Chapter 1

Israel's Banking System: A Long-Term View

Israel's banking system underwent a difficult year in 2001: profits of the banking groups declined significantly, and risks, especially credit risk, rose. The reasons underlying the poor performance of the banking system included the deep recession that gripped Israel's economy in 2001; the deterioration in the security situation, and political security-related and economic uncertainty which affected several main industries—construction and real estate, tourism, high-tech and communications; crises in the money and capital markets in Israel and abroad, which started with the collapse of the Nasdaq in the US at the end of 2000 and which worsened after the terrorist attacks in the US in September 2001.

Total profit of the five major banking groups went down from NIS 3.9 billion in 2000 to NIS 2.1 billion in 2001, so that their ROE (return on equity) fell from 11.7 percent in 2000 to 5.9 percent in 2001. The ROE in 2001 was lower than the average of the ten years from 1992 to 2001, 9.3 percent, and even further below the two-digit figures achieved in the four years 1997–2000 (an average of 11.2 percent).

There were three main components of the banks' total profits which accounted for the reduction in profits in 2001.

1. The loan-loss provision rose steeply from NIS 2.3 billion in 2000 to NIS 4.4 billion in 2001, and the share of loan-loss provision in total credit at the banks' responsibility went up from 0.5 percent to 0.85 percent. The high provisions were the result of the economic difficulties which the principal industries were experiencing, and of the directives of the Supervisor of Banks regarding a special provision in the light of the economic developments described above.
2. The contribution of subsidiaries to the profits of the banks declined heavily. In 2000 the investment in subsidiaries yielded profits of NIS 1.8 billion, and in 2001 this fell by NIS 400 million to

NIS 1.4 billion. The most notable reduction was the reduction of NIS 403 million in the contribution to profits made by the companies included under an equity method (mainly nonfinancial companies), against the background of the severe slowdown in economic activity which had a substantial effect on large corporations such as Koor Industries and the Israel Corporation.

3. The banks' non-interest income fell by NIS 315 million.

These three factors reflect the macroeconomic development outlined above—the slowdown in domestic economic activity (expressed in a drop in GDP and business-sector product) as well as the worldwide slowdown, which raised credit risks, and the slump in the capital markets in Israel and abroad which led to the reduction in activity on the Tel Aviv Stock Exchange.

The reduced quality of the banks' credit portfolio in 2001 was reflected not only by the increased loan-loss provision but also by the continued steep rise of the credit/GDP ratio, which encompassed most of the principal industries (with construction and real estate the most prominent), and by the rise in the ratio of problem loans to banks' capital.

The trend of rapidly rising credit to the public evident in the last few years persisted in 2001, and can be seen in the rising credit/GDP ratio since 1997. The expansion of credit against the background of the economic slowdown in general and in some of the major industries such as real estate, manufacturing and communications in particular, reduces firms' repayment ability; the low degree of banks' internalization of the full risks inherent in bank credit is therefore surprising,

The recognition of the positive relation between economic activity and businesses' credit repayment ability was reflected in the reduced amounts they raised on stock exchanges in Israel and abroad in 2001, and in a significant cutback in the amount of direct credit they obtained from abroad in the last few years (Table 1.2). The burden of financing current activity and long-term investments of Israeli firms apparently was borne by the banking system. Such a development serves to increase the (long-term) dependence of the companies on the banking system, but as stated, it raises credit risks, making it difficult for the banks to achieve performances similar to those of the last few years.

As ROE in Israel's banking system declined in 2001, so did the risk-based capital ratio, as it has been doing since the beginning of the 1990s; this ratio is an important indicator of the banks ability to absorb operational losses. Although its average level in 2001 was 9.4 percent, above the minimum requirement of 9 percent, in some banks it is very close to the 9 percent

figure. It is important to note that the risk-based capital ratio in western countries, including some in the same peer group as Israel (e.g., Belgium, Denmark, Finland, Greece, Ireland and Sweden) is significantly higher than that in Israel, although the minimum capital ratio required by the authorities in those countries is only 8 percent. The proximity of the capital ratio in Israel to the minimum required, and the fact that banks use up to the maximum permitted Tier 2 capital components (mainly subordinated notes) in Tier 1 capital¨ restricts banks' ability to grow, and lowers their capacity to deal with a possible realization of banking risks in the future. This assessment becomes even more acute in the light of the expectation that the recession will continue in some main industries—construction and real estate, communications, and computer services, hotels and catering services, etc.—in 2002. It seems that the Tel Aviv Stock Exchange also overestimated the performance of the banks in the last few years, and that in view of the economic and security-related difficulties confronting the country further deterioration in their results may be expected. This can be seen from the ratio of market value to book value of the five major banking groups in the last two years, and particularly in the first quarter of 2002. Another measure which indicates the banks' poor performance in 2001 is provided by the risk-adjusted return on capital (RAROC), which declined sharply in all banks.

In 2002:I the banking groups showed further deterioration in their performance (calculated on an annual basis): bank credit, a major source of profit for the banks, grew by only 3 percent; return on equity (ROE) went down sharply to only 4.2 percent (although slightly ahead of the risk-free return on government bonds of 3.9 percent); and credit risks continued to rise, reflected by a rise in the ratio of loan-loss provision to total credit to 0.95 percent.

The slower increase in bank credit, signs of which could already be seen in 2001:IV, was the banks' reaction to the deterioration in their capital adequacy, and it may also point to their caution in increasing credit (by rationing) and to their tightening up the conditions for credit at a time when the recession was affecting economic activity more deeply, the security situation was getting worse, and credit risks—the direct result of such developments—were rising.

There are good reasons for assuming that the continued standstill in economic activity and further decline in the security situation will adversely affect borrowers' repayment ability, and this would be reflected in the banks' results in the near future. The continued fall of the market values of the five major banking groups relative to their book values in 2002:I reinforces this assessment.

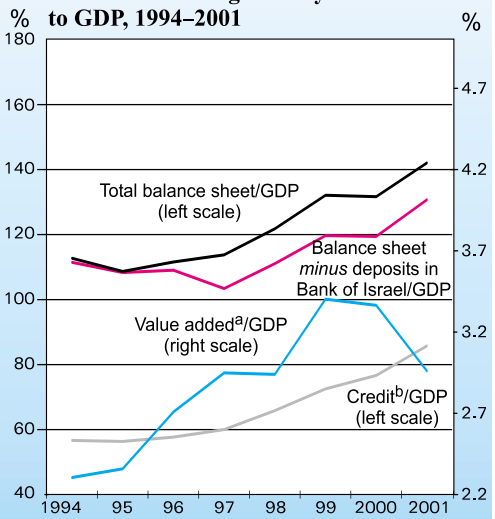
In April 2002 an embezzlement was discovered in the Trade Bank which far exceeded the bank's equity. A manager was appointed, and thereafter a provisional liquidator. The full lessons regarding the future (optimal) structure of Israel's banking system or the required method of supervision over the system have not yet been learned, but it is clear that such a serious event will have a lasting and deep-felt effect.

1. THE ACTIVITIES AND PERFORMANCE OF ISRAEL'S BANKING SYSTEM: A LONG-TERM VIEW

a. The commercial banks

Despite the drop in the profits and profitability of the banking system, the activity of the commercial banks continued to grow in 2001, although slightly more slowly than in the past. The average balance sheet grew by about 7.5 percent (compared with annual increases of 8 percent and 11 percent in 2000 and 1999 respectively), to NIS 637 billion (Table 1.1). The expanded activity against the background of a slowdown in general economic activity resulted in a rise in the total balance sheet/GDP ratio from 1.32 to 1.42. This ratio declined constantly in the early 1990s, but since 1996 has followed an upward trend—even if the banks' deposits in the Bank of Israel are deducted (as they are not connected to domestic product), both those related to the reserve requirements and those under the periodic auctions of deposits at the Bank among the commercial banks.

Figure 1.1
Indices of Banking Activity Relative to GDP, 1994–2001



[a] Value added is net before-tax operating income, salaries, general expenses, maintenance and depreciation on buildings and equipment.
[b] Credit to the public, excluding guarantees.
SOURCE: Returns to Supervision of Banks and Central Bureau of Statistics data.

Another measure which reflects the activity of the commercial banking system is the ratio of the system's value added (representing banking output) to GDP. This ratio went down from 3.4 percent in 2000 to 3.0 percent in 2001, due to the sharp fall in banks' profits (Figure 1.1), continuing the downward trend which started at the beginning of the 1990s (and which stopped temporarily in the second half of the decade).

In 2001 the rise in banks' activity was mainly the result of the accelerated growth

Table 1.1
Activities of the Commercial Banks,[a] 1996–2001

(percent)

	2001	1996	1997	1998	1999	2000	2001
	(*NIS million, Dec. 2001 prices*)[b]						
Rate of change[b]							
Total balance sheet							
Total assets	637,398	4.9	6.1	8.5	10.9	7.9	7.5
Total credit to public	381,945	7.7	7.3	10.5	12.0	13.7	12.7
Total deposits of public	537,931	18.2	12.6	15.5	12.3	9.9	10.8
Monetary loans from Bank of Israel	973	–56.4	–45.7	–60.0	–1.8	–9.7	–8.1
Deposits in Bank of Israel[c]	53,343			48.4	13.4	3.1	13.5
Share of segment in balance sheet[d]							
Unindexed	234,918	26.9	30.0	31.8	32.0	34.5	36.9
Indexed	154,831	35.5	34.1	30.9	29.3	27.0	24.3
Foreign currency[e]	213,423	31.9	30.5	31.8	33.1	33.1	33.5
Net interest margins by segment							
Unindexed		5.1	4.2	3.3	3.2	3.0	2.8
Indexed		1.1	1.2	0.9	0.8	1.2	1.0
Foreign currency		1.3	2.0	2.8	2.2	1.7	1.5
Total net interest margin		2.7	2.5	2.0	2.1	2.0	2.0

[a] The tables in this survey, including comparative data, are adjusted according to the description of assets and liabilities in the published financial statements. The tables do not include activity contingent on collection.
[b] Average balances and their rates of change.
[c] Including liquid assets in the Bank of Israel arising from the reserve requirement.
[d] Not including buildings and equipment and nonfinancial assets included in the balance sheet. Hence the figures do not total 100 percent.
[e] Indexed to and denominated in foreign currency.
SOURCE: Returns to Supervisor of Banks.

