

The Israeli Economy

Hoover Institution 2024 Monetary Policy Conference

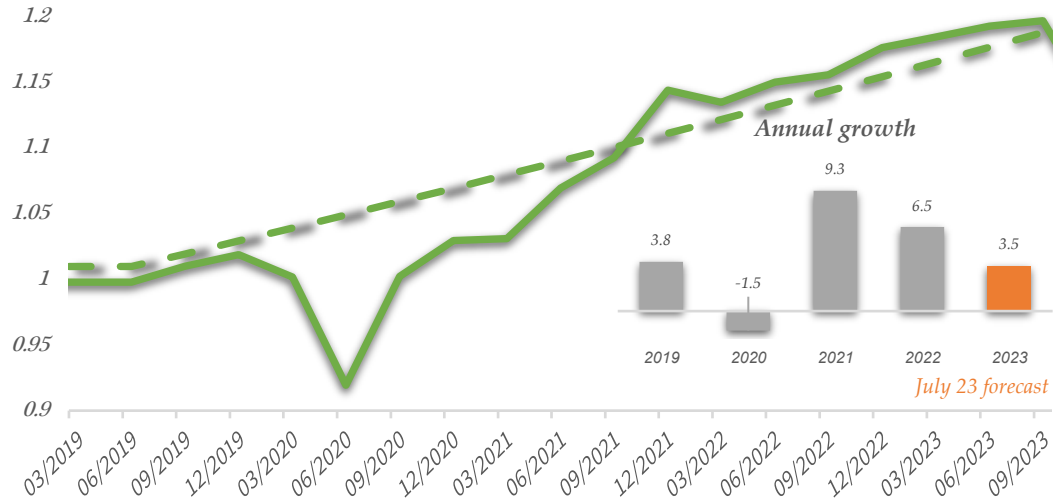
Prof. Amir Yaron

Governor, Bank of Israel

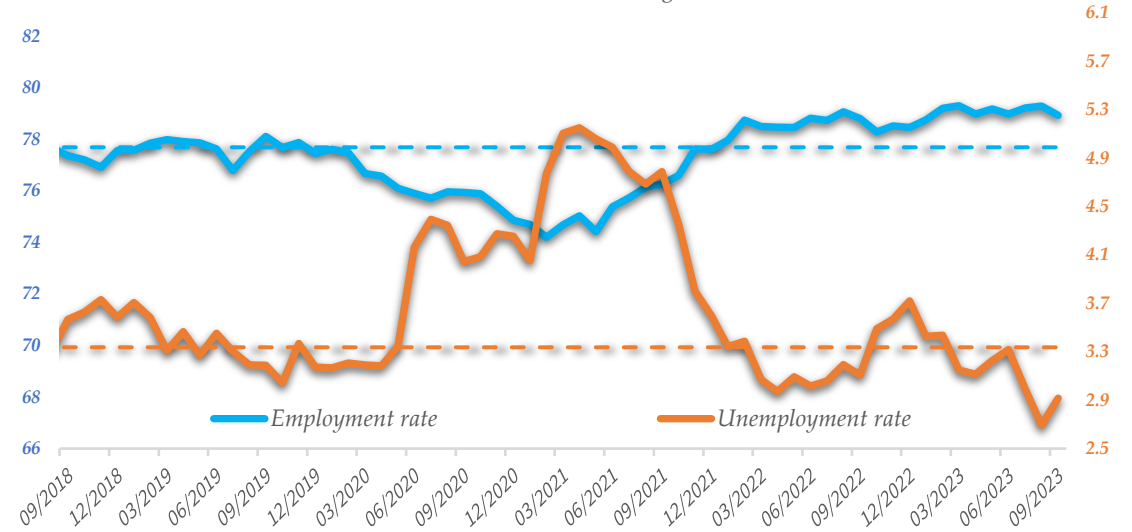


Before the war - On a path to soft landing: GDP above its trend; tight labor market; debt falling, and inflation moderating

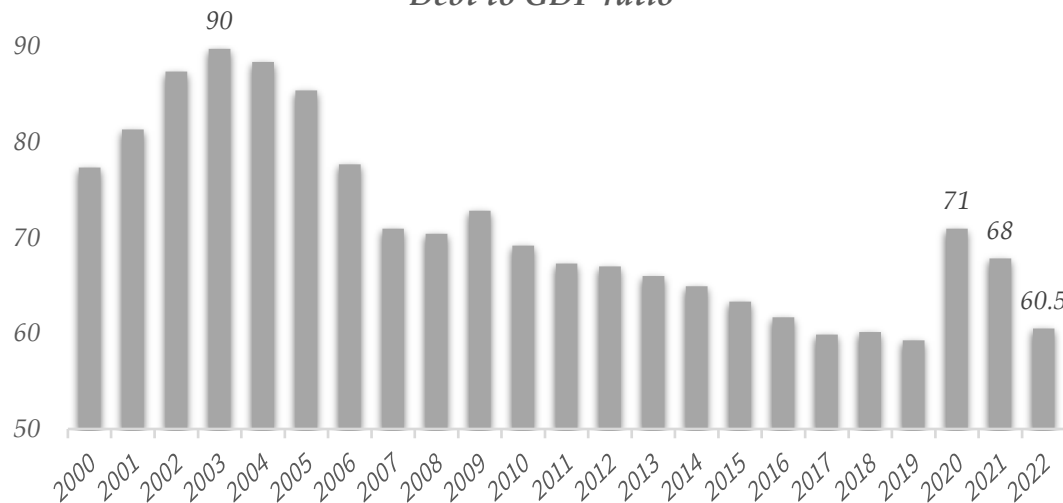
GDP in relation to its trend
quarterly, fixed prices, index: Jan 2019=1



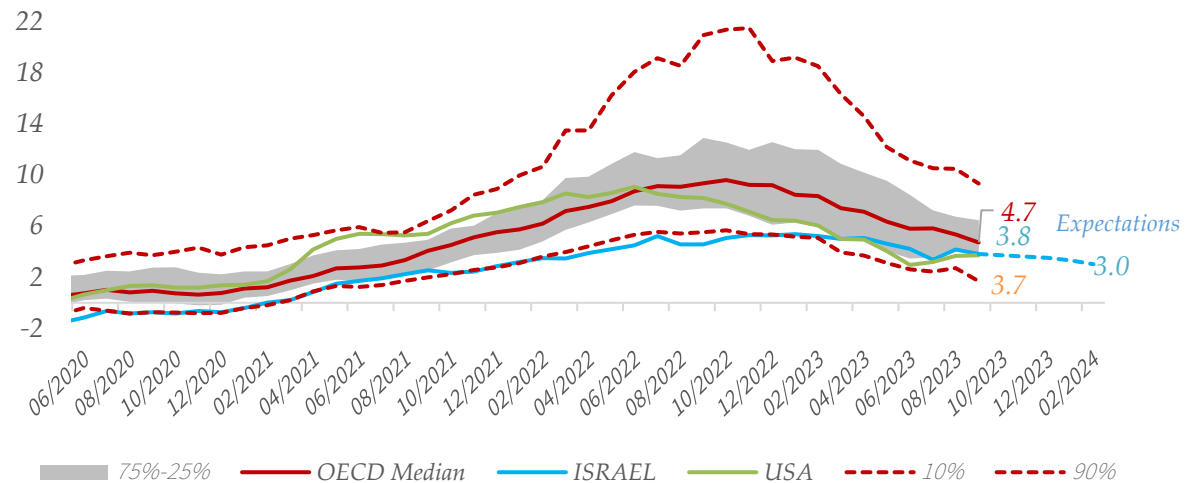
Employment rate and unemployment
Dashed line: 2019 Average



