

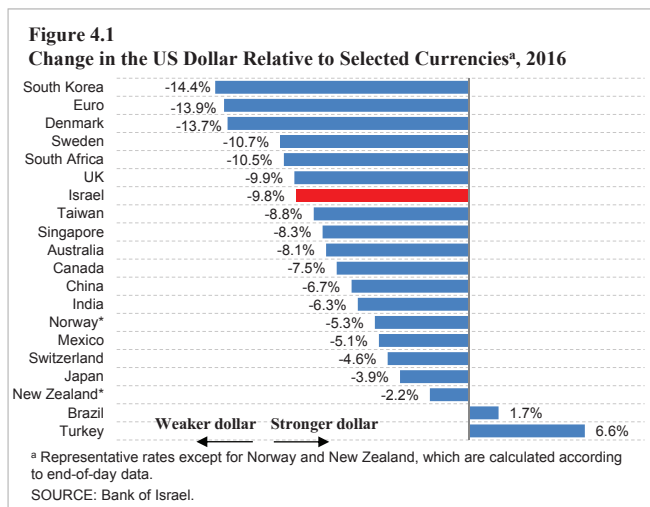
D. FOREIGN EXCHANGE ACTIVITY OF THE MAIN SECTORS

In 2017, the shekel strengthened against the dollar in parallel with the significant weakening of the dollar against the major currencies. Most of the shekel’s appreciation was in the first half of the year. In terms of the nominal effective exchange rate, which represents the currencies of Israel’s main trading partners, the shekel strengthened by a more moderate rate. In 2017, net foreign exchange sales by nonresidents and institutional investors were prominent, against net foreign exchange purchases by the other main sectors. The activity of these sectors was not homogeneous over the year as a whole. Nonresidents’ sales of foreign exchange were concentrated mainly in the first half of the year, while there were net purchases in the second half. The institutional investors increased their foreign exchange sales in the second half. The business sector increased its foreign exchange purchases in 2017, through a combination of increased net purchases by importers and lower net sales by exporters.

1. BACKGROUND: THE EXCHANGE RATES AND RISK

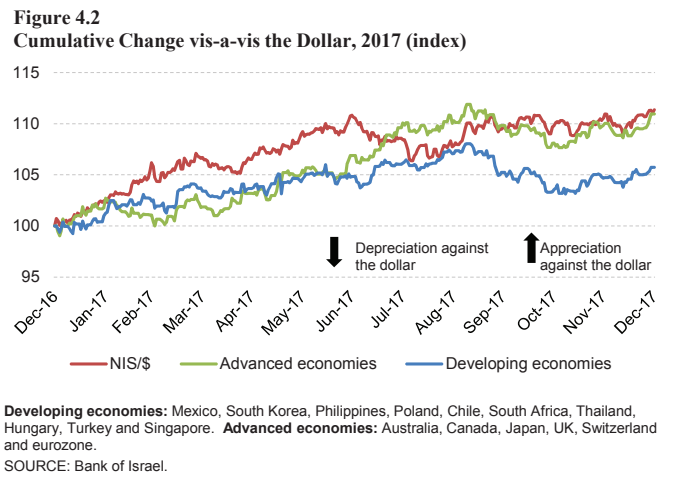
In 2017, the dollar weakened significantly against most major currencies, including against the euro and the shekel.

The shekel strengthened by about 9.8 percent against the dollar pound this year, continuing the appreciation against the dollar from 2016 (1.5 percent). Most of the appreciation took place in the first half of the year (8.2 percent).



The dollar weakened against the currencies of advanced and developing economies, mainly during the first half of the year.