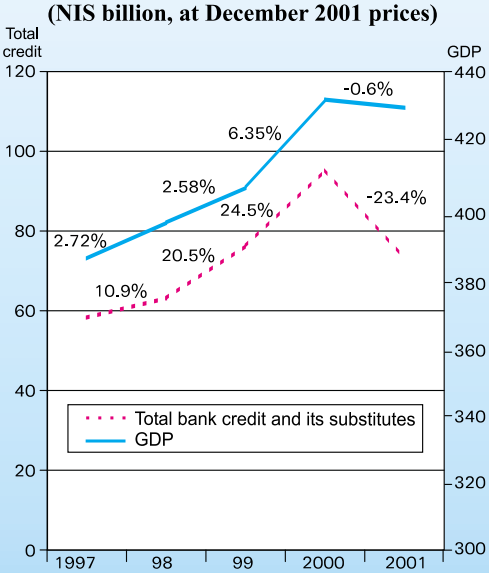
of credit to the public, as it had been in the previous five years. On average credit rose by 12.7 percent in 2001, following its 13.7 increase in 2000. With the exception of the first nine months of 2000, when GDP surged at an accelerated annual rate of 9.1 percent, economic activity has been decelerating for the last five year. The trend worsened in 2001, and GDP actually fell 0.6 percent, and business-sector product by 1.9 percent. With these developments providing the backcloth, the constant increase in the demand for credit needs to be explained.

In past annual reports on Israel's banking system several possible explanations were proposed for the negative link between changes in the amount of bank credit and changes in economic activity:

1. The rise in demand for credit to purchase control over corporations (which is not directly reflected in GDP) as part of the privatization process.
2. The accelerated rise in the stock of gross capital stock, which is supported by bank credit.
3. Structural and technological changes which require large investment to increase physical capital stock.
4. Firms' growing need to finance working capital as a result of the economic slowdown.

To examine the connection between corporations' financing needs and the level of economic activity requires a distinction to be made between the sources of finance, i.e., bank credit or credit from alternative sources including raising capital on a stock exchange in Israel or abroad. Viewed from this aspect it can be seen that over the last five years there was a positive connection between the level of economic activity and corporations' financing requirements, as expected. Credit flows from all sources, i.e., from the banking system and from nonbank sources, declined by 23 percent, from NIS 95 billion in 2000 to NIS 73 billion in 2001, a reduction which is consistent with the slowdown in economic activity in this period (Table 1.2 and Figure 1.2). Part of the increase in bank credit despite the slowdown can be explained by the crisis which affected the capital markets in Israel and abroad in 2001. As this significantly reduced the ability of firms to raise capital

Figure 1.2
The Flow of Bank Credit and its Substitutes,[a] and GDP, 1997–2001
(NIS billion, at December 2001 prices)



[a] The change in balance of credit to the public in the commercial and mortgage banks is an estimate of credit flows from the banking system. Credit substitutes include direct credit from abroad, raising capital in Israel and abroad via shares or corporate bonds, and finance from venture-capital funds.
SOURCE: Returns to Supervision of Banks and Central Bureau of Statistics data.

Table 1.2
Bank Credit Extended,[a] and its Main Substitutes, 1997–2001

(NIS million, December 2001 prices)

	Bank credit extended[a] (net)	Main credit substitutes[b]	*of which* Capital raised by Israeli firms on foreign stock markets[b]	*of which* Direct credit from abroad	Total credit	Share of bank credit (net) in total credit
1997	34,729	23,554	6,356	8,124	58,283	0.596
1998	40,130	23,040	3,411	8,659	63,170	0.635
1999	44,036	32,221	14,281	6,757	76,257	0.577
2000	47,648	47,613	18,082	3,099	95,261	0.500
2001	44,934	28,057	6,069	3,898	72,991	0.616

[a] Credit from commercial banks and mortgage banks. It is assumed that changes in the credit balances reflect the flow of new credit.

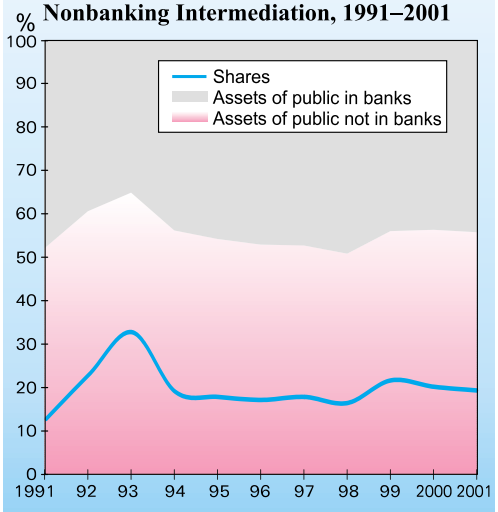
[b] Capital raised in Israel and abroad by the private sector, direct credit from abroad, and credit from venture capital funds.

[c] By means of shares and bonds.

SOURCE: Monthly returns to the Supervisor of Banks and Monetary Department, Bank of Israel.

on the stock exchange to finance their current activities, they increased their demand for bank credit. Thus the share of the banking system in the financing firms' current activities increased from 50 percent in 2000 to about 62 percent in 2001, reversing a downward trend that had prevailed for three years.

Figure 1.3
Banking Intermediation vis-à-vis Nonbanking Intermediation, 1991–2001



SOURCE: Returns to Supervisor of Banks and Monetary Department, Bank of Israel.

It is clear that against the background of the positive connection between economic activity and borrowers' repayment ability, raising the level of firms' dependence on the banking system to finance their current activities and their long-term ones (investment) adversely affects the quality of the banks' credit portfolio, so that banks too find it difficult to achieve the typically good results of most of the 1990s and 2000. The poor results of the five major banking groups in 2002:I highlight this connection: ROE declined to 4.2 percent (only slightly above the risk-free rate of return), and the share of loan-loss provision in total credit continued to rise, and reached 0.95 percent.

(i) The public's asset portfolio: deposits

Deposits of the public are a main component (about 80 percent in 2001) of

the sources which banks raise to finance their activities, and also a large part of the public's asset portfolio (Table 2.4). In 2001 deposits accounted for 44.2 percent of the public's total asset portfolio, slightly above the figure in 2000, but very much below that in the years from 1995 to 1998, when it averaged 48.5 percent.

Deposits of the public rose by 10.8 percent in 2001, similar to the average rate of increase in 1999 and 2000.

As in the past few years, most of the rise in deposits in 2001 was in unindexed local-currency deposits, which went up by about NIS 40 billion, or 18 percent. This increase was the continuation of a long-term trend which began at the end of the 1980s, with the public preferring unindexed short-term assets to CPI- or exchange-rate-indexed ones. This preference was largely due to monetary policy which had lowered inflation and uncertainty regarding inflation.

The share of unindexed local-currency deposits in the public's portfolio leaped up to a new level at the beginning of 1994, the year of the stock-exchange crisis, and since then the share has risen from 9 percent to 24 percent in 2001.

In 1999 both yields and turnover on the stock exchange recovered somewhat, and this had the effect of reducing the share of total bank deposits by about 5 percentage points, to 44 percent of the public's assets. The crisis erupted again in 2000, and the share of the public's assets held in the banks has remained more or less stable at 44 percent in 2000 and 2001.

(ii) Bank credit

The average balance of bank credit to the public came to NIS 382 billion in 2001, after rising by 12.7 percent from its 2000 level. The rate of increase of credit was faster than the rate of GDP growth again in 2001. The credit/GDP ratio was 85.7 percent at the end of 2001, up from 76.7 percent in 2000 and only 56 percent at the beginning of the 1990s (Figure 1.1). The change in this ratio has implications for banks' credit risks, and its rise over the last few years has lowered the quality of bank credit. Reverting to the division of the sources of firms' finance into bank and nonbank sources, the share of bank credit went down in 1998–2000, and rose again in 2001, mainly due to the slump in the stock exchanges in Israel and abroad (Figure 1.2).

About half of the rise in credit in 2001 was in foreign currency, and this credit rose by 9 percent in dollar terms and by 17 percent in NIS terms, the result of the sharp depreciation of the NIS against other currencies. In 2001 a large share of foreign-currency credit was taken by Israelis part of whose activities are abroad, but foreign-currency credit to nonresidents who have dealings with local firms also grew. Most of the rise in credit took place in the first three quarters of the year when Libor was low and when expectations of exchange-rate changes were also low. With the sharp rise in the exchange rate in September and its associated uncertainty (also related to the terrorist attacks in the US), the demand for foreign-currency credit eased.

The rise in on- and off-balance-sheet credit given by the commercial banks in 2001 encompassed all the principal industries (see Chapter 2). Credit to the financial services

industry, the largest part of which is intended for the purchase of the means of control of corporations, increased by NIS 12 billion (12 percent); credit to manufacturing industry grew by NIS 11 billion (11 percent), and was directed mainly towards the advanced industries; credit to construction and real estate, affected by the slump in the high-tech industries which reduced their demand for commercial footage to rent, and by the recession in the industry itself, rose by only NIS 7 billion (6 percent); credit to households went up by some NIS 10 billion (10 percent), due to the increased need to finance private consumption in the light of the economic recession and reduced per capita income.

The ratio of credit to sector product rose in almost all industries, emphasizing the banks' exposure to credit risks in the various industries. For the banking system as a whole the ratio of bank credit (on and off the balance sheet) to business-sector product rose from 1.6 to 1.8, with the main rises occurring in construction and real estate (from 5.1 to 5.9), communications and computer services (from 0.9 to 1.1), and hotels and catering services (from 1.7 to 2.1) (Table 2.6).

