

9. STRESS TESTS

Macroeconomic stress test of the banking system based on uniform scenario, 2013–14

a. General

The Banking Supervision Department has been carrying out macroeconomic stress tests based on a uniform scenario on the banking system since 2012. The banking corporations are required to estimate the results of the scenario through various methodologies that they develop, while at the same time, the Banking Supervision Department conducts its own test on the same scenarios, applying a uniform methodology for all the banks.

This stress test methodology—supervisory authorities and banking corporations conducting the same stress test at the same time—is an accepted international standard. The test contributes to an understanding of risks facing the banking system in general and each bank on its own.

The characteristics of the stress test scenarios are set each year after analyzing the potential risks faced by the banking system and their development over the recent period, assessing the probability of the scenario occurring, studying the lessons learned from previous crises, and compiling the insights gleaned from stress tests conducted previously in Israel and abroad. The stress test scenario should be severe but plausible, and reflect the main risks to which the banking system is exposed at the current time.

Beginning with the current test, carried out in 2013–14, the Banking Supervision Department integrates the uniform stress test as a complementary element to the Supervisory Review and Evaluation Processes (SREP), and its integration includes both quantitative and qualitative aspects. In parallel, the banking corporations⁶¹ are required to integrate it into their internal capital adequacy assessment processes (ICAAP). This is intended to utilize the testing process as an aid for evaluating the banking system's resilience, to ensure the existence of sufficient capital levels, to test the banks' capital planning, to set capital requirements and to take other measures as necessary—in accordance with best practices customary around the world. In addition, this process allows an examination of the banks' ability to conduct a uniform stress test based on statistical models and other methodologies, and supports the understanding of focal points of risk in the banking corporations while strengthening the supervisory dialogue with them.

The characteristics of the scenario and the results of the test conducted by the Banking Supervision Department are presented below.

b. The scenarios

The test was based on two scenarios—a base scenario and a stress scenario. The stress scenario this year was more severe than in the year before, and its parameters are calibrated to stress the main risk factors in the Israeli economy and in the banking system. The scenario horizon is 9 quarters, and the starting point is September 30, 2013.

1. **The base scenario:** The values of the variables in this scenario are based on the Bank of Israel's macroeconomic models, international institutions' projections of global developments, and other

⁶¹ The five major banking groups (Leumi, Hapoalim, Discount, Mizrahi-Tefahot and First International) and two independent banks (Union and Bank of Jerusalem).

assessments regarding economic developments—all as of the date on which the scenarios were formulated (September 2013).

2. The domestic stress scenario: A macroeconomic scenario of a severe domestic recession with serious ramifications for the housing and real estate industry, as a result of a deterioration in the geopolitical situation. The scenario is based on the recession of 2002, though somewhat more severe, and is characterized by a downturn in the real economy together with an increase in Israel's risk premium. The downturn is reflected in a sharp decline in GDP and in private consumption, and a resulting serious negative impact on the labor market and the housing and real estate market. Asset prices on the capital market are also markedly affected. Figure 1.29 presents the development of the macroeconomic variables in each of the scenarios, and Table 1.25 presents an international comparison relating to the major variables of the scenarios conducted in other advanced economies.

c. The methodology and assumptions

The Banking Supervision Department conducted the uniform stress test based on assumptions accepted worldwide, including: during the course of scenario there is no change in asset balances and composition; the banks do not raise additional capital; and there is no option of accounting for the possible responses by the banks to the development of the crisis.

In order to carry out the stress test, the Banking Supervision Department estimated the effect of the scenario on the main sections in the income statement and balance sheet. In order to estimate the credit risk and its main focal points, the Banking Supervision Department used a combination of a range of models and methodologies which it developed for that purpose: satellite models for credit risk, and models based on data at the borrower level for the main focal points of risk, including credit to construction and real estate, leveraged credit, and housing credit. The methodologies, based on data at the borrower level, both challenge and complement the satellite models, specifically in cases where the satellite models fail to adequately capture all the risks. This is true in particular due to the unique characteristics of the Israeli economy, such as high concentration, and structural changes in risk factors. Likewise, the Banking Supervision Department calculated an estimation for the group allowance.

In addition to credit risk, the Banking Supervision Department took into account the effects of market risks, the effect of the exchange rate and the inflation rate, the effect of the implementation of Basel III, and other regulatory processes with effects on core capital, and other issues.

