The Israeli Economy

Hoover Institution 2024 Monetary Policy Conference

Prof. Amir Yaron
Governor, Bank of Israel
Before the war - On a path to soft landing:

GDP above its trend; tight labor market; debt falling, and inflation moderating

GDP in relation to its trend
quarterly, fixed prices, index: Jan 2019-1

Employment rate and unemployment
Dashed line: 2019 Average

Debt to GDP ratio

Inflation in Israel and OECD

Source: BOI and IL CBS
The war led to a 21% decline in GDP (annual terms).
In the past, the Israeli economy recovered quickly after geopolitical conflicts

Quarterly Growth Rate (Annual Terms)
Real GDP, Seasonal Adjusted

Sources: Boi’s Analysis of CBS data
The impact of the war: contraction of GDP led - by consumption and unemployment increase. In recent months there has been a significant recovery.
There is an "excess depreciation" relative to the long-term trend that characterized the ILS exchange rate

The Nasdaq index, the exchange rate, and the predicted exchange rate from a regression of the exchange rate on Nasdaq

\[
\log(\text{USDILS}) = \beta_0 + \beta_1 \cdot \log(\text{NDX}) + \epsilon
\]

Source: BOI and BLOOMBERG data
## Steps taken by the BOI during “Swords of iron” war

<table>
<thead>
<tr>
<th>Monetary policy and financial stability</th>
<th>Banking, credit and Payments</th>
<th>Economic advice to government</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ FX market: Up to $30 billion FX sales</td>
<td>✓ Deferring loans free of interest and fees .</td>
<td>✓ Publication of a macro-economic forecast for the Israeli economy.</td>
</tr>
<tr>
<td>✓ Up to $15 billion SWAP transactions</td>
<td>✓ Enhancing remote banking services</td>
<td>✓ Micro-level economic analysis of economic activity &amp; industries</td>
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<tr>
<td>✓ Government &amp; Corporate bond repos</td>
<td>✓ Mitigating abuse of credit cards and accounts.</td>
<td>✓ Ongoing work vis-à-vis relevant government entities</td>
</tr>
<tr>
<td>✓ Low-interest loans to banks conditional on providing credit to SME’S.</td>
<td>✓ Easing of financial restrictions</td>
<td>✓ An advisory role for fiscal plans and framework</td>
</tr>
<tr>
<td>✓ Reduced interest rate by 0.25 PP</td>
<td>✓ Issued guidance to adopt a conservative policy regarding dividend distribution and credit loss allowance.</td>
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</table>
A large increase in the defense budget, without adjustments, could cause the debt-to-GDP ratio to spiral

Research Department updated forecast

<table>
<thead>
<tr>
<th></th>
<th>Total 2023-2025</th>
<th>As a percentage of 2023 GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defense expenditures</td>
<td>107</td>
<td>5.8%</td>
</tr>
<tr>
<td>Long-term program 2024-2025</td>
<td>30</td>
<td>1.6%</td>
</tr>
<tr>
<td>Compensation on direct and indirect damages</td>
<td>23</td>
<td>1.2%</td>
</tr>
<tr>
<td>Other civilian expenditures</td>
<td>41</td>
<td>2.2%</td>
</tr>
<tr>
<td>Interest payments</td>
<td>9</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total additional expenditures</td>
<td>210</td>
<td>11.3%</td>
</tr>
<tr>
<td>Loss of taxes</td>
<td>40</td>
<td>2.2%</td>
</tr>
<tr>
<td>Total effect of the war</td>
<td>250</td>
<td>13.4%</td>
</tr>
</tbody>
</table>

Additional permanent budget due to the war

<table>
<thead>
<tr>
<th></th>
<th>1% of GDP</th>
<th>0.5% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional security budget</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Additional interest payments</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Additional “Tkuma” budget</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total additional permanent budget</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>
Monetary Policy in Small Open Economies

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Roadmap

• Commonality in business, inflation, and interest cycles across large and small economies.

