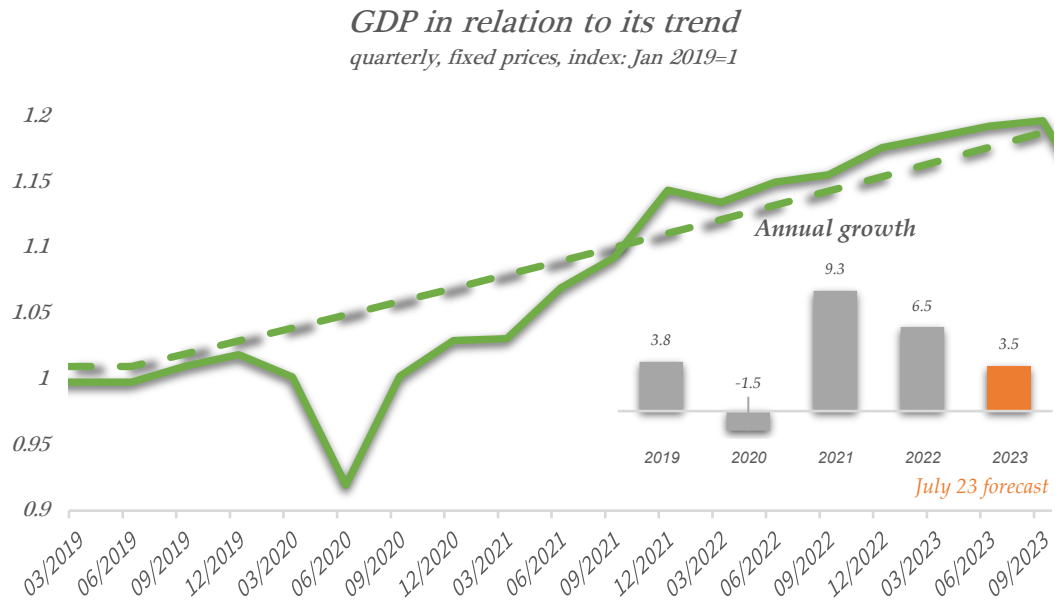
The Israeli Economy

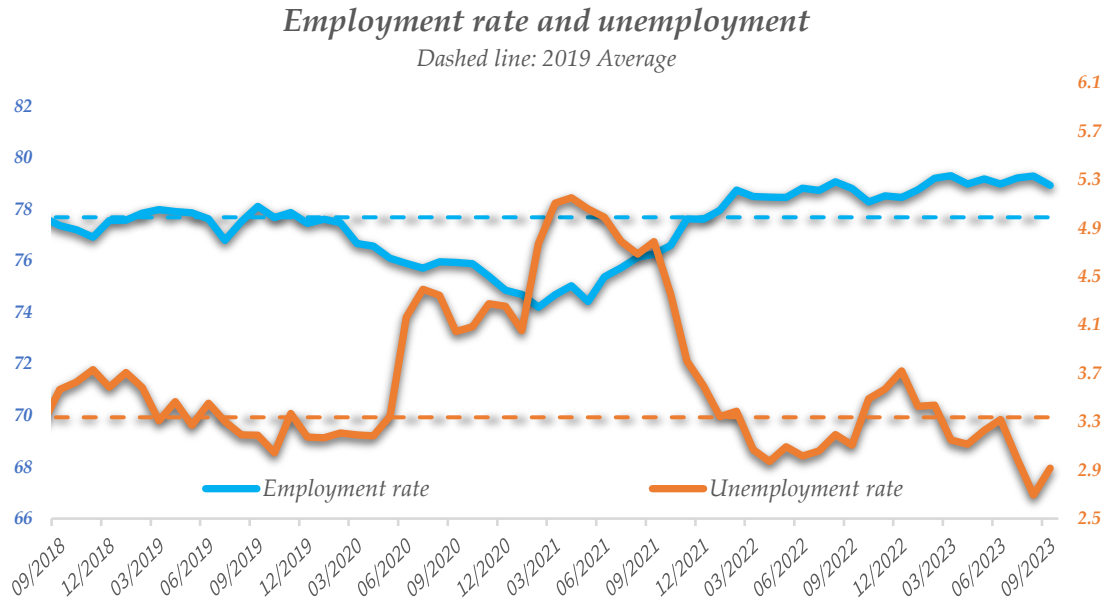
Hoover Institution 2024 Monetary Policy Conference

