Bank of Israel

Investment of the Foreign Exchange Reserves

Annual Report 2023

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"In 2023, the foreign exchange reserves increased by $10.5 billion, to a total of $204.7 billion. The increase in the foreign exchange reserves was impacted primarily by mark to market adjustments of $16.8 billion, which include capital gains from equity holdings as well as capital gains and interest income from bond holdings. With the outbreak of the war, the Bank of Israel implemented a foreign-exchange sales program that helped to stabilize the foreign exchange market and financial markets. The high level of foreign exchange reserves is a strategic asset that provides latitude for maintaining financial stability while reducing uncertainty."

Dr. Golan Benita,

Markets Department

Director

The level of the foreign exchange reserves and source of their change	In 2023, the foreign exchange reserves increased by $10.5 billion, to a total of $204.7 billion, notwithstanding foreign exchange sales of $8.5 billion. This increase stemmed mainly from capital gains on equity holdings as well as capital gains and interest income from bond holdings.
The asset allocation of the foreign exchange reserves	As of the end of 2023, the asset allocation of the foreign exchange reserves was 54 percent in government assets, 21 percent in equities, 15 percent in spread assets, and 10 percent in corporate bonds.
Economic and financial background conditions	During the course of 2023, global financial markets were volatile, impacted mainly by market assessments regarding the development of inflation, the expected path of central bank interest rates, and the effect of this path on economic activity worldwide. Alongside these factors, markets were impacted by a marked increase in risk to banking sector stability due to difficulties at several banks in the US and Europe, as well as by an increase in geopolitical risk, in view of the concern of an outbreak of a regional war in the Middle East. Toward the end of the year, market sentiment changed and markets trended upward, due to signs indicating the convergence of inflation to central bank targets, which enhanced expectations of the start of interest rate reductions by central banks.

The return on the foreign exchange reserves portfolio in terms of the currency benchmark

Global financial market developments were reflected in the returns on the foreign exchange reserves portfolio: the rate of return of the reserves portfolio in terms of the currency benchmark[1] was 8.3 percent in 2023. The return in terms of the basic benchmark[2] was relatively high compared to previous years, at 4.2 percent. The excess return in 2023 was 4.1 percent, mainly due to equity holdings.

Table 1a
The rate of return on the foreign exchange reserves portfolio, annual and multiyear average, in terms of the currency benchmark
(Percent, annual terms)

	2023	3 years	5 years
Reserves portfolio return	8.3	1.7	3.0
Basic benchmark return	4.2	1.3	1.2
Excess return	4.1	0.4	1.8

The risk level of the foreign exchange reserves portfolio

The risk level of the foreign exchange reserves portfolio moderated this year as a result of the decline in volatility in equity markets and was affected by the increase in the risk-free interest rate used as a cushion to absorb losses.

The return on the foreign exchange reserves portfolio in shekel terms

Due to the weakening of the shekel by 3.8 percent, the rate of return on the foreign exchange reserves portfolio in shekel terms was 12.4 percent.

Table 1b
The rate of return on the foreign exchange reserves portfolio, annual and multiyear average, in shekel terms
(Percent, annual terms)

	2023	3 years	5 years
Reserves portfolio return	12.4	4.1	1.8
Change in exchange rate of currency benchmark/shekel	3.8	2.4	-1.2

A negative sign in the change of the exchange rate indicates the shekel's appreciation.

The "Swords of Iron" War

With the outbreak of the war in October 2023, the Bank of Israel sold, for the first time, $8.5 billion of its foreign exchange reserves. The sales were carried out as part of a program to sell up to $30 billion in foreign exchange, and to provide liquidity to markets through SWAPs[3] of up to $15 billion. The program was implemented with the goal of moderating volatility in the exchange rate of the shekel and to provide the liquidity required for the continued proper functioning of the markets. The program's implementation, which was possible due to the high level of the reserves, made a marked contribution to the stability of the foreign exchange market and the financial markets.

[1] Information on the currency benchmark appears below in Chapter B.
[2] Includes short-term government bonds in the currency benchmark currencies with a duration of 6 months. Additional information on the basic benchmark appears below in Chapter B.
[3] An agreement between two sides to exchange financial assets at a predetermined future date.

Introduction: Economic and Financial Background Conditions

Global financial markets were volatile in 2023, impacted mainly by market assessments regarding the development of inflation, the expected path of central bank interest rates, and the effect of this path on economic activity worldwide. Alongside these factors, markets were impacted by a marked increase in risk to banking sector stability due to difficulties at several banks in the US and Europe, as well as by an increase in geopolitical risk, in view of the concern of an outbreak of a regional war in the Middle East. Toward the end of the year, market sentiment changed and markets trended upward, due to signs indicating the convergence of inflation to central bank targets, which enhanced expectations of the start of interest rate reductions by central banks.

In the first half of the year, the risk to financial stability in the banking sector increased considerably. In the US, the regulator closed several regional banks. This was due to significant losses in their financial statements that stemmed mainly from the sharp rise in Treasury bond yields and increasing concerns of a liquidity shortage, which sparked a run on the banks. In Europe, Switzerland's central bank led the quick purchase of Credit Suisse Bank ("CS") by the UBS Group, after CS's corporate governance failures, weak financial performance, and loss of investors' trust. These developments led to significant volatility in the markets and to sharp declines in share prices, mainly in the banking sector, and to concerns of a broad stability crisis. Rapid policy steps by the authorities in the US and Europe, which included activation of a deposit insurance framework for the closed banks' customers and increased liquidity to the banking sector, managed to stop the crisis from developing and restored faith in the markets.

Inflation moderated across the world over the course of the year. Moderation was also seen in core inflation, which is net of the effects stemming from price changes in volatile CPI items such as energy and food. Nonetheless, inflation levels in the main regions remained higher than central banks' inflation targets, primarily as a result of the continued demand pressure in certain segments, mostly in the services sector.

Central banks continued to raise interest rates and adopt a restrictive monetary policy, a key factor that affected economic and financial developments worldwide. Although it appeared that the cycle of interest rate increases had come to an end in the second half of the year and that inflation had begun to moderate, interest rates are expected to remain high. As a result, many advanced economies are experiencing positive real interest rates after an extended period of negative real interest rates.

There was moderate growth in the global economic activity. US economic activity surprised to the upside, supported by excess household savings, a tight employment market, and a rise in the "wealth effect." In the Eurozone, in view of weakness in manufacturing sectors and foreign trade, mainly in Germany, there was a slowdown in the pace of economic activity. China recorded recovery from the COVID-19 pandemic, although structural issues, such as high debt levels, a rise in household savings levels, and a crisis in the real estate sector, continue to weigh on economic activity in the world's second-largest economy.

In the global foreign exchange market, the US dollar was mixed against the currency benchmark currencies. The US dollar weakened mainly against the UK pound and the euro, in view of anticipated Federal Reserve easing policy, while at the same time the dollar strengthened notably against the Japanese yen, which is affected by the ultra-loose policy of Japan's central bank.

The significant positive sentiment in the markets toward the end of the year had a positive effect on financial assets and led to positive performance in the reserves portfolio.

