

BANK OF ISRAEL

Office of the Spokesperson and Economic Information

April 3, 2023

**Research Department Staff Forecast, April 2023**

**Abstract**

This document presents the macroeconomic staff forecast formulated by the Bank of Israel Research Department in April 2023[[1]](#footnote-1) concerning the main macroeconomic variables—GDP, inflation, and the interest rate. The compilation of the forecast during the current period involved significant uncertainty due to the legislative process regarding the judicial system. This process may have a significant impact on economic and financial developments in the short term and in the longer term, and therefore on the monetary policy that will be necessary during the forecast period. Since the results of the legislative process are unknown at the time of the forecast, we present analyses based on two potential situations: 1. The dispute regarding legislative changes concerning the judicial system is resolved in a way that does not affect economic activity moving forward; and 2. An analysis of the potential economic implications should the legislative and institutional changes be accompanied by an increase in the country’s risk premium, a negative impact to exports, and declines in domestic investment and in demand for private consumption.

In relation to the first situation, we present a detailed forecast, similar to the forecasts normally presented each quarter. In regard to the second situation, the range of possibilities is broad, both in terms of the legislative and institutional changes themselves and in terms of their economic implications. We therefore present an illustration of the directions and scales of the effect on economic developments in the coming three years, under various assumptions regarding the intensity and duration of persistence of the changes and their effects.

In a situation where the dispute surrounding the legislative changes with regard to the judicial system is resolved in a way that does not affect economic activity going forward, GDP is expected to grow by 2.5 percent in 2023, and by 3.5 percent in 2024. The inflation rate is expected to be 3.9 percent in 2023 and 2.3 percent in 2024. The inflation rate in the coming four quarters (the four quarters ending in the first quarter of 2024) is expected to be 3.4 percent. The monetary interest rate is expected to average 4.75 percent in the first quarter of 2024.

In view of the tremendous uncertainty in the second situation, in which there are significant legislative changes that have an impact on the economy, we present a broad range of the extent of the potential impact to GDP and of the effect on other economic variables. This range depends partly on the intensity and persistence of the changes in the risk premium, in the markets, and in demand. As such, the assessments presented below should be understood as indications of the scale of the impact.

According to the analysis presented below, in a case where the impact of the changes subsides relatively quickly, the adverse effect is estimated at an annual average of about 0.8 percent of GDP during the three-year period. In a situation where the public (the financial markets, the real sector, and consumers) perceives that the effects of the legislative changes will persist, the impact to GDP is estimated at an annual average of about 2.8 percent of GDP in each of the coming three years.

1. **A situation in which the dispute surrounding the legislative changes regarding the judicial system is resolved in a way that does not affect economic activity going forward**

The Bank of Israel Research Department compiles a staff forecast of macroeconomic developments on a quarterly basis. The staff forecast is based on several models, various data sources, and assessments based on economists’ judgment. The Bank’s DSGE (Dynamic Stochastic General Equilibrium) model developed in the Research Department—a structural model based on microeconomic foundations—plays a primary role in formulating the macroeconomic forecast.[[2]](#footnote-2) The model provides a framework for analyzing the forces that have an effect on the economy, and allows information from various sources to be combined into a macroeconomic forecast of real and nominal variables, with an internally consistent “economic story”.

1. **The global environment**

Our assessments of expected developments in the global economy are based mainly on projections by international institutions (the International Monetary Fund and the OECD) and foreign investment houses. Their growth forecasts for the advanced economies were revised slightly upward since the previous forecast published in January. In keeping with the investment houses’ forecasts, we assume that GDP growth in the advanced economies will be 0.6 percent in 2023 (compared with 0.1 percent in the previous forecast), and 1.1 percent in 2024 (compared with 1.4 percent in the previous forecast). World trade is expected to improve during the year in view of the reopening of China and improvement in the global production and supply chains, which have returned to their pre-COVID-19 levels (based on the supply chain stress index, cost of shipping, and world trade). However, the IMF lowered its world trade forecast slightly in its publication at the end of January. Its assessment was that trade will grow by 2.4 percent in 2023 (compared with 2.5 percent in their previous forecast) and by 3.4 percent in 2024. It should be noted that these IMF forecasts have not yet included the negative implications of the problems in the US and other banking systems.

