Bank of Israel

Market Operations Department

Investment of the

Foreign Exchange

Reserves

Annual Report 2010

Contents

TABLES

FIGURES

MAIN DEVELOPMENTS[1]

- Israel's foreign exchange reserves grew by $10.2 billion in 2010, compared with an increase of about $17 billion in the previous year, and at the end of the year stood at $69.3 billion.[2] As was the case in the previous two years, the increase in the reserves this year was due mainly to purchases of foreign currency by the Bank of Israel.
- The upward trend of foreign exchange reserves in developed and emerging market countries continued in 2010, in line with the trend in Israel, as the global financial crisis, which began in 2008, underscored the importance of maintaining an appropriately high level of reserves.
- The rise in the level of Israel's foreign exchange reserves in 2010 increased the ratios between the reserves and various aggregates of the economy, which are customarily used to assess the adequacy of the level of the reserves. Increasing these ratios serves the objectives that the new Bank of Israel Law stipulates for the Bank, and assists it in fulfilling its functions, as doing so strengthens the economy's resilience to crises and improves Israel's international financial standing.
- The holding-period rate of return on the reserves in terms of the numeraire was 1.2 percent in 2010, compared with 3.8 percent on average in the years 2001–10. In shekel terms the holding-period rate of return of the reserves portfolio was negative, at –7.1 percent, due to the strengthening of the shekel against the dollar and the euro during the year. The number of currencies in the numeraire was increased in order to obtain better diversification and to reduce the possible consequences of the financial crisis for the reserves in extreme scenarios.
- This rate of return in numeraire terms was largely affected by two factors: (a) the low interest rates and yields to maturity in the financial markets of the developed countries; and (b) the average duration of the reserves, which was shorter than in most of the previous years. The decision to shorten the average duration was taken in light of the high risk of receiving a negative holding period return which would be taken on by holding the reserves at a longer duration when interest rates and yields to maturity are so low.
- The active-management contribution in 2010 was 10 basis points—compared with an average contribution of 20 basis point in the past decade, but similar to the decade average if the exceptionally high contribution in 2009 is excluded. The main component of the active-management contribution in 2010 was the excess

[1] The Market Operations Department has been reporting to the public on the investment of the reserves since 2000. The reports for previous years, some of which have been published as chapters in the Bank of Israel's reports, can be found at http://www.bankisrael.org.il/publheb/publhslf.php?misg_id=27 on the Bank of Israel's website. Explanations and definitions of terms used in the current report appear in the previous reports, which also discuss various aspects of managing foreign exchange reserves that are not discussed in this report.

[2] The level of reserves throughout this survey does not include the IMF allocation to Israel of Special Drawing Rights (SDRs) or the balance of Israel's Reserve Tranche in the IMF. At the end of December 2010 these two totaled $1.6 billion, compared with $1.5 billion at the end of 2009. For a broader discussion of this issue see the Bank of Israel Financial Statements for 2010.

yield from asset selection in the portfolio, particularly from short-term spread assets.

- The background conditions under which the foreign exchange reserves were managed this year were especially challenging. The global financial crisis entered a new phase in which the concern of investors in the international markets focused on uncertainty regarding the debt-service capability of some EU member countries. While dealing with the implications of the continuing crisis for the reserves portfolio, the Market Operations Department also dealt with its effects on the domestic financial markets, as well as with advancing several special projects, some of which are directly related to managing the reserves, as will be detailed below.
- In March 2010 the Knesset passed the new Bank of Israel Law, which went into effect on June 1, 2010. The new Law defines the Bank's objectives and functions, one of which is holding and managing Israel's foreign exchange reserves. The Law changes the framework in which the major decisions are taken in the Bank, including decisions on the desired long-term level of the reserves and their investment policy. The Bank's new Monetary Committee, to be appointed in accordance with the Law, will play a central role in this process. As part of the Bank's reporting responsibilities, the Law defines the periodic reports on the level of the reserves and their management that the Bank must present to the Minister of Finance, the government, the Knesset Finance Committee, and the public.
- The new Law has removed the legal obstacles that in the past prevented the Bank from investing the reserves in certain financial assets which it viewed as desirable investment channels in terms of economic worth and risk management. Since the new Law became effective, the Bank has been studying how to identify and choose the appropriate ways of using the additional degrees of freedom that the new Law grants it in selecting assets for investment, including the possibility of investing in the global equity markets.
- In addition to managing the reserves and examining the option of broadening the range of assets in which the reserves could be invested, the Market Operations Department of the Bank of Israel advanced several special projects in 2010: (a) implementation of a computerized Integrated Treasury Management System, which is expected to enhance and streamline the management of the reserves; (b) establishment of a Bank of Israel Representative Office in New York; (c) preparations to meet the requirements of the new Bank of Israel Law, broaden the areas of activity as permitted by the new Law, and produce the reports as defined in the Law; and (d) completion of the organizational restructuring process with the addition of the state loans management function to the Department.

A. THE FOREIGN EXCHANGE RESERVES

1. The framework for holding and managing the reserves

According to the **Bank of Israel Law, 5770–2010**, one of the Bank's functions is to hold the state's foreign exchange reserves and manage them.[3] The Law enumerates the financial actions that the Bank is allowed to take in order to fulfill its functions, including managing the reserves. According to the Law, the Monetary Committee,[4] with the approval of the Minister of Finance, is entitled to change the principles according to which the Governor decides on the preferred level of the foreign exchange reserves over the long term. The Committee, in consultation with the Minister of Finance, is the body that will chart the guidelines for the investment policy of the foreign exchange reserves. As part of the Bank's reporting responsibility, the Law defines the types of periodic reports on the level of the reserves and their management that the Bank must present to the Minister of Finance, the government, the Knesset Finance Committee, and the public.

The management of the financial risk of the reserves in its various aspects is the focus of the investment policy. The principle financial risks are currency risk, price risk, credit risk, liquidity risk, and management-quality risk. The control of most of these is anchored in the management of the reserves against a benchmark, and in a system of compliance rules. The benchmark is a hypothetical portfolio, built according to rules determined in advance, in which the numeraire determines its currency composition. The asset structure of the benchmark is determined according to the preferred levels of price risk and liquidity risk for each of the currencies in the portfolio. The system of compliance rules restricts the extent of the gaps between the characteristics of the actual portfolio and the characteristics of the benchmark. The credit risk of the reserves is controlled by a separate system of rules and quotas. In addition to these, the investment policy deals with non-financial risks, such as operational risk and legal risk.

[3] Until the Bank of Israel Law, 5770–2010 came into force on June1, the reserves were managed in accord with the Bank of Israel Law, 5714–1954 and the legal interpretations of it accumulated over the years, and in accord with the investment policy decided by the Bank's Governor.

[4] Until the establishment of the Monetary Committee, all the authority granted to the Committee by the Law is in the hands of the Governor of the Bank.

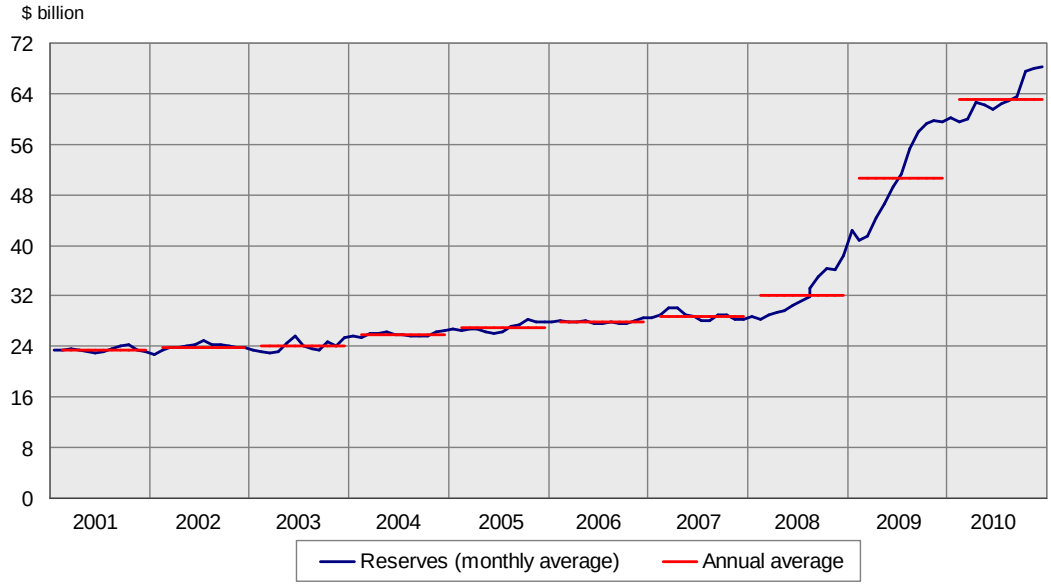
Enactment of the new Bank of Israel Law removed the legal obstacles that had in the past prevented the investment of the reserves in certain financial assets which the Bank considered to be desirable investment channels, from the viewpoint of their liquidity and their risk-return profile. In 2010, for the first time, the Bank utilized the additional degrees of freedom granted by the new Law, to invest part of its reserves in the bonds of public-sector entities in developed countries, which it had not been possible to invest in while the previous law was in force. At the same time the Bank conducted analysis and planning, in advance of a possible, more significant broadening of the range of assets in which the reserves will be invested in the coming years, including the possibility of investing in the global equity markets.