Leading global equity indices recorded positive returns in annual terms, led by shares of major technology firms, and this was also the case for the majority of equity indices in which the reserves are invested. Over the course of the year, trading was impacted by uncertainty in the financial markets due to the restrictive monetary policy and concerns of its implications on real and financial activity. Toward the end of the year, the markets trended upward in view of expectations that central banks would begin to reduce interest rates.

Government bond yields were traded at a high level of volatility over the course of the year in view of the uncertainty in the financial markets. Bond yields, which this year reached levels that exceeded previous years', recorded a sharp drop toward the end of the year due to the financial market expectations of a change in the monetary policies of the major central banks.

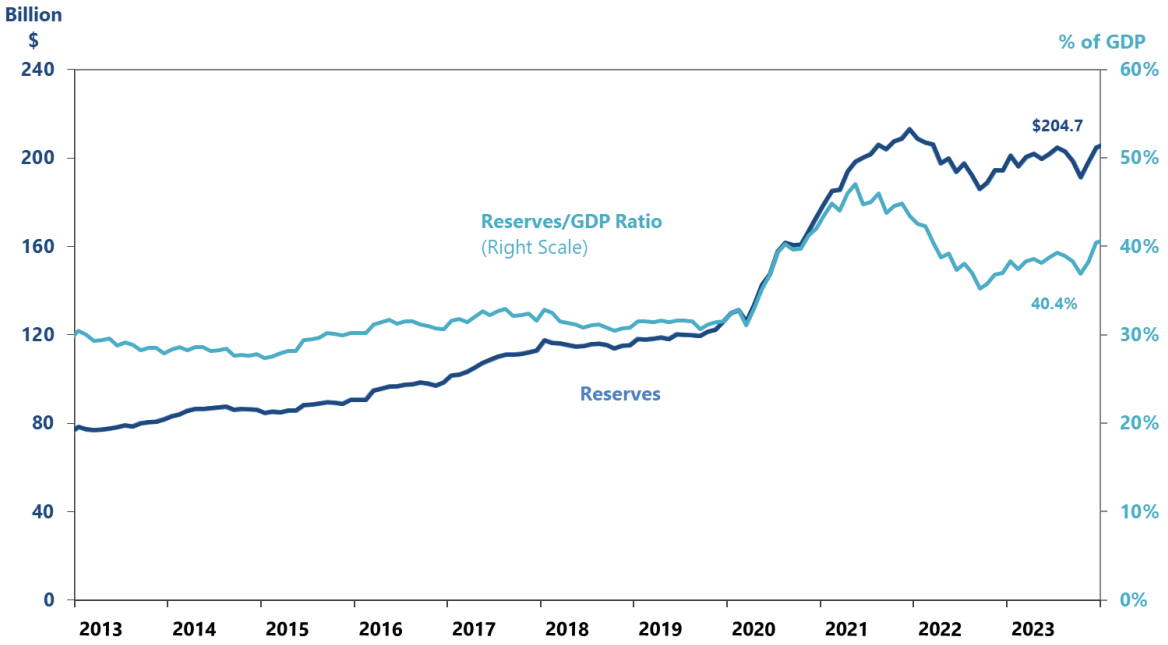
The corporate bond market was also volatile. The market was characterized by volatility, primarily in the first half of the year, due to the development of the banking sector crisis. In annual terms, the yield spread between these assets and government bonds declined, which led to capital gains in these assets.

A. The Level of the Foreign Exchange Reserves

1. Changes in the foreign exchange reserves

In 2023, Israel's foreign exchange reserves increased by $10.5 billion, from $194.2 billion at the end of 2022 to $204.7 billion at the end of 2023 (Figure 1).[4] **The ratio of the reserves to GDP increased from 37 percent[5] to 40.4 percent**.

Figure 1
The Level of Israel's Foreign Exchange Reserves, and the Ratio of the Reserves to GDP, 2013–23 (month-end balance)



Source: Bank of Israel

The increase of $10.5 billion in the reserves (see Table 2) was mainly affected by mark to market adjustments[6] of $16.8 billion and foreign exchange sales of $8.5 billion (see Figure 2), which were made within a program to sell up to $30 billion in foreign exchange, which was announced by the Monetary Committee when the war erupted (see section A2 below).[7]

The main components that affected the mark to market adjustments:

1. A total of $15.5 billion from capital gains on equity holdings as well as capital gains and interest income from bond holdings.
2. A total of $1.4 billion from gains on exchange rate differentials against the euro and other currencies, in which approximately 40 percent of the reserves are held, due to the strengthening of these currencies against the dollar.

[4] The level of the reserves throughout the Report includes the International Monetary Fund's allocations of SDRs and the balance of Israel's reserve tranche in the IMF. At the end of 2023, their combined level was $4.6 billion. For additional information see "Bank of Israel Financial Statements for 2023."

[5] This figure is calculated on the basis of GDP data for the year 2022, which were updated since the publication date of the report for 2022.

[6] The mark to market is the change in the dollar value of the reserves attributed to profits realized from interest income, capital gains, and the change in value due to asset price differentials and exchange rate differentials vis-a-vis the dollar of currencies in which the reserves are invested.

[7] Press release dated October 9, 2023.

Table 2[8]

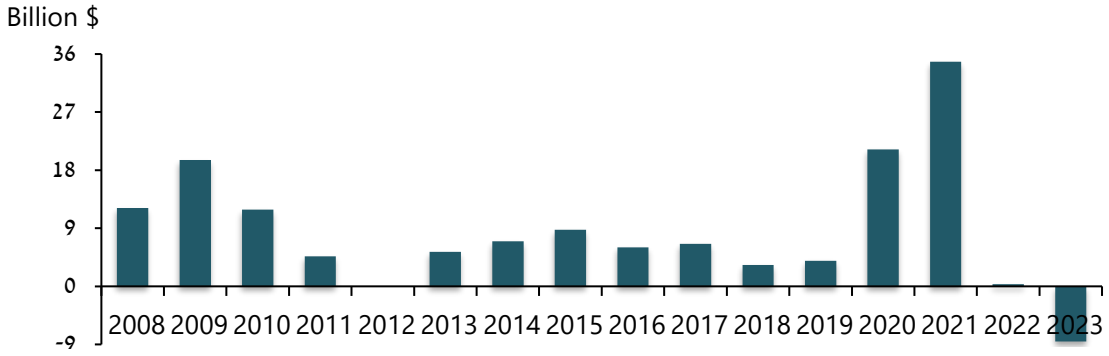
Components of the change in the reserves, 2023

($ million)

FX Sale	-8,546
Mark to Market	16,761
Private Sector	18
Government	2,243
Total Change	**10,476**