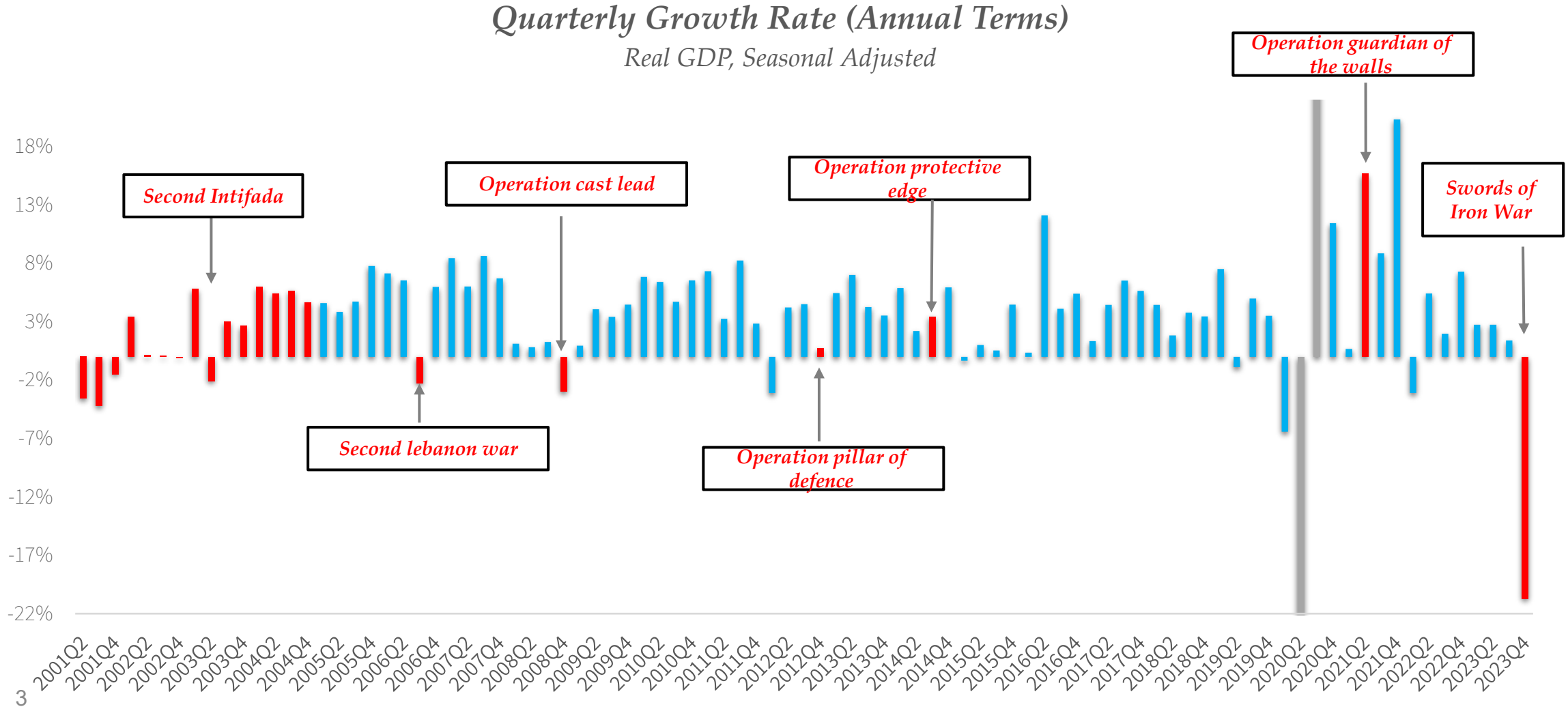
Debt to GDP ratio



Inflation in Israel and OECD



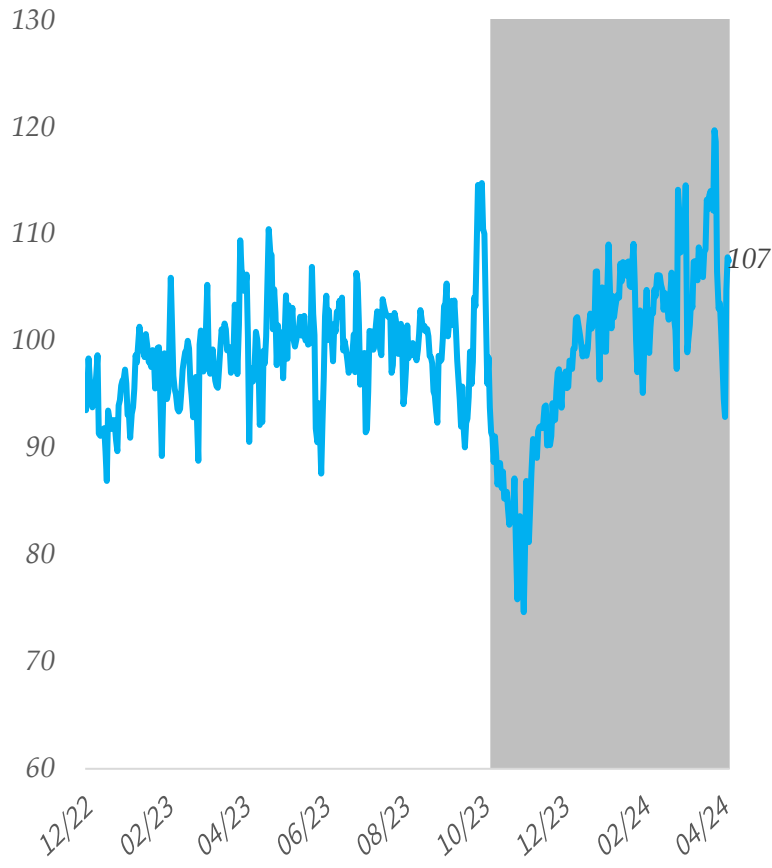
*The war led to a 21% decline in GDP (annual terms).
In the past, the Israeli economy recovered quickly after geopolitical conflicts*



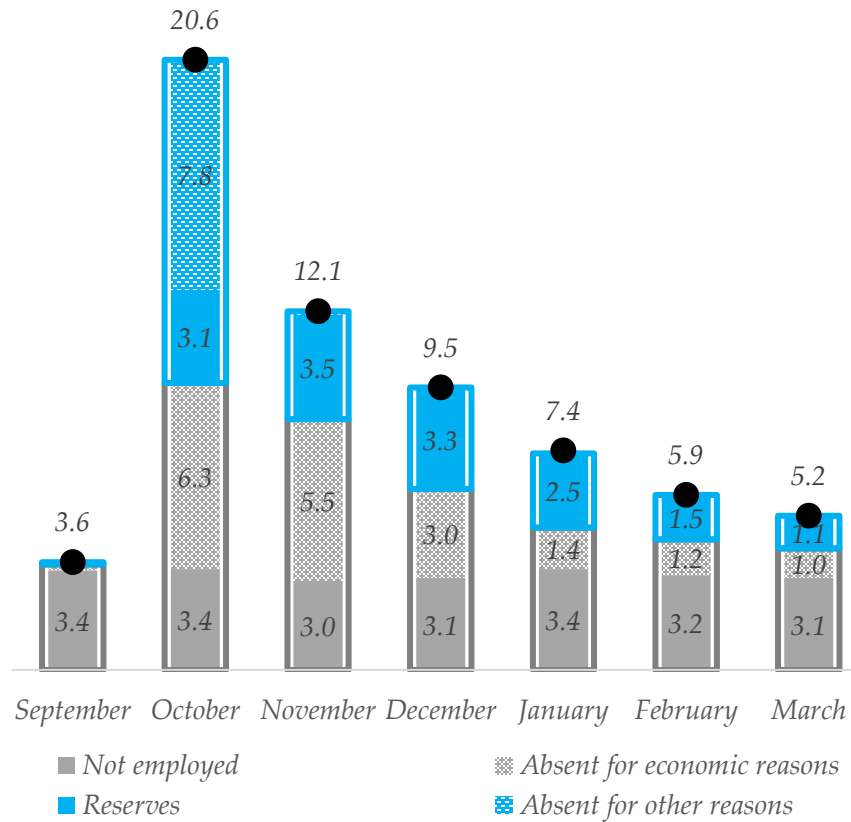
Sources: Boi's Analysis of CBS data

*The impact of the war: contraction of GDP led - by consumption and unemployment increase.
In recent months there has been a significant recovery*

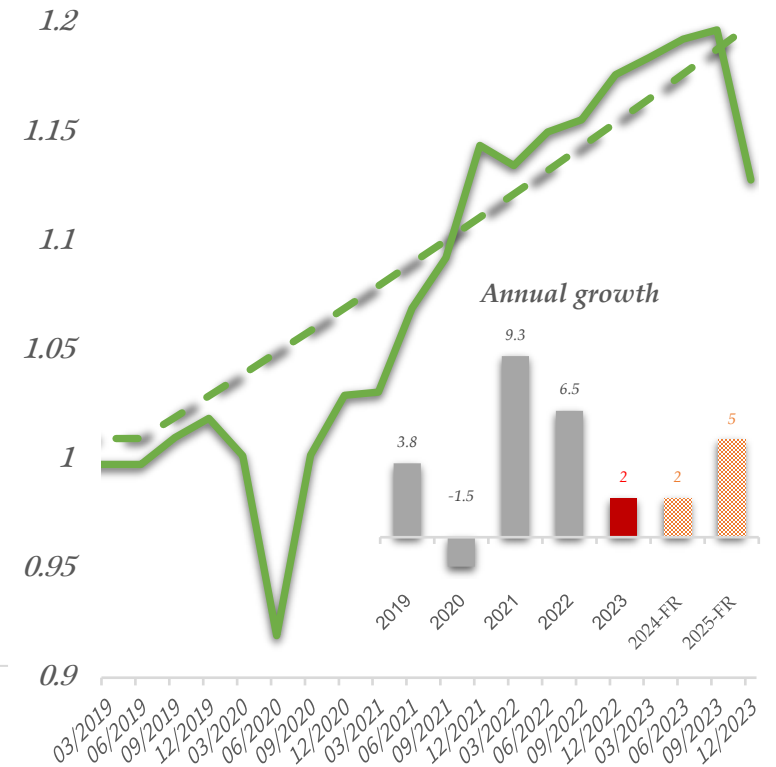
credit cards expenditure index
Seasonally adjusted, 2023Q3=100



Unemployment rate

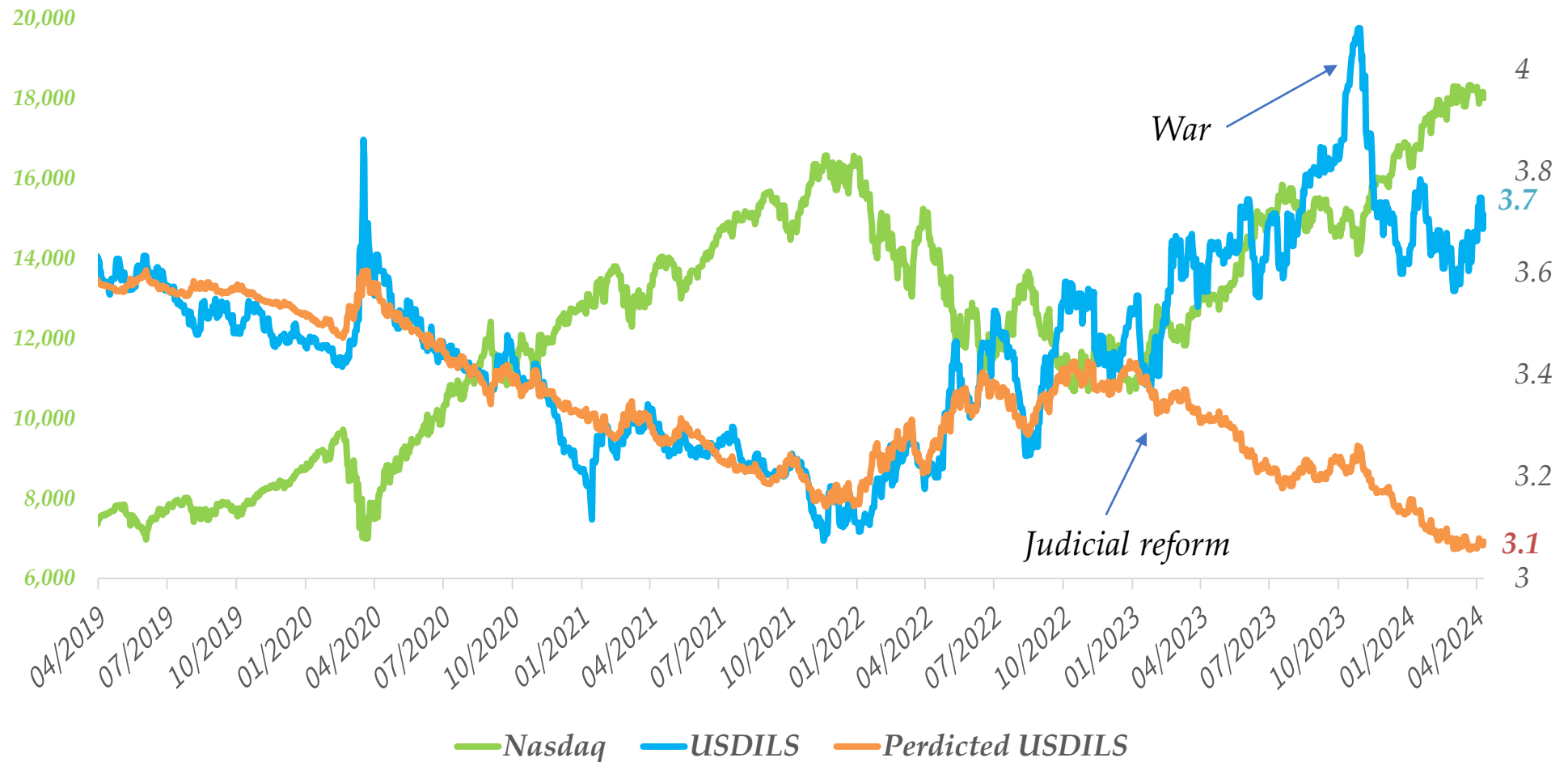


GDP in relation to its trend
quarterly, fixed prices, index: Jan 2019=1



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



$$\log(ILS_USD_t) = \beta^0 + \beta^1 * \log(NDX_t) + \varepsilon$$

Steps taken by the BOI during “Swords of iron” war

Monetary policy and financial stability

- ✓ FX market: Up to \$30 billion FX sales
- ✓ Up to \$15 billion SWAP transactions
- ✓ Government & Corporate bond repos
- ✓ Low-interest loans to banks conditional on providing credit to SME'S.
- ✓ Reduced interest rate by 0.25 PP

