

## D. FOREIGN EXCHANGE ACTIVITY OF THE MAIN SECTORS

In 2015, the high level of risk in the global and Israeli foreign exchange markets was maintained relative to the previous four years, following an increase since mid-2014. This risk is reflected in the standard deviations in exchange rate options on the currencies of advanced and developing economies.

In August 2015, there was a change in the shekel/dollar exchange rate, from appreciation of the shekel to depreciation, such that the shekel appreciated slightly against the dollar in 2015 as a whole, but there was a marked appreciation (7.3 percent) in terms of the nominal effective exchange rate.

During the year, there was a change in the foreign exchange activity of nonresidents and institutional investors. Nonresidents transitioned from exposure to an appreciation of the shekel to exposure to a depreciation—mainly the result of less hedging through derivatives. This was in contrast to the continued growth of their exposure to depreciation of the shekel since the end of 2012. In contrast, in 2015 as a whole, there was an increase in institutional investors' exposure to appreciation of the shekel, which resulted from net investments in balance sheet foreign exchange assets in parallel to partial hedging through derivatives. However, in August, the institutional investors transitioned from net foreign exchange sales to net foreign exchange purchases.

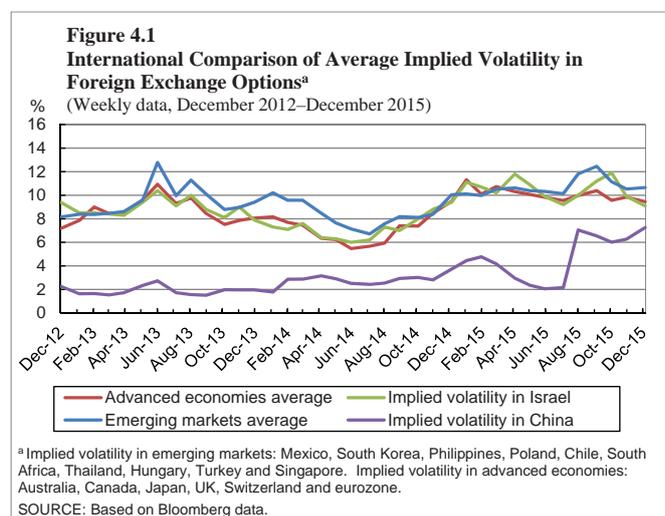
### 1. RISK AND THE EXCHANGE RATES

In 2015, the high level of exchange rate risk in Israel and the world was maintained, following its increase since mid-2014.

The high level of the average implied volatility reflecting exchange rate risk in Israel was maintained in 2015 (10.1 percent), compared with the average level in the previous four years (9.1 percent). This followed a marked increase since mid-2014.

These developments reflect an increase in risk, and took place against the background of the slowdown in China and expectations of an increase in the interest rate in the US.

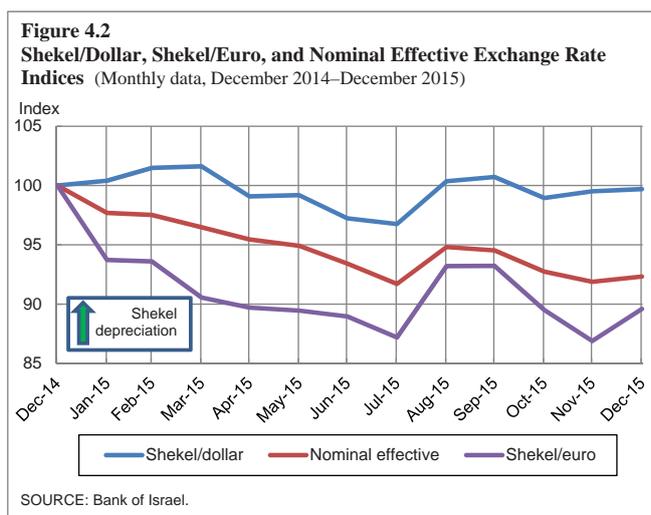
In August, the implied volatility of foreign exchange options in China and the other emerging markets increased sharply, and during 2015 as a whole, it increased by 3.5 percentage points in China and by 0.6 percentage points in the emerging markets as a whole.



In parallel with the increase in exchange rate risk, there was a change in the development of the shekel exchange rate in August 2015.

