Bank of Israel

Foreign Currency Department

Investment of the Foreign Exchange Reserves

Annual Report 2007

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Investment of the foreign exchange reserves in 2007—Main developments[1]

- The average level of the Bank of Israel's foreign exchange reserves in 2007 was about $28 billion.[2]
- This level of reserves is equal to 4 months of imports or to 69 percent of Israel's short-term external debt, a decrease of 0.7 months and 2.7 percentage points, respectively, relative to 2006. The reserves were only 72 percent of the desired level as calculated based on the estimate of possible uses of the reserves, as against 76–78 percent in 2004–2006.
- Israel's reserves have grown by only 27 percent over the past nine years, as against reserve growth of 127 percent in the OECD countries and 418 percent in the non-OECD countries.
- In light of these developments, the Bank of Israel in March 2008 announced a program to increase the level of the reserves significantly by buying foreign currency in the market. According to the program announced, the Bank will increase the reserves by about $10 billion over a two-year period by acquiring about $25 million per day.
- The management framework of the reserves, based on their possible uses and benefits to the economy, was unchanged in 2007. The principles of the management framework, and its various aspects, are reviewed on an ongoing basis by the Bank.
- The holding-period rate of return on the reserves in terms of the numeraire was 6.9 percent in 2007, up from 3.8 percent in 2006.[3] The return reflected the decline in yields to maturity of US government bonds during the year reviewed, which resulted in capital gains coupled with declining interest income.

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[1] The Foreign Currency Department has been publishing reports on the investment of the foreign exchange reserves since 2000. For reports on earlier years, parts of which were covered by sections in the Bank of Israel's Annual Reports, see the Bank's website www.bankisrael.gov.il. These earlier reports contain a glossary of terms used in this report and discussions on various aspects of management of the foreign exchange reserves that do not appear in the current report.

[2] The level of reserves is calculated on the basis of daily balances assessed at market value. The average level excludes reserves originating in domestic banks' foreign-exchange deposits with the Bank of Israel.

[3] All holding-period rates of return in this report are expressed in terms of the numeraire and exclude reserves originating in domestic banks' foreign-exchange deposits with the Bank of Israel, unless stated otherwise.

- In 2007, the holding-period rate of return on the reserves was almost identical to the benchmark return. The spread between these rates of return reflects the contribution of active management of the portfolio. The absence of a spread in 2007, as against positive spreads in previous years, was due to the turbulence in the financial markets in the second half of 2007 and primarily to the widening of yield differentials on spread assets relative to government bonds during this time, due to the US subprime crisis.
- The average exposure of the reserves to the world banking system was 33 percent in 2007. This exposure is managed under a system of quotas and rules, which plays a central role in credit-risk management of the portfolio.
- Although the US subprime crisis had an adverse effect on liquidity in the financial markets, the liquidity of Israel's reserves remained very high: about 91 percent of the portfolio was invested in high-liquidity assets and the rest in liquid assets which have a lower level of liquidity.

1. THE LEVEL OF THE RESERVES AND THEIR MANAGEMENT FRAMEWORK

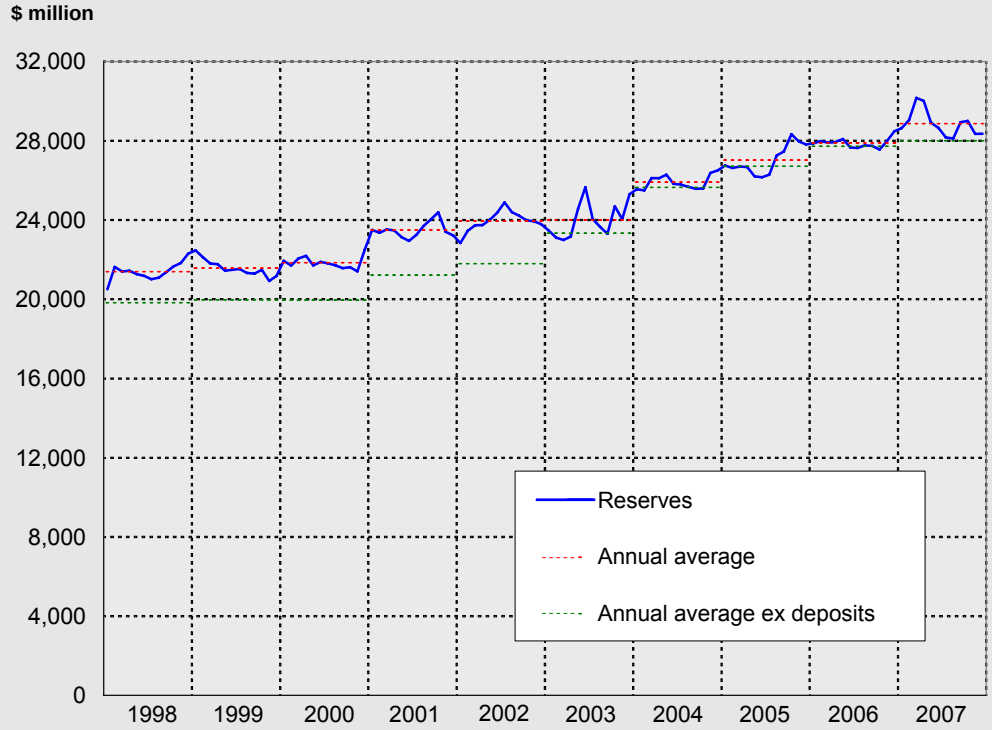
The management of Israel's foreign exchange reserves is subject to the **Bank of Israel Law, 5714-1954** and its accumulated legal interpretations. These define how the Bank may conduct its foreign-currency activities and limit the types of assets in which it may invest. In areas in which the Bank is not restricted by the wording of the Law, it acts within a framework that reflects the spirit of the Law and the Bank's priorities and limits the various risks to which the reserves portfolio is exposed. The main financial risks are *credit risk*, controlled by a system of rules and quotas; *interest-rate risk*, controlled mainly by setting a target average duration for each currency portfolio; and *currency risk*, controlled by defining a neutral currency composition for the portfolio—called the numeraire—that serves as a yardstick for measuring the performance of the actual portfolio. Other risks, such as *operational* and *legal risks*, are also taken into account.

a. The level of the reserves

The foreign exchange reserves stood at $28.4 billion at the end of 2007, $0.6 billion lower than at the end of the previous year. Government activity (net raising of capital and operational withdrawals) lowered the reserves by $3.1 billion. This decrease was partly offset by a $2.5 billion increase derived from current income from the investment of the reserves ($1.9 billion in interest and capital gains) and appreciation against the US dollar of other currencies in which some of the reserves are invested ($0.6 billion). On average, the reserves stood at $28 million in 2007, approximately the same as the 2006 average (Figure 1).[4]

Figure 1—Gross Foreign Exchange Reserves, 1998–2007

(monthly average)



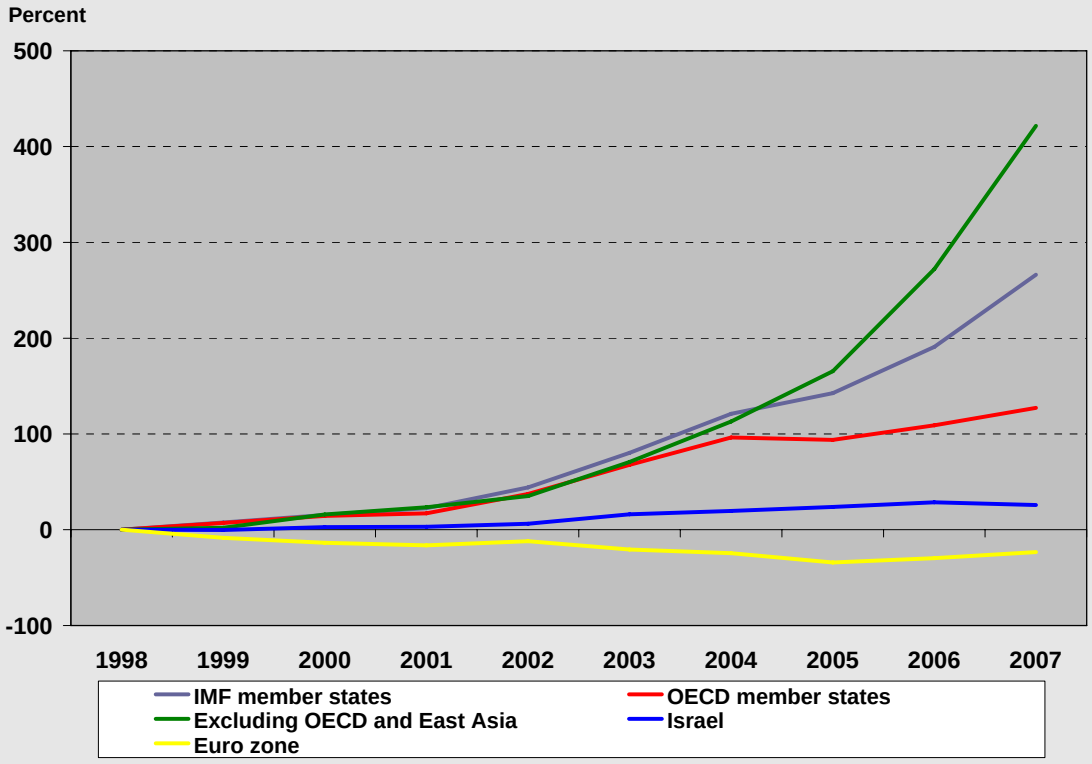
SOURCE: Bank of Israel.

During 2007, the reserves contracted by 2.2 percent in US dollar terms whereas the total reserves (excluding gold) of the IMF member countries increased by 25.9 percent (40.2 percent excluding the OECD countries and East Asia) and the total

[4] This level does not include domestic commercial banks' foreign-exchange deposits with the Bank of Israel, which serve mainly as collateral for participation in the ZAHAV (RTGS) payments system. Over the course of the year, these deposits were valued on average at 2.7 percent of the reserves.

reserves of the OECD member countries increased by 8.7 percent. Over the past nine years, Israel's foreign exchange reserves climbed by 26 percent – more slowly than those of the OECD countries which rose 127 percent, while the reserves of all countries rose by 266 percent and non-OECD countries' reserves increased by 418 percent (422 percent excluding East Asia) over the same period. Notably, the OECD countries' total reserves were affected by the decline in total reserves in the eurozone during these years (Figure 2). This decrease would appear to reflect a long-term adjustment of these countries' reserves, following the establishment of the European Monetary Union in 1999.

Figure 2—Rate of Increase in Foreign Exchange Reserves in Various Country Groups, 1998–2007



SOURCE: International Monetary Fund and Bank of Israel.

The reserves serve as a source of liquidity to be used as and when necessary, and their purpose is also to yield benefits that derive from the very fact that the country is holding a certain level of foreign exchange reserves. At the end of 2003, the Bank adopted a definition for the role of the reserves, according to which the uses of the reserves are divided into uses of government—for which the Bank would be likely

to sell to it foreign currency—and uses of the Bank.[5] The benefits that the domestic economy enjoys due to the holding of foreign exchange reserves are a reduction in probability of a crisis in the foreign-exchange market and enhancement of the country's standing in the international financial environment. The desired level of reserves for the purpose of benefiting the economy by the very fact of holding reserves is not added to the desired level of uses but overlaps it.