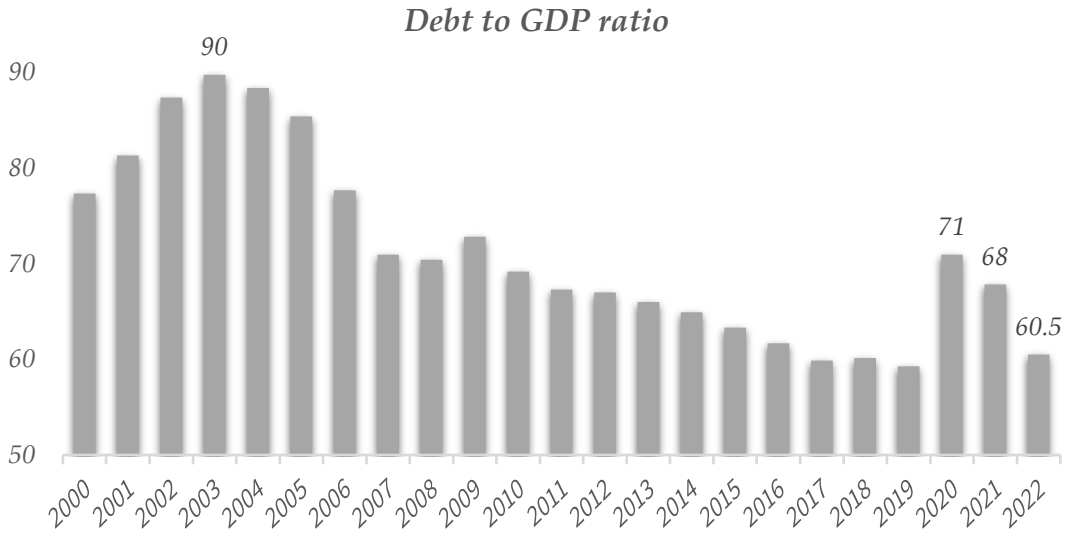
Prof. Amir Yaron

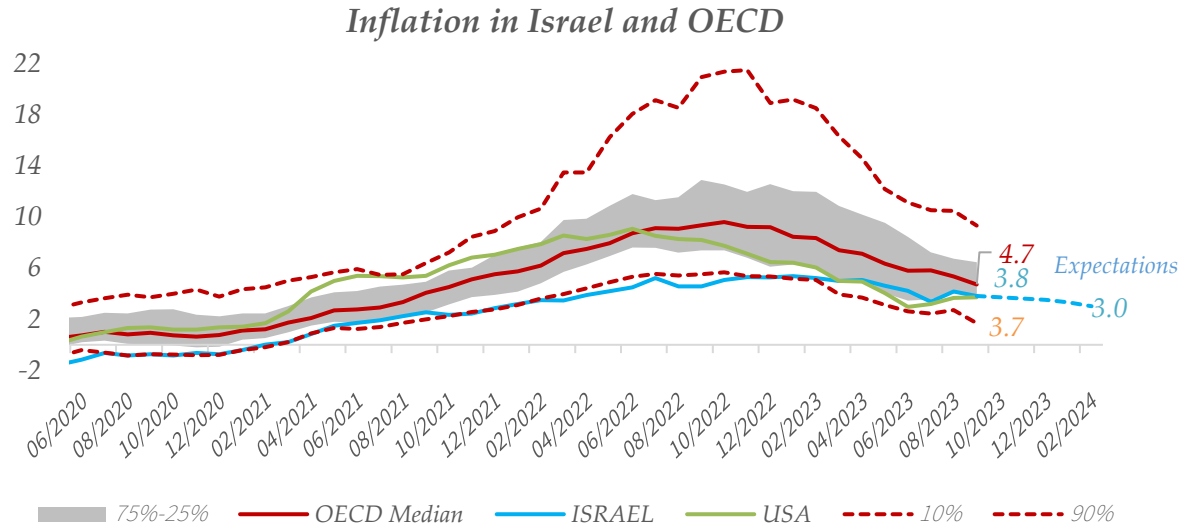
Governor, Bank of Israel

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



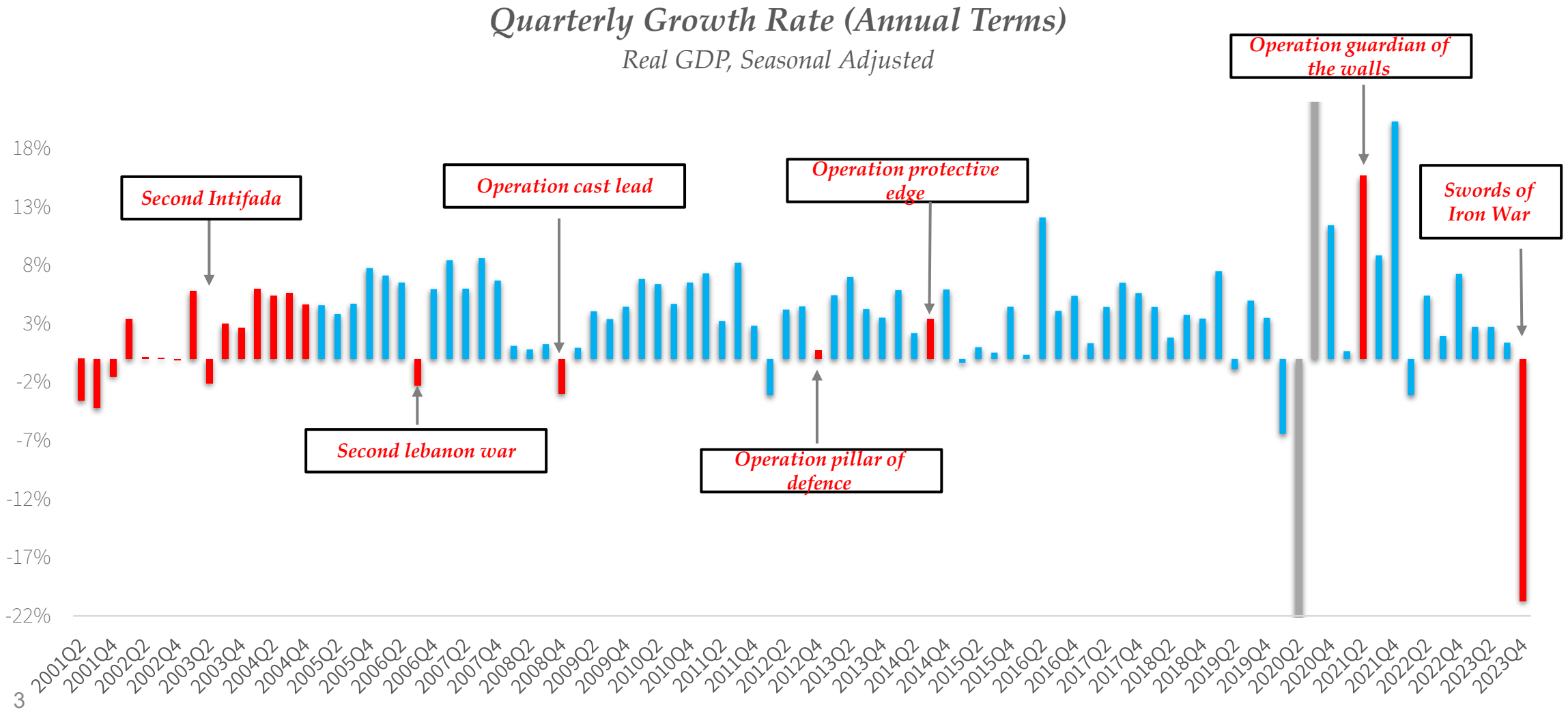






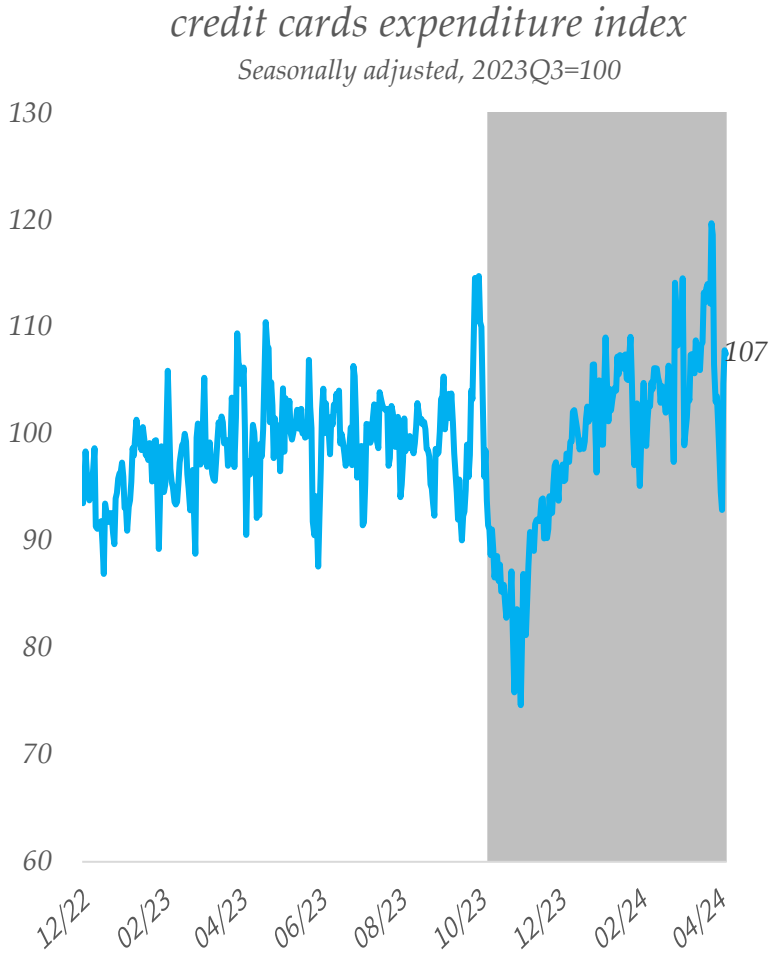
Source: BOI and IL CBS

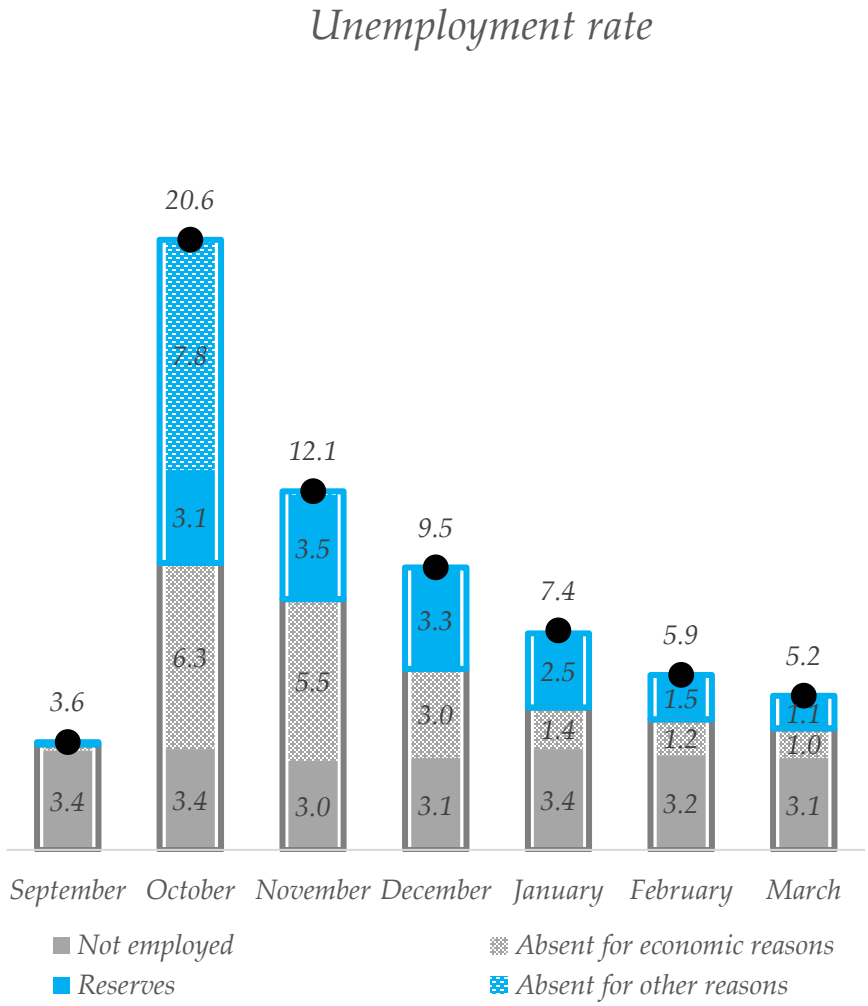
The war led to a 21% decline in GDP (annual terms).
In the past, the Israeli economy recovered quickly after geopolitical conflicts