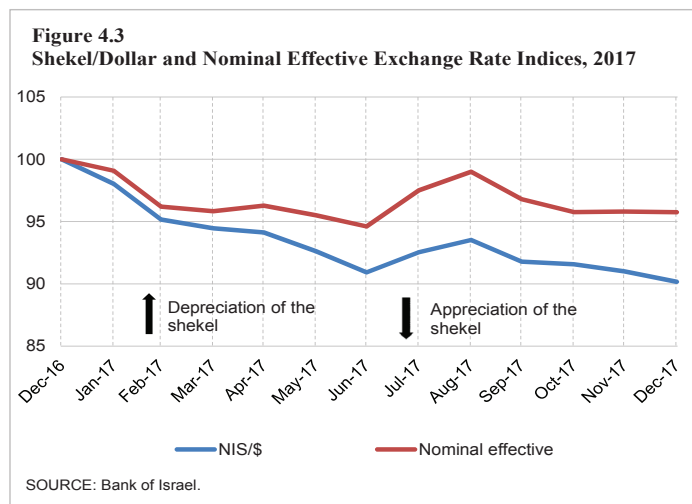
In 2017, the dollar weakened against the currencies of advanced economies by about 11 percent. The dollar weakened by a lower rate of about 6 percent against the currencies of developing economies (affected by the strengthening of the dollar against the Turkish lira by 7 percent since the beginning of the year.)



In parallel with the appreciation of the shekel against the dollar, the shekel also strengthened in terms of the nominal effective exchange rate.¹

The shekel appreciated by 4.2 percent in terms of the nominal effective exchange rate in 2017, further to the 4.8 percent appreciation in 2016.

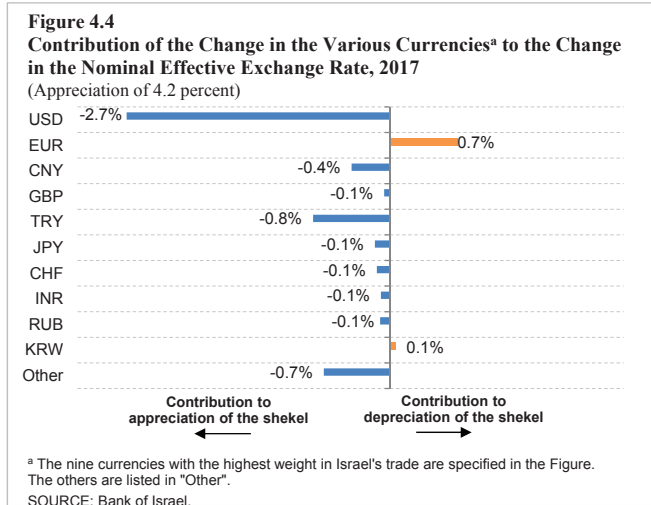
Similar to the shekel's appreciation against the dollar, the appreciation in terms of the nominal effective exchange rate was recorded in the first half of the year (5.3 percent), while there was a depreciation in the second half of the year (1.1 percent).



¹ For an explanation of the nominal effective exchange rate, see Main Terms at the end of this section.

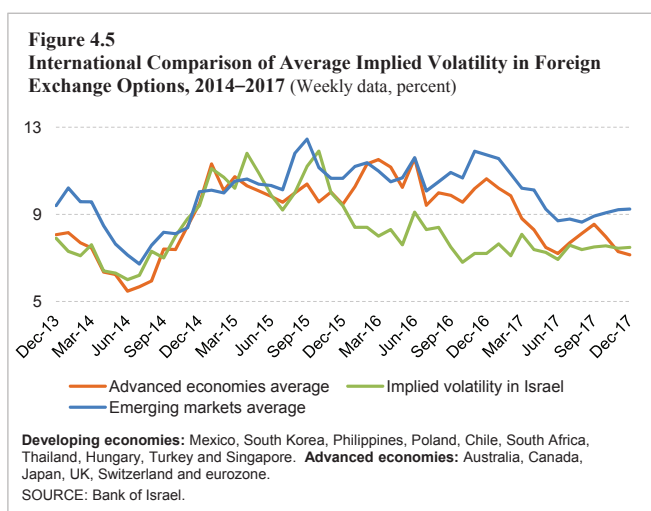
The main contributions to the change in the nominal effective exchange rate were the strengthening of the shekel against the dollar and against the Turkish lira, compared with a weakening of the shekel against euro.