The desired level of reserves obtained from use-related requirements was about $39 billion at the end of 2007—$22 billion to cover possible uses of government and $17 billion to cover possible uses of the Bank. At the end of 2007, the actual level of the reserves, not including domestic banks' deposits, covered 72 percent of the desired level based on uses, as against 76–78 percent in 2004–2006.

Although the average level of the reserves was 0.7 percent higher than in 2006, some of the economic aggregates to which the reserves are customarily compared grew much more vigorously—imports by 19 percent, M2 (nonindexed local-currency assets held by the public) by 25 percent, and Gross Domestic Product by 13 percent (all in US dollar terms). Accordingly, the ratios of the reserves to these aggregates declined. Other aggregates that are customarily compared with the level of reserves—gross external debt and short-term external debt—increased about as moderately as the reserves did, meaning that their ratios to the reserves were basically unchanged from the previous year (Table 1).

Table 1
The Level of the Reserves Relative to Other Aggregates, 1998-2007

	Average level of reserves[a] ($ million)	Imports (months)	Gross external debt	Short-term external debt	Unindexed local-currency assets (M2)	Gross domestic product
			Reserves as percent of aggregate			
1998	21,392	6.03	35	86	61	20
1999	21,718	5.42	33	82	55	20
2000	21,854	4.58	32	77	46	18
2001	23,523	5.53	33	77	43	20
2002	23,943	5.84	33	75	48	22
2003	24,002	5.61	32	78	46	21
2004	25,908	5.27	32	79	47	21
2005	27,030	5.00	34	77	46	21
2006	27,877	4.76	31	71	45	20
2007	28,073	4.02	30	69	36	18

[a] Based on daily valuation of the reserves.
SOURCE: Bank of Israel, The Central Bureau of Statistics, and returns from the banks.

[5] For details on the definition of the uses, see the reports on investment of the reserves for 2003–2005.

Various studies that the Bank has conducted indicate that the level of reserves derived from economic benefits resembles that derived from uses. Therefore, if the Bank held reserves at the level that would suffice for uses, it should also have enough reserves to attain the economic benefits. In this context, it should be noted that a country's ratio of foreign exchange reserves to short-term external debt is an indicator of particular interest to the IMF and the rating agencies, and there is a view according to which this ratio should be greater than 1. According to research conducted by the Bank, most of those non-EU countries which, in common with Israel, have sovereign ratings of investment grade but under AAA conform to this "norm." In Israel's case, however, the ratio of foreign exchange reserves to short-term external debt is only 69 percent (Table 1). Thus, it would appear that Israel is an outlier in this respect.

After investigating the matter thoroughly, the Bank of Israel announced in March 2008 its decision to increase the level of the foreign exchange reserves by about $10 billion over a two-year period—to $35 billion–$40 billion—by purchasing around $25 million per day. The regular and foreknown nature of these foreign-exchange purchases is meant to avoid any unnecessary effect on the foreign exchange market and to minimize any possible interference with the market mechanism. This is because the sums involved are small relative to the daily trading volumes in the domestic foreign exchange market, which exceed $2 billion on average. The Bank of Israel will periodically review the program to take into account changing market conditions.

This decision was made in view of the needs of the economy, given the rapid growth of GDP in recent years, Israel's increasing global economic and financial integration, and the presence of conditions that allow the Bank of Israel to increase the foreign exchange reserves in a prudent manner, which is consistent with the Bank's interest-rate policy targets and which bolsters the stability and resilience of the financial system and the economy as a whole.

b. The investment policy of the reserves

The investment policy of the reserves portfolio is set by the Foreign Currency Committee, which is headed by the Governor of the Bank. The Foreign Currency Department suggests topics to be discussed by the committee and reports to it about

the performance of the portfolio, investment decisions it has taken, and current developments in the international markets.

The investment policy that guides the management of the reserves is based on three principles:

- *Maintaining the value of the reserves in terms of their intended uses*, as described above. This is expressed in the determination of the currency composition of the reserves, the limitations on their exposure to credit risk and to some extent the management of their interest-rate risk.
- *Managing the reserves with a high degree of liquidity*. This is expressed mainly in restrictions on the types of assets in which the reserves may be invested.
- *Earning a reasonable yield on the reserves portfolio*, subject to the limits established by the above two principles. This is expressed in decisions about the duration of the portfolio, the permitted level of exposure to credit risk, and the use of active portfolio management.

Control of most aspects of financial risk in the reserves portfolio is anchored in the management of the reserves portfolio against a benchmark, a hypothetical portfolio chosen according to predetermined rules, as part of the investment policy. These rules determine the currency composition of the benchmark, its duration in each currency, the types of assets included, and the dispersion of these assets along the yield curve.

The currency component of the benchmark—the numeraire—is determined according to the designated uses of the reserves, its two major elements being the US dollar and the euro. In contrast, the structure of the benchmark's exposure to interest-rate risk in each currency—its duration and distribution along the yield curve—is not derived from the structure of exposure of the reserve uses in that currency to interest rate risk, but rather from the goal of achieving maximum yield with low risk, with the risk-return profile derived from the portfolio holder's preferences. Accordingly, the duration of the US dollar portfolio benchmark was 24 months in 2007 and that of the other currency portfolios was 16 months.[6] This decision was the outcome of considerations that, while long-term in nature, may vary in accordance with changes in the domestic or global economic environment.

[6] The background for determining the target duration and structure of the benchmark in the various currencies is described in previous annual reports. See, for example, Box 1 in the 2006 *Annual Report* on management of the foreign exchange reserves.

Because the Bank of Israel applies active management in investing the reserves, the actual reserves portfolio usually differs from the benchmark portfolio in terms of its exposure to various risk factors such as currency risk and interest-rate risk. The investment policy imposes maximum and minimum restrictions on the scope of such deviations. On the one hand, it sets a target for the contribution of active management, and establishes a framework for tracking error, such that while passive emulation of the benchmark is accepted as a short-term tactic in managing the reserves, it will not serve as a long-term management method. On the other hand, the investment policy imposes several restrictions on active management, expressed principally on five levels: 1) limits on the differences in currency composition between the actual portfolio and the benchmark; 2) a limit on the total difference between the duration of the actual portfolio and the duration of the benchmark in various currencies; 3) a quantitative limit on investments in various types of asset not included in the benchmark; 4) a compulsory minimum quantity of holdings in the most liquid assets; and 5) limits on exposure to credit risk.

The investment policy limits the exposure of the reserves to currency risk and to the element of interest-rate risk that is measured by duration differences. There are no explicit restrictions in respect of the element of interest-rate risk that stems from differences in distribution along the curve, but this risk is subject to monitoring. The investment policy also imposes quantitative restrictions on exposure to credit risk and the investment of the reserves in assets that are not included in the benchmark (spread assets). It establishes a minimum threshold for the credit quality of an individual institution and ensures appropriate diversification among institutions and countries according to their size and credit quality. There are also quantitative restrictions on the total exposure of the reserves portfolio to the global banking system. Finally, there are restrictions on other spread risks, unrelated to credit risk, e.g. on the scope of investment in inflation-indexed bonds or investment via outside managers.

The added value of active management is manifested in the differences in yield and risk between the reserves portfolio and its benchmark, which is analyzed by component in Section 2c below. The Bank’s decision to employ controlled active management of the reserves is primarily justified by its contribution to the yield on

the portfolio over the past decade, which amounted to 11 basis points[7] annually (Table 2). Active management has additional advantages, including strengthening business relations between the Bank and financial institutions abroad—which increases the Bank's ability to obtain economic and business information—and enhancing the professional caliber of its reserves management staff. These advantages also help the Bank to formulate and manage its economic policies and its activities in the financial markets.

Table 2
The Performance of the Actual Portfolio vis-à-vis the Benchmark Portfolio, 1998-2008
(percent, in annual terms, standard deviation in parentheses)

	Performance		Incremental yield				
	Actual portfolio	Neutral benchmark	Total	Currency management	Duration management	Asset selection	Dispersion positions and other contributions
1998	**6.00**	**5.99**	**0.01**	**0.00**	**0.01**	**0.07**	**-0.07**
	-(0.63)	(0.69)	(0.08)				
1999	**3.26**	**3.17**	**0.08**	**0.02**	**-0.06**	**0.08**	**0.05**
	(0.66)	(0.60)	(0.13)				
2000	**6.79**	**6.78**	**0.01**	**-0.15**	**0.00**	**0.15**	**0.01**
	(0.89)	(0.86)	(0.11)				
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)				
1998-2007	**4.46**	**4.35**	**0.11**	**0.00**	**-0.02**	**0.13**	**0.00**

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

[7] A basis point is one-hundredth of a percent, or one in 10,000. At the current level of the reserves, one extra basis point is worth about $2.8 million.

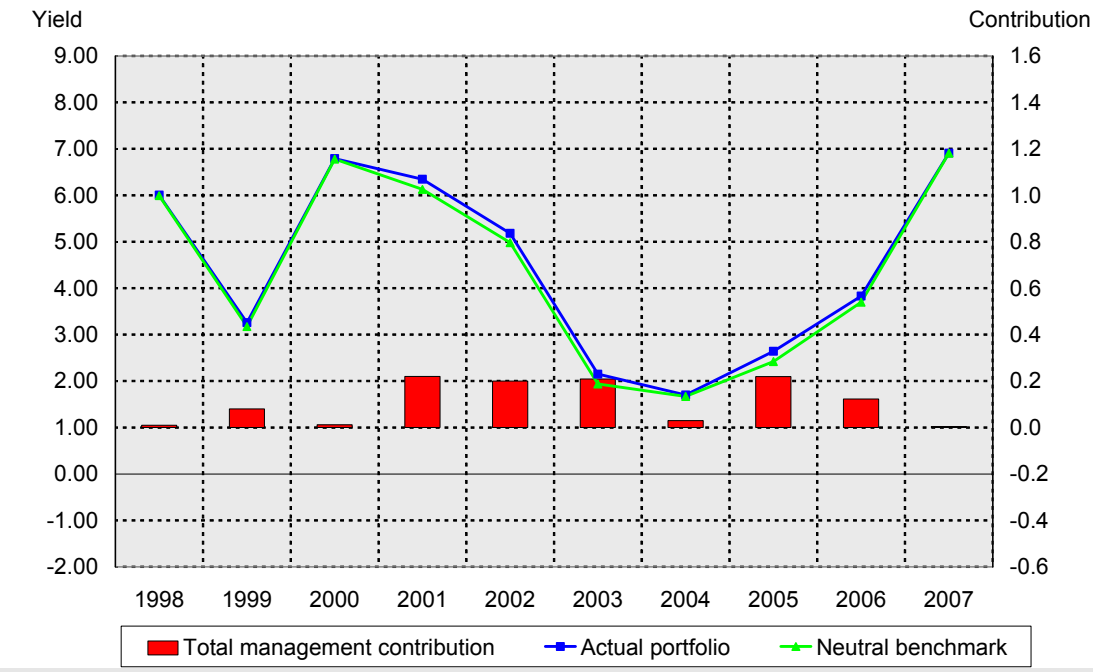
2. THE HOLDING PERIOD RATE OF RETURN AND THE RISK OF THE RESERVES PORTFOLIO RELATIVE TO THE BENCHMARK

a. The holding period rate of return on the reserves portfolio

The total holding period rate of return on the reserves portfolio was 6.9 percent in 2007, as compared to 3.8 percent in 2006 and 4.5 percent on average in 1998–2007 (Table 2 and Figure 3).[8] The return in 2007 was the highest recorded in the past decade. The high return was mainly due to the combined effects of two developments: the upturn in US government bond prices, occasioned by the financial crisis in the second half of the year (Box 1), and the decision in late 2006 to raise the target duration of the dollar-invested portion of the reserves from 16 months to 24 months. (See Box 1 of the 2006 Report.) Given the behavior of the markets during 2007, the extra return that may be credited to the change in duration was 77 basis points.