Since the publication of the previous forecast, the price of oil declined by about 6 percent, and commodity prices (excluding energy) remained virtually unchanged. The recovery in the production and supply chains support a moderation of inflation on imported goods in many countries, including Israel. In contrast, core inflation in a number of countries is persisting. During this period, investment houses’ inflation forecasts for the G4 economies remain stable, and inflation in one year (in the first quarter of 2024) is expected to be 2.8 percent, similar to their assessments in January. However, the decline in expected inflation globally is accompanied by a higher interest rate path. The investment houses’ forecast for the average interest rate in the G4 economies is 4.1 percent in the first quarter of 2024 (4.65 percent in the US and 4 percent in the eurozone), compared with 3.5 percent when the January forecast was published.

1. **Real activity in Israel**

**GDP is expected to increase by 2.5 percent in 2023 and 3.5 percent in 2024**.

National Accounts data published since the previous forecast (for the fourth quarter of 2022) were higher than expected. However, net of vehicle imports—purchases of which were brought forward for tax reasons[[3]](#footnote-3)—fourth quarter growth was estimated at about 2.6 percent, similar to our January assessment (2.4 percent).

Despite some improvement in the global growth forecasts, the 2023 growth forecast for Israel was revised slightly downward. The expected growth rate in 2023 is lower than the average growth rate of recent years (about 4.0 percent), and is expected to be reflected in a decline of the GDP level to slightly below the trend. One reason for the slowdown in the growth rate is the expected slowdown in world trade (which weighs on Israeli exports). Another reason is the fact that at the starting point, the level of economic activity is high (as reflected in GDP being higher than the precrisis trend). These reasons are relevant for the downward revision of the forecast.

Another explanation is the upward revision in the expected interest rate that will be required in Israel and abroad in order to reduce inflation, which seems more sticky than in the past and is expected to moderate demand for consumption and investments (more than our January assessment). There are also indications that the capital available to the business sector, and particularly to high-tech, is less than what we previously estimated. This is reflected, for instance, in a decline in the capital raised for high-tech at the end of 2022, and there are initial indications of this in early 2023 as well. Alongside this, there is a decline in building starts. In addition, the continuation of inflation is contributing to some reduction in the forecast of private consumption—due to its moderating impact on real wages.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1**  **Research Department Staff Forecast for 2022–2024**  (rates of change, percenta, unless stated otherwise) | | | | | |
|  | 2022  Actual | Forecast for 2023 | Change from the January forecast | Forecast for 2024 | Change from the January forecast |
| **GDP** | **6.4** | **2.5** | **-0.3** | **3.5** | **0.0** |
| Private consumption | 7.7 | 3.5 | -0.5 | 4.5 | 0.0 |
| Fixed capital formation (excl. ships and aircraft) | 9.7 | 1.5 | -1.5 | 4.5 | 0.5 |
| Public consumption (excl. defense imports) | 1.0 | 2.0 | -1.5 | 3.0 | 0.0 |
| Exports (excl. diamonds and startups) | 8.9 | 2.0 | 0.0 | 3.0 | 0.5 |
| Civilian imports (excl. diamonds, ships, and aircraft) | 12.0 | 3.0 | -1.0 | 6.0 | 0.5 |
| **GDP deviation from the precrisis trend (percent)** | **0.9** | **-0.5** | **0.0** | **-1.0** | **-0.1** |
| Unemployment rate (average for the year, age 25–64) | 3.3 | 4.1 | 0.1 | 4.0 | 0.0 |
| Employment rate (average for the year, ages 25–64) | **78.6** | **77.5** | **0.0** | **77.4** | **0.0** |
| Government deficit (percent of GDP) | -0.6 | 0.9 | -0.9 | 0.9 | -1.2 |
| Debt to GDP ratio (percent) | 60.7 | 59 | -3.0 | 58 | -3.0 |
| Inflation (percent)b | 5.2 | 3.9 | 0.9 | 2.3 | 0.3 |
| a In the forecast of National Accounts components, the rate of change is rounded to the nearest half percentage point.  b The average of the Consumer Price Index in the last quarter of the year compared with the average in the last quarter of the previous year. | | | | | |