2. Changes in the level of the reserves in 2010

In 2010 Israel's foreign exchange reserves in dollar terms grew by $10.2 billion—from $59.1 billion at the end of 2009 to $69.3 billion at the end of 2010 (Figure 1). In shekel terms the level of the reserves grew by NIS 23 billion, from NIS 223 billion at the end of 2009 to NIS 246 billion at the end of 2010.

Figure 1

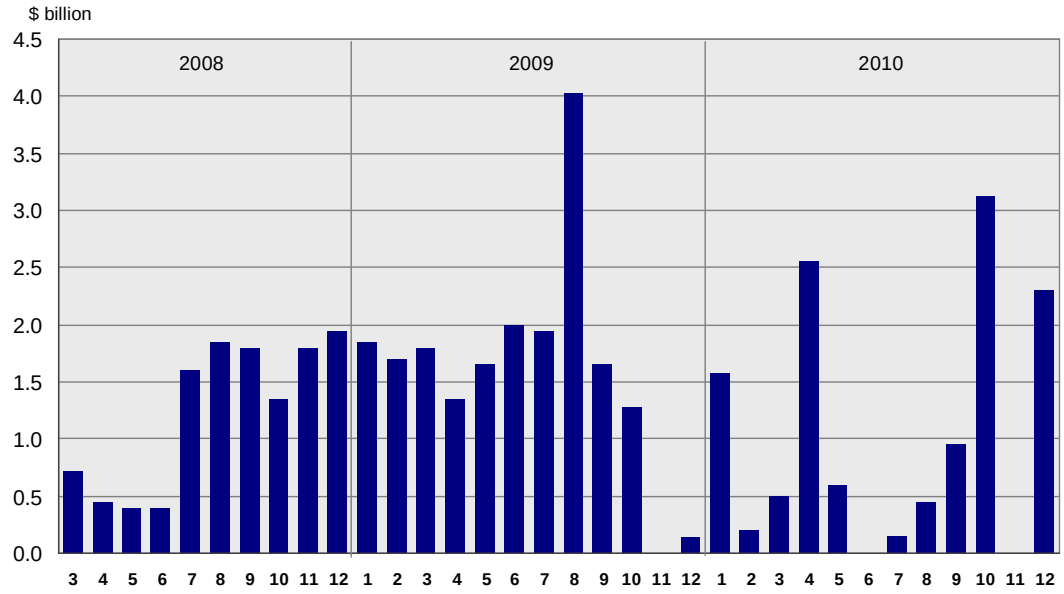
Foreign Exchange Reserves, 2001–10



The level of the reserves reflects purchases of dollars made in the framework of the Bank's policy since August 2009–to act in the foreign exchange market in the event of unusual movements in the exchange rate which are inconsistent with underlying economic conditions, or when conditions in the foreign exchange market are disorderly. In 2010 the Bank purchased $11.9 billion, further to the $31.7 billion purchased in the years 2008–09.[5] This purchase stems in part from the need to reach the long-term preferred level of reserves (Figure 2).[6]

Figure 2

Bank of Israel Purchases of Foreign Exchange, March 2008–December 2010



Other factors also contributed to changes in the level of the reserves in 2010. The change in the reserves attributed to interest income, capital gains, and exchange rate differentials reduced their value in dollar terms by $0.8 billion. This fall was mainly due to the weakening of the euro against the dollar during the year, which was partly offset by income from interest and capital gains, and by the strengthening of other currencies in the numeraire vis-à-vis the dollar. Withdrawals by the private sector of $0.2 billion, and by the government of $0.7 billion, also reduced the foreign exchange reserves during the year.

[5] Between March 2008 and August 2009 a program was instituted of purchasing fixed amounts of foreign exchange. Initially the program included the daily purchase of $25 million in the foreign exchange market, and in July 2008 the purchases were increased to $100 million a day.
[6] See Section A.3: The adequacy of the level of the reserves.

3. The adequacy of the level of the reserves

Holding an adequate level of foreign exchange reserves serves the objectives that the Law stipulates for the Bank and assists it in fulfilling its functions. The reserves are a source of foreign exchange liquidity that the Bank can use as needed, and the very fact of holding them confers benefits to the economy—reducing the probability of a crisis in the Israeli foreign exchange market, and improving Israel's international financial standing—benefits that also support the achievement of the Bank's objectives and the fulfillment of its functions. The preferred level of the reserves and the principles according to which the Governor sets it, as well as the investment policy of the reserves and the guidelines on which the policy is based, are derived from the possible uses of the reserves and the benefits derived from holding them.

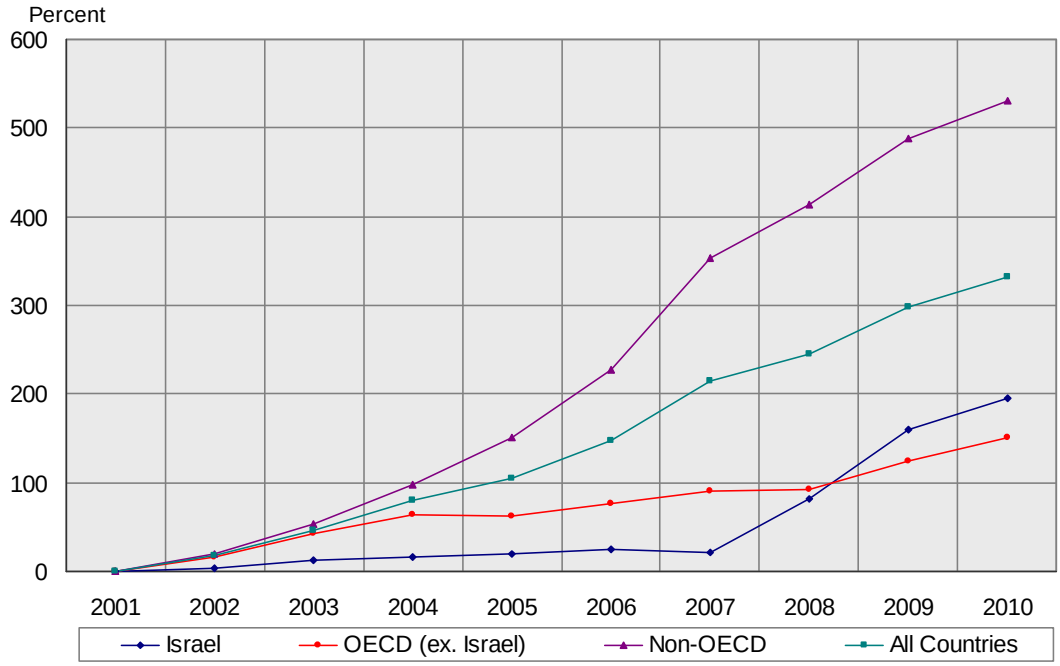
The Bank can use the reserves for: (1) sale of foreign currency to the government as requested—for example, for service of Israel's foreign exchange debts, or for financing imports in an emergency—as a part of the Bank's function as the government's banker; (2) any use that contributes to supporting the stability and orderly activity of the financial system, one of the Bank's objectives in the new Law; (3) managing monetary policy and supporting the orderly activity of the foreign exchange market in Israel, functions of the Bank of Israel according to the Law.

One of the lessons of the global financial crisis that broke out in 2008 is the importance of holding an adequate level of foreign exchange reserves, and the contribution of such reserves to the financial resilience of economies in a crisis, when liquidity in the markets dries up. From 2008–10, a period in which Israel increased its foreign exchange reserves by 143 percent, almost all the OECD countries increased their foreign exchange reserves—most quite considerably, and some at an even higher rate than Israel. For example, from 2008–10 the euro bloc (including the ECB) increased its overall reserves by 39 percent, Sweden and Australia each increased theirs by about 60 percent, Hungary by 92 percent, Denmark by 116 percent, and Switzerland by 389 percent. Two considerations seem to have motivated developed countries to increase their reserves: (1) the need to hold an appropriate level of reserves; and (2) intervention in the foreign exchange market as part of the central bank's macroeconomic policy.