Figure 3—Yield and Total Management Contribution, 1998–2007

(percent, in annual numeraire terms)



SOURCE: Bank of Israel.

[8] The return on the reserves in terms of components of the numeraire, shown in this report, excludes reserves that are managed against domestic commercial banks' foreign-exchange deposits with the Bank of Israel.

The volatility (standard deviation) of the portfolio return was 1.37 percent as against 0.73 percent 2006. Three main factors affect the holding rate of return on the reserves and its volatility: (i) developments in financial markets; (ii) long-term investment decisions, expressed in the composition of the neutral benchmark of the portfolio; and (iii) day-to-day portfolio management, including active management (decisions on deviations from the neutral benchmark).

The Bank of Israel normally evaluates the holding-period rate of return on the reserves portfolio in terms of a neutral currency composition—the numeraire—calculated according to intended uses of the reserves. The return on the reserves may also be calculated in shekel terms; by this reckoning, it came to –0.5 percent in 2007 as against –2.3 percent in 2006 and +6.5 percent in 2005. The negative return in shekel terms in 2007 resulted from the 9.0 percent depreciation of the US dollar against the shekel during the year. Other currencies in which the reserves are invested also lost ground to the shekel, with the exception of the euro, which gained 1.7 percent against the shekel. The combination of the euro's appreciation and income from interest and capital gains offset most of the effect of the shekel's appreciation against the US dollar and other currencies.

As stated above, the reserves generated earnings of $2.5 billion in US dollar terms—$1.9 billion due to interest income, capital gains/losses, and active management, and $0.6 billion on account of exchange-rate differentials.[9] Importantly, the *ex post* measurement in terms of only one currency of the return on a portfolio that was managed *ex ante* in accordance with a multi-currency target is strongly affected by the currency chosen for the measurement. For example, the return in 2007 was 9.3 percent in US dollar terms but –2.2 percent in euro terms. Therefore the return on the reserves is usually measured in numeraire terms. The US dollar and euro reserve portfolios earned returns of 7.7 percent and 3.9 percent (respectively, each in terms of its own currency); these results account for most of the total return on the reserves portfolio in numeraire terms. The total return is also affected by the returns on other portfolios and by components of the active-management contribution that are not attributed to any specific currency portfolio.

The return on the reserves in 2007 was strongly affected by the decline in yields to maturity of short- and medium-term bonds in the US market, which occurred against

[9] These sums were calculated in accordance with the average level of the reserves and include non-realized gains/losses. Therefore, they may be different from the data in the Bank's financial statements.

the backdrop of the subprime crisis that struck the mortgage market in the second half of the year (Box 1). The Federal Reserve cut its key rate gradually, from 5.25 percent to 4.25 percent, in September–December 2007 (and continued to lower it in early 2008). Yields to maturity climbed in eurozone markets but at much slower rates than the rates of decline in the American market. A decline in bond yields reduces the current-interest-income component of the holding-period return but concurrently causes the prices of these bonds to rise, resulting in a capital gain that boosts the holding-period rate of return.

Box 1

Instability in the Leading Financial Markets in the Second Half of 2007 due to the US Subprime Crisis[10]

This box briefly describes the US subprime crisis, how central banks and authorities in industrialized countries responded to it, and how it has affected the Bank of Israel's management of the reserves.

The Subprime Crisis

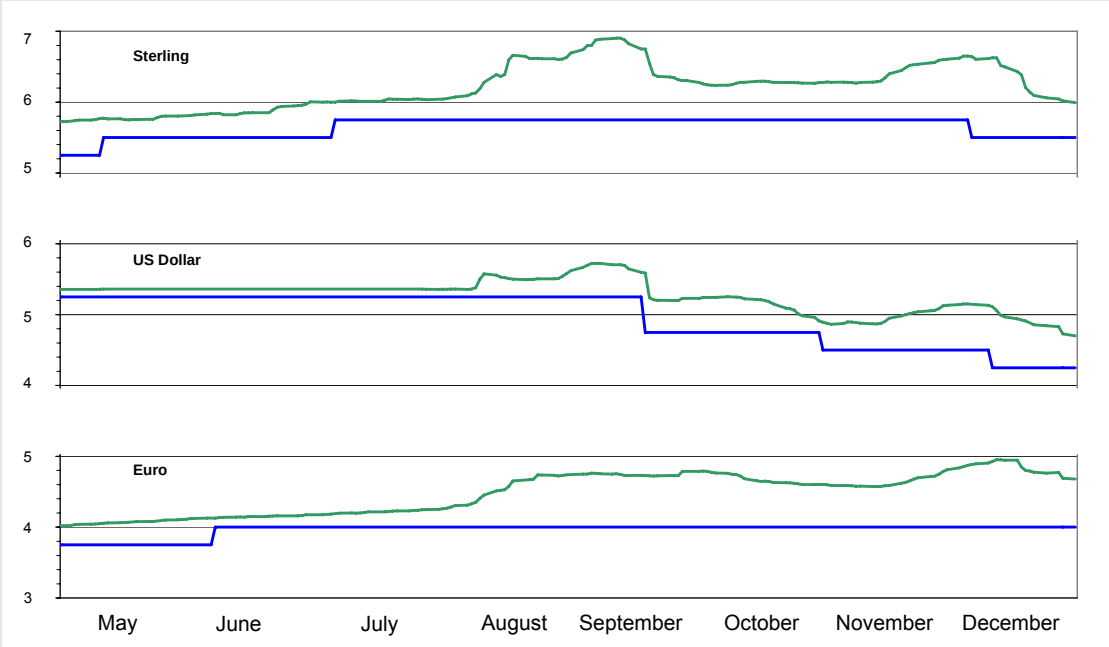
The crisis began in the US mortgage industry. About 75 percent of US housing loans serve as collateral for the issue of residential-mortgage-backed securities via a process of securitization. Most mortgages, given to prime borrowers, are securitized under the sponsorship of US federal agencies that were established for this purpose. Mortgages taken by subprime borrowers, in contrast, are securitized by private issuers. In recent years, the volume of issues backed by subprime mortgages ballooned—from $160 billion in 2001 to $600 billion a year in 2005 – 2006—and the terms for the issue of such loans were eased considerably. Over time, it was found that the propensity to default on mortgages taken in 2006 was much greater than that on loans issued in previous years, following an upturn in short-term interest rates and a halt in the long-term upward march of property values. In early 2007 many companies that dealt in subprime lending ran into serious difficulties or went bankrupt. Still, the impact of the

[10] For a more detailed description of the subprime crisis in the US, see, for example, Chapter 7 of the Bank of Israel *Annual Report* for 2007; Hördahl P. and Fender I. (2007), "Markets Hit by Renewed Credit Woes," *BIS Quarterly Review*, Dec. 2007, Bank for International Settlements; Dodd R. (2007), "Subprime: Tentacles of a Crisis," *Finance & Development* 44:4, International Monetary Fund. The remarks in this box about the subprime sector are also generally true with respect to the Alt-A sector in the US, which resembles the subprime sector in scope and behavior.

crisis on the global debt and capital markets was quite limited in the first few months of 2007.

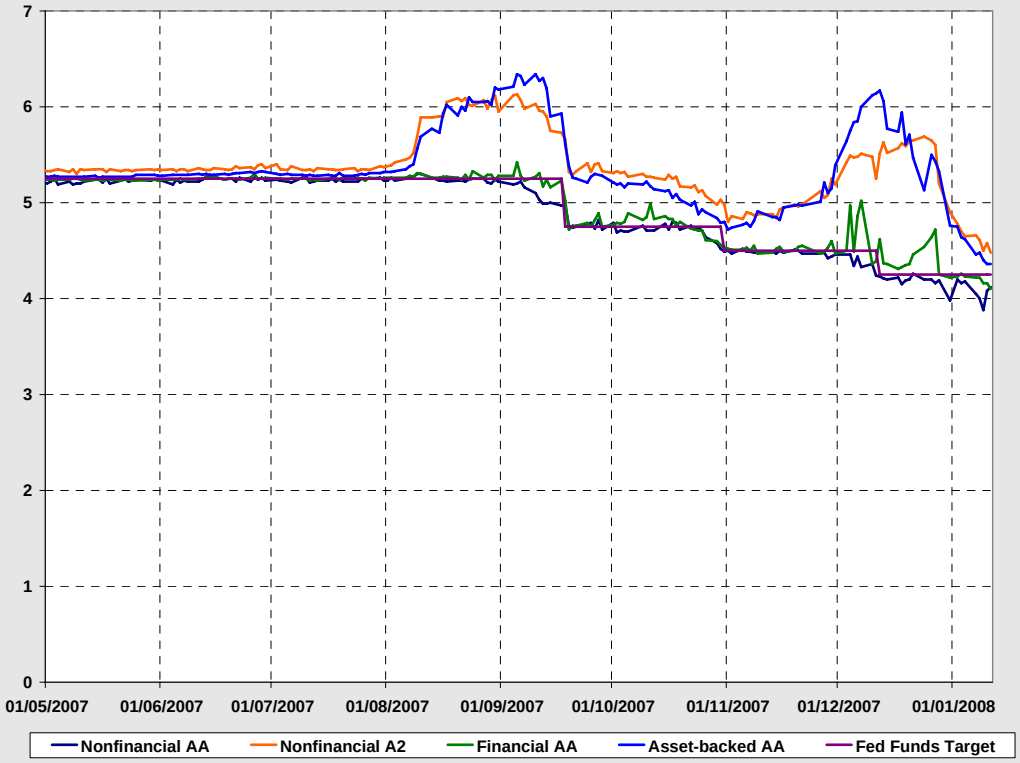
In late June, the crisis was found to be rippling beyond the US mortgage market. Several American and European financial institutions had to take exceptional measures due to investments of their own, or of funds that they managed, in assets backed by subprime mortgages. Reports of losses among European banks fueled the sense, widespread in the market, that exposure to subprime assets might be encountered anywhere. Given this climate, a "flight to quality" began in August, manifested among other things in rapidly falling yields on short-term government bonds and disruption of the ordinary relationship between risk-free interest and interbank deposit rates (Figure B-1). The markets were also jolted by a wide range of phenomena characteristic of liquidity crises: There was a rise in risk aversion, reflected in a widening of yield spreads, in markets not associated with the financial sector. For example, the widening of yield spreads on A-rated commercial paper of nonfinancial companies resembled that of AA-rated asset-backed commercial paper (Figure B-2). Also, banks became less willing to lend to each other at any interest rate. In September, reports about difficulties in raising operating liquidity led to a run on the British bank Northern Rock—the first bank run in Britain since 1866—even though according to all known information Northern Rock had no significant exposure to subprime assets. Ultimately, the British government had to back the bank's deposits with a far-reaching guarantee in order to keep the institution solvent. In October and early November, the injection of liquidity by central banks in the main industrial countries brought on a relative lull. Toward year's end, however (corresponding with the end of the fiscal year for most banks), liquidity conditions in the markets again deteriorated until central banks took a series of measures (described below) to restore liquidity. In early 2008, the subprime crisis seemed to be developing from a liquidity crisis that affected mainly the financial sector into a general credit crisis in the US and other industrial countries. Its ultimate impact on these countries' growth outlooks remains unknown, but, in any event, will no doubt be negative and considerable.