The forecast’s starting point is an economy that features a tight labor market. Despite the moderation in job vacancies, the job vacancy rate and the employment rate in the primary working ages are higher than before the COVID-19 crisis, while the unemployment rate is only slightly higher than it was before the crisis. Within the forecast period, our assessment is that the labor market will remain tight, but will gradually return to the typical precrisis rates. In particular, we forecast that the employment rate among the primary working ages will decline to an average of 77.4 percent in 2024, and the unemployment rate will average 4.0 percent in the same year.

Regarding fiscal policy, the budget framework that was approved reflects real public consumption that is lower than in the January forecast, and the revised revenue forecast is slightly lower than in January. According to the wage agreements, the wage increment in 2023 will be similar to our assessment from the previous forecast, but the increment in 2024 will be lower. The minimum wage will increase in April 2023 from NIS 5300 to NIS 5572—an increase of 5.1 percent. In our assessment, in each of the years 2023 and 2024, the deficit will be 0.9 percent of GDP, and the debt to GDP ratio will decline to below 60 percent.

1. **Inflation and interest rates**

According to our assessment, **inflation in the next four quarters (ending in the first quarter of 2024) is expected to be 3.4 percent (compared with 3.0 percent in the previous forecast)** (Table 2(. Inflation in 2024 is expected to be 2.3 percent (Table 1). The upward revision of the inflation forecast is mainly due to the depreciation of the shekel in terms of the nominal effective exchange rate, the pace and volatility of which increased in recent months. The revision of the forecast was also affected by the January and February CPI readings, which were surprisingly high and led to a revision in our assessments of the extent of inflation’s persistence. In contrast, the decline in oil prices is partly offsetting these effects on the revision of the forecast. The inflation rate is expected to slow during the forecast period due to more moderate demand, under the influence of restraining monetary policy in Israel and abroad, and due to the continued subsiding of supply-side pressures.

**The interest rate is expected to average 4.75 percent in the first quarter of 2024** (Table 2), and to help inflation converge to the midpoint of the target range during 2024.

Table 2 shows that the Research Department’s staff forecast regarding inflation and regarding the interest rate is slightly higher than the average of the private forecasters’ projections and expectations derived from the capital market.

| **Table 2** | | | |
| --- | --- | --- | --- |
| **Inflation forecast for the coming year and interest rate forecast for one year from now** | | | |
| (percent) | | | |
|  | Bank of Israel Research Department | Capital marketsa | Private forecastersb |
| Inflation ratec | 3.4 | 3.0 | 3.0 (2.6–3.7) |
| (range of forecasts) |  |  |  |
| Interest rated | 4.75 | 4.66 | 4.34 |
| (range of forecasts) |  |  | (3.0–5.0) |
| a) Inflation expectations are seasonally adjusted (as of April 2, 2023).  b) The average of forecasts published following the publication of the Consumer Price Index for February.  c) Research Department: the inflation rate during the four quarters ending in the first quarter of 2024. Capital markets and private forecasters relate to inflation during the 12 months ending at the end of the first quarter of 2024. | | | |
| d) Research Department: the average interest rate in the fourth quarter of 2023. Expectations derived from the capital market are based on the Telbor market and relate to the end of the first quarter of 2024 (weekly average as of March 31, 2023).  SOURCE: Bank of Israel. | | | |

1. **Main risks to the forecast**

In addition to the domestic risks to the forecast, some of which are discussed below, the forecast is exposed to risks as a result of potential developments originating abroad. The global risks to the forecast include a slower-than-expected moderation of inflation abroad in view of wage increases, mainly in the US where the labor market remains tight. In addition, the problems that have recently been exposed in the US banking system may have implications for developments there. Developments in the war in Ukraine may also have further implications for energy and commodity prices, and through them for economic activity, trade, and inflation globally (mainly in Europe). The more intense the effects of the war are, the greater the downward risk is for economic activity and the greater the upward risk is for inflation.