• Yet large variation in timing and extent of monetary policy.

• Economies that raised rates after the Fed experienced a faster decline in inflation.

• Higher Fed rates support reduction of inflation in SOEs (PMI, Commodity prices, imported inflation).

• Many SOE’s choose not to "wait" for the Fed’s “head-wind” (FX, exposure to energy, mortgage market).
Business cycles are generally shared between large and small economies

Inflation and interest rate: US, and SOEs average

SOEs: Chile, Colombia, Denmark, Hungary, Iceland, Netherlands, New Zealand, Norway, Philippines, Sweden, Switzerland, Czech Republic, Israel
Monetary policy reaction functions vary across economies

The central bank’s interest rate minus inflation VS. the duration of deviation of inflation from its target
Rising rates in the US itself dampen inflation in small open economies (SOEs)

Impact of a 100 Basis Point FED Rate Shock on average inflation in SOEs

\[ \text{SOEs}_t + h = \alpha_h + \beta_h \text{MPS}_t + \sum_{i=1}^{l} \gamma_{i,h} (\pi_{t-i}) + \sum_{i=1}^{l} \delta_{i,h} (\text{MPS}_{t-i}) + \sum_{i=1}^{l} \gamma_{i,h} (\text{SOE\_INTEREST}_{t-i}) + u_h \]

Standard Local Projection (Jorda 2005) - SOEs\(\pi_{t+h} = \alpha_h + \beta_h \text{MPS}_t + \sum_{i=1}^{l} \gamma_{i,h} (\pi_{t-i}) + \sum_{i=1}^{l} \delta_{i,h} (\text{MPS}_{t-i}) + \sum_{i=1}^{l} \gamma_{i,h} (\text{SOE\_INTEREST}_{t-i}) + u_h\)

MPS = Monetary Policy Shocks - calculated using high frequency rate data around FOMC announcements

Economies that raised rates after the Fed tended to experience a faster decline in inflation.

The date of the start of the interest rate hike in relation to the USA (X-axis, weeks) and the time until inflation has fallen to half its peak (Y-axis, weeks).
QUESTIONS:

1. WHAT ARE THE CHANNELS FOR THE FED “HEAD-WIND”?

2. WHY CENTRAL BANKS NOT ALWAYS USE IT?
1. Rate hikes in US weaken global demand, exerting disinflationary pressure on SOEs

Impact of 100 BP FED Rate Shock on World PMI

Impact of 1 Percentage Point Decrease in World PMI on SOEs Inflation

\[ PMI_{t+h} = \alpha_{(h)} + \beta_{(h)} MPS_t + \sum_{i=1}^{l} \gamma_{(i,h)} (MPS_{t-i}) + \sum_{i=1}^{l} \delta_{(i,h)} (PMI_{t-i}) + u_{(h)} \]

\[ \pi_{SOE_{t+h}} = \alpha_{(h)} + \beta_{(h)} PMI_t + \sum_{i=1}^{l} \gamma_{(i,h)} (\pi_{SOE_{t-i}}) + \sum_{i=1}^{l} \delta_{(i,h)} (PMI_{t-i}) + u_{(h)} \]
2. Rate hikes in US weaken global commodities prices, lowering SOEs inflation

Impact of 100 BP FED Rate Shock on World Commodity Prices

\[
P_{\text{COM}}_{t+h} = \alpha_{(0)} + \beta_{(0)} M_{t} + \sum_{i=1}^{I} \gamma_{(i,h)} (P_{\text{COM}}_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (M_{t-i}) + u_{(h)}
\]

Impact of 1 Percentage Point Decrease in Commodity Prices on SOEs Inflation

\[
\pi_{\text{SOE}}_{t+h} = \alpha_{(0)} + \beta_{(0)} P_{\text{COM}}_{t} + \sum_{i=1}^{I} \gamma_{(i,h)} (\pi_{\text{SOE}}_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (P_{\text{COM}}_{t-i}) + u_{(h)}
\]
3. FED’s rate reduce US inflation, leading to lower imported inflation in SOEs