An examination of the change in Israel's foreign exchange reserves since 2001 shows that most of the growth in the reserves took place in the past three years. At the same time, the cumulative growth rate of the reserves over the whole period does not significantly exceed that of the OECD group of countries (excluding Israel), and is substantially lower than the growth rate of the reserves of all countries world wide during this period (Figure 3).

Figure 3

Changes in the Foreign Exchange Reserves in Various Groups of Countries Worldwide and in Israel, 2001–10



Source: International Monetary Fund and Bank of Israel calculations

Even though the level of reserves grew moderately in the years 2001–07, the period was distinguished by the fact that the ratios of Israel's reserves to various aggregates in the economy—ratios that are customarily used abroad to assess the adequacy of a country's level of reserves—either remained steady or declined. As opposed to this, in the years 2008–09, during which time the size of the reserves grew substantially, these ratios grew significantly as well. In 2010 the growth trend of all the ratios of the reserves to aggregates continued, reaching record levels compared with previous years (Table 1), but the growth rate in 2010 was more moderate than in 2009. Furthermore, while the average level of reserves grew from 2001 to 2010 by 169 percent, and the

per capita level of reserves grew by 129 percent, the ratios of the reserves to other aggregates in this period grew at more moderate rates—between 28 and 80 percent.

Table 1
The Level of the Reserves Relative to Other Aggregates, 2001-2010

	Average level of reserves ($ million)	Resrves per capita ($)	Imports (months)	Gross external debt	Short-term external debt	Unindexed local-currency assets (M2)	Gross domestic product
				Reserves as percent of aggregate			
2001	23,495	3,610	5.4	35	79	43	19
2002	23,948	3,611	5.8	34	76	48	21
2003	23,999	3,556	5.5	32	80	46	20
2004	25,908	3,771	5.2	33	82	47	20
2005	27,020	3,865	5.0	35	82	46	20
2006	27,884	3,918	4.7	32	75	45	19
2007	28,865	3,985	4.1	32	72	37	17
2008	32,189	4,343	4.0	37	82	33	16
2009	50,645	6,706	8.3	55	124	48	26
2010	63,171	8,282	9.1	63	134	55	30
Dec-10	68,170	8,856	9.8	68	144	56	31

SOURCE: Bank of Israel, The Central Bureau of Statistics, and returns from the banks.

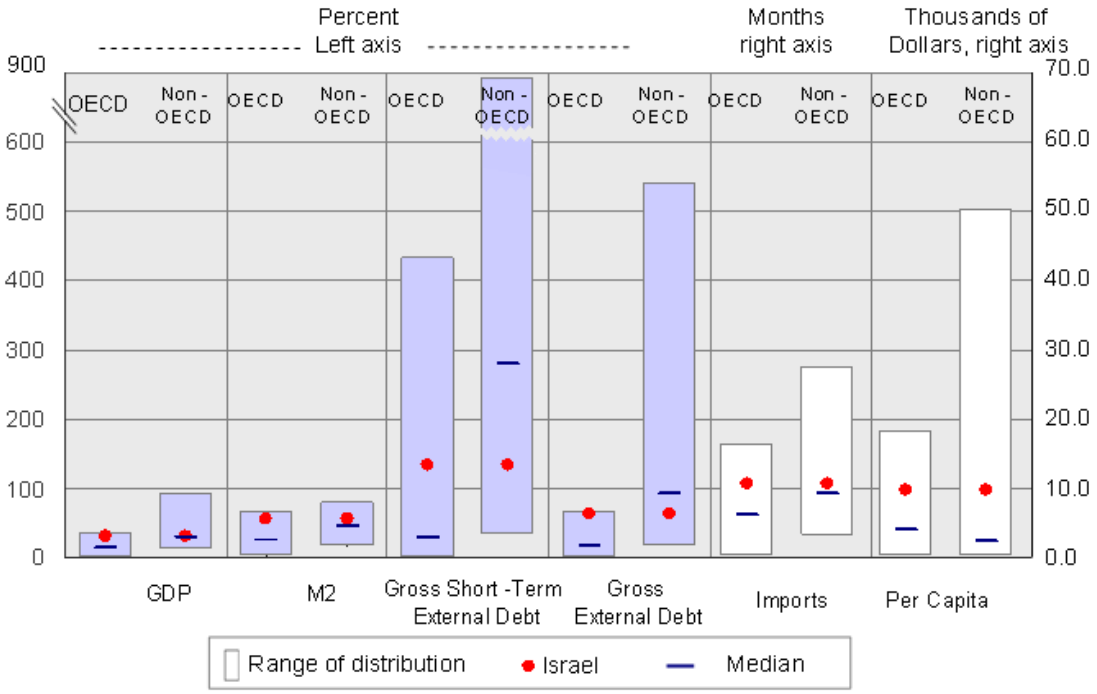
Figure 4 compares the ratios of the foreign exchange reserves to the aggregates appearing in Table 1 for Israel with the range of these ratios for two groups of countries: The first group, indicated as OECD, comprises all the countries that are members of this organization, except for Israel, the United States, Japan, the eurozone countries and Turkey—in all 15 countries. The second group, indicated as non-OECD countries, consists of 14 countries that are not members of this organization, and are usually categorized as emerging markets with an investment-grade credit rating (BBB– and above).[7] The figure shows that Israel's level of reserves, relative to these aggregates, is within the upper half, or very close to the upper boundary, of the range of countries in the OECD group. In most cases, Israel is also in the upper half of the second group—the non-OECD countries—and is not far from the median of the group. A striking exception, as to Israel's position in the second group, is the ratio of its reserves to the economy's short-term external debt. The figure for Israel, 134 percent, is substantially lower than the median of the second group of countries, 280 percent. Note that this ratio enjoys unique status as an accepted criterion for

[7] The countries in the OECD group are: Australia, Canada, Chile, the Czech Republic, Denmark, Hungary, Iceland, Korea, Mexico, New Zealand, Norway, Poland, Sweden, Switzerland, and the United Kingdom. The countries in the non-OECD group are: Bulgaria, Brazil, China, India, Latvia, Lithuania, Malaysia, Romania, Russia, Singapore, South Africa, Taiwan, Thailand, and the United Arab Emirates.

examining the adequacy of the level of foreign exchange reserves, and is given extra attention by decision-makers world wide.

Figure 4

The Level of Reserves at the End of 2010 Relative to Various Aggregates, Israel Compared with Other Countries



Source: International Monetary Fund, Moody's, World Bank (JEHD) and Bank of Israel calculations

In determining the preferred long-term level of Israel's foreign exchange reserves, emphasis is placed on quantitative rules that have gained acceptance in the international community and on international comparisons. The most important of these rules, as mentioned, is the ratio of the reserves to the economy's short-term external debt. However, the choice of the preferred level of the reserves over the long term is necessarily affected by other factors besides this one. The Bank's objective in choosing the preferred long-term level of the reserves is to define a reasonable range for it, and not a precise figure. The Bank's approach to this issue takes several factors into account, including: (a) the Bank's independent evaluation of the possible scale of uses of the reserves, so that in time of need it will have a sufficient level of liquidity at its disposal; (b) the minimal level of reserves necessary for the economy to derive benefit from the very fact of holding them, in other words, the amount that influential international bodies expect Israel to hold; (c) international comparisons according to accepted criteria, such as those presented above; (d) Israel's special needs, which are

affected also by the country's geopolitical situation; and (e) the direct and indirect costs to the Bank and the economy of holding the reserves.

B. RESULTS OF INVESTING THE RESERVES IN 2010

The holding-period rate of return on the reserves in terms of the numeraire was 1.2 percent in 2010, the lowest return in the past decade, and less than a third of the average return from 2001–10, 3.8 percent (Table 2 and Figure 5). The holding-period rate of return on the portfolio in 2010 in shekel terms was negative, at –7.1 percent, due to the strengthening of the shekel against the currencies in which the lion's share of the reserves are invested. (For more details, see Bank of Israel Financial Statements for 2010.)

The holding-period rate of return on the reserves portfolio is measured in terms of a basket of currencies—the numeraire. This is done in view of the arbitrariness of choosing a single currency for measuring the rate of return of a portfolio managed against a multi-currency benchmark, and also because of the considerable volatility that characterizes the rate of return when it is calculated in terms of any single currency. The composition of the numeraire is determined according to fixed principles that reflect the objectives of holding the reserves. The major consideration in determining the numeraire is to maintain the purchasing power of the reserves, in other words, the extent to which they can be used in time of need. The principles employed in determining the numeraire take into account several factors which are relevant to this goal. From the perspective of the reserve-portfolio managers, the numeraire is a risk-free currency composition. In the first quarter of 2010, several additional currencies were introduced into the numeraire, and as a result—into the reserves portfolio. This step was adopted against the background of the changes that have taken place in the global macroeconomic environment in recent years, and particularly in those countries that have served as the traditional lodging place for most of the foreign exchange reserves of central banks world wide. The additional currencies are those of industrialized countries of long standing.