During the first seven months of the year, the shekel appreciated<sup>1</sup> vis-à-vis the dollar by about 3.3 percent. But from the beginning of August until the end of the year, it depreciated by about 3 percent, so that over the year as a whole, the shekel appreciated slightly against the dollar.

Against the euro, the shekel strengthened by about 13 percent during the first seven months of the year, but weakened by about 3 percent since August. Against the nominal effective basket of currencies<sup>2</sup> the same change took place in August, and over the year as a whole, the shekel appreciated by 7.3 percent, further to its appreciation in 2014.



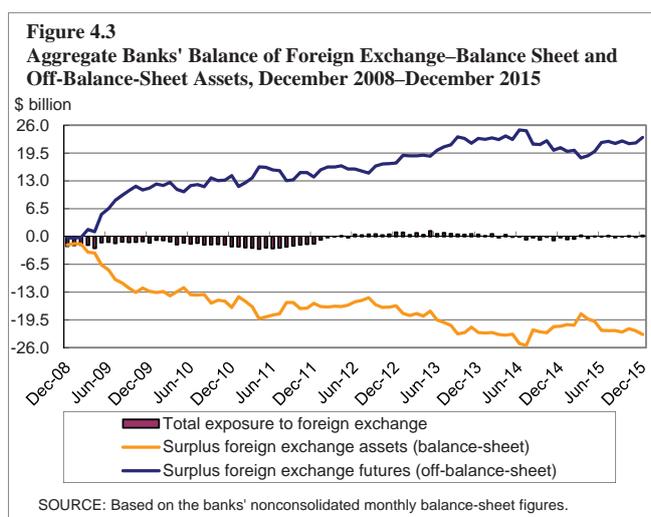
## 2. EXPOSURES TO THE EXCHANGE RATE BY SECTOR<sup>3</sup>

The banking system maintained near-zero exposure to the shekel exchange rate in 2015.

The banking system has persistently maintained low exposures to the exchange rate. Starting in 2009, there has been a change in the composition of exposure, with a marked upward trend in the banks' surplus balance-sheet foreign exchange assets, in parallel with an increase in the surplus of their off-balance-sheet liabilities. In mid-2014, there was a reversal of this trend, with continued maintenance of near-zero exposure to the exchange rate.

Starting in March 2015, there has been a return to the upward trend in the surplus of balance-sheet assets and off-balance-sheet liabilities in foreign exchange.

Most of the balance of futures contracts for the purchase of foreign exchange by the banking system is against Israelis—financial entities and institutional investors.



<sup>1</sup> The calculations here are based on daily data for the beginning and end of the period.

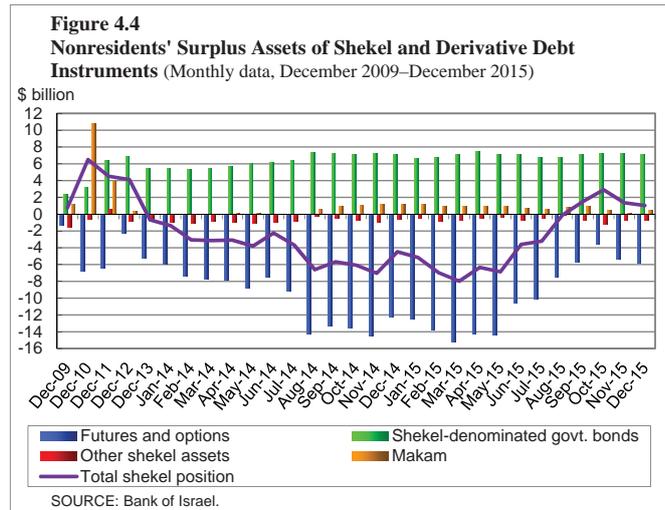
<sup>2</sup> The nominal effective basket of currencies is an index comprised of the weighted average of 26 exchange rates, reflecting the relative importance of each currency in Israel's foreign trade. The two main currencies in the basket are the US dollar and the euro. For more information: <http://www.boi.org.il/en/Markets/ExchangeRates/Pages/efectinf.aspx>

<sup>3</sup> See definitions, measuring and explanations of exposures to the exchange rate, at the end of the chapter.