(iii) Interest rates and financial margins

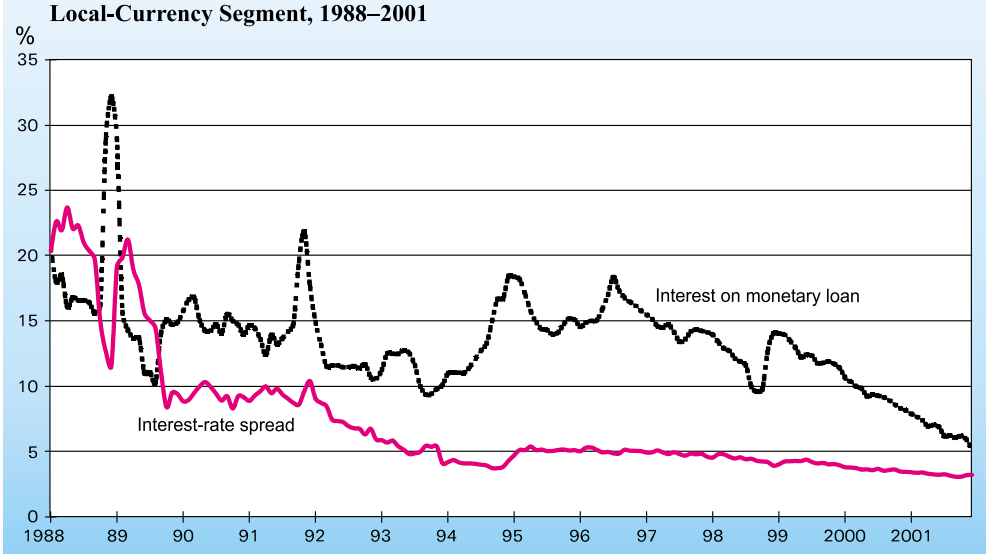
Changes in interest rates on unindexed deposits and credit, as well as in the interest-rate spread, are influenced by changes in the Bank of Israel's key interest rate, by shifts of the demand curve for credit and the supply curve of deposits, and also by changes in their elasticities.

Empirical research based on data of Israel's banking system has shown that in the long term there is a positive relation between the Bank of Israel's key interest rate and the interest-rate spread in the unindexed local-currency segment (Figure 1.4). This relation has weakened greatly since 1995, mainly due to the availability of floating-interest credit (indexed to the Bank of Israel interest rate or to prime), which reduced the average term of credit to a level similar to the average duration of deposits. (For a detailed discussion see the 2000 Report of the Supervisor of Banks on Israel's Banking System.)

In the course of 2001 the Bank of Israel cut the interest rate eleven times, by a cumulative 4.4 percentage points (from 8.2 percent to 3.8 percent), 2 percentage points of which was in the last week of the year.

The continuous cuts in the Bank's interest rate in 2001 were part of the monetary policy it adopted against the background of the worsening slowdown in economic activity, and the slump and uncertainty in the capital market, and the assessments that expected inflation was below the target level. The interest-rate spread in the unindexed local-currency segment (between fixed-term credit and fixed-term deposits) dropped from 3 percent in 2000 to 2.6 percent in 2001, extending the downward trend in the spread that has continued for fifteen years. The contraction of the spread in 2001 derived mainly from the change in the economic environment following the liberalization measures introduced in the money and capital markets by the government and the Bank of Israel, from reduced intervention by the government in the financial intermediation process, and from increased competition between banks and nonbank sources. The interest-rate spread was also affected as stated by the steps taken by the Bank of Israel—cutting the

Figure 1.4
Rate of Interest on Monetary Loan and Interest-Rate Spread, the Unindexed Local-Currency Segment, 1988–2001



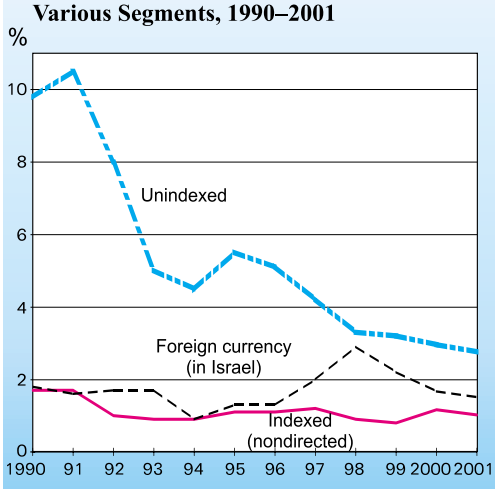
SOURCE: Returns to Supervisor of Banks and Monetary Department, Bank of Israel.

interest rate and significantly reducing the liquidity requirements applicable to the public's deposits. The net interest margin in the whole segment—which takes into consideration not only changes in interest rates but also changes in the composition of assets and liabilities and the effect on banks' income/expenses of their activities in derivatives (swaps, forwards, futures, etc.)—also declined in 2001, from 3 percent to 2.8 percent, continuing the long-term trend evident since 1990 (Table 2.12 and Figure 1.5).

Interest rates in the CPI-indexed segment are affected by changes in the Bank of Israel interest rate (albeit after a certain lag), by the yield to maturity on CPI-indexed bonds, which are affected by the government's borrowing needs (to finance its budget deficit), and by the demand for indexed credit.

The combination of the rise in the public's demand for CPI-indexed credit and the government's increased capital needs in 2001 on the one hand, and the sharp drop in the Bank of Israel's (short-term) interest rate on the other, led to the fall in real interest in the

Figure 1.5
Net Interest Margins in the Various Segments, 1990–2001



SOURCE: Returns to Supervisor of Banks.

indexed segment, and this in turn led to a slight contraction of the interest-rate spread in the segment, from 1.2 percent in 2000 to 1 percent in 2001.

Interest rates in the foreign-currency segment are affected mainly by changes in the Libor dollar rate. The Libor rate in effect serves as a basis for calculating interest in the foreign-currency segment, in the same way as does the Bank of Israel's key interest rate in the unindexed local-currency segment. This transmission mechanism has strengthened in the last few years, with the acceleration in the liberalization processes in the foreign-currency market, which increased the range of alternative foreign-currency deposits and credits. In 2001 the Libor dollar rate went down by 2.7 percentage points, so that interest on dollar credit to Israelis also fell, from 7.5 percent in 2000 to 4.9 percent in 2001 (Table 2.8).The outcome was that the spread between interest on foreign-currency credit to Israelis and that on exchange-rate indexed time deposits shrank from 5.9 percent in 2000 to 3.8 percent in 2001, and at the same time the net interest margin in the foreign-currency segment declined from 1.7 percent to 1.5 percent.

As a result of the changes (reductions) described above in the margins in the different segments and the rise in share of the unindexed local-currency segment (which has the highest net interest margin) in total uses from 30.8 percent to 34.2 percent, the overall net interest margin did not change in 2001, and remained at its 2000 level of 2 percent.

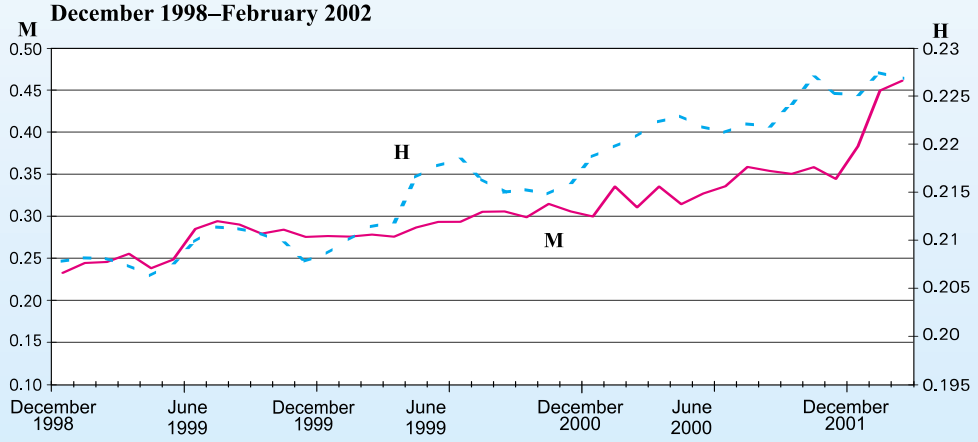
In addition to the classification into indexation segments, the development of interest-rate spreads may be examined by classifying banking activity by type of customer—households vis-à-vis firms. This analysis reveals that in the unindexed local-currency segment the interest-rate spread in banks' activity with households is significantly wider than in their dealings with firms. Figure 1.6 shows that the interest-rate spread, defined as the difference between the return on credit, which consists of income from interest and credit management fees, and the marginal cost of raising sources, consisting of (marginal) interest paid on sources (SROs) and operating expenses on activities with households, reached 7.8 percent at the end of 2001, compared with 3.2 percent in transactions with firms. The difference in the interest-rate spreads with regard to the two populations increased from an average 3.7 percentage points in 1999 to 4.2 percentage points in 2000 and up to an average of 4.8 percentage points in 2001. In addition to the interest-rate spread, a 'market power'[1] index and the Herfindahl (H) index of concentration in these two population groups were also calculated as indicators of the degree of competition in activity with the two groups. These two indices were also significantly higher in intermediation for households than in intermediation for businesses (Figure 1.6a–c).