Source: Bank of Israel

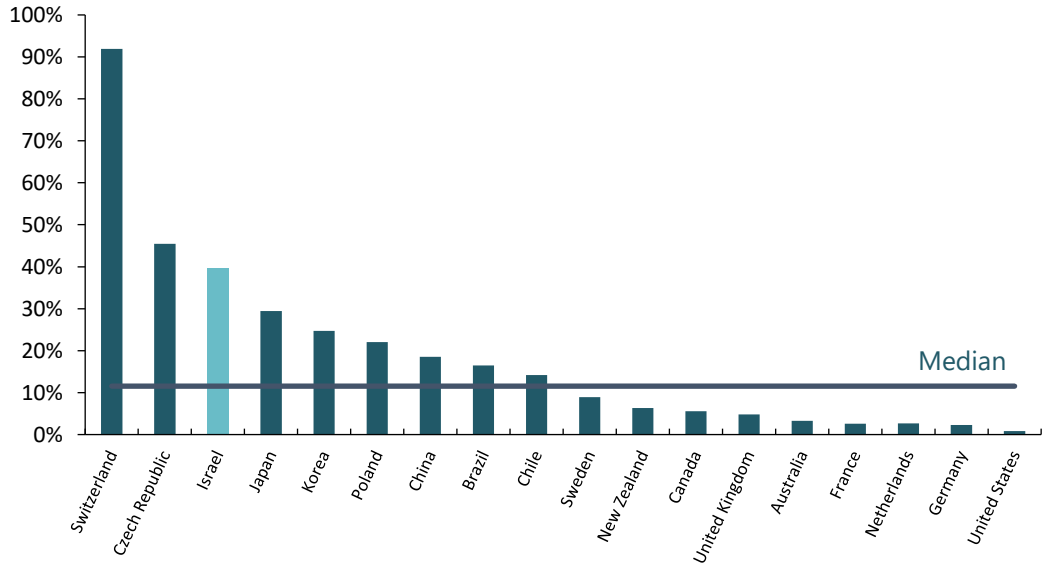
Figure 2
Bank of Israel Foreign Exchange Purchases and Sales, 2008–23



Source: Bank of Israel.

Reserves are commonly measured relative to various economic aggregates, mainly GDP. The ratio of reserves to GDP in Israel is high compared to the median of other countries (see Figure 3).

Figure 3
The Ratio of the Reserves[1] to GDP, Israel and Selected Countries



[1]Data on the foreign exchange reserves for 2023 are updated to the Hebrew report's publication date, March 2024. Date on GDP are as of September 30, 2023.
Source: OECD, International Monetary Fund

[8] In this table, government refers to transfers from abroad of the government and national institutions.

2. The "Swords of Iron" War

At the outbreak of the war in October 2023, the Bank of Israel sold, for the first time, $8.5 billion in foreign exchange reserves. The sales were made as part of a program announced by the Bank that included:

- Foreign exchange sales of up to $30 billion with the goal of moderating the volatility in the shekel exchange rate and to provide the liquidity required for continued proper functioning of the markets.
- Providing liquidity to the market through SWAPs in the market of up to $15 billion.

The program's implementation, which was possible due to the high level of the reserves, made a marked contribution to the stability of the foreign exchange market and the financial markets.

B. The Framework for Managing the Foreign Exchange Reserves

According to the **Bank of Israel Law, 5770-2010**, the Bank is responsible for holding and managing the state's foreign exchange reserves. A country's foreign exchange reserves are designed to serve as an inventory that suffices for the economy during a crisis or an emergency (for example, the event of war or a natural disaster). At such times, foreign currency reserves may remain a country's main source of financing in foreign currency.

The Monetary Committee, which is headed by the Governor and whose members include representatives from among the public, has the authority to establish **guidelines for the investment policy of the foreign exchange reserves** (Appendix 1), in consultation with the Minister of Finance, and to monitor the implementation of this policy. Management of the foreign exchange reserves by the Bank of Israel is based on the use of a benchmark as a reference point for measuring the performance of investment decisions and the risks taken by the portfolio manager.

A benchmark is a hypothetical portfolio composed of various investable assets based on known and fixed rules.

The **basic benchmark** represents a low-risk composition of investable assets that meets the goal of managing the reserves at a high level of liquidity. The currency composition of the basic benchmark is identical to the currency composition of the currency benchmark, and it includes short-duration (6 months) government bonds in the currency benchmark currencies.

The **currency benchmark** is a basket of currencies that is used, alongside the shekel, to measure the returns on the foreign exchange reserves. As the rate of return on the reserves is also measured in terms of the currency benchmark, its composition is considered risk free from the perspective of the reserves portfolio managers. The currency benchmark's composition is determined by the Monetary Committee on the basis of the principles detailed in the guidelines (Appendix 1), and will be reviewed at least once a year and revised when necessary, subject to the approval of the Monetary Committee. The currency benchmark comprises seven main reserve currencies, in the following proportions: 61 percent US dollar, 20 percent euro, 5 percent UK pound, 5 percent Japanese yen, 3.5 percent Australian dollar, 3.5 percent Canadian dollar, and 2 percent Chinese yuan.

The annual strategic asset allocation process determines the composition of the reserves portfolio for the coming year. The strategic composition of the reserves portfolio is determined so there is an expected return on the portfolio that complies with the desired risk level and the guidelines. The strategic asset allocation, based on forecasts of macroeconomic developments and trends in the global financial markets, determines the main features of the reserves portfolio, including the currency composition, the asset composition, and the target duration for each currency.

In the context of the strategic asset allocation for 2023, the Monetary Committee decided to increase the share of investment in equities from 21 percent to 23 percent, and to increase the share of investment in investment grade corporate bonds from 8 percent to 9 percent. The Committee also decided to reduce the share of investments in non-investment grade corporate bonds, from 2 percent to 1 percent (see Table 3). These decisions were based on the assessment that global economic activity will be moderate, inflation will moderate yet remain high in comparison to the major central banks' inflation targets, and monetary policy will continued to be restrictive. The Markets Department manages the reserves in compliance with the strategic allocation and in accordance with the degrees of freedom granted to it by the Committee.

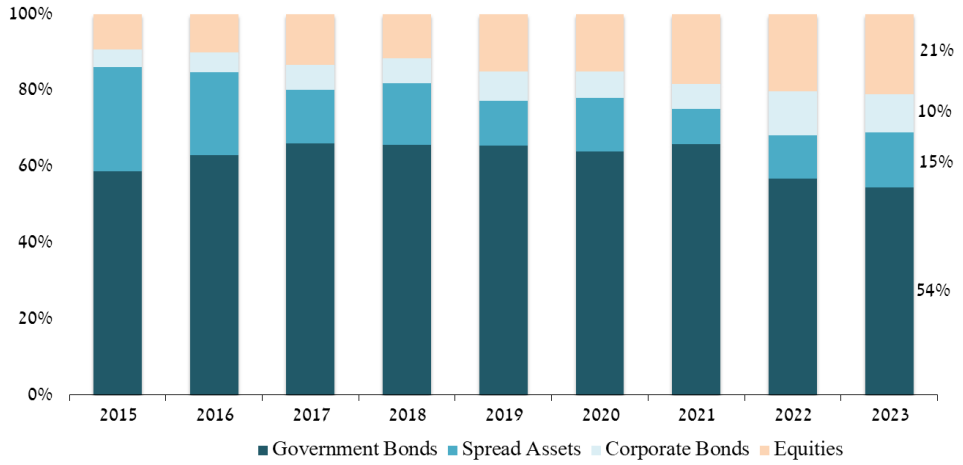
Table 3
Strategic asset allocation for 2022 and 2023