In 2015, nonresidents transitioned from exposure to an appreciation of the shekel to exposure to a depreciation, in contrast to the persistent increase in their exposure to appreciation that began in 2012.

In 2015, there was an increase of \$5.8 billion in the surplus of shekel assets against shekel liabilities (in debt instruments only), which is mainly derived from a decline in net future shekel liabilities (“hedging” through derivatives), following a persistent increase in them in previous years.

As a result of this decline in hedging, while the other shekel assets and shekel liabilities changed only slightly, nonresidents transitioned in August 2015 from exposure to appreciation of the shekel to exposure to depreciation.

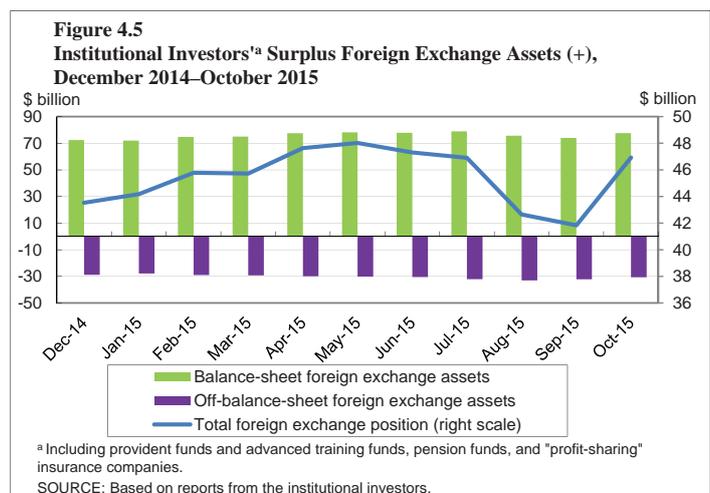


During 2015<sup>4</sup>, institutional investors increased their structural exposure to appreciation of the shekel.

During 2015, institutional investors increased their surplus foreign exchange assets (balance-sheet and off-balance-sheet) by about \$3.3 billion: an increase of about \$6.2 billion in balance-sheet foreign exchange assets against an increase of about \$2.9 billion in off-balance-sheet foreign exchange liabilities.

Against the background of the high volatility in the markets in August,

there was a temporary decline in institutional investors' exposure to changes in the exchange rate in August and September (totaling about \$5 billion), due to temporary declines in global stock prices.



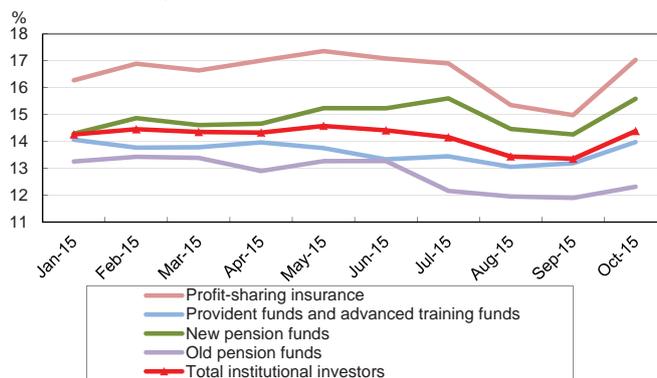
<sup>4</sup> Data on institutional investors include data for January–October only, due to a change in the method of calculation among some of the reporting institutions for the “Total shekel/foreign exchange futures/derivatives” section in November 2015.

In 2015, there was no significant change in the total rate of exposure to foreign exchange of all institutional investors from their total assets.

During 2015, there was an increase in the rate of exposure to foreign exchange of the new pension funds (an increase of 1.6 percentage points) and profit-sharing insurance companies (an increase of 1.1 percentage points). In contrast, there was a decline (of 1.8 percentage points) in the old pension funds' exposure to foreign exchange.

Due to the volatility in global stock prices, there was a temporary decline in the rate of exposure to foreign exchange of each of the types of institutional investors in August–September 2015.