Table 2

The Performance of the Actual Portfolio vis-à-vis the Benchmark, 2001-2010

(Percent, in numeraire annual terms, weekly standard deviations in annual terms in parentheses)

	Performance		Incremental yield				
	Actual portfolio	Neutral benchmark	Total	Currency management	Duration management	Asset selection	Dispersion and other contributions
2001	**6.35**	**6.13**	**0.22**[a]	**0.00**	**-0.01**	**0.18**	**-0.01**
	(1.44)	(1.36)	(0.20)				
2002	**5.18**	**4.98**	**0.20**	**0.03**	**-0.02**	**0.20**	**-0.01**
	(1.32)	(1.41)	(0.17)				
2003	**2.15**	**1.94**	**0.21**	**0.04**	**-0.02**	**0.19**	**0.00**
	(0.81)	(0.79)	(0.09)				
2004	**1.70**	**1.67**	**0.03**	**0.02**	**-0.05**	**0.09**	**-0.02**
	(0.66)	(0.68)	(0.08)				
2005	**2.64**	**2.44**	**0.21**	**0.00**	**-0.03**	**0.19**	**0.04**
	(0.60)	(0.67)	(0.12)				
2006	**3.83**	**3.70**	**0.12**	**-0.02**	**-0.05**	**0.21**	**-0.01**
	(0.73)	(0.79)	(0.14)				
2007	**6.91**	**6.91**	**0.00**	**0.05**	**0.02**	**-0.08**	**0.01**
	(1.37)	(1.50)	(0.25)				
2008	**5.95**	**6.14**	**-0.19**	**0.02**	**0.00**	**-0.24**	**0.02**
	(1.42)	(1.46)	(0.53)				
2009	**1.91**	**0.81**	**1.10**	**-0.02**	**-0.01**	**1.09**	**0.03**
	(0.60)	(0.65)	(0.22)				
2010	**1.24**	**1.14**	**0.10**	**0.01**	**0.00**	**0.09**	**0.00**
	(0.35)	(0.35)	(0.15)				
2001-2010	**3.77**	**3.56**	**0.20**	**0.01**	**-0.02**	**0.19**	**0.00**

[a] 5.5 basis points of total incremental yield are not attributed to any listed component in this year.

SOURCE: Bank of Israel.

The rate of return on the reserves portfolio, in terms of any currency or basket, is not affected by changes in the size of the reserves during the period, even if their source is outside the reserves portfolio itself, such as withdrawals by the government or open-market purchases of foreign currency by the Bank of Israel.[8] This method of calculating the return, which has been in effect for many years, conforms with accepted practice in the investment management sector in Israel and world wide. Its aim is to make possible a meaningful comparison of the rates of return on the reserves from year to year, and with the returns on other managed portfolios. This is possible

[8] The return is calculated on a time-weighted basis, i.e., as the geometric average of the daily returns in a given period. This is opposed to a money-weighted calculation of return, which is based on the assumption that the daily returns are constant over the period.

only when the return is not dependent on the size of the portfolio. Furthermore, the changes that take place in the level of the reserves are not motivated by business considerations of profit maximization, but rather by considerations of monetary policy, fiscal policy, macroprudential policy and the like.

In 2010 the foreign exchange reserves were managed under challenging background conditions. The global financial crisis entered a new phase in which the concerns of investors in international markets moved from the stability of the global banking system and the solvency of private financial institutions to the solvency of some of the member countries of the European Union—in some cases, against the background of guarantees that the governments had granted to banks in these countries. This development presented those active in the global financial markets, including the managers of the Bank of Israel's reserves, with unusual challenges, because, among other things, the charting of appropriate solutions to the problems that were revealed was, at times, dependent on political and not purely financial considerations. At the same time, the Bank's Market Operations Department, which is responsible for all the Bank's actions in the financial markets, including managing the reserves, was also required to devote considerable resources to dealing with the effects of the continuing crisis on the financial markets in Israel. In addition, the Department advanced several large-scale special projects (see Box 1).

In order to control the exposure of foreign exchange reserves to various financial risks, the investment policy of the reserves establishes a benchmark—a hypothetical portfolio built according to rules determined in advance—and a system of compliance rules that limit the size of the gaps between the financial characteristics of the benchmark and those of the actual portfolio. The return on the reserves portfolio can therefore be divided into two parts: (1) the benchmark's rate of return; and (2) the active-management contribution, which is the rate-of-return gap between the reserves portfolio and its benchmark.

(**1**) **The benchmark's rate of return**. The major factor determining the holding-period rate of return on the reserves portfolio is the composition and structure of the benchmark. This is because the freedom of action that the compliance rules leave to portfolio managers is relatively small. The benchmark serves the reserves-portfolio

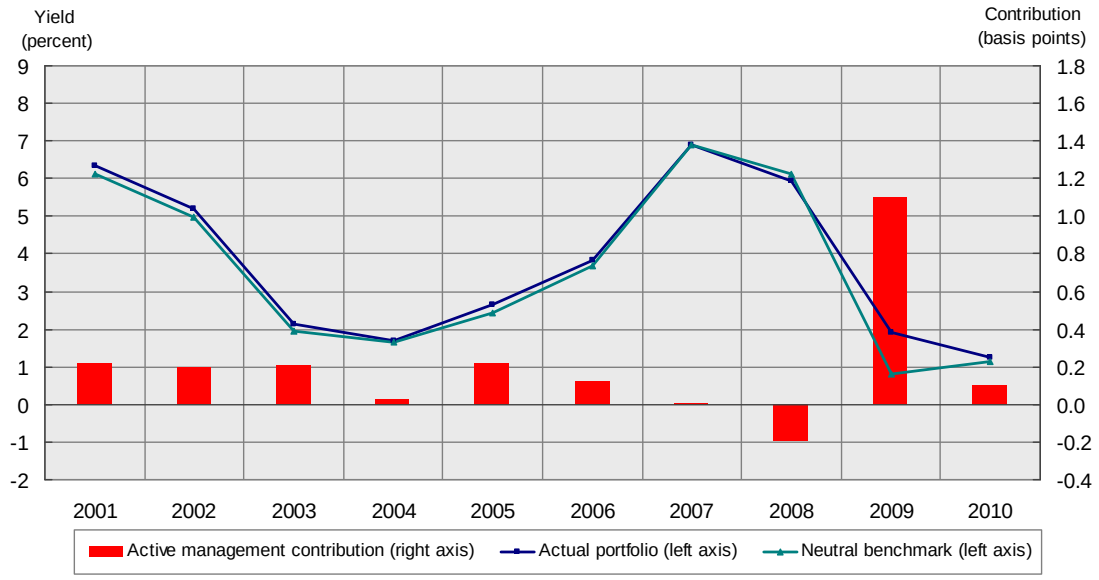
managers as a "risk-free portfolio"; the benchmark is also a criterion for reviewing and assessing managerial quality and the performance of the portfolio.

(2) The active-management contribution. This is the additional return stemming from active management of the reserves portfolio, that is to say, decisions made to invest the portfolio in a different manner from that of the benchmark, with the aim of achieving a higher return. As opposed to the benchmark return, the return on the portfolio is also affected by transaction costs, which adversely affect the portfolio's performance compared with the benchmark. In most of the past few years the active-management contribution was positive and small, except for 2008 and 2009 in which the influence of the financial crisis led to rapid and extreme changes in the prices of many financial assets (Figure 5).