1. **A scenario presenting an analysis of the potential economic implications should the legal and institutional changes be accompanied by an increase in the country’s risk premium, a negative impact on exports, and declines in domestic investment and in demand for private consumption.**

This scenario presents an analysis of the potential economic implications if the legal and institutional changes are accompanied by an increase in the country’s risk premium, a negative impact to exports, and a decline in demand for domestic investments and for private consumption. Indications of the potential direction of the impact of advancement in these processes are derived from the markets’ responses to the developments of the recent period, as detailed below.

Since there is tremendous uncertainty regarding the pace, intensity, and implications of the legislative process regarding the judicial system, we present a wide range of possibilities. In addition, as opposed to the macroeconomic forecast in Section 1, which is presented for just the coming two years, in this scenario, we present the impact over the coming three years (which we relate to as one bloc). This is because it is difficult to assess the precise timing of the impact on the economic variables, and since some of the effects may be realized only after some time. Our assessment is that the economic impacts will be reflected through three main channels, and we analyze each of them separately. These channels (hereinafter “shocks”) are an increase in Israel’s risk premium, an impact to demand for Israel’s exports, and an impact to domestic demand for investments and for private consumption.

Assumptions in the scenario regarding the nature of the impact:

*Increase in the economy’s risk premium:* There are a number of developments that have taken place in the recent period that may serve as an indication of the possibility of an increase in the economy’s risk premium. In recent months, we have seen some increase in the yield spread on dollar-denominated Israel government bonds relative to US bonds; a weakening of the shekel; underperformance of the domestic equity market relative to the US and European markets; and public statements by credit rating agencies and investment houses. All of this means that investors will demand a premium in order to be willing to hold domestic assets such as equities, government bonds, or corporate bonds. An increase in the risk premium raises the economy’s financing costs, and may be reflected in a reduced volume of capital in the economy, a decline in the pace of venture capital raising for the high-tech industry that is so significant for Israel, and a depreciation of the shekel with a resulting acceleration of inflation. The result would be a decline in the volume of real investments in the economy (in facilities, machinery, equipment, and R&D), which over time would lead to a negative impact on the stock of capital in the economy, and therefore to the level of GDP.

*A negative impact to domestic investments and to private consumption:* A negative impact to the way in which the Israeli economy is perceived may lead to a decline in demand for investments (in facilities, machinery, equipment, and R&D), both by Israelis and by foreign companies operating here (including in the high-tech field). Capital mobility also enables domestic investors to choose between investing in Israel and investing abroad, in accordance with assessments of relative worthwhileness. In addition, and similar to previous crises, uncertainty regarding the economic implications of various processes and concern over harm to economic activity and employment may work to reduce private consumption and increase savings as a security buffer against a future impact to household income. The result is a negative impact to the stock of capital and to labor productivity in Israel and, as a direct result, to GDP. In contrast with a decline in investment originating from an increase in the premium demanded by credit providers from Israel and abroad (the first shock), this involves an impact to the willingness to invest in the economy for a given interest rate level.

*Impact to demand for Israel’s exports:* In view of a potential change in attitudes toward Israel on the part of other countries, as well as in view of a potential change in the assessment of the economy’s risk, there may be an impact to the willingness to do business with Israeli companies, or to consume Israeli goods and services.

Assumptions regarding the size of the impact:

In order to assess the potential impact to activity, we must assess the volume of the impact in each of these channels. As an indicator of this, we based our examination on the 2001–2002 crisis in Israel, since that crisis was due to a confluence of significant domestic events and an unstable global environment, the economic effects of which were reflected in the three channels listed above.

