Inflation and public finances
a brief history of a long relationship

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Austrian Fiscal Advisory Council Workshop

The inflation hangover in public finances

Session 1. Inflation shocks and public finances: stylised facts

Vienna, 22 June 2026

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The views expressed are those of the presenter and should not be attributed to the BIS or the HNB.

Outline

1. Inflation and tax revenue
2. Inflation and public expenditure
3. Budget deficit and public debt under high inflation
4. Fiscal-monetary policy interactions under high inflation
5. Concluding remarks

Main takeaways

High inflation boosts tax revenue and (initially) fiscal positions

- Tax systems have become highly elastic to inflation
- Reflects long-term shifts and better tax collection technology
- Inflation boosts nominal GDP, improves deficit/debt ratios

But public spending catches up with quickly with inflation

- Two-thirds of spending adjusts quickly to inflation
- Reflects long-term shift in expenditure structure

Main risk: (mis)perception of strong fiscal position

- Buoyant revenue → new spending programmes → risk of long-term fiscal damage

Great inflation (1973–82) vs. Covid pandemic (2021–23)

CPI, annual av. %			GDP, annual av. %			Unemployment, % LF		
	1973–82	2021–23		1973–82	2021–23		1973–82	2021–23
AT	6.4	6.4	AT	2.7	3.2	AT	2.0	6.9
DE	5.2	5.3	DE	2.2	1.6	DE	3.7	5.6
CH	4.9	1.9	CH	0.7	3.5	CH	0.4	2.4
UK	14.2	5.7	UK	1.5	4.7	UK	5.6	4.2
US	8.8	5.6	US	2.4	3.9	US	7.0	4.2

Inflation and tax revenue

General government revenue growth, in % of GDP

	2021	2022	*1992–2020 ave.*
Adv. economies	0.8	0.3	–0.1
EMEs	1.0	0.2	0.2

UK example, cumulative increases, in %

	1979-83	2000:Q2 - 2023:Q1
Inflation	42	19
Nominal GDP	18	12
VAT revenue	86	57
PIT revenue	51	27

Inflation and tax revenue

Surprisingly little empirical research

1970s: studies on *negative* effects of high inflation on real tax revenue – Tanzi-Oliveira effect

- Eg π 10%/mo, collection lag 60 days, real revenue ↓ 17%

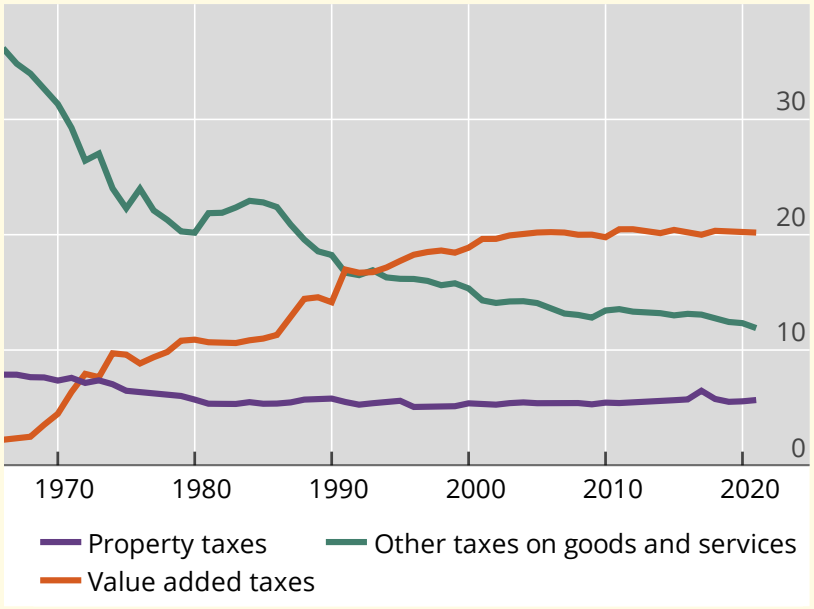
Big changes in tax structure over past 50 years: rise of VAT, better tax collection due to spread of withholding, digital technologies