The differences between the interest-rate spread, market power, and the H index may indicate that market discipline (one of the features of competition in the industry) is

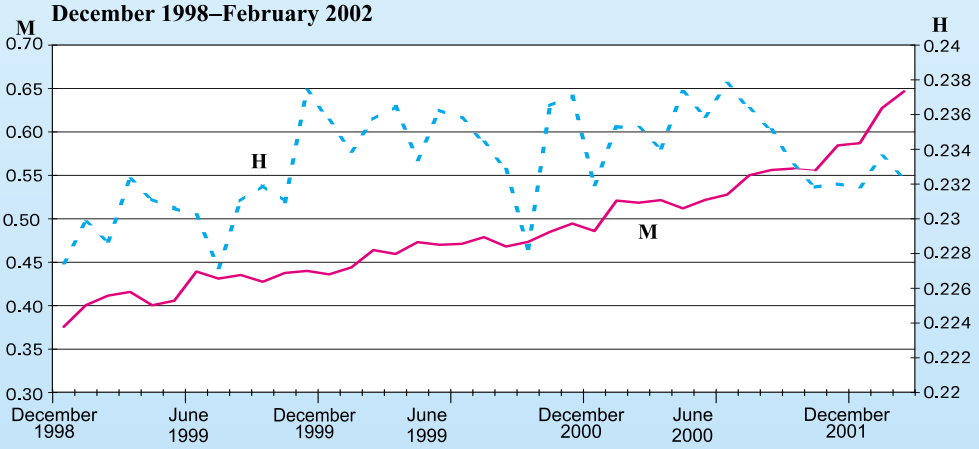
[1] Market power is defined as the relative deviation of the price of the product (income from interest and credit management charges) from its marginal cost (the interest on SROs *plus* the marginal operating cost). According to the financial statements published by the two largest banks, 60 percent of operating costs are attributed to the retail segment, and 40 percent to the business segment. For a full discussion see Chapter 1 of the 2000 Annual Report of the Supervisor of Banks.

Figure 1.6

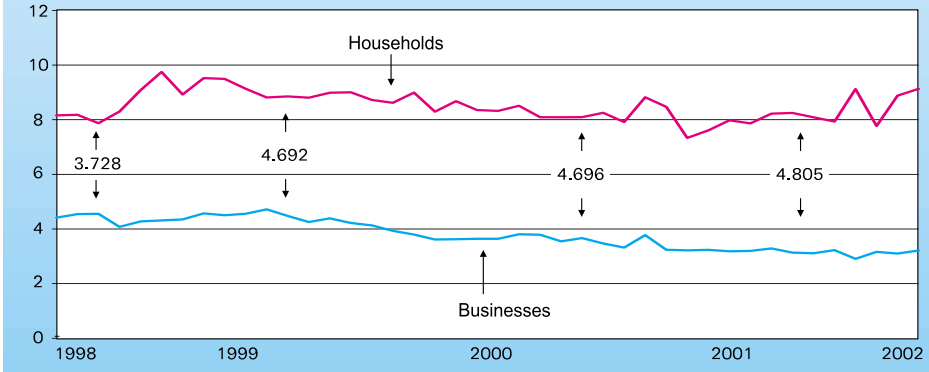
a. Concentration Index (H) and 'Market Power' Index (M) for Business Customers, December 1998–February 2002



b. Concentration Index (H) and 'Market Power' Index (M) for Households, December 1998–February 2002



c. Interest-Rate Spread[a] for Business Customers and Households in the Unindexed Local-Currency Segment: September 1998–February 2002



A Calculated as income from interest and management charges on unindexed credit *less* expenses on raising unindexed sources (interest rate on SROs and operating costs). The values express the difference between interest rates for businesses and for households, and are in percentage points, annual averages.
SOURCE: Returns to Supervisor of Banks.

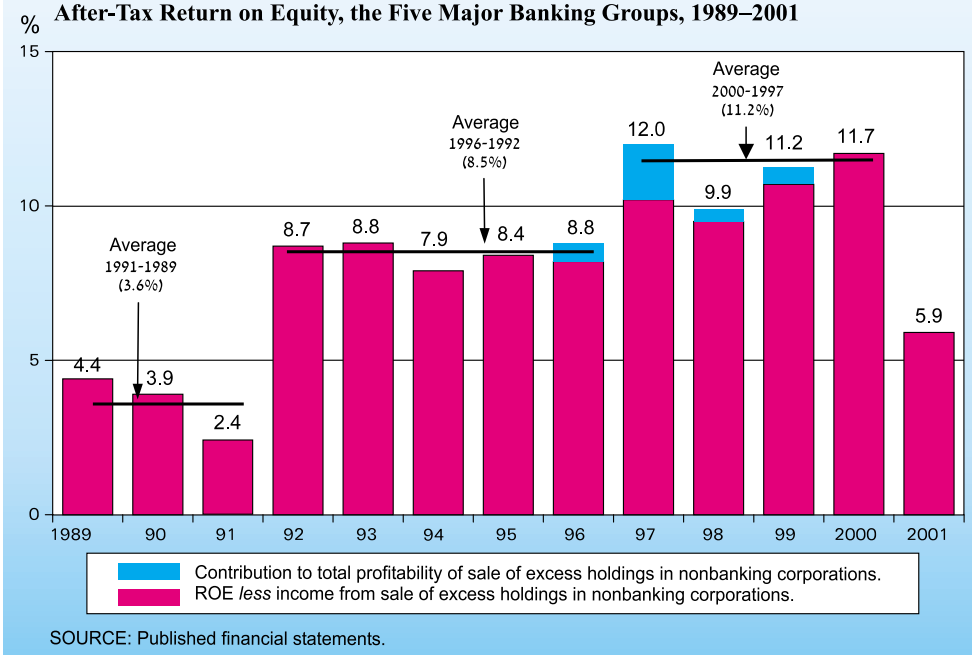
enforced more by large customers than it is by households. In other words, households have less power to negotiate with the banks, and they therefore tend to concentrate their activities in one or at most two banks. Businesses on the other hand have a stronger negotiating position and are less 'captive' to the banks, have accounts in several banks, and can therefore impose market discipline. Business firms' stronger bargaining position is also derived from the existence of more substitutes for bank credit available to them, such as raising money on the stock exchange (in Israel and abroad) and credit lines from banks abroad. Households, however, have hardly any alternatives to bank credit, except for liquidating savings and other assets.

b. Financial results and risks in the five banking groups

(i) Financial results

The total profit of the five major banking groups (including minority interests) dropped from NIS 3,886 million in 2000 to NIS 2,116 million in 2001. The decrease reflected a sharp drop in ROE in the five banking groups, from 11.7 percent to 5.9 percent (Table 1.3 and Figure 1.7). ROE in 2001 was lower than the average of the previous four years (11.2 percent) and lower also than the longer term average of 8.2 percent for the years 1989–2000. Once again there was marked variation between the ROEs of the different groups: in Mizrahi it was 8.5 percent; in Leumi, 8.1 percent; in Hapoalim, 7.8 percent; in the First International, 5.6 percent; and in Discount, a negative 3.9 percent (Table 3.2).

Figure 1.7
After-Tax Return on Equity, the Five Major Banking Groups, 1989–2001



SOURCE: Published financial statements.

Table 1.3
Financial Results of the Five Major Banking Groups,[a] 1994–2001

(percent)

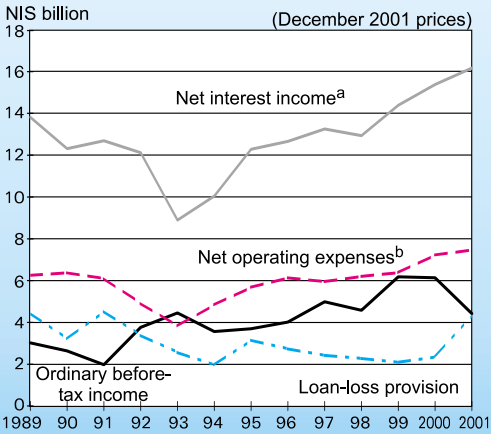
	1994	1995	1996	1997	1998	1999	2000	2001
	(NIS million, Dec. 2001 prices)							
Total after-tax profit	1,961	2,193	2,427	3,475	3,105	3,630	3,886	2,116
Total after-tax profitability (ROE)	7.9	8.4	8.8	12.0	9.9	11.3	11.7	5.9
Total net interest margin	2.2	2.6	2.5	2.5	2.2	2.4	2.3	2.3
Operating costs/total assets	2.8	2.8	2.7	2.6	2.5	2.3	2.4	2.2
Non-interest income/ total operating expenses	63.7	58.0	56.2	58.0	57.2	58.9	58.2	55.7

[a] For details see Table 3.2.
SOURCE: Published financial statements and returns to Supervisor of Banks.

There were three main reasons for the decline in the return on equity in the banking groups:

The first reason was the 86 percent increase in the loan-loss provision, which raised the ratio of the loan-loss provision to total credit at the banks' responsibility from 0.5 percent to 0.85 percent after many years (starting in 1988) of constant decline in this ratio. In 2001 the loan-loss provision rose by about NIS 2 billion, with most of the increase in the specific provision. Provision was made in almost all industries, but was most notable in communications, computer services, construction and real estate, manufacturing, hotels and catering services, and also against credit advanced to households. The high loan-loss provisions were the result of the economic difficulties these industries were experiencing, but they also reflected the directives of the Supervisor of Banks regarding a special provision against the background of the economic developments described above (Figure 1.8).

