Box 2: An examination of the banking system's resilience on the basis of statistical tools for the analysis of stress tests, based on the Research Department's macroeconomic forecast scenarios as of May, 2020

- In view of the COVID-19 crisis and its effect on economic activity in general and the banking system in particular, the Banking Supervision Department carried out an analysis of macroeconomic stress tests in May 2020 based on two scenarios for the development of the crisis. The two scenarios were based on macroeconomic forecasts made by the Bank of Israel Research Department in May of 2020.
- The goals of the analysis were the early identification of foci of risk in the banking system resulting from the crisis, and an assessment of the banking system's ability to continue its support of economic activity through the provision of credit. In addition, the analysis provided a tool to assist in decision making with regard to the policy measures required from the banking system's point of view in order to support and rehabilitate the economy.
- Unlike previous scenarios, it was assumed that growth in total credit would not be less than 2.5 percent, with the goal of assessing the banking system's ability to continue supporting the economy during the crisis.
- The results of the test indicated that even in a scenario of only a low level of control of the pandemic, including a renewed outbreak of infection in the fourth quarter of 2020 and another round of economic shutdowns, the banking system is expected to maintain its resilience and stability. The banks' capital adequacy ratio is not expected to fall below the required minimum in the stress scenario, despite the major losses that the banking system is expected to suffer due in part to the rise in credit losses.
- The main losses that are expected in the low control scenario occur in the credit portfolio, in view of the crisis's adverse effect on businesses and the high rate of unemployment due to the second shutdown of the economy. The consumer credit portfolio in particular is expected to show the largest losses in this scenario.
- The Banking Supervision Department will continue to monitor economic developments as a result of the response to the COVID-19 virus in particular and additional risks in general, and will work to maintain the stability of the banking system as part of its support for the economy.

a. Introduction

In normal times, the Banking Supervision Department carries out an annual macroeconomic stress test for the banking system (every year since 2012), based on a uniform scenario. The goal of the process is to better understand the risk foci to which the banking system and each of the banks are exposed. In this way the analysis assists in evaluating the strength and resilience of the system and ensuring the existence of a sufficient level of capital relative to the risk that originates from those sources. In addition, the test makes it possible to evaluate the banks' risk management processes, identify areas of vulnerability, and assess the banks' ability to estimate the risks that threaten them in a stress situation. In this context, the banks also evaluate the effects of a scenario built by the

Bank of Israel Research Department using a variety of accepted models and methods[17], while the Banking Supervision Department examines the expected effect of the scenario on each of the banks individually and on the banking system as a whole using a uniform method. The performance of these stress tests over the years has contributed to the strengthening of capital in the banking system and its adaptation to the risk profile of the banks and the domestic economy, as well as helping to improve the management of risk in the banking system.

In May of this year, in view of the developing COVID-19 pandemic and its impact on economic activity in general and on the financial system in particular, the Banking Supervision Department decided to examine the impact of two scenarios for the development of the crisis, as presented by the Research Department in the macroeconomic forecast published that month: a basic scenario and a scenario with a low level of control over infection. The analysis was carried out with the tools that the Banking Supervision Department uses in order to perform macroeconomic stress tests for the banking system. The test had several goals, including the early identification of risk foci in the banking system in view of the crisis, and an assessment of the banking system's ability to continue supporting the economy through the provision of credit. In addition, it constituted a tool that can assist in the determination of the necessary steps to be taken with regard to the banking system in order to support and rehabilitate the economy.

The results indicate that the realization of the more pessimistic scenario, including a renewed outbreak of the virus in the last quarter of 2020 and another shutdown of the economy, will have a significant effect on the banking system. **However, the banking system is expected to maintain its resilience and stability, and the capital adequacy ratio is not expected to decline for any of the banks to below the minimum level required by the Banking Supervision Department in the stress test, i.e. a Common Equity Tier 1 Capital ratio of 6.5 percent**, despite the large losses expected for the banking system partly due to the increase in credit losses.

As mentioned, and according to the forecasts published in May, the test was based on two scenarios: the basic scenario and a scenario of low control over infection (Figure 1), where the second scenario includes a renewal of the pandemic during the final quarter of 2020, which leads to a second shutdown of the economy, although its economic effect is less severe. The scenario includes an additional contraction in GDP, alongside an increase in unemployment, a drop in housing prices, and a shock to the capital market. It is important to emphasize that the scenario is based on assessments and models, and does not constitute a forecast.