Banking, credit and Payments

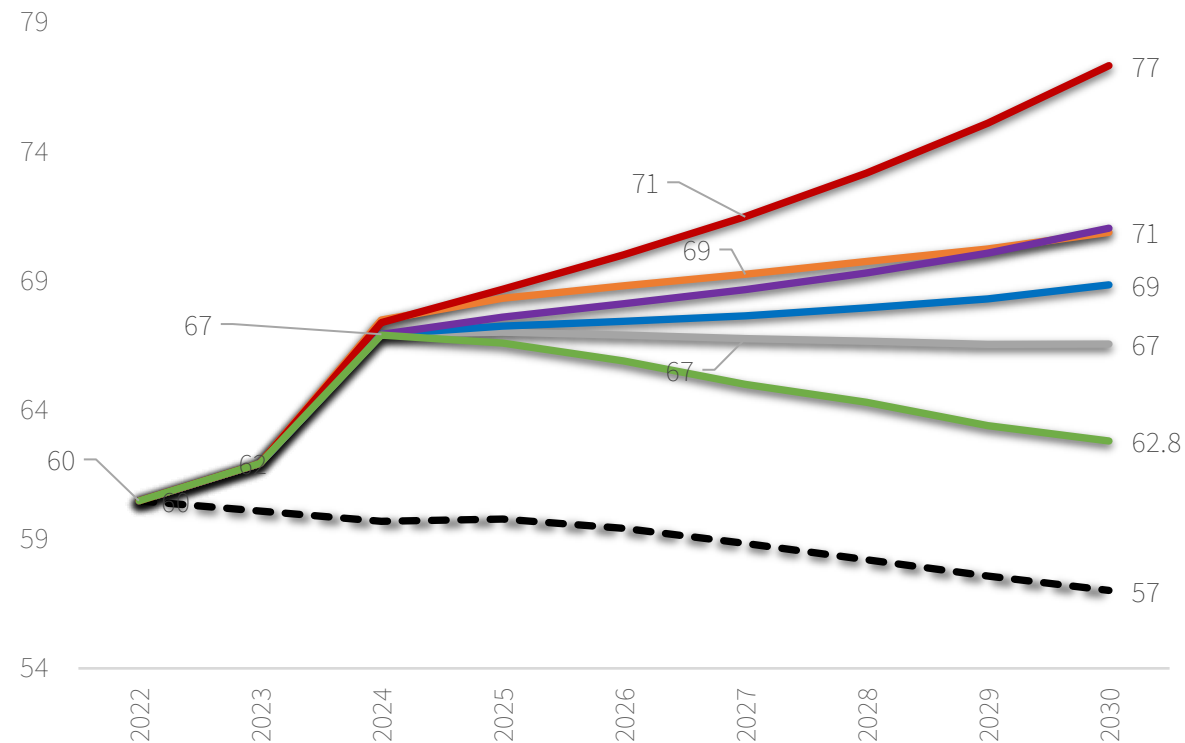
- ✓ Deferring loans free of interest and fees .
- ✓ Enhancing remote banking services
- ✓ Mitigating abuse of credit cards and accounts.
- ✓ Easing of financial restrictions
- ✓ Issued guidance to adopt a conservative policy regarding dividend distribution and credit loss allowance.

Economic advice to government

- ✓ Publication of an macro-economic forecast for the Israeli economy.
- ✓ Micro-level economic analysis of economic activity & industries
- ✓ Ongoing work vis-à-vis relevant government entities
- ✓ An advisory role for fiscal plans and framework

A large increase in the defense budget, without adjustments, could cause the debt-to-GDP ratio to spiral

Public debt



- Current agreements, without the adjustments
- Base scenario + attaching the defense budget to GDP per capita
- - - Forecast at the eve of the war
- Full adjustments scenario

Research Department updated forecast

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

Additional permanent budget due to the war

	1% of GDP	0.5% of GDP
Additional security budget	20	10
Additional interest payments	7	7
Additional "Tkuma" budget	3	3
Total additional permanent budget	30	20

- Base scenario
- 1% GDP addition to the budget at the eve of the war
- Addition of 1% GDP, slowing of potential growth and the increase of the risk premium

Monetary Policy in Small Open Economies

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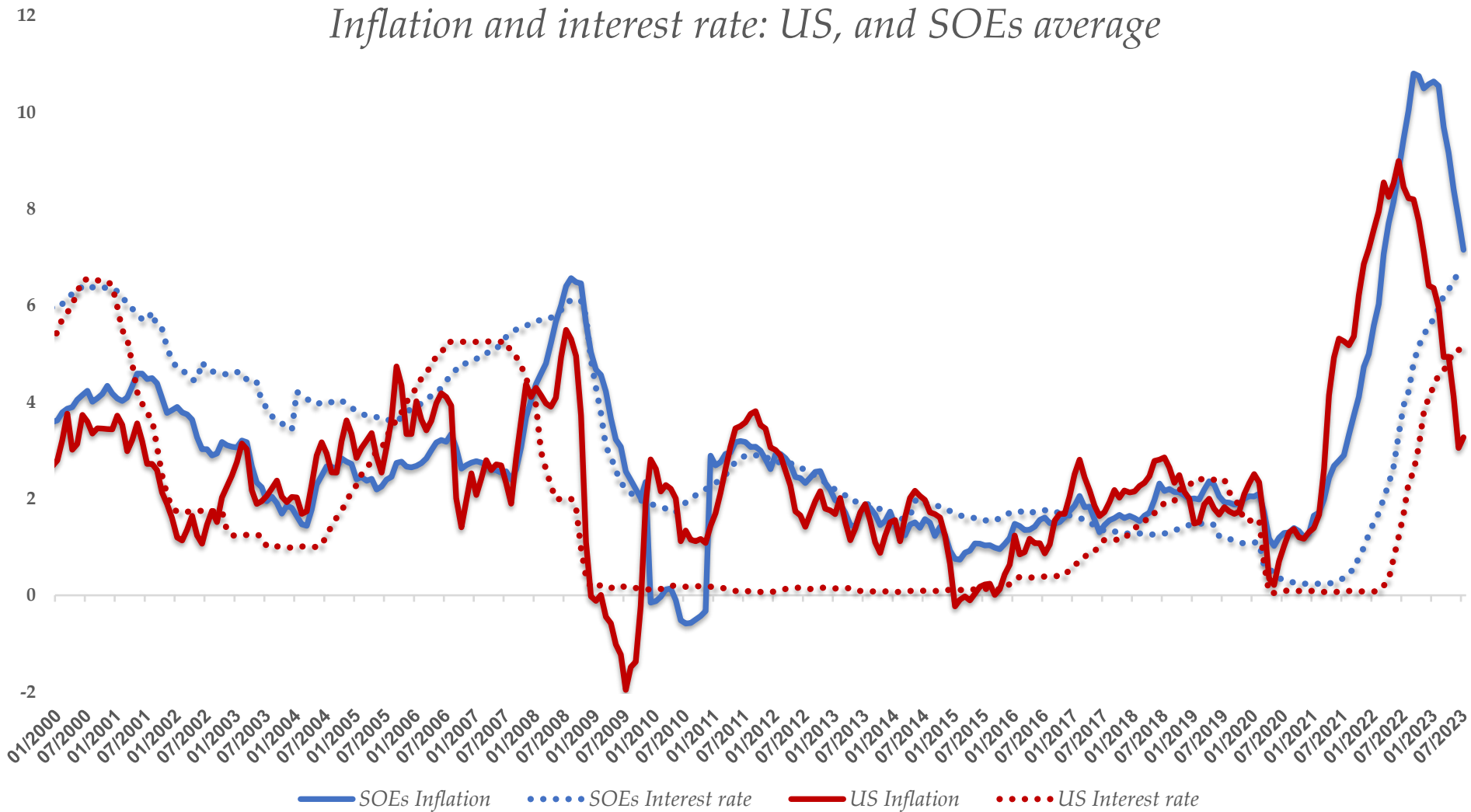


Roadmap

- *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).*

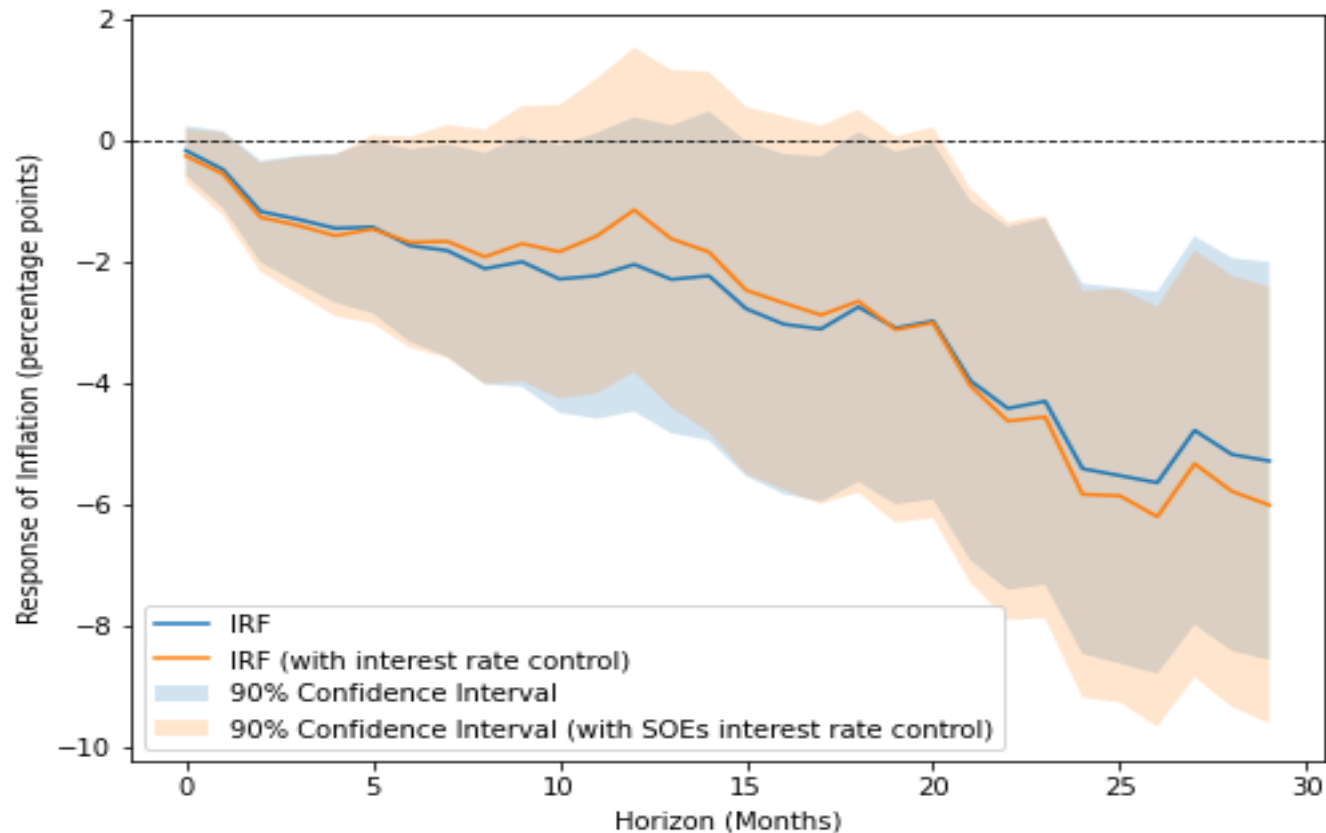
Business cycles are generally shared between large and small economies