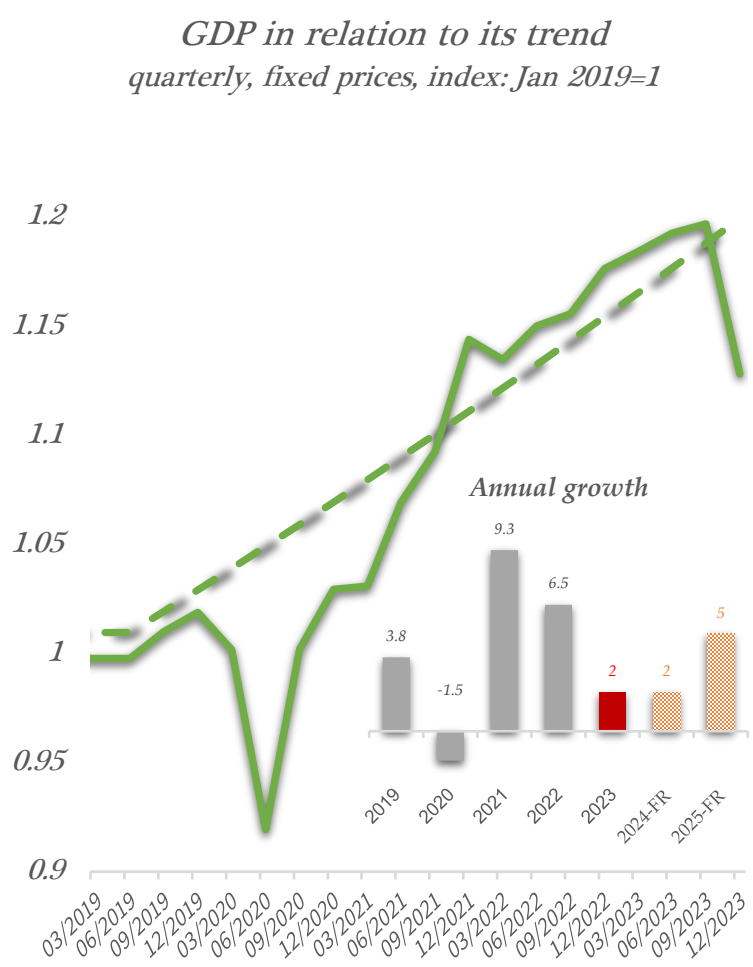


Sources: Boi's Analysis of CBS data

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



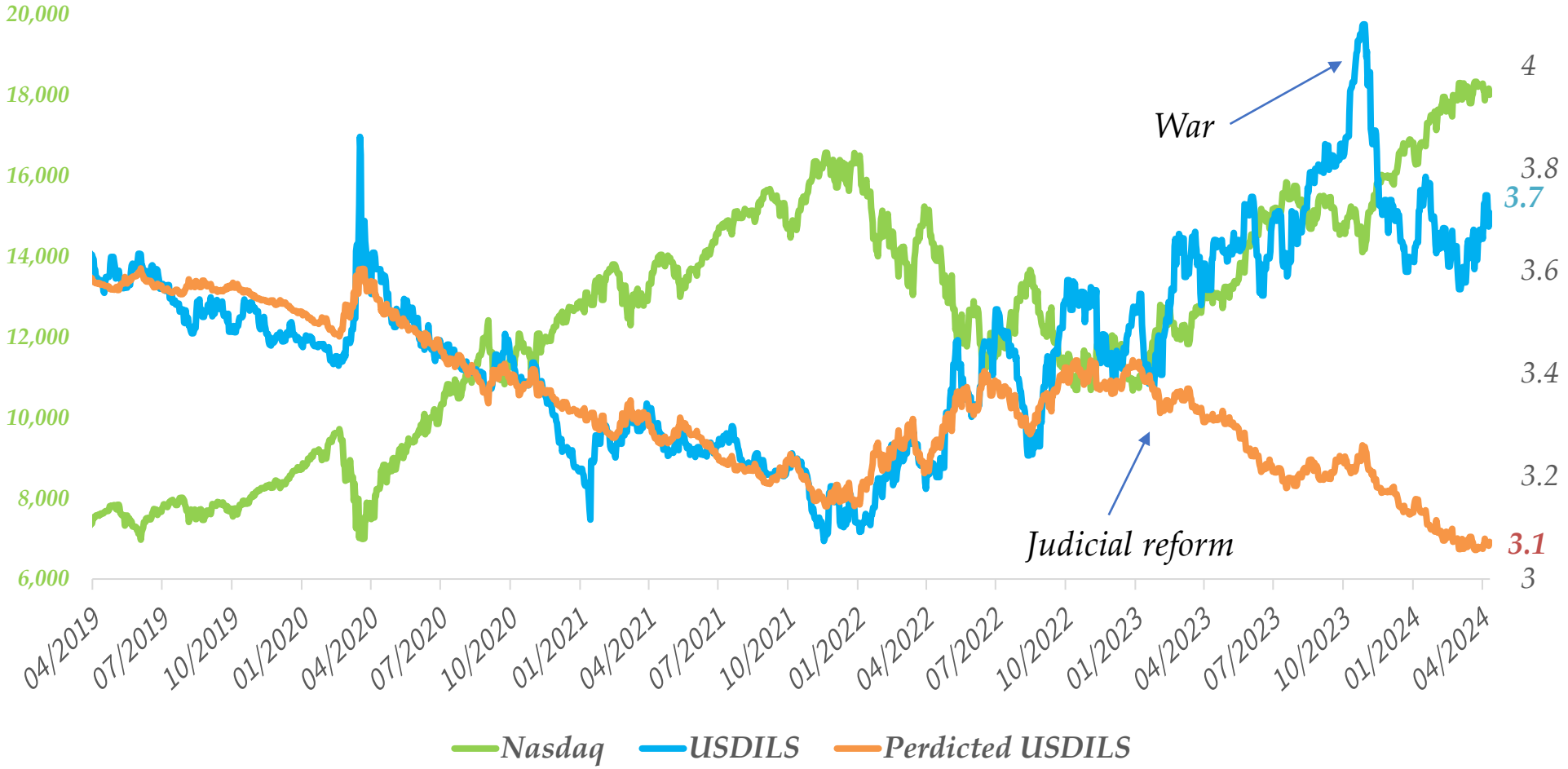




Source: BOI and IL CBS

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



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

Source: BOI and BLOOMBERG data

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*

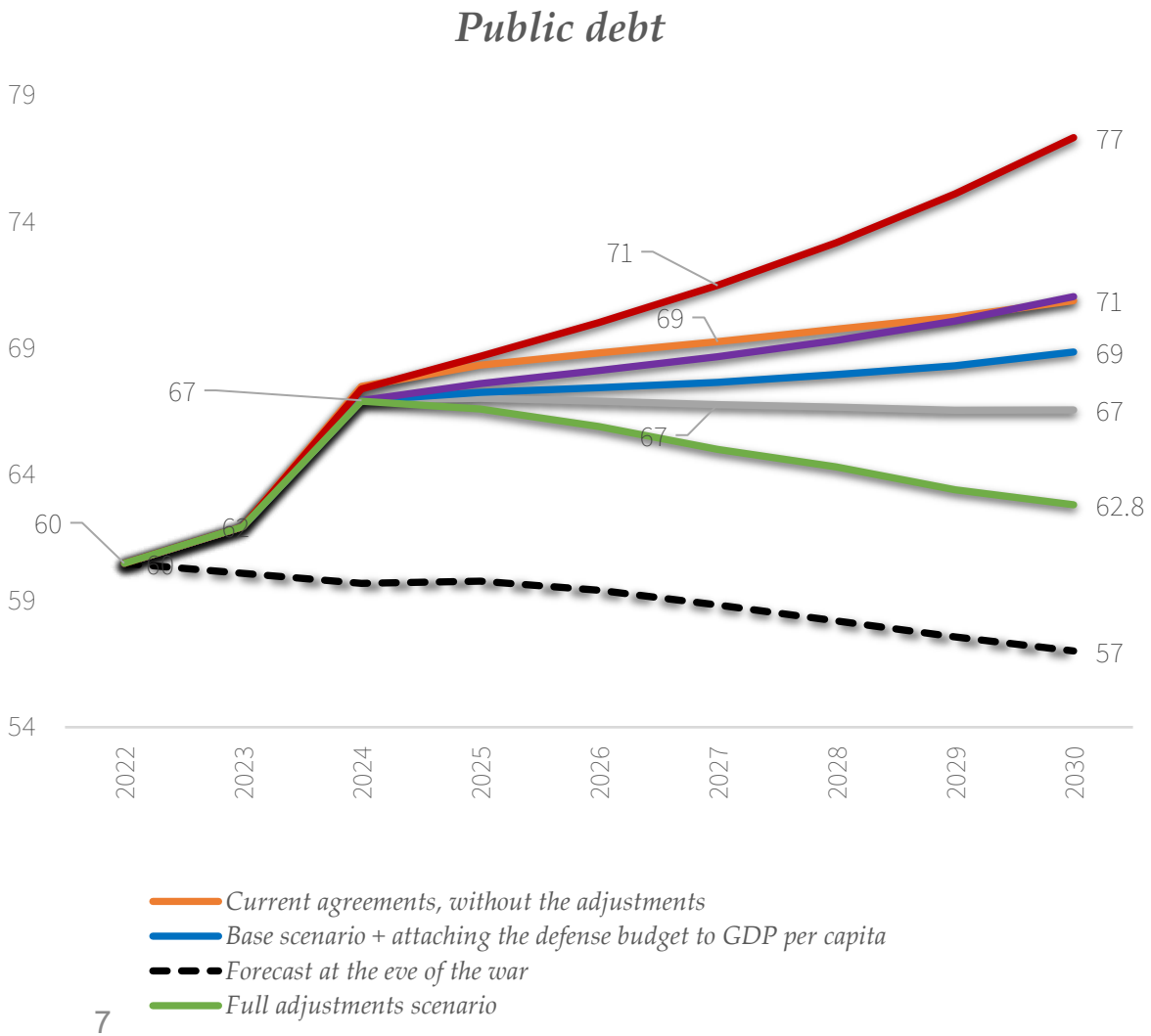
Banking, credit and Payments

- ✓ *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



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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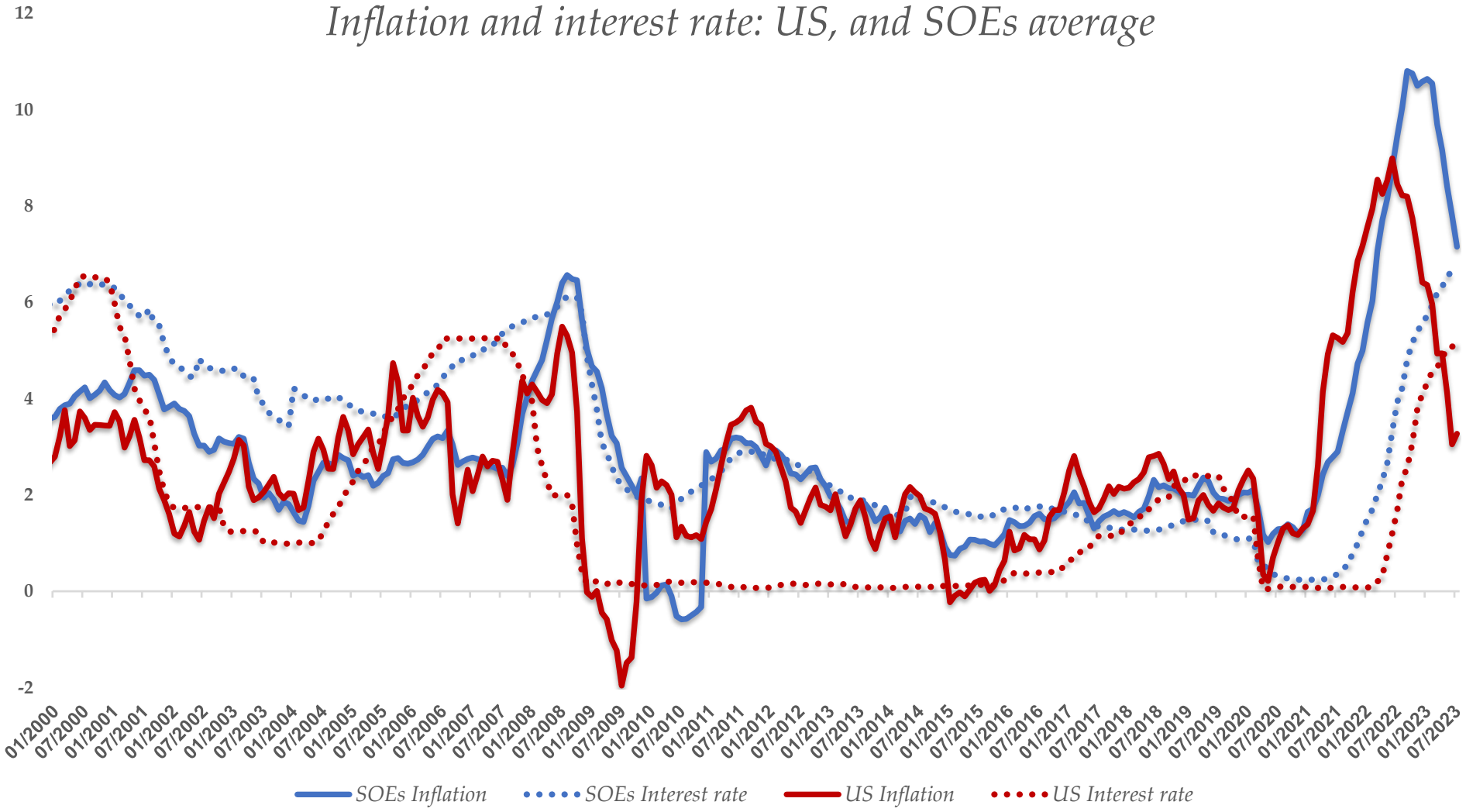
Roadmap

- *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).*

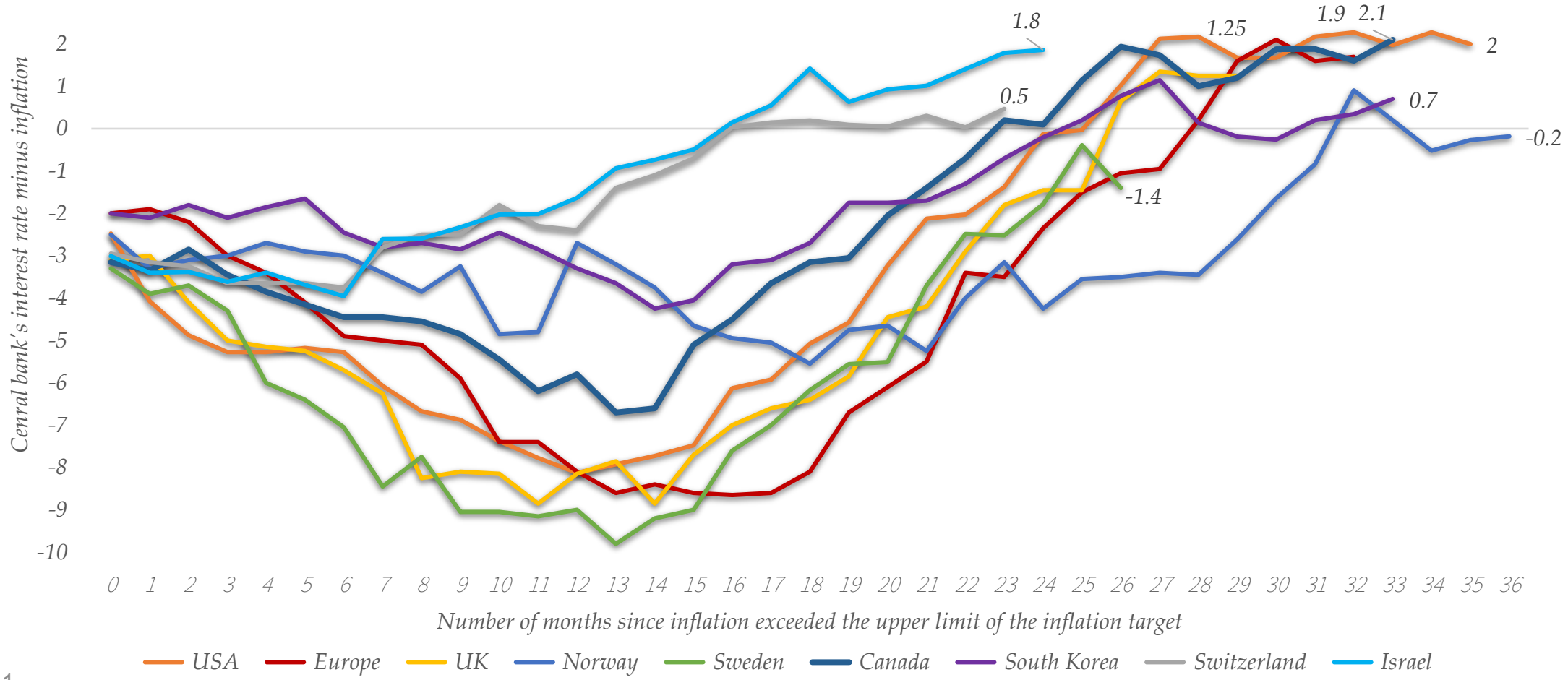
Business cycles are generally shared between large and small economies



SOEs: Chile, Colombia, Denmark, Hungary, Iceland, Netherlands, New Zealand, Norway, Philippines, Sweden, Switzerland, Czech Republic, Israel