The shekel strengthened this year against most currencies in the basket that comprises the nominal effective exchange rate. The shekel's appreciation against the dollar contributed to a change of 2.7 percentage points in the rate, and its appreciation against the Turkish lira contributed 0.8 percentage points. In contrast, the shekel's weakening of 2.6 percent against the euro during the year contributed 0.7 percentage points of depreciation against the nominal effective exchange rate.



Similar to 2016, the implied volatility² of the shekel exchange rate remained low, reflecting expectations of low volatility against the other currencies.

In parallel, the indices of implied volatility of the advanced and developing economies declined, mainly in the first half of the year.



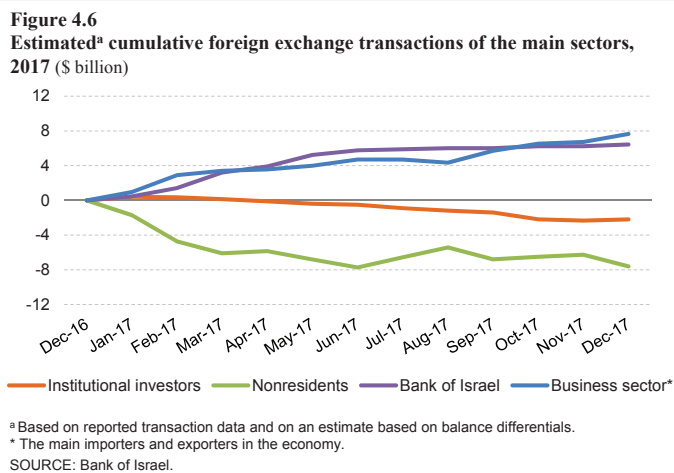
² For an explanation of implied volatility in options, see Main Terms at the end of this section.

2. FOREIGN EXCHANGE ACTIVITY OF THE MAIN SECTORS

Prominent activity in the foreign exchange market included net foreign exchange sales by nonresidents and institutional investors and net foreign exchange purchases by the other main sectors.

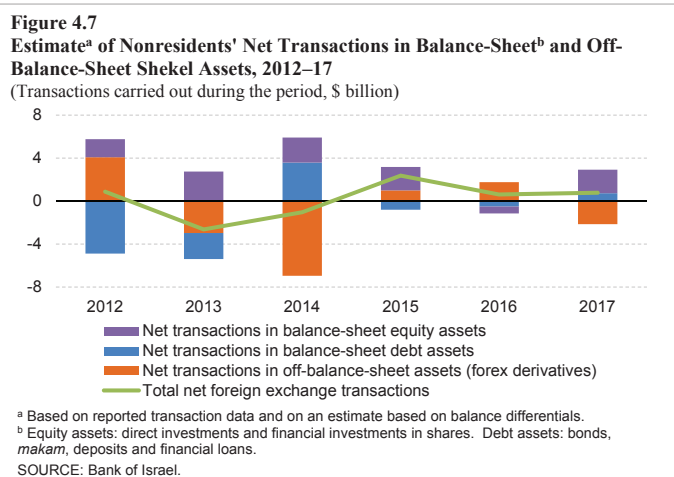
Nonresidents' sales of foreign exchange were concentrated in the first half of the year, and totaled \$7.7 billion. In contrast, the business sector purchased \$4.8 billion in the first half of the year, and the Bank of Israel purchased foreign exchange in accordance with its policy of the past few years.

Beginning in June 2017, nonresidents moved to net purchases of foreign exchange, which were offset by additional foreign exchange sales at the end of the year. In contrast, the institutional investors increased their foreign exchange sales in the second half.



In 2017, nonresidents made net foreign exchange sales and purchased shekel assets.