Asset allocation	**2022**	**2023**
Government Bonds	69%	67%
US	38.3%	36.9%
Europe	15.1%	14.8%
Others	15.6%	15.3%
Corporate Bonds IG	8%	9%
US	6.00%	6.75%
Europe	2.00%	2.25%
Corporate Bonds HY	2%	1%
US	1.50%	0.75%
Europe	0.50%	0.25%
Equities	21%	23%
Duration (Years)		
Government & Corporate Bonds	2.1	2.0
US	2.3	2.0
Europe	1.5	2.0
Others	2.3	2.0

Source: Bank of Israel

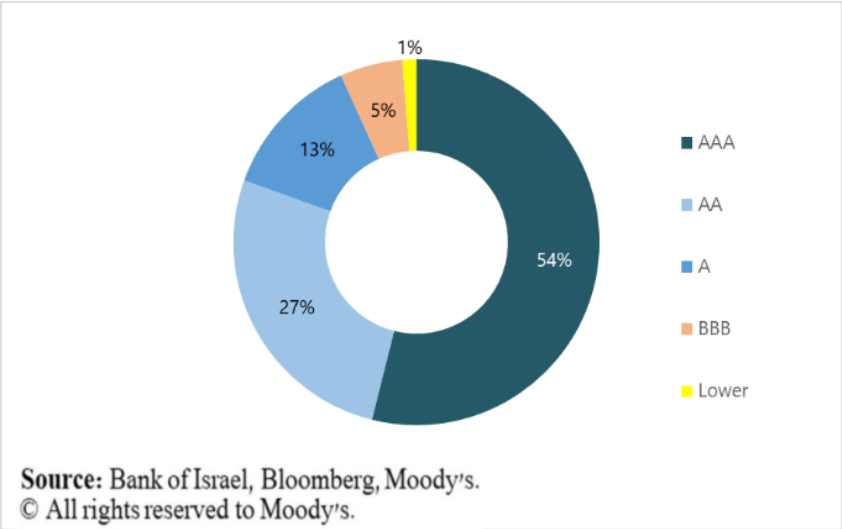
At the end of 2023, 54 percent of the reserves were invested in government-issued assets,[9] 21 percent in equities, 10 percent in corporate bonds,[10] and 15 percent in spread assets[11] (see Figure 4).

Figure 4
The Distribution of the Reserves Portfolio by Assets, 2015–23 (year-end)



Of the non-equity assets in the reserves portfolio, at the end of 2023, 54 percent were invested in AAA rated bonds, 27 percent were in the AA rating group, 13 percent in the A rating group, 5 percent in the BBB rating group, and the remaining 1 percent in lower rating group assets (see Figure 5).

Figure 5
The Distribution of the Reserves Portfolio (Excluding Equities), by Credit Rating, 2023
(year-end)



[9] Including deposits and current accounts in central banks that are subject to the same country risks as government bonds.
[10] Investment grade and below investment grade bonds.
[11] Debt instruments of multinational issuers and public sector issuers, and government bonds denominated in a currency other than the issuing country's local currency.

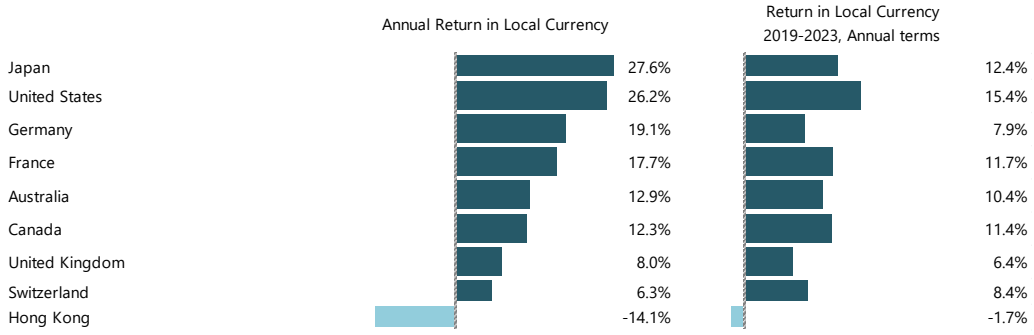
C. The Rate of Return on the Reserves

1. Return on the reserves portfolio in currency benchmark terms

In 2023, the rate of return on the reserves portfolio in currency benchmark terms was 8.3 percent. The basic benchmark return[12] was 4.2 percent, and the excess return[13] was 4.1 percent.

The positive rate of return was due to factors that included the **contribution of the equities component in the reserves portfolio**. The positive trend in the markets led to an annual increase in most equity indices in which the reserves are invested (see Figure 6—returns by country, in local currency).

Figure 6
Rates of Return[1] of the Main Equity Indices in the Reserves Portfolio, Annual and 5-Year Period (Annual terms)

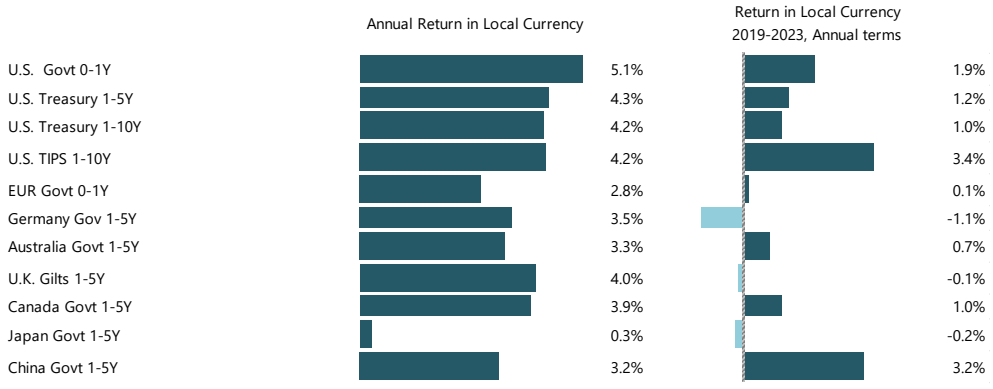


1 Includes dividends, and capital gains/losses.

Source: Bank Of Israel and Bloomberg

The positive rate of return was also recorded due to the **government bonds** component. Government bond yields fluctuated considerably over the year due to the uncertainty in the financial markets (see Figure 7- returns by country, in local currency).

Figure 7
Rates of Return[1] of the Main Government Bonds Indices in the Reserves Portfolio, Annual and 5-Year Period (Annual terms)



[1] Includes Interest.

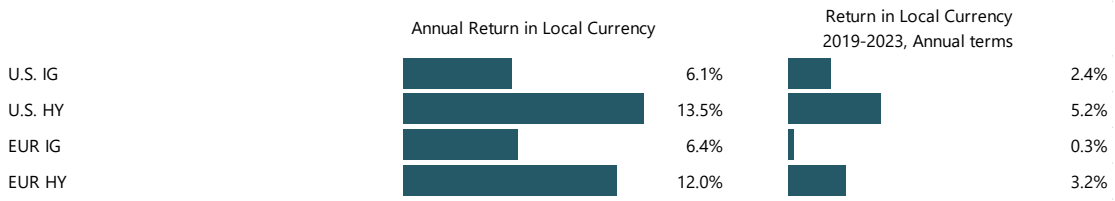
Source: Bank Of Israel and Bloomberg

[12] A low-risk benchmark that includes short-term government bonds. For additional information, see Chapter B above.

