

## Chapter 4

### *The Financial System and its Stability*

- ◆ The positive trends in the local financial system continued during 2010, following the turnaround and rapid recovery from the global crisis in 2009.
- ◆ The positive trends in the local financial system were influenced by the continuing stabilization of the global financial system in 2010. This process was hindered to some extent by the worsening debt crisis in a number of European countries during the year and by the persistent problems in the US housing market, as well as rates of growth in the developed countries that were slower than expected during the exit from a recession.
- ◆ The low level of the interest rate in Israel and the expectation that economic activity would continue to expand, provided support for the continued increase in the prices of assets in the local markets. Thus, share prices rose to record levels while the prices of government and corporate bonds continued to rise and yields reached historically low levels, with spreads in the corporate bond market continuing to narrow. The price of housing continued to increase sharply, for the third consecutive year.
- ◆ The resilience of the financial institutions, i.e. the banks and insurance companies, continued to improve for the second consecutive year. This was a result of the continued improvement in their capital structure, against a background of high levels of profitability and the regulatory requirements to increase their capital base.
- ◆ During 2010, the Israeli economy experienced a major inflow of short-term capital from abroad, which primarily involved conversion and swap transactions of foreign currency into shekels and the purchase of makam. This was the result of the interest rate spread between Israel and the developed countries, in which the level of interest rates was still in the vicinity of zero.
- ◆ The increased exposure of the economy to short-term capital inflows from abroad led to the increased exposure of the business sector to fluctuations in the exchange rate that are unrelated to the fundamentals of the economy. This represented a challenge to the managers of monetary policy and exposed the economy to the risk of a rapid outflow of capital, accompanied by a substantial depreciation.
- ◆ The low yields on interest-bearing investments and the low rates of interest in the mortgage market intensified the demand for housing, including purchases for investment purposes, and this trend, alongside the problems on the supply side, led to a 54-percent increase in housing prices over the last three years, which has led to concern that a bubble is developing.
- ◆ Despite the stabilization of the local financial market during the last two years, additional steps are needed to reinforce stability, primarily in view of the high level of uncertainty and fragility in the global financial system. These include continued efforts to increase the stability of the financial institutions and the management of macro-prudential policy in order to deal with risk in the financial system at an early stage, particularly the rapid increase in housing prices, and if necessary in the corporate bond market as well.

## 1. TRENDS IN THE LOCAL FINANCIAL MARKET IN 2010 AND FUTURE RISKS

The positive trends in the local financial system continued in 2010, following the turnaround in 2009 and the rapid recovery from the global crisis.

The positive trends in the local financial system in 2010 were influenced by the stabilization of the global financial system and the positive forecasts of a continued expansion in local real activity.

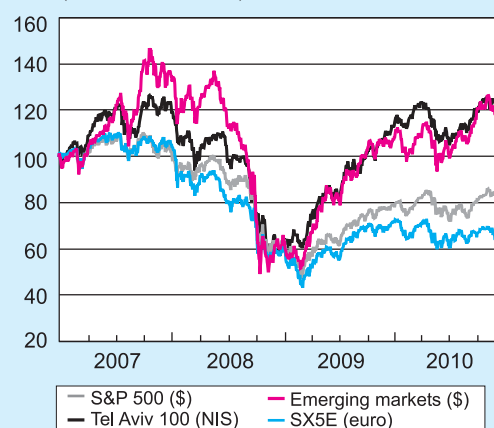
The stabilization of the global financial market in 2010 was disrupted during the course of the year by the worsening debt crisis in a number of European countries and the fear that there will be implications for the stability of European banks if the crisis worsens.

**The positive trends in the local financial market continued in 2010.** This followed the turnaround in 2009 and the rapid recovery of the financial system from the global crisis (Table 4.1). The effect of the global crisis on the local financial system was considered moderate in comparison to the intensity of the shock experienced in other developed countries and was focused primarily in the financial markets, particularly the inter-bank credit market, and in financial institutions that provided this credit. Meanwhile, the banking system remained stable, despite the shock it experienced. (For a discussion of the reasons behind the economy's relative resilience to the crisis, see the Bank of Israel Annual Report for 2009.)

**The positive trends in the local financial system in 2010 were influenced by the continued stabilization of the global financial system and the positive forecasts of a continuing recovery in real local economic activity.** These trends were reflected in the following phenomena, among others: the continued rise in share prices, as in other markets around the world, to record levels (Figure 4.1); the continued increase of government bond prices, at a similar rate to that in 2009, with an accompanying drop in yields to historic lows; the additional decline in yields and risk spreads in the non-bank credit market and the approach of spreads to early 2008 levels; the continuing issue of corporate bonds at a similar gross volume to that in 2009; the moderate decline in the economy's risk premium, after its substantial decline in 2009; the resilience of the financial institutions (banks and insurance companies), which continued to improve thanks to the increasing strength of their capital structures, against the background of high profitability and regulatory requirements to increase their capital base; and the high yields attained by long-term savings institutions.

**The stabilization in the global financial system during 2010 was hampered somewhat** as a result of the increasingly serious debt crisis in a number of European countries, including Greece, Spain, Ireland and Portugal, and the fear that if the crisis intensifies it will have an effect on the stability of European banks (Figure 4.2). The stabilization was reflected in the continued increase in prices in the financial markets, following the rapid recovery in 2009 and the continued stabilization of the financial institutions. This involved

**Figure 4.1**  
**Share Price Indices in Israel and World Wide (Based on Dollar Prices), 2007-10**  
(1 Jan. 2007 = 100)



<sup>a</sup> SX5E is an index of 50 leading shares in EMU countries. Source: Based on Bloomberg.

**Table 4.1****Main Stability Indicators of Israel's Financial System, 2005–10**

	2005	2006	2007	2008	2009	2010
	(percent)					
<b>A. The global environment</b>						
Rate of growth of global GDP	4.6	5.2	5.3	2.8	-0.6	4.8
Increase in world trade	7.8	8.9	7.4	2.9	-11.0	11.8
Emerging markets' bond index (EMBI) spread (annual average)	3.2	2.0	1.9	3.8	4.5	2.8
VIX (volatility) index of Chicago Board Options Exchange (annual average)	12.81	12.81	17.54	32.69	31.48	22.55
<b>B. The domestic environment</b>						
Government debt/GDP ratio (end of period)	91.5	82.3	75.8	75.1	77.6	74.5
Net external debt/GDP ratio (end of period)	-15.6	-21.1	-23.9	-22.6	-27.0	-23.0
Private credit/GDP ratio (end of period)	137.3	135.5	142.1	142.2	136.5	135.0
Business-sector credit/product ratio (end of period)	132.9	132.1	140.1	139.1	131.2	131.6
Household credit burden (credit/disposable income ratio) (end of period)	63.2	58.9	60.7	62.5	61.7	62.0
Israel's risk premium (the CDS spreads, annual average)	0.32	0.31	0.22	0.98	1.57	1.18
Yield gap between 10-year government shekel notes and 10-year US T-notes (annual average)	2.09	1.52	0.94	2.24	1.83	1.49
Spread between corporate and government debt (annual average)	1.20	1.08	1.66	4.02	5.56	3.10
<b>C. Financial assets</b>						
<b>Risk indices (annual averages)</b>						
Implied volatility of:						
Exchange rate	6.3	7.3	9.3	15.1	13.7	9.3
Tel Aviv 25 share price index	19.3	21.1	21.2	33.8	32.1	21.0
Actual standard deviation of:						
Exchange rate	4.6	5.3	7.0	14.6	10.4	6.3
General share price index	12.9	13.0	14.1	24.2	18.6	13.4
<b>Prices and yields (in annual terms)</b>						
Change in NIS/\$ exchange rate (during the year)	6.8	-8.2	-9.0	-1.1	-0.7	-6.0
Change in effective exchange rate (during the year)	1.1	0.0	-3.1	-10.1	4.3	-4.8
Change in general share price index (during the year)	33.2	5.4	23.3	-46.4	78.7	12.6
Yield to maturity of 5-year unindexed government bonds	5.6	6.1	5.2	5.2	3.9	3.8

(Cont.)

**Table 4.1 (cont.)**  
**Main Stability Indicators of Israel's Financial System, 2005–10**

	(percent)					
	2005	2006	2007	2008	2009	2010
<b>D. Resilience of the financial system</b>						
The banking system (period end)						
Risk-weighted capital ratio	10.7	10.8	11.0	11.1	13.7	14.1 <sup>a</sup>
Risk-weighted equity ratio	7.1	7.4	7.6	7.5	8.5	8.5
Ratio of problem loans to total balance sheet credit	9.8	8.4	6.2	7.1	6.6	5.7 <sup>a</sup>
<b>Insurance companies<sup>b</sup></b>						
Core capital/assets ratio	---	---	6	3.9	5.8	6
Share of risk assets in total assets	---	---	42.6	32.5	41.5	43.1
<b>Provident funds<sup>c</sup></b>						
Share of liquid accounts in total liabilities	50.1	52.3	56.5	57.0	58.4	59.6
Ratio of liquid assets to liquid liabilities	23.6	22.6	18.4	23.2	28.7	28.3
<b>Market liquidity</b>						
Change in total daily turnover in the markets	35.6	27.1	42.7	4.6	-3.8	-7.7
Bid-ask spread in NIS/forex market	0.08	0.08	0.08	0.11	0.10	0.07

<sup>a</sup> Data through September 2010.

<sup>b</sup> Including central provident funds and advanced study funds.

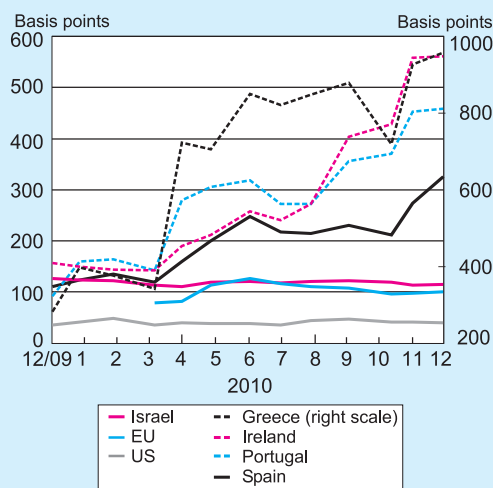
SOURCE: Based on IMF data and data of the Capital Markets, Insurance and Savings Division of the Ministry of Finance, and the TASE.

increased availability of credit in the US and a somewhat tighter supply of credit in Europe. These positive trends, and in particular the availability of credit to the business sector, provided support for the continuation of the fragile recovery in real activity in the developed countries, which was slower than what would be expected during the exit from a recession. This is in comparison to the accelerated growth in the emerging economies which were less affected by the crisis.

The intensification of the debt crisis in Europe in the second quarter of the year led to a decline in asset prices in the global markets (including Israel), which was halted only thanks to the assistance program of the EU and IMF. The fear of a debt crisis intensified again towards the end of the year, but in that case did not affect the positive trends in the global financial markets and its effects were mainly restricted to the countries in crisis. This involved an additional and substantial increase in risk premiums and the cost of raising capital and, at a later stage, the reduction in the rating of their debt.

Against the background of a hesitant recovery in real activity in the developed countries and their high rates of unemployment, the central banks in the US and Europe continued their very expansionary monetary policies and in some of them, particularly the US, new programs for quantitative easing were initiated which were

**Figure 4.2**  
**5-Year CDS Spreads in Israel and**  
**Around the World,**  
**December 2009 to December 2010**  
 (monthly averages)



SOURCE: Based on Bloomberg.

accompanied by fiscal measures to support the recovery.

The broad monetary and fiscal injections in the developed countries created large liquidity surpluses in these countries, which led to the renewal of capital flows from developed to emerging economies in a search for higher yields. This was the result of the higher interest rates in the emerging economies and the relative improvement in their situations following the crisis. These countries, which were less affected by the crisis, enjoyed relatively small budget deficits and optimistic growth forecasts. The flow of capital contributed to the increase in asset prices in the emerging markets and to pressures for appreciation of their

The large-scale monetary and fiscal injections in the developed countries created large liquidity surpluses in those countries and led to a renewal of capital flows from the developed economies to the emerging economies, in a search for higher yields.

exchange rates. This led a number of countries to take steps to moderate these trends, which included intervention in the foreign currency market and various restrictions on the flow of capital.

Part of this capital flow was to the Israeli economy since the hikes in the Bank of Israel interest rate that began in the last quarter of 2009 had widened the interest rate spread between Israel and other countries. This was also due to the relatively favorable situation of Israel's real economy, as well as the relative resilience shown by Israel during the crisis. The flows of capital were directed primarily to short-terms transactions for the conversion and swap of foreign currency into shekels and the purchase of makam. Thus, they intensified the fundamental pressure on the exchange rate, which originated in the current account surplus that has existed since 2003. The share of foreign residents in the conversion of foreign currency into shekels rose to 62 percent of the average volume of total transactions while the proportion of makam held by foreign residents reached 28.4 percent at the end of 2010 and continued to rise in early 2011.

Capital flowed into Israel as a result of the hikes in the Bank of Israel interest rate, which increased the interest rate gap between the local economy and other developed economies, and due to the relatively positive real economic situation in Israel, as well as the economy's resilience during the crisis.

In contrast, foreign direct investment in Israel fell in 2010 and foreign residents' investments in shares fell sharply, which was a continuation of the downward trend in foreign investments in 2009.<sup>1</sup>

<sup>1</sup> Net investment in shares on the TASE in 2010 was negative, declining by \$800 million, as compared to positive net investment of \$1.7 billion in 2009. It is possible that the sharp drop in investment in shares on the TASE is related to the adjustments required in foreign investment portfolios as a result of Israel's transfer in May 2010 from the MSCI index of emerging markets to the MSCI index of developed economies.

As a result of the growing short-term capital flows and the weakening of the dollar worldwide during the second half of the year, the exchange rate of the shekel appreciated during the course of the year, despite the continued intervention by the Bank of Israel in trading.

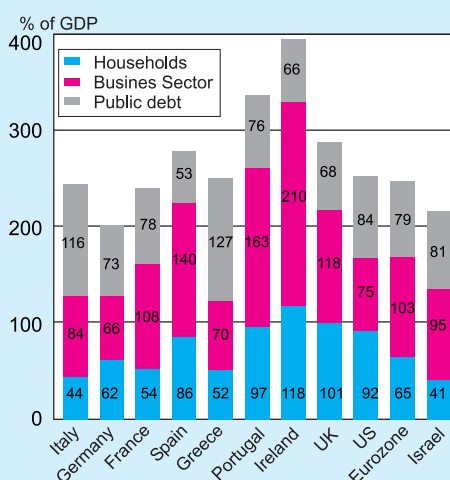
One of the reasons for the Israeli economy's resilience to the crisis is related to the total debt burden, which, at the height of the crisis, was low relative to other countries, especially countries that were severely affected by the crisis.

**The intensification of short-term capital movements and the weakening trend of the dollar worldwide during the second half of the year created pressures for appreciation** and the shekel in fact appreciated during the year both relative to the dollar and relative to the euro by 6.0 percent and 12.9 percent, respectively, in spite of the continued intervention by the Bank of Israel in trading. The appreciation occurred during the second half of the year following the depreciation during the first half.

The increased exposure of the economy to short-term capital flows from abroad increased the economy's financial risk and the exposure of the business sector to large fluctuations in the exchange rate that are unrelated to the economy's fundamentals. These fluctuations represented a challenge to the managers of monetary policy and exposed the economy to the risk of a reversal and a rapid outflow of capital accompanied by a large depreciation. Nonetheless, the high level of foreign currency reserves accumulated during the last two years as a result of the purchase of foreign currency by the Bank of Israel, provides the economy with tools for dealing with this risk, at least for a limited period of time. (For a discussion of the exchange rate policy, see Chapter 3.)

**One of the reasons for the resilience of the Israeli economy to the crisis is related to the economy's overall debt burden,<sup>2</sup> which at the height of the crisis was low relative to other countries,** particularly countries that were the most affected by the crisis, such as the US, Britain, Ireland and Spain. Thus, for example, the debt to GDP ratio of the private non-financial sector in Israel rose moderately during the years prior to the crisis, in contrast to the substantial increases in countries more affected by the crisis. Particularly noticeable is the low level of the household debt to GDP ratio relative to other economies and the ratio of the non-financial business sector, which was lower than the average for other countries (Figure 4.3). This tended to "compensate" for the higher tax burden in the government sector. As a result of the crisis, the government debt burden relative to GDP rose in many developed countries and they required large-scale government rescue programs. Israel did not require such assistance and its relative situation even improved as a

**Figure 4.3**  
**Ratio of Public and Private Debt to GDP in Israel and Selected Countries, March 2010**



<sup>a</sup> To end-2009.

SOURCE: IMF, the European Commission, and the Bank of Italy.

<sup>2</sup> Public and private debt, excluding the financial sector.



result of the decline in government and private debt relative to GDP, in contrast to the worldwide trend.

**The resilience of the financial institutions (banks and insurance companies) in Israel continued to improve in 2010, which continued the trend in 2009.** This can be attributed to the additional improvements in their capital ratios, against the background of high profitability and regulatory requirements to strengthen their capital base. The ratio of Tier 1 and regulatory capital to risk assets in the local banking system remains high (8.3 percent and 14.1 percent, respectively) and above the levels of capital which, according to decisions reached in international forums, were to be attained only in 2019. In the insurance market, it was decided to implement “Solvency II”,<sup>3</sup> and in actuality, the capital of the insurance companies at the end of 2010 was higher than the minimum required by the path adopted to meet international requirements. The improvement in the capital structure of the financial institutions was also accompanied by regulatory requirements to enhance their corporate governance and risk management, steps that are expected to reinforce the resilience of these institutions to shocks.