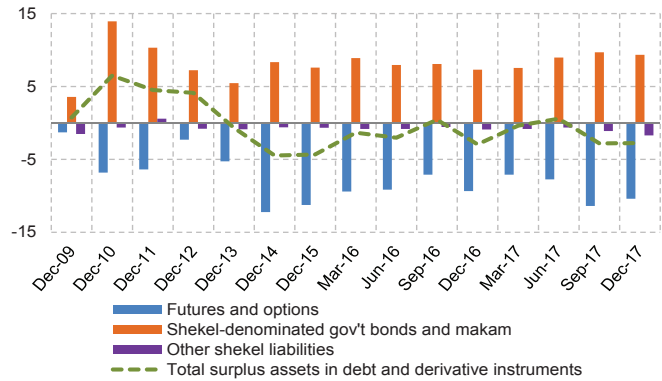
The estimate of net investments by nonresidents in shekel assets in 2017 totaled about \$800 million, mainly direct investments in equities (equity assets) totaling \$1.6 billion and investments in *makam* and government bonds totaling about \$1.3 billion. In contrast, nonresidents increased their balance of forward transactions for the sale of shekels (derivatives) totaling about \$2.1 billion.



In 2017, nonresidents' exposure to appreciation of the shekel through surplus shekel liabilities in debt instruments was about \$2.8 billion.

Nonresidents' sales of foreign exchange in the first half of the year were reflected in a decline in the surplus of shekel liabilities, while foreign exchange purchases in the second half contributed to its increase.

Figure 4.8
Nonresidents' Surplus Liabilities (+) of Shekel and Derivative Debt Instruments (2009–2017, \$ billion)

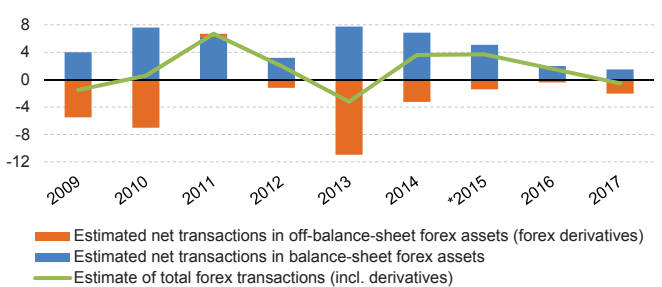


SOURCE: Bank of Israel.

In 2017, similar to the previous year, institutional investors' ³ investments in foreign exchange assets were negligible.

The volume of investment in balance-sheet foreign exchange assets totaled about \$1.5 billion in 2017, and was mainly concentrated in the first half of the year. In contrast, the institutional investors made net sales of foreign exchange through derivative instruments totaling about \$2 billion.

Figure 4.9
Estimate of Institutional Investors' Net Balance-Sheet and Off-Balance-Sheet Foreign Exchange Transactions, 2009–17
(Transactions carried out during the period, \$ billion)

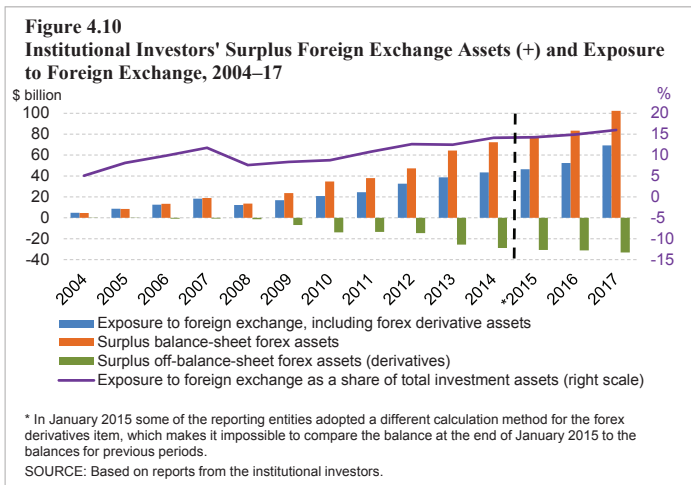


* The Figure for 2015 shows only the transactions for February to December 2015, due to the transition to a different method of calculation for the forex derivatives item.
SOURCE: Bank of Israel.

³ Provident funds, advanced training funds, pension funds, and insurance companies with profit-sharing policies.