[13] For information on the excess return, see Chapter D below.

A positive rate of return was also recorded due to the contribution of **corporate bonds**. Corporate bond returns fluctuated over the year, mainly in the first half of the year, due to the developing crisis in the banking sector. For the year overall, the yield spread between these assets and government bonds recorded a decline, which led to capital gains on assets of this type (see Figure 8 - returns by country, in local currency).

Figure 8
Rates of Return[1] of the Main Corporate Bond Indices in the Reserves Portfolio, Annual and 5-Year Period (Annual terms)



[1] Includes Interest.
Source: Bank Of Israel and Bloomberg

The average multiyear return on risk assets, whose proportion in the reserves portfolio increased in recent years, is expected to be positive, which is reflected in the long-term average shown in Figure 6. Nonetheless, these assets are inherently volatile and losses can be expected in certain years, especially during a crisis.

Three-year measurement shows that the reserves portfolio's return is positive over time and is less volatile compared to the annual measurement. The three-year average rate of return on the reserves portfolio increased this year and reached the annual rate of 1.7 percent in terms of the currency benchmark (see Figure 9).

Figure 9
The Reserves Portfolio Return, Annual and 3-Year Period, 2015-23
(Annual, in terms of the currency benchmark**)**

Source: Bank of Israel.

2. Return on the reserves portfolio in shekel terms

The return on the reserves in shekel terms is the return in currency benchmark terms plus the gains or losses from the currency exposure against the shekel. The revised guidelines set a target for the return in shekel terms, such that it would, in the long term, at least cover the financing costs of holdings the reserves, and therefore the return on the reserves portfolio is also reported in shekel terms.

Due to the weakening of the shekel in 2023, the rate of return on the reserves portfolio in shekel terms was 12.4 percent, due to gains from the depreciation of the shekel against the majority of the currencies comprising the currency benchmark, a depreciation that totaled 3.8 percent. From a long-term perspective, the five-year average rate of return on the reserves portfolio in shekel terms is 1.8 percent, and the three-year average rate of return in shekel terms is 4.1 percent. Similar to the return on the reserves portfolio in terms of the currency benchmark, the shekel-based return is less volatile compared to the annual measurement as the measurement period is extended.

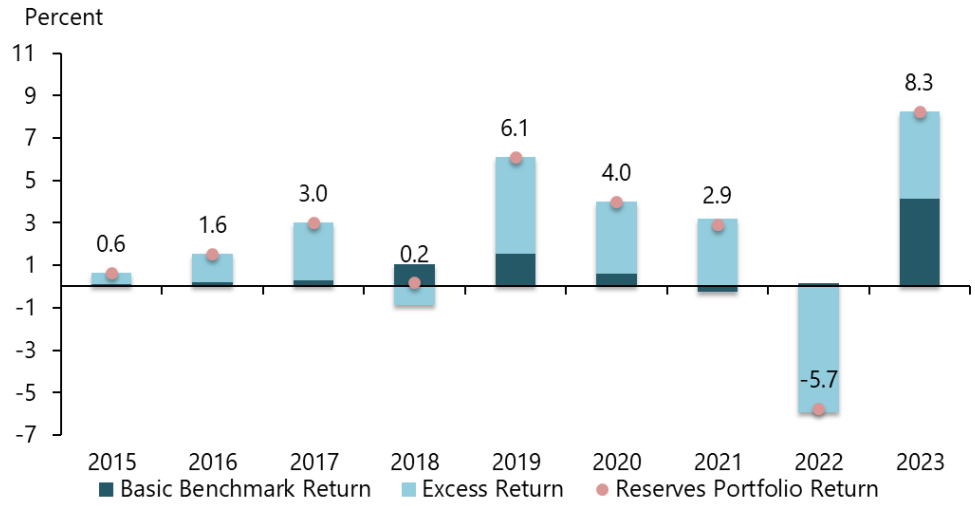
D. Excess Return over the Basic Benchmark

The excess return is mainly the outcome of the decisions to invest in additional countries and assets not included in the basic benchmark, or in different proportions, diversifications and durations compared to the basic benchmark. Excess return decisions may be classified according to the following risk components: duration and diversification, equities, corporate bonds, spread assets, and currency and asset exposures.

The excess return over the basic benchmark (hereinafter, "excess return") has had the greatest effect on the return on the reserves portfolio. Increasing the risk components in the portfolio increases the long-term expected return due to the **risk premium (**the return on risk assets in excess of the risk-free interest rate). At the same time, volatility is also expected to increase due to the higher volatility of the risk assets. Increased volatility is offset, to some extent, by the portfolio's diversification across asset types.

This year, the excess return had a contribution of 4.1 percent to the rate of return on the reserves portfolio in currency benchmark terms. Investment of the foreign exchange reserves in risk assets was initiated in 2012 through investment in equities, and continued through investments in investment-grade corporate bonds, which commenced at the end of 2014. In 2022, investments were also made in below-investment-grade (high yield) corporate bonds.

Figure 10
The Reserves Portfolio Return, the Basic Benchmark Return, and the Excess Return, 2015–23
(in terms of the currency benchmark)



Source: Bank of Israel.

Table 4
Breakdown of the Excess Return to its components, 2021–23
(Basis points, in terms of the currency benchmark, annual)

	2021	2022	2023
Equities	357	-305	358
Duration & Diversification	-57	-286	26
Currency and asset exposures	10	0	0
Corporate bonds	6	-7	26
Spread assets	5	6	1
Total	**321**	**-592**	**411**

Source: Bank of Israel.

Following are details of the contribution of the main Excess Return components:

1. Equities

Exposure to equities generated a positive contribution of 358 basis points.

The reserves' investment in equities commenced in 2012, and tracks local equity indexes in the investment markets. The investment is diversified in accordance with a broad equity index of advanced economies, based on the MSCI Developed Markets index. This year, the contribution of investment in equities was 358 basis points. This positive contribution was recorded after the majority of the equity markets in which the reserves are invested increased in some cases by double-digit figures, in annual terms.

The largest contribution was recorded in the US. The contribution is the outcome of the share of the investment in a given market and the change in the equity index in that market. As of the end of 2023, the major share of investment in equities was invested in US equities, approximately 14.6 percent, which generated a positive contribution of 281 basis points to the excess return due to the 26 percent increase in the US index.

2. Duration and diversification

Exposure to duration and diversification generated a positive contribution of 26 basis points.

The duration of investments in fixed-income is a measure of the level of the portfolio's interest rate risk. The contribution of duration and diversification is attributed to the decision to invest the reserves at a duration that differs from that of the basic benchmark[14], and the decision to disperse the assets differently along the curve compared with the basic benchmark. A portfolio with a longer duration usually benefits from higher current income at a higher interest rate compared to the basic benchmark, and generates capital gains when yields decline, but increases the portfolio's volatility and leads to capital losses when yields rise. Over the course of the year, the Monetary Committee decided to increase the portfolio duration due to the assessment that the cycle of interest rate hikes was coming to an end, and inflation was expected to moderate.

At the end of the year, the duration of the reserves portfolio is 2.4 years. The positive contribution was affected by several factors including the aforementioned changes in the duration of the reserves portfolio that were carried out during the year.