**Figure 4.6**  
Institutional Investors' Rate of Exposure to Foreign Exchange, by Entity, December 2014–October 2015



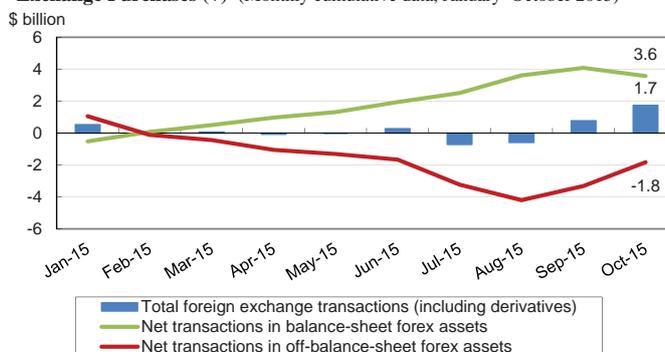
SOURCE: Based on reports from the financial institutions.

### 3. FOREIGN EXCHANGE PURCHASES AND SALES AGAINST THE SHEKEL

During 2015, institutional investors partly hedged their investments in foreign assets and increased the volume of futures transactions for the sale of foreign exchange.

During the year, institutional investors increased the balance of futures transactions for the sale of foreign exchange by about \$1.8 billion, against an increase in investments in foreign exchange assets totaling about \$3.6 billion, mainly in foreign bonds and stocks. In August 2015, there was a marked decline in off-balance-sheet foreign exchange liabilities, in contrast with the trend since the beginning of the year.

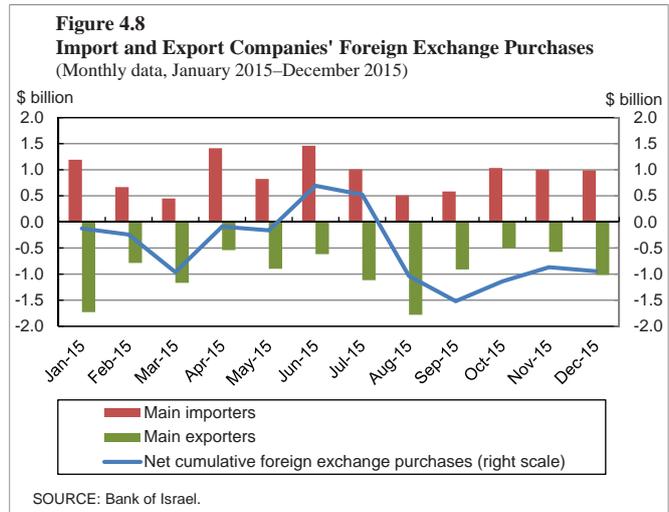
**Figure 4.7**  
Foreign Exchange Asset Transactions by Institutional Investors Compared With Change in Shekel/Forex Derivatives and Foreign Exchange Purchases (+) (Monthly cumulative data, January–October 2015)



SOURCE: Based on reports from the institutional investors.

In 2015, there were net sales of foreign exchange totaling about \$1 billion by Israel's main exporters and importers.

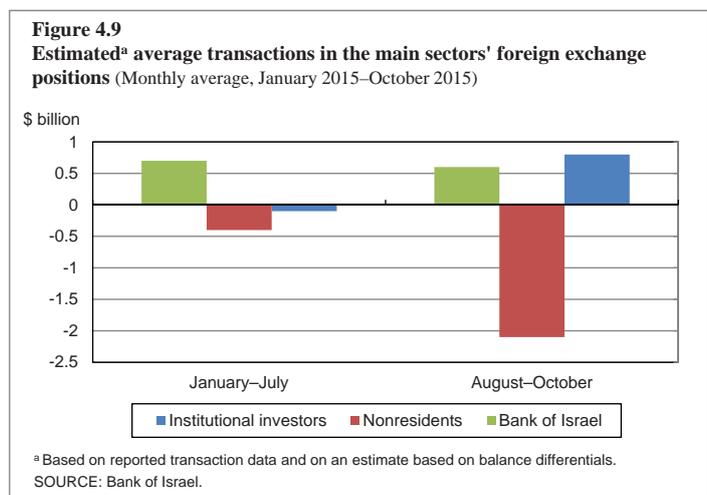
Due to the depreciation of the shekel, net cumulative foreign exchange sales by the nonfinancial sector (represented here by the large importers and exports) increased beginning in August. Exporters increased foreign exchange sales, while importers decreased foreign exchange purchases.