→ modern tax systems more elastic with respect to inflation

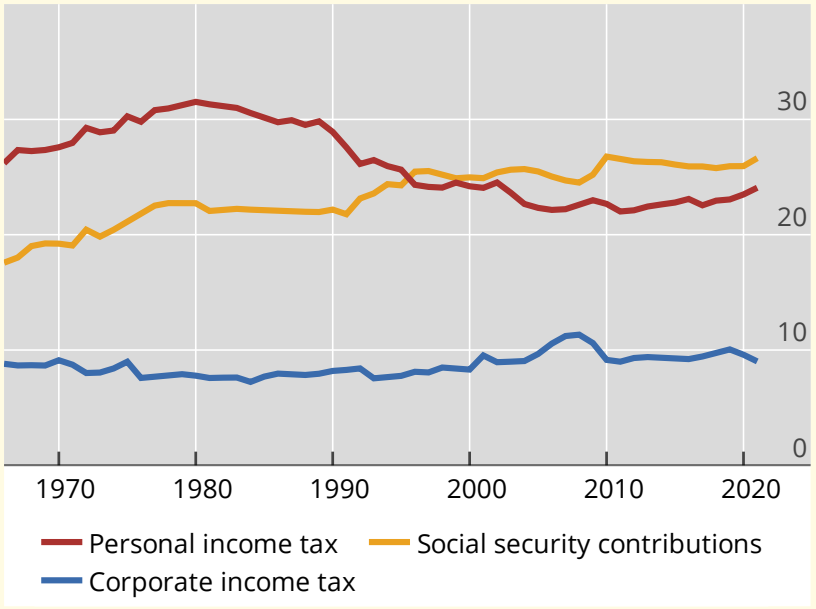
GRAPH 2

Trends in tax structure in the OECD countries (in per cent of total tax revenue)[1]

Taxes on goods and services and property taxes



Taxes on income



[1] Simple averages of OECD member countries.

Sources: OECD, *Revenue Statistics*.

Some tax distortions that inflation causes

- Bracket creep – fixed nominal thresholds for progressive income taxes – result in higher real taxes
- Revenues decline with inflation – avoid collection lags, payment delays
- Inflation may
  - Increase bias towards debt over equity where interest payments are deductible
  - … and may discourage investment where depreciation allowances are based on historic cost of production assets
  - … as well as household saving where savings income is taxed
- Taxation of nominal rather than real income from capital and property increases tax burden
- Specific taxes, nominal fees and charges decrease in real terms with inflation

Inflation and public expenditure

Unlike taxes, spending items adjust to inflation with varying lags

Public spending structure, OECD, 1980-2019, % of total expenditure

	Share in total	Adjusts to inflation
Goods and services	16%	Immediately
Public investment	9%	Immediately
Pensions, transfers to HH	40%	Few months' lag
Public sector wages	22%	Few quarters' lag
Debt service	5%	Immed. for new debt, depends on maturity for outstanding

Inflation and public expenditure

Subsidy programmes in response to inflation

- Raise government spending
- But may also affect inflation: energy subsidies lowered π in euro area by 1 pct. pt. in 2022 (ECB Bulletin 2/2023)
- However, this could be reversed when subsidies are withdrawn, esp. if energy prices remain high
- Effect of large subsidy programmes could be non-linear depending on level of support – example of pandemic related spending in 2020–21