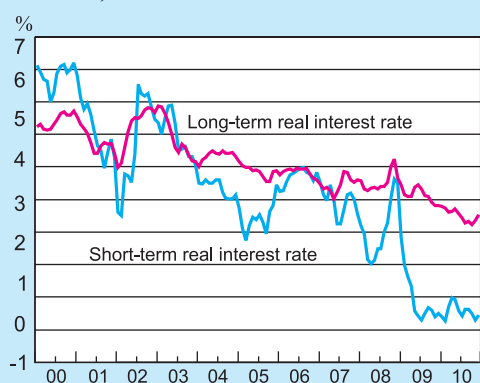
**The real long-term interest rate on government bonds continued to decline in 2010 and reached very low levels. This represents a continuation of the long-term downward trend from levels of more than 5 percent at the beginning of the decade to 2.5 percent at the end of 2010 (Figure 4.4).** The real short-term rate of

interest fell even more, from levels of 7 percent at the beginning of the decade to a level of -0.5 percent at the end of 2010. The negative level of the real short-term rate of interest since May 2009 is a manifestation of the highly expansionary monetary policy adopted by the Bank of Israel during the last two years, which were characterized by the global crisis and low rates of interest worldwide. The continued decline of the real long-term interest rate in 2010, despite the increase in the short-term interest rate by the Bank of Israel, is related primarily to the drop in long-term yields worldwide and the confidence in fiscal policy (which

The resilience of financial institutions in Israel, i.e. banks and insurance companies, continued to increase in 2010. This can be attributed to an additional improvement in their capital ratios as a result of high profitability and regulatory requirements to strengthen their capital base.

The real long-term rate of interest on government bonds continued to fall in 2010 and reached particularly low levels. This represented a continuation of its long-term downward trend.

**Figure 4.4**  
**Long- and Short-Term Real Interest Rates,<sup>a</sup> 2000-10**



<sup>a</sup> Short-term real interest rate—the average monthly yield on government CPI-indexed bonds with 1-2 years to maturity. Long-term real interest rate—the average monthly yield on government CPI-indexed bonds with more than ten years to maturity.

SOURCE: Bank of Israel.

<sup>3</sup> A directive adopted by the European Parliament and European Council. Its goal is to create a uniform European regime for the supervision of insurance companies. The directive applies to various aspects of insurance company activity, including licensing, management of risk and capital requirements, corporate governance and supervision of cross-border activity.

The value of the public's asset portfolio rose in 2010, alongside an increase in the share of high-risk high-yield assets, such as shares and corporate bonds, at the expense of bank deposits and government bonds.

The share of corporate bonds in the public's asset portfolio reached a record level in 2010 and there were increased holdings of these bonds by mutual funds.

The long-term savings institutions increased their investment abroad during the last two years.

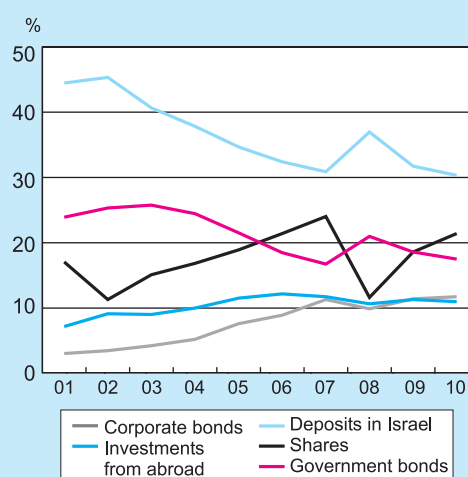
finished both 2010 and 2009 with deficits that were significantly lower than the decided-upon ceilings).

**The rise in prices in the financial markets led to an increase of 9.7 percent in the value of the public's asset portfolio in 2010, which was a continuation of the 22-percent increase in 2009** (Figure 4.2). The composition of the portfolio also changed during the last two years. This was the result of the low rate of interest, which increased the demand for high-yield high-risk assets, such as shares and corporate bonds, at the expense of bank deposits and government bonds. As a result, the prices of shares and corporate bonds rose and their share of the portfolio increased to levels similar to those that prevailed at the end of 2007, prior to the crisis, although they still remained higher than in preceding years (Figure 4.5). The proportion of shares and corporate bonds in the public's asset portfolio rose from about 21 percent at the end of 2008 to 33 percent at the end of 2010, in parallel to the decline in the share of deposits and government bonds from 58 percent to 48 percent. These adjustments in the asset portfolio were also reflected in the increased volume of share issues, the continued issuing of corporate bonds (and the decline in their yields) and in the positive accumulation in mutual funds that specialize in bonds.

**Particularly noticeable was the increase in the share of corporate bonds, which reached a record level in 2010 and during the second half of the year stood at an average of 12 percent, which is higher than its pre-crisis level.** The increase in holdings of corporate bonds was channeled through the mutual funds, while long-term institutional investors chose to reduce their holdings and the share of corporate bonds fell in the portfolios they manage. This is apparently in response to the shock they absorbed during the crisis as a result of their large holdings of corporate bonds (Table 4.3).

At the same time, long-term savings institutions have significantly increased their investments abroad during the last two years, in contrast to the public which has reduced its exposure abroad. The increased rates of investment abroad were accompanied by the hedging of exchange rate risk and therefore did not offset the pressure for appreciation of the exchange rate due to the capital inflows of foreign investors. The new pension funds and insurance companies (with profit-sharing policies) had particularly high rates of investment abroad (19.4 percent and 27.0 percent, respectively). The increase in the rate of investment abroad broadens

**Figure 4.5**  
**The Public's Asset Portfolio, 2001-10**  
(end of year)



SOURCE: Bank of Israel.



**Table 4.2**  
**Composition of the Public's<sup>a</sup> Assets Portfolio, 2005–10**

	2005	2006	2007	2008	2009	2010
Total portfolio (NIS billion)	1,648.0	1,839.2	2,055.9	1,886.7	2,299.5	2,523.6
Nominal rate of change (%)	16.0	11.6	11.8	-2.8 <sup>b</sup>	21.9	9.7
Composition (%)						
Cash and deposits	34.6	32.4	30.8	37.0	31.7	30.3
Makam	4.1	4.6	3.2	3.5	2.7	2.7
Government bonds <sup>c</sup>	21.4	18.4	16.7	21.0	18.5	17.5
Corporate bonds <sup>d</sup>	7.6	8.9	11.2	9.8	11.4	11.7
Shares in Israel <sup>e</sup>	18.9	21.4	24.0	11.5	18.5	21.3
Investments abroad <sup>f</sup>	11.5	12.1	11.7	10.6	11.2	10.9
Other <sup>g</sup>	1.9	2.2	2.4	6.7	5.9	5.5

<sup>a</sup> The public does not include the government, the Bank of Israel, nonresidents' investments, the commercial banks or the mortgage banks.

<sup>b</sup> The nominal rate of change, net of a February 2008 addition for a government commitment to all pension funds, is -11.7 percent.

<sup>c</sup> Including earmarked bonds.

<sup>d</sup> Tradable and nontradable; including convertibles.

<sup>e</sup> Including warrants.

<sup>f</sup> Including investment in Israeli securities traded abroad, and excluding exchange-traded funds (ETFs) traded in the Tel Aviv Stock Exchange based on foreign indices.

<sup>g</sup> From February 2008 including the government commitment to support the old pension funds. In February 2008 this commitment stood at NIS 72 billion.

SOURCE: Bank of Israel.

their diversification of risk and in addition increases the liquidity of their portfolios by providing them with the ability to sell assets in substantial quantities without affecting their prices. Nonetheless, it is important that this diversification be done with an in-depth understanding of international markets and that it be accompanied by management of the exchange rate exposure.

**The low yields on investments that are considered to be relatively low risk and the low rates of interest in the mortgage market intensified the demand for housing in Israel, some of which was for investment purposes.** This trend, along with the problems in the supply of housing, led to an increase of 17.5 percent in the price of houses in 2010 and a cumulative increase of more than 50 percent in the last three years. The purchase of apartments was financed in part through mortgages, and total new mortgages in 2010 grew by 36 percent relative to 2009, following an increase of only 15 percent in 2009. The ratio of total household debt to disposable income also grew, reaching a level of 62 percent, as compared to 58.5 percent at the end of 2007. Nonetheless, the ratio is still significantly lower than in other countries (Figure 4.6).

**Despite the exceptional increase in prices in the housing market, it appears that the level of prices at the end of 2010 did not significantly deviate from the**

The low yields on investments that are thought of as relatively low risk and the low interest rates in the mortgage market stimulated the demand for housing in Israel and this trend, along with problems on the supply side, led an increase in housing prices.

### Table 4.3

	Investments abroad <sup>a</sup>					Shares					Private bonds					Government bonds					(percent)
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010					
Provident and severance pay funds	10.5	7.2	10.1	12.7	19.3	8.6	14.2	16.4	36.7	32.2	29.1	27.5	20.5	33.1	26.3	26.3					
Advanced study funds	9.6	6.7	9.3	11.5	19.6	10.8	16.2	18.3	37.9	32.3	26.6	24.5	18.1	29.8	24.3	25.3					
Old pension funds	5.5	4.4	5.7	6.6	3.7	1.9	3	2.7	13.0	7.1	7.3	7.2	69.8	81.1	73.7	71.1					
New (general) pension funds	6.9	5.1	8.0	15.3	17.2	6.1	12.1	11.2	35.8	25.4	25.7	25.1	22.9	45.8	34.8	29.1					
New (compre- hensive) pension funds <sup>c</sup>	10.8	8.3	13.7	19.4	9.5	5.1	8.6	10.4	21.7	17.8	16.7	14.4	44.7	47.6	42.7	40					
Mutual funds	13.4	6.1	6.2	6.5	13.2	4.2	8.1	9.2	20.1	11.3	20.2	25.1	32.1	36.6	36	32.8					
Guaranteed-yield insurance plans <sup>d</sup>	1.8	1.4	2.8	4.0	1.5	1.3	1.9	2.1	9.3	11	11.8	12.3	65.4	66.1	64	63.4					
Profit-sharing insurance plans <sup>d</sup>	19.6	16.3	24.7	27.0	19.7	11.2	15.6	17.2	27.5	26.7	24.5	22.4	14.4	22.9	15.7	14.4					
All institutional investors	9.3	6.8	10.0	12.1	13.3	5.6	9.3	10.5	25.1	18.3	18.7	18.4	36.5	50.7	43.4	41.4					

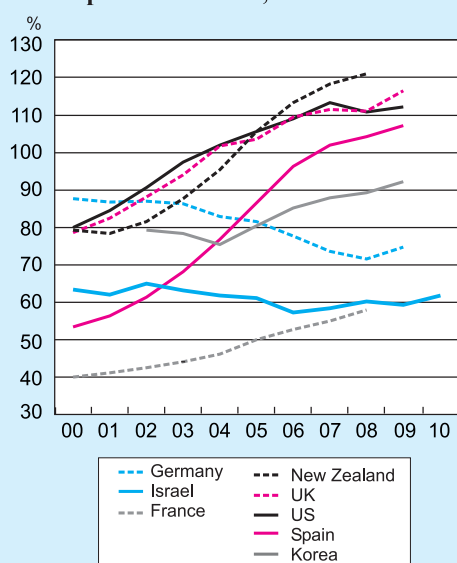
<sup>a</sup> Including investments in Israeli securities traded abroad, foreign securities, deposits abroad and mutual funds. Does not include investments in ETFs traded in Tel Aviv that track indices abroad.

<sup>b</sup> Including the Central Pension Provident Funds.

<sup>c</sup> Investment assets only for life-insurance schemes.

SOURCE: The Capital Market, Insurance and Savings Division of the Ministry of Finance, and returns from the mutual funds to the Bank of Israel.

**Figure 4.6**  
Ratio of Household Debt to  
disposable income<sup>a</sup>, 2000-10



<sup>a</sup> Unlike the rest of the world, the data on disposable income in Israel includes company profits.  
SOURCE: Based on OECD and Central Bureau of Statistics data.

level consistent with the fundamentals of the economy (see Chapter 2). Nonetheless, in view of the increase in house prices to high historic levels relative to rents and to wages and in view of the accelerated rate of price increases, a concern has arisen that a bubble will develop in the market if prices continue to rise at a rapid pace. Therefore, the Bank of Israel has taken a number of steps to somewhat dampen the demand for housing by making large variable rate mortgages with high loan-to-value ratios somewhat more expensive. These measures are also intended to increase the awareness of mortgage customers and the banks to the risks implicit in variable rate mortgages and the need to take into account repayment ability at higher interest rates. This is particularly important given the high proportion of

It appears that prices in the housing market at the end of 2010 did not exceed significantly the level justified by the economy's fundamentals; however, if the accelerated rate of price increases continues a bubble is liable to develop.

this type of mortgage.<sup>4</sup> In addition, these steps are likely to influence the public's expectations of the future trend in housing prices and thus can contribute to moderating demand and the actual rate of increase in prices.

The relatively low loan-to-value rates in the mortgage market in Israel, the structure of collateral and the fact that there is almost no securitization of mortgages in Israel are indications that the mortgage market is still conservative relative to other countries and this explains why the Bank of Israel has avoided taking more extreme measures until now.

**Credit to the business sector increased only moderately in 2010 following a decline in 2009** and at the same time the downward trend in the ratio of business sector credit to GDP leveled off (Figure 4.7). This ratio had increased during the years prior to the crisis, primarily as a result of the rapid expansion of non-bank credit to the real estate industry. Since the crisis, the ratio of credit to business sector output has fallen; however, the contribution of the real estate industry to this decrease was minor and the liabilities of the industry relative to others even increased.

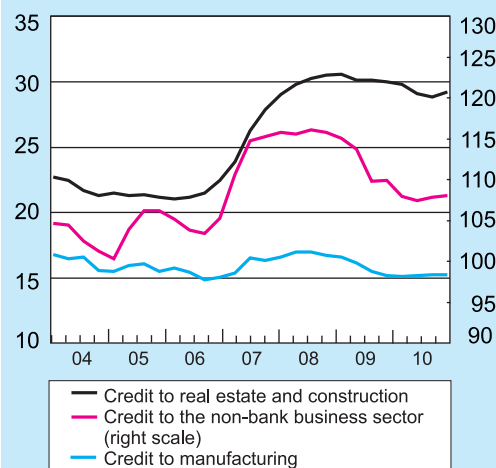
Various indicators, including the banks' capital ratio (which is above the required minimum), credit spreads, the accessibility of the non-bank market and the Bank of Israel's Companies Survey, implied that the moderate growth in credit to the business

Credit to the business sector rose in 2010 at a moderate rate, following the decrease in 2009. Various indicators imply that the leveling-off in the growth of credit does not reflect supply-side problems.

<sup>4</sup> About 50 percent of new mortgages taken out in 2010 were non-indexed shekel mortgages with a variable interest rate, as compared to 60 percent on average in 2009 and a record level of 76.5 percent in February 2009.

The issues of corporate bonds in 2010 continued at a pace similar to that in 2009, with spreads in the secondary market continuing to narrow at a rapid pace.

**Figure 4.7**  
**Outstanding Domestic Credit<sup>a</sup> to the Business Sector, 2004-10**  
(NIS billion, end of quarter)



<sup>a</sup> Bank and non-bank credit, not including credit from abroad (because of lack of a breakdown of this credit by industry).  
SOURCE: Bank of Israel.

The narrowing of spreads in the corporate bond market and the increased dominance of mutual funds in this market are liable to lead to a higher level of volatility in bond prices than in the past if the economy takes a sharp turn.

sector does not reflect problems on the supply side.

The issue of corporate bonds in 2010 continued at a similar pace to that in 2009 after a sharp drop in 2008 (Figure 4.4). The net capital<sup>5</sup> raised by the non-financial business sector in 2010 was much lower than in 2009 (NIS 1.5 billion vs. NIS 8 billion). Most of the issues were carried out by highly rated companies although there was greater access to the primary market for companies with less than the highest rating (an A rating or lower, including the real estate industry), accompanied by the continued and significant narrowing of spreads in the secondary market, to the point that it was unclear whether their level at the end of 2010 constitutes appropriate compensation for the level of risk in the market.

The narrowing of spreads and the increasing dominance of mutual funds in the corporate bond market in recent years, while the holdings of long-term savings institutions<sup>6</sup> have shrunk in size, will likely lead to greater volatility in this market relative to the past if there is a major reversal in the economy. This risk is even greater as a result of the new directives issued by the Capital Market Branch regarding investment in the corporate bond market<sup>7</sup> being applied only to long-term institutional investors. As a result, bonds issued since the new directives went into effect and which do not meet the investment criteria that are required or recommended by the new directives will probably not be purchased by long-term institutional investors, even in the secondary market, and this may significantly limit their tradability. The risk in the private bond market is becoming more relevant in view of the large measure of uncertainty abroad, the expectation of an upward trajectory for the interest rate, the

<sup>5</sup> Issues less redemptions. The net raising of capital, including by the financial sector, totaled NIS 14 billion as compared to NIS 21 billion in 2009.

<sup>6</sup> Provident funds and pension funds. Thus, for example, the holdings of private bonds by the provident funds fell from about 37 percent of the portfolio that they managed at the end of 2007 to 27.5 percent at the end of 2010.

<sup>7</sup> The new directives adopted the recommendations of the Hodek Committee and went into effect in two stages: in October 2010 regarding investment in the primary market and in January 2011 regarding investment in the secondary market.