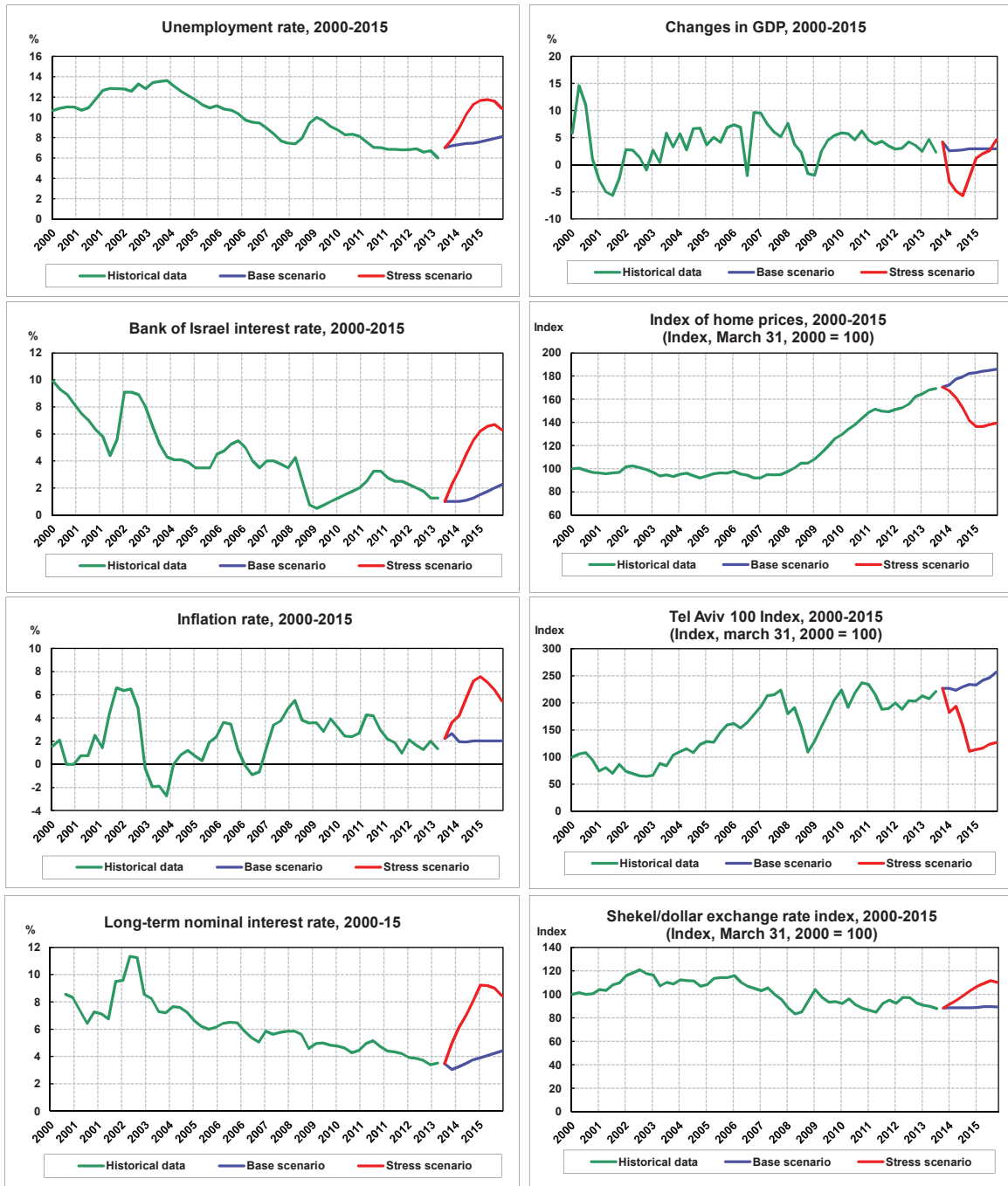
It should be noted that the uniform stress test does not include an analysis of the effect of the scenario on liquidity risk⁶² and on operational risk; it also does not include related indirect consequences, such as withdrawals of deposits by nonresidents, lowered credit ratings for banks and a negative impact on investor confidence. The test focuses on the direct effect of the scenario on the credit portfolio, securities portfolio, and banks' profitability.

d. The findings

The results of the stress test indicate that a realization of the adverse domestic scenario would have a marked impact on the banking system, but no risk to its stability is expected. The immediate impact derives

⁶² The Banking Supervision Department made a separate assessment of how various stress scenarios would affect liquidity risk in the banking system.