TABLE 1

Structure of government expenditure, as a percentage of GDP, period averages

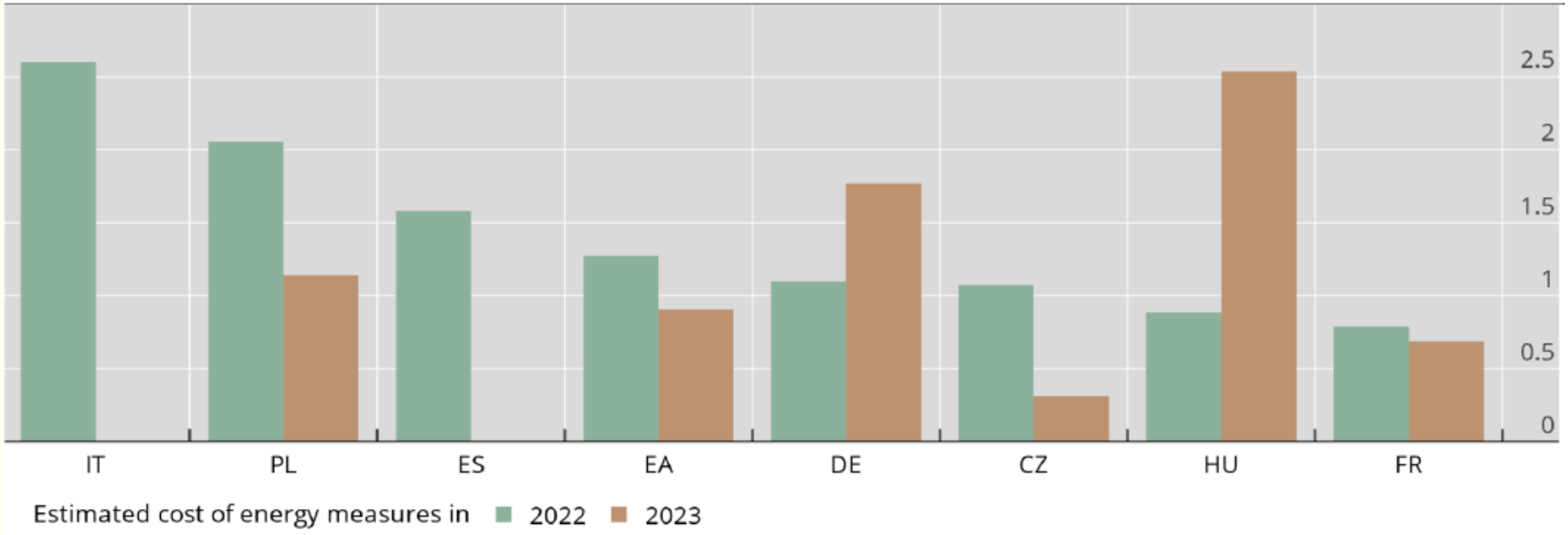
	Public sector wages			Purchases of goods and services			Interest payments			Social security transfers			Public investment		
	1980–95[1]	1996–2008	2009–21	1980–95[1]	1996–2008	2009–21	1980–95[1]	1996–2008	2009–21	1980–95[1]	1996–2008	2009–21	1980–95[1]	1996–2008	2009–21
EA	…	10.3	10.3	4.6	4.7	5.5	5.3	3.6	2.3	21.1	20.6	22.9	3.3	3.2	3.0
GB	9.2	10.1	9.4	7.8	6.7	8.3	4.0	2.4	2.6	11.8	12.3	14.1	1.7	2.3	2.8
JP	5.8	5.9	5.4	2.9	2.9	3.4	3.3	2.8	2.0	12.2	15.5	21.3	7.5	5.4	4.0
US	10.4	9.9	9.8	5.7	6.3	6.7	6.1	4.4	4.0	10.1	11.3	15.4	4.4	3.7	3.5
SOE[2]	14.2	12.6	13.2	7.4	6.5	6.8	4.6	2.4	0.8	17.8	16.3	16.5	2.6	3.4	3.9
EME[2]	…	8.6	8.8	…	5.1	4.8	…	2.3	1.8	…	4.4	7.1	…	3.1	3.6

Note: EA = euro area; GB = United Kingdom; JP = Japan; US = United States, SOE = small open economies; EME = emerging market economies.

[1] Initial observations vary across countries. [2] Median values for small open economies (Denmark, Norway, Switzerland and Sweden) and EMEs (Chile, Korea, Poland and South Africa).

Sources: OECD; IMF; author`s calculations.

