

D. Foreign Exchange Activity Of The Main Sectors

The shekel strengthened significantly against the dollar and in terms of Israel's nominal effective exchange rate in 2019. Globally, the dollar traded with a mixed trend against the major currencies.

The transition by institutional investors to net sales of foreign exchange was prominent during 2019, in parallel with the continued foreign exchange sales by nonresidents.

The business sector increased its net purchases of foreign exchange—a combination of increased net purchases by importers and significantly lower net sales by exporters.

1. BACKGROUND: THE EXCHANGE RATES

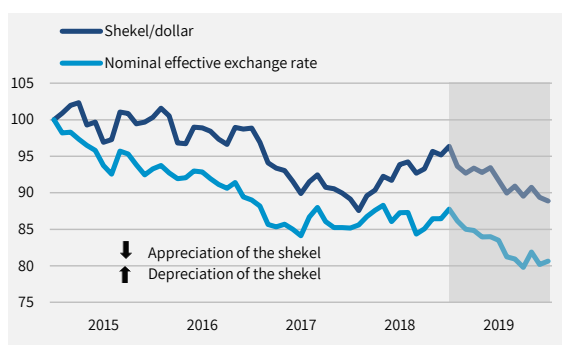
The shekel strengthened against the dollar and in terms of the nominal effective exchange rate¹ in 2018, further to the long-term trend in previous years.

The shekel strengthened by 7.8 percent against the US dollar, after having weakened by 8.1 percent in the previous year.

The shekel strengthened by 8.2 percent in terms of the nominal effective exchange rate, which represents the currencies of Israel's major trading partners, after having weakened by 2.8 percent in 2018.

The upward trend of the shekel was consistent throughout most of the year.

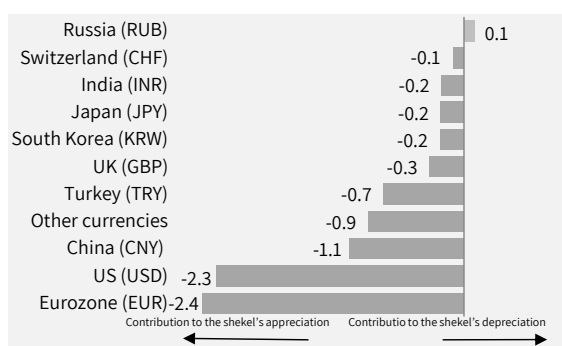
Figure 4.1: The shekel/dollar and nominal effective exchange rate indices



The shekel strengthened against most currencies in the basket that comprises the nominal effective exchange rate.

The main contributing factors to the appreciation against the nominal effective exchange rate were the strengthening of the shekel against the euro and, which contributed 2.4 percentage points to the appreciation, and against the dollar, which contributed 2.3 percentage points.

Figure 4.2: Contributions of the Change in the Various Currencies to the Change in the Nominal Effective Exchange Rate (8.2 percent) percentage points



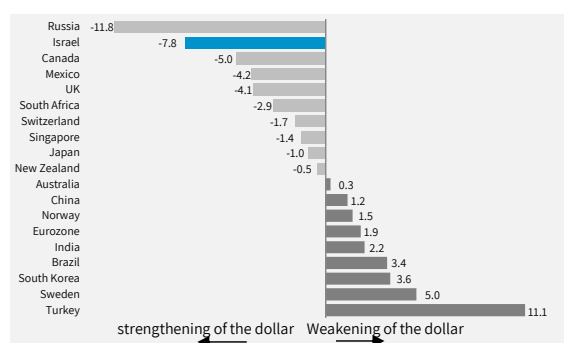
¹ For an explanation of the nominal effective exchange rate, see Main Terms at the end of this section.

Globally, the dollar traded in a mixed trend against the major currencies.

The dollar strengthened by 1.9 percent against the euro, and weakened by about 1 percent against the yen and by about 4.1 percent against the pound.

The strengthening of the shekel and of the Russian ruble against the US dollar were particularly prominent, as was the weakening of the Turkish lira.