Inflation and interest rate: US, and SOEs average



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



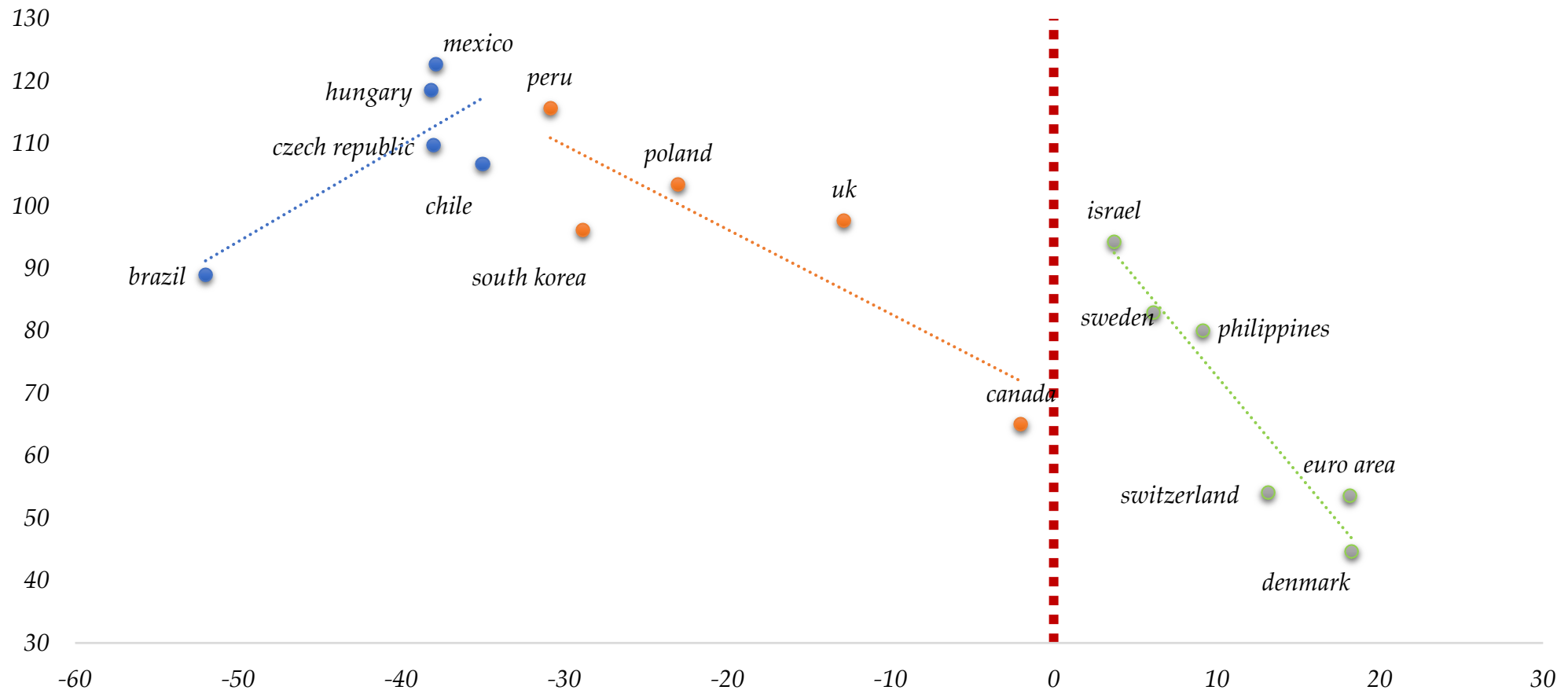
$$\text{Standard Local Projection (Jord'a 2005)} - SOE_ \pi_{t+h} = \alpha_{(h)} + \beta_{(h)}MPS_t + \sum_{i=1}^I \gamma_{(i,h)} (\pi_{t-i}) + \sum_{i=1}^I \delta_{(i,h)} (MPS_{t-i}) + \sum_{i=1}^I \gamma_{(i,h)} (SOE_ INTEREST_{t-i}) + u_{(h)}$$

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

BOI analysis. Data sources: BLOOMBERG, OECD. Monthly data January 1995-July 2023

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:

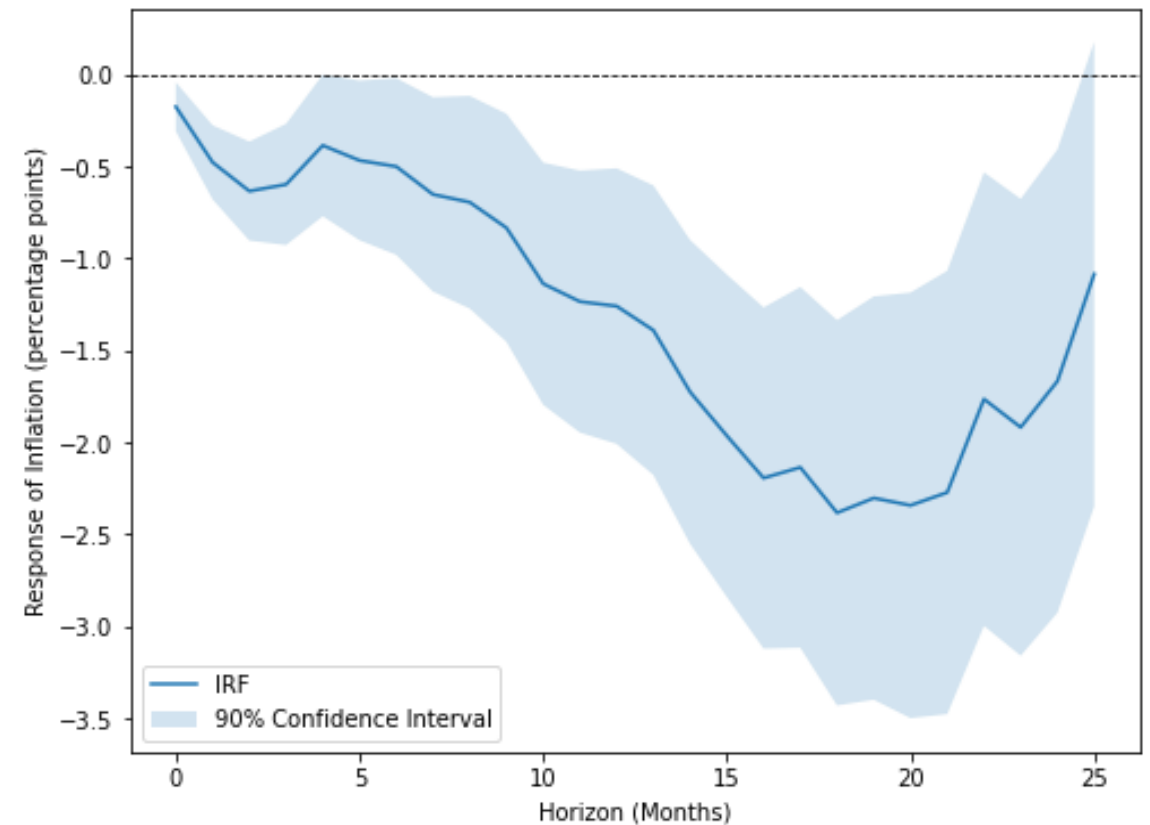
- 1. WHAT ARE THE CHANNELS FOR THE FED "HEAD-WIND"?*
- 2. WHY CENTRAL BANKS NOT ALWAYS USE IT?*

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

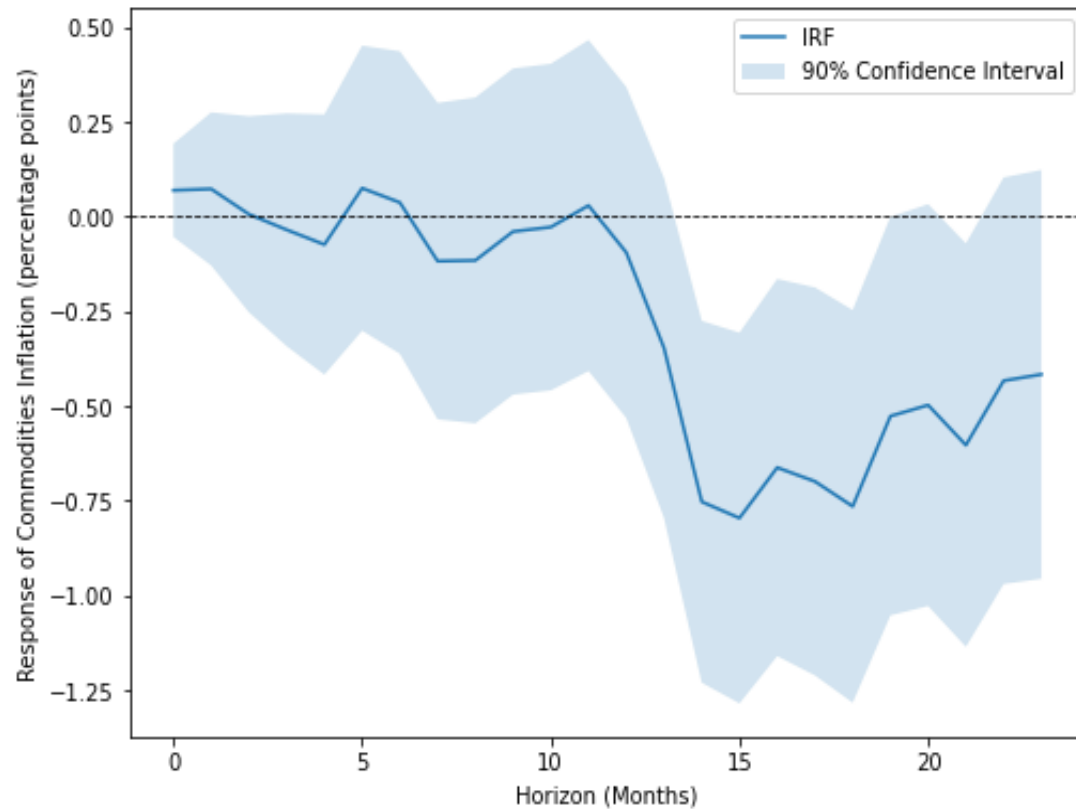


$$15 \quad PMI_{t+h} = \alpha_{(h)} + \beta_{(h)}MPS_t + \sum_{i=1}^I \gamma_{(i,h)} (MPS_{t-i}) + \sum_{i=1}^I \delta_{(i,h)} (PMI_{t-i}) + u_{(h)}$$