Figure B-1—Central Bank Rates (blue) **and LIBOR Rates** (green) **in Leading Financial Markets, 2007**



SOURCE: Bloomberg.

Figure B-2—US Commercial Paper Interest Rates, 2007



SOURCE: Federal Reserve and Bloomberg.

Responses of Central Banks and Authorities

From August onward, central banks in main industrial countries took a series of measures to inject liquidity into money markets and restore them to proper functioning. In addition to a massive injection into the banking system, they tried to expand the channels through which commercial banks might obtain liquidity. The commercial banks, however, were not always willing to use the sources of liquidity that the central banks made available to them, fearing that such usage would become generally known in the market and would be interpreted as evidence of distress. In another measure, the US Federal Reserve cut its rate by 100 basis points by year's end and by another 125 basis points in January 2008. In December, the Fed and the central banks of the European Union, Switzerland, Great Britain, and Canada announced joint measures including institution of the Term Auction Facility program, which widened the circle of banks that could take US dollar liquidity loans directly from central banks and broadened the range of collateral that banks might use for this purpose. Concurrently, authorities in various countries, foremost the US, adopted a series of fiscal and regulatory measures designed to mitigate the long-term effect of the crisis on growth and stability.

How the Crisis Affected Management of the Reserves in 2007

The Bank of Israel's reserves portfolio is not invested in mortgage-backed assets—with the exception of GNMA securities, which are fully guaranteed by the US Government—and is not exposed to investment vehicles that may be seriously affected by the indirect implications of the crisis, e.g., certain segments of the equity markets or lower-rated debt securities. Accordingly, the Bank did not modify its management strategy or the levels of financial risks to which the portfolio is exposed. The permissible maximum exposure of the reserves to the global banking system was left at 35 percent because the banks at issue are of the highest caliber. There was also no reason to revise the management rules for currency and interest risk in view of the crisis. The Bank did step up its monitoring of the financial sector in developed countries in accordance with ongoing developments during the year.

The indirect implications of the crisis, however, had an adverse effect on the total yield of the reserves portfolio. The crisis pummeled the markets with shocks in both the levels and the volatility of the various yield spreads (Figures B-1 and B-2). This

made active management of the reserves more difficult than in previous years. In certain areas of activity, too, the crisis made it harder to identify and exploit profit opportunities. In other areas, however, profit opportunities not common in ordinary years presented themselves. The main body of this report describes these effects in detail where possible. Some banks that have investment quotas within the framework of the reserves did report exceptionally large losses due to the crisis; the Bank responded to this, where necessary, under the rules of its existing credit-risk policy.

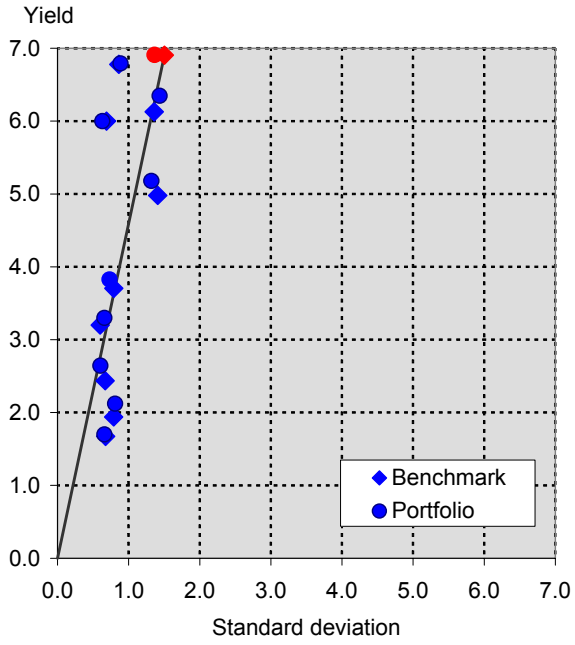
b. Rate of return and risk in terms of the benchmark

The benchmark holding-period rate of return was 6.91 percent in 2007 and its volatility (standard deviation) was 1.50 percent. The holding-period rate of return of the actual portfolio was also 6.91 percent but its volatility was lower—1.37 percent. In view of developments in the financial markets, the composition of the benchmark is the definitive factor in determining the holding-period rate of return of the portfolio because the scope of deviations of the portfolio's composition from that of the benchmark is relatively small.

In the past decade, portfolio return and year-to-year volatility have been very close to those of the benchmark (Figure 4). The differences in the annual holding-period rates of return of the benchmark and the portfolio from year to year are large and conspicuous; this is because they are affected mainly by market developments in individual years. The year-to-year differences in holding-return volatility are smaller. In 2007, both the yield and the volatility of the portfolio were the highest observed in the past decade, mainly due to the effects of the crisis in the second half of the year.

The ratio of benchmark yield to benchmark risk in a given year reflects the trade-off between yield and risk in that year, as implied by the markets. In Figure 4, this ratio is expressed as the slope of the line connecting the year-by-year observations with the origin of the axis, showing that the ratio in 2007 resembled that in previous years during the past decade except for 1998 and 2000, when strong yields were paired with relatively low volatility.

Figure 4—Dispersion of Yields of the Portfolio and the Benchmark, 1998–2007



Years ranked by yield on actual portfolio

	Portfolio		Benchmark	
	Yield	Standard deviation	Yield	Standard deviation
2007	6.9	1.4	6.9	1.5
2000	6.8	0.9	6.8	0.9
2001	6.3	1.4	6.1	1.4
1998	6.0	0.6	6.0	0.7
2002	5.2	1.3	5.0	1.4
2006	3.8	0.7	3.7	0.8
1999	3.3	0.7	3.2	0.6
2005	2.6	0.6	2.4	0.7
2003	2.1	0.8	1.9	0.8
2004	1.7	0.7	1.7	0.7

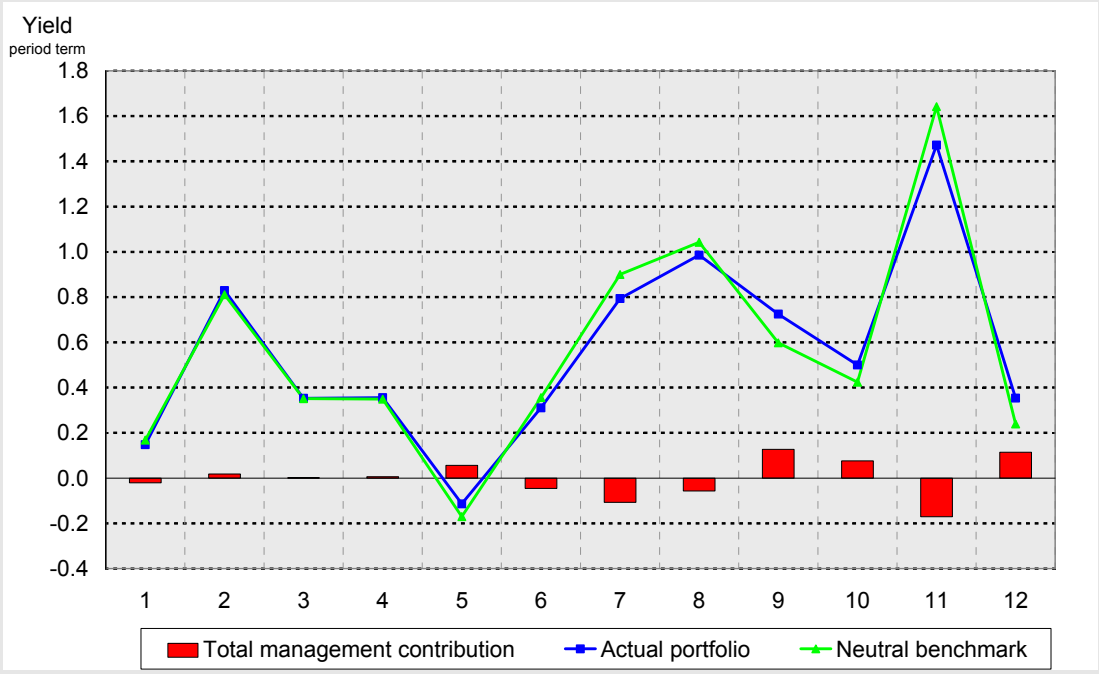
SOURCE: Bank of Israel.

The difference between the benchmark holding-period rate of return and that of the actual portfolio expresses the contribution of day-to-day management to the portfolio yield. The contribution of management in 2007 was about 0.5 basis point—the lowest rate in the past decade—whereas the tracking error (the volatility of this contribution) added up to 25 basis points, the highest in the past decade (Table 2 and Figure 3). The management contribution and the tracking error originate mainly in decisions made within the scope that the investment policy allows for characteristics of the portfolio to emulate or deviate from those of the benchmark—currency composition, duration, assets included, and distribution of assets across the yield curve. The contribution of day-to-day management may also be influenced by operational factors which can affect the ability to reach and carry out portfolio management decisions.

The rate of return and its volatility were not uniform over the course of 2007 due to the dramatic change that the markets underwent when the crisis broke out in mid-year (Box 1). Figure 5, showing the holding-period rates of return of the benchmark and the reserves portfolio in each month of 2007, leads to two conclusions:

- The average monthly holding-period rate of return of the benchmark (and of the portfolio) was 0.8 percent in the second half of 2007 as against 0.3 percent in the first half of the year.
- Benchmark volatility increased in the second half of the year relative to the first half but at a lower rate than the increase in average rate of return—59 percent. The volatility of the actual portfolio increased even less, by only 28 percent.

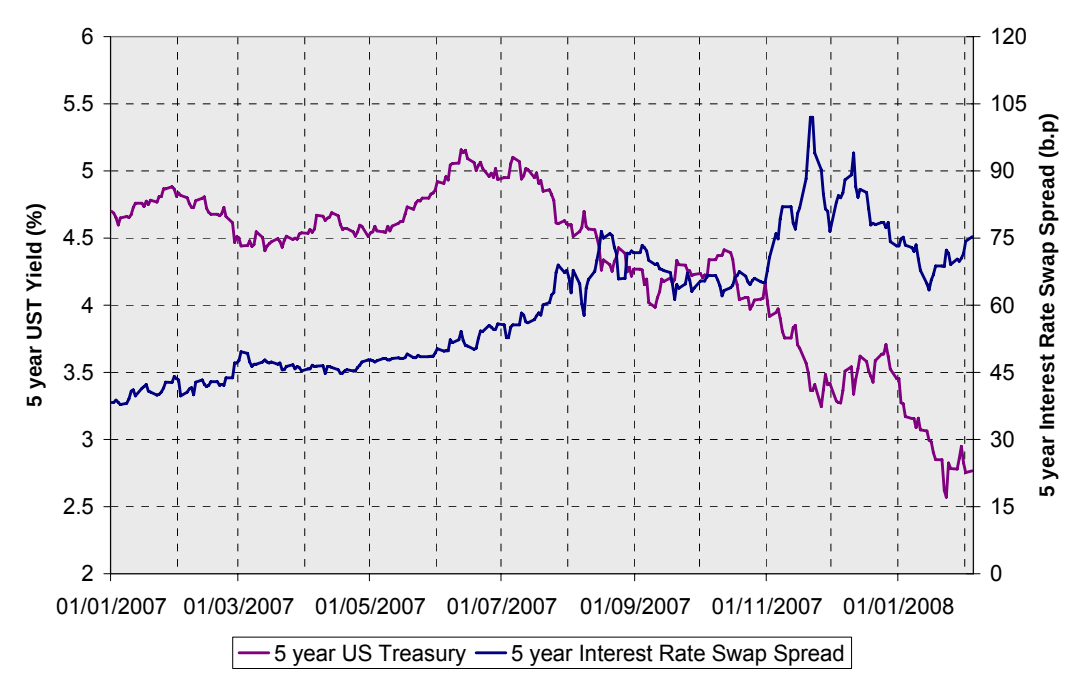
Figure 5—Yield and Total Management Contribution, January-December, 2007



SOURCE: Bank of Israel.