Based on the model we use to build the forecast each quarter, we identify the typical size of the shocks to the risk premium, domestic demand, and demand for exports that hit the economy during recent decades. During the 2001–2002 crisis, the intensity of each of these shocks was about the size of one standard deviation, as estimated for the shocks over the period for which the model is estimated. The reason for their development into a crisis has to do with their prolonged persistence over a number of quarters.

As a result of the 2001–2002 crisis, the increase in the risk premium was reflected in a cumulative increase of about 4.5 percentage points in the interest rate spreads and a depreciation of about 18 percent (in terms of the nominal effective exchange rate) over those two years. The aggregate impact to GDP growth in each of the first two years of the crisis was about 3 percent. The characteristics of the Israeli economy today are significantly different than those of two decades ago. The macroeconomic environment is better and more stable, the debt to GDP ratio is about 60 percent, the high-tech sector is well-established, more diversified, and more resilient, and foreign exchange reserves of close to $200 billion provide a considerable security buffer for the economy. These make it easier for the economy to absorb shocks while reducing the impact to activity. In contrast, the high-tech sector, which is very sensitive to the global economy and foreign investments, is larger (about 17 percent of GDP compared to about 12 percent at the beginning of the 2000s, and about 11 percent of salaried employees compared with about 8 percent then). The high-tech sector currently accounts for more than half of Israel’s exports, compared to a smaller share in the past. In addition, the economy today is much more open to capital flows and is therefore more sensitive to changes in the world’s perception of the Israeli economy. These characteristics actually work to increase the economy’s vulnerability to various shocks. Therefore, as a measuring stick, we choose to use shocks of a similar size to those that hit the economy at the beginning of the century.

In order to design the risk scenarios, in addition to choosing the size of the shocks, we must determine the extent of their persistence, meaning the typical duration until they subside. Changes in the judicial system are expected to be structural and prolonged. Therefore, alongside a scenario in which the persistence of the shocks is the same as during recent decades (as estimated based on historical data in the model we are using), and which is presented in the gray lines in Table 3, we also present a scenario in which the shocks are more persistent. For instance, for “Risk Premium”, the gray line shows a shock on the scale of one standard deviation, with a high persistence coefficient of 0.6, as estimated from the data of the entire sample. However, since the shock that we are analyzing may have an impact over time, the white lines shows the effect a higher persistence coefficient, of 0.925. This persistence coefficient better reflects the events in 2001–2002, when the shock appeared for seven consecutive quarters. The impact of each shock, even at a fixed size, depends on its persistence. The greater the persistence, the stronger the impact (the white rows in Table 3).[[4]](#footnote-4)

Results:

Table 3 shows separately the cumulative loss of GDP, in percent of GDP per year, for each of the shocks under the various assumptions of the extent of its persistence, based on a model-based analysis.

The Table shows that in a case where the effect of the changes subsides relatively quickly (the gray lines in the Table), the aggregate effect of the three channels would be an adverse impact at an average annual rate of 0.8 percent of GDP in each of the next three years. In a scenario where the shocks are more persistent, the impact totals an average of about 2.8 percent of GDP each year over the coming three years. Most of the decline in GDP in this case is due to a significant impact to investment in the economy, due to the increased uncertainty and higher risk premium. The depreciation of the shekel slightly moderates the impact to exports in the three examined years, but the significant reduction in investment, and the resulting impact to the stock of capital and to production capacity in the economy, is expected to deepen the impact on exports and on GDP in the more distant future. Private consumption is also significantly affected due to the increased uncertainty and the higher interest rates due to the increased risk premium. The extent of the impact to economic activity and to growth depends on the size of the shocks in these channels in response to the changes in legislation.