Figure 4.3: Rate of Change of the Dollar Against the Major Currencies*, 2019 Present



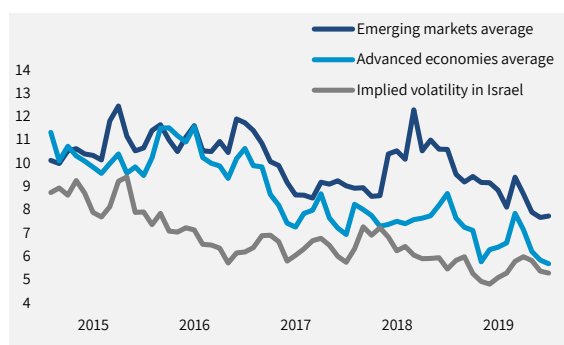
* The data are calculated based on end-of-day figures. The change in the shekel/dollar rate is calculated according to the representative rate.

The implied volatility² of options on the shekel exchange rate remained low in 2019.

The implied volatility of options on the shekel exchange rates was 5.3 percent at the end of 2019, a decline of 0.2 percentage points from the end of 2018, reflecting expectations of low volatility.

The volatility of the advanced markets³ declined by about 3 percentage points to 5.7 percent in 2019, while the volatility of the emerging markets⁴ declined by the same amount, to 7.7 percent.

Figure 4.4: The Implied Volatility of Shekel/Dollar Exchange Rate Options International Comparison, Percent

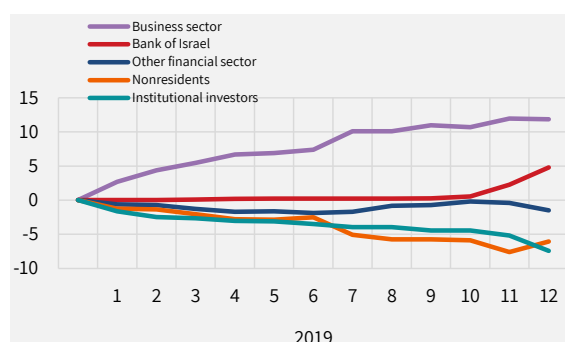


2. Foreign Exchange activity of the main sectors

The main segments of the foreign exchange market⁵ in 2019 featured net foreign exchange sales (shekel purchases) by nonresidents and institutional investors against net foreign exchange purchases (shekel sales) by the business sector.⁶

The business sector made net purchases of foreign exchange totaling \$7.4 billion in 2019. Foreign exchange sales by nonresidents, and foreign exchange purchases by the Bank of Israel were concentrated in the second half of the year.

Figure 4.5: Estimated Net Cumulative Foreign Exchange Purchases (+) by the Main Sectors \$ billion



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

³ The advanced economies included here are: Australia, Canada, Japan, UK, Switzerland, and the Eurozone countries.

⁴ The emerging markets included here are: Mexico, South Korea, Philippines, Poland, Chile, South Africa, Thailand, Hungary, Turkey, and Singapore.

⁵ For further details regarding definitions, terms, and explanations, see "Database on Shekel/Forex Market Activity" in Chapter 2 of the Statistical Bulletin for 2018.

⁶ The nonfinancial business companies

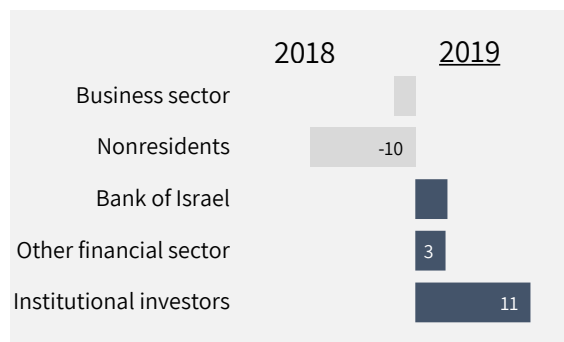
The institutional investors changed their behavior relative to the net foreign exchange purchases they made in 2018.

The institutional investors made about \$7 billion worth of net sales in 2019, compared with net foreign exchange purchases of about \$11 billion in 2018.

Nonresidents continued selling dollars in 2019, totaling about \$6 billion.