Figure 1.29
Historical Macroeconomic Data and Development of Scenarios, 2000–15



SOURCE: Historical data—based on Central Bureau of Statistics, Tel Aviv Stock Exchange; Base scenario and stress scenario data—Bank of Israel.

Table 1.25
Comparison of macroeconomic variables of a uniform stress test^a, Israel and selected economies

Main macroeconomic variables	Israel		US		Canada		UK		Europe	
	Starting point	Stress scenario	Starting point	Stress scenario	Starting point	Stress scenario	Starting point	Stress scenario	Starting point	Stress scenario
GDP - Maximum contraction ^b in the stress scenario		4.0%		3.7%		4.9%		3.5%		2.3%
Unemployment rate - Maximum level in the stress scenario	6.9	11.7	7.3	11.3	7.3	12.6	7.2	11.8	10.7	13.0
Monetary interest rate ^c - Maximum level in the stress scenario	1.25	6.7	0.0	0.1	1.1	0.3	0.5	4.2	-	-
Stock index - Maximum change of the leading index in each country		-50%		-50%		-32%		-28%		-20%
Home prices - Maximum change during the stress scenario		-20%		-25%		-33%		-35%		-12%

^a Duration of the scenario: Israel and US - 9 quarters; UK and Europe - 3 years; Canada - 5 years.

^b Duration of contraction in GDP: Israel and US - During one year; UK - During two years; Canada and Europe - During 3 years.

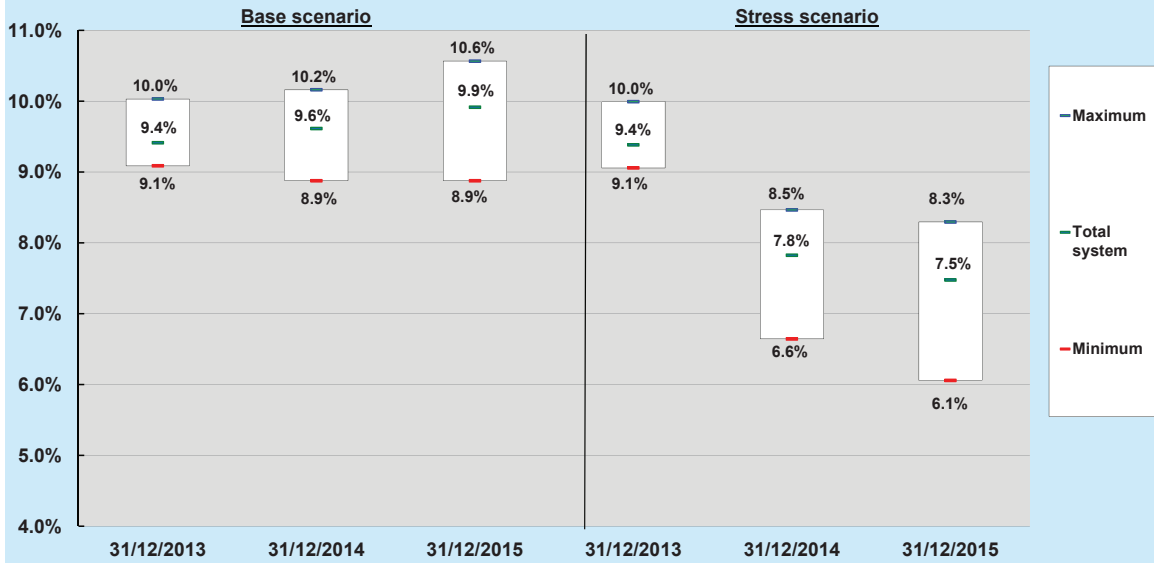
^c Data regarding the ECB's monetary interest rate were not published in the stress scenario carried out in Europe. However, it was noted that the inter-bank short-term interest rates increase by 80 basis points.
SOURCE: Israel - Bank of Israel; US - Federal Reserve; Canada - IMF FSAP; UK - Bank of England; Europe - European Banking Authority.

from exposure to credit risk and to market risk. The recession will make it difficult for business and private borrowers to meet their commitments, and the banks will record large losses in the credit portfolio, half of which originate from the housing, construction and real estate credit portfolio. The concentration in the Israeli credit market is also expected to make these losses more severe. Sharp increases in bond yields, and declines in the stock market, are expected to cause significant losses in the banks' securities portfolio which, in turn, will negatively impact profitability and erode capital. However, it should be noted that the stress test results do not take into account activities which the banks would likely take in order to reduce the negative impact of the scenario, such as selling stocks and bonds, and reducing credit volumes.