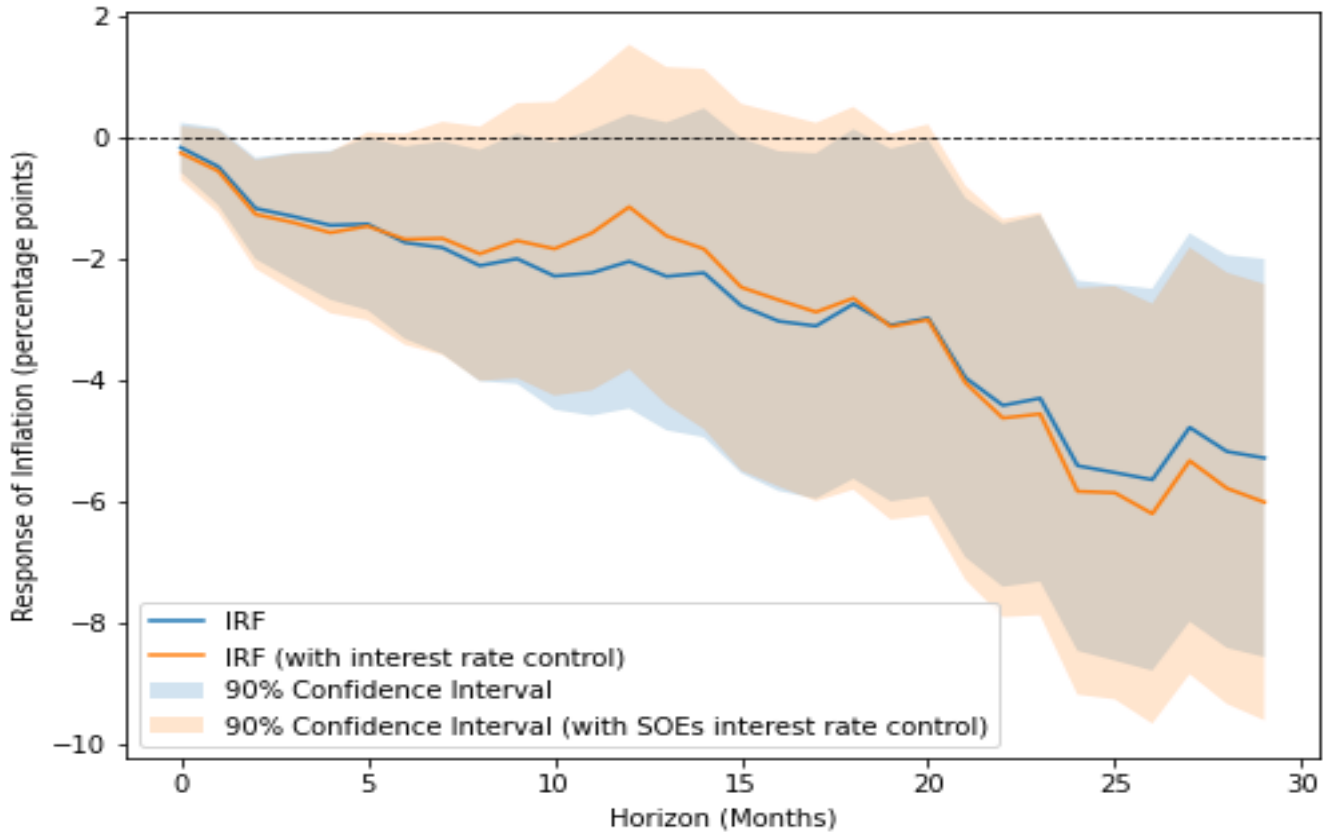
Monetary policy reaction functions vary across economies

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



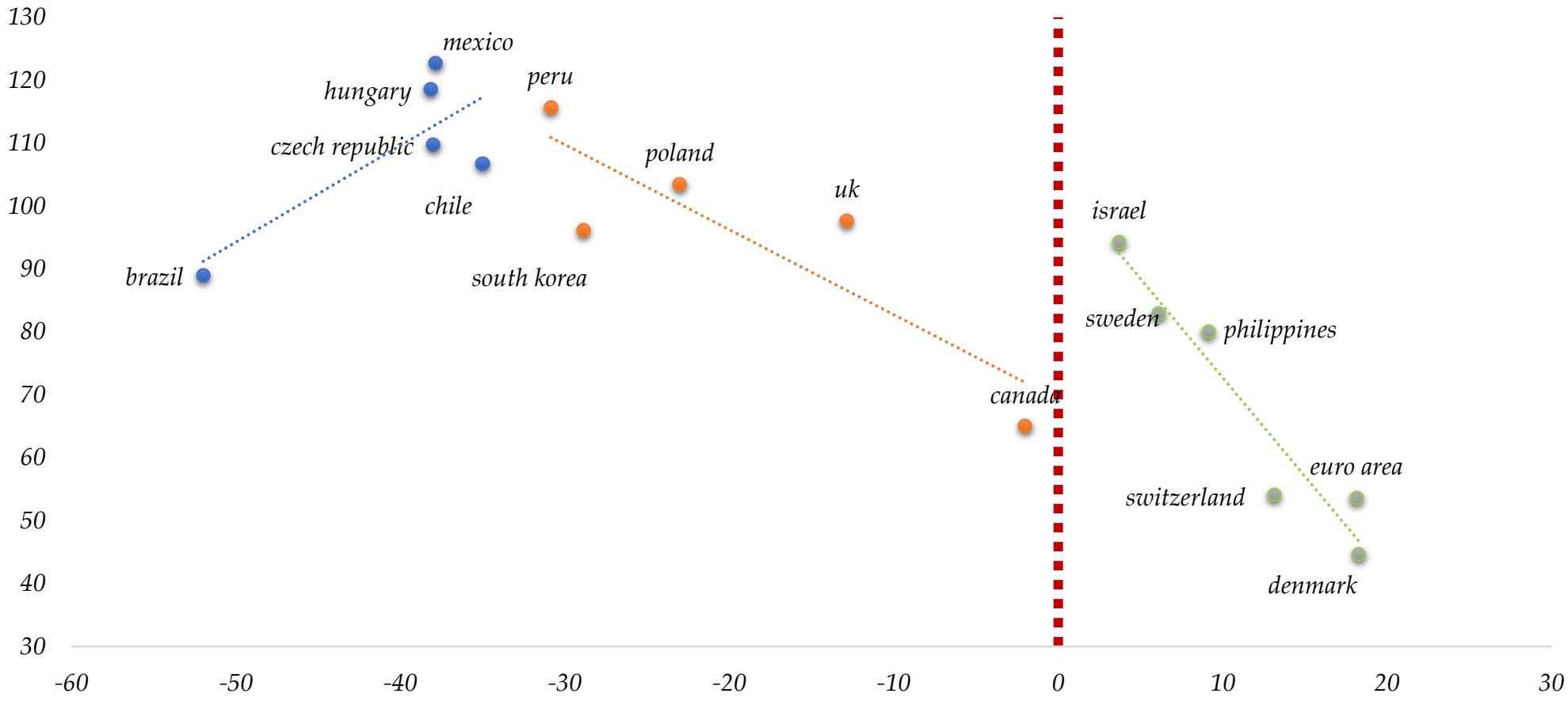
Standard Local Projection (Jord'a 2005) - $SOE\_\pi_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} MPS_t + \sum_{i=1}^{I} \gamma_{(i,h)} (\pi_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (MPS_{t-i}) + \sum_{i=1}^{I} \gamma_{(i,h)} (SOE\_INTEREST_{t-i}) + u_{(h)}$

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)



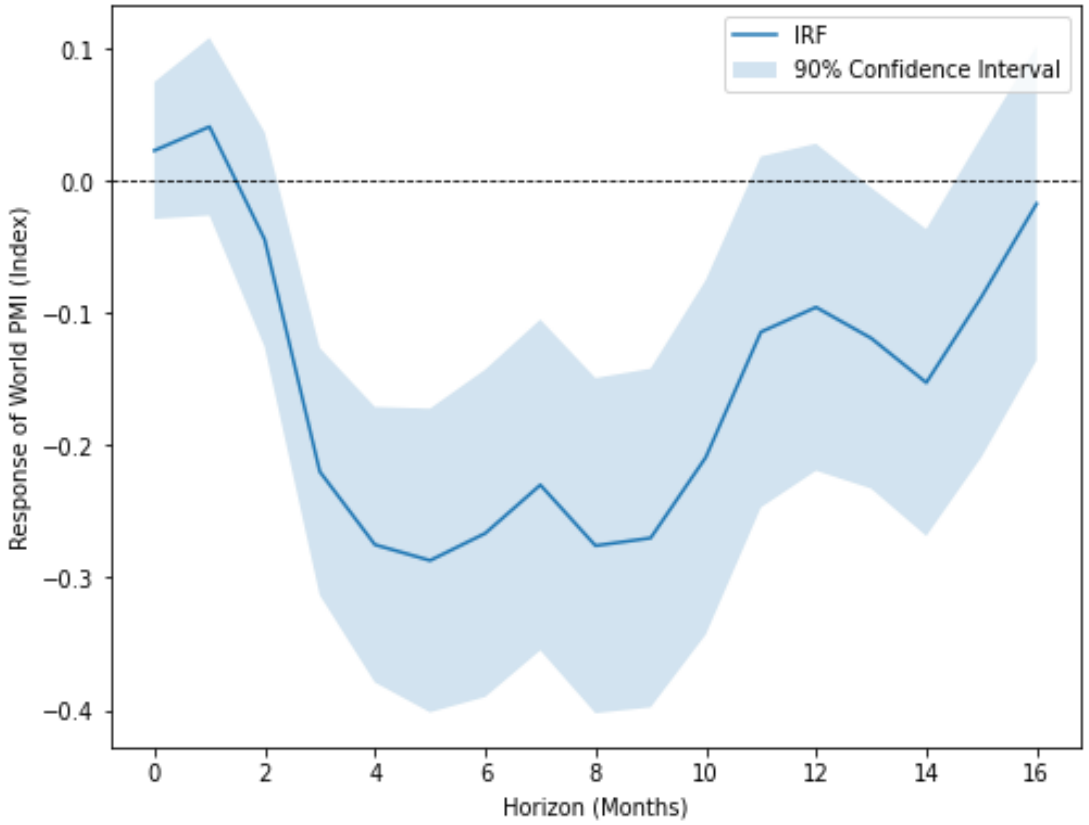
QUESTIONS:

1. *WHAT ARE THE CHANNELS FOR THE FED "HEAD-WIND"?*

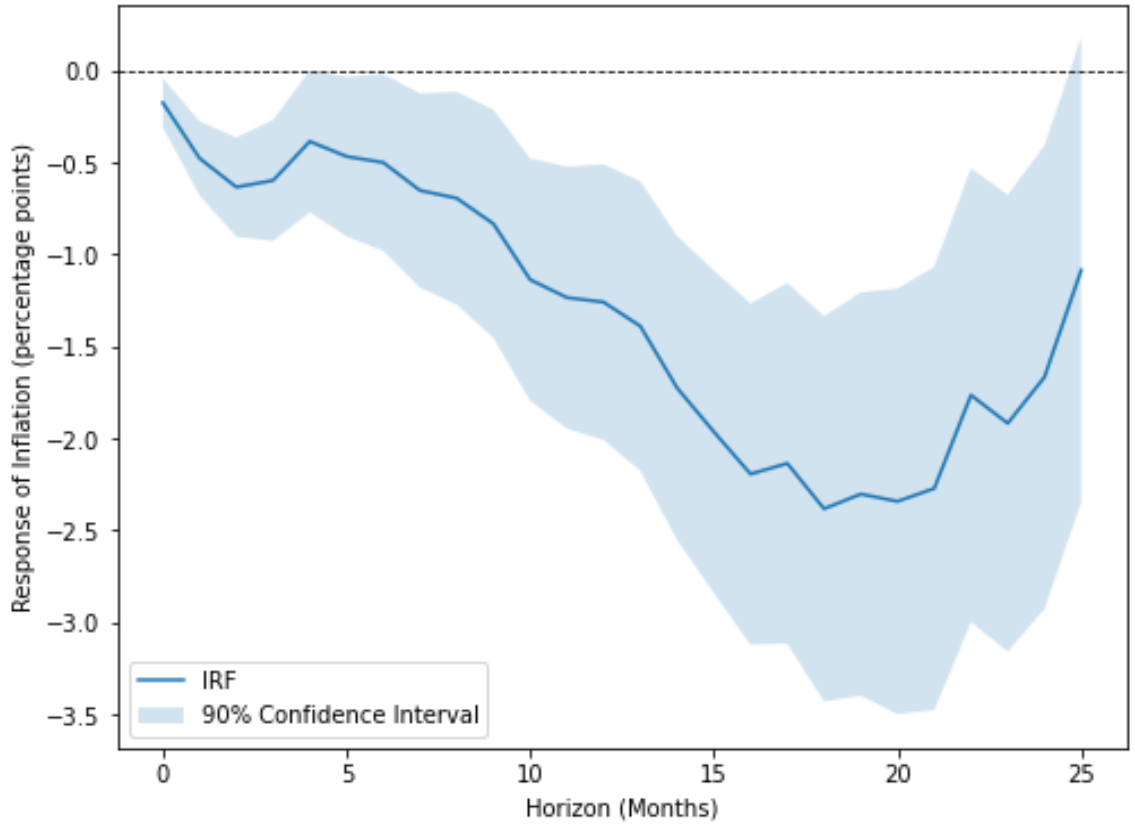
2. *WHY CENTARL BANKS NOT ALWAYS USE IT?*

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

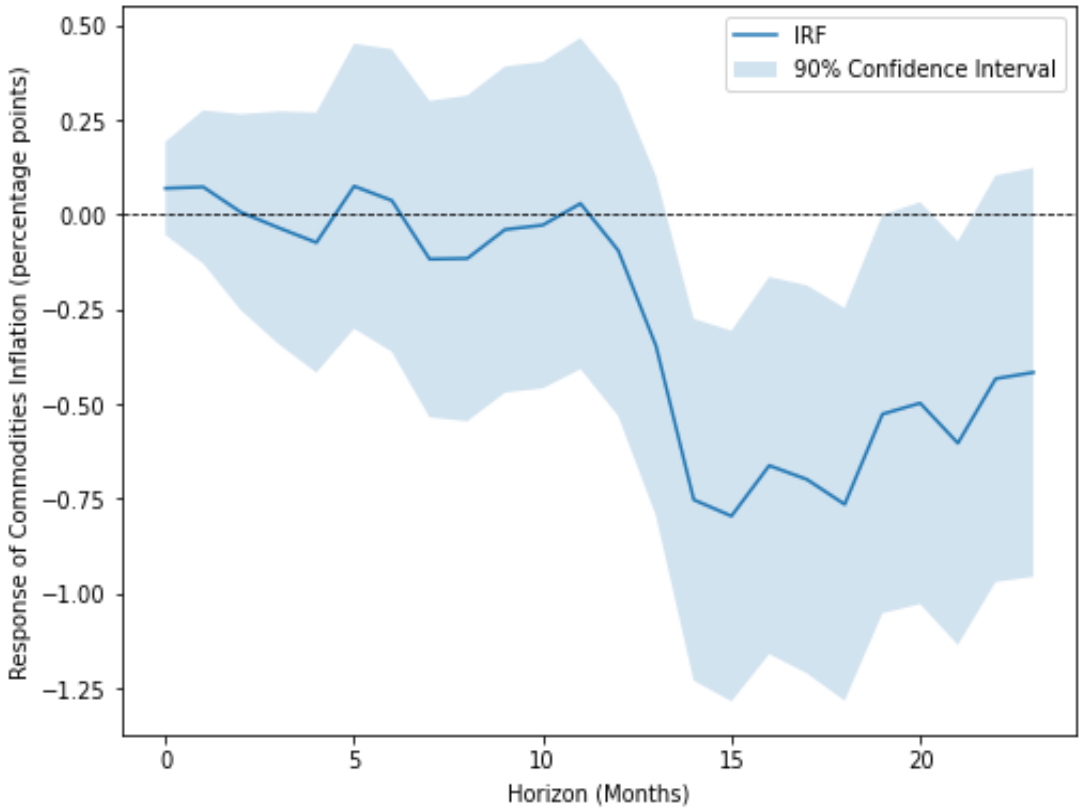


$$PMI_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} MPS_t + \sum_{i=1}^{I} \gamma_{(i,h)} (MPS_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (PMI_{t-i}) + u_{(h)}$$

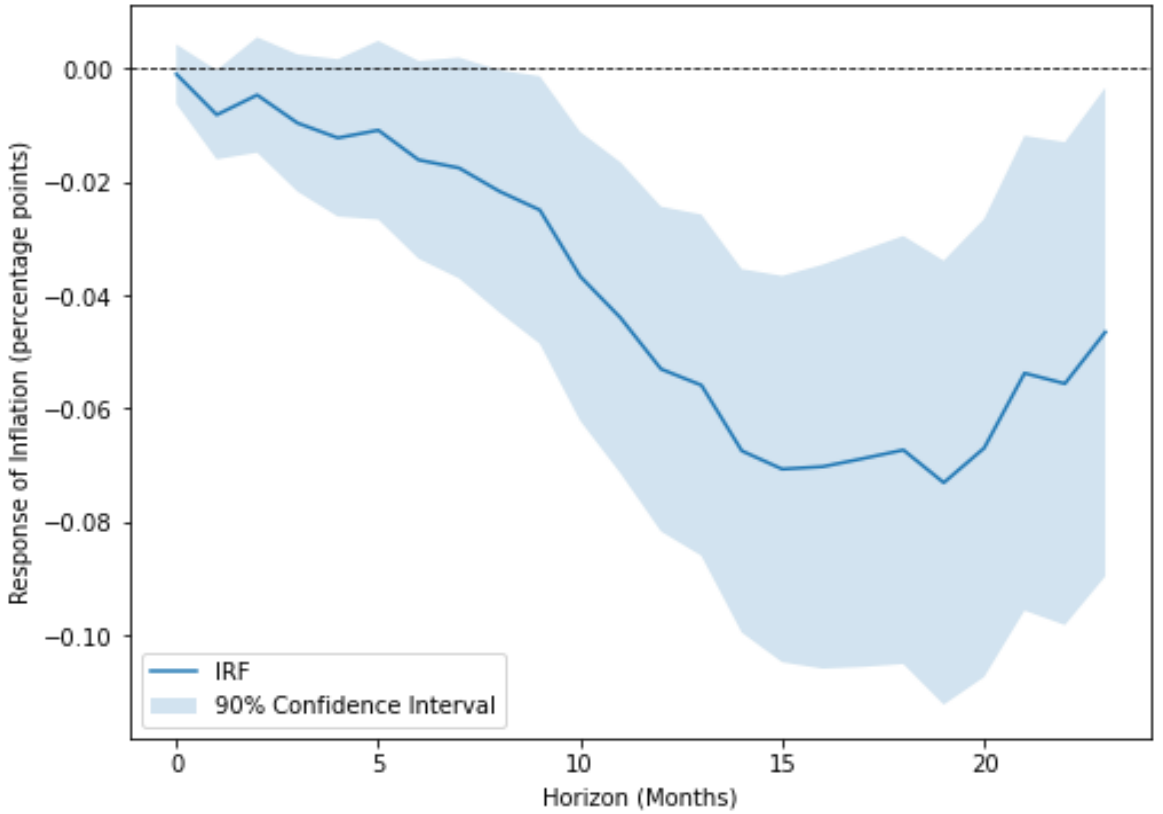
$$\pi\_SOE_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} PMI_t + \sum_{i=1}^{I} \gamma_{(i,h)} (\pi\_SOE_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (PMI_{t-i}) + u_{(h)}$$

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 Inflaion

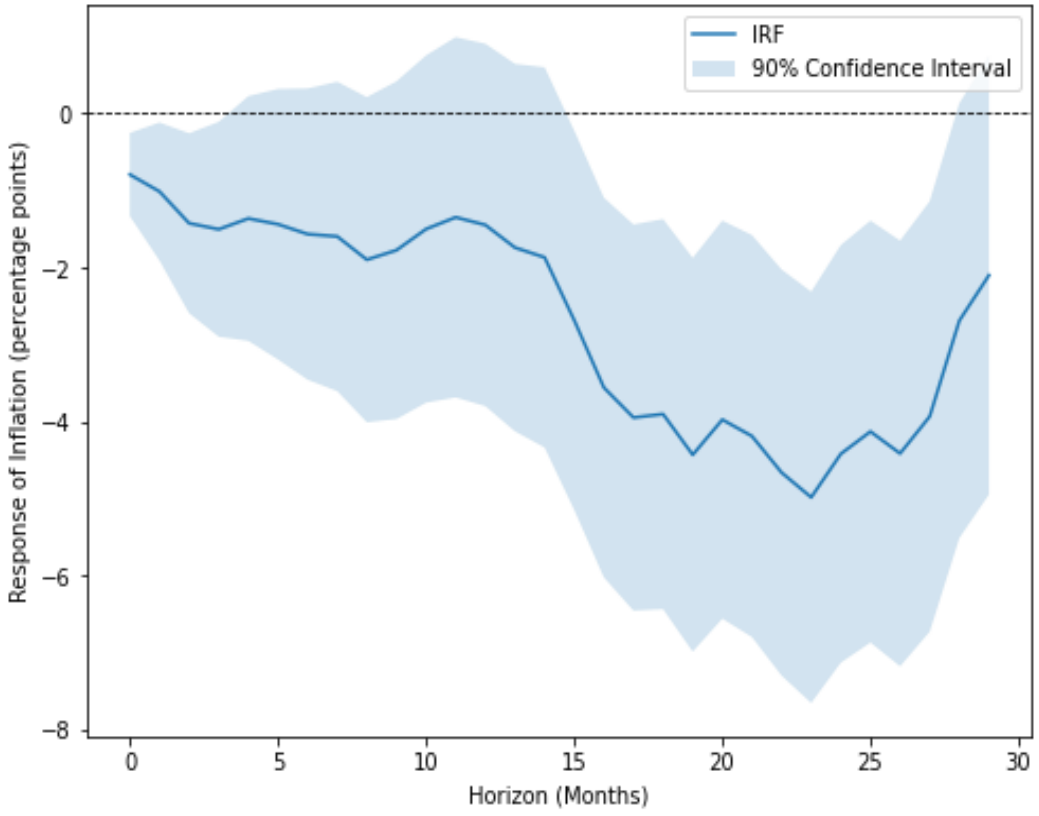


$$P\_COM_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} MPS_t + \sum_{i=1}^{I} \gamma_{(i,h)} (P\_COM_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (MPS_{t-i}) + u_{(h)}$$

$$\pi\_SOE_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} P\_COM_t + \sum_{i=1}^{I} \gamma_{(i,h)} (\pi\_SOE_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (P\_COM_{t-i}) + u_{(h)}$$