Figure 5

The Yield and the Active-Management Contribution, 2001–10

(numeraire terms)



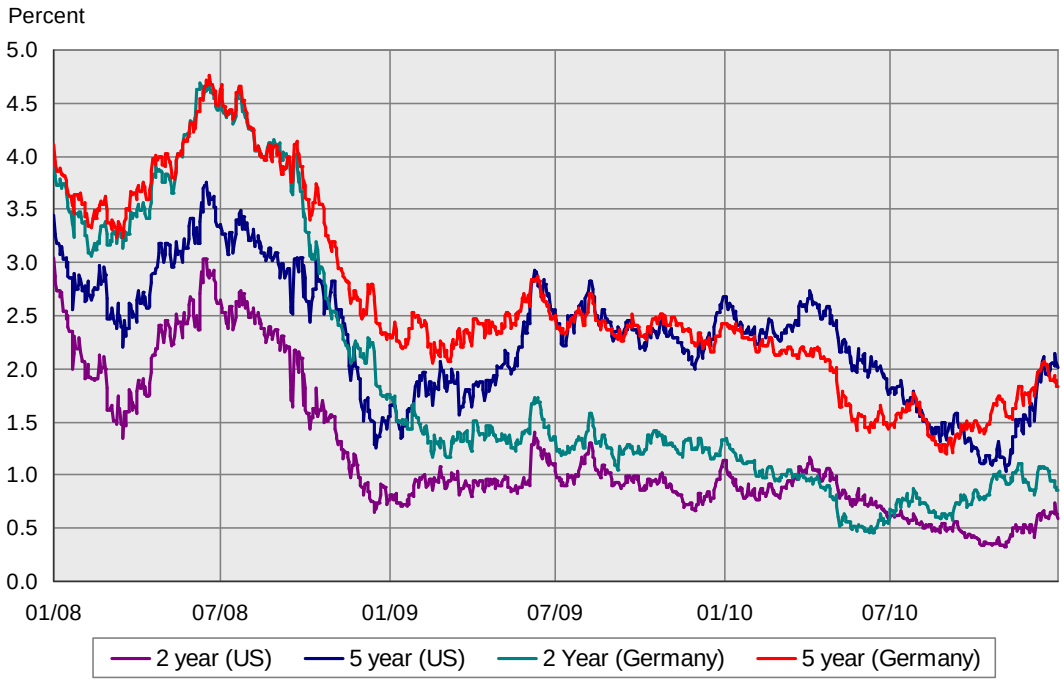
1. The rate of return and risk of the benchmark

This year, the benchmark's holding-period rate of return was 1.1 percent, as opposed to 0.8 percent in 2009 and an average of 3.6 percent from 2001–10. The low level of the benchmark rate of return in the past two years, relative to most of the previous years, is a result of the lows to which interest rates and yields to maturity fell, in those markets in which the reserves are invested, in the wake of the global financial crisis.

Throughout 2010 the central banks of the United States and the eurozone kept short-term interest rates at the very low levels that prevailed at the beginning of the year. In the United States, the first stage of the quantitative easing policy, which the Fed had launched at the end of 2008, was discontinued toward the end of the first quarter of 2010. In the fourth quarter the US Federal Reserve instituted a new round of quantitative easing, which, contrary to the previous round, was based solely on the purchase of government bonds. These steps were taken by the central banks against the background of high unemployment in the United States and the European debt crisis. At the same time, the yields to maturity in the bond markets of the United States, Germany, and other countries remained at levels close to zero on the short end of the curve, while yields farther out the curve fell, by about 25 basis points for one-year yields and by 50 to 70 basis points for two- to five-year yields (Figure 6).

Figure 6

Yields to Maturity of US Government Bonds and German Government Bonds, 2008–10



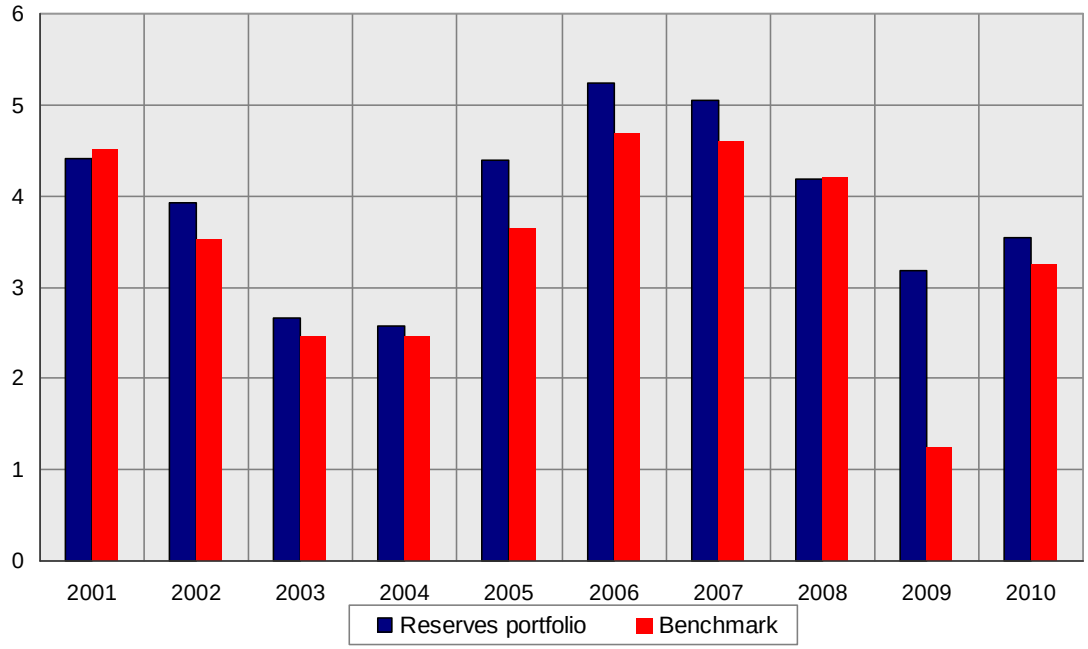
In 2009 the Bank of Israel decided to shorten the duration of the dollar benchmark from 16 to 9 months, a decision which remained in force in 2010 as well. In the third quarter of 2010 the duration of the euro benchmark was also shortened—from 14 months to 10 months. These decisions were taken in reaction to changes in the yield

curves, in order to maintain the risk-return profile that the reserves portfolio has had in recent years. The Bank's long-term policy is to avoid having a significant risk of recording a loss on the reserves portfolio in numeraire terms. Therefore, in view of the low levels which interest rates and yields to maturity had reached in the United States and Europe, it was necessary to reduce the exposure of the reserves to the possibility that they would absorb capital losses in excess of their interest income, in the event of a rapid and sharp rise in yields to maturity in the bond markets of the United States and the eurozone. Against this, the shortening of the duration of the dollar benchmark and the euro benchmark also reduced the extent of capital gains that could be achieved in the event of a fall in yields, as well as the current income from interest. However, it is important to bear in mind that these actions were not taken as a position, with the goal of making a profit, but rather, as mentioned, in order to reduce exposure to the risk of recording a negative return. In the other currency benchmarks, it was decided to keep the duration on average at slightly more that a year.

The volatility (standard deviation) of the benchmark’s rate of return in 2010 was 0.35 percent, the lowest level in the past decade, and only slightly more than half the level of volatility in 2009, which even then was considered very low (Table 2). The decrease in volatility together with the decrease of the return of the portfolio left the ratio of the portfolio’s rate of return to its standard deviation close to its median level over the past decade (Figure 7). This ratio expresses the trade-off between risk and return.

Figure 7

The Ratio of the Rate of Return to the Standard Deviation in the Reserves Portfolio and the Benchmark, 2001–10



The decrease in the benchmark's volatility is attributed mainly to the shortening of the duration of the dollar benchmark and the euro benchmark, as described above, and to a certain extent also to the addition of new currencies to the composition of the numeraire, which improved the diversification of the reserves portfolio among different financial markets. Against this, the volatility of yields to maturity in the bond markets of the United States and the eurozone was higher in 2010 than in the previous year.