Since August 2015, the institutional investors have transitioned to net foreign exchange purchases, while nonresidents have expanded their sales of foreign exchange.

In the first seven months of the year, both nonresidents and institutional investors were net sellers of foreign exchange. Starting in August 2015, there was a change in the foreign exchange activity of these two sectors, in opposite directions. The institutional investors transitioned to purchasing foreign exchange, while nonresidents increased their sales of foreign exchange.

The Bank of Israel purchased foreign exchange throughout the year.



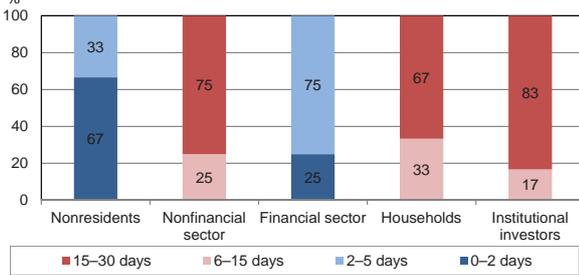
ZOOM IN



THE VOLUME OF FOREIGN EXCHANGE TRANSACTIONS

The average duration of transactions<sup>a</sup> by nonresidents and the financial sector is significantly shorter than the average transaction duration of the other sectors.

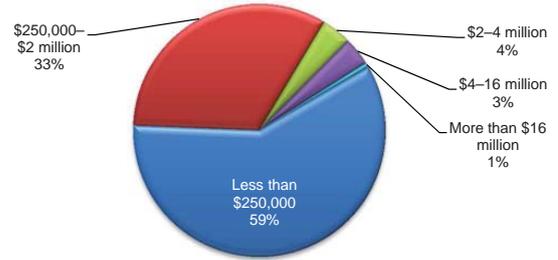
**Figure 4.10**  
Distribution of transaction duration in 2015 (monthly averages)



<sup>a</sup> Excluding swap and options transactions.

There were 424,000 foreign exchange transactions<sup>a</sup> carried out in 2015, more than half of which were small transactions of less than \$250,000.

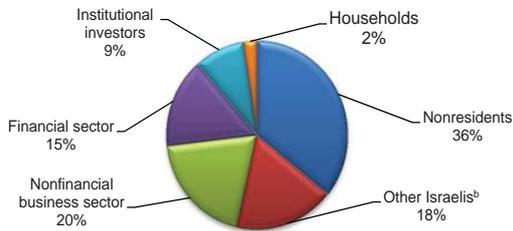
**Figure 4.11**  
Distribution of number of transactions by value of each transaction, 2015



<sup>a</sup> Excluding swap transactions.

In 2015, the volume of transactions in the foreign exchange market<sup>a</sup> was about \$625 billion, about half of which were carried out by nonresidents and the nonfinancial business sector.

**Figure 4.12**  
Distribution of the Volume of Transactions in Foreign Exchange Market, by Segment, 2015

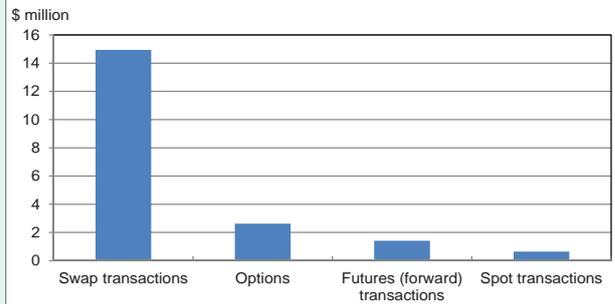


<sup>a</sup> Excluding swap transactions.

<sup>b</sup> Including: Non-profits, government, branch customers, and unclassified customers.

The average amount of swap transactions in 2015 was significantly higher than the average amount of transactions in other instruments.