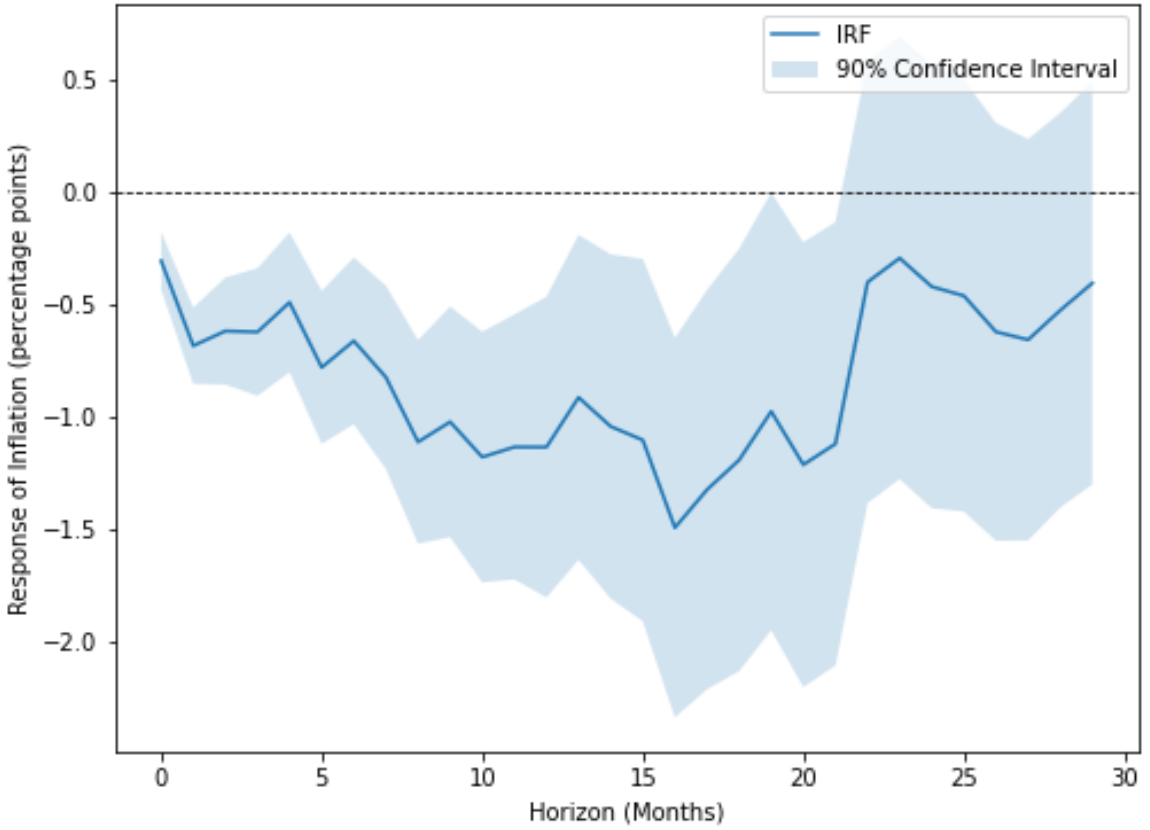
3. FED's rate reduce US inflation, leading to lower imported inflation in SOEs

Impact of 100 BP FED Rate Shock on <u>US Inflation</u>



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

Impact of 1% Decrease in <u>US Inflation</u> on <u>SOEs Inflation</u>
(controlling for commodity prices and USD exchange rate)

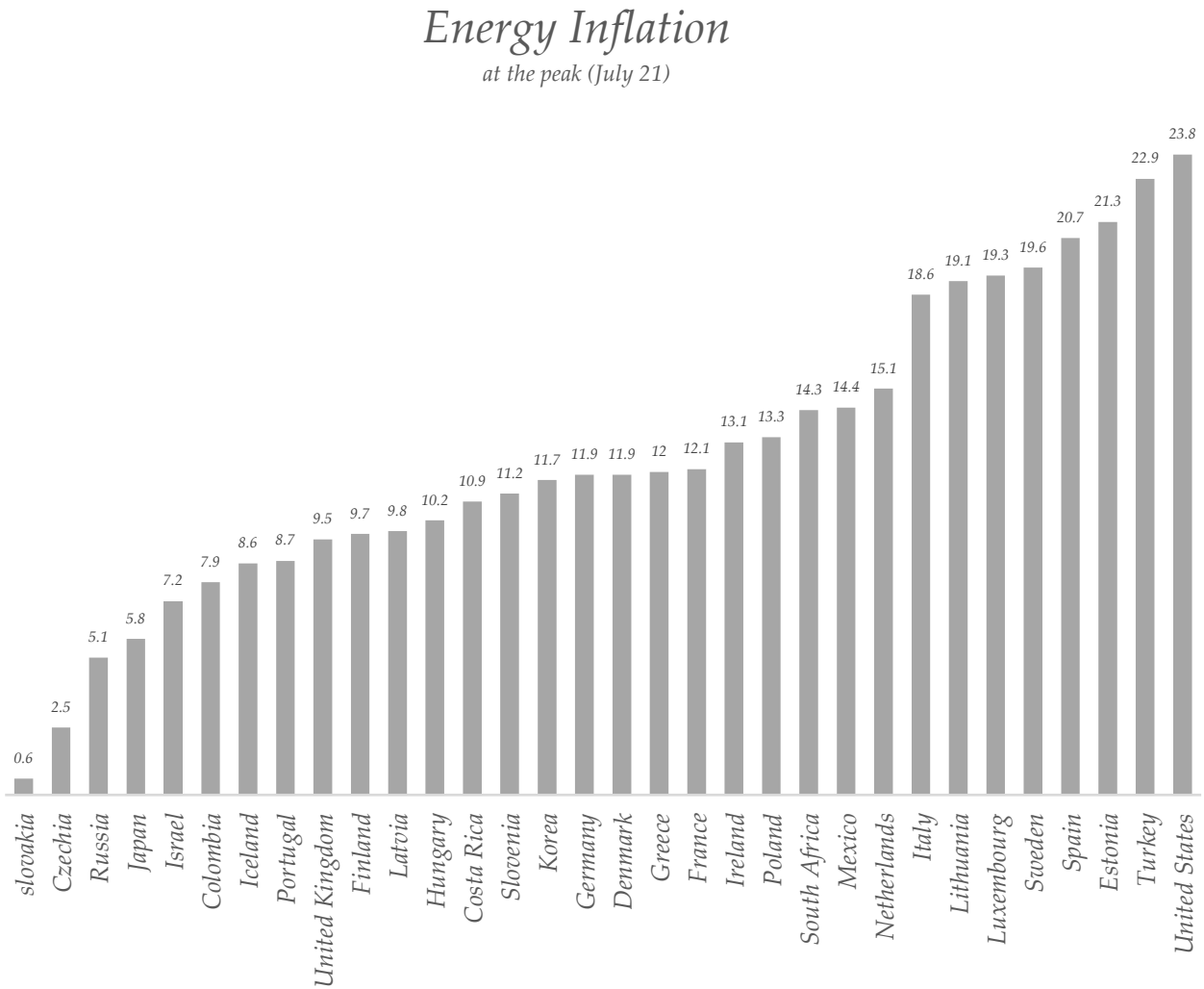


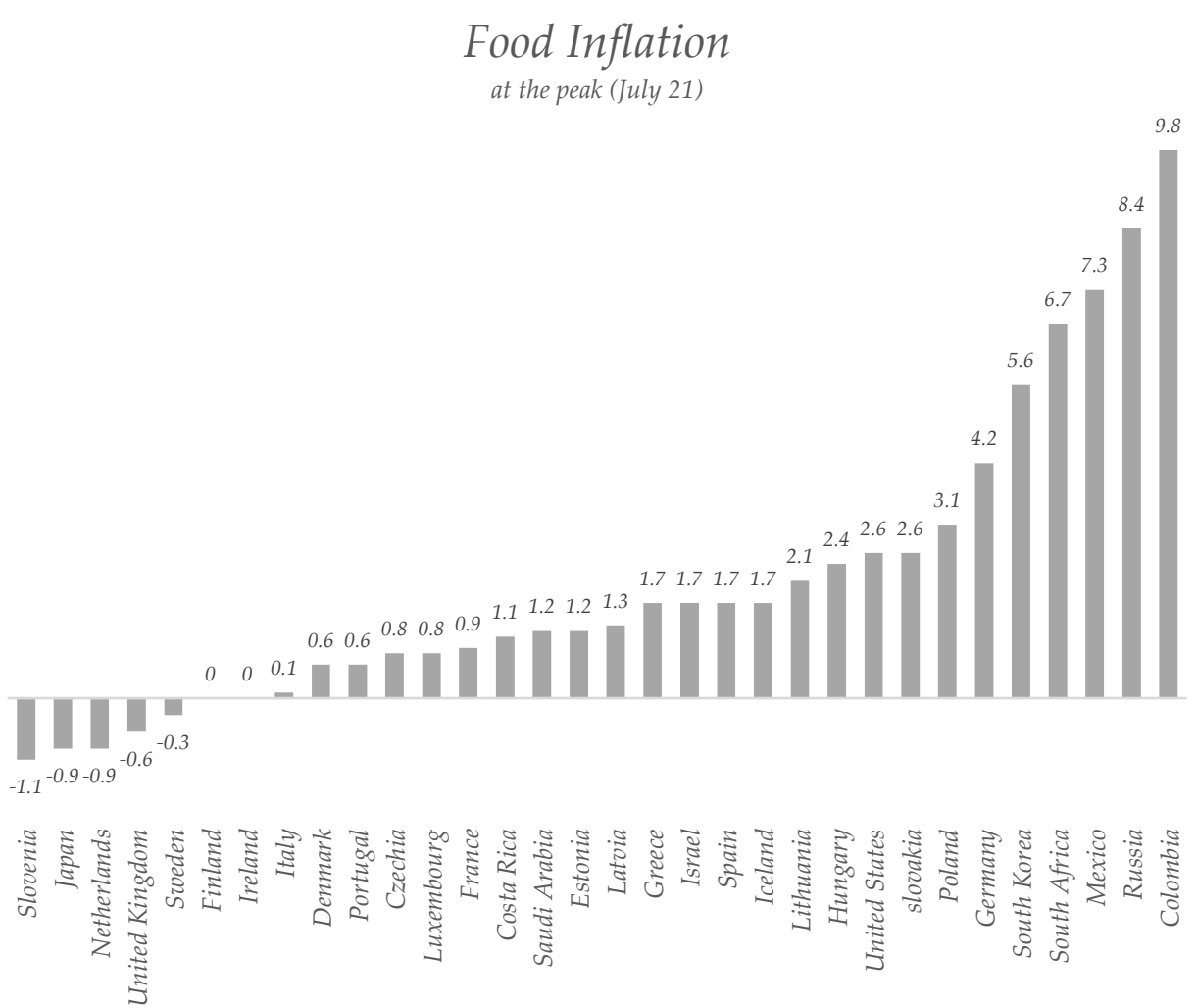
$$\pi\_SOE_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)} US\_\pi_t + \sum_{i=1}^{I} \gamma_{(i,h)} (US\_\pi_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)} (\pi\_SOE_{t-i}) \sum_{i=1}^{I} \delta_{(i,h)} (USD_{t-i}) \sum_{i=1}^{I} \delta_{(i,h)} (P\_COM_{t-i}) + u_{(h)}$$