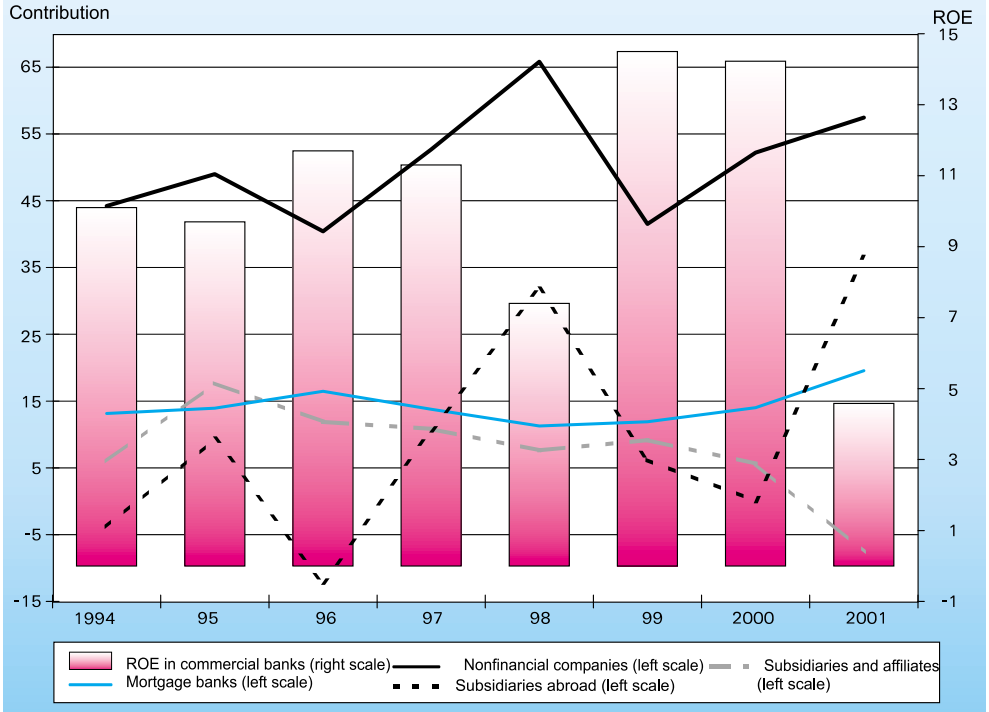
Figure 1.8
Effect of Income Components on Before-Tax Income, the Five Major Banking Groups, 1989–2001



[a] Before loan-loss provision.
[b] Operating expenses *less* non-interest income.
SOURCE: Returns to Supervisor of Banks.

The second reason was the reduction in the subsidiaries' contribution to the banks' profits. Whereas in 2000 the investment in subsidiaries yielded profits of NIS 1.8 billion, in 2001 this fell to NIS 1.4 billion. All investment categories in Israel were affected (commercial banks, capital-market companies, mortgage banks, and investment in nonfinancial companies)

Figure 1.9
Contribution of Subsidiaries and Affiliates, Subsidiaries Abroad, Mortgage Banks and Nonfinancial Companies to Net Income, the Five Major Banking Groups, 1994–2001
(percent)



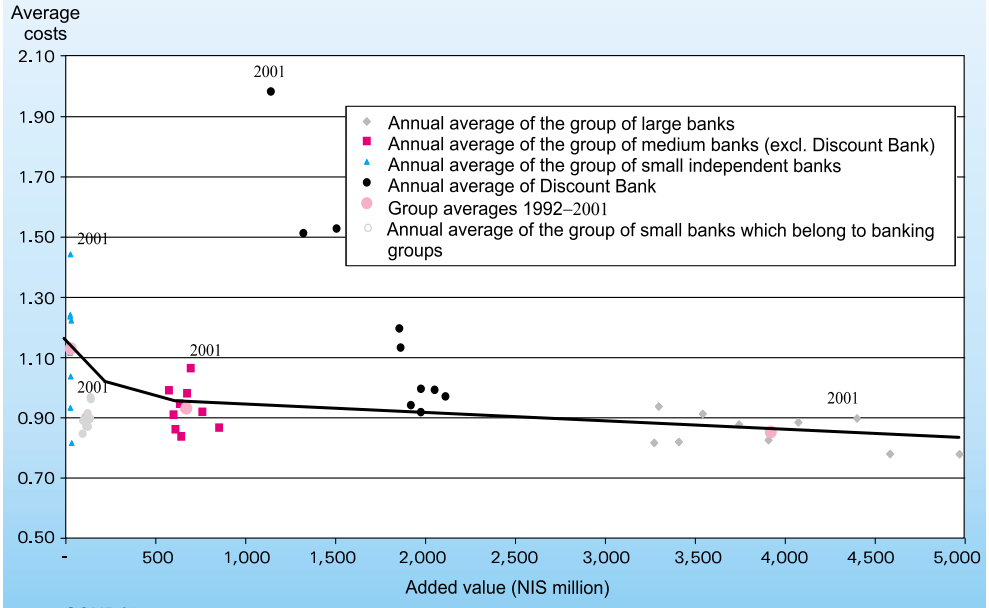
SOURCE: Published financial statements and *Bank of Israel Annual Report*.

with the exception of investments in subsidiaries abroad. The contribution to the banking groups' profits made by subsidiaries abroad rose by NIS 611 million, mainly due to the real depreciation of the NIS against other currencies, but also due to an increase in profits denominated in dollars (Figure 1.9).

The decline of some NIS 403 million in the contribution to profits made by the companies included under the equity method (particularly nonfinancial companies) was especially notable (i.e., from a profit of NIS 274 million in 2000 to a loss of NIS 129 million in 2001), and it took place against the background of the marked slowdown in economic activity which had a heavy impact on large corporations such as Koor and the Israel Corporation.

The universal nature of banking activity in Israel was apparent again in 2001: the varied investment in subsidiaries (with low and sometimes even negative correlations in the returns on the investments) highlights banks' ability to diversify their profit sources in the light of the frequent changes in the conditions of the economic environ-ment in which the banking system operates.

Figure 1.10
Ratio of Operating Expenses to Value Added: Group Averages for Three Groups by Size, 1992–2001



SOURCE: Published annual reports.

In the long term, investments in mortgage banks have yielded higher returns than do other investments. The high ratio of the average return to the standard deviation indicates high risk-adjusted profitability over time. Despite the slump in the economy and especially the recession in the real estate market that has persisted for several years, the mortgage banks yielded a particularly high return of 10 percent (Figure 1.10).

The third reason was the decline in the contribution to profits of non-interest income from banks' activity in the capital market. This income dropped in 2001 by about NIS 315 million, following a 29 percent rise in 2000. Note that in 2001 the capital market was in a slump, in contrast to 2000 when activity in the market (as expressed by the extent of trade in shares and the amount of capital raised) showed a significant increase from its previous year's level. The decline in non-interest income in 2001 derived mainly from the reduction in income from customers' transactions in securities, i.e., purchase and sale commissions, custody fees, etc. (Table 3.2 and Figure 3.3). This income declined despite the real rise in the index of fees and commissions which continued the upward trend it has followed since 1996 (Figure 3.5).

As the level of operational expenses remained stable in 2001 (a moderate rise of only 0.8 percent compared with an increase of 8 percent in 2000), the 'operating coverage ratio' went down by 2 percentage points from 52.7 percent to 50.7 percent. The small increase in banks' operational expenses while profit and profitability fell sharply indicates a reduction in their operational efficiency.

Table 1.4
Financial Activity and Results, Mortgage Banks and Overseas Offices,[a] 1994–2001

(end-year balances, NIS million, December 2001 prices)

	1994	1995	1996	1997	1998	1999	2000	2001
Mortgage banks[a]								
Total assets	45,950	57,655	68,162	78,913	86,016	94,311	102,140	107,488
Total credit[b]	42,295	54,454	65,686	76,968	84,681	93,050	100,955	105,592
of which: Nondirected mortgages	34,629	43,633	53,252	62,066	68,221	75,815	83,624	87,658
Total deposits[c]	37,030	48,393	58,568	68,884	75,763	83,753	90,517	95,745
of which: Deposits of the public	24,346	31,292	35,961	41,008	43,611	45,594	46,435	46,684
Net income	336	375	463	530	419	523	584	533
Return on equity (ROE) (%)	13.9	12.6	13.5	13.4	9.4	11.2	11.6	10.0
Risk-based capital ratio (%)	12.0	11.9	12.0	12.0	10.6	10.6	10.1	10.1
Overseas offices								
Total assets[d] (in NIS)	46,228	51,127	52,770	58,660	76,881	88,906	99,988	117,094
Net income[e] (in NIS)	188	284	326	524	896	760	601	682
Return on equity (ROE)[g] (%)	4.5	7.6	5.7	11.2	15.6	8.9	7.3	7.2

[a] Excluding directed credit.
[b] Including mortgages from the banks' funds, and directed loans, and loans to building contractors and other construction and real-estate companies.
[c] Including deposits of the public and from banks.
[d] Translation of net income into NIS according to exchange rate on balance-sheet date.
[e] Return on equity in dollar terms refers to subsidiaries only.
SOURCE: Published financial statements and returns to Supervisor of Banks.

Operational efficiency comprises three components:

1. Efficiency deriving from the reduction in average operating costs due to changes in the size of banks, expressed as economies of scale;

2. Efficiency due to the reduction of a bank's operating expenses without a change in its size—X-efficiency. This is expressed in the ability of a bank's management to reduce expenditure on the various production inputs (physical capital, labor, and financial sources) in order to generate a given output. The test of this efficiency relates to different size-groups (peer groups), and is generally attributed to the management's managerial abilities.

3. Efficiency that results from economies of scope, and reflects the bank's ability to use given production inputs to generate a wider range of banking products at a lower cost than when the outputs are produced separately.

In order to examine the development of operating expenses per unit of output in the last decade, the average costs of seventeen commercial banks in 1992–2001 were mapped (Figure 1.10).