**Table 4.4**  
**Security Issues by the Nonbanking Private Sector, by Type of Security,<sup>a</sup> 2007–10**

	NIS million, at current prices				Composition			
	2007	2008	2009	2010	2007	2008	2009	2010
<b>Capital raised</b>	<b>119,664</b>	<b>33,343</b>	<b>57,480</b>	<b>58,594</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<i>of which</i> via tradable securities	81,194	27,968	47,028	54,922	68	84	82	94
Capital raised for working capital (a+b)	98,219	26,972	49,051	53,440	82	81	85	91
a. Nonfinancial private sector	87,666	15,373	31,265	35,287	73	46	54	60
Shares and convertibles	14,959	5,794	6,067	12,207	13	17	11	21
Tradable bonds	37,230	5,942	19,736	19,870	31	18	34	34
Nontradable bonds <sup>b</sup>	35,477	3,638	5,462	3,211	30	11	10	5
b. Capital raised by banks and insurance companies	10,553	11,599	17,787	18,153	9	35	31	31
Shares and convertibles	0	796	641	212	0	2	1	0
Tradable bonds	7,560	9,861	12,796	17,691	6	30	22	30
Nontradable bonds <sup>b</sup>	2,993	941	4,350	250	3	3	8	0
Financial instruments	21,445	6,371	8,429	5,154	18	19	15	9
Equity ETFs	4,987	-1,358	7,934	5,068	4	-4	14	9
Bond ETFs	6,257	8,124	2,207	521	5	24	4	1
Structured bonds	5,283	829	249	752	4	2	0	1
CDs	4,918	-1,224	-1,961	-1,188	4	-4	-3	-2

<sup>a</sup> Not including issues to subsidiaries. Since 2008 not including issues by foreign companies.

<sup>b</sup> Net issues, not including issues to subsidiaries

SOURCE: Based on Tel Aviv Stock Exchange data.

The high level of concentration in the business sector, in both real and financial activity, and the control by a few business groups of a significant portion of economic activity increases the systemic risk in the financial system.

The continued stability of the local financial system is dependent to a large extent on developments in the global financial system, which is still in a fragile state, and on the regional geopolitical situation.

high volume of redemptions in the private bond market in coming years and the fact that this market is in any case characterized by low liquidity.

An additional risk, which is characteristic of the Israeli economy as a whole, is the high level of concentration in the business sector, both in real activity and financial activity, and the control of a significant share of economic activity by a few business groups. The high level of concentration increases systemic risk in the financial system since these same groups are the largest risk groups for the banks and the collapse of even one of them will constitute a shock to the banking system. The solution to this problem, which was implemented already at the beginning of the previous decade, includes, among other things, limits on the exposure of the banks to a single borrower or group of borrowers, as well as limits on credit to purchase groups. However, notwithstanding these restrictions, the existence of large business groups increases the moral hazard and systemic risk in the financial system since large or complex business groups become too big to fail (see the box in Chapter 4 of the Bank of Israel Annual Report for 2009). During the course of 2010, an interministerial committee was formed in order to recommend solutions to reduce concentration in the economy and to increase competition.

**Despite the resilience shown by the local financial system during the crisis and the positive trends during the last two years, continued stability is dependent to a large extent on development in the global financial system, which is still fragile and whose stability is threatened by numerous risks, as well as on the regional geopolitical situation.** These risks also have their effects on the local financial system, which include the following: 1) The stabilization abroad was achieved to a large extent thanks to massive government support which raised the public debt to unsustainable levels in many developed countries. This problem already became evident during 2010 in the form of a debt crisis in a number of euro bloc countries. If this crisis spreads to other major countries in Europe or to the US, it is liable to undermine confidence in the financial system, including the already fragile world banking system, and will endanger the recovery in real activity worldwide. Such a development is liable to also affect the local financial system and the real economy. 2) The fragility of the recovery abroad has led many central banks in the developed countries to maintain a very low level of interest in order to provide support for the recovery in real economic activity and it is believed that the low rates of interest will continue during 2011. The maintenance of low rates of interest abroad over time will have an influence on the interest rate levels in the local economy and will encourage the increase in the prices of assets such as houses, shares and corporate bonds. The continued increase in asset prices following the increases during the last two years raises concerns over the development of bubbles. 3) The liquidity surpluses and low interest rates in the developed countries have led to the renewal of capital flows from developed countries to emerging economies, including Israel. These capital flows create pressure for appreciation and are problematic for the business sector, as well as constituting a challenge for the managers of monetary policy. There is also concern



that a rapid increase of the interest rate due to, for example, increased concerns over inflation or increased security risks to the economy, will result in the export of capital and a major depreciation, accompanied by a steep decline in asset prices and the profits of financial institutions, and will thus hamper the recovery in real activity.

The Bank of Israel is closely monitoring the increase in asset prices and short-term capital flows and is taking measures as needed (see Box 4.1).

**In view of the high risks that still exist in the global financial system and the damage that another financial crisis is liable to cause in the real economy, many countries have seen to it that lessons are learned from the crisis and that broad reforms of the financial system are implemented.** Their goal is to prevent a repetition of a similar crisis in the future; however, the pace with which these lessons are being applied is fairly slow and many issues are still being debated. Indeed, there is a concern that as time passes the willingness to make far-reaching changes will diminish.

Many countries are busy studying the lessons from the crisis and are promoting widespread reforms in the financial system; however, these reforms are being implemented at a slow pace.

The main conclusions drawn from the crisis are as follows: 1) Recognition of the importance of macro-prudential policy, which is based on an overall view of the financial system and early response to risks developing within it. This is apart from the supervision of each individual financial institution. 2) Recognition of the importance of a strong and stable capital base, close supervision, appropriate corporate governance and a structure of incentives that does not create a basis for conflicts of interest with respect to the resilience of the financial institutions and the financial systems during a crisis. In particular, there is greater understanding of the importance of regulation and supervision of non-bank financial entities, whose supervision prior to the crisis was lacking, and of particularly close supervision over financial institutions with critical systemic importance.

In the Israeli context, the main conclusions are as follows: 1) The policy of tightening supervision and capital requirements and strengthening corporate governance in financial institutions, in accordance with international standards, should be continued. This should include insurance companies, in view of their growing dominance in the local financial market as well as their control of the pension and provident funds. 2) The management of macro-prudential policy needs to be strengthened. This includes focusing on the monitoring of the development of bubbles and dealing with them, as well as the exposure to large borrowers both in the non-bank market (since these exposures affect the repayment ability of borrowers in this market as well) and among the banks. This is primarily due to the high level of concentration in the credit market and among financial institutions. 3) The cooperation and coordination between supervisory authorities need to be increased and a decision made as to the optimal supervisory structure that is appropriate to the structure of Israel's financial system.

**Box 1****Macro-prudential policy****1. Macro-prudential policy: definition and examples**

It is difficult at the moment to find an agreed-upon definition of the term macro-prudential policy. The policy focuses on the links between financial institutions, the markets, financial infrastructures and economic activity in general<sup>1</sup>. The goal is to reduce systemic financial risk, whose realization involves high macroeconomic costs. Systemic risk is defined as the risk of a disruption in the supply of financial services that is caused by faults in the financial system or in part of it and which has the potential for major adverse effects on the real economy. According to Borio<sup>2</sup>, the disruption can be the result of an imbalance in the financial system that develops over time (the time dimension) or from channels of infection between financial institutions, in particular the failure of a large institution (the space dimension). The causes of the last crisis include the development over time of excessive appetite for risk in various financial institutions, which led to massive growth in the balance sheets of these institutions and in their off-balance-sheet transactions.

The global financial crisis led many to recognize that there is a fundamental lack of understanding regarding the systemic risks in the financial system and that in addition the policy needed to prevent the development of these risks is lacking. Macro-prudential policy is preventative; its goal is to strengthen the resilience of the financial system to shocks and to moderate the effect of a realization of financial risk on real economic activity.

The main way of dealing with threats to financial stability that develop over time is to identify processes that are unsustainable and/or are characterized by feedback (such as pro-cyclical credit or asset price bubbles) and to respond to their development at an early stage.

The main way of dealing with developing threats to financial stability as a result of infection among institutions is to include measures that are meant to assess the ability of the financial system to withstand internal and external shocks, to work to strengthen that ability, to increase preparedness for failure events and to ensure the ability to respond to them in real time. In conclusion, the goals of macro-prudential policy are the recognition of potential threats to financial stability in two dimensions (time and space), their identification at an early stage and the implementation of measures to reduce the risk.

<sup>1</sup> "Macro-prudential instruments and frameworks: a stocktaking of issues and experiences", May 2010, BIS, Committee on the Global Financial System.

<sup>2</sup> Claudio Borio, "Implementing a macro-prudential framework: blending boldness and realism", BIS, July 2010

## 2. The development of macro-prudential policy

The term macro-prudential policy has been in use for a number of decades. However, the processes that have been attributed to this policy have changed over the years. At the end of the 1970s, this policy was discussed in the context of the implications of the flow of surplus capital to the developing countries. In following decades, it was used to deal with the innovative implications of financial instruments and the development of the capital market. Since the onset of the global financial crisis, the use of this term has expanded significantly and it has even been used in public discourse. Macro-prudential policy is currently perceived as supplementing micro-prudential policy, i.e. the supervision of the stability of individual financial institutions.

It is important to emphasize that despite the recognition of the importance of macro-prudential policy and the actual use of this policy by a number of countries, there is currently no accepted conceptual or theoretical definition of the role of supervision in the economy, particularly following the crisis and certainly not on the macro level. Thus, the fundamental analysis needed for the formulation of this policy is lacking. The steps currently being taken are based on the judgment of experienced policy makers and emphasis is still placed on micro supervisory tools and accepted tools for the regulation of banking activity. Nevertheless, there is ongoing development of this topic.

## 3. Examples of macro-prudential policy tools

There is a wide variety of tools that can be used to implement macro-prudential policy, some of which are micro and some of which are macro. Micro-prudential policy tools for dealing with systemic risk include capital ratios, provisions, restrictions on credit, LTV<sup>3</sup> limits, liquidity reserves, limits on concentration, etc.; macro-prudential policy tools include fiscal policy tools (taxes, financial activities, etc.), monetary policy tools (the interest rate, liquidity, etc.) and others (restrictions on capital flows, etc.).

Examples of the use of macro-prudential policy following the crisis include the discussion of the imposition of countercyclical capital requirements on the banks, including a requirement for capital buffers of up to 2.5 percent of risk assets during a period of prosperity (see Box 2) and the tightening of supervision and capital requirements on institutions with systemic importance.

<sup>3</sup> Loan to Value.

#### 4. Macro-prudential policy in Israel

One of the objectives of the Bank of Israel according to law is to provide support for the stability of the financial system and its normal functioning. The Bank of Israel works to achieve this goal through, among other things, macro-prudential policy. This should be viewed against the background of the last global crisis which emphasized the need to devote more effort to the stability of the financial system in order to reduce systemic risk. One way this can be done is through the use of macro-prudential tools.

The financial system in Israel weathered the last financial crisis successfully relative to other developed countries; however, the relatively positive situation of the economy and the unavoidable influence of low interest rates abroad, in view of the fact that Israel is a small and open economy, have contributed to the upward trend in local asset prices, particularly housing prices. Therefore, in order to deal with the dilemma created for monetary policy, use has been made of macro-prudential policy that is meant to deal specifically with the sharp increase in housing prices.

Within this framework, the Supervisor of Banks at the Bank of Israel announced a number of steps in the housing credit market: In March, the activity of purchase groups was restricted, such that the bank credit to purchase groups was categorized as credit according to industry rather than housing credit and therefore the banks were required to fully include it in the capital adequacy calculation. In May, steps were announced to reduce housing credit and the credit risk of the banks, such that in cases where LTV exceeds 60 percent on new loans an extra capital allocation at a rate of 0.75 of the loan balance will be required. In October, a higher capital requirement was introduced for variable rate loans of more than NIS 800 thousand if LTV is above 60 percent and also if the proportion of the variable rate part is higher than 25 percent of the total loan. In this case, the loan will have a weight of 100 percent for purposes of capital adequacy (instead of 35 or 75 percent, according to the characteristics of the loan).

#### Box 2

##### Macro-prudential policy: countercyclical capital ratios

The ratio of capital to risk weighted assets is an indicator of the resilience of a commercial bank, as it is used as a capital buffer to absorb any losses it might incur. The ratio can be changed by increasing capital or by reducing risk weighted assets, particularly by restricting the supply of credit. As part of the macro-prudential measures recently considered, it was suggested to require the banks to maintain a

countercyclical capital ratio, which will be higher during periods of prosperity and lower during periods of recession (see for example, Drehmann et al., 2010<sup>1</sup>). In other words, the ratio of capital to risk weighted assets will be raised during periods of high growth while during periods of recession the banks will be permitted to use the capital and thus reduce their capital ratio. The goal is to prevent a situation where the supply of credit is limited (by the banks) during a recession due to the requirement to meet minimal capital ratio requirements, which may exacerbate the recession and hamper the recovery from it.

This box tests the hypothesis that a shortage of capital is the main motive of the banks in Israel in limiting the supply of credit during recessions. According to the results of the analysis, an increase in borrower risk rather than a shortage of capital is what leads the banks to reduce the supply of credit during these periods, a finding which essentially makes the imposition of a regulatory requirement for a countercyclical capital ratio superfluous.

**Table 1**  
**Results of estimation<sup>a,b</sup>**

Factor influencing supply of credit	Estimated elasticity of factor during prosperity	Estimated elasticity of factor during recession
Intercept	*1.59 (0.59)	5.46* (1.09)
Bank of Israel interest rate	-0.084* (0.006)	-0.084* (0.006)
Ratio of doubtful debt provisions to total credit <sup>c</sup>	-0.318* (0.049)	-0.318* (0.049)
Capital adequacy ratio	1.078* (0.272)	-0.587 (0.437)

<sup>a</sup> For the estimation we used a Pooled IV/Two Stage EGLS regression for quarterly figures for each of the five major banking groups in Israel, and the sample period is from the second quarter of 1998 until the second quarter of 2010.

<sup>b</sup> Values of the standard deviation of the elasticity are shown in parentheses. An asterisk means significance within 5 percent. The regression showed DW=0.68 and AdjR<sup>2</sup>=0.81.

<sup>c</sup> We allowed the elasticity of the factor of credit risk to be different for each of the large banking groups. The reported elasticity is the average.

### Theoretical framework

In order to test the hypothesis, we need to estimate the supply of bank credit in Israel. We use the following theoretical framework. Consider a banking system in which, on the one hand, banks face a given competitive cost (interest) on their sources and on the other hand benefit from market

<sup>1</sup> M. Drehmann, C. Borio, L. Gambacorta, G. Jimenez and C. Trucharte (2010). "Countercyclical capital buffers: exploring options", BIS Working Papers, No. 317.

power in providing credit to borrowers and determining the interest rate on it. In this system, the supply of bank credit is determined by the demand for credit and according to the marginal cost in providing it.

The marginal cost of providing a shekel of credit can be divided into two components: the interest on the sources for the financial intermediary (such as public deposits) and the credit risk premium (which can only be partially quantified). This premium can also be divided into sub-components: the part that can be quantified, and for which the banks create a loan-loss provision, and the other part (which cannot be quantified) against which they hold capital.

The supply of credit therefore positively depends on factors that increase the demand of the public for credit and negatively on the deposit interest rate, the loan-loss provision and the capital ratio maintained by the bank. Based on this conceptual framework, the hypothesis was tested empirically by estimating the effect of the capital ratio and the other factors mentioned on the supply of credit during recessions.

### **The data and the results of the empirical estimation**

The data used in the estimation included the Bank of Israel rate of interest (for the interest on deposits), the capital ratio, and the ration of total loan-loss provision to total credit. The bank credit portfolio is highly diversified and is influenced by many factors. Thus, in order to simplify the analysis, we tested the above hypothesis using shekel credit in the segment of non-indexed activity only. Similarly, in order to avoid the need to deal with the income effect of the demand for credit (as appears in the theoretical framework), we used data on the proportion of credit within the banks' total assets, which is less influenced by income factors. We created a dummy variable for periods of prosperity and recession, which received a value of one for quarters in which the Composite State of the Economy Index grew at a lower rate than its trend (recession) and zero otherwise. The estimates of the elasticities are presented in Table 2.1.

It was found that the effect of the capital ratio on the supply of credit during periods of prosperity is positive and significant, though during periods of recession the effect was not significant. This finding indicates that the capital ratio in the Israeli banking system did not constitute a constraint on the provision of credit during the recessions within the sample (the early 2000s and the last recession in 2008–9). It was found in fact that credit risk had a significant effect on the supply of credit, both in a recession and in a period of growth. These results do not support the need for regulatory action to maintain a countercyclical capital ratio.

It is interesting that according to an additional test we carried out using data on the Israeli banking system since 1998, it was not possible to reject the hypothesis that the banks in Israel, as part of their prudent risk management, chose to maintain a relatively high capital ratio during periods of prosperity and a relatively low ratio during recessions, even without such a regulatory requirement<sup>2</sup>.

<sup>2</sup> The results of the regression to test the connection between the ratio of capital to risk components and the business cycle (as reflected in the Composite State of the Economy Index) shows that the capital ratio is indeed positively correlated with the Index, when controlling for the effect of exposure to risk on the ratio. This result was valid for all the banks in the sample. The regulatory requirement regarding the minimal capital ratio was found to have a large and significant effect on the capital ratio in this regression.