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

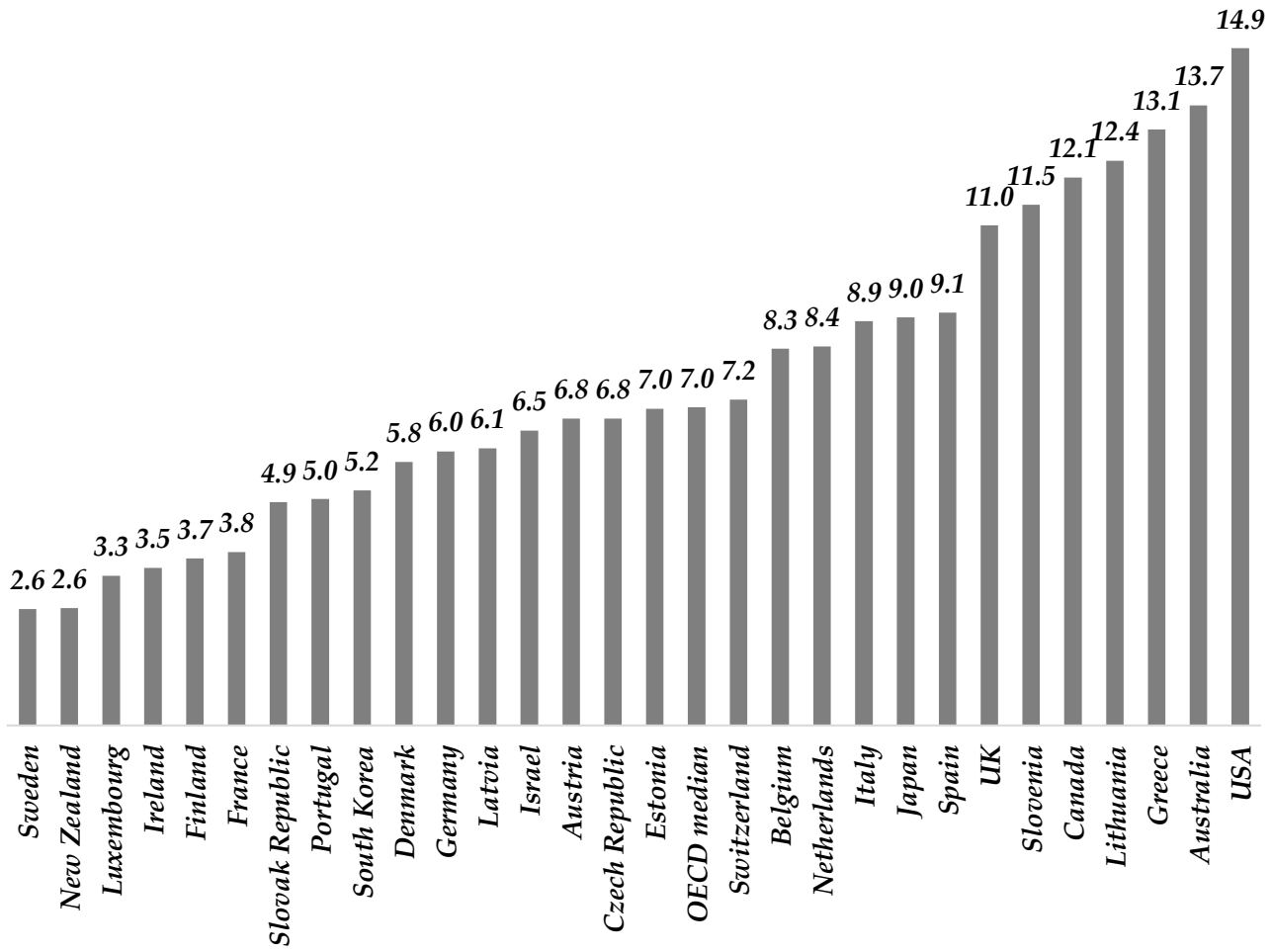




Source: OECD

Variation in the degree of fiscal expansion

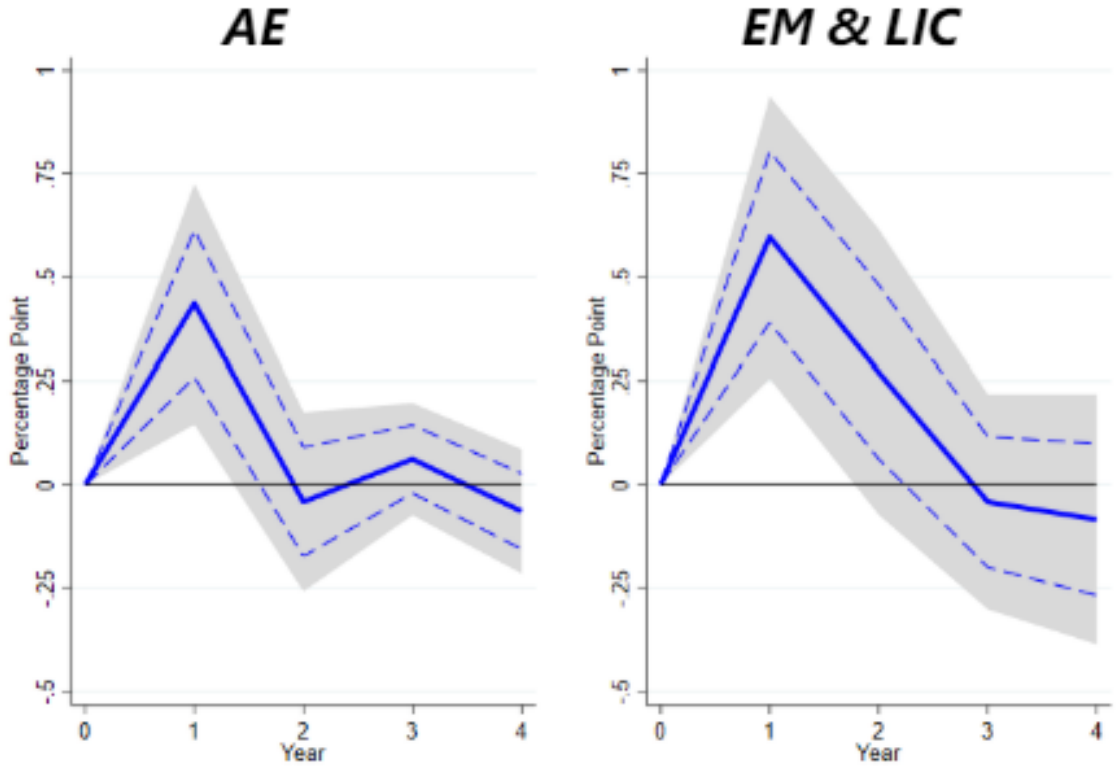
Fiscal expansion (% GDP) in 2020-2021



Deviation from the share of GDP in 2019

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

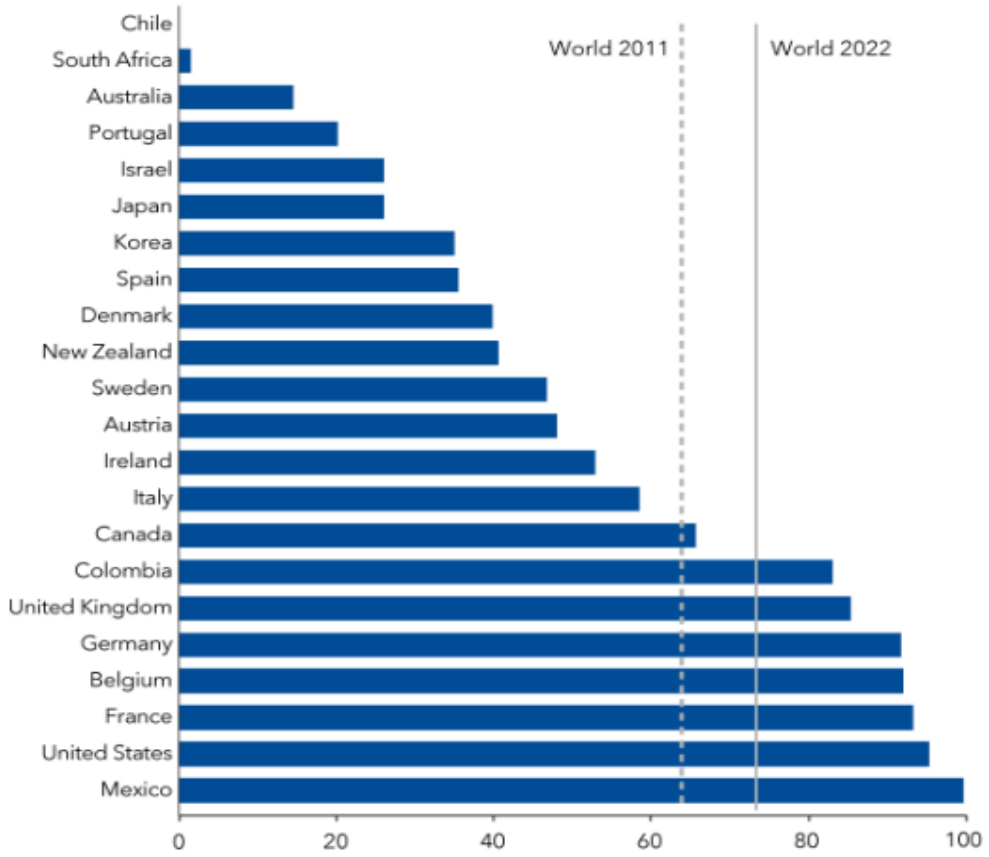
1970 - 2020



S Cevik , F Miryugin "It's Never Different: Fiscal Policy Shocks and Inflation" IMF WP2023

Higher FRM require higher rates to reduce inflation effectively

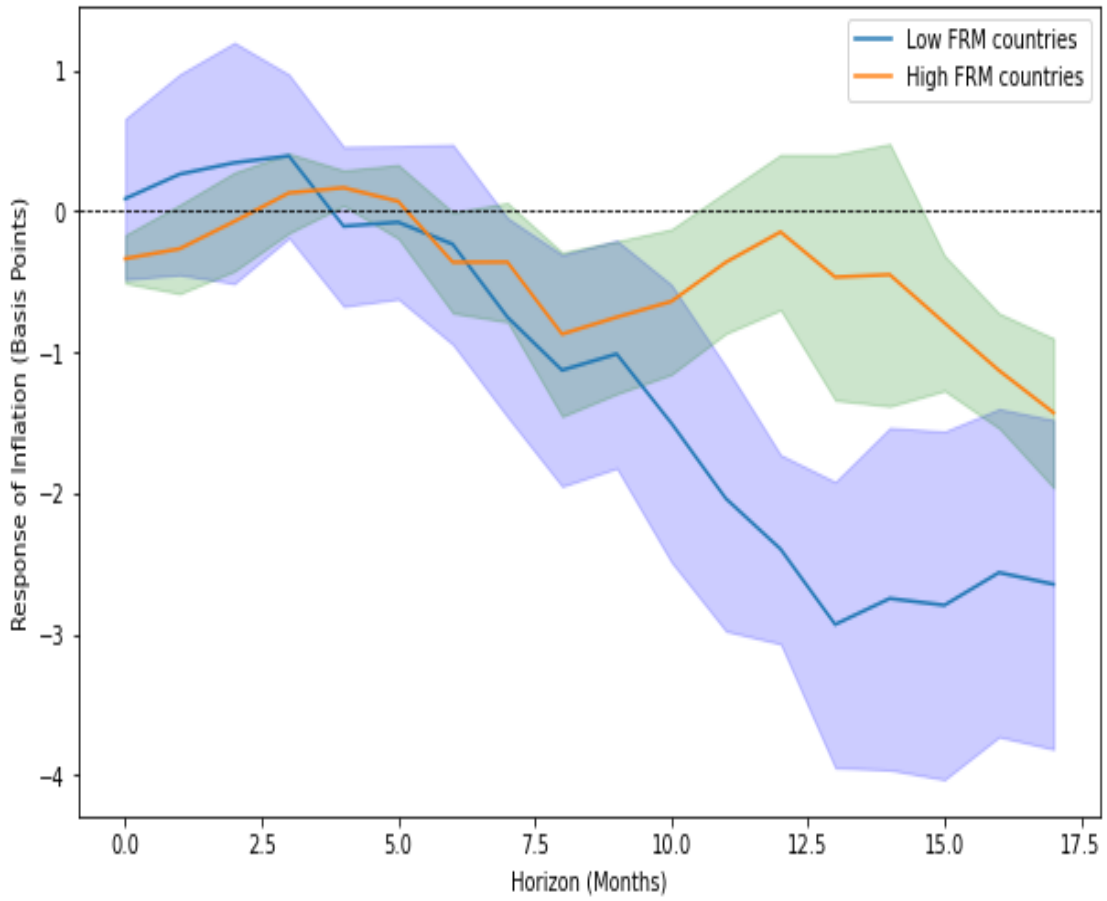
Country-level share of fixed rate mortgages
(percent of country-level stock of mortgages, 2022:Q4)



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).