First, the banks were divided into three size-groups—large, medium, and small. Israel Discount Bank was placed in a category of its own because it cannot be classified as either large or medium; in addition, its average expenditure is exceptionally high, so that it would have biased the results of the analysis. A bank's output is defined here as value added, calculated as the sum of pre-tax profit, wages and related expenses, amortization and depreciation, and expenditure on maintenance of buildings and equipment. This definition reflects the return on the various factors of production (labor and capital) as well as the return to shareholders from the process of financial intermediation. Results are shown for the entire period (1992–2001), for the sub-periods (1992–96 and 1997–2001), and for 2001 separately. Figure 1.10 and Table 1.5 show the following:

1. In the last decade Israel's banking system has benefited from economies of scale. These are expressed in a continuous decline in average operating expenses, starting from the small banks via the medium banks to the large ones. The fall in average expenses becomes even more pronounced if the small independent banks are separated from the small banks that belong to one of the groups (Bank Massad, Bank Yahav, Arab Israel Bank, etc.). Membership of a banking group reduces the costs which subsidiaries face (such as communication services), and this provides justification for its separate identity. On average, throughout the entire period (1992–2001) average expenditure in the small independent banks was NIS 1.13 per NIS 100 of value added, in the medium banks (excluding Discount) it was NIS 0.93, and in the two largest banks it was NIS 0.86. A similar picture regarding economies of scale emerges if the whole period is divided into the two sub-periods 1992–96 and 1997–2001, and even more strikingly if 2001 is taken separately.

2. There are greater differences in average operating expenses between the smaller banks than between the medium ones, while the differences between the two largest banks are very small. The differences between the banks with the highest and lowest average expenditure in each group indicate that the potential exists for improving X-efficiency, especially in the small banks. It is possible to increase efficiency for a given

Table 1.5
Statistics on Ratio of Operating Expenses to Value Added, for Groups by Size, 1992–2001

	2 largest banks[a]	Discount Bank	4 medium banks[b]	Small banks: Independent[c]	Small banks: Belonging to banking groups[d]
Average, 1992–2001	0.86	1.22	0.93	1.13	0.90
Average, 1992–1996	0.87	0.96	0.91	1.03	0.88
Average, 1997–2001	0.83	1.47	0.95	1.23	0.92
2001	0.90	1.98	1.07	1.44	0.96
Maximum-minimum difference					
Average, 1992–1996	0.08		0.26	3.53	0.40
Average, 1997–2001	0.06		0.30	4.39	0.53
2001	0.16		0.24	2.37	1.07

[a] Bank Leumi and Bank Hapoalim.

[b] Mizrahi Bank, First International Bank, Union Bank, and Mercantile Discount Bank.

[c] Maritime Bank, Investec (Israel) Bank, Euro-Trade Bank, Global Investment Bank (B.H.), Bank Polska Kasa Opieki Tel Aviv, Kupat Haoved Haleumi, Industrial Development Bank, Trade Bank.

[d] Bank Yahav, Otsar Hahayal Bank, Arab Israel Bank, Continental Bank, Bank Massad, Poalei Agudat Israel Bank.

SOURCE: Returns to Supervisor of Banks.

level of output by cutting the number of employees, reducing wages, closing branches, changing the mix of factors of production, etc. The relatively large differences between the small banks are due inter alia to the heterogeneous nature of this group, which comprises independent banks and banks that are part of a group, and in addition most of the small banks tend to specialize either with regard to population (Bank Massad, Bank Yahav, Otsar Hahayal bank, etc.) or with regard to type of activity (Industrial Development Bank, Trade Bank, Maritime Bank, Euro-Trade Bank, etc.). The heterogeneous activity of the small banks also gives rise to high variance in the ratio of operating expenses to value added in this group. Since the activities of the two largest banks are similar, and they are better able to diversify their sources of income, their operating expenses/value added ratio is more uniform and lower than in the other banks. This finding may therefore indicate the existence of more economies of scope in the large and medium sized banks than in the small, specialized ones.

Figure 1.10 shows that average operating expenses in 2001 in each of the banking groups was higher than the long-term average, indicating a decline in the operational efficiency of the banking system overall, and particularly in Israel Discount Bank which reported negative profitability in 2001, as stated.

(ii) Risks

The long-term return on equity of the banking system should be analyzed alongside a review of the changes in the banks' exposure to the various risks—credit, market, liquidity,

operating, etc. Below, the banks' exposure to various risks in recent years is examined in the light of the instability of their return on equity in the last decade. In order to examine the possible connection between ROE and risk, the development of several components of risk and return is analyzed.

(a) Credit risk

Credit risk is generally divided into three components—the quantity, quality, and concentration of credit. In order to review the overall effect of these components on a bank's risk it is necessary to examine its credit risk vis-à-vis its equity, thereby taking into account the way the bank treats the whole range of risks. Since the risks are expressed not only in terms of capital adequacy but also through the risk premium, the extent of collateral, and ongoing monitoring of the development of a risk and its resulting classification, the extent of loan-loss provision, etc., it is also necessary to examine the bank's attitude to its risk exposure via these parameters. The extent of credit given by the five major banking groups rose by 10 percent in 2001, continuing the long-term trend, and reached NIS 510 billion at the end of the year. This increase, and particularly the rise in the credit/GDP ratio, intensify credit risk, as GDP reflects customers' repayment ability.

The ratio of credit (on and off the balance sheet) to business-sector product rose from 1.6 in 2000 to about 1.8 in 2001, continuing the continuous rise from 1.07 in 1997. The most notable rises were in construction and real estate from 5.1 to 5.9, communications and computer services, from 0.9 to 1.1, and hotels and catering services, from 1.7 to 2.1. Three indices are normally used to measure the quality of credit: the share of banks' risk-weighted assets in their total assets, the ratio of their problem loans to total credit or to equity, and the ratio of their annual expenditure on loan-loss provision to outstanding credit.

In 2001 the risk-weighted assets/total assets ratio rose from 65.3 percent to 67.3 percent, carrying on the long-term trend which started in 1992 (Table 1.6). This trend is the direct result of the long process of liberalization which included the gradual reduction of the reserve requirements in the commercial banks until the mid-1990s. Subsequently the rise in risk-weighted assets derived essentially from the public's increased demand for credit in both local and foreign currency. The increase in this ratio over the last decade, which suggests a deterioration in the quality of bank credit, is an important indicator, particularly in the light of the economic slowdown of the last few years, and especially in 2001.

The ratio of problem credit (less indebtedness under special supervision and collateral transferred to the bank's ownership, and less credit to agriculture covered by special arrangements from previous year) to equity also deteriorated in the last few years, most notably in 2001 (Table 1.6). Another indication that the quality of credit deteriorated in 2001 is the ratio of annual loan-loss provision to the balance of credit to the public at the banks' responsibility. After declining since the end of the 1980s until it reached 0.5 percent in 1999, the ratio rose in 2001 to 0.85 percent (Table 1.6), and the rise also expresses (albeit with a lag) the positive relation between economic activity and the quality of the

Table 1.6
Concentration of Credit, Quality of Credit and Capital Adequacy, the Five Major Banking Groups, 1993–2001

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Concentration of credit									
H-index of concentration by industry	0.136	0.139	0.141	0.153	0.157	0.149	0.144	0.142	0.143
					(*Percent*)				
Concentration by borrower[a]						44.7	46.4	47.2	47.5
Quality of credit									
Loan-loss provision/credit to the public	1.20	0.80	1.15	0.92	0.75	0.61	0.48	0.50	0.85
Problem loans/total credit at groups' responsibility	13.5	14.3	12.9	11.3	9.6	9.4	8.7	7.1	9.1
Problem loans excluding agriculture/capital	69.0	91.8	89.3	81.9	74.0	83.4	83.7	76.9	110.3
Problem loans[b]/equity	30.2	34.1	29.1	26.3	22.1	26.7	34.7	35.9	38.2
Risk weighted assets ratio	49.1	53.3	56.3	56.3	57.8	62.9	62.9	65.3	67.3
Credit/GDP ratio[c]	0..64	0.57	0.56	0.58	0.60	0.66	0.72	0.77	0.86
Credit/business-sector-product ratio[d]					1.07	1.25	1.58	1.60	1.76
Capital adequacy									
Capital/risk-weighted-assets ratio	10.5	9.80	9.60	9.66	9.97	9.21	9.43	9.24	9.38
Tier 2 capital/risk-weighted-assets ratio				0.91	1.07	1.77	2.35	2.58	3.16
Share of subordinated notes in Tier 1 capital						18.3	27.7	33.4	44.5

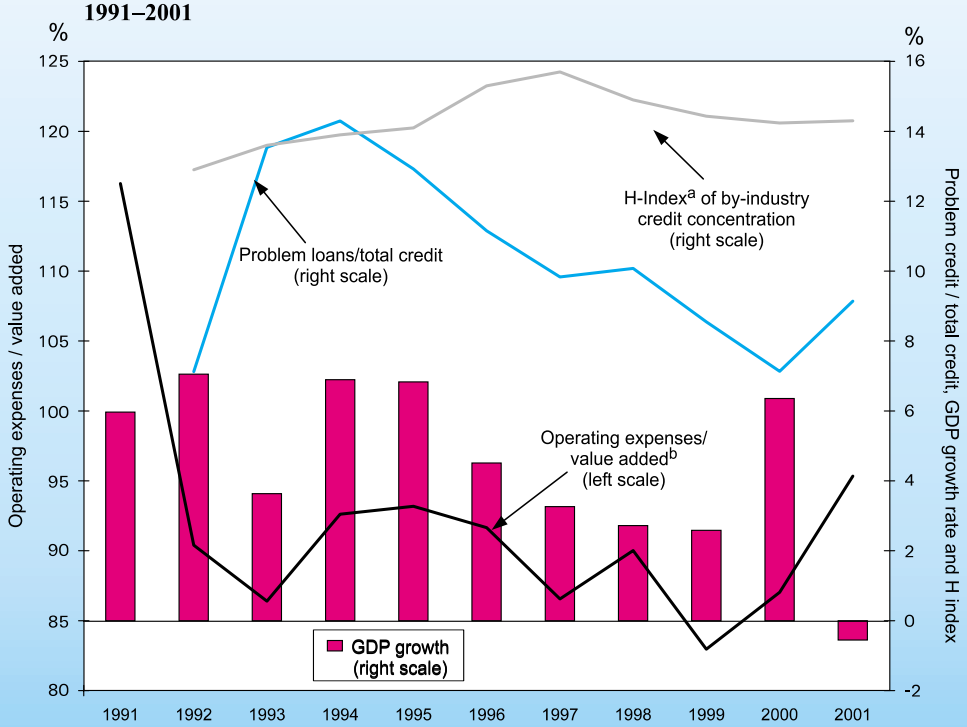
[a] Share in total of those borrowing more than NIS 33 million.
[b] Excluding agriculture and indebtedness under special supervision and collateral that has been realized by the bank.
[c] Credit in the whole commercial banking system excluding off-balance-sheet credit.
[d] Including off-balance-sheet credit; calculated for the whole banking system.
SOURCE: Published financial statements and returns to Supervisor of Banks.

credit portfolio. In view of the continued slack in economic activity in 2002, there may be further deterioration in the quality of the bank credit portfolio, which will necessitate accordingly high loan-loss provisions.