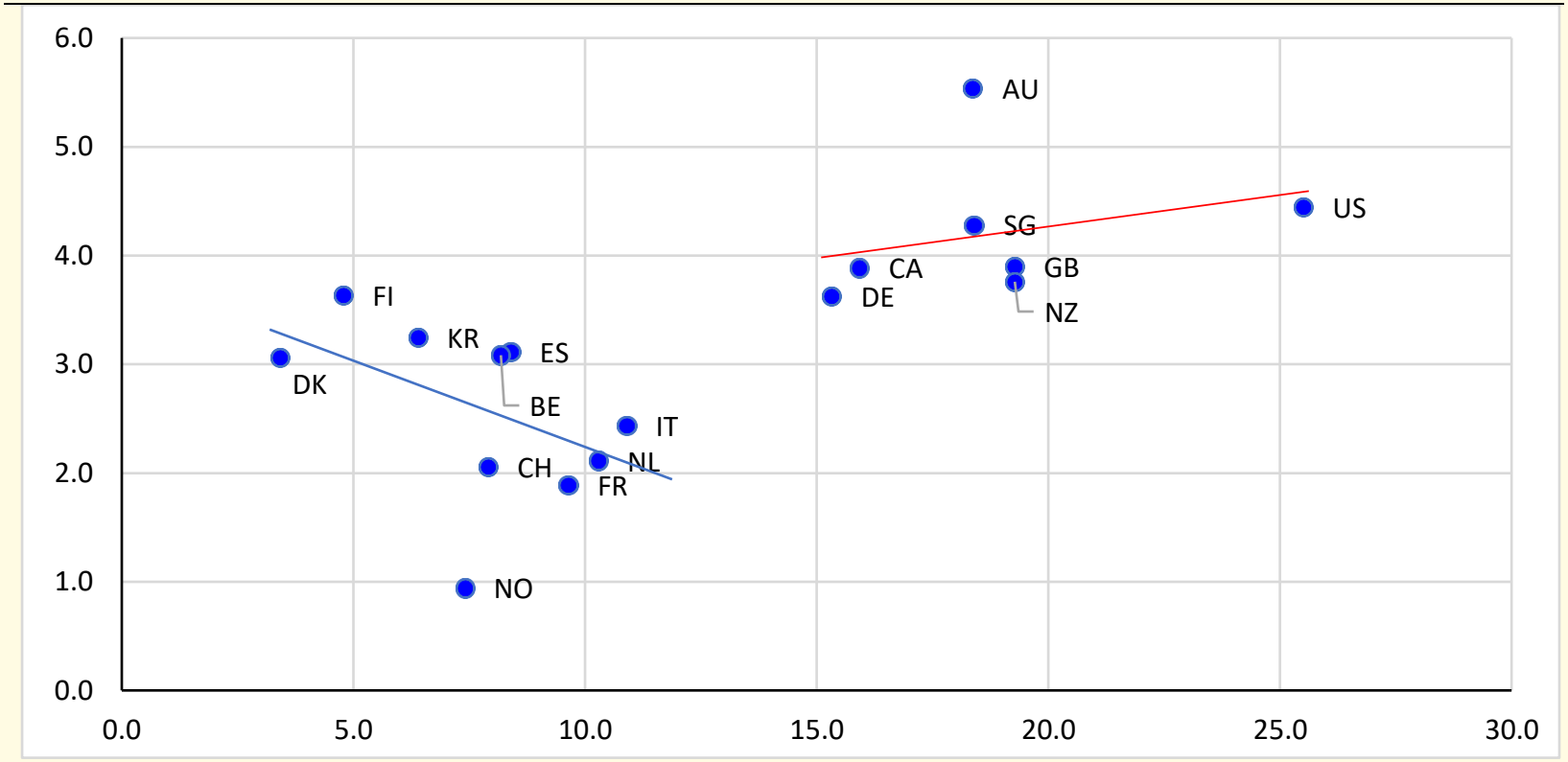
Estimated cost of energy measures in the EU (as a percentage of GDP)



Source: European Commission, *Autumn 2022 Economic Forecast*.

GRAPH 4

Fiscal policy support and core inflation, 2020–22



Horizontal axis: additional spending or foregone revenue between March 2020 and September 2021, as a percent c GDP. Based on national authorities and IMF staff estimates. Includes temporary support measures for households an firms and temporary tax reductions (eg lower social security contributions and VAT reductions for specific sector severely hit by the pandemic).

Vertical axis: change in annual average year-on-year core inflation between 2020 and 2022, in percentage points.