In contrast, the business sector made net purchases of foreign exchange totaling about \$12 billion, compared with a small volume of net sales in 2018.

Figure 4.6: Estimated Net Cumulative Foreign Exchange Purchases (+) by the Main Sectors
\$ billion



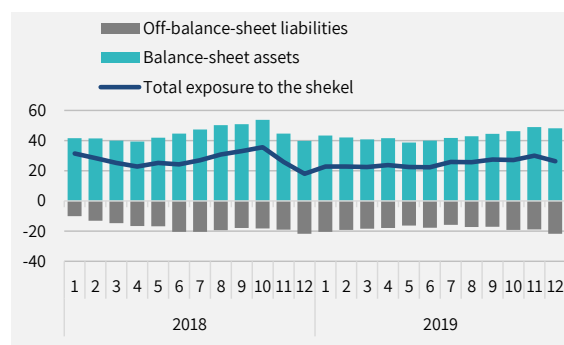
2.1 Nonresidents

Nonresidents made net foreign exchange sales (shekel purchases) by increasing their balance of balance-sheet assets.

The balance of nonresidents' balance-sheet assets increased by about \$8 billion in 2019, increasing their exposure to a depreciation of the shekel⁷.

Nonresidents' future shekel liabilities in derivatives⁸ remained about \$22 billion, similar to last year.

Figure 4.7: Balance of Nonresidents' Net Shekel Liabilities in Debt Assets and Forex Derivatives
\$ billion

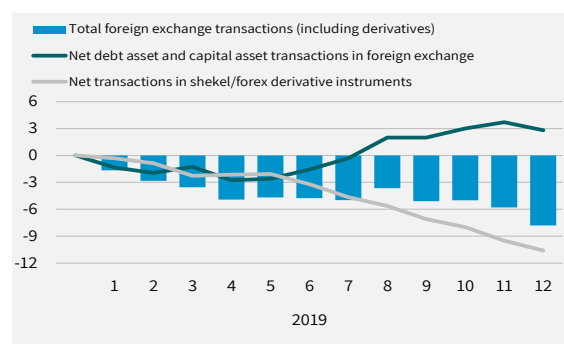


2.2 Institutional investors

The institutional investors made net sales of foreign exchange through derivative instruments in 2019, where were partly offset by purchases of foreign assets.

The institutional investors hedged their exposure to foreign exchange through net foreign exchange sales of about \$10.6 billion in derivative instruments, while purchasing debt assets and capital assets (mainly shares abroad) totaling about \$2.8 billion, mainly in the second half of the year.

Figure 4.8: Net Cumulative Foreign Exchange Transactions by the Institutional Investors
\$ billions



⁷ For an explanation, see Data Sources and Main Terms at the end of this section.

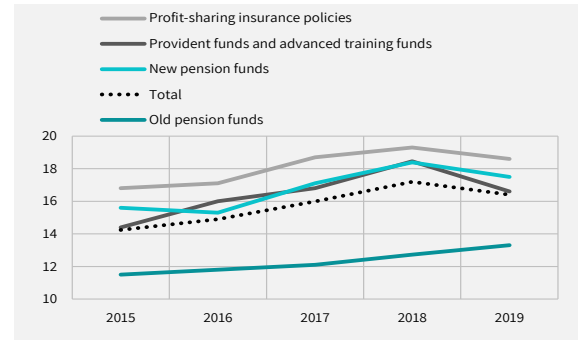
⁸ Derivative assets are futures transactions and options.

Institutional investors' net sales of foreign exchange contributed to a decline of 0.8 percentage points in the rate of their exposure to foreign exchange, to about 16.4 percent of all assets.

Most of the institutional investors, with the particular prominence of the provident funds and advanced training funds, lowered their exposure to foreign exchange. The exposure of provident funds and training funds decline by 1.8 percentage points to 16.6 percent.

In contrast, the old pension funds increased their exposure to foreign exchange, but continued to maintain a low exposure rate of about 13.3 percent.

Figure 4.9: Institutional Investors' Exposure to Foreign Exchange
Percent



2.3 The business sector

The business sector was prominent in net foreign exchange purchases in 2019, with an increase in foreign exchange purchases by importers, which were partly offset by sales by exporters.