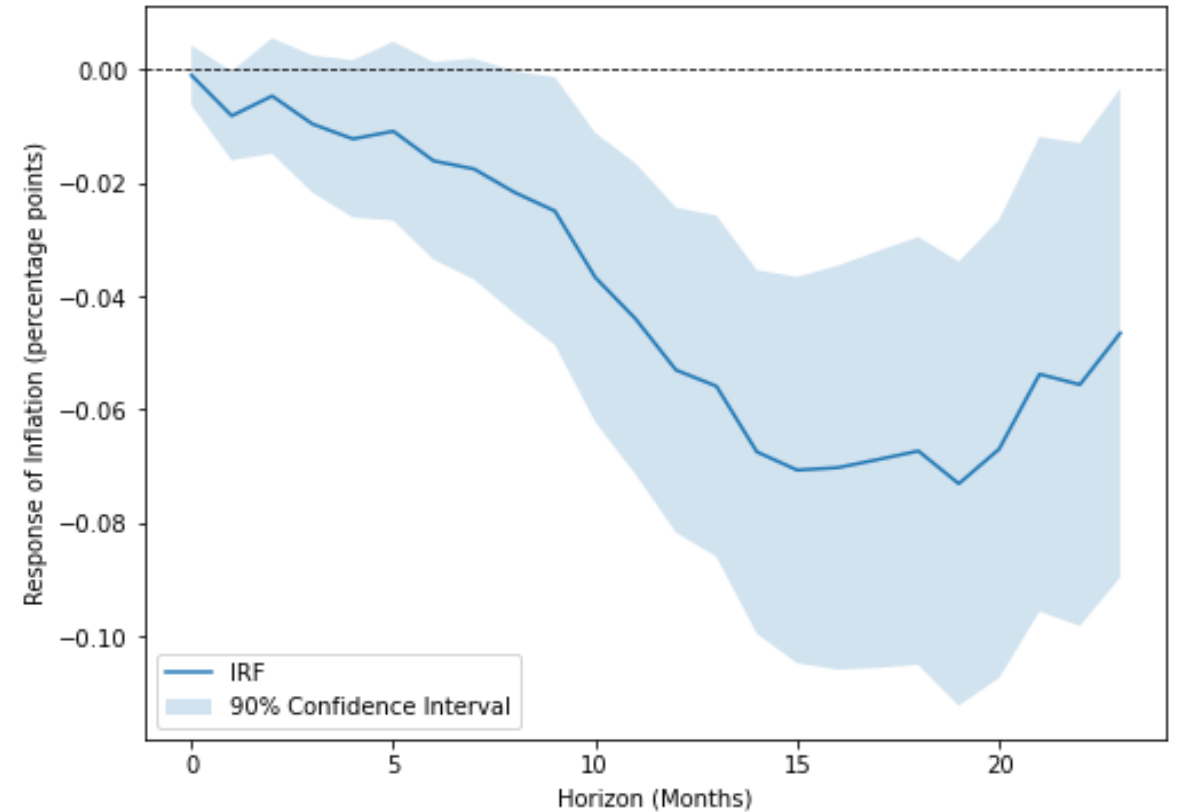
$$\pi_{SOE_{t+h}} = \alpha_{(h)} + \beta_{(h)}PMI_t + \sum_{i=1}^I \gamma_{(i,h)} (\pi_{SOE_{t-i}}) + \sum_{i=1}^I \delta_{(i,h)} (PMI_{t-i}) + u_{(h)}$$

2. Rate hikes in US weaken global commodities prices, lowering SOEs inflation

Impact of 100 BP FED Rate Shock on World Commodity Prices



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

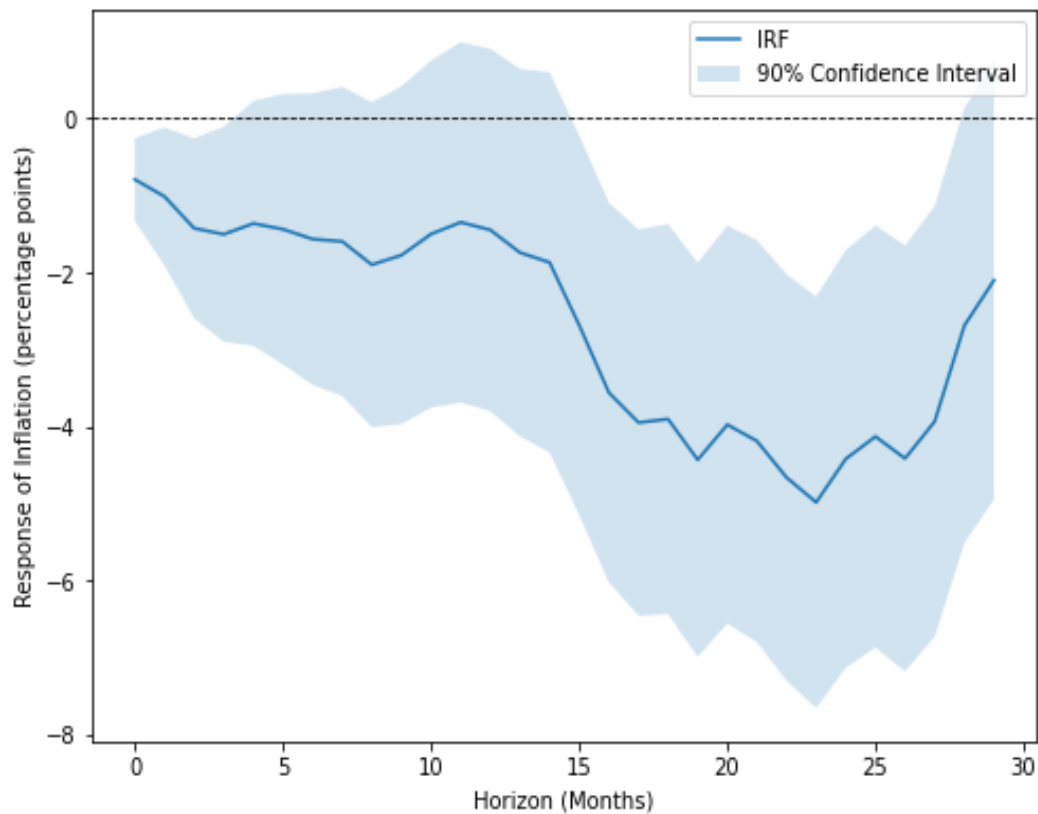


$$16 \quad P_COM_{t+h} = \alpha_{(h)} + \beta_{(h)}MPS_t + \sum_{i=1}^I \gamma_{(i,h)} (P_COM_{t-i}) + \sum_{i=1}^I \delta_{(i,h)} (MPS_{t-i}) + u_{(h)}$$

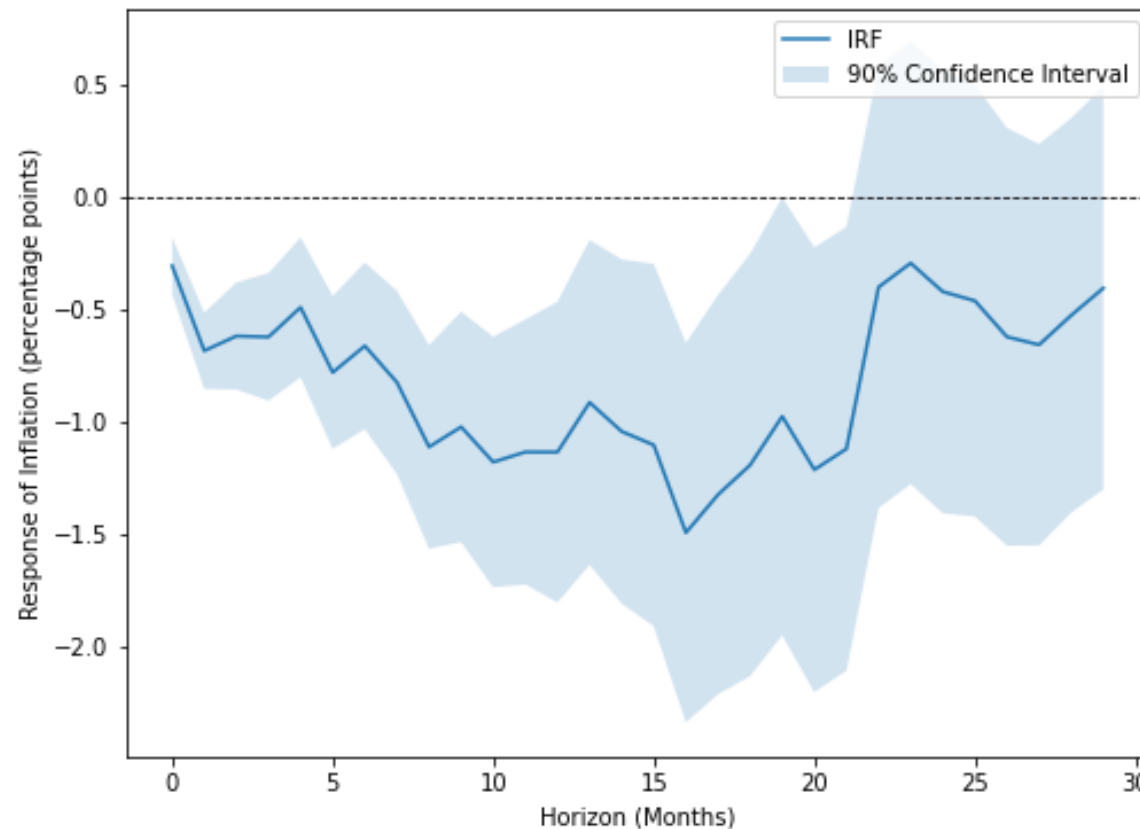
$$\pi_SOE_{t+h} = \alpha_{(h)} + \beta_{(h)}P_COM_t + \sum_{i=1}^I \gamma_{(i,h)} (\pi_SOE_{t-i}) + \sum_{i=1}^I \delta_{(i,h)} (P_COM_{t-i}) + u_{(h)}$$