Impact of 100 BP FED Rate Shock on US Inflation

Impact of 1% Decrease in US Inflation on SOEs Inflation
(controlling for commodity prices and USD exchange rate)
Despite the benefits of the Fed’s “head-wind”, some SOEs choose not to ”wait”

- Variability in exposure to energy / commodity prices during Ukraine-Russia war.
- Variations in fiscal policy, especially as in the fiscal expansions during COVID.
- The credit structure of the economy may affect the transmission of monetary policy (e.g. economies with FRM (fixed-rate-mortgage) require higher interest rates).
- A rise in interest differentials ($r_{US} – r_{SOE}$) may lead to depreciation of local currency and capital outflows.
Variation in exposure to energy and food

Energy Inflation
at the peak (July 21)

Food Inflation
at the peak (July 21)

Source: OECD
Variation in the degree of fiscal expansion

Fiscal expansion (% GDP) in 2020-2021

Response of inflation to a one standard deviation fiscal shock computed LP
1970 - 2020

Deviation from the share of GDP in 2019

S Cevik, F Miryugin “It’s Never Different: Fiscal Policy Shocks and Inflation” IMF WP2023
Higher FRM require higher rates to reduce inflation effectively

Country-level share of fixed rate mortgages
(percent of country-level stock of mortgages, 2022.Q4)

Impact of a 100 Local Interest Rate Shock on Local inflation
Rate differential leads to a strengthening of the dollar against other currencies

**Impact of 100 BP Interest Rate Differential on USD Exchange Rate VS. World Currencies**

(Controlling for US and SOEs Inflations)

\[ \text{USD}_t = \alpha + \beta (\text{FED}_t - \text{SOE}_t) + \sum_{i=1}^{t} \gamma_{i} (\text{USD}_{t-i}) + \sum_{i=1}^{t} \delta_{i} (\text{FED}_t - \text{SOE}_t)_{t-i} + \sum_{i=1}^{t} \psi_{i} (\text{SOE}_t - \text{SOE}_t)_{t-i} + \epsilon_{t} \]
The initial Currencies position can affect propensity to move first

**Real effective exchange rate (REER)**
2019-2021

ReER take into account both nominal exchange rate developments and the inflation differential vis-à-vis trading partners. Higher level indicates an appreciation of the economy’s currency against a broad basket of currencies.
The initial Currencies position can affect propensity to move first

REER take into account both nominal exchange rate developments and the inflation differential vis-à-vis trading partners. Higher level indicates an appreciation of the economy’s currency against a broad basket of currencies.
SOEs, The Taylor rule and Exchange Rate
Does the Taylor rule for SEOs (should) include exchange rate?

• Taylor (2001)* - including ER in interest rate policy rules provides little benefit to macroeconomic performance and can sometimes worsen it, as the ER already indirectly affects through the GDP and (expected) inflation.

• Yet, some SOEs respond to changes in the exchange rate.
  
  • Lubik & Schorfheide (2007)** demonstrate that some CB account ER in their Taylor rule, while some do not.
  
  • Israel TR in the DSGE model: \( r_t = 0.15[R^*_{t} + \pi + 2.26(\pi_t - \bar{\pi}) + 0.137 \hat{y}^\text{gap}_t + 0.03S_t] + 0.85r_{t-1} + \eta_t \)

• Why CB directly consider ER?:
  
  • Timing: ER can have impacts not adequately reflected in GDP / inflation. Depreciation may affect inflation with a 2Y lag, while the rule considers 1Y expectations; GDP is observed with lag and may undergo revisions.
  
  • Information: The ER can act as a valuable informational variable, providing signals about economic conditions that may not be fully captured by the output gap and inflation measures.
  
  • Financial stability: ER fluctuations can impact financial stability – that not necessary captured by GDP / inflation.

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Thank you