2. The contribution and risk of active management

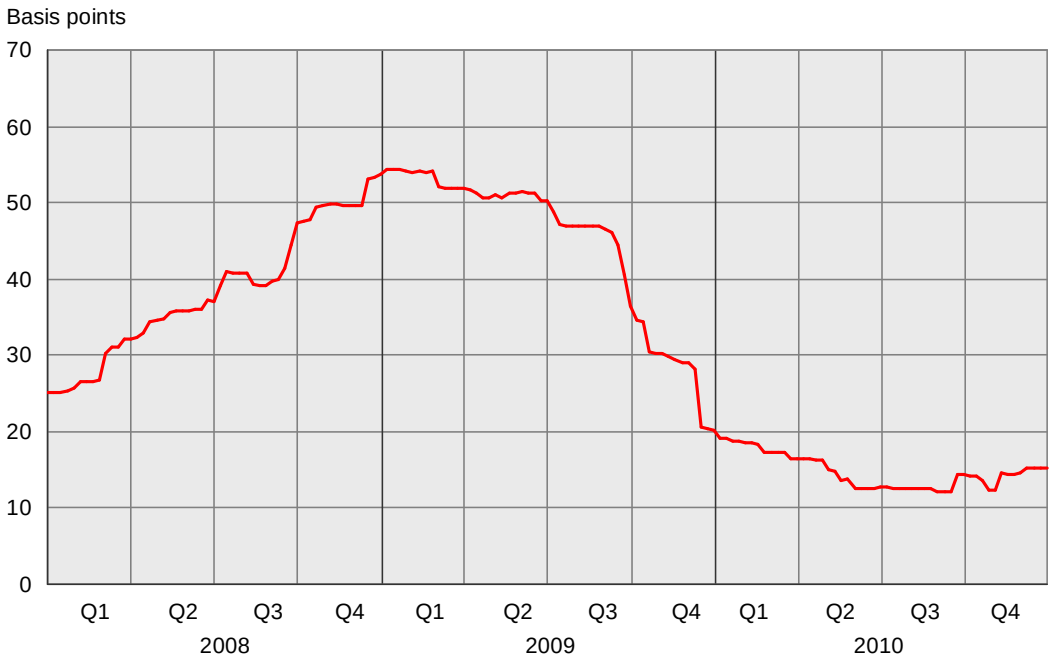
The active-management contribution reflects the overall contribution of decisions to invest the reserves portfolio in a different composition from that of the benchmark. In 2010 the active-management contribution was 10 basis points, similar to the average of 1999–2008, which was 9 basis points. In 2009 the active-management contribution was very high and anomalous relative to previous years. As a result, the average active-management contribution in the years 2001–10 stood at 20 basis points, double the contribution that was achieved in 2010 (Table 2). The high level of the active-

management contribution in 2009 is attributed to the special character of the financial markets' behavior in that year, and does not reflect the level that can be achieved in a regular year.

In the first half of 2010 the volatility of the active-management contribution, known as tracking error, stabilized, and on average over the whole year stood at 15 basis points, similar to the average level of the years 2006–07. This is in contradistinction to the high level it reached toward the end of 2008, and that remained in the first half of 2009, a level that reflected the ramifications of the global financial crisis (Table 2 and Figure 8).

Figure 8

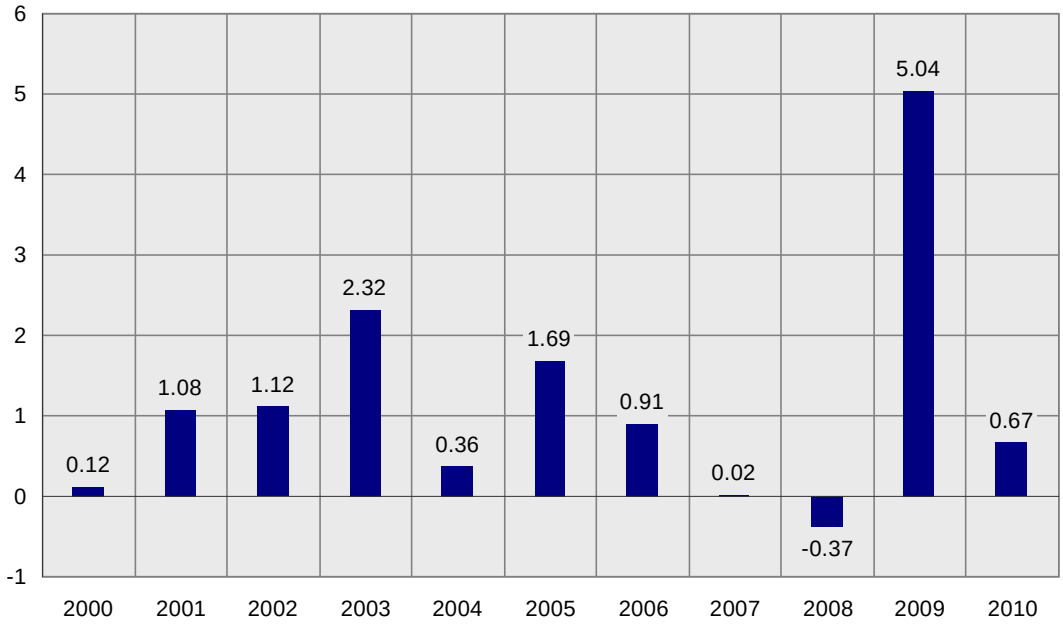
Volatility of the Active-Management Contribution (Tracking Error), 2008–10



The ratio of the active-management contribution to its volatility, known as the information ratio, is an accepted risk measure that examines the efficiency with which an additional return over the benchmark is achieved, relative to the additional risk taken (Figure 9). In 2010 the value of this ratio was 0.68, not far from the average of the decade prior to 2009, which was 0.79. (2009 was anomalous in this respect as well, and is therefore not used in calculating the average.)

Figure 9

The Ratio of the Active-Management Contribution to Its Standard Deviation (Information Ratio), 2001–10



The active-management contribution was positive in the first and the third quarters of 2010, negative in the second quarter, and almost zero in the last quarter of the year (Figure 10). The negative contribution in the second quarter is due almost totally to the capital losses incurred by assets whose prices were adversely affected by developments in the European debt crisis. These capital losses were reflected also in the widening of yield spreads in the Eurobond market. These later narrowed, but began to widen slightly again toward the end of the year (Figure 11).

In this context it should be made clear that the government bonds in the euro portfolio of the reserves were issued by a variety of European countries, all with a high credit rating. In the initial stages of the global financial crisis, before its center of gravity moved to Europe, the compliance rules preventing excessive exposure to credit risk were tightened. This proved itself in the course of the European debt crisis, and probably prevented larger capital losses. However, the crisis also hit the bonds of several countries with strong macroeconomic data and high ratings, and these recorded capital losses.

Figure 10

The Yield and the Active Management Contribution, January-December 2010

(numeraire terms)

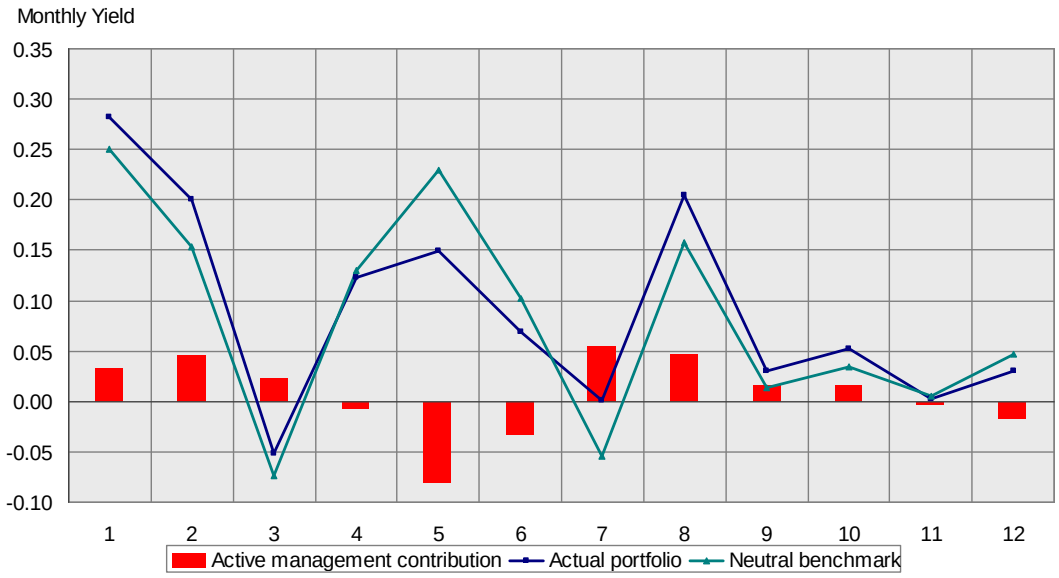
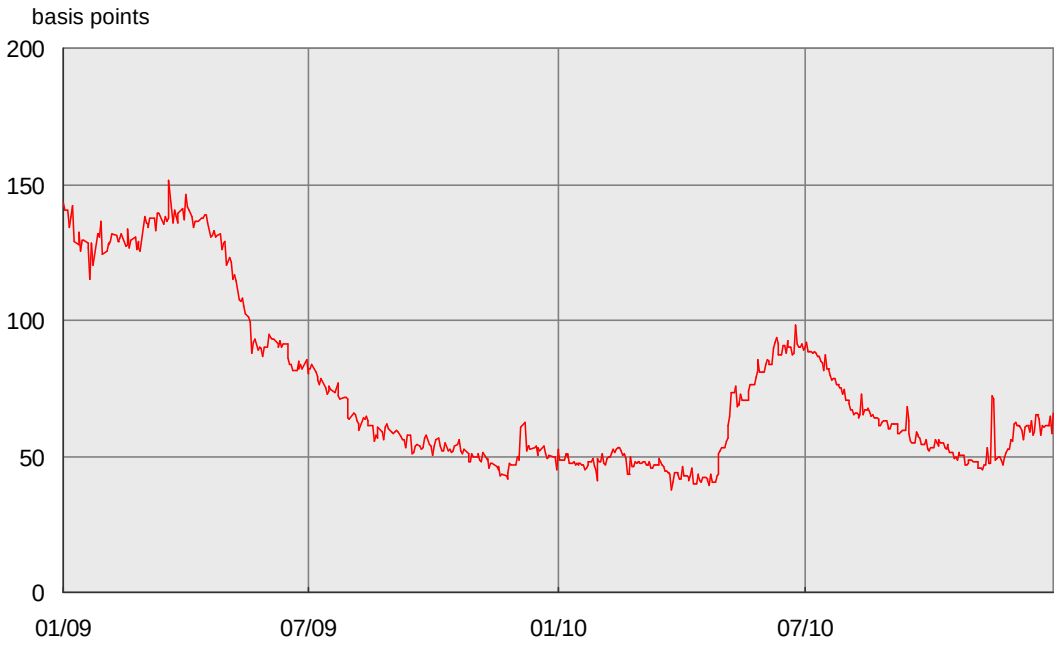