**Figure 4.13**  
The Daily Average Value of Transactions, By Instrument  
(Total aggregate daily average of about \$20 million in all instruments)



## FOREIGN EXCHANGE ACTIVITY OF THE MAIN SECTORS

Main indicators in the foreign exchange market								
	Level <sup>a</sup>				Change			
	2012	2013	2014	2015	2012	2013	2014	2015
Actual volatility of the shekel/dollar exchange rate (moving 20-day average) <sup>b</sup>	5.5%	3.5%	9.4%	5.1%	-0.1	-2.0	5.9	-4.3
Implied volatility of shekel/forex OTC options <sup>b</sup>	9.4%	7.9%	9.4%	9.1%	-1.8	-1.5	1.5	-0.3
Shekel/dollar representative exchange rate	3.73	3.47	3.89	3.90	-2.3%	-7.0%	12.0%	0.3%
Shekel/euro exchange rate	4.92	4.78	4.73	4.25	-0.3%	-2.8%	-1.2%	-10.1%
Dollar/euro exchange rate	1.32	1.38	1.22	1.09	2.0%	4.6%	-11.8%	-10.4%
Yen/dollar exchange rate	86.16	104.98	119.49	120.41	11.2%	21.8%	13.8%	0.8%
Nominal effective exchange rate (January 1, 2010 = 100)	97.22	89.80	92.75	86.02	-0.7%	-7.6%	3.3%	-7.3%
Average daily trading volume - conversions, swaps and OTC options (\$ million)	4,978	4,157	8,428	5,936	-23.8%	-16.5%	102.7%	-29.6%
Nonresidents' share of trading volume <sup>b</sup>	41.0%	34.6%	32.7%	33.2%	1.8	-6.4	-1.9	0.6
Nonresidents' exposure to the exchange rate (\$ billion)	4.1	-0.7	-4.5	1.4				
Institutional investors' exposure to the exchange rate (\$ billion)	32.7	38.9	43.5	46.9 <sup>c</sup>	2.0	-3.2	3.6	3 1.8
The banking system's exposure to the exchange rate (\$ billion)	1.0	0.5	-0.2	-0.2	-8.5	-9.3	-12.5	-13.8
Foreign exchange purchases by institutional investors (\$ billion)					15.5	12.6	14.1	11.9

<sup>a</sup> Level at the end of the period.

<sup>b</sup> Change in percentage points.

<sup>c</sup> Including data for January–October, due to a change by some of the reporting entities in the calculation method of the “Total futures and shekel/forex derivative assets” item in November 2015.

SOURCE: Bank of Israel.

## MAIN TERMS

**Exposure to the exchange rate** is the monetary amount at risk in a case of changes in the shekel exchange rate vis-à-vis foreign currencies. In terms of Israelis and the various sectors in the Israeli economy, this amount is estimated in this chapter by the surplus of their foreign exchange assets over foreign exchange liabilities (denominated in and indexed to foreign exchange). In terms of nonresidents, this amount is estimated by calculating the surplus of their shekel assets over shekel liabilities. An Israeli is exposed to appreciation of the shekel when he holds a surplus of foreign exchange assets (positive), and is exposed to a depreciation of the shekel when he holds surplus foreign exchange liabilities (negative asset surplus). Nonresidents' exposure works in the opposite direction—surplus shekel liabilities leads to an exposure to appreciation of the shekel, and surplus shekel assets leads to an exposure to depreciation of the shekel.

Foreign exchange assets include: **balance-sheet assets** such as cash and deposits in foreign currency, foreign currency government and corporate bonds (generally foreign), and **off-balance-sheet assets**, meaning the open balance in transactions in derivative financial instruments (hereinafter: DFIs) for the purchase of foreign exchange against shekels, such as futures transactions and options (tradable and nontradable). Similarly, foreign exchange liabilities include: balance-sheet liabilities such as foreign exchange loans, and off-balance-sheet liabilities, meaning the open balance in DFI transactions for the sale of foreign exchange against shekels. Nonresidents' assets and liabilities in shekels are defined similarly.

Many Israelis, led by institutional investors, hold foreign assets as part of an investment policy of diversification of their asset portfolio and its risks. Such holdings, of foreign assets only, expose them to appreciation of the shekel. In order to minimize this exposure, they sell foreign exchange in DFI transactions (referred to as “hedging”). Exporters and importers are exposed to changes in the exchange rate due to their commercial activity—in opposite directions—and protect themselves through DFI transactions. Other Israelis, such as financial companies, may manage exposure to the shekel exchange rate with the intention of profiting from changes in the rate, by purchasing and selling foreign exchange against shekels in the present (spot) and through future DFI transactions. The nonresidents sector is comprised of various companies and individuals with activity in shekels and a similar variety of motives.

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