The concentration of credit by industry, as measured by the H index (Figure 1.11) has been stable at a relatively high level in 1998–2001, after rising in the period from 1992 to 1997. The stability is the result of the continued rise in credit to major industries such as construction and real estate, communications and computer services, and individuals (Table 1.6). Another index of concentration which also attests to high concentration in the credit portfolio is the share in total credit of credit extended to borrowers whose indebtedness exceeds NIS 33 million; in the five banking groups this index rose moderately—from 44.7 percent in 1998 to 47.5 in 2001 (Table 1.6).

A composite analysis of all the indices of credit described above (quantity, quality, and concentration) shows unequivocally that the banks' exposure to credit risks has risen in the last few years, and particularly in 2001. This assessment is based mainly on the persistent increase in both the credit/GDP ratio and the risk-weighted assets/total assets

Figure 1.11
Risk and Efficiency Indices, the Five Major Banking Groups, and GDP Growth, 1991–2001



[a] H-Index x 100.
[b] Value added calculated as sum of ordinary before-tax income, salaries and general expenses, maintenance and depreciation on buildings and equipment.
SOURCE: Published financial statements and *Bank of Israel Annual Report*.

Table 1.7
Return on Equity and its Components, the Five Major Banking Groups, 1993–2001

(percent)

	1993	1994	1995	1996	1997	1998	1999	2000	Average 1993–96	Average 1997–2000	2001
Return on equity (ROE)[a]	8.86	7.93	8.41	8.84	12.00	9.88	11.32	11.68	8.51	11.22	5.90
Return on assets (ROA)[b]	0.45	0.42	0.45	0.47	0.64	0.48	0.52	0.53	0.45	0.54	0.26
Assets to risk-weighted assets ratio, A/A*	2.23	1.86	1.78	1.78	1.73	1.59	1.59	1.51	1.91	1.61	1.49
Inverse of capital adequacy, A*/$\tilde{E}$	8.79	10.23	10.43	10.33	10.03	10.86	10.61	10.82	9.95	10.58	10.66
Capital base/equity, $\tilde{E}$/E	1.01	1.00	1.02	1.02	1.08	1.20	1.29	1.35	1.01	1.23	1.46

[a] ROE is as follows; $\frac{\pi}{E} = \frac{\pi}{A} \bullet \frac{A}{A^*} \bullet \frac{A^*}{\tilde{E}} \bullet \frac{\tilde{E}}{E}$, where A* is risk-weighted assets; A is total assets; π/A is ROA; $\tilde{E}$ is the bank's capital base, used to calculate capital adequacy (Tier 1 plus Tier 2 capital); E is the bank's equity (Tier 1 capital); and A*/$\tilde{E}$ is the inverse of the risk-based capital ratio (i.e., the inverse of capital adequacy).

[b] Total assets in the denominator include off-balance-sheet credit equivalents, and differ from the data in Chapter 3.

SOURCE: Returns to Supervisor of Banks.

ratio, and on the sharp increase in 2001 in the ratio of the loan-loss provision to total credit at the banks' responsibility, as well as on the deterioration of the ratio of problem credit (excluding indebtedness under special supervision and credit to agriculture) to the banks' equity. All this comes against the backdrop of the continued economic slowdown, the deterioration in the security situation, and the slump in the capital markets in Israel and elsewhere. Since the banks' capital adequacy also declined in the last few years (although it is still above the minimum 9 percent requirement) while the share of subordinated notes in total Tier 1 capital is coming close to the limit (of 50 percent) in some banking groups, their ability to cope with risks is impaired.

(b) Market risks: interest risk, exchange-rate risk, and inflation risk

Exposure to interest-rate risk is examined by means of value at risk (VaR). The total value subject to interest-rate risk (in the three indexation segments) varied from 2.9 percent of net worth (about NIS 348.3 million) in the Hapoalim group, to 11.4 percent of net worth (NIS 516 million) in the Discount group. Total VaR is calculated as the sum of the VaRs in each segment, on the conservative assumption of the worst case scenario in all segments simultaneously, ignoring the correlations between the changes in the various interest rates. A calculation of the total value subject to interest-rate risk using the covariance matrix taking these correlations into account is given in the appendix to Chapter 5. The calculation shows that low and negative correlations between the prices of the risks in the last few years significantly reduces the value at interest-rate risk in all the groups.

With regard to indexation-base risks (i.e., inflation and exchange-rate risks), total VaR (in absolute value and also as a percentage of net worth) rose in 2001 in the Hapoalim and Leumi groups, and remained fairly stable (with slight reductions) in the Discount and Mizrahi groups.

Although total market risks of the banking groups have risen in the last few years, they are still at quite a low level, and their share of the total risks that banks are exposed to is relatively small: assets exposed to market risks accounted for only 2 percent of all risk-weighted assets (exposed to all risks) held by the banks. In terms of the minimum capital ratio the addition of market risks is only 0.2 percent.

2. THE RISK-ADJUSTED RETURN ON CAPITAL (RAROC) IN THE LAST DECADE

The return on equity (ROE) of the banking groups dropped, as stated, from 11.7 percent in 2000 to 5.9 percent in 2001, its first sharp fall in ten years. It came after two shifts to new levels in the 1990s: the first was in 1992, with the level rising from an average of 3.6 percent in 1989–91 to one of 8.5 percent in 1993–96; the second was in 1997, with the average rising to 11.2 percent for 1997–2000.

In the light of the sharp reduction in the profitability of the banking system and the rise in banking risks, the profits of the system must be brought into line with the risk, and this is done by analyzing the indices of risk-adjusted return on capital over the last few years.

Risk-adjusted return on capital (RAROC), in its wider definition, ascribes expected surplus income (income above risk-free return), i.e., the risk premium, to risk. Risk is measured via the capital the bank must hold to cover maximum losses from its transactions in a given period (e.g., one month) and with a given probability (confidence interval, e.g., 99 percent). The definition of risk is derived from the bank's value at risk (VaR). There are several ways of calculating RAROC (variance-covariance, historic approach, Monte Carlo, etc.), which differ mainly in their methods of calculating risk or the value at risk (see Chapter 5).

Here the variance-covariance method is used. This is based on the assumption that the distributions of the prices of risk are normal, and hence VaR is calculated on the basis of the standard deviation of these distributions, assuming that the expected (mean) change in the prices of risk is zero. In this approach the RAROC index is similar to the Sharpe index of performance.

RAROC was calculated for 1992–2001 for each of the five banking groups and for the whole banking system. In the analysis the period was divided into two sub-periods, 1992–96 and 1997–2000, because of the two new plateaux in ROEs reached in 1992 and 1997 (see above). RAROC indices were also calculated for 1992–2001 and 1997–2001, to give expression to the effect of the year 2001, which was the worst year in the last decade for each of the five banking groups.

Table 1.8 shows the RAROC of the five banking groups in these periods, which was calculated as follows (similar to the Sharpe index):

$$RAROC_S = \frac{ROE - R_f}{Z \cdot \sigma_{ROE}}$$

where

ROE is the banking group's mean return on equity;
R_f is risk-free interest (the yield to maturity on 10-year government bonds);
σ_{ROE} is the standard deviation of the ROE
Z is the value of the confidence interval with 99 percent probability derived from the normal distribution: 2.33.

The excess return on equity is divided by the standard deviation of ROE, σ_{ROE}, on the basis of the assumption that in the reduced form the changes in risks over time are reflected in the distribution of the bank's profit and its ROE.

A comparison of the development of RAROC over time between the banking groups (Table 1.8) shows that in the Hapoalim and Mizrahi groups performance improved between 1992–96 and 1997–2000, while in the Leumi, Discount, and First International groups it deteriorated.

Table 1.8 also shows that all the groups performed poorly in 2001. The RAROC indices for all groups declined steeply from the first sub-period to the second, with the deterioration in the performance of the Hapoalim group the most prominent.

The differences in performance between the banking groups, and the changes within

Table 1.8
Risk-Adjusted Return on Capital (RAROC), by Banks and Activity Segment, 1992–2001

a. RAROC According to Variance-Covariance Method ($RAROC_S$)

(percent)

	1992–2000	1992–2001	1992–1996	1997–2000	1997–2001
Leumi	0.75	0.74	2.37	1.76	1.07
Discount	0.30	0.09	1.08	–0.14	–0.25
Hapoalim	1.31	1.17	1.74	2.72	1.16
Mizrahi	1.48	1.38	1.33	1.54	1.28
First International	1.38	1.04	2.57	0.77	0.59

$RAROC_S$ is defined as $= \frac{ROE - R_f}{2.33 * \sigma_{ROE}}$

b. RAROC According to Variance-Covariance Method,[a] by Banks and Activity Segment, 1994–2001

	Leumi	Discount	Hapoalim	Mizrahi	First International
Commercial banking	0.76	–0.20	0.73	0.34	0.83
	(44.0%)	(57.8%)	(41.7%)	(33.9%)	(69.3%)
Financial companies	–0.03	–0.02	0.24	0.03	–0.22
	(15.8%)	(4%)	(24.8%)	(11.4%)	(2.8%)
Nonfinancial and insurance companies	0.49	–	0.08	–0.46	–
	(6.4%)	(0.0%)	(16.5%)	(0.0%)	(0.0%)
Mortgage banks	0.835	0.835	2.609	1.730	1.422
	(7.8%)	(6.9%)	(6.4%)	(48.1%)	(13.7%)
Overseas offices	0.08	0.23	–0.19	–0.15	0.12
	(25.9%)	(30.4%)	(10.5%)	(6.3%)	(13.9%)
Total banking activity	**0.71**	**–0.06**	**1.39**	**1.28**	**0.90**

[a] Variance-covariance method: $RAROC_S = \frac{ROE - R_f}{2.33 * \sigma_{ROE}}$

[b] Risk-free interest (R_f) for the period (1994–2001): 4.57 percent.