Sources: IMF, *Fiscal Monitor Database of Country Fiscal Measures in Response to the Covid-19 Pandemic*; OECD; author's calculation

Budget deficit and public debt under high inflation

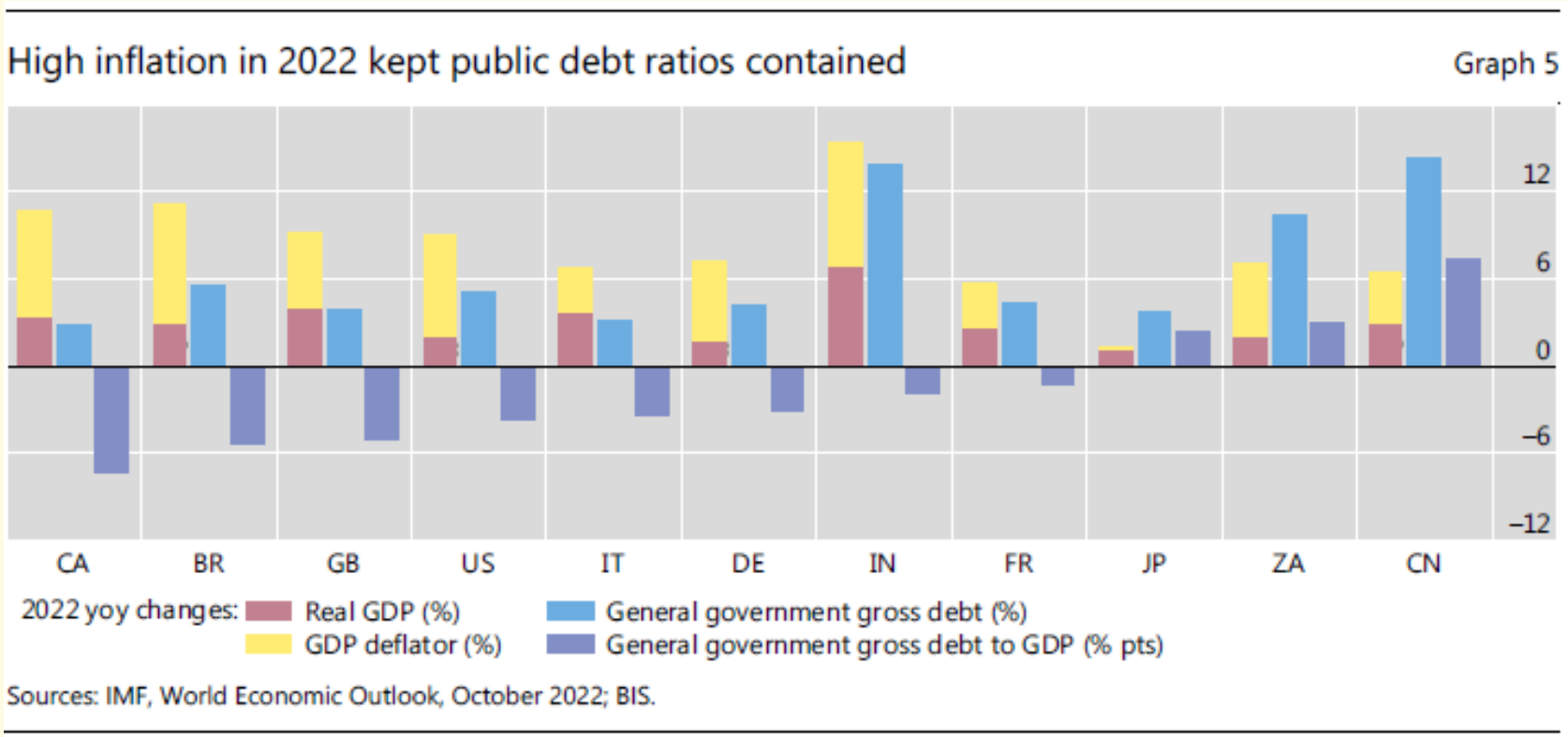
Overall budget balance initially tends to improve under high inflation: revenue increases faster than expenditure

- 1 pct. pt. ↑ in GDP deflator, 0.1–0.2 pct.pt. improvement in primary balance ratio (EU, 1970–2013) (Atinassi et al, 2016; Berti et al, 2016)
- Overall deficit/GDP in adv. economies fell to 4¼% in 2022 from 7½% in 2021
- Public debt/GDP fell by 2–8 pct. pts. despite nominal debt rising by 3–14%

How long this improvement lasts depends on:

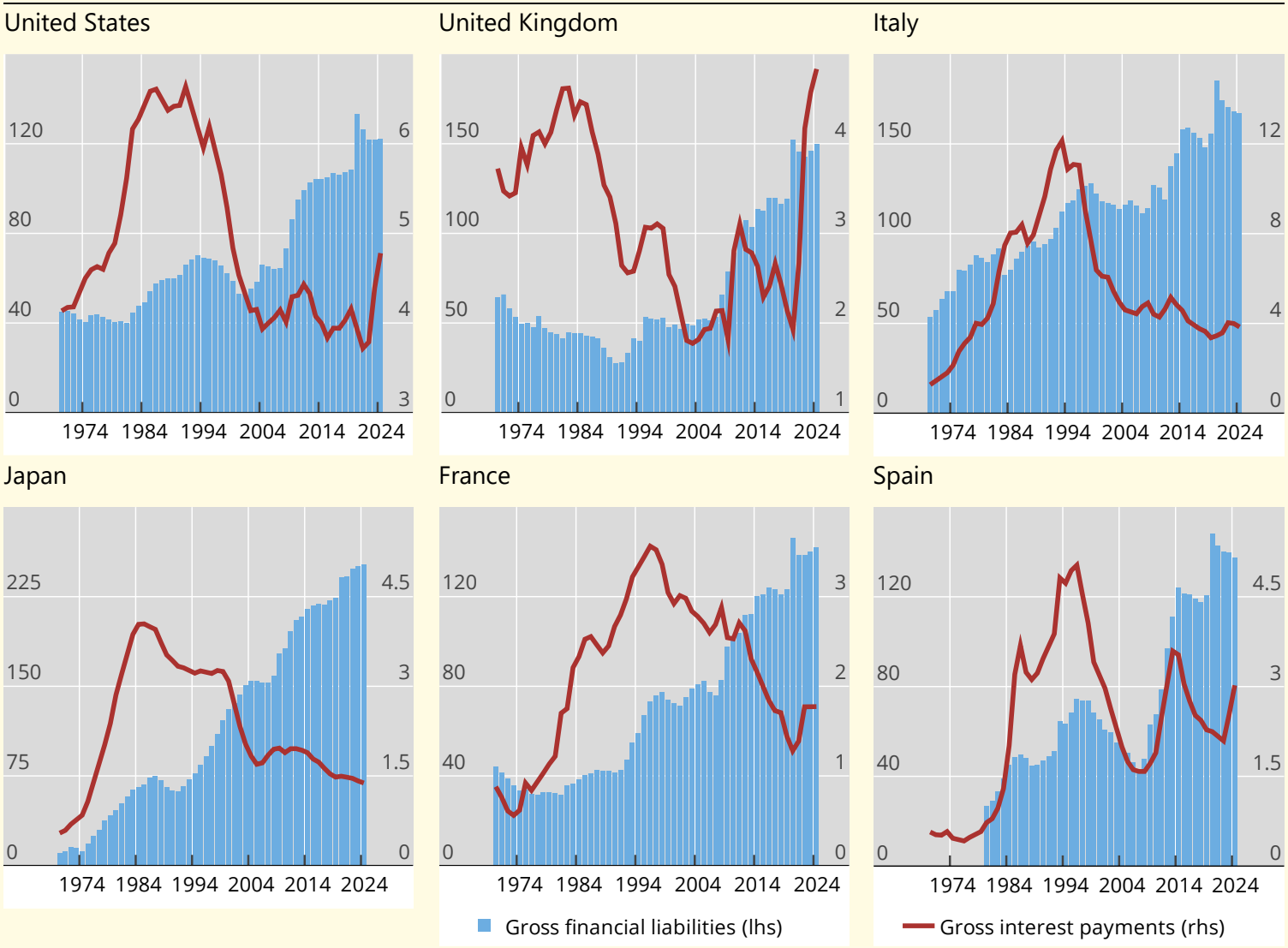
- How quickly big spending items (pensions, transfers, wages) adjust to inflation
- New subsidy schemes to offset purchasing power loss
- Rate of inflation
- Monetary policy response – interaction with debt dynamics