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)



$$US\bar{\pi}_{t+h} = \alpha_{(h)} + \beta_{(h)}MPS_t + \sum_{i=1}^I \gamma_{(i,h)} (US_{\pi_{t-i}}) + \sum_{i=1}^I \delta_{(i,h)} (MPS_{t-i}) + u_{(h)}$$

$$\pi_{SOE_{t+h}} = \alpha_{(h)} + \beta_{(h)}US_{\pi_t} + \sum_{i=1}^I \gamma_{(i,h)} (US_{\pi_{t-i}}) + \sum_{i=1}^I \delta_{(i,h)} (\pi_{SOE_{t-i}}) + \sum_{i=1}^I \delta_{(i,h)} (USD_{t-i}) + \sum_{i=1}^I \delta_{(i,h)} (P_{COM_{t-i}}) + u_{(h)}$$

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.*

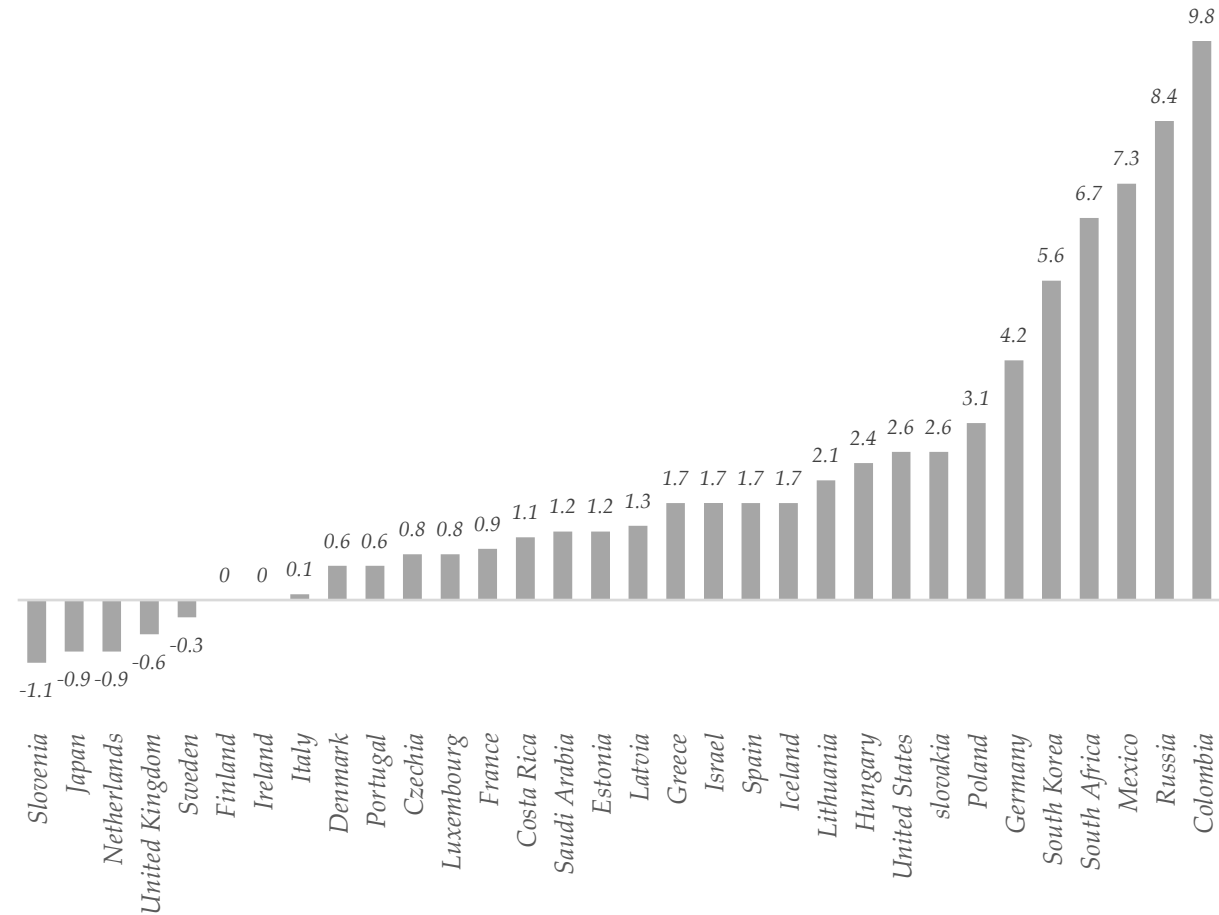
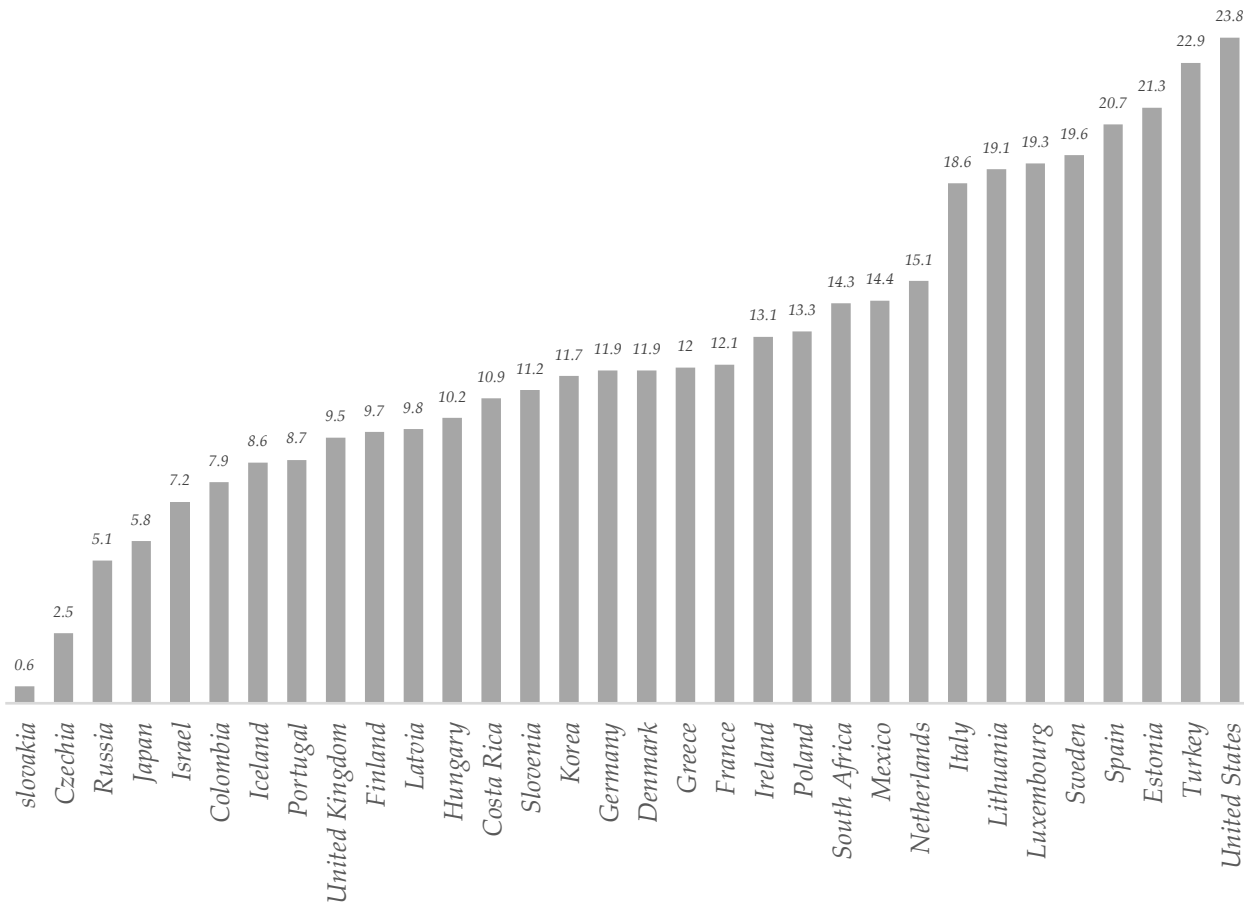
Variation in exposure to energy and food

Energy Inflation

at the peak (July 21)

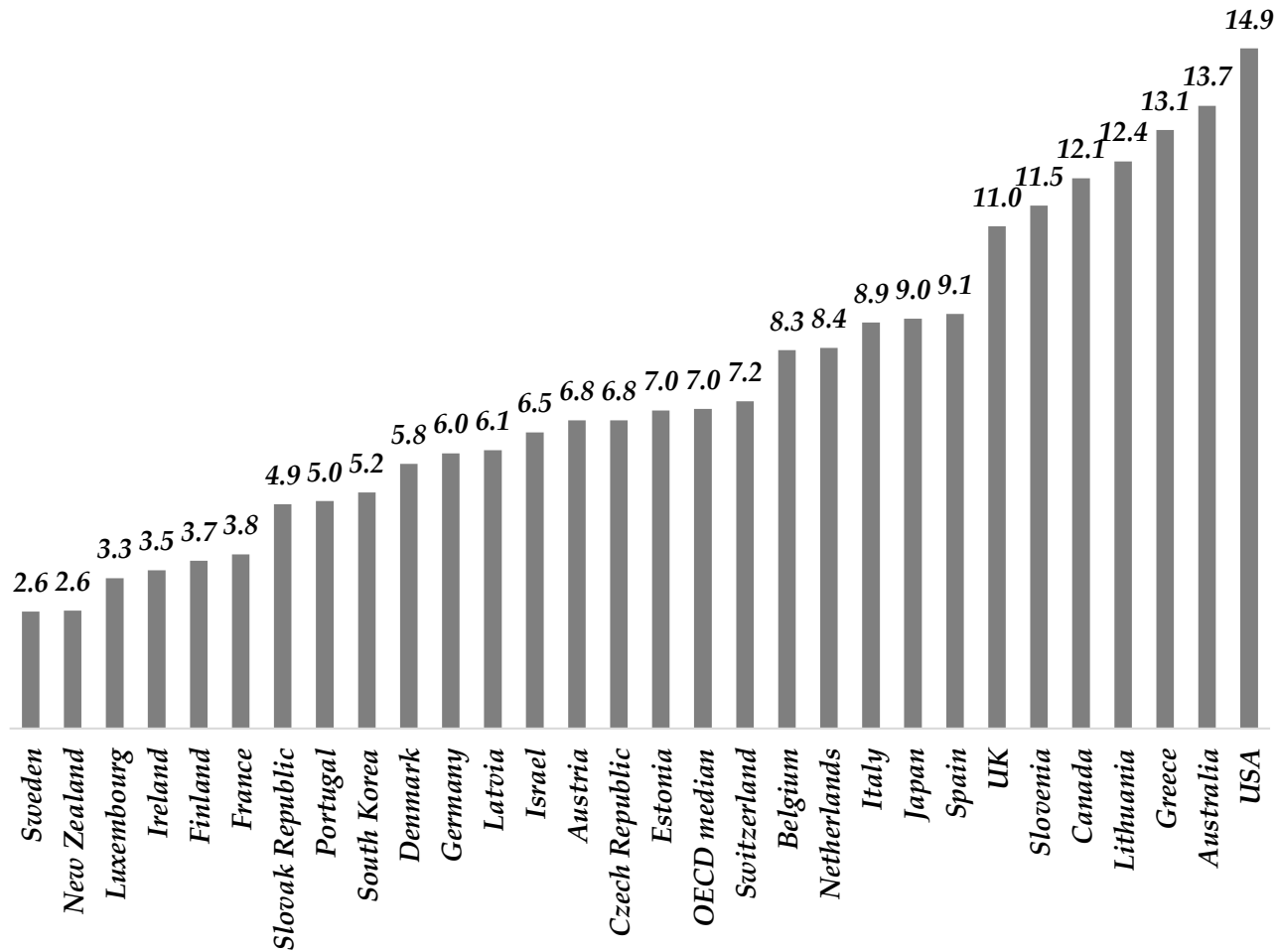
Food Inflation

at the peak (July 21)