## 2. LESSONS LEARNED AND REFORMS IMPLEMENTED IN OTHER COUNTRIES AS A RESULT OF THE CRISIS, AND THE ISRAELI PERSPECTIVE

The intensity of the crisis in the global financial system and the extensive losses it caused to the world economy in terms of output and unemployment has led countries to examine the lessons to be learned and the reforms to be implemented in the financial system, in an attempt to deal with the failures that led to the crisis, such as faults in the structure of the financial system, in regulation and in supervision, problems of moral hazard as a result of a defective system of incentives, etc.

Despite the major efforts invested, both in analyzing the crisis and in passing legislation, and the expansion of institutional infrastructures, it appears that so far a significant proportion of the decided-on reforms either do not go far enough or the implementation of decisions is too slow. In some areas, there is also noticeable erosion in recommendations in the process of their becoming legislation. It may be that the attempt to deal simultaneously with such a wide range of issues is leading to delays and making it difficult to focus. Therefore, it is unclear whether the crisis will be exploited as a lever to correct the serious problems that were exposed in the functioning of the financial system or whether the lack of focus will lead to the dilution of the process.

### a. Lessons learned and reforms initiated worldwide as a result of the crisis

The main initiatives taken abroad to change legislation following the crisis are the “Dodd-Frank Act”<sup>8</sup> in the US, which was passed in July 2010 and various parts of which are expected to go into effect by 2013, and the European initiative at the level of the European Commission.<sup>9</sup>

Following are the main lessons learned and initiatives for reform worldwide as a result of the crisis:

- **Macro-prudential policy:** One of the most important lessons learned worldwide as a result of the crisis is the importance of macro-prudential policy. The crisis demonstrated that in order to ensure the stability of the financial system it is not sufficient to simply ensure the stability of each financial institution on its own, or of any single component of the financial system. Rather an integrative perspective of the financial system as a whole is needed, including an effort to identify exceptional risks that are developing over time and the risk of lateral infection, and to respond at an early stage. This is an approach that is still in the development stage and there are still no agreed-upon principles for the management of this type of policy. In this framework, the identification of risks and their monitoring will, starting in 2011, be the responsibility of the Financial Stability Oversight Council in the US and the European Systemic Risk Board in Europe (for further discussion of macro-prudential policy, see Box 1).

Macroprudential policy involves an overall view of the financial system and is aimed at achieving the early identification of developing risks, with the goal of responding to them at an early stage.

<sup>8</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act.

<sup>9</sup> [http://ec.europa.eu/internal\\_market](http://ec.europa.eu/internal_market)

Following the crisis, the supervisory authorities worldwide are working to strengthen the capital structure of the banks and other financial institutions.

The reforms currently being carried out include an expansion and tightening of supervision over the banks and non-bank financial institutions, as well as markets that were revealed to be a focus of risk to the financial system.

The reforms in the area of derivatives are intended to encourage the shift of derivatives trading to a formal and organized market and to increase the standardization with respect to derivatives that continue to be traded over-the-counter.

- **Strengthening the capital structure of the financial institutions:** One of the most important conditions for the stability of a financial institution is a strong and stable capital structure, which will enable it to successfully weather shocks. As a result of the crisis, an international effort, led by the FSB,<sup>10</sup> is being made to reach a consensus regarding the key factors to be dealt with as part of comprehensive reform in the banking sector. The consensus taking shape calls for tighter capital requirements on the banks, including a requirement to increase Tier 1 capital, the imposition of limits on rates of leverage and the setting of liquidity standards. In addition, a change is expected in the requirements for pre-determined provisions and for hybrid capital,<sup>11</sup> as has recently been done in Switzerland. The intention is that reforms to increase capital and liquidity requirements will be implemented not just among the banks but also among other financial institutions, in order to prevent the shift of risk between financial institutions.
- **Tighter supervision of the financial system:** In many countries, supervision prior to the crisis did not adjust itself to the innovations in the global financial system and left many areas without appropriate supervision or none at all. This made possible the rapid expansion of credit (such as mortgage credit), credit derivatives, securitization transactions, etc., as well as the uncontrolled development of risks among financial intermediaries including banks and other financial intermediaries such as investment companies and hedge funds, over which supervision was lax. The reforms currently being implemented involve the expansion and tightening of supervision of the banks and non-bank financial institutions, as well as markets that were revealed to be focuses of risk for the financial system. Thus, for example, banks in the US have been prohibited from using their regulatory capital to finance risky transactions of certain types (the Volcker Law) or to purchase certain real estate assets through their trading rooms. A special tax has been imposed in Sweden and England in order to create a negative incentive for the financing of risky transactions.
- **Regulating the trade in derivatives:** The derivatives market was one of the focuses for the development of the global crisis and the reforms taking shape in this area are meant to create incentives for the shift of OTC<sup>12</sup> trading in derivatives to a formally organized market and an obligation to settle these transactions in a central clearinghouse (CCP)<sup>13</sup>, with the goal of reducing risk and facilitating supervision over the volume of transactions and monitoring risks that are developing in the market. Nevertheless, the assessment has been growing that settlement through CCP does not necessarily reduce risk in the case of systemic risk.

<sup>10</sup> The Financial Stability Board, which was created in order to coordinate the work of the national financial authorities on an international level and to develop and advance effective regulation, supervision and other financial policies.

<sup>11</sup> A promissory note according to which the issuing bank can convert the capital note to shares in the case of deterioration in its financial resilience, according to the note's pre-determined rules.

<sup>12</sup> Over the Counter.

<sup>13</sup> Central Counterparty.

- There is an intention to harmonize the rules for accounting and reporting in the area of derivatives on the international level and to prevent the possibility of reporting transactions using the netting method. Thus, it will be possible to more accurately estimate the risk involved.
- **Changing the supervisory structure:** The financial crisis has raised the question of which supervisory structure is optimal and whether to place this structure within the central bank or outside it. Up until the crisis, the trend worldwide was to concentrate the supervisory authorities in one body, which in most cases was external to the central bank.<sup>14</sup> Following the crisis, the trend that is taking shape involves shifting more supervisory powers to the central bank since it has the function of lender of last resort (LOLR), among other reasons. Thus, for example, new legislation in the US expands the Fed's powers to supervise financial institutions (both banks and non-banks) with systemic importance. In Britain, the powers of the central bank for macro- and micro-prudential supervision were expanded and the government declared legislation based on the twin peaks model, in which one supervisory authority is responsible for the stability of financial intermediaries and the financial system while the other is responsible for protecting the investor. This essentially eliminates the need for the FSA, the supervisory authority for financial services, which until the crisis was a model for future financial supervision that is concentrated in one body, external to the central bank. Also in France, a shift has begun to the twin peaks supervisory model, with the involvement of the French Ministry of Finance. In Germany, where bank supervision was not previously the exclusive responsibility of the central bank, the bank supervision authorities have been united within the central bank.
- **Increased coordination and cooperation between the various supervisory authorities on the national and international levels:** The crisis proved how important integration is between financial systems worldwide and how quickly infection occurs between markets and between institutions. Thus, for example, although "poisonous" products developed only in the US, financial institutions worldwide purchased them and were also adversely affected. Thus, there is an effort to increase cooperation between the various regulators within each country and between countries in an attempt to harmonize the supervisory tools between the various institutions and markets and also to create binding international standards that will prevent the possibility of regulatory arbitrage. Until now, there have been few results of these efforts.
- **Modifying the structure of incentives in the financial system:** One of the most important lessons from the global crisis is that the structure of incentives in the financial system is subject to moral hazard and encourages players in the market to take on excessive risk. This is a result of the method of compensation, which is

The trend taking shape worldwide following the crisis is to transfer more supervisory powers over the financial system to the central bank.

Regulators worldwide are working to increase cooperation between themselves, both within each country and between countries, and to establish binding international standards that will prevent regulatory arbitrage.

<sup>14</sup> Regulating the Regulators: The Changing Face of Financial Supervision Architectures Before and After the Crisis, Donatto Masciandaro and Marc Quintyn.

The moral hazard that characterizes the method of compensation in the financial system is being dealt with through the strengthening of the connection between compensation and long-term performance, enhanced corporate governance and greater control by the board of directors over compensation, while giving shareholders a say as well.

Institutions with systemic importance, which are too big or complex to fail, tend to take on excessive risk. The trend worldwide is towards closer supervision and regulation over them and an increase in their capital and liquidity requirements.

a function of the volume of transactions completed and short-term performance, without taking into account long-term losses. This situation encourages players in the market to increase the volume of transactions even while increasing risk. The reforms being implemented worldwide in this area are intended to strengthen the connection between the firm's method of compensation and long-term performance and to enhance corporate governance and the oversight of the board of directors over methods of compensation, as well as providing shareholders with the right to become involved in the method of compensation (for example, "say on pay" in the US). The moral hazard that existed as a result of the widespread use of derivatives that did not appear in the balance sheet was dealt with by limiting the possibilities for off-balance-sheet activity.

- **Institutions that are too big or too complex to fail:** There is a broad consensus worldwide that institutions with systemic importance, which are too big or too complex to fail, tend to take on excessive risk and enjoy a competitive advantage over other institutions. The crisis and the large government injection to rescue institutions of this type illustrated the high cost that taxpayers are liable to have to pay for the existence of these institutions and the need to deal with the moral hazard implicit in their activity. There is still no consensus as to the right way to deal with these institutions and whether they should be broken up. The policy taking shape involves the tightening of supervision and regulation of these institutions and imposing higher capital and liquidity requirements. These steps are meant to reduce the incentive to create additional large institutions and perhaps even to encourage the breakup of existing ones. It is the intention to introduce threshold criteria for size and complexity that will determine the definition of an institution as "large" rather than declaring a defined list of such institutions, since such an announcement has the potential to increase moral hazard.
- It is also important to limit the damage from the failure of an institution that is too big to fail. One possibility is to provide the regulatory authorities with the power to intervene in the case of a fear of failure, to take control over the institutions in order to continue to provide its essential functions and thus prevent infection of other institutions and to prepare for liquidation or sale. This is to be done in a way that shareholders and executives do not receive protection while the rights of depositors are ensured (i.e. to ensure that a resolution mechanism exists). In order to simplify the process, a number of countries are working to formalize a "living will" process for large institutions, which will determine in a formal and clear manner how losses are to be divided between creditors and related entities in the event of failure.
- **Rating companies:** Although supervisory authorities worldwide agree that the business model for the activity of rating companies is subject to moral hazard, there is still no consensus as to the model which should replace it. Nonetheless, due to the importance of the rating companies to the financial system, the supervisory authorities in the US are considering possible changes in the business model, in parallel to the many other proposals that are intended to improve the activity

of rating companies and their supervision. Being considered are a requirement for registration together with the fulfillment of regulatory requirements, the tightening of supervision and increased transparency with respect to their rating methods and the models used. Thus, the supervisory authorities have weakened the regulatory requirements on supervised entities to invest in securities that are rated by a recognized rating agency, while encouraging them, and sometimes requiring them, to rely more on their own analysis. The supervisory authorities have also reduced the possibility of rated companies to “shop” for a rating company that will provide a higher rating and have raised the standards to be met by employees of rating companies. Despite the changes, there is an understanding that these steps have still not solved the main problems. Thus, for example, additional steps are planned in Europe which will enable regulators to demand information from rating companies, to investigate them and to audit them.

- **Closing of gaps in data and information:** As a result of the crisis, the international community has taken various initiatives to identify and close gaps in data and information in order to reinforce financial stability. The main international effort has produced a document by the IMF and FSB that contains 20 recommendations and which was already adopted in November 2009 by the G-20 ministers of finance and central bank governors. The recommendations relate to both the need for expanding databases and for the development of new analytical and statistical frameworks. The goal is primarily to identify developing risks in the financial system, the possibility of infection between countries and the vulnerability within countries.

#### b. The Israeli perspective

The shock to the local financial system was more limited than in many other developed countries; nonetheless, the drawing of conclusions from the crisis in Israel has not focused only on the correction of faults revealed during the crisis, but also on learning from the experience of other countries.

Following is a list of the reforms and main conclusions that have been implemented in Israel as a result of the crisis, as well as additional steps taken to increase competition in the financial system (see Box 1 with regard to the implementation of macro-prudential policy):

- **Changes in the banking system:** The banking system in Israel operates according to conservative methods and is subject to close and meticulous supervision, strict capital requirements and limits on exposure to complex instruments. This policy contributed to the stability and resilience of the banking system during the crisis and reduced its exposure to risk factors that developed. Moreover, Israel is monitoring the changes being made in the world banking system in accordance with the lessons of the crisis and is working to implement the recommendations being made with respect to strengthening the capital structure, placing limits on the level of leverage, monitoring liquidity risk, a countercyclical capital ratio, etc.

The business model of rating companies is subject to moral hazard and efforts are being made worldwide to reach agreement on a different business model. This is in parallel to proposals that would tighten the supervision over rating companies and increase the transparency of their operations.

An international effort is being made to define the data and information required to monitor developing risks in the financial system.



In order to clarify Bank Supervision's expectations of the banks until the issue of final recommendations worldwide, the Supervisor of Banks published a bulletin in June 2010 on intermediate capital policy, in which he required the banks to make the necessary adjustments in order to increase their ratio of core capital to risk assets to at least 7.5 percent by the end of the year.

In view of the weaknesses identified in the local banking system with regard to the management of risk arising from financial instruments and the functioning of boards of directors, Bank Supervision has worked in various ways for the adoption of guidelines for appropriate corporate governance. Within this framework and following the instructions from Bank Supervision, the banks completed the adoption of an appropriate compensation policy at the end of 2009. In addition, a chief risk manager was appointed in each bank who is responsible for the risk management system, and guidelines were issued relating to the activity of the board of directors.

- **Changes among institutional investors:** Institutional investors are dominant in the local financial markets and in recent years have been managing about 40 percent of the public's asset portfolio (Table 4.5). Against this background, there has been a realization of the prime importance of modifying their operating methods, while implementing the lessons learned from the crisis.

- **Adoption of the Chilean pension model:** One of the most serious problems revealed during the crisis in the pension savings industry lies the management of most pensions funds, which is carried out according to general models of diversification, without the fund members being aware of the level of risk adopted by the fund and without taking into account the characteristics of each individual member in order to choose the saving profile that is appropriate to him. As a result, the savings of members close to retirement are managed in the same way as those of young members, with the result that older members are exposed to excessive market risk. Therefore, an additional crisis in the markets, such as the one in 2008, is liable to adversely affect members close to retirement without there being time for them to benefit from a future recovery in the markets.

In order to solve this problem, the Ministry of Finance decided to adopt a model similar to that used in Chile since 2002 (the Chilean model), according to which pension savings managers are permitted to manage a limited number of investment tracks according to the age of the member and to which members will be channeled according to their age. The older the member, the more conservative will be the investment track he is designated to. Members who have already retired will have the most conservative investment track. The channeling into these investment tracks will be done automatically and will not require any action on the part of the member; nonetheless, he will be given the opportunity to choose a specialized track or a different default track than the one automatically offered to him.

The Banking Supervision Department is working to implement the guidelines being formulated worldwide to strengthen the resilience of the banking system. In addition, the weaknesses revealed in the local banking system during the crisis with regard to risk management and corporate governance are being dealt with.

The Director of the Capital Markets, Insurance and Savings Division has tightened the regulation of long-term institutional investors and has issued instructions for the strengthening of their capital structure, risk management and corporate governance. This is accompanied by a process to introduce an age-dependent investment model (the Chilean model).



The Ministry of Finance's proposal to institute default investment tracks is expected to reduce the losses to savers close to retirement in the case of a crisis, in order to avoid the results of the last crisis. The proposal has not yet been implemented and its implications for the demand for specific assets, such as shares and private bonds, are still being considered. Also being looked at is the effect on the size of pensions due to the expected drop in returns for middle-aged members who will move to more conservative investment tracks.

**The strengthening of regulation and capital structure for institutional investors:**

As part of the lessons learned from the crisis, the Finance Ministry's Director of the Capital Markets, Insurance, and Savings Division has tightened regulation of long-term institutional investors and has issued directives for the strengthening of capital structure, risk management and corporate governance. Thus, for example, the Director of the Capital Market, Insurance, and Savings Division has decided to adopt the Solvency II directive regarding insurance companies and has issued instructions for the tightening of internal auditing and control mechanisms in the management of long-term investments by institutional investors. In addition, instructions were issued regarding compensation policies and the linking of compensation to long-term performance, as well as instructions to improve transparency and the quality of reporting to the public. The Israel Securities Authority has also taken steps to improve transparency, reporting and monitoring of mutual fund activity and their exposure to investments in high-risk bonds. It has also promoted the Law for Administrative Enforcement, which will provide it with quickly-implemented and efficient tools for enforcement and will improve its ability to protect the investing public.

- **The payment and settlement system:** In recent years, reforms have been carried out in the main payment and settlement systems. These include the creation of the RTGS (Real Time Gross Settlement) system and entry into the CLS, the international clearing house in foreign currency. Simultaneous with the development and advancement of the payment and settlement systems, which are at the core of the financial system and are highly important to the functioning of the system in normal times and even more so in crises, steps were taken to strengthen the supervision over these systems. The Bank of Israel has initiated the creation of a new body that will supervise the payment systems in Israel in accordance with the Payment Systems Law.
- The Law specifies under which conditions the payment system will be subject to the supervisory authority of the Bank of Israel, the obligations that apply to the system operator and the tools available to the Bank of Israel in order to implement its supervisory authority. Until now, the Governor has declared two payment systems to be designated audited systems: the RTGS system and the CLS system. The Bank of Israel takes part in the supervision of the CLS system, which is carried out by an international consortium made up of all the central banks connected to the CLS and led by the Fed.
- **The credit derivatives and securitization market:** These markets are in their early stages of development in Israel and noticeably lacking in this area are

The Director of the Capital Markets, Insurance and Savings Division has issued new instructions that are meant to improve the procedure used by institutional investors for investing in corporate bonds, by, among other things, defining the desirable properties of bonds in which they will invest.