The starting point of the scenario is December 2019 and its horizon is three years, i.e. until the end of 2022. The analysis uses actual data reported by the banking system for March 2020.

b. Assumptions

The Banking Supervision Department performed the examination based on various assumptions, with the goal of assessing the scenario's impact on each of the banks and better understanding the risk foci to which each bank is exposed. Unlike previous scenarios, **underlying this scenario is**

[17] The banks evaluated in the stress test are Leumi, Hapoalim, Discount, Mizrahi-Tefahot, First International, Union Bank, and Bank of Jerusalem.

the assumption of at least 2.5 percent growth in total credit, with the goal of determining the banking system's ability to continue supporting economic activity during the crisis. Given this level of growth in credit, an increase in assets was assumed that would facilitate it, and particularly that the entire increase in credit would be financed by attracting additional deposits from the public. In addition, as in previous years, it was assumed that there is no change in the size or the mix of the portfolio of securities, that there is no raising of additional capital, and actions taken by the banks' managements in response to the crisis with the goal of minimizing damage are not taken into account.

The results reflect the scenario's direct effect on capital, profitability, the credit portfolio, and the securities portfolio. This examination does not consider the possibility of a drop in the banks' liquidity or feedback effects such as those resulting from a loss of confidence among investors.

c. Findings

A renewed shutdown of the economy, and in particular the accompanying macroeconomic shocks, is expected to have a significant effect on the banking system, but not to endanger its stability. The shutdown of the economy, which is reflected in various restrictions placed on the labor market, leads to an increase in unemployment and a decline in business activity according to the scenario. This shock is liable to make it difficult for some sections of the public to meet their obligations, and is therefore expected to result in significant losses to the banks' credit portfolio. The shocks are also reflected in a rise in bond yields and a drop in share prices, which reduce the income from the banks' securities portfolio. Alongside the effect on the banks' profits and the erosion of banking capital during the scenario, the growth in credit in the economy increases the banking system's risk assets, and therefore acts to further erode the capital ratios. Nonetheless, the growth in credit also has a moderating effect on the damage to the banks, since it leads to an increase in interest income in the system.

It was found that despite the adverse effects, the banks maintain a Common Equity Tier 1 Capital ratio above the threshold required by the Banking Supervision Department in a stress test (6.5 percent). This result emphasizes the **importance of the capital strengthening process** (an increase of about 3 percentage points in the Common Equity Tier 1 Capital ratio during the past decade) **carried out by the Banking Supervision Department in recent years**. This is in addition to steps taken by the Banking Supervision Department to achieve more conservative risk management among the banks, including a significant reduction in the banks' exposure to large borrower groups, a reduction in exposure to credit for the purpose of acquiring control and leveraged credit, an improvement in the characteristics of the housing credit portfolio, and an improvement in the banking system's performance as a result of steps taken to improve efficiency and cut costs. The average Common Equity Tier 1 Capital ratio in the system is liable to drop in the pessimistic scenario from a level of about 11.1 percent in 2019 to about 10.2 percent in 2022 (Figure 2).[18] Although the capital ratio of the system as a whole is not significantly affected during the scenario, there is a high level of variance among the banks with respect to the scope of the decline. The bank that suffered the greatest effect fell to a capital ratio of 7.8 percent (Figure 2).

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[18] The year in which the average capital ratio in the system reaches its lowest point during the scenario.

It appears that during the period of the analysis, the banks' profitability is expected to be adversely affected, **with all of the banks experiencing at least one quarterly loss during the scenario, and on average the banking system is expected to show losses for an entire year.** The average return on equity (ROE) in the system is expected to drop from 8.3 percent at the start of the scenario to -2.75 percent at the peak of the crisis (the first quarter of 2021; Figure 3).

The main losses expected in the scenario occur in the credit portfolio. The adverse effect on businesses and the high unemployment make it difficult for households and the business sector to meet their commitments, which leads to significant losses in the banks' credit portfolios and a reduction in their equity capital.