3. Corporate bonds

Exposure to corporate bonds generated a positive contribution of 26 basis points.

The investments in **investment-grade corporate bonds** are made relative to a well-known benchmark with broad coverage of dollar-denominated corporate bonds traded in the US and euro-denominated corporate bonds traded in Europe. In early 2023, the Monetary Committee increased the allocation to investment-grade corporate bonds to 9 percent of the reserves. The decline in the yield spread between these assets and government bonds resulted in a positive contribution of 18 basis points to the Excess Return.

The investment in **below-investment-grade corporate bonds** (**high-yield)** is made relative to a well-known benchmark with broad coverage of dollar-denominated corporate bonds traded in the US and euro-denominated corporate bonds traded in Europe. In early 2023, the Monetary Committee reduced the allocation to below-investment-grade corporate bonds to 1 percent of the reserves. The decline in the yield spread between these assets and government bonds resulted in a positive contribution of 8 basis points to the Excess Return.

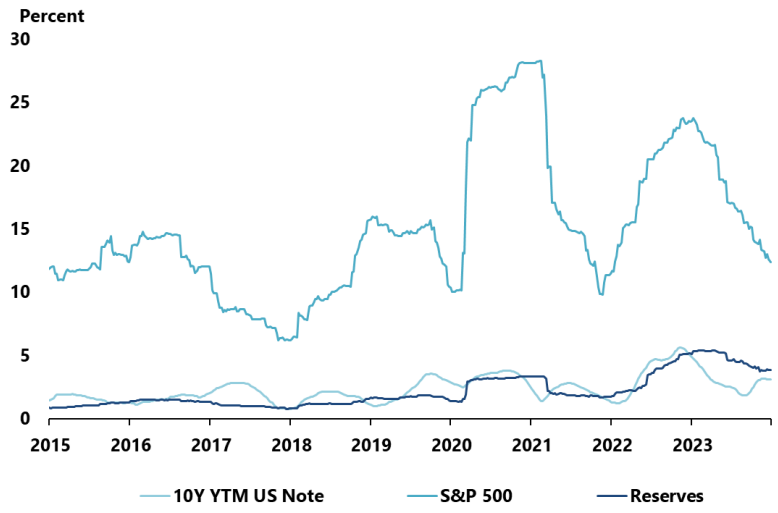
[14] A duration of six months.

E. Risk

The risk in the reserves portfolio moderated this year due to the reduced volatility in the equities markets, and as a result of the influence of the increase in the risk-free interest rate used as a cushion to absorb losses.

The standard deviation of the rate of return on the portfolio over a one-year period, which is a measure of financial-market volatility, moderated slightly this year to 3.8 percent (see Figure 11).

Figure 11
Standard Deviation[15] of the Reserves Portfolio, S&P 500 Index and 10-Year US Treasury Note, 2015–23



Source: Bank of Israel, Bloomberg.

The maximum risk level of the foreign exchange reserves portfolio (the risk profile) was determined by the Monetary Committee based on its assessment of the appropriate risk profile for holding the reserves, which is defined as the maximum level of loss on the reserves that the Committee Is willing to absorb and that does not impair the achievement of the aims in respect of which the reserves are held. The aim is to limit the foreign exchange reserves' exposure to various financial risks: price risk, credit risk, currency risk, and liquidity risk.

CVaRp (conditional value at risk at a p probability level) is a measure of market risk (price risk and currency risk) in terms of the expected loss on the reserves, given a specific period and probability (p). CVaRp is a forward-looking (ex-ante) measure that is affected by changes in the portfolio holdings and the volatility of the portfolio assets, but is based on past levels of volatility.

In its investment policy guidelines, the Monetary Committee sets the maximum risk level of the reserves: Given the worst 5 percent of possible investment outcomes, the average loss—the $CVaR_{5\%}$— would not exceed 900 basis points over a one-year horizon.

In addition to determining the maximum level of this risk, at the beginning of each year the Monetary Committee sets the risk level (in terms of the $CVaR_{5\%}$) used to determine the strategic asset allocation for that year, based on its forecast of macroeconomic and financial background conditions. The Committee set a risk level of 530 basis points for the allocation in 2023. The portfolio risk, in terms of $CVaR_{5\%}$, hovered around this level during the year, but did not exceed the maximum risk level defined in the guidelines (900 basis points).

[15] Weekly standard deviations of the return, in annual terms, 1-year moving average.

Appendices

Appendix 1: Foreign Exchange Reserves: Investment Policy Guidelines[16]

In effect from April 7, 2021

In accordance with Section 40(b) of the Bank of Israel Law, 5770-2010 (hereinafter, "the Law"), the Monetary Committee is to establish the guidelines for the investment policy of the foreign exchange reserves.

1. Basic guidelines derived from the goals of holding the reserves

The investment policy of the reserves portfolio is based on the main goal of achieving the Bank of Israel's objectives and proper fulfillment of its functions as they are detailed in the Bank of Israel Law. Subject to that, the investment policy is also based on the following goals:

a) Achieving a return in shekel terms that, in the long term, will cover at least the financing cost of holding the reserves[17];
b) Maximizing the holding rate of return in the medium term, in terms of the currency benchmark (see 3. below) and within the framework of the risk profile (see 4. below), subject to attaining goal (c) below;
c) Managing the reserves with a high level of liquidity: A large part of the reserves are to be invested in assets that can be liquidated rapidly at short notice and without negatively impacting their value. The precise level of liquidity is to be decreased to the extent that the ratio of the actual level of reserves relative to the adequate level is high (5(f) below).

2. The division of work between the Monetary Committee and the Markets Department

In implementing Section 40(b) of the Law, the Committee shall make a distinction between establishing the guidelines and periodic monitoring, and setting the detailed instructions for the day to day management of the portfolio.

The Monetary Committee will set the guidelines, in consultation with the Minister of Finance as established by law, will update the guidelines to the extent necessary, and will monitor the implementation of the investment policy by the Markets Department.

The Markets Department will implement the investment policy, within the framework of degrees of freedom which will be set periodically by the Monetary Committee, and will report to the Monetary Committee on a quarterly basis on the implementation of the policy: developments in international markets and their impact on the management of the reserves, the investment decisions reached by the Department, the portfolio's rate of return, and the financial and other risks to which the portfolio is exposed.

The Markets Department will advise the Monetary Committee on fulfilling its functions, through position papers and suggestions for discussion in the Committee.

The Monetary Committee will approve and update as needed the division of authorities regarding the investment policy of the foreign exchange reserves.

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[16] The characteristics of the reserves portfolio are reported to the public in an annual report published on the Bank of Israel website.

[17] The financing cost of holding the reserves is the gap between the cost of raising the capital in shekels required for holding the reserves and the return of the foreign exchange reserves in terms of the currency benchmark with the addition of the gain or loss from the currency exposure vis-à-vis the shekel.

3. The measurement of the holding rate of return on the foreign exchange reserves, the currency benchmark and the principles for its determination

The holding rate of return on the reserves shall be measured and reported in Monetary Committee reports in terms of the currency benchmark and in shekel terms. The currency benchmark is a basket of currencies that will be used, in addition to the shekel, for measuring the rate of return on the foreign exchange reserves. As the rate of return on the foreign exchange reserves will also be measured in terms of the currency benchmark, its composition will be defined as the risk-free currency composition for the reserves portfolio managers.