Figure 11

The Average Spread of Eurobond Assets in the Reserves Portfolio, 2009–10



Of the total active-management contribution, 10 basis points, nearly all—9 basis points—stemmed from selection of the assets in the reserves portfolio, assets that were different from those of the benchmark (Tables 2 and 3). This is despite the fact that the proportion of the portfolio invested in benchmark assets this year was particularly large, 59 percent of the reserves, as opposed to 48 percent on average in the five previous years (Figure 12).

Table 3
The Contribution of Asset Selection[a], 2008-2010 (basis points, in annual terms)

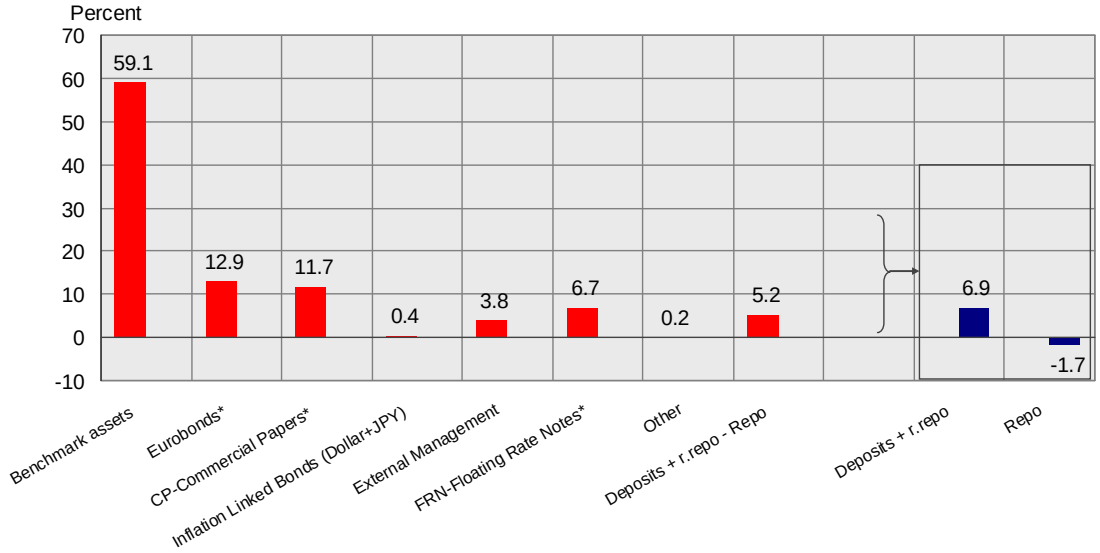
	2008	2009	2010
Short term assets (up to 1 year)	22.1	26.3	6.7
Long term assets (longer than 1 year)	-33.6	59.3	3.3
Inflation-linked securities	-2.7	7.9	-2.3
GNMA	-6.7	0.1	0.0
Assets under external manegment	-3.3	15.8	1.6
Total	**-24.1**	**109.3**	**9.3**

SOURCE: Bank of Israel.

[a] Also includes the contribution of the asset dispersion along the curve, relative to the benchmark.

Figure 12
The Asset Distribution of the Reserves Portfolio, 2010

(average over the year)



* Includes the issues of the banks with full government guarante.

Table 3 divides the contribution of asset selection according to type of asset. The highest contribution this year was from the selection of short-term-spread assets

(particularly in dollars)—including commercial paper, floating-rate notes, and short-term bonds of non-benchmark countries (synthetic transactions)—which came to 6.7 basis points. This contribution stems mainly from the higher interest income that these assets pay, due to the positive spreads between them and government securities in the benchmark. The selection of long-term assets in the reserves portfolio contributed 3.3 basis points to the return. Note that capital losses caused by the widening of spreads during the year reduced the positive contribution of the long-term-spread assets in the portfolio, and their contribution this year was therefore lower than that of the short-term-spread assets. The performance of externally managed assets—primarily as a result of investments in the GNMA sector—contributed 1.6 basis points to the return. Against this, the decision to invest in inflation-indexed US government bonds (TIPS) reduced the active-management contribution by 2.3 basis points. The yield spread between indexed bonds and nominal bonds reflects the inflation expectations in the country in which the securities were issued—the United States in the case of TIPS. Over the period in which the TIPS investment was managed, the demand for protection from several years of future inflation dropped. As a result, the level of inflation embodied in the yield spreads between the indexed bonds and the nominal bonds fell, and therefore the holding-period rate of return of indexed bonds was less than that of nominal bonds for a similar redemption period.

The new Bank of Israel Law permits investment of the reserves in types of financial assets that were not permitted according to the previous law. In 2010 the Bank took an initial step in this direction and invested in bonds issued by certain public-sector entities in developed countries. According to the criteria of Basel II, the credit-risk level attributed to those entities that were approved for investment is essentially no different from that of similar public bodies in whose bonds the reserves were invested in previous years—but for legal reasons it was not possible to invest in the bonds of the new entities as long as the previous Bank of Israel Law was in force.

As was the case at the end of 2009, exposure to bank risk remained close to zero throughout 2010. This was a continuation of the policy of reducing the exposure to credit risk introduced on the eve of the outbreak of the crisis, together with the fact that taking on bank risk was not economically worthwhile, given the narrow yield spreads above the yield of government-guaranteed debt instruments (TED spreads).

Other changes that the Bank adopted on the eve of the outbreak of the global crisis and in the course of the crisis, to reduce the exposure of the reserves portfolio to the growing financial risks, also remained in place.

3. The yield on the dollar portfolio relative to other managed portfolios

Each year the Market Operations Department compares the performance of the dollar portfolio of the reserves to several mutual funds that operated in the American market in the past decade. This year the group included 11 mutual funds that primarily invested in US government bonds from 2001 to 2010. Some of the funds are classified as "investors in short-term government bonds"; the rest are "general investors in government bonds," which, in practice, invest in the medium term. The funds invested no more than a small proportion of their portfolios in indexed US government bonds (TIPS) and in low-rated assets (less than AA).[9] These permit a rough comparison between the performance of the Bank of Israel's US dollar portfolio and that of the eleven mutual funds despite the differences between them.[10] Comparing the performance of different portfolios is problematic because of the differences between them in preferred risk-return profile and in investment policy (including their benchmarks and the compliance rules applying to them). The effects of the continuing financial crisis particularly highlighted this year the existence of such differences between the dollar portfolio of the reserves and the private mutual funds. Nevertheless, a comparison with the performance of portfolios of similar character can provide a measure of the dollar portfolio's performance.