Consumer credit shows the highest rate of losses in the scenario (an average annual loss rate of about 2.1 percent)[19], which is primarily due to the sharp increase in the unemployment rate. The high loss rates are also reflected in high loss rates relative to capital (2.4 percent), even though the banking system has reduced its exposure to this portfolio during the past two years. With respect to business credit (excluding construction and real estate), the models foresee an average loss rate of 1.2 percent. The l banking system's significant exposure to this type of credit results leads to a higher rate of loss relative to capital, which stands at 1.9 percent (Figure 4).

The drop in housing prices in the scenario is also expected to result in credit losses, via the portfolio of credit to the construction and real estate industry. With respect to the credit losses in the housing credit portfolio, the rising unemployment is expected to increase the proportion of borrowers that will have difficulty making their mortgage payments, thus increasing the rate of loss in the portfolio. Nonetheless, the many steps taken by the Bank of Israel in recent years has significantly reduced the loss rates expected from this portfolio.

Another source of expected losses is the securities portfolio, in view of a sharp rise in bond yields and declines in share prices. Currently, the banks manage a conservative securities portfolio, which is made up primarily of low-risk securities, namely Israeli government bonds (about 57.6 percent of the portfolio in December 2019). Nonetheless, the rise in the yields on government bonds, as a result of the nature of the scenario, leads to a drop in their value and therefore to significant losses.

The pessimistic scenario is characterized by a high level of severity, which is similar to that used in past stress tests, and which reflects risk foci to which the Israeli economy and the banking system are exposed during the COVID-19 crisis. It should again be emphasized that the scenario was constructed on the basis of developments in the economy up until the month of May. The Bank of Israel Research Department continues to update the macroeconomic forecasts according to recent economic developments, including the high rate of unemployment and the introduction of additional restrictions on economic activity. In this context, a deterioration is expected in the various scenarios for the development of the crisis. The Banking Supervision Department will continue to monitor the risks faced by the banking system, in accordance with the updated forecasts.

[19] Based on models and assessments, and not meant to be a forecast.