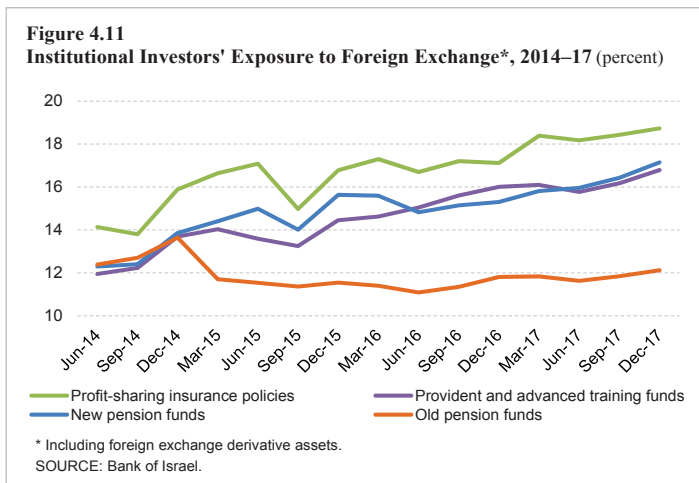
Despite the negligible flow of assets, the institutional investors' exposure to foreign exchange increased during the year, while exposure to foreign exchange as a share of their total assets also increased.

The balance of institutional investors' foreign exchange assets increased by about \$19 billion, to \$102.3 billion, mainly affected by increases in the prices of securities abroad. The increase in the balance was reflected in an increase of about 1.1 percentage points in institutional investors' exposure to foreign exchange as a share of their total assets, to 16.0 percent.



The increase in the rate of exposure to foreign exchange encompassed all institutional investors.

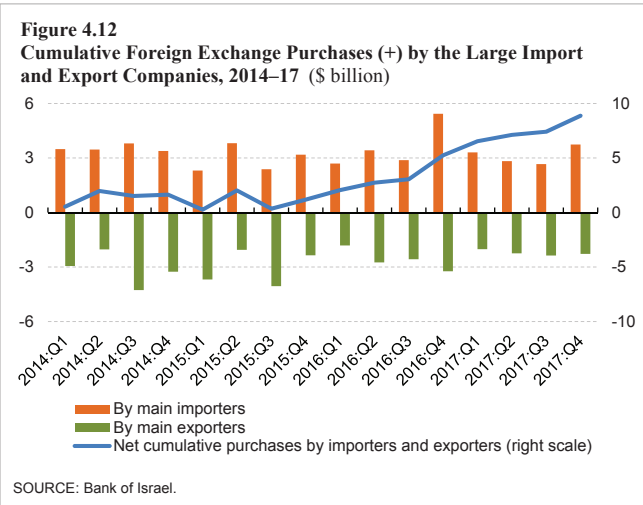
The highest rate of exposure to foreign exchange was at the insurance companies, where the rate was about 19 percent at the end of the year (an increase of about 1.6 percentage points since the beginning of the year). The new pension funds and the provide and advanced training funds had a 17 percent rate of exposure to foreign exchange. The old pension funds maintained a lower exposure rate of about 12 percent.



In 2017, the business sector increased its foreign exchange purchases, further to its activity in 2016.

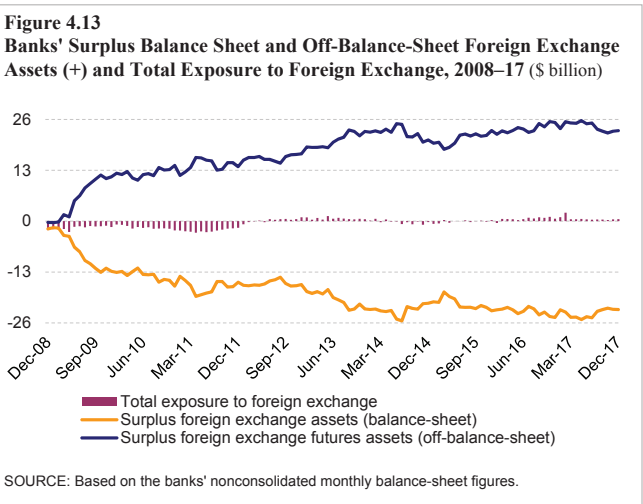
In 2017, there was a marked increase in foreign exchange purchases by import companies, due to the increase in the import of goods and services, mainly energy materials.

In parallel, the moderate decline in foreign exchange sales by export companies continued.