[c] Figures in parentheses beneath RAROC indices are the share of investment in the activity as percentage of equity, 1994–2001 average.

SOURCE: Published financial reports.

the groups over time, derive from the way the banks' managements function, as expressed in the choice of capital investment in the various areas of activity (commercial banking, mortgage banks, nonfinancial companies, subsidiaries abroad, and capital-market

activities), as well as in how their investments are managed. The groups are also very different in the kinds of activity they undertake. Thus, in commercial banking the differences could be created by the management focusing on retail rather than wholesale banking, or by specializing in specific indexation segments (indexed, unindexed, foreign currency), etc. Hence, comparing the performance of different banking groups presents more problems than comparing the performance of different portfolios which comprise homogeneous securities (shares, bonds, etc.).

Table 1.8b shows the RAROC indices for the various kinds of activity for the period 1994–2001 as well as the distribution of the capital investments of each banking group between five areas of activity: commercial banking—whether in the bank itself (solo) or in subsidiaries; financial companies; nonfinancial companies; mortgage banks; and subsidiaries abroad.

In order to illustrate the effect of the heterogeneity of activity between the banking groups, and the effect of the quality of management, note, for example, that the proportion of its equity which Discount Bank invested in commercial banking was similar to that invested by the First International Bank, but while in the latter this activity performed the best, in the former it was the weakest activity. In all five groups mortgage banking outperformed all the other activities in the period 1994–2001.

Finally, an analysis of the performance of the banking groups over time indicates the existence of differences, sometimes marked, in their performance. These may be due to the choice of investments (rate of investment in a given activity) or to the quality of management.

3. MARKET-TO-BOOK RATIO (MV/BV)

In the last decade the liberalization of the money and capital markets in Israel accelerated: the government pursued a declared policy of gradually reducing its role in the capital market and reducing its intervention in the intermediation processes of the banks and other financial institutions. At the same time many public corporations, including banks, underwent the process of privatization, in which the government sold its holdings to private entities. These changes resulted in increased use being made of the information available in the financial markets for purposes of analyzing and assessing the stability of business companies, including financial institutions.

This trend of increased use of market data is consistent with the inclusion of the concept of market discipline as the third pillar on which the new regulations of the Basle Committee on Banking Supervision are based.[2] The Committee's proposals include recommendations for increasing transparency and extending full disclosure as ways of advancing market discipline. Such use of market data is based on the assumption of an efficient market, in which the price of a security at any time reflects all the relevant information about it

[2] For more detail see Box 5.1 on p 190 in the 2000 issue of this Report.

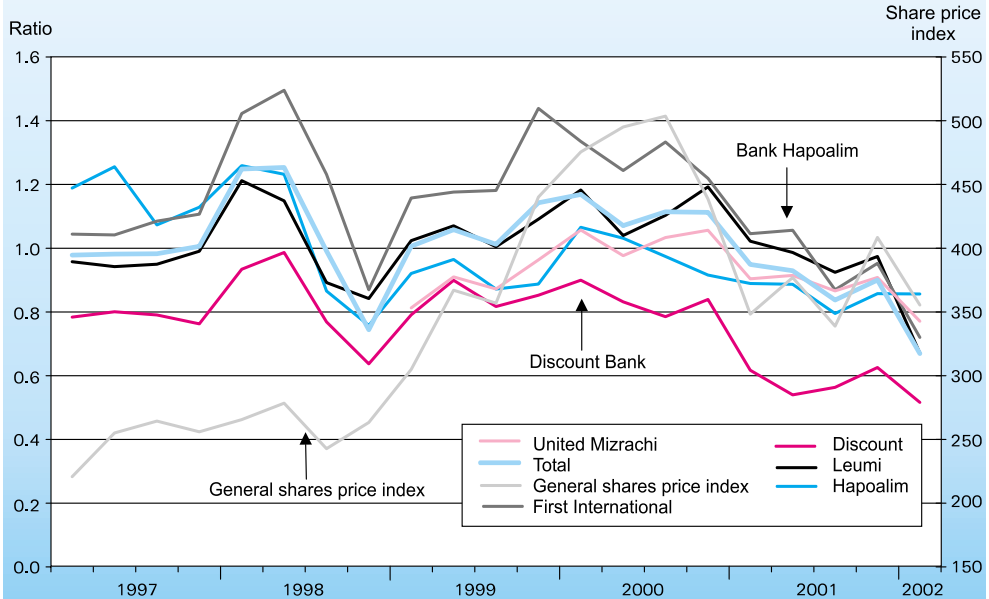
(information which comes from the capital market, public information, and private specific information regarding the company). If the market is efficient, stock market data reflect the market value of the bank, taking into account, among other things, current profits and the bank's future (expected) cash flow. In order to examine how developments in the banking system in the last few years—particularly the steep fall in the profits of the banking groups in 2001—were reflected in the prices of banks' shares traded on the Tel Aviv Stock Exchange, the market values (MV) of the five major banks were compared to their book values (BV) for the period from 1997 to 2001. This is known as the market to book ratio, and is calculated as MV_t/BV_t where

MV_t is the market value of equity ownership in shares and options outstanding at time *t* divided by the number of shares. The market value of any company is defined as the value of its shares and options registered for trading (excluding convertible bonds, embedded bonds, and purchase options), plus an assessment of shares not registered for trading, according to their price.

BV_t is the par value (equity *plus* surplus value *plus* retained earnings) at time *t* divided by the number of shares.[3]

The ratio of the market value of a bank to its book value indicates the degree of

Figure 1.12
Ratio of Market Value to Book Value of the Five Major Banks, March 1997–March 2002



SOURCE: Tel Aviv Stock Exchange and Published Financial Statements.

[3] The literature contains another approach according to which book value should include all capital (i.e., Tier I, II and III), because that is what serves as a cushion to absorb the bank's expected or unexpected losses from its activities.

adjustment of the market value of its equity as assessed by investors to the value of its equity as recorded on its balance sheet. If the value is more than one, this shows that investors assess the bank's value higher than its balance-sheet value, and reflects the bank's higher potential value in the eyes of the investors. A ratio of less than one means that the book value is an over-valuation of the true value of the bank's equity or of its net worth, in the opinion of the capital-market investors.

The literature on this subject, which deals mainly with data relating to shares of commercial banks in the US, describes two factors responsible for the deviation of the book value from the true economic market value of bank shares:

1. Higher volatility of interest rates—resulting in interest-rate risk exposure—contributes to a greater deviation of the BV from the MV. Since until recently banks were not obliged to report the market value or fair value of their assets and liabilities in their published financial statements, the book value of their equity did not reflect their true exposure to market risks, including interest risks.
2. The more comprehensive the supervision of banking by the authorities and the more frequent and rigorous the on-site and off-site examinations it carries out, and the stiffer the regulatory standards regarding charging off problem loans, the lower the deviation of the BV from the MV, and vice versa.

In the US, the MV/BV ratio for all available banks whose stocks were traded during the years 1914–1996 exceeded one for most of the years, and in certain years it was even higher than two.[4]

A comparison of the market to book ratios of the five Israeli banking groups for the period from March 1997 to March 2002, and the concurrent development of the general share price index (Table 1.9 and Figure 1.12) yield the following findings:

a) In the last five years the ratios have been falling in the different banks; hence, the market assesses that the performance of the commercial banks will not improve in the near future, and may actually deteriorate further. The fluctuations of the MV/BV ratio fluctuated around the downward trend line correlate with changes in the general share price index at that time.
b) Throughout the period investors assessed Bank Hapoalim as performing best, with an improvement noticeable particularly after its privatization in 1998. Bank Discount was assessed as the worst performer.
c) It appears that the MV/BV ratios of the large banks in Israel, except for the Discount Bank, more or less converged to a uniform value of 0.8 at the beginning of 2002. The similarity in the ratios may suggest that investors in bank shares view the five groups as basically one entity. The sharp decline in the ratios in 2000 and 2001, and especially in the first quarter of 2002, may accurately reflect the market assessment that the performance of the commercial banks will deteriorate further in the near future (in other words, that the banks' books do not accurately reflect their situations and their

[4] A. Saunders and Wilson, B. "Bank Capital Structure: An Analysis of the Charter Value-Hypothesis," Salomon Center, New York University, working paper (1996).

economic robustness), particularly in the light of the continued slowdown in economic activity, the worsening security situation, exposure to ever growing credit risks, and capital ratios that are very close to the minimum required level of 9 percent.

It is interesting to note that ranking the banks in the last few years by their MV/BV ratios gives the same result as ranking them by their RAROC values (Table 1.8).

Table 1.9
Ratio of Market Value to Book Value (MV/BV) of the Five Major Banks, 1997–2001

(annual data based on quarterly averages)

	1997	1998	1999	2000	2001
Hapoalim	1.07	1.25	1.24	1.28	0.98
Leumi	0.96	1.02	1.05	1.13	0.98
Discount	0.78	0.83	0.84	0.84	0.59
Mizrachi			0.89	1.03	0.90
First International	1.16	1.03	0.91	1.00	0.86
Total	0.99	1.06	1.05	1.12	0.90

SOURCE: Published financial statements and the Tel Aviv Stock Exchange.