Figure 2.1
Historical Macroeconomic Data and Development of Scenarios, 2000–2022

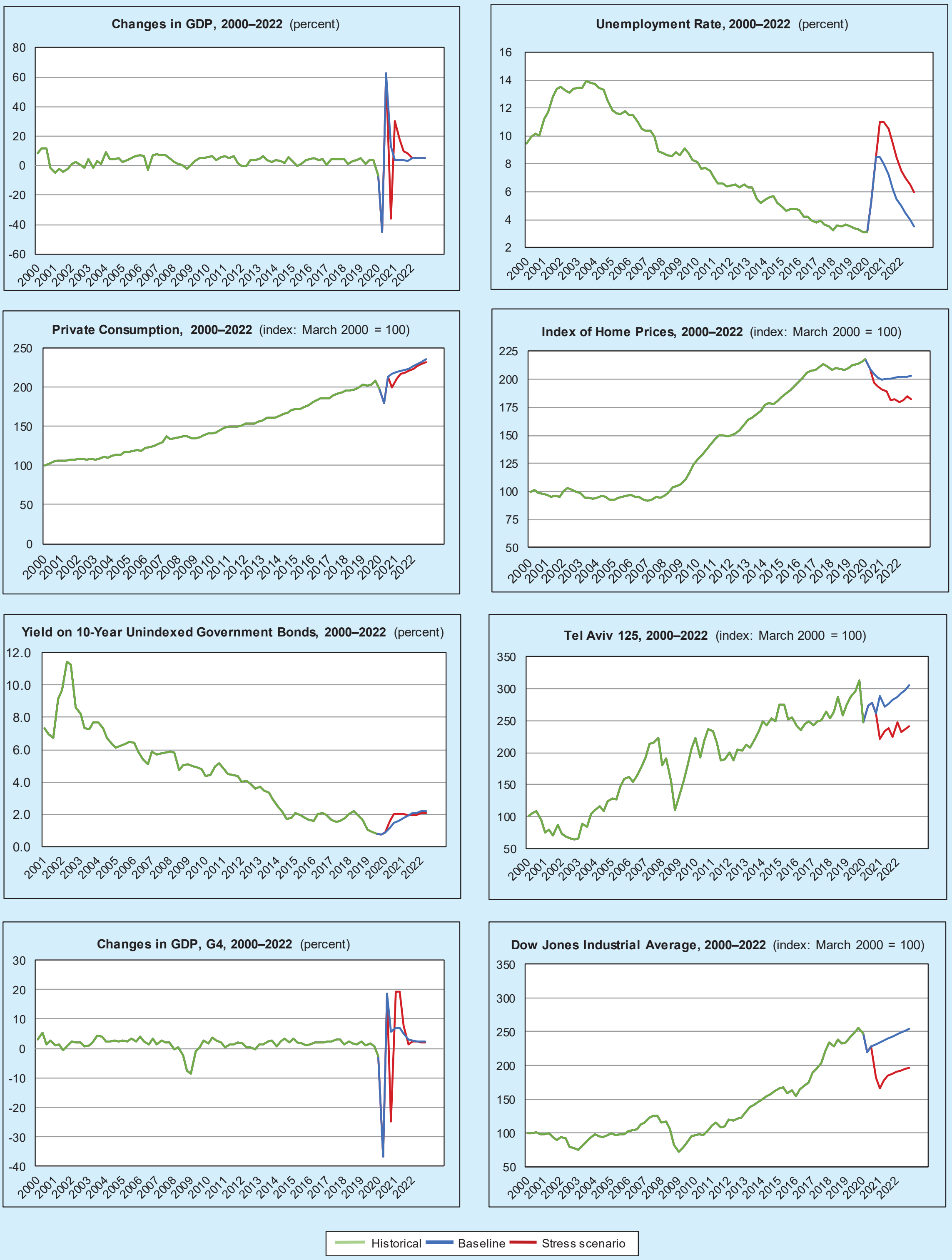
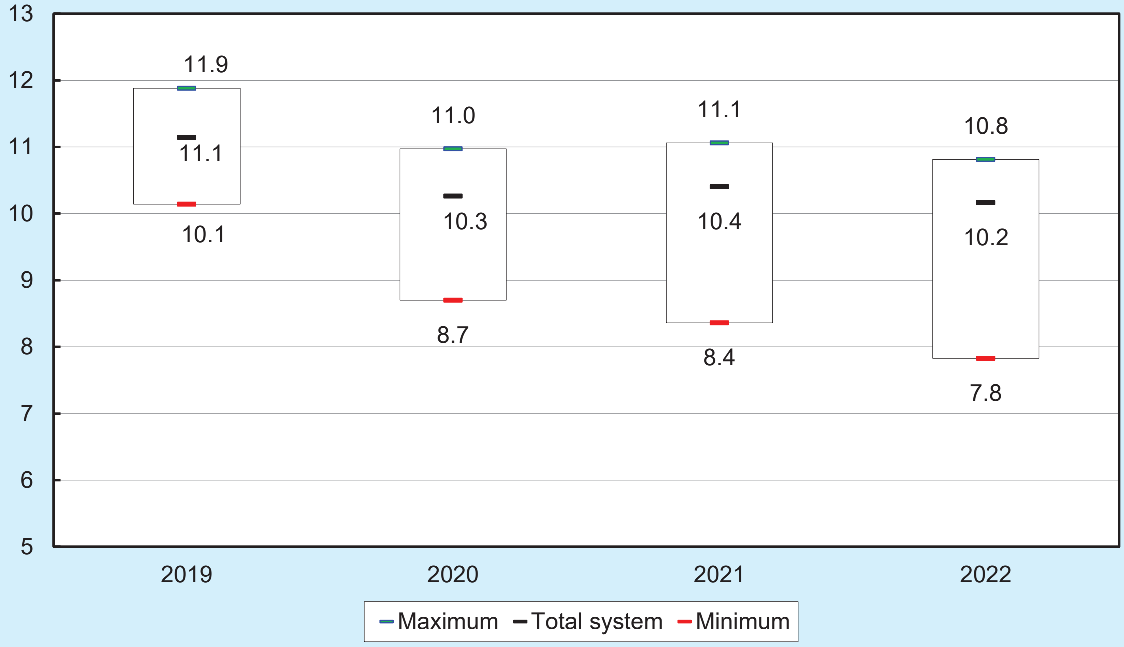
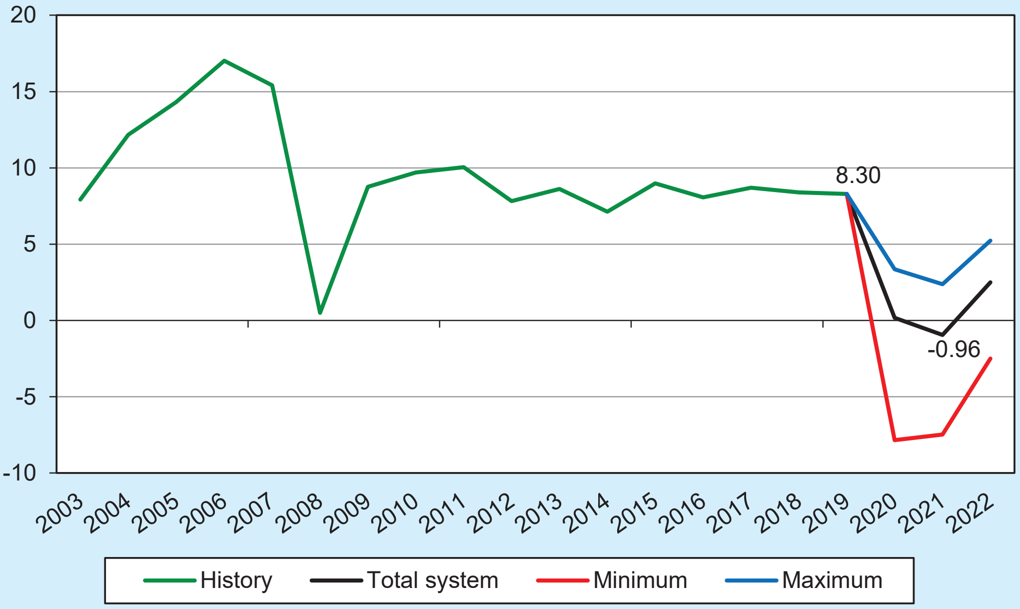