The Israel Securities Authority is working to promote a law for rating companies that will reinforce their supervision and increase the transparency of their rating models.

The payment and settlement system in Israel has undergone wide-ranging reforms in recent years, among them the creation of the RTGS system and Israel's becoming a member of the international settlement system in foreign currency.

The market for credit and interest rate derivatives is still underdeveloped in Israel. Efforts are being made to develop this market, while implementing the lessons learned from the crisis.

markets for interest rate derivatives, CDS credit derivatives and securitization of mortgages, which constitute a significant proportion of the derivatives and securitization markets in other countries. The attempts at developing these markets in Israel are being made in parallel with the creation of infrastructure that will facilitate their balanced development. This will involve the implementation of the main lessons learned worldwide from the crisis.

- **Providing the Bank of Israel with tools for crisis management:** The global crisis illustrated the centrality of the central bank in managing financial crises and indeed the new Bank of Israel Law, which went into effect in June 2010, specifies that the Bank of Israel is to provide support for the stability of the financial system and its normal functioning and provides it with some of the tools needed for crisis management, such as the status of lender of last resort for non-bank financial institutions and the right to demand information from them.

The steps implemented in Israel so far contribute to the stability of the local financial system but are not sufficient in themselves. Efforts should continue in the following areas: the strengthening of the supervision and capital structure of financial institutions, in accordance with developing worldwide trends, and the enhancement of their corporate governance; increased cooperation and sharing of information between the various regulators and deciding on the optimal structure for supervisory authorities in accordance with worldwide trends; the strengthening of supervision over the non-bank credit market and increased supervision over rating companies that operate in Israel, while improving their incentive systems and encouraging investment institutions to carry out their own analysis; the continued development of tools for the management of macro-prudential policy; and the strengthening of supervision over payment and settlement systems.

The new Bank of Israel Law assigns the responsibility for supporting the stability of the financial system and its proper functioning to the Bank of Israel and provides it with some of the tools it requires for crisis management.

- **Measures to increase competition in the pension savings market:** In November 2010, the Director of the Capital Markets division announced a program to increase competition in the pension savings market. As part of the program, the following decisions were made, among others: to implement a uniform model for ceilings on management fees on the various savings products, that a company which manages provident funds be granted the possibility of marketing insurance coverage and to increase the transparency of management fee changes. The implementation of these measures is expected during the course of 2011. The program was preceded by an additional initiative by the Regulator of the Capital Market to create a pension clearinghouse, whose function would be to increase the efficiency in the transfer of information and funds between institutional bodies, pension consultants and pension agents in the long-term saving industry and thus to increase competition.

- **Changes in the corporate bond market** (according to the recommendations of the Hodek Committee): The corporate bond market has developed at a rapid pace in recent years and was a focus of risk in the local financial system during the crisis. This was because the market's development outpaced that of the infrastructure of institutional bodies for evaluating and monitoring credit risk and was not

**Table 4.5**  
**Institutional Investors: Main Developments, 2007–10**

	Mutual funds	Provident and severance pay funds	Advanced study funds	Pension funds		Life insurance schemes <sup>a</sup>		Total
				Old	New <sup>b</sup>	Guaranteed yield	Profit sharing	
Balance <sup>c</sup> (NIS billion, current prices)								
2007	119.4	186.1	88.0	157.1	62.8	50.1	96.4	760.1
2008	98.0	142.1	70.8	235.9	69.1	54.9	84.8	755.6
2009	133.2	176.7	94.5	264.7	91.0	60.6	118.4	939.1
2010	156.6	189.2	107.8	283.9	108.4	65.5	127.6	1038.9
Percent of total public investors' savings <sup>e</sup>								
2007	5.8	9.1	4.3	7.6	3.1	2.4	4.7	37.0
2008	5.2	7.5	3.8	12.5	3.7	2.9	4.5	40.0
2009	5.8	7.7	4.1	11.5	4.0	2.6	5.1	40.8
2010	6.2	7.5	4.3	11.2	4.3	2.6	5.1	41.2
Net accrual (NIS billion, current prices) <sup>g</sup>								
2007	5.0	-0.7	3.7	-4.2	6.4			10.2
2008	-9.4	-8.8	-0.6	-4.4	8.0			-15.1
2009	21.3	-3.3	4.7	-5.1	9.0			26.5
2010	16.2	-3.5	5.0	-5.7	10.8			22.8

<sup>a</sup> Asset balances of life insurance plans do not include fixed assets, receivables and deferred purchasing expenses.

<sup>b</sup> Including general pension funds and central pension provident funds.

<sup>c</sup> All institutional investor assets are net of investments in mutual fund.

<sup>d</sup> Since February 2008, assets of the old pension funds include the government's undertaking to help them. That undertaking has applied since 2003, but only in February 2008 were the funds directed to record it as part of their assets. The balance of the undertaking changes every month, and in December 2008 it totaled NIS 76.7 billion.

<sup>f</sup> Excluding transfers between funds.

SOURCE: Based on mutual funds' returns to the Bank of Israel and data of the Capital Market, Insurance and Savings Division of the Ministry of Finance.

accompanied by the parallel development of a supervisory infrastructure and institutional restrictions on this type of credit.

- In July 2010, the Regulator of the Capital Market published new instructions that were meant to improve the procedures of institutional bodies for investment in corporate bonds, in accordance with the recommendations of the Hodek Committee. The new instructions impose the following obligations on institutional investors: requirements for the receipt of documents and the performance of analysis prior to investing; the obligation to register non-negotiable bonds that were purchased by an institutional body at a registration office; and reporting requirements that apply to companies issuing bonds, to whom the reporting requirements of the Securities Law do not apply, as a condition for the purchase of their bonds by an institutional investor. In addition, the new instructions specify the desirable characteristics of

bonds in which institutional bodies will invest, including contractual conditions and financial standards. The new instructions went into effect at the end of 2010 and beginning of 2011 and it appears that they have the potential to improve the investment process. It is important that the new instructions be accompanied by enhanced transparency regarding the quality of bonds even after the issuing stage and by close supervision of the institutional investors purchasing them, as part of the implementation of a systemic supervisory policy. This will make it possible to identify an unbalanced expansion of credit to industries or sectors at risk at an early stage and to stop such expansion before it develops. The possibility should be considered of providing the Regulator of the Capital Market with legal tools for instructing long-term savings managers to reduce specific exposures (through, for example, requirements to increase capital if an excessive exposure has been identified).

- In parallel to the activities of the Director of the Capital Markets division, the Israel Securities Authority also made a number of regulatory modifications as a result of lessons learned from the crisis, including an obligation for designated reporting that requires issuing companies to report to the holders of their bonds, and the issue of an outline that will facilitate the work of credit officers in the formulation of debt arrangements in the bond market. In addition, the Israel Securities Authority is promoting legislation that expands the responsibilities of bond trustees and upgrades corporate governance in companies issuing bonds to the public.
- **Rating companies:** The Israel Securities Authority is working to promote the Rating Companies Law, which will enhance the transparency of rating models. The Law will require the rating companies to report the rating methods they use and information they possess and will regulate their activities, including professional standards, the prevention of conflicts of interest and the determination of supervisory and enforcement powers.

### 3. CREDIT TO THE NON-FINANCIAL PRIVATE SECTOR AND THE CORPORATE BOND MARKET

The accelerated expansion of credit is one of the most important indicators of the development of risks in the financial system. Such an expansion is characteristic of rapid growth in which the confidence of borrowers (and lenders) in their repayment ability is high. During such a period, banks are willing to take on greater risk<sup>15</sup>, and loans can be obtained with relative ease and with low spreads in the non-bank market as well. The rapid expansion of credit can lead to an undermining of the stability of financial institutions when there is a downturn in economic conditions and

<sup>15</sup> "Credit cycles, credit risk and prudential regulation", Gabriel Jimenez, Jesus Saurian, Banco De Espana, January 2005.

deterioration of repayment ability. Thus, the close monitoring of this indicator is of prime importance.

In Israel, total credit to the non-financial private sector<sup>16</sup> has grown at a relatively moderate rate in the last two years and reached a total of NIS 1.1 trillion (Table 4.6). However, while credit to the business sector, as well as non-housing credit to households, has risen only moderately, the rate of increase in mortgages to households has been rapid and is a cause for concern (see Section b below).

There is rapid growth in mortgages provided to households, which has become a cause for concern.

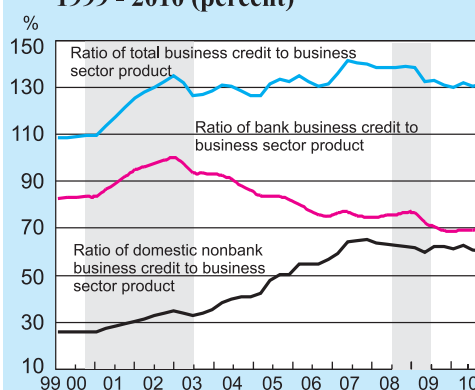
#### a. Credit to the business sector

Credit to the business sector reached a total of NIS 759 billion at the end of 2010, following a two-year period of very moderate growth (3 percent in 2010 following a contraction in 2009). The slow rate of growth is surprising in comparison to the more rapid growth rates in preceding years, particularly against the background of high rates of growth in business sector output in the last two years, very low rates of interest in the credit market and high rates of investment by the business sector in 2010. As a result of the slow growth in credit, the ratio of business sector debt to business output during the last two years fell from 139.1 percent of output at the end of 2008 to 131.6 percent at the end of 2010, which was primarily due to the drop in bank credit (Figure 4.8).

The slow expansion of credit in 2010 was not a result of constraints on the supply of credit but rather was determined by firms' preferences.

It appears that the slow expansion of credit to the business sector in 2010 was not the result of constraints on the supply of credit but rather the preferences of firms. Evidence of this includes: the ratio of capital to the banks' risk assets, which is higher than required and enables them to increase the supply of credit if they wished; the decreased assessment of risk in the credit market, which was manifested in a decline in demanded spreads in the corporate bond market and stability in credit spreads in the bank market relative to the end of 2009;<sup>17</sup> and the high level of accessibility to the capital market for companies wishing to issue bonds. The Survey of Companies also indicates a low level of financing constraints. It is possible that the low demand of firms for credit is related to the current stage

**Figure 4.8**  
**Ratio of Credit to the Business Sector to Business Sector Product, December 1999 - 2010 (percent)**



SOURCE: Bank of Israel.

<sup>16</sup> Credit to the business sector and to households from the banks, local non-bank sources and abroad.

<sup>17</sup> The spreads in the bond market: relative to government bonds; in the bank credit market: relative to the interest rate on deposits.

**Table 4.6**  
**Distribution of Credit to the Private sector by Type of Borrower, 2006–10**

(end of period)

	Balances, <sup>a</sup> NIS billion, at current prices					Rate of change from previous period (%)			
	2006	2007	2008	2009	2010	2007	2008	2009	2010
<b>Debt of the private nonfinancial sector (1+2)</b>	883	981	1,032	1,049	1,098	11.1	5.3	1.6	4.8
<i>of which: Bank credit<sup>b</sup></i>	554	592	645	647	701	7.0	8.9	0.3	8.3
<b>1. Business sector debt</b>	635	713	743	737	759	12.4	4.2	-0.9	3.0
Bank credit <sup>b</sup>	360	380	410	387	410	5.6	7.8	-5.5	5.9
Corporate bonds and nonbank credit	148	209	205	218	226	41.2	-1.9	6.4	3.5
Credit from abroad	126	124	128	131	122	-2.0	3.5	2.2	-6.5
<b>2. Households' debt</b>	248	268	289	312	340	7.9	8.1	7.9	8.9
Bank credit	193	212	235	259	290	9.6	10.9	10.4	11.9
<i>of which: Mortgages</i>	170	180	196	210	234	5.8	8.5	7.4	11.4
Credit not for housing	78	87	94	102	106	12.4	7.4	8.8	3.6

<sup>a</sup> Bank credit data before loan-loss provisions; tradable bonds data at par value plus accrued interest.

<sup>b</sup> Excluding bonds issued by the business sector and purchased by the banks. This balance appears under the item "Tradable bonds in Israel."

SOURCE: Bank of Israel.

of the business cycle, which enables them to still use their unexploited inventory of capital, as well as efficiency measures and relatively high profitability during the last year. All these factors have reduced the need for firms to increase their sources of working capital.

An exception to the above is the real estate industry, which is highly leveraged. The assessment of risk in this industry rose substantially as a result of the crisis and still remains significantly higher than in 2006, prior to the crisis. The liabilities of the industry rose rapidly in the years prior to the crisis as a result of the large amounts of capital raised in the non-bank market and they remained at a high level even after the crisis. It appears that the industry's access to credit has become more restricted, relative to the pre-crisis situation. Thus, spreads for raising capital have risen, and in 2010, the net issue of debt in the non-bank market was negative, in the amount of about NIS 5 billion, despite the relatively rapid growth this year.

The structural reforms carried out in the Israeli economy during the last decade led to a rapid expansion of non-bank credit, primarily against the background of reduced issues of government debt and the reforms in the long-term savings industry. As a result, the proportion of local non-bank credit in the financing of the business sector rose gradually to 30 percent, in comparison to only 4 percent at the beginning of the previous decade.

The increased exposure in the non-bank market to the real estate industry's risks abroad have also led indirectly to increased risk for the local banks, primarily due to the large share of these borrowers in the banks' credit portfolio.



The rapid expansion of non-bank credit increased the supply of credit and the level of competition in the credit market. This was accompanied by greater dispersion of credit risk in the market as a result of the division of credit risk between the banks and institutional investors and the broad dispersion of debt in the non-bank market, such that the risk from a single borrower was very low.

Nonetheless, it appears that the broader dispersion of credit risk during the crisis did not, as expected, reduce the banking sector's exposure to credit risk. This is because there was an expansion in the supply in credit simultaneously with the increase in dispersion, which was characterized by deficiencies in the monitoring of credit risk in the non-bank market (see Chapter 4 in the Bank of Israel Annual Report for 2008). This enabled an increase in the leverage of borrowers, particularly in the real estate industry, accompanied by an increase in the exposure of the industry to real estate investments abroad, which were the focus of the global crisis. The increase in the non-bank market's exposure to the risks of the real estate industry abroad led indirectly to an increase in the risk of the local banks as well, due to the high degree of concentration in the credit market and the large share of some of these borrowers in the banks' credit portfolio. This development illustrated the need for the banking system to condition the granting of credit on limits to the exposure of borrowers in the non-bank market as well, even if the banks' debts are secured by collateral, since this exposure may undermine the stability of the borrower and compromise his repayment ability to the banks as well.

## **b. The corporate bond market**

### *(1) The primary market*

During 2010, the non-financial private sector raised the gross amount of NIS 23 billion through the issue of bonds (whether negotiable or non-negotiable) as compared to about NIS 25 billion in 2009. The net issues<sup>18</sup> totaled only NIS 1.5 billion, as compared to NIS 8 billion in 2009. The business sector again began raising capital in 2009, with the stabilization of the financial system and the forecasts of a recovery in real activity. This followed an almost complete halt in the second half of 2008.

An analysis of the composition of issues, including those of the financial sector, indicates that the capital market became more accessible in 2010 for less than top-rated companies. This can be seen in the reduced share of issues by companies rated AA or better to 40 percent of the total in 2010 as compared to 64 percent in 2009. However, most of the issues in 2010 were of high-rated companies: companies with a rating of A or better accounted for about 87 percent of issues while the share of unrated companies constituted only 8 percent, which is similar to their share in 2009 and substantially lower than prior to the crisis. The companies that issued bonds are from a wide spectrum of industries, with the banking and real estate industries standing out.

In 2010, the non-financial private sector raised NIS 23 billion (gross) through the issue of bonds, most of which had a high rating, although there was also an expansion of issues by companies with lower ratings as well.

Again in 2010, there was a high proportion of unindexed shekel issues (41 percent), about 55 percent of which had a fixed interest rate.

<sup>18</sup> Issues of bonds less redemptions of bonds issued in previous years.

Also in 2010, the share of shekel non-indexed issues (41 percent) was particularly noticeable and of that about 55 percent had fixed interest rates. Since 2008, non-indexed shekel issues have become a substantial component of the corporate bond market; nonetheless, about 70 percent of outstanding bonds are still linked to the CPI.

The increase in the share of shekel non-indexed issues during the last two years is apparently related to the reduced proportion of long-term institutional investors in the private bond market, alongside the growth in the share of the mutual funds. Long-term institutional investors invest the lion's share of their assets in CPI-linked assets while mutual funds invest only a small proportion. Thus, for example, at the end of 2010, CPI-linked assets constituted 55 percent of the long-term assets of institutional investors as opposed to only 30 percent of the mutual funds' assets.