Inflation initially flatters fiscal balances



GRAPH A1

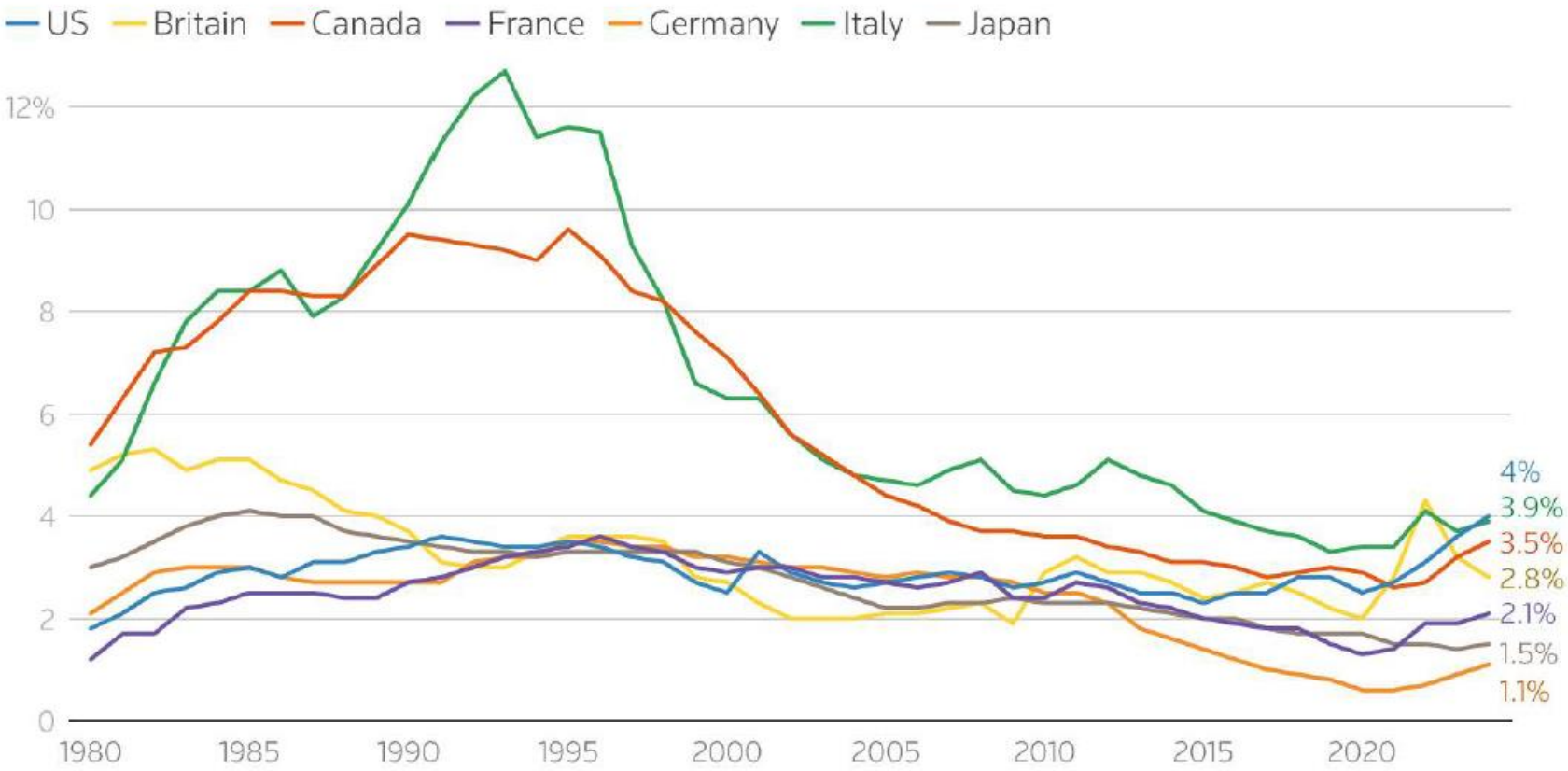
Gross public debt and gross interest payments in advanced economies, as a percentage of GDP[1]



[1] For the general government.

Sources: OECD, *Economic Outlook*; BIS.