In 2007, the volatility of the portfolio's return was 13 basis points smaller than the benchmark's return volatility (Table 2). This compares with a difference of 5.4 basis points (on average and in absolute terms) in the prior nine years. In other words, the contribution of management had an especially smoothing effect in 2007, mainly due to the volatility of the holding return on Eurobonds, the main spread asset in the portfolio. The yield to maturity of dollar denominated Eurobonds is derived from the yield to maturity of US Treasury debt plus a margin. From August on, as Treasury yields rapidly fell, spreads widened significantly (Figure 6). The widening of the spreads offset the holding-period rates of return of spread assets relative to benchmark assets, mitigated their volatility, and, thereby, reduced the total volatility of the portfolio containing them.

Figure 6—Yield to Maturity of Five-Year US Government Bonds and Spread on Five-Year Interest Rate Swaps, January 2007–January 2008



SOURCE: Bloomberg.

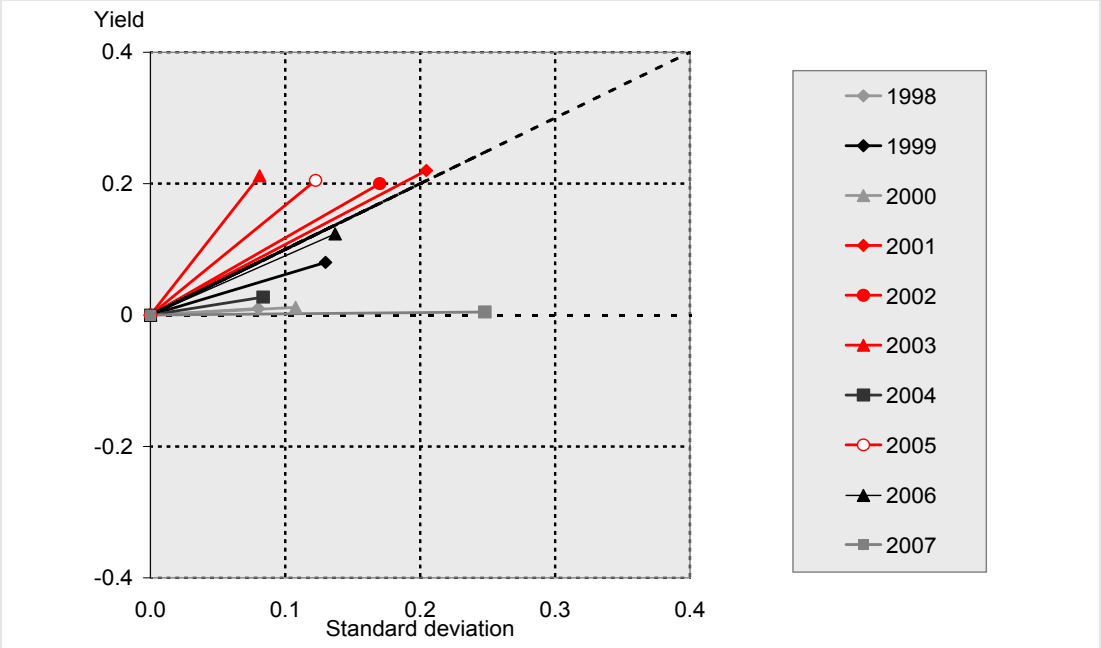
Analysis of the yield spread relative to the benchmark and its volatility may provide an indication of the level of skill of portfolio management. Ideally, management of the portfolio should achieve a positive yield spread with volatility lower than the yield. The ratio of incremental yield and its volatility (the "information ratio") is reflected in Figure 7 by the slope of the line for each year. The slope of the line will ideally be greater than one, in which case the incremental yield more than compensates for the incremental risk. The actual information ratio in 2007 was close to zero, resembling the situation in 1998 and 2000.

In late 2006, the Bank set a target of 30 basis points for tracking error. Its purpose in so doing was to increase the contribution of active management by assuming a moderate additional risk in fields where a high information ratio might be attained while creating an incentive to improve the information ratio in fields where it was lower than ideal. In the first half of 2007, the tracking error stayed within a range that resembled the 2006 level but in the second half of the year it moved to a steep upward trend (Figure 8). The main reason for this was a change in market conditions, rather than changes in the way the reserves are managed. Since tracking error is measured on a moving annual basis, any change in the Bank's behavior pattern or in market

conditions will affect it moderately and with a lag, whereas measuring it over a shorter moving period would show sharper changes.

Figure 7—Yield Spreads vis-à-vis the Benchmark, 1998–2007

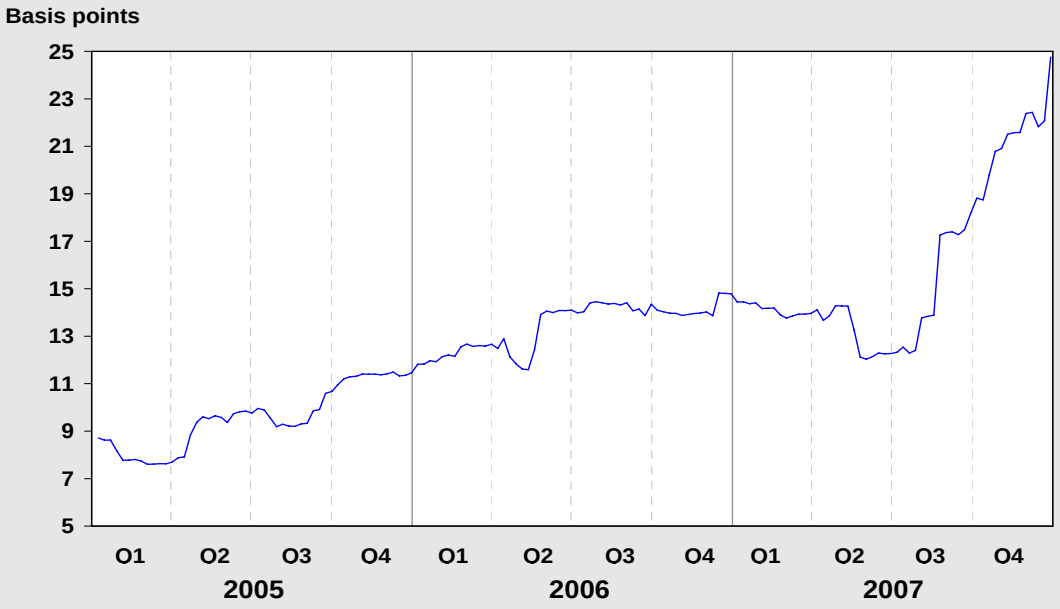
(percent, in annual numeraire terms)



SOURCE: Bank of Israel.

Figure 8—Tracking Error of Active Management, 2005–2007

(based on moving 52-week calculation)



SOURCE: Bank of Israel.

c. The contribution of ongoing management of the reserves portfolio by components

As part of the ongoing management of the portfolio, decisions are made to deviate from the composition of the benchmark, i.e. to open positions. The additional yield from the management of various types of positions is shown in Tables 3 and 4. A position constitutes an addition of risk relative to the benchmark that may be rewarded by added yield. In the management of a position, a predetermined ceiling is generally put on the potential loss; if the cumulative loss reaches the ceiling, the position is closed.

Table 3

Contribution of Management Decisions to the Yield Spread, vis-à-vis the Benchmark, 2007

(basis points, in annual terms)

	Total contribution	Duration	Asset selection		Dispersion positions	Currency management	Other contributions
			Spread effect	Dispersion effect			
Total	0.5	2.1	-8.2	-0.1	-0.4	5.3	1.8
Currency portfolios							
Total	-5.2	2.1	-8.2	-0.1	-0.4	-	1.4
Dollar portfolio	-3.7	0.2	-5.2	0.1	0.1		1.2
Euro portfolio	1.6	0.4	1.0	-0.2	0.1		0.2
Other portfolios	-3.1	1.5	-4.1	0.0	-0.6		0.0
Currency positions	5.3					5.3	
Other contributions	0.4						0.4

SOURCE: Bank of Israel.

1) *Contribution of currency management*

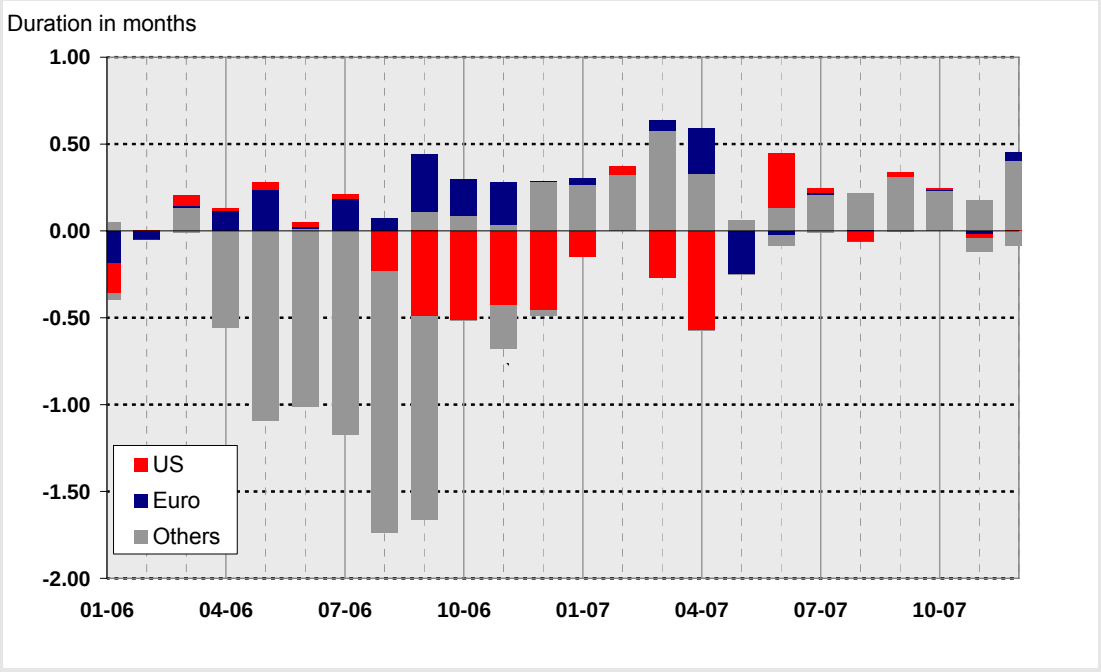
Currency positions are managed on the basis of an analysis of economic variables, on the basis of tactical considerations, or with the aid of models (which are used for the management of small short-term currency positions). The contribution of currency management includes exchange-rate and interest-rate differentials on the currency positions. In 2007, currency-position management added 5.3 basis points to the portfolio yield (Table 3).