The negative impact to the profitability of the banking system could be significant and prolonged: A cumulative loss of more than NIS 3 billion and return on equity of -2.2 percent in 2014 and of -1.8 percent in 2015. The core capital ratio of the banking system will be negatively impacted, and would decline from 9.3 percent in September 2013 (the beginning of the scenario) to 7.5 percent at the end of the period (end of 2015). The core capital ratio at the banks will range from 6.1 percent to 8.3 percent—levels that attest to the stability of the system and to it having sufficient capital buffers to absorb serious macroeconomic shocks to the Israeli economy (Figure 1.30 and Figure 1.31).

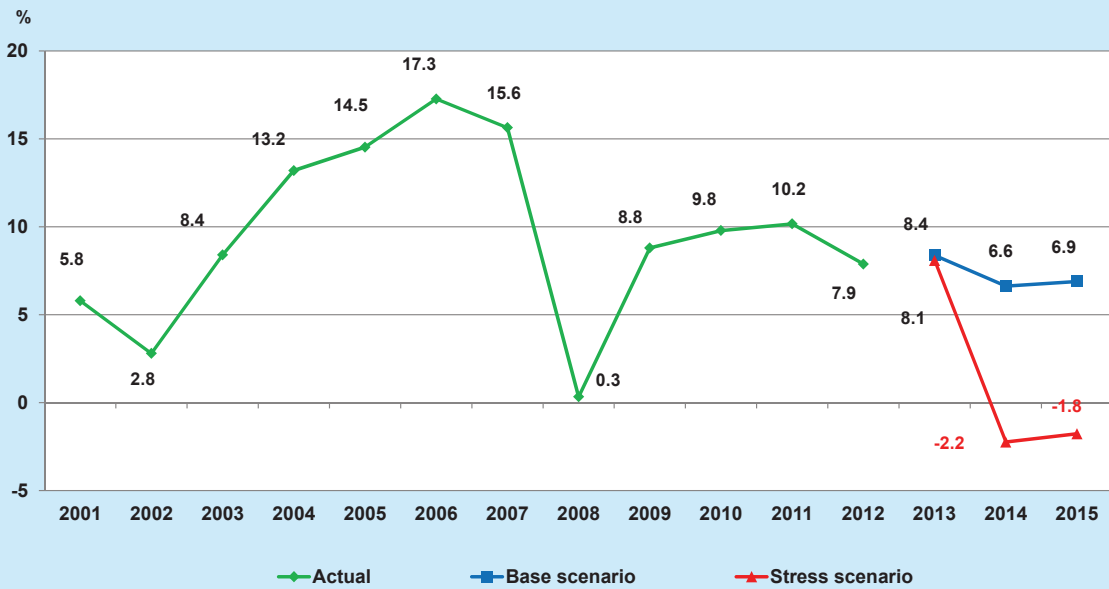
The most significant negative impact on bank profitability, as noted, derives from credit losses. During the two years of the adverse scenario occurring, banks would post credit losses of about NIS 27 billion (before tax), an annual loss rate of 1.6 percent, on average. About half of the loss, NIS 13 billion, derives from credit to the construction and real estate industry and from housing credit. Part of the credit losses comes with a lag (in the second year) and is liable to increase the severity of the crisis and to lead to an additional negative impact. With regard to the securities portfolio, the declines in value over the course of the scenario total about NIS 17 billion. However, it should be noted that 75 percent of the negative impact derived from the Israeli government bond portfolio, and this portfolio is negatively impacted primarily in respect of the increase in the interest rate and the increase in Israel's risk premium. While macroeconomic changes are reflected gradually in credit losses, market risks are realized immediately with the changes in market prices as a result of mark to market changes in bonds and a decline in equity values. The immediate and severe negative impact in the market is also liable to lead to chain reactions and related effects, such as a negative impact on investor confidence and a sharp decline in the valuation of bank shares and other shares, though, as noted, these were not examined in this scenario.

Figure 1.30
Development of core capital ratio: minimum and maximum values in the system and value in the total system, 2013-15



SOURCE: Based on reports to the Banking Supervision Department.

Figure 1.31
Development of the return on equity, the entire system, 2001-2015



SOURCE: Based on reports to the Banking Supervision Department.