Following the shock experienced by the corporate bond market in 2008, the pattern of issues changed in 2009 (see the Bank of Israel Annual Report for 2009). It is interesting to examine whether this change continued into 2010 and particularly whether there was any additional change as a result of the new instructions issued by the Capital Market Branch in July 2010 regarding the investment of institutional bodies in private bonds, in accordance with the recommendations of the Hodek Committee.<sup>19</sup>

An examination of the issues carried out in 2010 shows that for the most part the trends of 2009 continued into 2010. Thus, total issues in 2010 were similar to their level in 2009 and significantly lower than the record amounts raised in 2006–7. It appears therefore that the over-selectivity in bond issues is still present. This assessment is reinforced by the large proportion of issues by highly rated companies and the small proportion by unrated companies. Further support can be seen in the decrease in issues by real estate companies as a proportion of the total, relative to the pre-crisis situation, although the total amount of bonds issued by the real estate industry was greater in 2010 than in 2009 and the proportion of unrated issues increased as well.<sup>20</sup> The spread demanded in the issues of real estate companies and unrated companies was also larger than in 2006 (the lowest point reached for spreads) even though the trend showed a continuing contraction and its level is already similar to what it was in 2008.

An examination of the uses of capital raised by the real estate industry show that about one-third of the capital issues was, according to the prospectus, intended for recycling of existing debt while the rest did not have a specific designation. Thus, the lenders (i.e., the purchasers of the issued bonds) accepted the possibility that the

The total value of issues in 2010, which was similar to that in 2009 but lower than the record amounts raised in 2006–7, indicate that over-selectivity still exists.

An examination of the uses of funds raised by the real estate industry show that about one-third of the amounts raised were, according to the prospectus, intended for the recycling of existing debt.

<sup>19</sup> The new instructions went into effect in October 2010 in the primary market and in January 2011 in the secondary market; however most of the expected changes were already known in September 2009, when the interim report of the Hodek Committee was published. Some of the instructions were binding while others were only recommendations; however, the market's assessment was that, in most cases, the investment committees of institutional investors would adopt the new instructions in their entirety.

<sup>20</sup> The proportion of issues by the real estate industry within total issues in 2010 was 18 percent, as opposed to 14 percent in 2009, and the proportion of unrated issues by the real estate industry was 18 percent as opposed to 12 percent in 2009.

capital raised would be used for the financing of projects abroad, the main channel through which local real estate companies were exposed to the industry's foreign risk during the crisis.

With regard to the existence of contractual covenants or a demand to fulfill certain financial criteria, in accordance with the new instructions of the Capital Markets division, a sampling of issues in 2010 shows a certain improvement relative to the situation in 2009. Thus, about 40 percent of issues carried out in 2010<sup>21</sup> included contractual covenants or a requirement to meet financial criteria, as opposed to only 28 percent in 2009. Despite the improvement, most of the issues in 2010 still lacked any of the aforementioned covenants or requirements, which was made possible by the fact that the new instructions only applied to long-term institutional investors while the rules of investment for mutual funds remained unchanged.

The fact that the new instructions are valid only for long-term institutional investors, alongside the desire of these investors to reduce their exposure to private bonds as a result of the lessons learned from the crisis, shifted demand for bonds from them to mutual funds that specialize in corporate bonds, which have raised a net amount of about NIS 33 billion in the last two years. As a result, the proportion of corporate bonds in the total assets of the mutual funds rose to an average of 24 percent at the end of 2010, as compared to only about 11 percent at the end of 2008. At the same time, the direct holdings of the public in corporate bonds also rose and reached almost 50 percent of total outstanding bonds at the end of 2010, as compared to 38 percent at the end of 2007 (Figure 4.9).<sup>22</sup>

In this context, we would mention that the high rate of holdings of corporate bonds among short-term investors and the fact that long-term institutional investors cannot, according to the new rules, purchase some of these bonds in the secondary market is liable to have implications for the volatility in this market in the event of a downturn in the market and this is particularly the case since this market is characterized by low trading volume. Therefore, it is important that uniform rules of investment be imposed on mutual funds as well, in order to prevent the continued expansion of an inventory of bonds that only some of the market players are permitted to invest in.

Again in 2010, most of the issues lacked any contractual covenants or requirements to meet financial standards, despite the improvement relative to 2009.

The fact that the new instructions of the Ministry of Finance Capital Markets division apply only to long-term institutional investors and that these investors sought to reduce their exposure to corporate bonds in view of the lessons learned from the crisis led to a shift of demand for these bonds to mutual funds.

<sup>21</sup> Of the number of issues. According to a sample that included 66 percent of the issues of the non-financial business sector with a rating of A or lower. The new instructions went into effect only in October 2010, such that for most of 2010 there was no obligation to operate according to them.

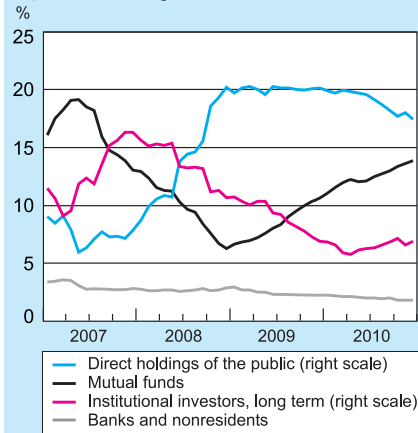
<sup>22</sup> There is no information available on the holders of bonds who are included in the term "the public". It can be surmised that most of them are portfolio managers, managers of ETFs and companies, while the direct holdings of households are apparently not large, in view of the expertise required to invest in this market.

During 2010, the fall in yields in the corporate bond market continued and their yields reach historic lows.

The spreads in the corporate bond market continued to narrow in 2010.

**Figure 4.9**  
**Composition of Holdings of Corporate Bonds,<sup>a</sup> 2007-10**

(end of month, percent of market value of bonds)



<sup>a</sup> Including convertible bonds, structured bonds, and certificates of deposit (CDs) issued by foreign companies.

SOURCE: Based on reports from the institutions direct to the Capital Market, Insurance and Savings Division in the Ministry of Finance and to the Bank of Israel, and the Tel Aviv Stock Exchange.

(2) *The trend in yields and spreads during the year*

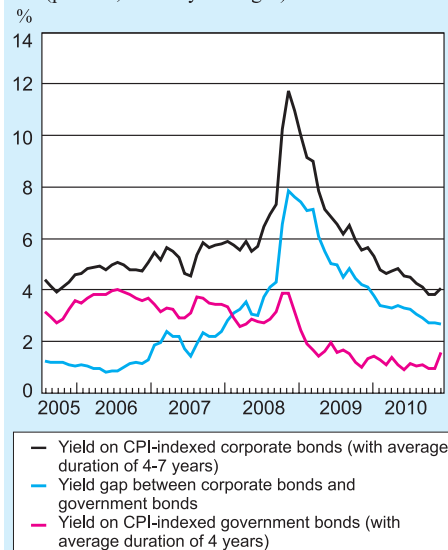
During 2010, yields fell in the corporate bond market, which continued the downward trend in 2009. The level of yields in the market reached a historic low and reflected costs of raising capital not yet experienced by the business sector (Figure 4.10). The drop in yields in 2010 was primarily the result of the reduced assessments of risk in the corporate bond market, as reflected in the narrowing of the spread with government bonds, and to a lesser extent the fall in the riskless yield on government bonds.

The level of spreads in the corporate bond market continued to narrow in 2010 and their levels reached 2.6 percent on average at the end of the year, which is similar to the situation in the first quarter of 2008. This was higher than the low levels (1.2 percent on average) prevailing from 2005 until mid-2007.

The reduction in spreads encompassed all the ratings and all the industries. However, in the real estate industry and among unrated companies, their level at the end of 2010 was a long way from the aforementioned low levels in the past (Figure 4.11). Thus, for example, the average spread in the real estate industry at the end of 2010 stood at 4.2 percent as compared to an average of 1.9 percent during the years 2005–6 and among unrated companies in this industry it stood at 9.1 percent as compared to 5 percent during those years. Among unrated companies not in the real estate industry, the spread at the end of 2010 stood at an average of 6.5 percent, as compared to 2.7 percent in 2005–6. The fact that spreads in the corporate bond market did not return to the low historic levels perhaps is an expression

**Figure 4.10**  
**Yields on Corporate Bonds and CPI-Indexed Government Bonds and the Gap Between Them,<sup>a</sup> July 2005 to December 2010**

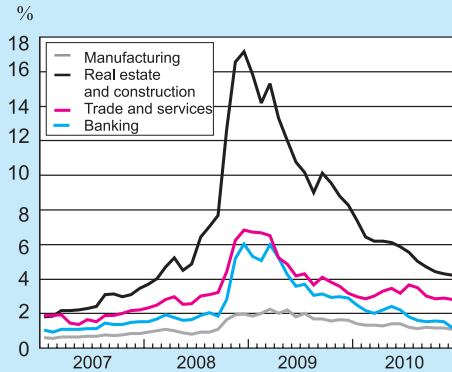
(percent, monthly averages)



<sup>a</sup> Negotiable bonds excluding: convertible bonds, structured bonds, and certificates of deposit (Cds) issued by foreign companies.

SOURCE: Bank of Israel.

**Figure 4.11**  
**The Gap between Yields on**  
**CPI-Indexed Corporate Bonds and**  
**Yields on CPI-Indexed Government**  
**Bonds<sup>a</sup>, by Industry.**  
 (monthly average)



<sup>a</sup> The gap is calculated as the gap between the weighted average yield to maturity on CPI-indexed corporate bonds, excluding convertibles, with a yield to maturity of up to 60 percent and with an average duration longer than six months, and the yield on Galil-type government bonds with an average duration of five years.

SOURCE: Bank of Israel.

of caution in the market, following the crisis that prevailed in the market, although it is unclear whether the present level of spreads is a fair compensation for the high uncertainty currently prevailing in the financial system.

### (3) The inventory of bonds

The stock of corporate bonds totaled about NIS 253 billion in face value.<sup>23</sup> The bonds were mainly issued by companies in banking (26 percent), real estate (25 percent), investment and holding companies (18 percent) and commerce and services (20 percent). The share of the real estate industry in the stock of bonds grew rapidly from 13 percent at the end of 2004 to almost 30 percent in mid-2008. This was due to the large amount of capital raised in the years prior to the crisis in order to finance

The face value of corporate bonds at the end of 2010 totaled about NIS 253 billion and the share of the real estate industry remained the largest of the various industries, apart from the banks.

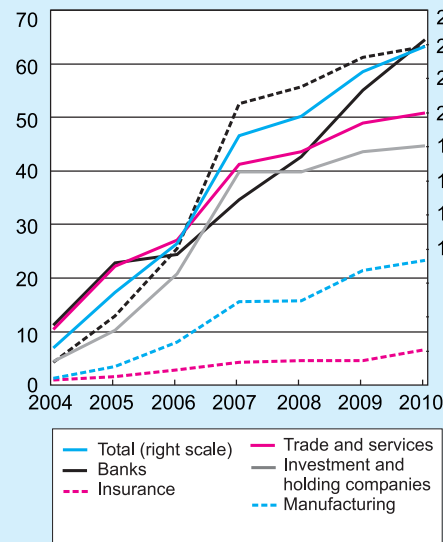
investments in real estate, some of them abroad and in countries where real estate prices rose sharply. The proportion of the real estate industry in the stock of negotiable bonds has fallen somewhat since the crisis, although it still remains the highest among the various industries, except for the banks (Figure 4.12). Such a high proportion is uncharacteristic of markets in other countries, where most of the financing for the real estate industry is provided by the banking system. In those countries, banks provide credit to real estate companies gradually, according to the progress of building, a system that isn't practical in the case of credit obtained in the capital market.

The high yields in the real estate industry and the high proportion (80 percent) of real estate companies with bonds that traded at a yield exceeding 8 percent at the end of 2010 can be attributed to the following factors: the high rates of leverage among companies in the real estate industry, the fact that this industry was at the center of the crisis abroad and the exposure of Israeli companies to real estate investments abroad, some of them in countries that were at the center of the crisis. The proportion of the companies that traded with a yield of above 8 percent within total traded companies has declined since reaching a record level during the crisis. At the end of 2010, it stood

Real estate companies account for the largest share of companies whose bonds are traded at high yields.

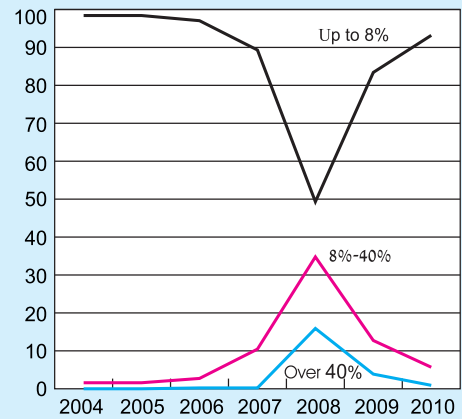
<sup>23</sup> Negotiable and non-negotiable bonds listed for "Retzef-Institutional" trading, not including structured bonds, deposit certificates and bonds issued by foreign companies. This total does not include non-negotiable bonds that are not listed for trade on the "Retzef-Institutional" and are held by institutional investors. The estimated total stock of bonds as of the end of 2010 (negotiable and non-negotiable) stood at NIS 300 billion.

**Figure 4.12**  
**Outstanding Balance of Corporate Bonds, by Industry, 2004-10**  
 (NIS billion, nominal value, excluding structured bonds)



SOURCE: Bank of Israel.

**Figure 4.13**  
**Outstanding Balance of CPI-Indexed Corporate Bonds<sup>a</sup>, by Yields, 2004-10**  
 (percent of nominal value, excluding convertibles and structured bonds)



<sup>a</sup> Tradeable bonds excluding convertible bonds, structures, CDS, and bonds issued by foreign firms.

SOURCE: Bank of Israel.

at only 6.8 percent, as compared to 54 percent at the height of the crisis in November 2008 (Figure 4.13).

The share of highly rated companies (AA or above) was 68 percent on average prior to the crisis and fell to about 38 percent at the end of 2010, following the broad lowering of ratings during the crisis and the increase in the proportion of A-rated bond issues.

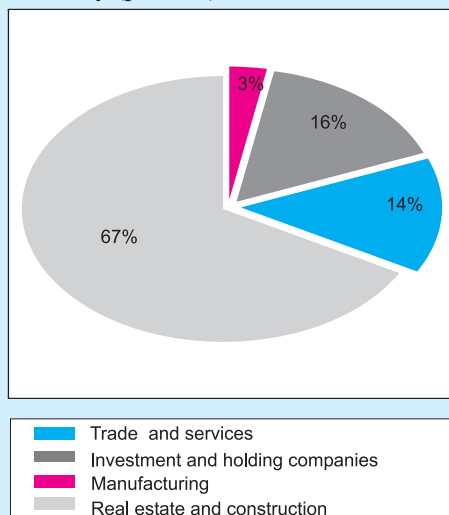
#### (4) Debt arrangements in the corporate bond market

The number of new companies entering into a debt arrangement fell to 11 in 2010 and the face value of their debt totaled about NIS 2.1 billion.

The financial crisis hit the corporate bond market before formal procedures had developed for debt arrangements, unlike the situation in other developed markets. The procedures for debt arrangements were formulated during 2009 in parallel to a growing accumulation of companies that required such arrangements. From the last quarter of 2008 until the end of 2009, 50 companies whose bonds had a face value of NIS 17.3 billion entered into an arrangement. During 2010, 11 new companies, whose bonds had a face value of NIS 2.1 billion, entered into arrangements. The number of companies still remaining in an arrangement at the end of 2010 was 52 and their bonds had a face value of only about NIS 6.8 billion. This was the result of the completion of the arrangement process for a number of large companies, such as Africa Israel and Zim.



**Figure 4.14**  
**Outstanding Balances of Bonds of**  
**Companies that Made Special**  
**Repayment Arrangements in 2010, by**  
**Industry (percent)**



SOURCE: Bank of Israel.

The infrastructure for debt arrangements in the non-bank market is particularly important to the functioning of the market. This is because the debt arrangement procedure in this market is more complex than that involving the banks, due to the wide dispersion among a large number of lenders, whose interests sometimes conflict.

The proportion of debt in arrangement within total negotiable bonds stood at 2.5 percent at the end of 2010, which is higher than the proportion of rescheduled bank credit (1.2 percent) as of the end of September 2010. About 70 percent of the companies in debt arrangements were in the real estate industry (Figure 4.14).

#### (5) Expected redemptions of bonds

The continuing increase in the stock of corporate bonds in recent years has also brought about an increase in the volume of expected redemptions each year and therefore to an increase in the issues needed to recycle debt, as the non-bank market grows in importance as a source of financing for the business sector.

Total redemptions of bonds in 2010 (principal only) stood at NIS 25.9 billion,<sup>24</sup> about half of which is accounted for by the real estate industry. During 2011, the volume of redemptions is expected to be somewhat lower at NIS 21 billion, 34 percent of which is accounted for by the real estate industry. Most of the redemptions expected in 2011 (about 90 percent) involve bonds that traded at a yield of less than 8 percent at the end of 2010. The volume of redemptions in subsequent years (2012–15) is expected to be larger (about NIS 30 billion on average per year), due to the large redemptions by the banks and the real estate industry (about NIS 8 billion per year on average for each of these industries). This means that in order for the capital market to be a net source of capital in coming years, the volume of gross bond issues will have to be above NIS 30 billion on average per year.

In view of the large redemptions expected in coming years, the gross amount of issues must exceed NIS 30 billion per year on average in order for the capital market to be a net source of funds.

<sup>24</sup> According to the forecast of redemptions. The amount of actual redemptions is not known.

### c. Credit to households

The total debt of households continued to grow rapidly in 2010, as a result of the rapid increase in new mortgages.

The total debt of households continued to grow in 2010 and reached NIS 340 billion at the end of 2010. This represents a growth rate of about 9 percent relative to the end of 2009, which is a continuation of the relatively rapid rates of growth during the years 2007–9. The large increase in credit to households is the result of an acceleration in the issue of new mortgages, while the other components of credit to households recorded only moderate increases. Thus, for example, total gross new mortgages, which were provided by the banks, grew by 36 percent, which represents a continuation of the average growth rate of about 27 percent during the years 2007–9 (Figure 4.15). Total outstanding mortgages from the banks rose by 16.4 percent in 2010.