The framework we use is based on a linear model. Therefore, a shock that is twice as intense will be reflected in an impact that is twice as serious to GDP. In contrast, if the shocks to the risk premium, demand for exports, and domestic demand are smaller, the impact to GDP would be smaller accordingly. However, in a situation in which the shocks are relatively large and perceived as persistent, the response of the economic variables may be beyond the assessment that is in line with the existing estimation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Shock | Persistence | Half-life in years | Shekel depreciation in terms of nominal effective exchange rate | Deviation of inflation | Deviation of the interest rate | Annual average change in GDP (over three years)\* |
|  |  |  | Change in the first year | Average during the first year | Average during the first year | Percent of GDP |
| Increase in risk premium (increase of 0.6% in the interest rate spread vis-à-vis abroad, and depreciation of 2.7% - both in the first year) | 0.6 | 0.3 | 1.6 | 0.6 | 0.5 | -0.04 |
| 0.925 | 2.2 | 13 | 3.3 | 1.9 | -1.9 |
| Decline in domestic demand (decline of 2% in investment and of 0.2% in private consumption in the first quarter | 0.925 | 2.2 | 1.8 | -0.2 | -0.25 | -0.7 |
| Decline in demand for exports (decline of 1.4% in the first quarter | 0.05 | 0.1 | 0.1 | 0 | 0.0 | -0.03 |
| 0.925 | 2.2 | 0.7 | 0 | -0.1 | -0.2 |
| **Total impact under the estimated persistence** |  |  |  |  |  | **-0.8** |
| **Total impact under very high persistence (0.925/0.95)** |  |  |  |  |  | **-2.8** |
| \* One percent of GDP in 2022 was about NIS 17.6 billion.  Notes: The first row (gray shading) for each shock reflects the developments for a shock the persistence of which is what has been typical in the history of the Israeli economy over the past three decades (the estimated inertia of the relevant shock in the Research Department’s DSGE model). The second row in each shock (white background) shows the development in a scenario characterized by a shock of a more prolonged nature. (For the decline in domestic demand, the estimated persistence is equal to the high persistence. Therefore, there is only one line in that part of the Table).  The effect of the endogenous variables (those that are affected by the shocks within the model) depends on the persistence of the shocks, and therefore differs for each row. For instance, an increase in the risk premium by one standard deviation is expected to lead to a depreciation of less than 2 percent if it is temporary as in the past (the gray rows), or a cumulative depreciation of 13 percent during the first year if it has a prolonged effect (the white rows). Similarly, the impact on the interest rate, as well as on other variables, varies greatly with the extent of persistence of the shock (even though there is no change in its initial size). | | | | | | |

The uncertainty regarding the extent of the impact of the legislative process on the economic variables makes it difficult to quantify the various effects. The aim of this illustration is to indicate the potential directions of the impact and the various potential intensities, based on empirical links from the past. The analysis illustrates that if the changes in the legislative structure are considered permanent, their effect on economic activity in the next three years alone may be greater than past shocks. This is beyond the fact that the impact on economic activity may be more prolonged. Moreover, it is important to clarify that the more permanent the changes are considered, the greater their impact will be in the present, not just over time.

1. The forecast was presented to the Bank of Israel Monetary Committee on April 2, 2023, prior to the decision on the interest rate made on April 3, 2023. [↑](#footnote-ref-1)
2. A Discussion Paper on the DSGE model is available on the Bank of Israel website, under the title: “MOISE: A DSGE Model for the Israeli Economy,” Discussion Paper No. 2012.06. [↑](#footnote-ref-2)
3. Vehicle purchases, which are part of private consumption and of fixed capital formation, increased markedly, partly due to the expected increase in vehicle taxation (electric and regular) at the beginning of 2023, which led to purchases being brought forward to the end of 2022. Even though vehicles are imported, their effect on GDP is due to the taxation component and to domestic profits, in respect of which the market price for vehicles is higher than their import cost. [↑](#footnote-ref-3)
4. In Table 3, we show the extent of persistence (the shock’s inertia from quarter to quarter), as well as the shock’s half-life, meaning the time that passes until the shock subsides to half its original size. [↑](#footnote-ref-4)