The currency benchmark will be set by the Committee based on the following principles:

(a) Diversification: The currency diversification of the currency benchmark contributes to reducing exchange rate risk vis-à-vis the shekel in the Bank's balance sheet and encourages investment diversification;

(b) Stability: The principle of stability is important both for asset allocation as well as for currency allocation. Given that the reserves are held for the long term, frequent or sharp changes in the currency weights in the benchmark currency, which will lead as well to changes in the weight of the assets in those currencies, are liable to lead to a loss in the long term. Therefore, the stability of the composition of the currency benchmark should be maintained and frequent or sharp changes in it should be avoided;

(c) The currency benchmark shall only include reserve currencies: Due to the importance of the goals of liquidity and appropriate return, the currency benchmark will be made up of currencies that are recognized around the world as reserve currencies;

(d) The currencies that will be included in the currency benchmark will be those of countries in which there is a range of asset markets, with high liquidity;

(e) In order to achieve a return that covers, in the long term, the financing cost of holding the reserves, in choosing the currency benchmark composition the Committee will take into account the volatility of the reserves' long-term return in shekel terms.

The composition of the currency benchmark shall be examined by the Monetary Committee based on the recommendation of the Markets Department, in accordance with changes in global markets, at the end of each year or if there are material changes in said circumstances.

4. The risk profile

The risk profile determines the maximum level of risk that the Monetary Committee is willing to accept in order to achieve the goals of holding the reserves. In establishing the risk profile, scenario analysis and a range of analytical tools to measure risk, such as VaR, CVaR, and others should be used.

The risk profile will be set so that given the worst 5 percent of outcomes, the average loss will not be greater than 900 basis points over a 1-year horizon (see 3. above). This risk level was set with the goal of limiting risk in the short term and increasing the probability of complying with the target of covering the financing cost in the long term.

The risk level will be set at least once a year by the Monetary Committee in accordance with background conditions.

5. The rules for managing the financial risks of the reserves

The rules for managing the financial risks to which the reserves are exposed, and their asset allocation, which will be set in terms of the currency benchmark, are to be determined in accordance with the goals of the investment policy of the reserves (Section 1 above) and subject to the risk profile set by the Monetary Committee (Section 4). The asset allocation of the foreign exchange reserves in terms of the currency benchmark will be approved at least once a year by the Monetary Committee.

a) The types of assets approved for use in managing the reserves are:

1. Bonds (including bonds with fixed interest, with variable interest, and CPI-indexed bonds)
2. Mortgage-backed securities (MBS) and asset-backed securities (ABS), a maximum of 6 percent of total reserves
3. Tradable Certificates of Deposit (CDs)
4. Fixed term deposits
5. Commercial Paper (CP) issued by governments or with the full and direct guarantee of governments, or by a PSE (Public Sector Entity) or by multinational institutions
6. Equities, a maximum of 27 percent of total reserves
7. Derivatives whose underlying asset is permitted for investment. It should be clarified that the constraints in the guidelines regarding any permitted investment apply as well to investment in derivatives on the same asset as noted in this section.
8. Cash.

b) Management against a benchmark

Control over the financial risk of the reserves is anchored in their management against a system of benchmarks. The rules for managing the financial risks of the reserves generate the currency allocation of the benchmarks, the features of their price risk (such as duration) in each currency, and the asset types included in it. The investment returns of the portfolio managers are measured against these benchmarks.

c) Currency risk:

The currency exposure of the reserves is set by:

1) The composition of the currency benchmark (Section 3 above).
2) Strategic currency exposures relative to the composition of the currency benchmark: The extent of the strategic currency exposures is limited to 10 percent of total reserves. The composition and amounts of the exposures will be set by the Monetary Committee.
3) Short and medium term currency exposures relative to the composition of the currency benchmark: Their amount is limited to 2 percent of the total reserves. The composition and amounts of the exposures will be set by the Markets Department.

d) Market risk:

In order to limit the market risk to which the foreign exchange reserves are exposed the Monetary Committee set:

1. The risk profile of the foreign exchange reserves in accordance with Section 4.

2. Total combined investment in equities (Section 6.a.5) and in corporate bonds (Section 4.e.5) shall not exceed 35 percent of the total reserves.

3. A share of at least 45 percent of the total reserves is to be invested in cash, government bonds, or in deposits at central banks.

e) Credit risk:

In order to limit the credit risk inherent in day-to-day management of the reserves portfolio, the Monetary Committee set the following rules:

1. Investment in the currency, or denominated in the currency, of countries[18] is permitted in countries whose generic credit rating[19] category is at least BBB. Investment in currencies, or denominated in currencies, of countries whose generic credit rating category is BBB is limited to 1 percent of the total reserves and requires the specific authorization of the Monetary Committee.

2. Investment is permitted in bonds and commercial paper (CP) issued by governments, or with full and direct government guarantees, if their generic credit rating category is at least BBB. Investment in the BBB generic rating category is limited to 1 percent of total reserves, and requires the specific authorization of the Monetary Committee.

3. Investment in bonds and commercial paper (CP) of public sector entities (PSE) is limited to a maximum of 15 percent of total reserves, and only in bonds or CP whose generic credit rating category is at least A.

4. Investment in corporate bonds is limited to 15 percent of total reserves. Investment in corporate bonds for which their credit rating is below BBB- is permitted only up to a share of 5 percent of the total reserves.

5. Investment in bonds and CP of multinational financial institutions and deposits with them is limited to 15 percent of the reserves.

6. The total exposure of the reserves to the banking system and brokers should not exceed 10 percent of total reserves.

7. Activity is permitted with banks and brokers whose generic credit rating category is at least BBB. Activity with banks and brokers whose generic credit rating category is BBB is limited to DVP[20] (delivery versus payment) alone.

8. If a bank or a broker does not have a credit rating, DVP activity is permitted with them only upon receipt of a full and direct guarantee letter from its parent company and if its generic credit rating category is at least BBB.

f) *Liquidity risk:*

In order to provide an immediate response to the financial problems that arise during emergencies, an appropriate portion of the reserves should be invested in assets that can be

[18] Country—in this document, foreign countries.
[19] **C**redit rating: The credit rating of at least one of the international credit rating agencies—IBCA International Rating Agency, Moody's Investor Services, or Standard & Poor's Corporation, or another rating company based on the Bank of Israel internal rating—in accordance with the approval of the Monetary Committee.
[20] DVP activity is when the payment and the asset are transferred between the sides at the same time and thus the credit risk in such activity is essentially zero.

liquidated in large amounts at short notice and without negatively impacting their realization value.

1. The assets in which the reserves are invested are classified into 3 levels of liquidity:
    a. Highly liquid assets that can be realized within a month without negatively impacting their realization value.
    b. Assets that can be realized within three months without negatively impacting their realization value.
    c. Low-liquidity assets that can be realized in a period exceeding three months without negatively impacting their realization value.

2. The Monetary Committee is to set a minimum level of investment for highly liquid assets, and set a maximum level for low-liquidity assets. Classification of assets into the various liquidity levels can change due to changes in market conditions.

g) Active management and compliance rules:

The reserves portfolio is actively managed according to the investment policy and within the framework of limited and well defined degrees of freedom that are to be set by the Monetary Committee.