Figure 2.2
Development of Tier 1 Capital Ratio According to the Banking Supervision Department's Stress Test, Total System, 2019–2022[a]



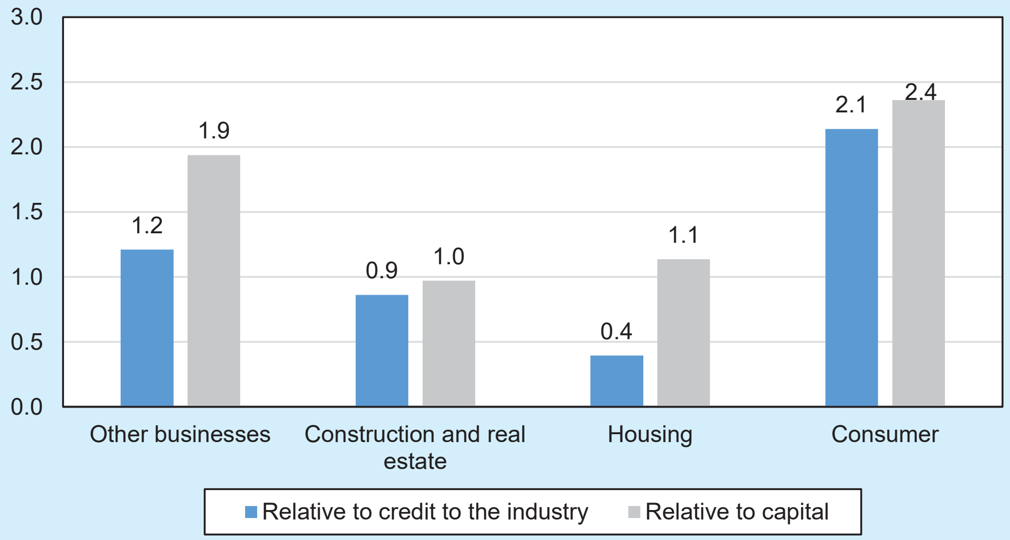
[a] Based on models and assessments, and not as a forecast.
SOURCE: Banking Supervision Department.

Figure 2.3
Development of Return on Equity According to the Banking Supervision Department's Stress Test, Total System, 2003–2022[a]



[a] Based on models and assessments, and not as a forecast.
SOURCE: Banking Supervision Department.

Figure 2.4
Expected Loan Loss Provisions During the Stress Test[a,b], Selected Industries, Total System, 2020–2022 Average



[a] Based on models and assessments, and not as a forecast.
[b] Total credit losses relative to capital are 7.1 percent, credit losses relative to capital are across all segments.
SOURCE: Banking Supervision Department.