2) *Contribution of management of duration and dispersion along the yield curve*

In 2007, the management of duration positions in the various currency portfolios contributed 2.1 basis points to the difference between the portfolio yield and the

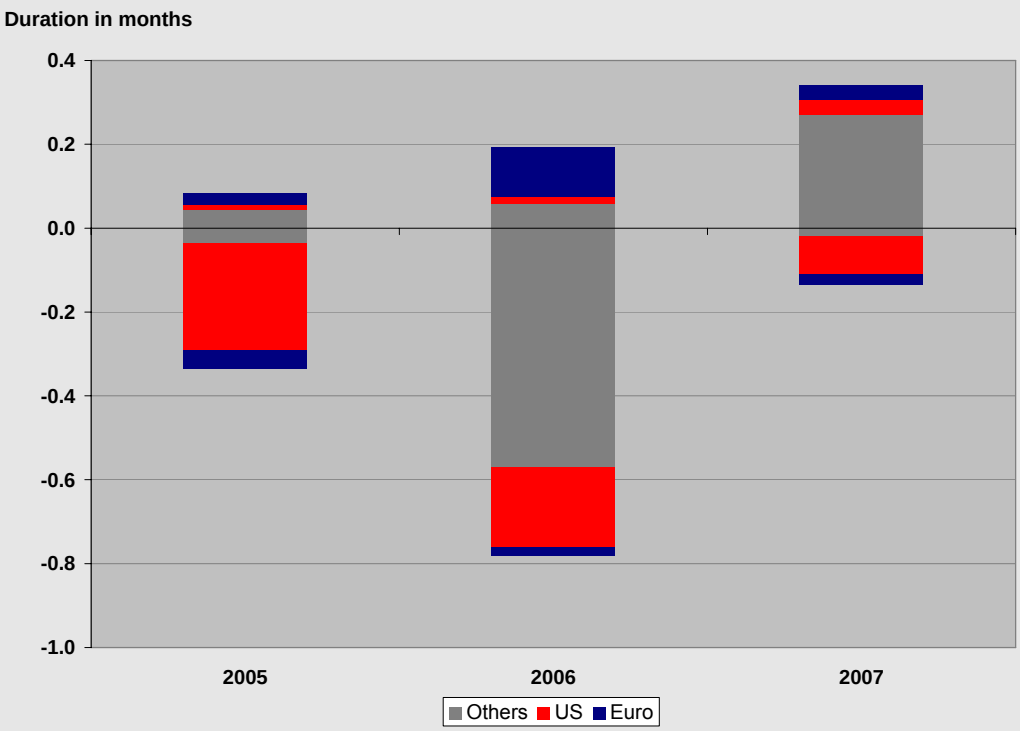
benchmark (Table 3 and Figure 9). As noted in Section 1b above, the benchmark durations are 24 months for the US dollar portfolio and 16 months for other currency portfolios. Duration positions appear as a difference between the duration of the currency portfolio and the neutral duration determined for the same portfolio, 16 months or 24 months as the case may be. Most of the contribution of duration-position management flows from the management of long-duration positions in portfolios other than US dollar and euro. Notably, the above contribution of duration management was attained even though duration positions in 2007 were smaller than in the two previous years (Figure 10).

Figure 9—Duration Positions in the Total Portfolio, 2006–2007



SOURCE: Bank of Israel.

Figure 10—Average Size of Duration Positions in the Total Portfolio, 2005–2007



SOURCE: Bank of Israel.

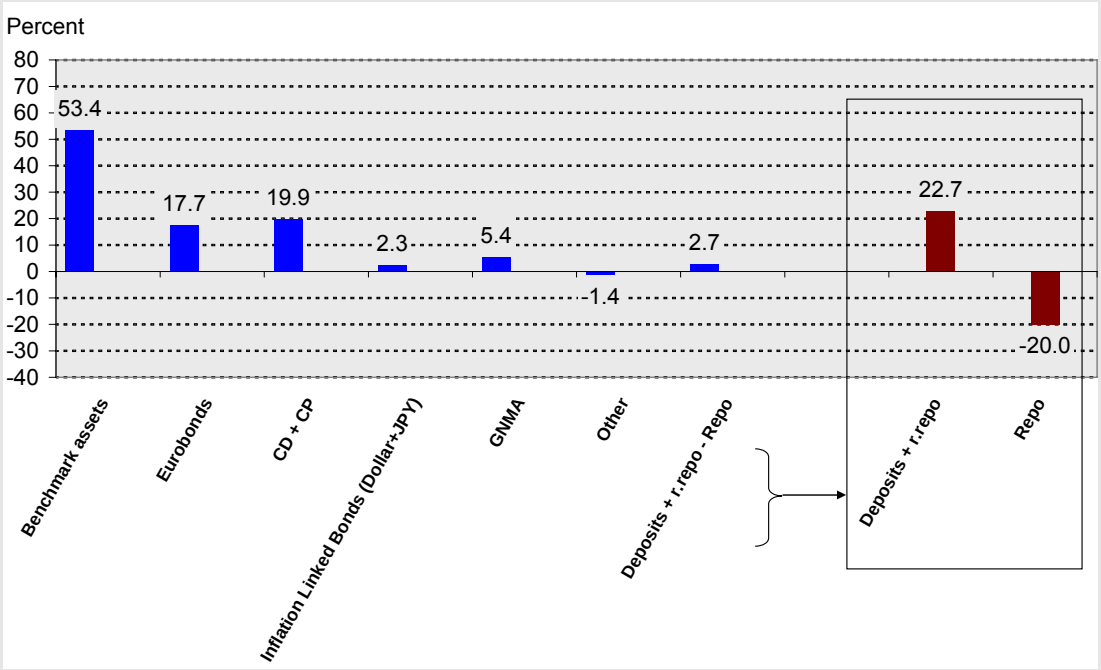
The contribution of dispersion relative to benchmark was –0.4 basis point, composed of 0.2 basis point due to dispersion positions in US dollar and euro and –0.6 basis point due to dispersion positions in other portfolios. The dispersion effect of asset-selection positions contributed –0.1 basis point (Table 3). Asset-dispersion positions are created when assets in one segment of the yield curve are bought and assets in another segment are sold. A position of this kind is structured so that its profit or loss results from a change in the slope of the yield curve, as distinct from parallel up or down shifts of the curve, which are not supposed to affect its performance. These positions are often managed by means of futures contracts.

3) *Contribution of asset selection* [11]

Asset-selection decisions contributed –8.3 basis points to the return on the reserves portfolio in 2007 (Table 4 and Figure 11). This outcome is due to the decision to invest in spread assets, i.e., the sort that are not included in the benchmark. This type of investment activity delivered an extra yield of 13 basis points on annual average in 1998-2007 (Table 2) and had not had a negative effect on the portfolio yield for many years until 2007. The yield to maturity of a spread asset may be split into two factors: (a) the expected yield to maturity of government bonds in the same currency and to the same maturity and (b) the yield spread, which reflects the characteristics of the issuer of the asset and usually changes continuously and moderately. However, the aberrant conditions that dominated the markets in the second half of 2007 sometimes caused these spreads to change in unusually large and abrupt ways (Box 1).

Figure 11—Asset Distribution of the Reserves Portfolio, 2007

(percent, annual average)



SOURCE: Bank of Israel.

[11] The contribution of spread-asset selection is measured by the difference between their holding rate of return and that of assets of the same duration which are of the type of assets included in the benchmark, weighted relative to their share of the portfolio. In calculating the total contribution of day-to-day management, the effects of differences in asset dispersion across the curve which result from decisions on the selection of spread assets—a factor included in the calculation of the dispersion contribution, discussed in Section (2) above—are also taken into account.

Table 4
The Contribution of Asset Selection, 2007
(basis points, in annual terms)

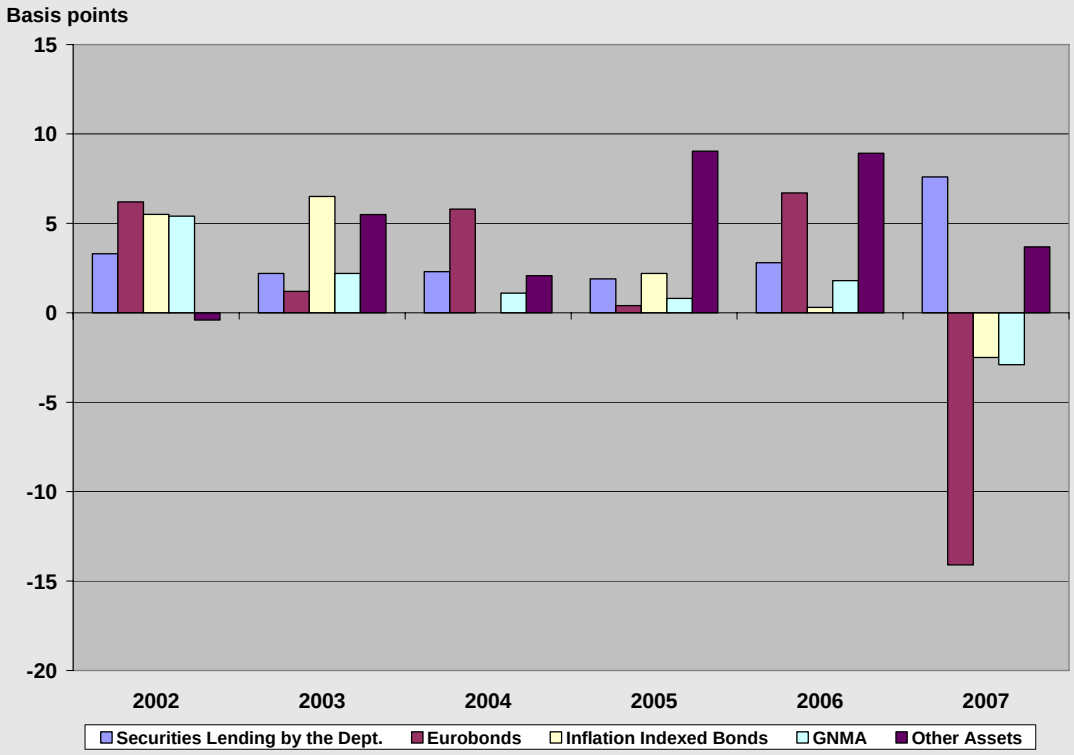
	Total reserve portfolio
Securities lending by the Department[12]	7.6
Eurobonds	-14.1
CD + CP	3.7
Inflation-linked securities	-2.5
GNMA	-2.9
Other assets and residual	0.0
Total contribution of asset selection	-8.2
Dispersion deriving from asset selection	-0.1
Total	-8.3

SOURCE: Bank of Israel.