An examination of the range of the yields (Figure 13) indicates that the performance of the dollar portfolio over the years was within or above the range of the "short-term" fund yields. In 2010, however, the yield of the dollar portfolio was at the lower end of the distribution of yields of the short-term funds, and lower than the average of their yields by 1 percent. This could be explained by the continuing decision to maintain the duration of the benchmark of the dollar portfolio at a relatively low level (see Section B.1 above), together with the flattening of the yield curve of US government bonds during the year. Because 2010 was characterized by a decline in yields to

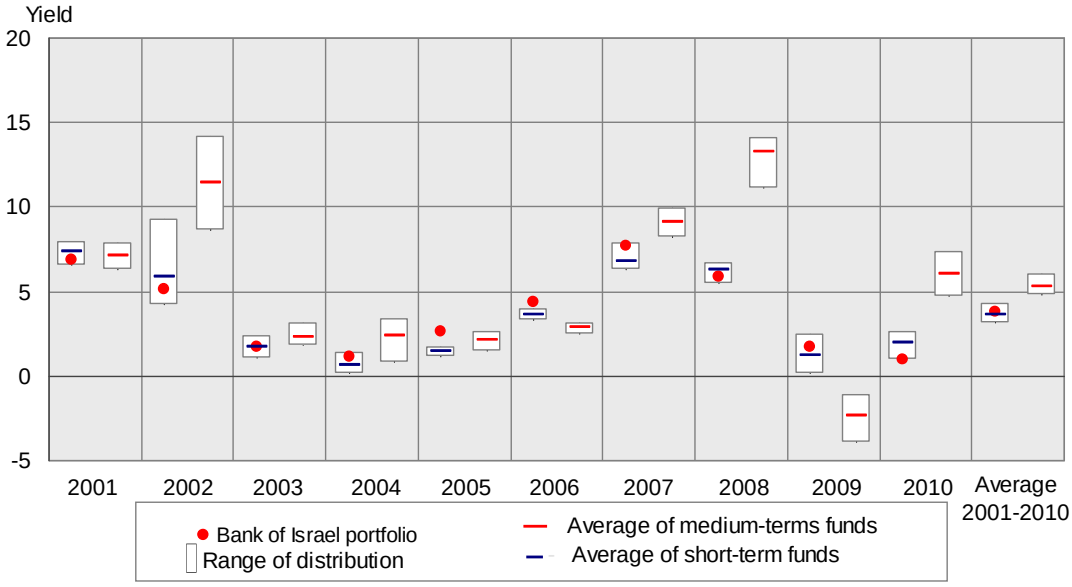
[9] It may be that some corporate bonds are also included within this component—an asset class which the Bank of Israel did not invest in at all during 2010.

[10] Among other points, note that the performance of the mutual funds is after deducting management fees, which reflect the costs of ongoing operating expenses, while the performance of the dollar portfolio of the Bank of Israel's reserves is reported without deducting expenses of this kind.

maturity in the medium and long terms, it was to be expected that the medium-term funds would yield a higher return than the short-term ones, as indeed happened.

Figure 13

Distribution of the Annual Yields of Mutual Funds in the US Market, 2001–10



Examination of the data on these funds suggests that the duration of the Bank of Israel's dollar portfolio is closer to that of the short-term funds than to that of the medium-term ones, and so therefore its performance is more like that of the short-term funds. The data also shows that, on average over the decade, the medium-term funds achieved a higher yield than did the short-term ones. However, their annual yield was more volatile, and sometimes even negative, as happened in 2009. This points up the Bank of Israel's choice to invest the foreign exchange reserves in assets of relatively short duration, in order to reduce the volatility of the annual holding-period yields and the risk of obtaining a negative yield on the reserves portfolio, even at the price of relinquishing a possible higher average yield over a period of several years.

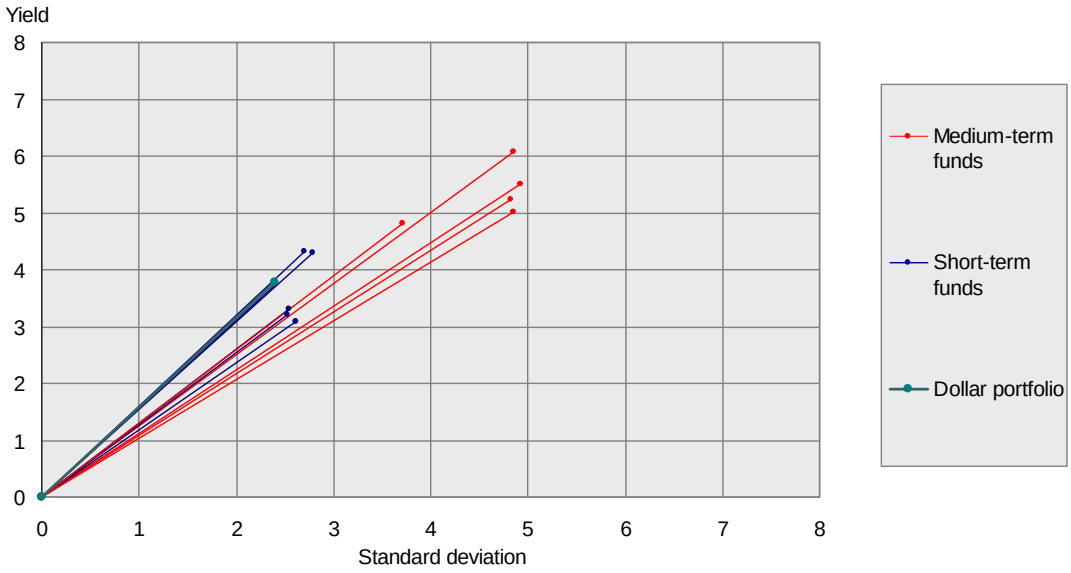
The average yield of each fund compared with its volatility in the past decade (Figure 14) shows that in the dollar portfolio the yield-to-risk ratio, which is reflected by the slopes of the lines, is higher than in all the other funds, except for one that is approximately equal. The Bank of Israel's dollar portfolio is therefore superior to nearly all of them in this respect. The yield-to-risk ratio in the short-term funds is generally greater than in the medium-term ones; in other words, the excess return that

the medium-term funds show over the short-term ones is achieved at the expense of even greater risk.

Figure 14

The Dollar Portfolio vis-à-vis Funds in the US Market—Yield and Risk, 2001–10

(annualized, percent)



Box 1 – Special Projects

During 2010 the Market Operations Department of the Bank of Israel advanced several projects:

Implementation of an Integrated Treasury Management System

In 2010 the Bank of Israel allocated considerable resources to implementing an Integrated Treasury Management System (ITMS). The new system is a product of Wall Street Systems, a world leader in this area, and is already in use at more than 23 central banks world wide.

The new ITMS will be used to manage the Bank's foreign exchange reserves and to conduct its activity in the domestic financial markets—for implementation of

monetary policy, among other things. The system replaces several systems that have been in use until now for these needs. Unifying the Department's activities in a single, modern, integrated system will streamline work processes and reduce exposure to operational risks in all the Market Operations Department's centers of activity—the front office, the middle office, the back office, and the control system.

The new ITMS will provide each one of the employees who deal with the Bank's activities in the financial markets with the data on the Bank's financial assets and liabilities that is relevant for his or her work, updated in real time. The system will enable the capture and straight-through processing of deals, and will support the ongoing management of financial risks, the building and adjustment of benchmarks, the process of restating asset valuations in the reserve portfolio according to updated market values and recording these for accounting purposes—all at a high level of reliability and in compliance with the best practices of the financial sector and with international accounting standards. The new system will also enable the Bank of Israel to utilize new financial instruments and to operate in additional financial markets, activities that the Bank's existing systems do not support.

Establishment of a Bank of Israel Representative Office in New York

In October 2010 the Bank of Israel inaugurated a representative office in New York, thereby joining a long list of central banks that have offices in this important financial center. The Representative Office, which was established and will be run by the Market Operations Department, is intended to strengthen the connections between the Bank of Israel and the international financial bodies located there, including the external managers of parts of the foreign exchange reserves portfolio. A further objective of the Representative Office is to improve the ability to collect and analyze financial information which is needed for executing the Bank's monetary policy. The Office is staffed by two Bank of Israel employees sent to New York for this purpose, and an administrative manager recruited in the United States.

Preparations for implementing the new Bank of Israel Law

In 2010 the Market Operations Department devoted significant resources to preparing for the new Bank of Israel Law, including preparations for working with the Bank's new Monetary Committee due to be appointed. The Committee will play a major role

in determining the principles according to which the Governor decides on the preferred long-term level of the reserves, and it will chart the guidelines of the reserves' investment policy. The Department has been and will continue to be active in identifying and examining desirable ways to employ the additional degrees of freedom that the new law grants in selecting assets for investment of the reserves. The Department has also prepared for production of the periodic reports on the level of the reserves and their management, which the Bank is required to present to the Minister of Finance, the government, Knesset's Finance Committee, and the public, according to the new Law.

Completion of the transfer of shekel activity to the Market Operations Department

Transfer of the Bank of Israel's shekel activity to the responsibility of the Market Operations Department, in the framework of the Bank's reorganization, has been completed. The activity transferred to the Department in 2010 was previously managed by the State Loans Administration, which has been closed. The Department's responsibility includes managing the Bank's tradable portfolio, and also the management, on behalf of the Ministry of Finance, of the earmarked bonds that were issued for the insurance companies. All this is in addition to the Department's responsibility for implementing the Bank's monetary policy by means of the various monetary instruments, which was transferred to the Department in previous years.