IMF

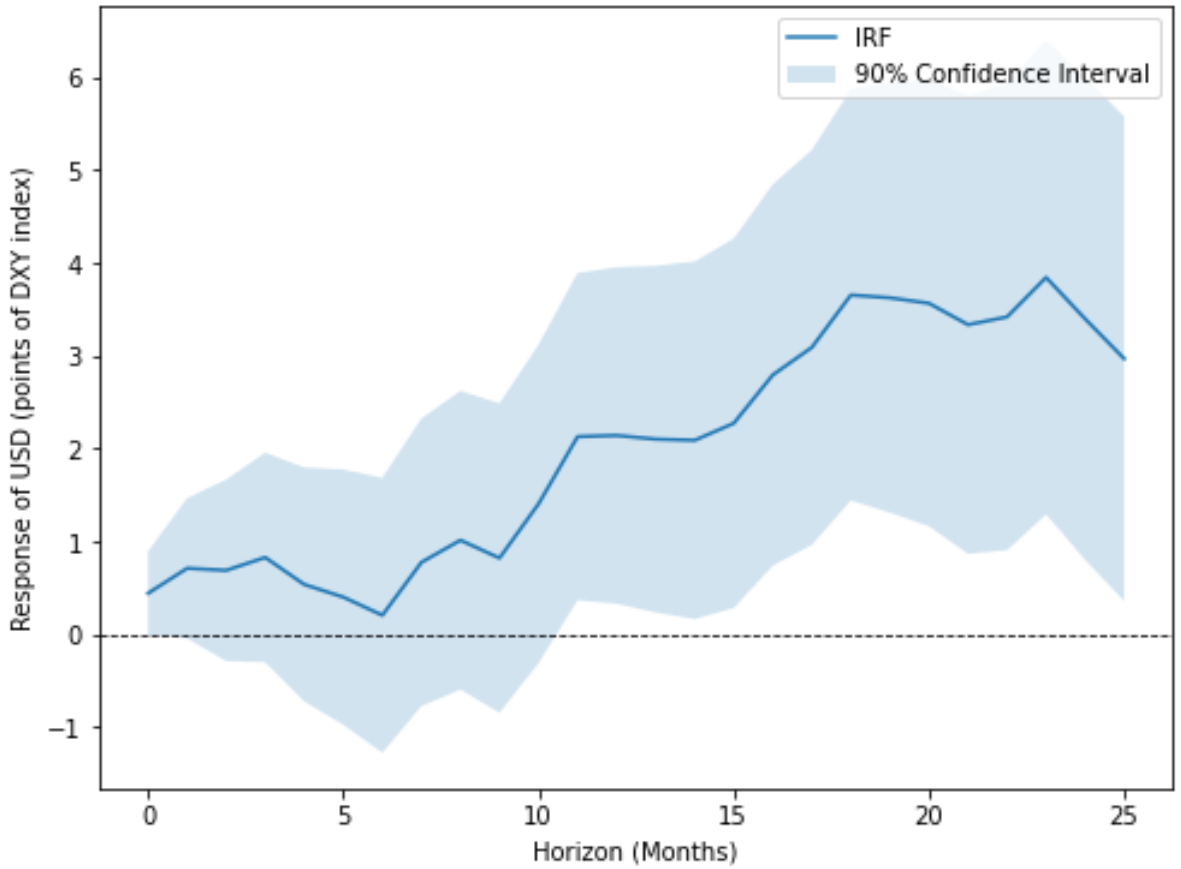
Impact of a 100 Local Interest Rate Shock on Local inflation



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)

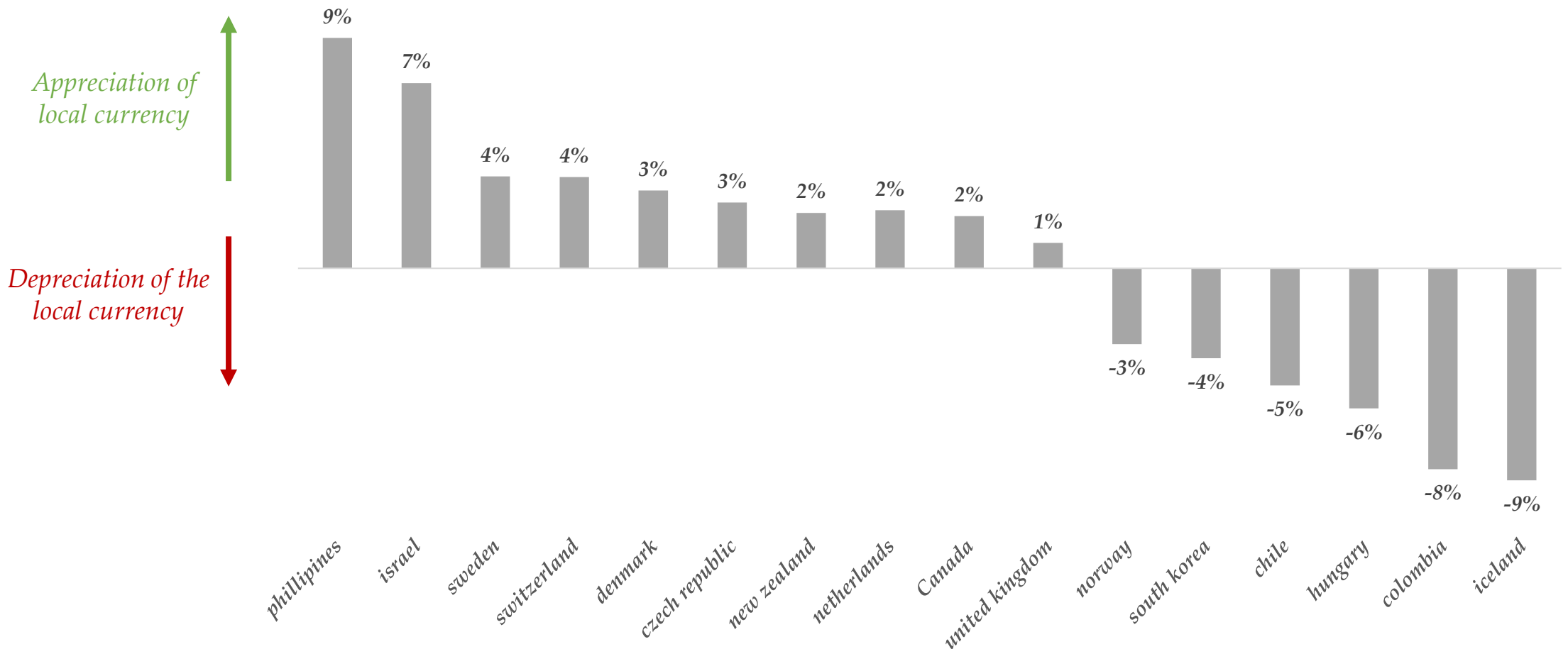


$$USD\_\pi_{t+h} = \alpha_{(h)} + \boldsymbol{\beta}_{(h)}(FED\_INTEREST - SOE\_INTEREST)\_t + \sum_{i=1}^{I} \gamma_{(i,h)}\,(USD_{t-i}) + \sum_{i=1}^{I} \delta_{(i,h)}\,((FED\_INTEREST_t - SOE\_INTEREST_t)_{t-i}) + \sum_{i=1}^{I} \gamma_{(i,h)}(SOE\_INTEREST_{t-i}) + u_{(h)}$$

The initial Currencies position can affect propensity to move first

Real effective exchange rate (REER)

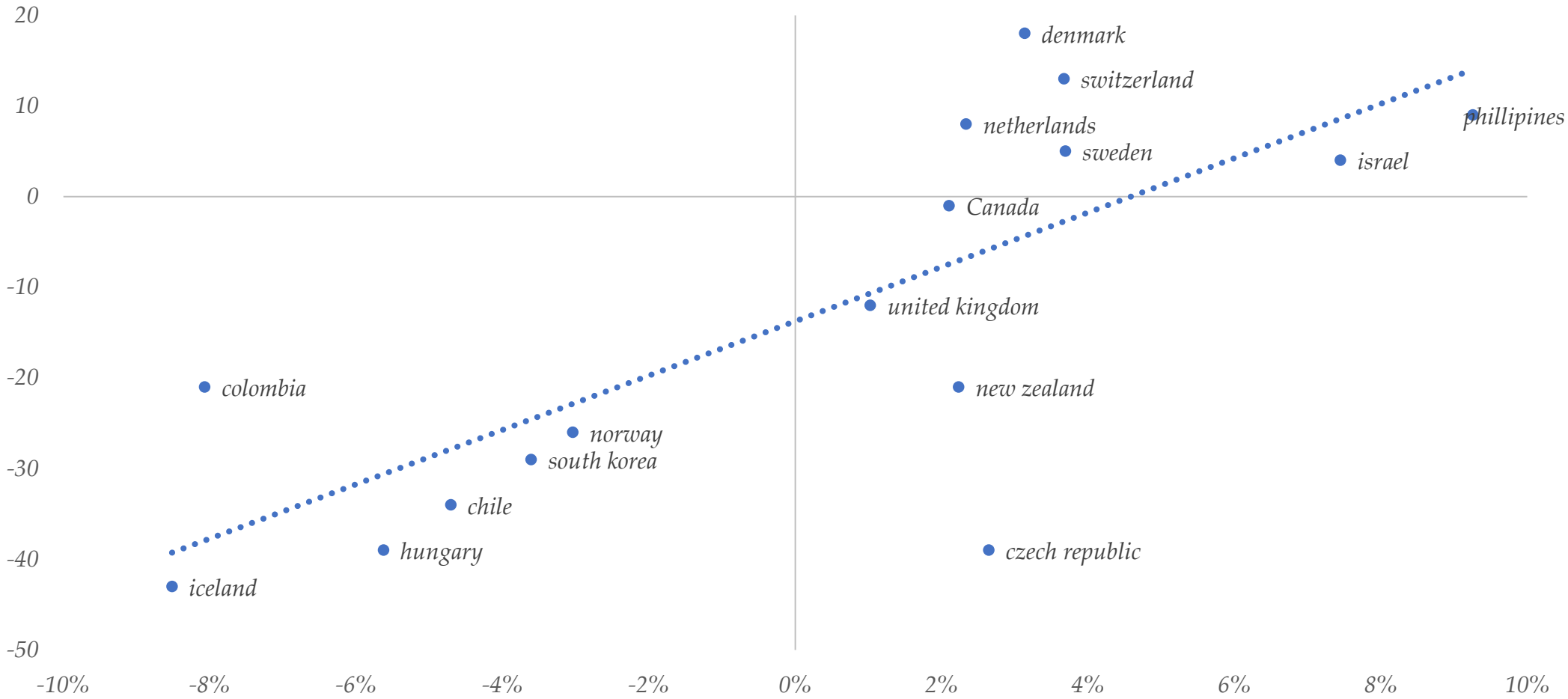
2019-2021



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