As noted in Box 1 above, the reserves portfolio is not invested in mortgage-backed assets with the exception of GNMA securities, which are fully guaranteed by the United States Government. Similarly, the portfolio is not invested in types of assets whose prices respond in extreme ways to changes in the pricing of risk in global financial markets. The unusual conditions in 2007, however, did have a perceptible effect on the total contribution of asset management—which was 22.5 basis points lower than its average in the previous nine years—and on the internal composition of this contribution. Figure 12 illustrates the performance of asset management by components in recent years, showing both the difference in the levels of contributions of long-maturity spread-asset positions—Eurobonds, GNMA, and inflation-indexed bonds—which were negative for the first time during the review period, and in the level of the contribution of securities lending, which was very high. Furthermore, it is an accepted tactic in active management of bond portfolios to increase a position in a spread asset when the yield spread widens and to reduce it when the spread contracts. Accordingly, exposure to the Eurobonds yield spread was increased during the year.

[12] The lending of securities involves the linking of two trades—a repo transaction and a reverse-repo transaction or bank deposit. In the repo transaction, a security is loaned in exchange for cash that is "deposited" in a reverse-repo transaction against another security or invested in a bank deposit. The two trades are for the same term and have no effect on the duration of the portfolio. The Bank of Israel profits from such a pair of trades because the securities loaned in the repo transaction are in demand in the market by parties who are prepared to borrow them and to lend the equivalent value in money to the securities lender at a lower interest rate than that paid to the lender by depositing it elsewhere.

Figure 12—Contribution of Asset Selection by Components, 2002–2007



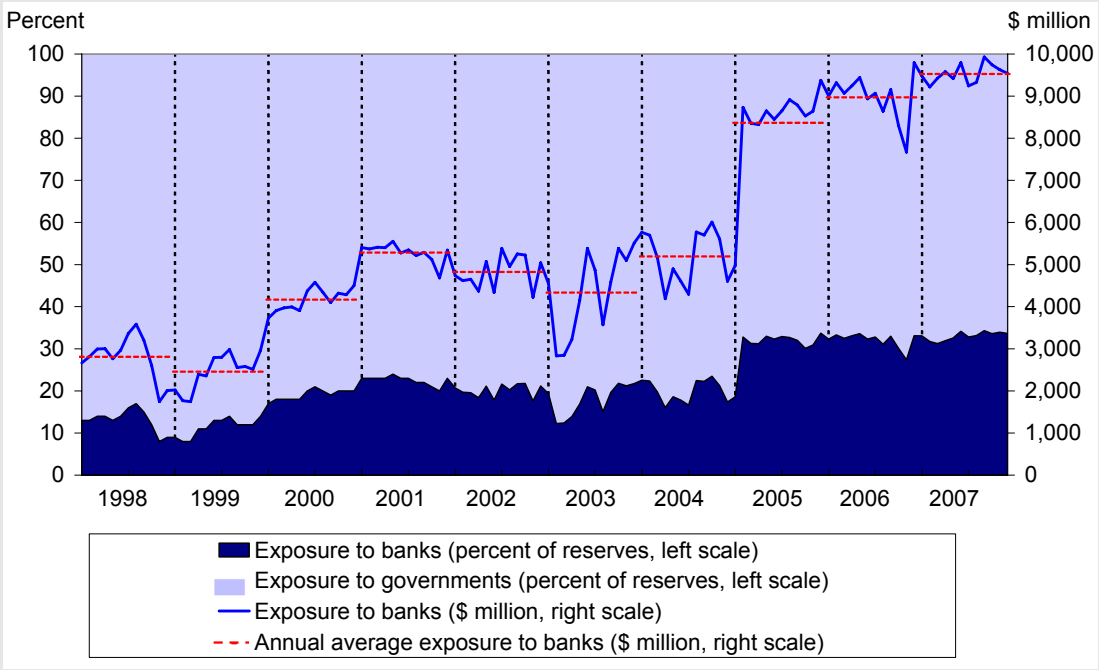
SOURCE: Bank of Israel.

d. Control of credit risk in ongoing management

As with many other central banks, the Bank of Israel's sensitivity to credit risk is greater than its sensitivity to other risks, such as interest risk. The credit risk which is necessary to the ongoing management of the reserves portfolio is managed by the Bank's internal restrictions—quantitative ceilings on various exposures and a system of investment regulations.

Exposure of the reserves to the international banking system, which includes exposure to banks on account of deposits (including tradable certificates of deposit—CDs) and on account of other trades done with them, is an important part of the reserve portfolio's exposure to credit risk. This exposure is restricted to a ceiling of 35 percent of the portfolio. The actual annual average exposure of the reserves to banks stood at 33 percent of the reserves in 2007, slightly higher than the 2005–2006 average of 31.5 percent (Figure 13).

Figure 13—Exposure to Banks and Governments, 1998–2007



SOURCE: Bank of Israel.

Box 2
Activities of the Foreign Currency Department in 2007

The Foreign Currency Department carries out a wide variety of activities, some essential for the management of the reserves portfolio and others related to the Bank of Israel's role as the government's banker. Below we describe these activities briefly, focusing on the effects of events in 2007. As with any organization that operates in the financial markets, these areas of activity may be divided into those of the front office, the middle office, and the back office, all directed by the management echelon. (The account that follows is organized by types of activity and does not necessarily reflect the Department's current organizational structure.)

The front office, or dealing room, engages in real-time surveillance of developments in financial markets, including markets in which the reserves are not invested. It makes decisions crucial to the implementation of the reserves' investment policy—both aligning the reserves with the benchmark to the requisite extent and practicing active management—and executes the required trades in the financial markets. The dealing room is also the Bank's "window on the financial markets" and a center for the collection of real-time information at times of instability.

The middle office is in charge of day-to-day monitoring of the portfolio's exposures to various financial risks and enforcing compliance with the investment policy rules that limit these exposures. It also provides the Department management with staff services in identifying and planning necessary updates of the investment policy, both at the level of "worldview" (in accordance with domestic and foreign economic developments) and in policy details. Finally, it monitors developments in the areas of financial research and market analysis from a long-term perspective—developments that may have implications for the management of the reserves.

To be able to execute trades, the Department may find it necessary to negotiate and sign many contracts of diverse kinds. Conduct of this area of activity is handled by the middle office in conjunction with the Bank's Legal Department.

These two areas—the dealing room and the middle office—also provide inputs for the Bank's decisions on domestic interest rates and discussions of other policy issues unrelated to investing the reserves. Needless to say, the crisis that struck the global financial markets in the second half of 2007 led to increased demands of this type on the Department's resources.

The back office is in charge of several kinds of activity: settling trades, managing cash accounts, communications, accounting, monitoring outside managers, and enforcing rules of compliance, to name only a few. Settling trades includes a lengthy series of actions, mainly preparing and sending out settlement instructions to various parties for the transfer of funds and securities. These actions must be carried out with great exactitude and on a tight and rigid schedule, because the cost of a "failed trade" (nonperformance or delinquent performance) may be quite high.

The entire process is subject to real-time auditing by an independent officer and to subsequent examinations by officials in and outside of the Department.

Another area of Department activity within the back office's purview is the provision of foreign-exchange banking services to government offices and auxiliary units and limited services to the commercial banking system. The Department transfers funds on account of imports and exports by government and auxiliary units and for the day-to-day operation of Israel's diplomatic missions around the world. It also handles foreign-currency deposits that commercial banks place with the Bank of Israel for various purposes.

This last-mentioned area of activity became centrally important in 2007 because the banks use much of the sums that they deposit as collateral for the transfer of

domestic currency via the ZAHAV (RTGS) payments system. The Department invests the sums on deposit in a way that offsets as much as possible the exposure to currency and interest risks that the Bank of Israel assumes by accepting these deposits, which create a liability of the Bank of Israel to the domestic banks. These investments earn interest at roughly the rate that the Bank pays the domestic banks for the deposits. Accordingly, apart from having to allocate resources to handle these deposits, the Bank incurs a direct pecuniary cost by accepting them, since it is impossible to invest the sums received in ways that would generate more earnings than the interest paid on the deposits without creating exposure to a financial risk such as interest-rate risk.

The Department maintains relations with institutions around the world—commercial banks, investment houses, other central banks, and international agencies. These relations also are helpful to the decision-making process of managing the reserves, in all its aspects, and to the design and the management of the Bank's policies and its activities in the financial markets. In this context, the efforts of the Department in 2007 to promote the inclusion of the Israeli shekel as one of the currencies settled via the CLS system are worthy of note. In May, 2008, CLS Bank formally announced that the shekel had been designated as one of the currencies eligible to settle through CLS.

Finally, under the planned restructuring of the Bank of Israel, most of the Department's activities will be transferred to the soon-to-be-established Financial Markets Division, where they will be joined by the Bank's activities in domestic financial markets. Although these changes will not be made until 2008, planning and preparing for them were among the Department's most important activities in 2007.

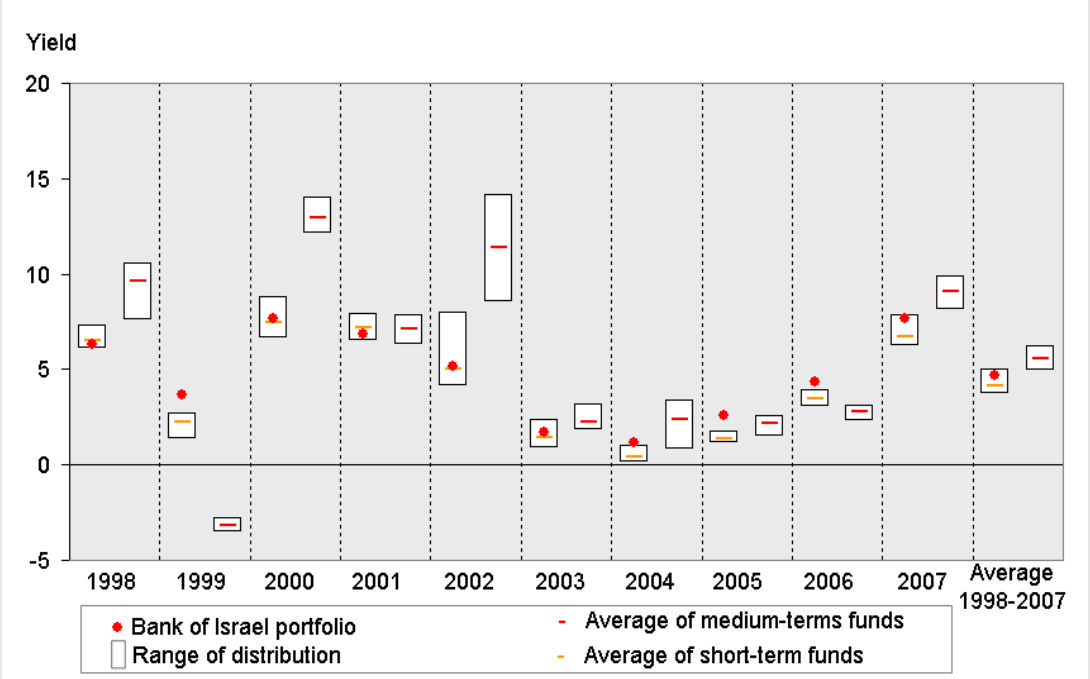
3. YIELD ON THE RESERVES PORTFOLIO RELATIVE TO OTHER MANAGED PORTFOLIOS

The comparison of portfolios in terms of performance is problematic because different portfolios are generally managed against different benchmarks and under different rules. Nonetheless, something may be learned from a comparison of portfolios that have similar characteristics.