The net foreign exchange purchases by the major import companies totaled about \$14.9 billion in 2019, in view of continued growth of goods and services exports.

In contrast, net foreign exchange sales by the major export companies totaled about \$7.5 billion in 2019, compared with about \$2 billion in the previous year.

Figure 4.10: Net Cumulative Foreign Exchange Purchases by the Major Import and Export Companies
\$ billions

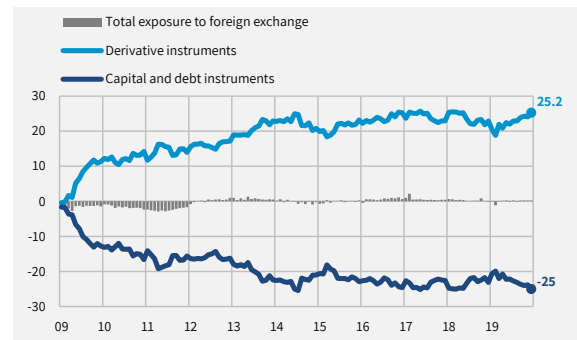


2.4 The banking system⁹

The banking system maintained near zero exposure to foreign exchange.

The banking system's balance of assets in foreign exchange derivative instruments increased by about \$2.3 billion to about \$25.2 billion at the end of the year. At the same time, there was an increase of about \$1.9 billion in the system's surplus of liabilities in foreign exchange capital and debt instruments, to \$25 billion.

Figure 4.11: Net Foreign Exchange Assets of the Banking System and Total Exposure to Foreign Exchange
\$ billions

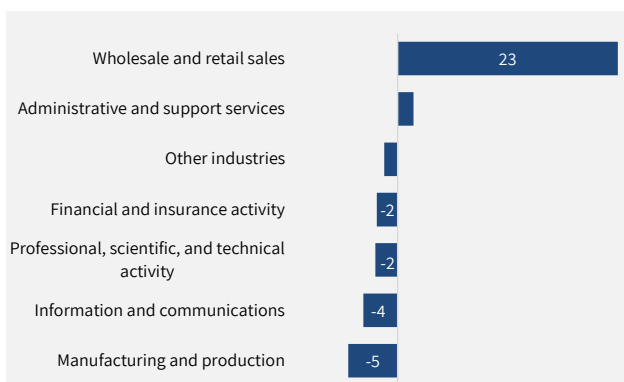


⁹ The domestic banking corporations.

▶ THE BUSINESS SECTOR'S FOREIGN EXCHANGE ACTIVITY

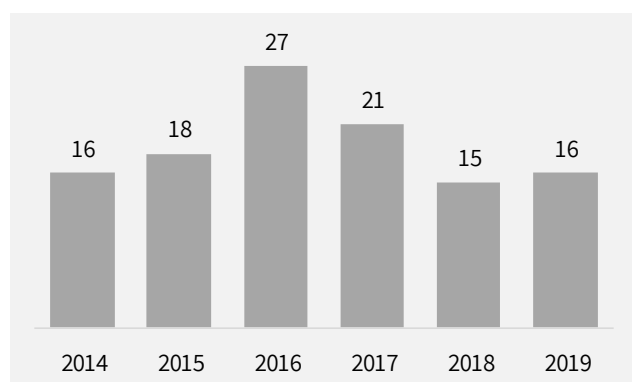
The wholesale and retail sales industry¹⁰ was prominent in net foreign exchange purchases.

Figure 4.12: The Business Sector's Net Foreign Exchange Purchases by Industry Classification¹¹, 2019, \$ billions



The business sector's share remained stable, at about 6 percent in the past two years.