The banking system maintained low exposure to appreciation of the shekel.

The banking system’s off-balance-sheet assets in foreign exchange (financial derivatives) declined during the year by \$2.2 billion, which was mostly offset by a similar decline in surplus balance-sheet foreign exchange liabilities.



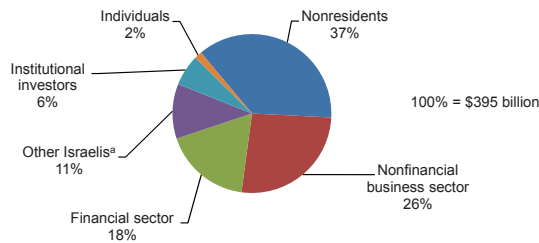
ZOOM IN



THE VOLUME OF FOREIGN EXCHANGE TRANSACTIONS

In 2017, about 63 percent of the volume of transactions in the foreign exchange market (excluding swaps) were carried out by nonresidents and the nonfinancial business sector.

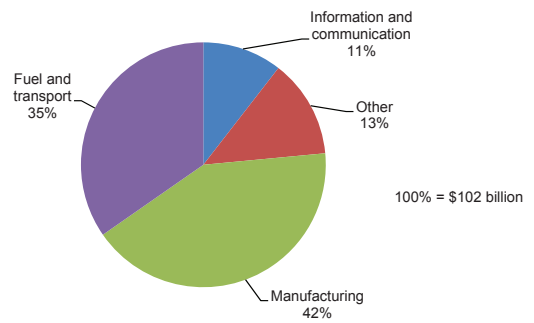
Figure 4.14
Volume of Transactions (Excluding Swaps) in the Foreign Exchange Market by Sector, 2017



^a Including non-profit organizations, the government, branch customers and unclassified customers.

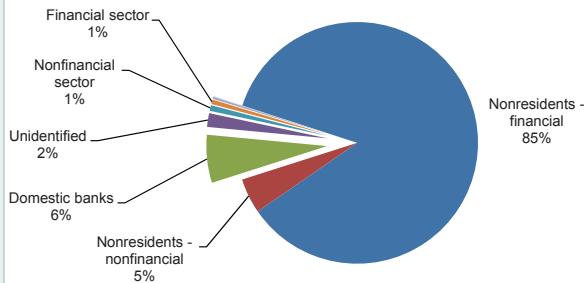
In 2017, about 42 percent of the volume of transactions by the business sector were carried out by companies in the manufacturing industry.

Figure 4.15
Volume of Transactions by the Business Sector, by Industry, 2017



In 2017, about 90 percent of the volume of conversion and derivative transactions in shekels by nonresidents were carried out with other nonresidents.

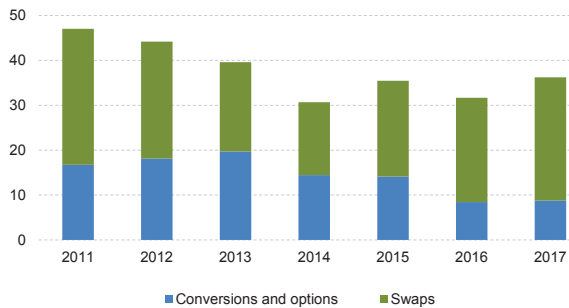
Figure 4.16
Volume of Transactions^a by Nonresidents, by Sector, 2017



^a Data from foreign reporting.

In 2017, nonresidents accounted for 36 percent of total trading volume in foreign exchange.

Figure 4.17
Nonresidents' Relative Share of Total Trading Volume (daily average, percent)



SOURCE: Based reports by the banks.