The performance of eleven mutual funds that operated in the American market in 1998–2007 will be used for the comparison. These funds were primarily invested in US government bonds. 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—Treasury Inflation-Protected Securities) or in low-rated assets (less than AA).[13] These traits 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. It should be borne in mind, however, that the performance of the funds is net of commissions that reflect the cost of ongoing operations while the performance of the US dollar reserves portfolio is reported without subtracting this cost.

Figure 14—Performance Distribution of Managers of Short- and Medium-Term Funds in the US Market, 1998–2007

(percent, in annual terms)



SOURCE: Bloomberg. Fund selection is also based on data from Lipper Inc. (via the Wall Street Journal internet site).

[13] These assets may have included a component of corporate bonds, which the Bank of Israel is not permitted to hold.

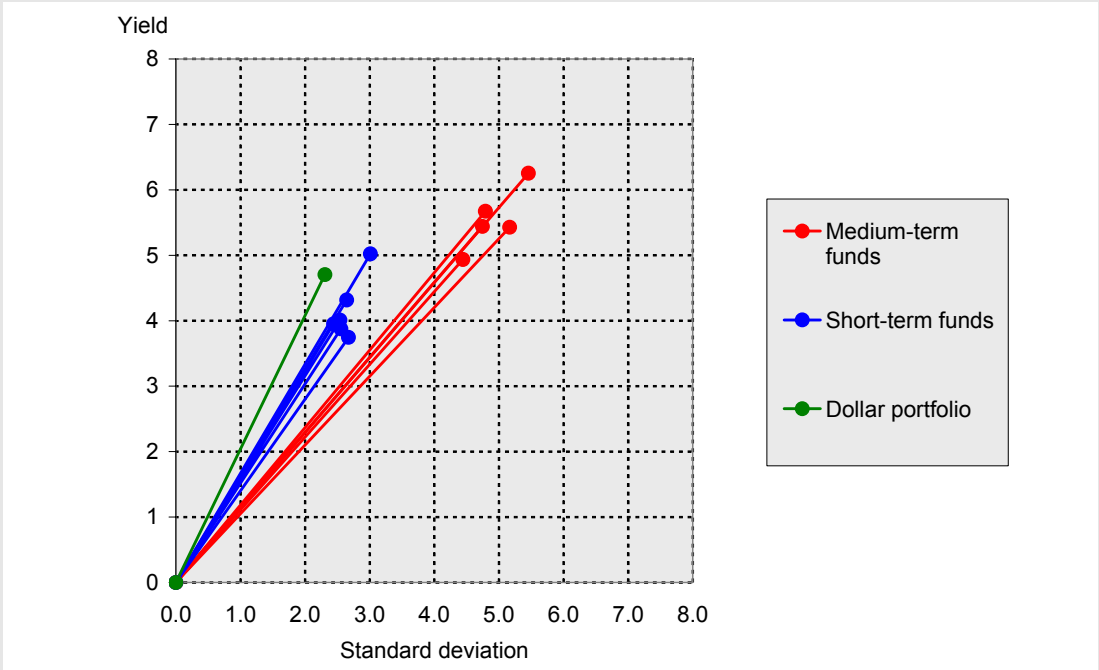
Figure 14 presents the range of annual holding period rates of return on the funds since 1998 for each type of fund—"short-term" and "medium-term." For each period, the graph shows the lowest and highest yields among the group of portfolios, the average yield for the group, and the performance of the US dollar portfolio. An examination of the range of the yields indicates that the performance of the dollar portfolio during the review period was within or above the range of fund yields. In 2007, the holding-period rate of return of the dollar portfolio surpassed the rate of return of most short-term funds but fell short of the lowest rate among medium-term funds. The average performance of all the funds taken together exceeded that of the dollar portfolio by 12 basis points. In the 1998–2007 period, too, the rate of return of the dollar portfolio approximated that of the funds as a whole. The data imply that the duration of the dollar portfolio is closer to that of the short-term bonds than to that of the medium-term ones. What is not clear, however, is the extent to which the positioning of the dollar portfolio on the scale of the short-term funds' holding-period returns is due to differences in duration or to differences in the mix of assets. Due to lack of information about the other funds' duration management, the Bank cannot compare the funds' duration with that of the dollar portfolio over time.

The data also demonstrate the wide variation of yields among the funds, which implies differing investment allocations, and the high volatility of the yields on medium-term funds, as compared to that of the short-term funds. The latter apparently reflects the longer duration of the medium-term funds. Nonetheless, both groups of funds exhibit a similar narrow range of cumulative yields. The return for the added risk associated with the longer duration of the medium-term funds is that the range of cumulative yields of these funds is some 1.2 percent higher than that of the short-term funds.

This finding is even more apparent when one compares the average yield of each fund with its volatility during the 1998–2007 period. These are presented in Figure 15, which also shows the average yield of the dollar portfolio and its volatility during the period. The yield-to-risk ratio is significantly higher in the dollar portfolio than in the other funds, as can be seen in the figure from the slope of the line joining each observation to the origin.. Also evident is the higher yield-to-risk ratio among the short-term funds than among the medium-term funds. The differences in yield-to-risk ratio between the dollar portfolio and the various funds is due to the narrow range of variation among the yields as against the wide range of variation in volatility.

Figure 15—Yield and Risk: the Dollar Portfolio vis-à-vis Funds in the US Market, 1998–2007

(percent, in annual terms)



SOURCE: Bank of Israel.

4. THE LIQUIDITY OF THE RESERVES[14]

The level of liquidity of the reserves portfolio is an estimate of the portion of the portfolio that can be realized quickly and without loss in value. To monitor the general level of liquidity of the portfolio on an ongoing basis, the assets in the portfolio are divided into four groups ranked by the possibility of selling them quickly without the sale itself causing a loss. The securities were grouped on the basis of the bid–offer spread for tradable assets and term to maturity for nontradable assets. The groups are:

1. Very liquid securities;
2. Liquid securities [15]

[14] A detailed discussion of the level of liquidity of the reserves and the management of this liquidity may be found in Box 2.1 in the 2002 *Annual Report* of the Foreign Currency Department.

[15] In 2007, the boundary between "very liquid" and "liquid" securities was set at 3 cents, in contrast to the 2-cent boundary used in previous years. This decision followed an examination showing that the latter cutoff point is more compatible with the boundary as defined in basis points, which was

3. securities and other assets maturing within a month's time;
4. all other assets.

The first three groups constitute the liquid component of the reserves. The difference in levels of liquidity among these three groups is relatively small and the ranking of liquidity level of the third group vis-à-vis that of the first two is a matter of judgment. The fourth group, however, is clearly less liquid than the first three. Importantly, the bid–offer spread for a particular type of asset may widen considerably in times of crisis in the international financial markets. Therefore, the cost of realizing part of the reserves at a time of global crisis (as opposed to only a domestic crisis) may be greater than that implied by the level of liquidity of the reserves measured according to the bid–offer spread as observed in normal times.

The liquid component of the reserves in 2007 accounted for 91 percent of the total reserves on average, similar to the 2006 level (Figure 16). The overall level of this aggregate hardly changed after the crisis broke out but its internal composition changed as a result of the crisis: the "liquid" group expanded at the expense of the "very liquid" group (Figure 16). The main reason for the change was the widening of bid–offer spreads on Eurobonds after the crisis began in August, inducing the shift of some "very liquid" assets to the "liquid" group. Furthermore, the percent of Eurobonds in the portfolio climbed gradually during the year, from 12 percent at the beginning to 22 percent at the end. (See discussion in Section 2c[3] above.) Even though the bid–offer spreads of CD and CP assets widened after the crisis began, they remained within the "liquid" group. The percent of such assets also increased gradually during the year, from 15 percent to 21 percent, thus increasing the weight of assets in the "liquid" group.

On average, 9 percent of the reserves portfolio in 2007 was invested in assets that were not classified as being part of the liquid component of the reserves portfolio since they are characterized by lower liquidity. This group is composed of externally managed funds (which are invested primarily in GNMA securities), bank deposits to terms of more than one month, and some Eurobonds.

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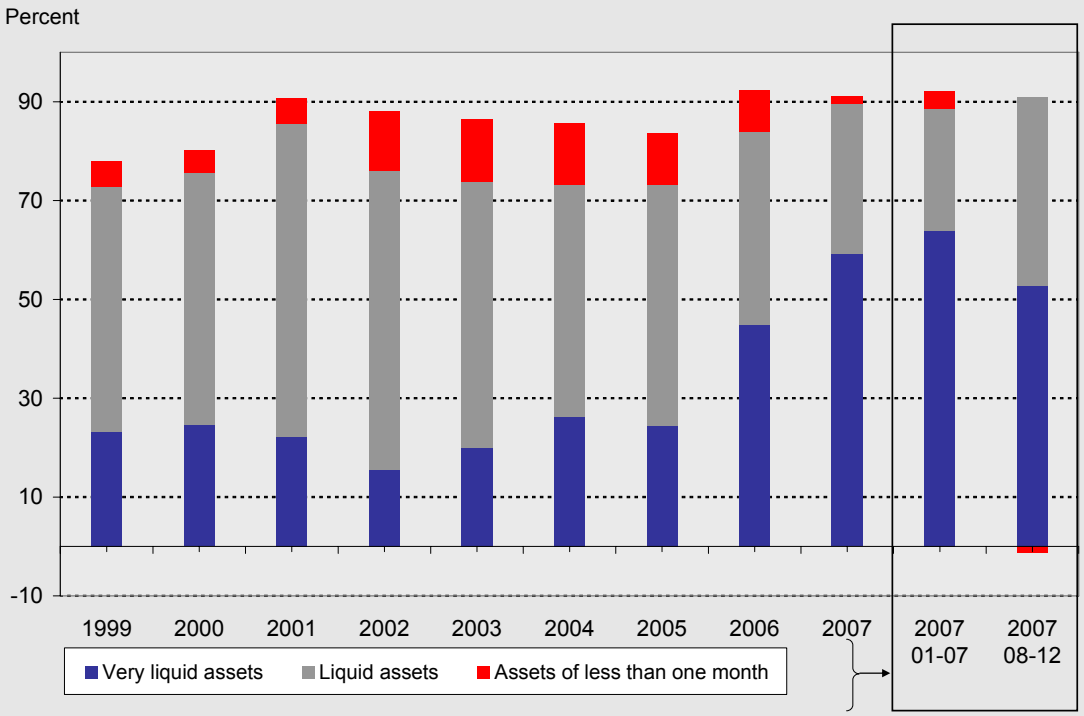
unchanged. The definition should have been changed for previous years as well, but this was not done due to technical constraints.

Figure 16—Liquidity of the Reserves Portfolio, 1999–2007

(annual average)



SOURCE: Bank of Israel.

Given the purposes of holding foreign exchange reserves and the ability to sell a large part of them in a short time without depressing their value by so doing, it appears that their liquidity level is high enough despite the gap between the actual level of the reserves and the desired level. This is because the liquid component of the reserves seems to be large enough to cover any uses that are likely to be required at short notice.

The high liquidity of the reserves is due to two main factors. One is the investment policy, based on the Bank of Israel Law, that prescribes a conservative approach to the management of financial risks and defines liquidity as one of the main goals in managing the reserves. The second factor consists of economic-advisability considerations, based mainly on the width of the financial spreads of the various spread assets and the paths they are expected to follow relative to their risk. In view of these considerations, the Bank has made only partial use of its discretion to invest in low-liquidity spread assets in recent years.