6. The nonfinancial risks inherent in managing the reserves

In determining the investment policy for the reserves, the exposure of the Bank and of the portfolio to the various nonfinancial risks inherent in investing the reserves—reputation risk, legal risk, political risk, operational risk, and so forth—should be taken into account as well.

7. Measuring returns and reporting them

The reserves are managed with transparency. The Markets Department shall report periodically to the Monetary Committee (see 2 above) on the amount of the reserves and changes in them, the currency benchmark composition, changes in currency exposures, the asset allocation, portfolio duration, country exposure, credit risk, liquidity risk, and the return on the portfolio and its various components in terms of the currency benchmark and in shekel terms. The report should include an analysis of the current developments in the financial markets and their effect on the management of the reserves.

8. Handling passive breaches

The Monetary Committee will set the rules for handling passive breaches from the investment policy guidelines.

Appendix 2: Glossary

	Term	Explanation
1	Active management	An investment management style in which the portfolio manager tries to achieve a return greater than that of a benchmark or market index by deciding to buy or sell securities or by various investment strategies .In this report, the term describes the contributions of decisions to invest in additional assets and countries that are not included in the basic benchmark.
2	Basic benchmark (currency benchmark composition benchmark)	Represents an asset composition that is low-risk and investable, which meets the reserves' investment policy objective of managing them with a high degree of liquidity. Its currency composition is identical to the currency benchmark composition. It includes short-term government bonds in the currency benchmark currencies.
3	Basis point	0.01 percent; one ten-thousandth, or one hundredth of a percentage point.
4	Below investment-grade rating	A credit rating below BBB- (at Fitch and Standard and Poor's) or below Baa3 (Moody's). Known as High Yield (HY).
5	Benchmark portfolio	A hypothetical investable portfolio constructed according to agreed-upon rules, which is used as a yardstick for evaluating the performance of an investment portfolio manager and as an anchor for the portfolio risk management.
6	CVaRp (Conditional Value at Risk)	The risk index that is used to quantify the level of risk, in terms of the expected loss on the investment portfolio in a specific time and given a certain probability (p). In the guidelines, the Monetary Committee set the maximum level of risk for the reserves, so that given the worst five percent of possible outcomes, the average loss—the $CVaR_{5\%}$—would not be greater than 900 basis points over a one-year horizon.
7	Credit rating	The rating represents a rating agency's assessment of the ability and readiness of the issuer (corporation or government) to meet its required payments fully and on time. The rating represents the relative probability of the issuer to reach default relative to other rated issuers. The major international rating agencies are Fitch, Moody's Investor Services, and Standard and Poor's Corporation.
8	Credit risk	The exposure to the possibility of loss due to failure of timely payment on debt, whether of an issuer, a financial institution or a country, or as a result of changes in the market's assessment of the probability of such an event.
9	Currency benchmark	A currency basket used for measuring the returns on the foreign exchange reserves. See Chapter B, Section 3 above.
10	Currency risk	The exposure to the possibility of a loss as a result of a change in exchange rates.
11	Duration	The sensitivity of a small change in the value of a debt instrument, expressed as a percentage of its original value, to the change in the yield to maturity (with the opposite sign) of the instrument. Measured in units of time.
12	Excess return	The difference between the return on the reserves portfolio and the return on the basic benchmark, which measures the decisions to invest in additional assets and countries that are not included in the

		basic benchmark. Also termed "contribution of active management".
13	Foreign exchange reserves	Financial assets that are issued by foreign entities and which are denominated in a foreign currency (including gold). They are exclusively owned and managed by a central bank and are available to it for carrying out its statutory functions without delay.
14	Information Ratio	The Information Ratio measures the excess return of the portfolio manager relative to the risk taken, and indicates the degree of consistency in the manager's ability to generate excess returns on additional risk. It is calculated as the ratio of the excess return to its standard deviation.
15	Interest rate risk	The exposure to the possibility of a loss as a result of an increase in yields to maturity.
16	Investment-grade rating	A credit rating in the range of AAA to BBB- (at Fitch and Standard and Poor's) or between Aaa and Baa3 (Moody's). Known as IG.
17	Investment policy guidelines	The investment policy guidelines include details on the assets, risk profile, and quantitative and qualitative limitations on the types of assets permitted for investment. It should be emphasized that the limitations on the various asset types are not a recommendation for the actual share of investment in those asset types.
18	Liquidity risk	The exposure to a potential loss resulting from the compulsory liquidation of assets in a short period of time and at a larger volume than what the market is able to handle without a negative impact on the market price and/or the buy/sell spread.
19	Mark-to-market	The change in reserves in one currency terms attributed to realized profits from interest and capital gains income, and to the change in value from asset price differentials and from exchange rate differentials vis-à-vis this currency of the currencies in which the reserves are invested. In this report, the currency is dollar. Also termed price differential.
20	Market risk	The exposure to a potential loss resulting from changes in asset prices. The market risk of bonds combines the interest rate risk and credit risk, if there is any.
21	Monetary Committee	The Monetary Committee was established in accordance with the Bank of Israel Law, 5770-2010. The Committee consists of six members-three from the Bank and three representatives from among the public. The Governor of the Bank of Israel serves as chairperson of the Committee. The Monetary Committee sets the policy for achieving the Bank's objectives, including monetary policy, and decides on the activities that the Bank must take to achieve them. The Committee is charged with outlining the guidelines for the reserves' investment policy, in consultation with the Minister of Finance, and with monitoring the implementation of such policy. The Committee also approves and updates the division of authorities with regard to the reserves' investment policy, between it and the Markets Department.
22	Portfolio duration	The average duration of a portfolio of fixed-income instruments (where the duration of each asset is weighted according to its share of the portfolio); a widely accepted measure used to estimate the portfolio's interest rate risk.
23	Risk assets	Assets featuring higher risk than government bonds. In this report, the term refers to equities and corporate bonds.
24	Risk-free portfolio	A portfolio in which the investor is not subject to gains or losses.
25	Risk premium	The excess return of a risk asset over the risk-free interest rate.

26	Spread asset	An asset with a yield to maturity that is greater than that of a government bond with a similar term to maturity, due to differences in exposure to credit risk, liquidity risk, operational factors, etc. The yield spread of this asset is measured as the difference between its yield to maturity and that of a government bond with a similar term to maturity. Spread assets include also government bonds denominated in a currency which is not the local currency of the country of issuance.
27	Standard deviation	A statistical measure used to quantify the dispersion of a distribution around its expected value. Often used as a measure to quantify the exposure to uncertainty. See also volatility.
28	Volatility	The standard deviation (see definition in this glossary) of the distribution of rates of return of a financial asset, such as a security or portfolio, over a defined time (a day, a week, etc.).
29	Yield curve	A line that plots the yields to maturity of bonds with similar characteristics (such as the bonds of a particular country in local currency) but different maturities.
30	Yield spread	The difference between yields to maturity of two debt instruments.
31	Yield to maturity	The rate of return, in annual terms, which would be obtained from holding a debt instrument until its final redemption, if it was possible to invest all of its cash flows at the same rate of return until that date. Synonymous term: internal rate of return.