Variation in the degree of fiscal expansion

Fiscal expansion (% GDP) in 2020-2021

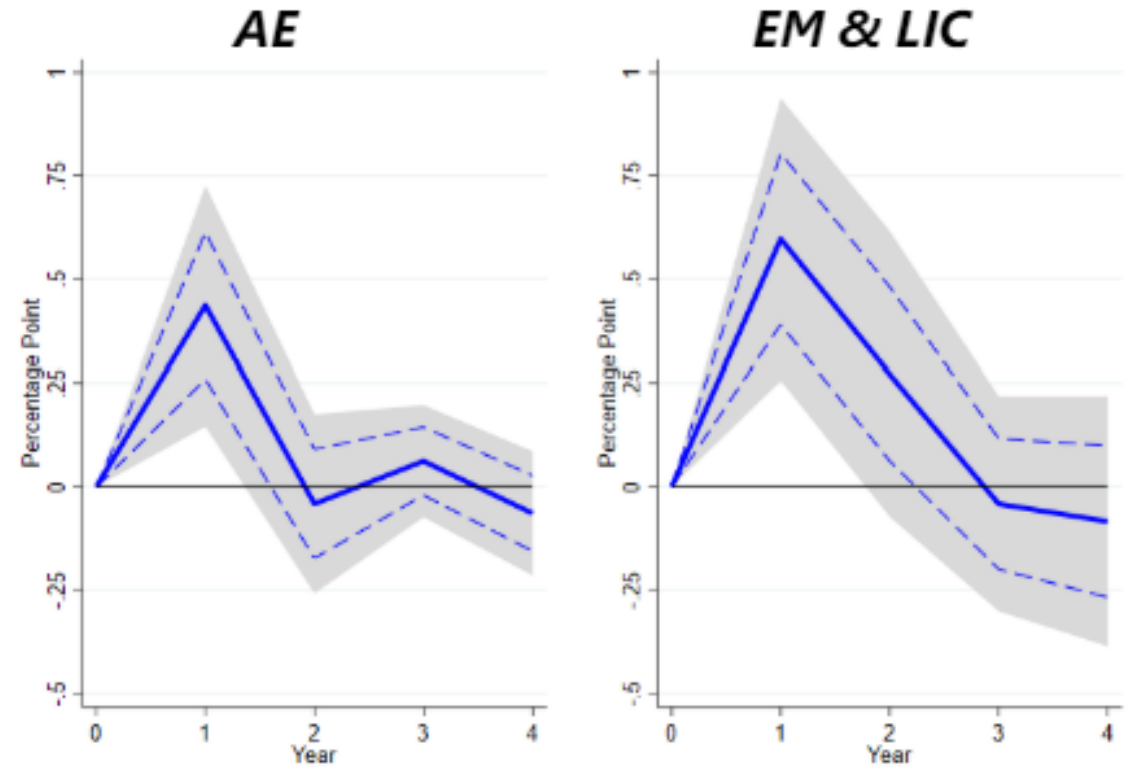


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Deviation from the share of GDP in 2019

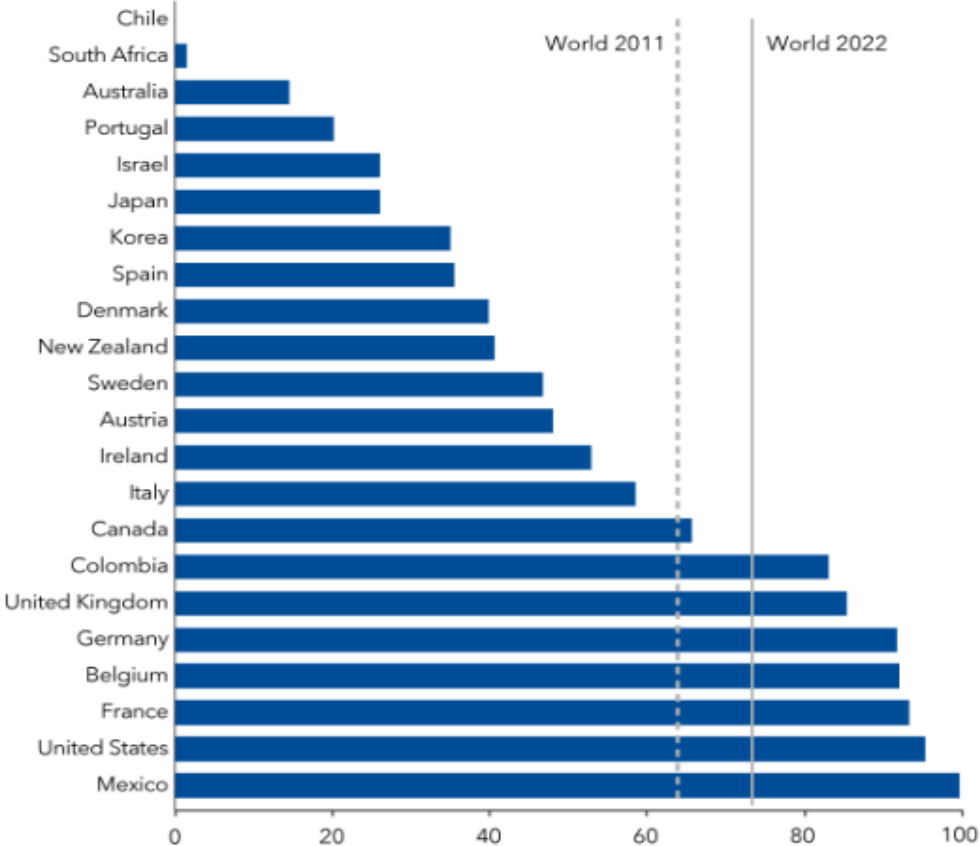
Response of inflation to a one standard deviation fiscal shock computed LP

1970 - 2020



Higher FRM require higher rates to reduce inflation effectively

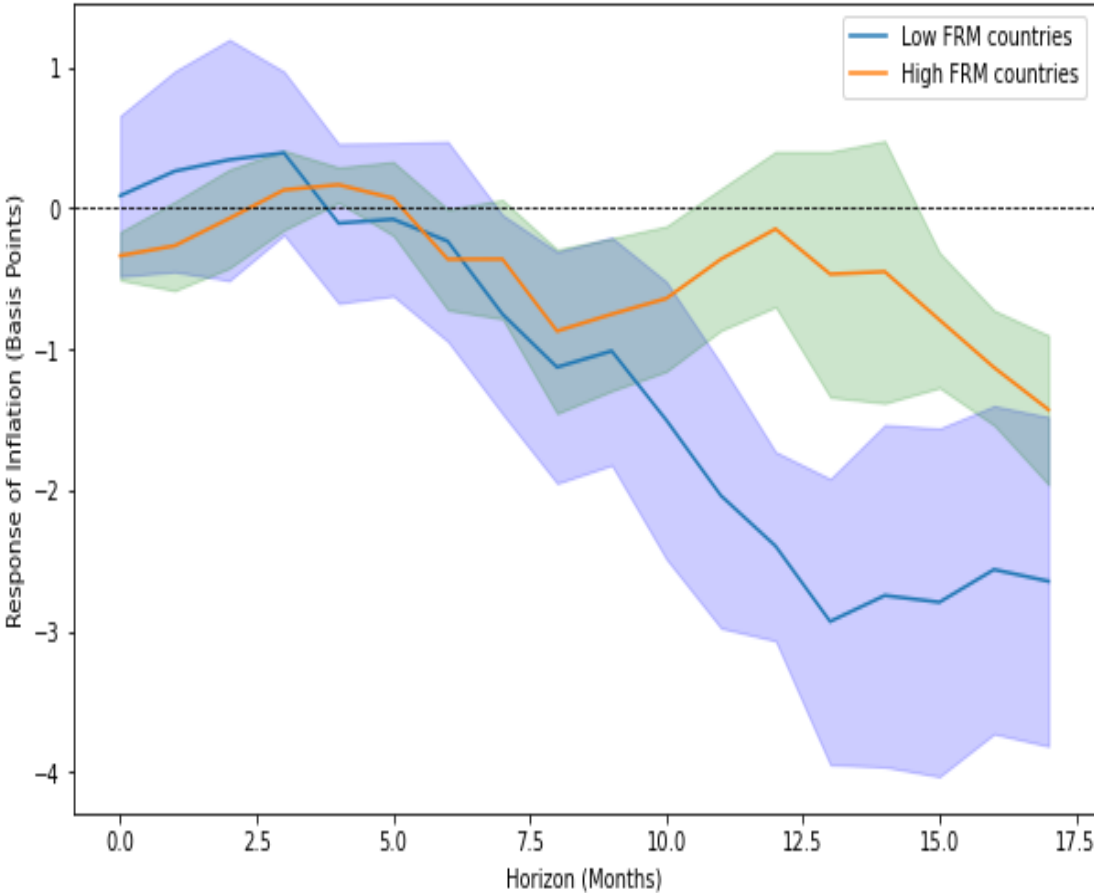
Country-level share of fixed rate mortgages
(percent of country-level stock of mortgages, 2022:Q4)



Source: European Central Bank; national authorities' data; and IMF staff calculations.
Note: Mortgages are deemed fixed-rate if nominal payments do not reset within a year.
Fixed rate mortgages exclude mortgages that adjust to inflation (as in Chile).