Mortgages are one of the main components in the debt burden of households in Israel and at the end of 2010 they constituted 69 percent of their total debt. Despite the rapid increase in new mortgages, the ratio of household debt to disposable income in Israel has not changed significantly since 2008 and at the end of 2010 it stood at about 62 percent, which is significantly lower than in most developed countries.

One reason for the accelerated rate of new mortgages is the low rates of interest in the economy, which encourage the mortgage-financed purchase of housing, including as an investment asset (Figure 4.15).

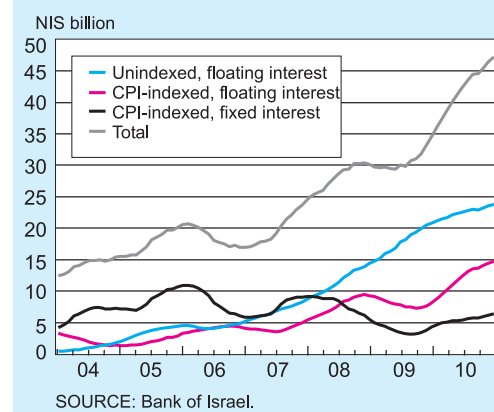
About 50 percent of new mortgages in 2010 were non-indexed with a variable interest rate (Figure 4.16). The interest rate on these mortgages is closely related to changes in the Bank of Israel rate of interest and any future increase in interest rates is likely to expose borrowers to higher repayments. Thus, for example, the average interest rate on new variable rate non-indexed mortgages increased to 2.63 percent on average in

2010 in contrast to 1.77 percent in 2008 and as a result the burden of interest payments on outstanding shekel non-indexed mortgages that were valid at the end of 2008 grew by about NIS 500 million. On the basis of various assumptions regarding the future path of the interest rate,<sup>25</sup> the burden of interest payments is expected to increase even more significantly in 2011, by NIS 1.6–2.2 billion. Such an increase represents about 0.4 percent of disposable income and together with the increase that already occurred

About 50 percent of new mortgages in 2010 were unindexed and had a variable interest rate. A rise in the Bank of Israel interest rate in the future is liable to expose the holders of these mortgages to ballooning repayments.

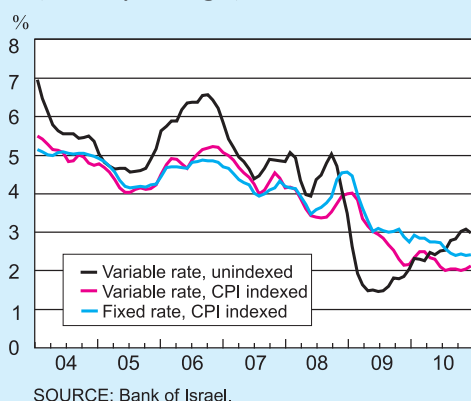
According to the expected path of a rising interest rate by the Bank of Israel, the burden of repaying the interest on mortgages is expected to rise significantly in 2010.

**Figure 4.15**  
Amount of New Mortgages Granted in  
Previous 12 Months, 2004–10



<sup>25</sup> The calculation is based on the assumption that the interest rate on new variable rate non-indexed mortgages will reach a level of 4.5–5.2 percent by the end of 2011, which is consistent with analysts' forecasts of the Bank of Israel rate of interest during 2011, with the addition of a spread or according to the average nominal level of the rate of interest on new mortgages during 2006–8.

**Figure 4.16**  
Interest rates on new mortgages  
granted, 2004–10  
(Monthly averages)



in 2009, it may have somewhat of an influence on private consumption.

With regard to the risk to the banking system, the rates of financing in the mortgage market in Israel are significantly lower than what is common in other countries, a situation that reduces the banks' risk of customers defaulting. Apart from this, the market for mortgage securitization is almost nonexistent in Israel and the risk arising from mortgages remains on the books of the bank for the whole life of the debt. This provides an incentive to the bank to meticulously examine the repayment ability of customers,

The mortgage market in Israel is much more conservative than in other countries that experienced a crisis in the housing market.

including at higher interest rates. An additional difference is related to the right of recourse for mortgage loans in Israel unlike other countries where mortgage loans are non-recourse, i.e. the house is the only collateral available to the lending bank. For these reasons, it appears that the mortgage market in Israel is far more conservative than those in other countries that have experienced a crisis in the housing market.

Nonetheless, the rapid and prolonged rise in prices in the housing market, alongside the continued growth in new mortgages, requires close monitoring of developments and the adoption of measures to halt these trends at an early stage before they become a real threat to the financial system. During 2010, the Bank of Israel took a number of steps in the mortgage market and is continuing to closely monitor the developments in this market (for further discussion of these measures, see Box 1).

#### 4. THE EQUITY MARKET

Share prices increased at a rate of 12.6 percent in 2010 and reached record levels. This represents a continuation of the upward trend since the beginning of 2009. Shares have risen cumulatively by 101 percent during these two years, which followed a drop of 46 percent in 2008. The increase in 2010 was accompanied by a drop in the risk implicit in the market, which was reflected in a decline of the implied volatility in Tel Aviv 25 Stock Index options to 17 percent, as compared to its level of 24 percent in 2009.

Following increases of this magnitude, the question arises as to whether the level of share prices reflects fundamental economic factors. Several indicators indicate a positive response to this question. For example, indicators of market value, which are calculated for companies traded in the share market, indicate that the level of share prices is not excessive relative to the level of companies' activities and during the last

Share prices continued to rise in 2010, at a rate of 12.6 percent, and reached record levels. The question arises therefore as to whether their levels are consistent with the fundamentals of the economy.

two years share prices have risen in parallel with the sharp rise in corporate profits and the accumulation of capital. Thus, the price to earnings and price to book ratios remained relatively constant (14.5 and 2.1 percent, respectively). The expected price to earnings ratio<sup>26</sup> also remained relatively low at about 11.6 percent. The levels of the historic and expected ratios are consistent with their long-run averages.

The yield in the share market relative to alternative investment channels is also not excessive. Thus, the risk premium, which is derived from the spread between the required yield on shares<sup>27</sup> and the riskless rate of interest is about 5 percent, in contrast to periods of price bubbles in which this premium reached even negative levels. In addition to these indicators, which indicate that share prices are consistent with fundamental economic factors, an examination of the accumulation in mutual funds that specialize in shares relative to the mutual fund market as a whole does not indicate that the public is rushing to this type of investment, which would indicate herd behavior and the existence of a price bubble. In addition, the discontinuous nature of the share price increases<sup>28</sup> and the high variance across industries support the assessment that activity in the share market cannot be characterized as herd behavior.

At the same time, there are signs that share prices are too high. Thus, the upward trend has been manifested in share offerings in the primary market in the amount of NIS 12 billion, which is twice the amount in each of the two preceding years. Generally, parties at interest prefer to issue shares during periods in which they feel that prices are high. Furthermore, share prices in Israel in recent years have been highly correlated with those in other countries<sup>29</sup> and therefore delinkage between global share prices and fundamental factors can be reflected in the Israeli stock market as well.

The question of the pricing of shares is especially relevant regarding the oil and gas partnerships, in spite of the discovery of huge offshore gas reservoirs within Israel's maritime boundaries. The prices in this sector increased by 49 percent in 2010 and since the beginning of 2009 by some 900 percent. The market value of this sector has reached NIS 38 billion, which represents about 5 percent of the share market's total value. The trading volumes of this sector, which were negligible in 2008, constituted about 14 percent of total trading during the last three months of 2010. Institutional investors hold about 9 percent of the shares of this sector and the public holds about 31 percent while the remaining 60 percent are held by parties of interest. This sector raised about one billion shekels in the primary market this year.

<sup>26</sup> The expected price to earnings ratio is calculated as the ratio between the current price and expected profit during the next four quarters. Expected profit during the coming year is calculated as the average of analysts' forecasts, as published by Bloomberg.

<sup>27</sup> The required yield on shares is estimated by dividing 1 by the price to earnings ratio. Risk free interest in this analysis was the yield on unlinked 10-year government notes.

<sup>28</sup> The upward trend in share prices came to a halt during April-May as a result of the debt crisis in Europe.

<sup>29</sup> The correlation with the index of emerging markets stood at 87 percent in 2010.

## 5. THE FINANCIAL INSTITUTIONS

a. The banks<sup>30</sup>

*(1) Financial intermediary activity and its pricing in the macroeconomic environment of 2010*

The performance of the banks during the first three quarters of 2010 (Table 4.7) was positive and are an indication of the continuing recovery in the Israeli banking system following the global crisis of 2008. The return on equity rose, indicating an increase in profitability relative to the previous year, following a sharp decline during the crisis. The growth in the proportion of bank credit provided to private individuals within total bank credit continued the upward trend that began in 2009. In addition, there was a decline in credit risk as reflected in the ratio of credit to problematic borrowers and the ratio of the total loan-loss provision to total credit, as, from a longer term perspective, a situation of stability is beginning to take shape. With regard to capital adequacy, the relatively high level of last year is being maintained. This can be attributed mainly to

The positive results reported by the banks during the first three quarters of 2010 indicate a continuation of the recovery in the local banking system following the last global crisis.

**Table 4.7**  
**Indices of the Banks' Performance,<sup>a</sup> 2006–10**

	2006	2007	2008	2009	2010/Q3
			(Percent)		
Return on equity (ROE)	17.3	16.6	0.4	8.2	9.8
<b>Activity</b>					
Credit to the public/total assets	63.9	66.1	69.3	66.2	69.1
Credit to households/total credit	33.9	33.7	34.4	38.6	43.1
<b>Operating efficiency</b>					
Operating expenses/total assets	2.6	2.5	2.5	2.4	2.5
Assets per employee post (index, at constant prices)	109.7	114.9	121	126.7	-
<b>Risk</b>					
Credit to problem borrowers/total credit	9.4	7.1	8.4	7.8	6.9
Total doubtful debt provision/total credit	5.5	4.9	4.7	5.1	4.9
<b>Capital adequacy</b>					
Capital adequacy ratio	10.8	11.0	11.2	13.7	14.1
Tier I capital adequacy ratio <sup>c</sup>	7.5	7.6	7.5	8.3	8.5

<sup>a</sup> The five major banking groups.

<sup>b</sup> Includes off-balance sheet credit.

<sup>c</sup> This ratio is computed according to Basel I through 2008, and Basel II after that.

SOURCE: Banks' published financial statements, and the annual surveys of Israel's banking system.

<sup>30</sup> The analysis in this section is based in part on data from the financial statements for the first three quarters of 2010.

The acceleration this year in economic activity was reflected in only a moderate increase in the demand for bank credit in the business sector; however, growth continued in the demand of households for credit in order to purchase housing for residence or investment.

the high level of profitability but also to the constraint imposed by Bank Supervision on the distribution of dividends.<sup>31</sup>

During 2010, the banks operated in an environment: of rapid growth relative to other developed countries; a current account surplus and significant capital inflows as a result of the interest rate spread between Israel and abroad; and a higher rate of inflation in asset prices, including housing prices. In this environment, the implementation of monetary policy involved a mix between adjusting the short-term interest rate in order to attain its targets and the purchase of foreign currency in the market (for details, see Chapter 3). In addition, policy measures were adopted to achieve financial stability targets in order to, among other things, reduce the exposure of borrowers to the interest rate risk implicit in variable rate mortgages (for details, see Box 1). This section discusses, among other things, the integration of the banks within this economic environment.

The Israeli banking system has recovered relatively quickly from the crisis and with “cleaner” balance sheets than banking systems in other developed countries. Nonetheless, in view of the level of concentration in financial activity in Israel, banking activity was also influenced this year by several macroeconomic developments related directly or indirectly to the crisis:

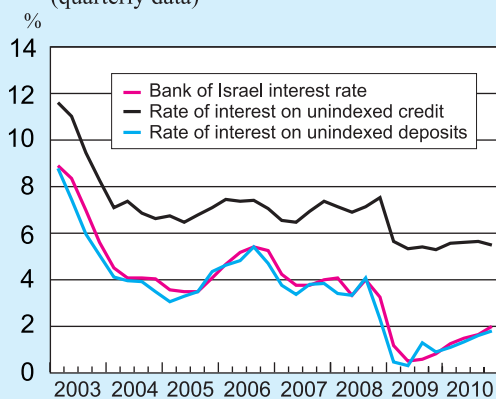
a. The acceleration in economic activity this year was manifested in only a moderate increase in the demand of the business sector for bank credit, though the increase in demand by households for housing credit, both for residential and investment purposes, continued its upward trend and most of this demand was channeled to the mortgage banks. Therefore, total bank credit to the business sector increased this year by about 3 percent in real terms following a decline last year while bank credit to households (primarily for housing) continued to grow at a rate of about 9.3 percent (in 2010 prices) for the fourth consecutive year. Various indicators show that the banks did not tighten the constraints on the supply of credit this year. Limits on credit were not mentioned in the Companies Survey as effective constraints; the banks were holding a quantity of capital that exceeded supervisory requirements; and the lack of increase in the spread between interest rates on credit and interest rates on sources (Figure 4.17), against the background of relative stability in demand for bank credit (excluding mortgages).

b. The low short-term rates of interest (the Bank of Israel rate of interest, the non-indexed bank interest rates, the yield on makam, etc.) and their moderate uptrend, which the Bank of Israel led this year as part of its monetary policy (Figure 4.17), constituted an essential component in the Israeli economy’s response to the global financial crisis. At the same time, the prolonged period during which the short-term interest rate has remained at low levels has contributed to the increase in demand for financial assets (shares and bonds), as well as the increase in the demand for housing, both for residential and investment purposes. Therefore, the prices of these assets rose this year (see Sections 3 and 4 in this chapter), as did the demand of households

<sup>31</sup> In June, the Banking Supervision Department permitted the distribution of dividends on the condition that a core capital adequacy ratio of at least 7.5 percent is maintained.

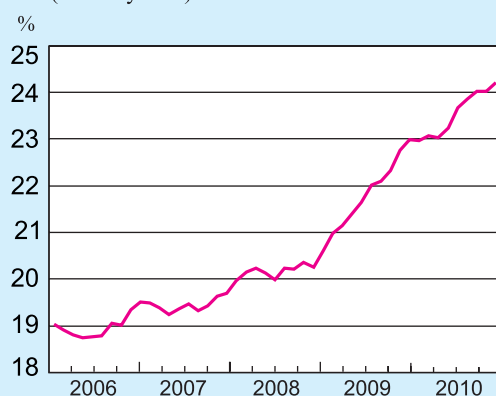


**Figure 4.17**  
Interest Rates, 2003-10  
(quarterly data)



SOURCE: Banks' reports to the Bank of Israel.

**Figure 4.18**  
Share of Housing Credit to Households  
in Total Bank Credit, 2006-10  
(monthly data)



SOURCE: Banks' reports to the Bank of Israel.

for housing credit from the banks, as mentioned above (Figure 4.18; for a discussion of mortgages, see Section 3).

c. The inflow of capital, which was encouraged by the widening interest rate spread with other developed countries (the US and European countries), can be manifested in two ways: the supply of foreign currency in exchange for shekels or for bonds and/or the increased demand for credit in foreign currency, replacing the demand for credit in shekels. The inflow of short-term capital from foreign residents and the increase in their holdings of makam this year are evidence of the first type of capital inflow.

Total bank credit<sup>32</sup> in foreign currency or indexed to foreign currency increased in dollar terms by about 5.4 percent during the third quarter of 2010, following two years of decline (in dollar terms), which reached about 20 percent, cumulative, and continued during the first half of 2010 as well. It is possible that this increase in the third quarter of 2010 is indeed an indicator of the beginning of a trend to exploit the interest rate spread between credit in

Total bank credit in foreign currency or linked to it grew in the third quarter of 2010, after declining for two years. This occurred against the background of the widening interest rate gap between credit in local currency and credit in foreign currency and the expectations of a nominal appreciation of the exchange rate.

local currency and credit in foreign currency, in view of the expectations of a nominal appreciation of the exchange rate.

The interest rate on non-indexed credit in Israeli currency has been on an upward trend since mid-2009 (Figure 4.17), as expected following the hikes in the Bank of Israel interest rate. It was also found (see Figure 4.19) that since the beginning of the global crisis the interest rate on bank credit in foreign currency has been more closely linked than in the past to the Libor interest rate (the cost of foreign credit sources) after being delinked during the five years prior to the crisis. It is possible that over these five years the demand for credit in foreign currency was relatively strong, while it

The upward trend continued in the share of net interest income in total banks' income, which reached pre-crisis levels.

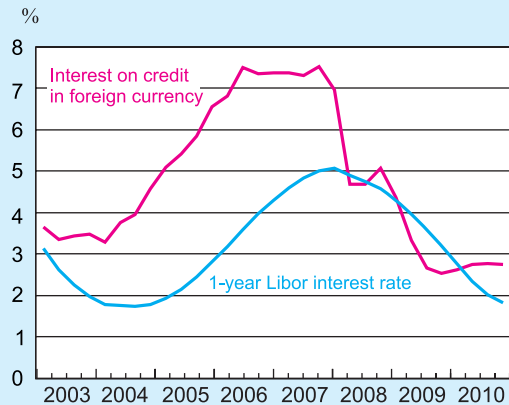
<sup>32</sup> Total figures for all of the banks in Israel.

was weakened during and right after the crisis. However, delinkage has appeared again this year, possibly indicating renewed interest in foreign currency credit.

