1.9	-2.0	-2.6	-2.6
	2016:Q2			27.1	30.2	30.2	29.2	31.1	31.1
	2016:Q3						7.2	10.7	10.7

SOURCE: Based on Central Bureau of Statistics.

Table 2

Development of GDP, imports and uses

(Seasonally adjusted data, quantitative rates of change compared to previous period, in annual terms)

	2014	**2015**	**2016**	**2015:Q2**	**2015:Q3**	**2015:Q4**	**2016:Q1**	**2016Q:2**	**2016:Q3**
GDP	3.2	2.5	3.8	-0.2	2.0	4.1	3.3	5.0	3.6
Business sector product	3.1	2.3	3.9	-1.3	2.3	4.2	2.5	5.4	4.2
Imports excluding defense, ships, aircraft and diamonds	4.2	1.4	7.9	-5.3	2.9	19.8	-2.6	31.1	10.7
Private consumption	4.3	4.3	6.1	0.0	6.3	6.6	6.3	9.5	3.4
of which : private consumption excluding durable goods	3.7	4.7	5.5	1.1	5.4	4.1	6.0	9.0	4.7
Public consumption	3.7	3.3	3.8	0.0	2.9	13.7	-2.4	7.4	3.9
of which : public consumption excluding defense imports	3.3	4.0	3.9	2.8	5.3	10.2	1.3	4.7	3.0
Gross domestic investment	3.5	3.0	6.4	10.6	-11.6	16.5	-1.8	-6.5	26.6
of which : in fixed assets	0.0	0.1	11.0	-1.2	3.1	13.6	19.4	8.0	15.3
Exports excluding diamonds	2.5	-2.6	2.6	-12.3	-0.1	1.7	10.8	7.9	-2.5
of which : exports excluding diamonds and startups	4.7	-2.7	1.4	-12.7	1.2	1.7	2.3	11.0	-0.8

SOURCE: Based on Central Bureau of Statistics.

Appendix Table 1

Developments in the Domestic Asset Markets

(rate of change)

	07/16	08/16	09/16	10/16	11/16	12/16
Yield to maturity (monthly averages, percent)						
3-month *makam*	0.1	0.1	0.1	0.1	0.1	0.1
1-year *makam*	0.1	0.1	0.1	0.1	0.1	0.2
Unindexed 5-year notes	0.8	0.9	0.9	1.0	1.2	1.3
Unindexed 20-year bonds	2.8	2.9	2.9	3.0	3.2	3.4
CPI-indexed 1-year notes	-0.4	-0.3	-0.4	-0.3	-0.3	-0.3
CPI-indexed 5-year notes	-0.2	-0.1	-0.1	0.1	0.1	0.2
CPI-indexed 10-year bonds	0.2	0.3	0.4	0.5	0.5	0.7
Yield spread between government bonds and private bonds rated AA-AAA (percentage points)[a]	1.1	1.1	1.1	1.2	1.2	1.1
Yield spread between government bonds and unrated private bonds excluding real estate (percentage points)[b]	5.2	5.3	5.3	5.6	6.2	5.9
Stock market (rate of change during the month)						
General shares index	5.7	-1.4	-1.9	-3.5	-0.2	1.3
Tel Aviv 25 Index	4.3	-0.8	-0.3	-2.6	2.9	1.7
Foreign exchange market (rate of change during the month)						
NIS/$	-0.5	-1.1	-0.7	2.4	-0.3	0.2
NIS/€	-0.9	-0.6	-0.4	0.2	-3.1	-0.9
Nominal effective exchange rate	-1.0	-0.8	-0.7	0.9	-2.3	-0.5
Risk indices derived from trading in shekel-dollar options (monthly averages, percent)						
Implied volatility	9.5	9.3	9.3	8.7	9.2	9.4
Probability of depreciation greater than 5%	0.4	0.3	0.2	0.3	0.4	0.4
Probability of appreciation greater than 5%	0.3	0.2	0.2	0.1	0.1	0.2

[a] The calculation was changed to CPI-indexed bonds, excluding convertible bonds, with a yield of up to 60 percent and a duration of more than 6 months.

[b] The yield spread relates to spreads between all series of corporate bonds and CPI-indexed government bonds (formerly "Galil" bonds) with the relevant duration.

SOURCE: Bank of Israel calculations.

Appendix Table 2

The inflation and interest rate environment

(monthly averages)

	07/16	08/16	09/16	10/16	11/16	12/16
Inflation environment (percent)						
Monthly change in CPI	0.4	-0.3	-0.1	0.2	-0.4	0.0
Forecasters' predictions of monthly CPI (average of forecasts prior to publication of CPI)	0.2	0.0	-0.1	0.1	-0.1	0.0
12-month change in CPI	-0.6	-0.7	-0.4	-0.3	-0.3	-0.2
One-year inflation expectations derived from the capital market	0.5	0.4	0.5	0.4	0.4	0.5
Forecasters' one-year inflation predictions	0.8	0.6	0.6	0.6	0.7	0.6
Inflation expectations for various terms[a]						
Forward inflation expectations from end of first year to end of second year	0.7	0.7	0.7	0.8	0.9	0.7
Forward inflation expectations from end of second year to end of third year	1.1	1.0	1.1	1.0	1.3	1.2
Forward inflation expectations from end of third year to end of fifth year	1.4	1.4	1.4	1.2	1.4	1.4
Forward inflation expectations from end of fifth year to end of tenth year	2.2	2.1	2.1	2.1	2.3	2.4
Interest rates and interest rate differentials						
Bank of Israel interest rate	0.1	0.1	0.1	0.1	0.1	0.1
Derived real interest rate	-0.4	-0.3	-0.4	-0.3	-0.3	-0.3
Short-term interest rate differential between Israel and the US	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5
Short-term interest rate differential between Israel and the eurozone	0.1	0.1	0.1	0.1	0.1	0.1
Forecasters' predictions of change in the Bank of Israel interest rate for next month (average forecast, prior to the decision)	0.0	0.0	0.0	0.0	0.0	0.0
Telbor interest - 3-month forward rate in 9 months	0.1	0.2	0.2	0.2	0.2	0.2
Forecasters' predictions of the interest rate a year hence	0.1	0.1	0.1	0.1	0.2	0.2
Long-term (10-year) nominal interest rate differential between Israel and the US	0.3	0.3	0.3	0.2	0.1	-0.1
Long-term (10-year) real interest rate differential between Israel and the US	0.2	0.2	0.3	0.4	0.2	0.1

[a] Inflation expectations are measured by the difference between yields on local currency unindexed and indexed bonds. These expectations include an element of risk premium, which rises with the length of the term to which the expectations relate.

SOURCE: Based on Central Bureau of Statistics data and private forecasters' reports.