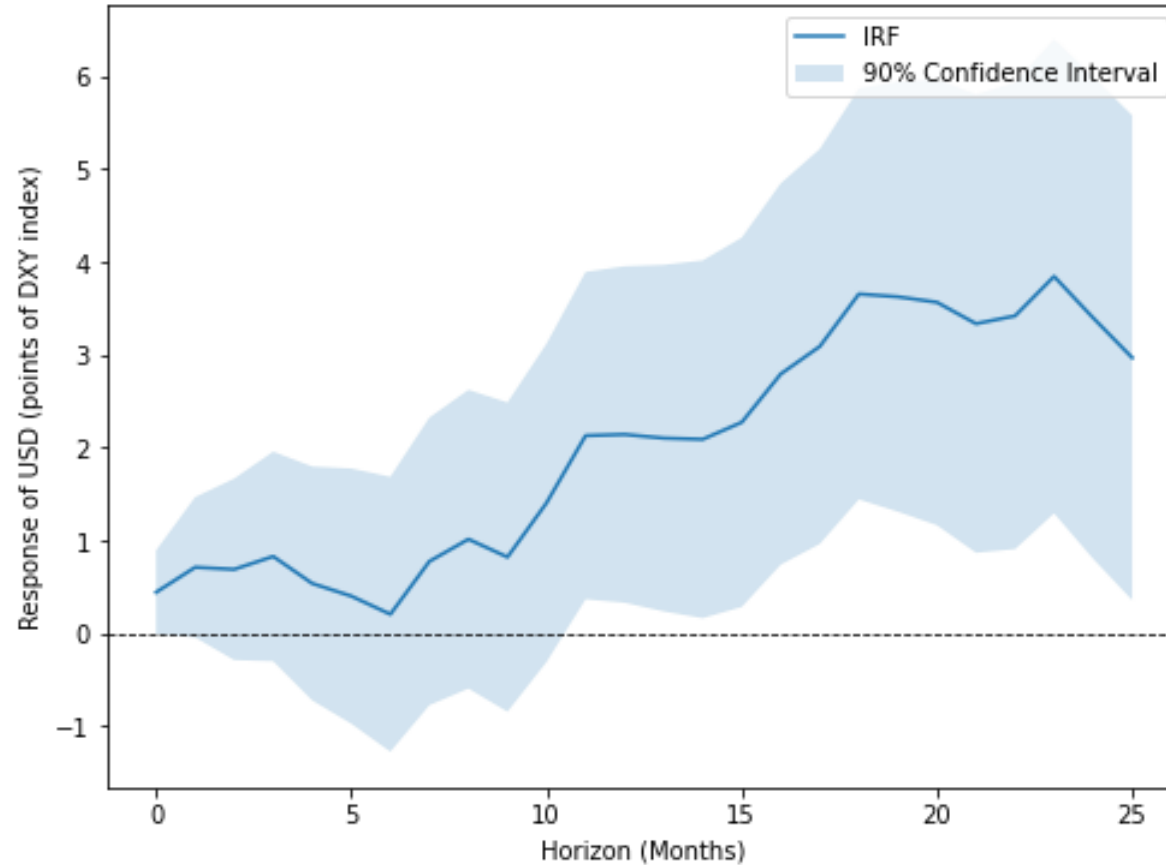


Impact of a 100 Local Interest Rate Shock on Local inflation



Rate differential leads to a strengthening of the dollar against other currencies

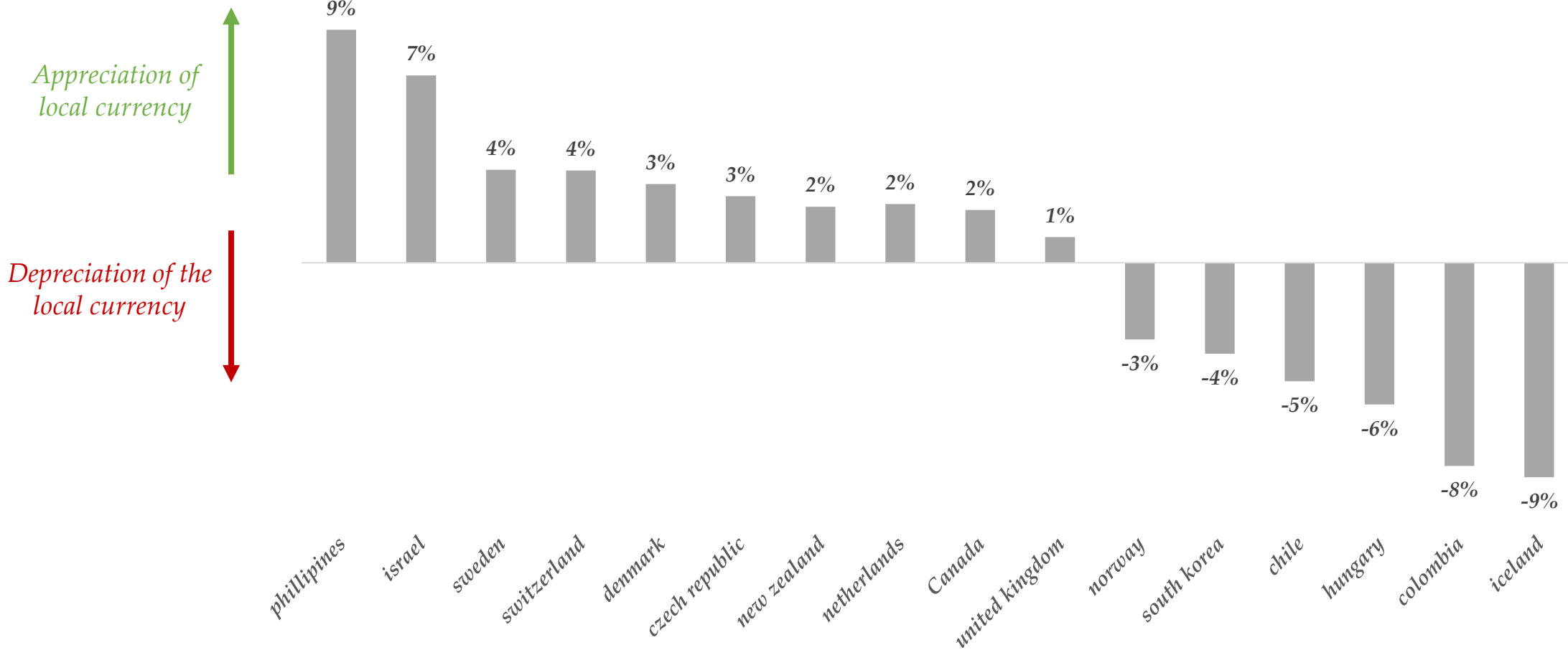
Impact of 100 BP Interest Rate Differential on USD Exchange Rate VS. World Currencies (controlling for US and SOEs Inflations)



$$USD_{\pi_{t+h}} = \alpha_{(h)} + \beta_{(h)}(FED_INTEREST - SOE_INTEREST)_t + \sum_{i=1}^I \gamma_{(i,h)}(USD_{t-i}) + \sum_{i=1}^I \delta_{(i,h)}((FED_INTEREST_t - SOE_INTEREST_t)_{t-i}) + \sum_{i=1}^I \gamma_{(i,h)}(SOE_INTEREST_{t-i}) + u_{(h)}$$

The initial Currencies position can affect propensity to move first

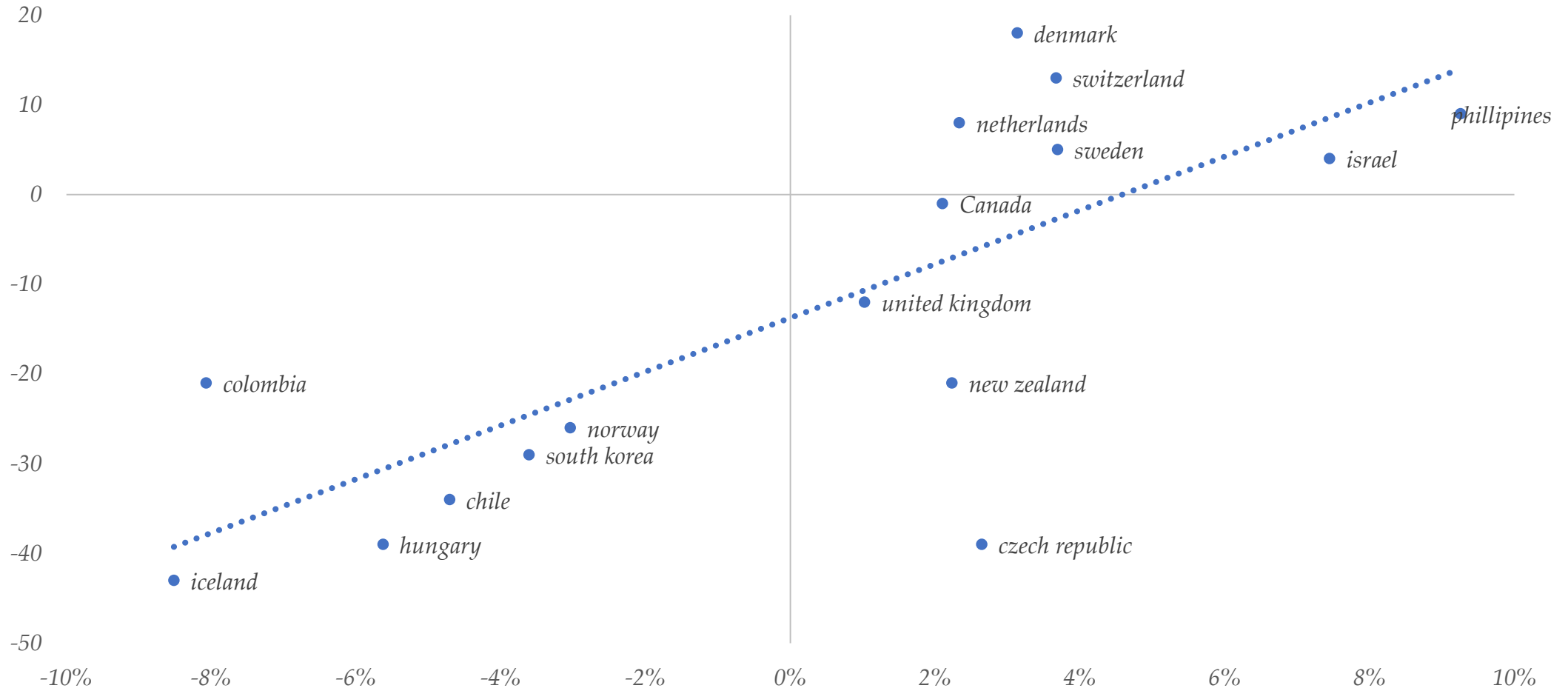
Real effective exchange rate (REER) 2019-2021



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

The date of first interest rate hike in relation to the USA (Y-axis, weeks) and the real appreciation 2019-2021 (X-axis, %)



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 : $r_t = 0.15[R_t^* + \bar{\pi} + 2.26(\pi_t - \bar{\pi}) + 0.137\hat{y}_t^{gap} + \mathbf{0.03\Delta S_t}] + 0.85r_{t-1} + \eta_t^R$*
- *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.*

* Taylor, John, B. 2001. "The Role of the Exchange Rate in Monetary-Policy Rules." *American Economic Review*, 91 (2): 263-267.

** Lubik, Thomas A. & Schorfheide, Frank, 2007. "Do central banks respond to exchange rate movements? A structural investigation," *Journal of Monetary Economics*, Elsevier, vol. 54(4), pages 1069-1087, May.

Thank you