As was the case last year, the Bank of Israel continued this year to use commercial bank deposits with it as part of its monetary policy, and also continued to purchase foreign currency and to sterilize the effect of those purchases on the money supply (see Chapter 3). The total deposits of the commercial banks at the Bank of Israel are in large part a manifestation of this policy. This year, total balances fell somewhat relative to total deposits of the public with the commercial banks. The decline is the result of the increased use by the Bank of Israel of *makam* as an alternative monetary instrument for sterilization, though it is also consistent with the commercial banks' reduced demand for liquidity, in view of the recovery from the crisis.

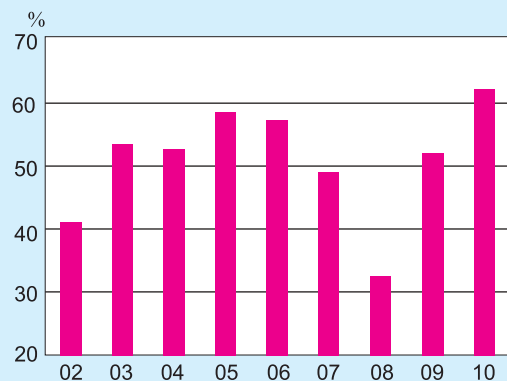
This year again, the banks achieved a high degree of profitability, as already mentioned (Table 4.7). The source, among others, for the increase in profitability, is the increase in net interest income and operating revenue. It can be seen from Figure 4.20 that the upward trend in the proportion of net interest income in total revenue (net interest income and operating revenues) continued this year and reached its pre-crisis rate.<sup>33</sup>

**Figure 4.19**  
**Rate of Interest on Foreign Currency Bank Credit and the 1-Year Libor (Dollar) Rate of Interest**  
(percent, end-of-quarter data)



SOURCE: Banks' reports to the Bank of Israel.

**Figure 4.20**  
**The Share of Net Interest Income<sup>a</sup> of the Five Largest banks in Israel in Their Total Income, 2000-10**



<sup>a</sup> Net interest income is bank revenue from interest, offset by interest payments to depositors.

SOURCE: Bank of Israel.

<sup>33</sup> Using a similar graph, we showed in the Bank of Israel Annual Report for 2009 that operating revenues are less correlated with the business cycle.

*(2) Stability of the banking system: risk, pricing and capital adequacy*

During the first three quarters of 2010, there were signs of stability in credit risk and the banks' exposure to it (Table 4.7). The proportion of credit to problematic borrowers in total credit continued to decline this year to about 6.9 percent and the proportion of the total doubtful debt provisions within total credit also declined somewhat to about 4.9 percent, against the background of the decrease this year in expenses due to the doubtful debt provision relative to total credit (0.4 percent as compared to 0.8 percent in the previous year). An examination of the trend in the credit risk of the banks from a longer-term perspective (Figure 4.21) shows the stabilization of these risk indicators at pre-crisis levels, together with the stability in the ratio of total bank credit to GDP, which is an indicator of banks' exposure to credit risk.

Credit risk is dependent on, among other things, the degree of concentration of credit. This is measured according to various cross-sections, among them the breakdown of credit according to industry and according to loan size. Table 4.8 presents the development of these figures during recent years and the following trends can be seen:

1. The breakdown of credit according to size indicates an upward trend in the proportion of credit to small borrowers (up to NIS 2 million) during the period since 2003 while the proportion of the largest borrowers (over NIS 200 million) remained stable even after the financial crisis. It appears therefore that in spite of the banks' policy to increase the dispersion of credit, which is indicated by the upward trend in the proportion of credit to small borrowers, the amount of credit to the largest borrowers is making it difficult to significantly reduce concentration in credit.

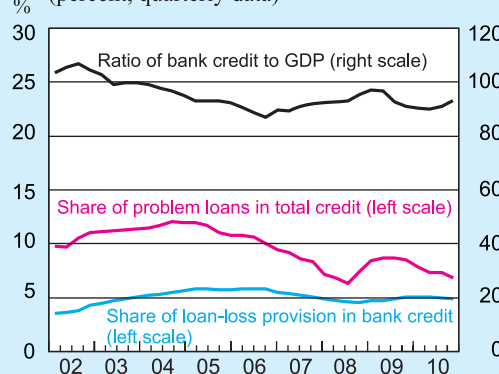
2. Since 2003, the banks have increased the proportion of credit to households within total credit, particularly during the last two years. This trend reduces the concentration of the bank credit portfolio, since households are dispersed among all the industries of the economy and the public sector. At the same time, credit to households exposes the bank to economy-wide risks (i.e., during a recession).

3. The proportion of credit to the commerce and services industries

During the first three quarters of 2010, there were signs of stability in credit risks and the banks' exposure to them.

There has been a clear upward trend in the share of small borrowers since 2003 while the share of large borrowers has remained stable, even after the global financial crisis.

**Figure 4.21**  
The Ratios of the Balances of Loan-Loss Provision and Problem Credit to Total bank Credit, and the Ratio of Bank Credit to GDP, The Five Major Banking Groups, 2002-10  
(percent, quarterly data)



SOURCE: Banks' reports to the Bank of Israel.

During the last two years, the share of credit to the real estate industry rose at the expense of the shares of the manufacturing, commerce and services industries

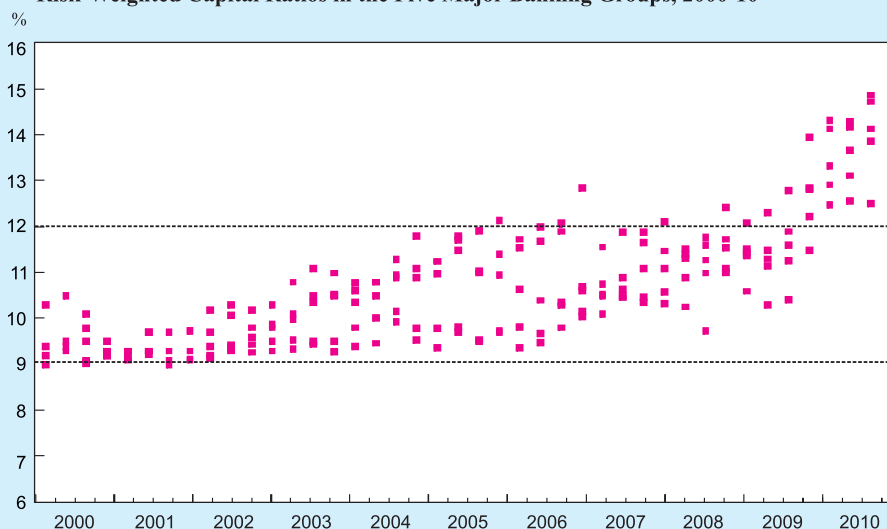
within the portfolio of credit to all industries grew until 2007, at the expense of the proportions of most other industries. This is apparently the result of the upward trend in the proportion of commerce and services in business product during this period. This development increased the concentration of credit, as can be seen in the H Index.<sup>34</sup> However, the picture has changed in the last two years: the proportion of credit to the real estate industry grew substantially, at the expense of the manufacturing, the commerce and services industries, whose proportions fell somewhat.

With respect to the industry constraint that limits the credit provided to a single industry by a bank, there was no significant change this year in the proportion of credit that went to the construction industry within total bank credit, which stood at about 14.6 percent in 2010 (see Note 2 to Table 4.8). Nonetheless, in view of the growth in the public's demand for mortgages and the accelerated sales of housing (see Chapter 2 on the construction industry), about half of the increase in the liabilities of the construction industry was a result of the growth in bank guarantees (including a Sales Law guarantee) which were provided to home buyers against the transfer of mortgages as a source of financing for the use of construction companies.

The relatively high level of capital adequacy achieved by commercial banks last year seems to have been maintained and even surpassed this year. On average, it grew

Capital adequacy, which is reflected in the ratio of capital to total risk-adjusted assets, continue to increase moderately in the five banking groups.

**Figure 4.22**  
Risk-Weighted Capital Ratios in the Five Major Banking Groups, 2000-10



<sup>34</sup> The H-Index is the Herfindahl-Hirschman Index of concentration, and is calculated as follows:

$$H = \sum_{j=1}^N s_j^2$$
 where N is the number of industries and  $s_j$  is the proportion of credit to industry j out of total credit. A higher index indicates higher concentration.

**Table 4.8**  
**Concentration of credit according to loan size and industry in certain years**

<b>Credit segmented by size</b>	<b>2003</b>	<b>2007</b>	<b>2009</b>
<b>NIS thousands</b>		<b>Percent</b>	
0 --2,000	32.6	34.2	39.4
2,000-- 20,000	14	13.3	12.9
20,000 --200,000	30.4	29.4	25
Up to 200,000	23	23.1	22.8
<b>Credit segmented by sector of economy<sup>b</sup></b>	<b>2003</b>	<b>2007</b>	<b>2010Q3</b>
		<b>Percent</b>	
Agriculture	1.2	1.3	1.1
Manufacturing	22.3	21.3	19.8
Construction	27.9	26.3	29.4
Electricity and water	1.7	1.4	1.4
Transport and communications	9.8	7.0	7.4
Trade and services	37.1	42.8	40.9
<b>H Index of concentration of credit</b>	<b>0.276</b>	<b>0.303</b>	<b>0.298</b>
<b>Credit to households as a percentage of total bank credit</b>	<b>30.9</b>	<b>34.6</b>	<b>39.5</b>

<sup>a</sup> Bank credit on balance sheet and off balance sheet, loan activity in Israel, consolidated balance

<sup>b</sup> The segmentation is based on total credit to sectors of the economy, excluding credit to private individuals. This is different than the segment calculation for industry limitations by the Banking Supervision Department.  
 SOURCE: Banks' published financial statements, and the Annual Survey of Israel's Banking System

to 14.1 percent, up from 13.7 last year (Table 4.7, Figure 4.22). The tier 1 capital adequacy ratio rose to 8.5 percent in 2010.

#### **b. The insurance companies**

The insurance companies in Israel continued to show positive results during the first nine months of 2010 although to a lesser extent than during the same period in the previous year, which was due to the more moderate price increases in the capital market. The equity of the insurance companies continued to grow such that they presented capital surpluses which were larger than the Ministry of Finance's minimal requirements and as of the end of 2010 they fulfilled the requirements of the capital regulations.

The insurance companies in Israel continued to show good results during the first nine months of 2010 though they did not match those of the parallel period in the previous year, primarily due to the more moderate price increases in the capital market.

During the first three quarters of 2010, the profits of the insurance companies totaled NIS 2 billion, which is similar to the level of profits during the first three quarters of 2007, prior to the crisis. This contrasts with profits of NIS 2.2 billion during the same period in the previous year. This drop in profits was primarily the result of the significant decline in investment profits, which constituted only 30 percent of the insurance companies' total revenues during this period, as opposed to more than 50 percent during the first three quarters of 2009. This was due to the leveling off of price increases in the capital market during 2010.<sup>35</sup> In contrast, total premiums collected<sup>36, 37</sup> during this period grew by about 5 percent, primarily as a result of the increase in life insurance premiums<sup>38</sup> and health insurance. The increase this year is similar to that in the third quarter in the previous year though lower than that during the same period in 2008 (9 percent).

The assets of the insurance industry totaled NIS 285 billion in September 2010, of which NIS 205 billion were in life insurance, which has grown by 9 percent since the end of 2009 and by 37 percent since the end of 2008. Forty-nine percent of the life insurance assets are concentrated in profit-sharing policies,<sup>39</sup> which grew in 2010 by 11 percent, following a sharp increase of 37 percent in 2009. During the first nine months of 2010 most of the insurance companies returned to collecting variable management fees on profit-sharing policies, following a period of negative returns on these policies in 2008 which prevented the collection of these fees during the same period in the previous year.<sup>40</sup>

During the first nine months of the year, the insurance companies' Tier 1 capital grew by about 12 percent, thanks to the positive returns in the markets, which led to increased profitability. As a result, the ratio of Tier 1 capital to the insurance companies' assets grew from 5.8 percent in 2009 to 6.0 percent in the third quarter of 2010. According to their financial statements, each of the five largest insurance companies<sup>41</sup> completed the third quarter of 2010 with significant capital surpluses, which exceeded minimal capital requirements by NIS 800 million. At the same time their repayment ability (the ratio of recognized capital to required capital) reached 135 percent, in comparison to 125 percent at the end of 2009.

<sup>35</sup> We would also mention the substantial tax benefits enjoyed by the insurance companies in 2009 as a result of the Economic Efficiency Law approved by the Knesset in July 2009.

<sup>36</sup> The premiums earned from retention constituted 60 percent of their total revenues in the third quarter of 2010, in comparison to about 45 percent during the same period in the previous year.

<sup>37</sup> As a result of the increase in sales less cancellations.

<sup>38</sup> Premiums earned on life insurance during the first three quarters of 2010 constituted about 47 percent of total premiums earned during this period.

<sup>39</sup> In these policies, the investment risk is borne by the policy holder and not by the insurance company.

<sup>40</sup> An insurance company is entitled to a fixed management fee in the amount of 0.05 percent per month for the management of accumulated assets in profit-sharing policies, in addition to variable management fees of up to 15 percent of the real return achieved less the fixed management fees. In the case of a loss, the insurance company is not entitled to the variable management fee, up to the coverage of the accumulated loss.

<sup>41</sup> Phoenix, Harel, Clal, Migdal and Menora.

Most of the insurance companies again began to collect variable management fees on profit-sharing policies.

The insurance companies' equity continued to grow, such that their capital surpluses exceeded the minimal requirements of the Ministry of Finance and they met the capital requirements as of the end of 2010 according to the new capital regulations.



In September 2009, the EU adopted the Solvency II directive. The proposed directive constitutes a fundamental and comprehensive change in the regulations that ensure the repayment ability and capital adequacy of insurance companies in the EU countries. Its goals are to improve the protection of policyholders' funds, to enhance the integration between markets and to increase competition in the industry. Insurance regulators in Israel decided to implement the proposed directive for insurance companies in Israel close to the same time it is adopted in the EU, in January 2013.

According to the Ministry of Finance's new guidelines, insurance companies must gradually increase their equity over a period of three years: by 30 percent in 2009, at least 30 additional percent in 2010 and another 40 percent by the end of 2011. The financial statements of the five largest insurance companies for the third quarter of 2010 show that on the basis of the companies' current capital surplus, the companies already fulfill the new capital requirements as of the end of 2010. As part of the implementation, the Supervisor of Insurance published a draft in November 2010 containing the instructions for carrying out QIS5,<sup>42</sup> a quantitative impact study that is the fifth published by the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS). In the survey, insurance companies are required to calculate the effect of adopting the directive's proposed requirements on their financial sources.

A significant proportion of the insurance companies' asset portfolio is invested in the capital market, which leads to their dependency on the market's performance. Insurance companies are relatively conservative in their nostro investments, with more than half of their financial asset invested in government bonds, primarily in Israel.<sup>43</sup> Even after subtracting the guaranteed-yield policies<sup>44</sup> from the companies' nostro portfolio, about 33 percent of their investments in the third quarter of 2010 were channeled to government bonds, while, for purposes of comparison, about 18 percent of the assets held by the public are invested in government bonds. Moreover, the insurance companies' rate of investment in shares,<sup>45</sup> which is considered a relatively risky investment, is also substantially lower than the proportion held by the public (5 percent versus 25 percent) even though their liabilities are primarily long term. This is similar to the situation of insurance companies in the EU, which invest less than 5 percent of their funds in shares. Similarly, the insurance companies had relatively small investments in real estate in the third quarter of 2010, i.e. only 2.4 percent of their nostro investments, which is similar to the situation during the same period in the previous year.

<sup>42</sup> Insurance companies must submit the result of the survey to the Capital Market Branch in the Ministry of Finance by January 31, 2011.

<sup>43</sup> For purposes of comparison, according to the Financial Stability Review of the ECD which was published in December 2010, 47 percent of the total bonds held by insurance companies in the EU are government bonds and they constitute 17 percent of their financial assets.

<sup>44</sup> The lion's share of life insurance policy assets with "guaranteed yields" (57 percent which represent NIS 37 billion) are invested in designated bonds, which are CPI-indexed government bonds ("Hetz") that guarantee a pre-determined fixed yield and indexation.

<sup>45</sup> Direct investment in shares, share ETFs and share options in Israel and abroad.

A large proportion of the insurance companies' asset portfolio is invested in the capital market, which emphasizes their dependency on its performance.

The five largest insurance companies have two main reinsurers and the combined exposure to them accounts for half of the total exposure of the Israeli insurance companies to reinsurers.

Almost all of the insurance companies will have to cope with the heavy damage caused to property and businesses by the fire in the Carmel Region in December 2010. The compensation will be divided between government and private insurance companies. However, it appears that the insurance companies' financial exposure to the disaster is small, thanks to the coverage they have from re-insurers abroad.

The five largest insurance companies have two main re-insurers: Munich Re and Swiss Re. Together they account for about half of the exposure of the Israeli insurance companies to re-insurers. The dominant of the two is Munich Re, which accounts for about one-third of the total exposure to re-insurers, a situation which emphasizes the concentration in this area and which raises the level of risk. Nonetheless, it is worth mentioning that these two companies are the largest international re-insurer groups in the world.<sup>46</sup>

We also note that for all of the companies, the level of exposure to reinsurers rated above A is over 90 percent, and the rate of exposure to reinsurers rated below BBB (or are unrated) is less than 7 percent.

<sup>46</sup> Together they generate about 37 percent of the gross volume of revenues of the 35 leading re-insurers in the world.