FOREIGN EXCHANGE ACTIVITY OF THE MAIN SECTORS

Main indicators in the foreign exchange market

	Level ^a					Change				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Actual volatility of the shekel/ dollar exchange rate (moving 20-day average) ^b	3.5%	9.4%	5.1%	7.2%	4.8%	-2.0	5.9	-4.3	2.1	-2.4
Implied volatility of shekel/ forex OTC options ^b	7.9%	9.4%	9.4%	7.2%	7.5%	-1.5	1.5	-0.3	-2.2	0.3
Shekel/dollar representative exchange rate	3.47	3.89	3.90	3.85	3.47	-7.0%	12.0%	0.3%	-1.5%	-9.8%
Shekel/euro exchange rate	4.78	4.73	4.25	4.04	4.15	-2.8%	-1.2%	-10.1%	-4.8%	2.6%
Dollar/euro exchange rate	1.38	1.22	1.09	1.05	1.20	4.6%	-11.8%	-10.4%	-3.3%	14.1%
Yen/dollar exchange rate	104.98	119.49	120.41	117.00	112.55	21.8%	13.8%	0.8%	-2.8%	-3.8%
Nominal effective exchange rate (January 1, 2010 = 100)	89.80	92.75	86.02	81.89	78.40	-7.6%	3.3%	-7.3%	-4.8%	-4.2%
Average daily trading volume - conversions, swaps and OTC options (\$ million)	4,393	6,375	6,382	7,277	6,636	-15.9%	45.1%	0.1%	14.0%	-8.8%
Nonresidents' share of trading volume ^b	39.5%	30.5%	35.4%	31.7%	36.2%	-4.4	-9.0	5.1	-3.7	4.5
Nonresidents' exposure to the exchange rate (\$ billion)	-0.7	-4.5	-4.3	-2.9	-2.8					
Institutional investors' exposure to the exchange rate (\$ billion)	38.7	43.4	46.5	52.4	69.2					
The banking system's exposure to the exchange rate (\$ billion)	0.5	-0.2	0.3	0.8	0.5					
Foreign exchange purchases by institutional investors (\$ billion)						-3.2	3.6	3.7 ^c	1.6	-2.2
Foreign exchange purchases by main exporters (\$ billion)						-9.3	-12.5	-13.8	-10.4	-8.9
Foreign exchange purchases by main importers (\$ billion)						12.6	14.1	11.9	13.9	12.5

^a Level at the end of the period.

^b The changes shown in the right-hand panel are in percentage points.

^c In January 2015, some of the reporting entities adopted a different method of calculation for the forex derivatives item, which makes it impossible to calculate the net transactions in foreign exchange assets (forex purchases) for that month. Forex purchases for 2015 therefore do not include that month.

SOURCE: Bank of Israel.

DATA SOURCES AND MAIN TERMS

The Bank of Israel Information and Statistics Department manages a database of activity in the foreign exchange market. The Department gathers data and information on a daily basis from financial intermediaries in Israel and abroad regarding shekel-forex transactions, and processes them into a detailed high-quality dataset that provides a broad picture of the foreign exchange market. The data are received from domestic banking corporations, domestic financial institutions, and foreign banks. In addition, this chapter makes use of reports by the institutional investors to the Ministry of Finance and the Bank of Israel, reports from the banking system to the Banking Supervision Department, and reports from banks and other financial intermediaries to the Bank of Israel regarding nonresidents' holdings of Israeli financial assets.

Exposure to the exchange rate and derivatives

- **Exposure to the exchange rate** (or exposure to foreign exchange) 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.
- Foreign exchange assets include: **balance-sheet assets** such as cash and deposits in foreign currency and 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 forward 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 in the future through DFI transactions. The nonresidents sector is comprised of various companies and individuals with activity in shekels and a similar variety of motives.

- **Implied volatility in foreign exchange options** represents the expected volatility in the exchange rate. Assuming that the options market is efficient and that actors in the market price the options based on the Black-Scholes model, the implied volatility should include all the relevant information regarding future volatility of the exchange rate. It therefore serves as a market estimate of exchange rate volatility during the period remaining until the options expire.
- **The nominal effective exchange rate**¹: An index that reflects the relative price of the shekel vis-à-vis a basket of currencies. The weight of each currency in the index reflects its importance in Israel's foreign trade. The index is calculated as the geometric average of the shekel's exchange rate against 26 currencies representing the 33 countries that are Israel's major trading partners.

¹ For more information on effective exchange rates, see: <http://www.boi.org.il/en/Markets/ExchangeRates/Pages/efectinf.aspx>