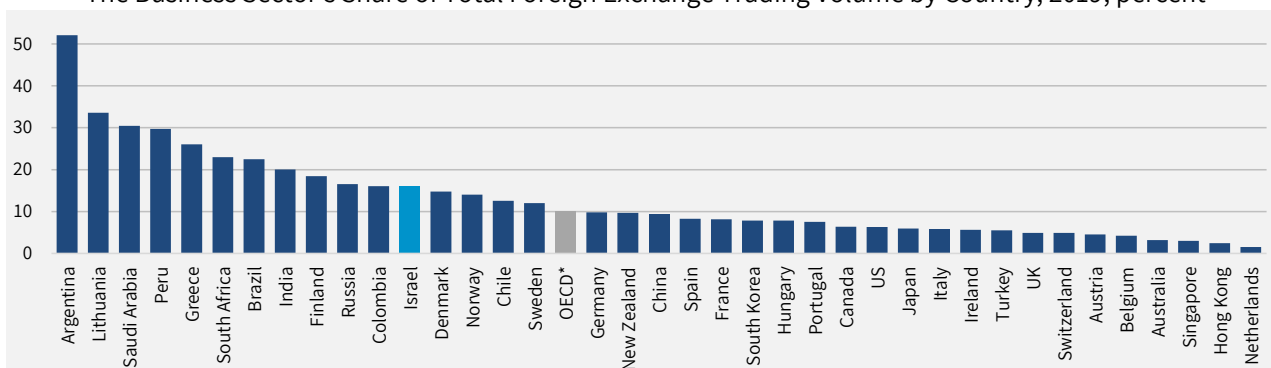
Figure 4.13: The Business Sector's Share of Total Foreign Exchange Trading Volume, percent



The business sector's share of trading volume in Israel, which was about 16 percent in 2019, is about 6 percentage points larger than in the OECD¹².

Figure 4.14:

The Business Sector's Share of Total Foreign Exchange Trading Volume by Country, 2019, percent



SOURCE: Based on Central Bureau of Statistics and BIS.

¹⁰ The industry is composed mainly of energy and vehicle import companies.

¹¹ Central Bureau of Statistics. For a full list of the classification levels, industries, and classification manner and principles, see "Uniform Classification of Industries 2011" on the Central Bureau of Statistics website.

¹² The OECD countries, excluding Estonia, Iceland, and Slovenia.

Main indicators in the foreign exchange market



	Level				Change			
	2016	2017	2018	2019	2016	2017	2018	2019
Actual volatility of the shekel/dollar exchange rate (moving 20-day average)	7.2%	4.8%	4.9%	4.1%	2.1	-2.4	0.1	-0.8
Implied volatility of shekel/forex OTC options	6.2%	5.7%	5.5%	5.3%	-1.7	-0.4	-0.3	-0.2
Shekel/dollar representative exchange rate	3.85	3.47	3.75	3.46	-1.5%	-9.8%	8.1%	-7.8%
Shekel/euro exchange rate	4.04	4.15	4.29	3.88	-4.8%	2.7%	3.3%	-9.6%
Dollar/euro exchange rate	1.05	1.20	1.15	1.12	-2.9%	14.0%	-4.7%	-1.9%
Yen/dollar exchange rate	117.00	112.55	109.87	108.52	-2.8%	-3.8%	-2.4%	-1.2%
Nominal effective exchange rate (January 1, 2010 = 100)	89.00	85.16	87.77	80.63	-4.6%	-4.3%	3.1%	-8.1%
Average daily trading volume - conversions, swaps and OTC options (\$ million)	5,756	5,580	5,991	6,202	6,997	6,519	50.0%	-3.1%
Nonresidents' share of trading volume	31.0%	34.7%	27.7%	31.2%	32.8%	34.4%	-11.5	3.3
Nonresidents' exposure to the exchange rate (\$ billion)	21.0	29.0	18.0	26.0				
Institutional investors' exposure to the exchange rate (\$ billion)	52.5	69.4	71.0	86.4				
The banking system's exposure to the exchange rate (\$ billion)	0.6	0.4	-0.2	0.2				
Net foreign exchange purchases by institutional investors (\$ billion)					-1.2	-2.3	10.2	-7.7
Net foreign exchange purchases by main exporters (\$ billion)					-10.4	-9.2	-11.6	-4.6
Net foreign exchange purchases by main importers (\$ billion)					14.4	13.1	13.8	10.6

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 section 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)

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.

■ 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

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.