Interest payments on public debt as a share of GDP



Source: IMF

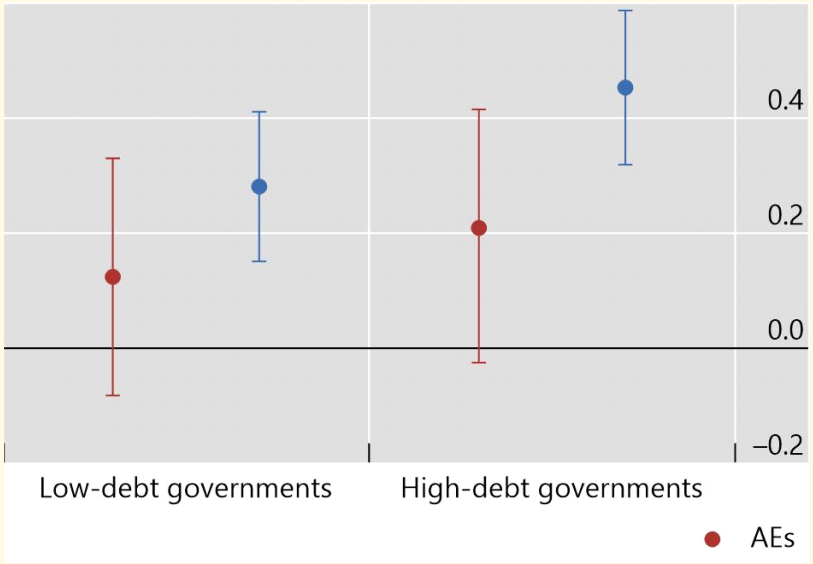
Feedbacks from fiscal to monetary policy

Prudent fiscal policy helps transmission of monetary policy

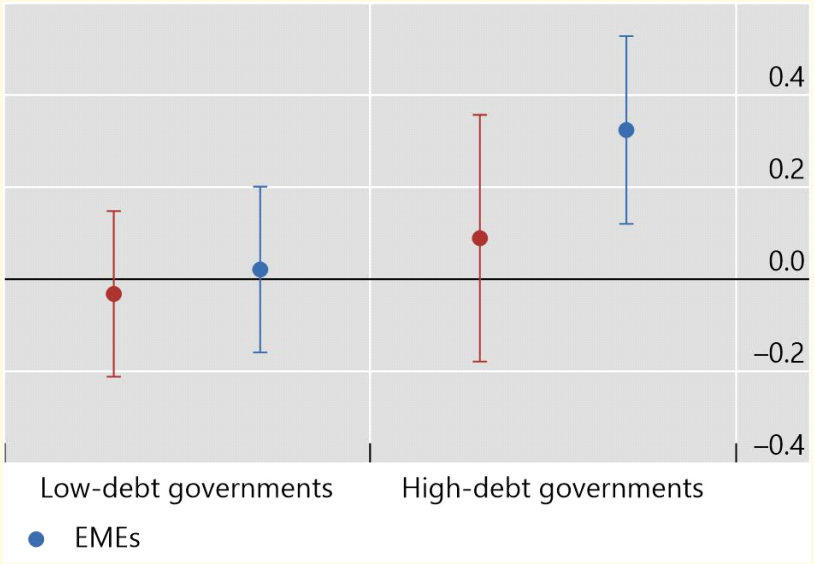
GRAPH 7

High public debt leads to larger yield and CDS increases when policy rates rise (in percentage points) [1]

Long-term yield response to policy rate hike



CDS spread response to policy rate hike



[1] Dots correspond to point estimates and bars to +/- two standard deviations around these estimates.

Sources: Bloomberg; IHS Markit; Refinitiv Datastream; national data; BIS

Concluding remarks

- Improvement in tax revenue and deficit/debt to GDP ratios induced by inflation is temporary: growth will slow, inflation eventually decline, lowering tax revenue and nominal GDP growth
- Public spending adjusts quickly to inflation:
  - Structure of public spending has become more rigid over time, implying less room for discretionary fiscal policy
  - Higher interest rates quickly translate into rising debt servicing costs
- Fiscal tightening helps monetary policy in the fight against inflation
- Policy implications
  - On the revenue side, build buffers during economic upturns
  - Resist pressures to spend tax windfalls, esp. on permanent transfers
  - Focus new spending on growth-enhancing activities to complement private investment

Paul Volcker, *Federal Reserve Bulletin*, March 1980:

In the past, at critical junctures for economic stabilization policy, we have usually been more preoccupied with the possibility of near-term weakness in economic activity or other objectives than with the implications of our actions for future inflation. The result has been our now chronic inflationary problem, with a growing conviction on the part of many that this process is likely to continue. Anticipations of higher prices themselves help speed the inflationary process.

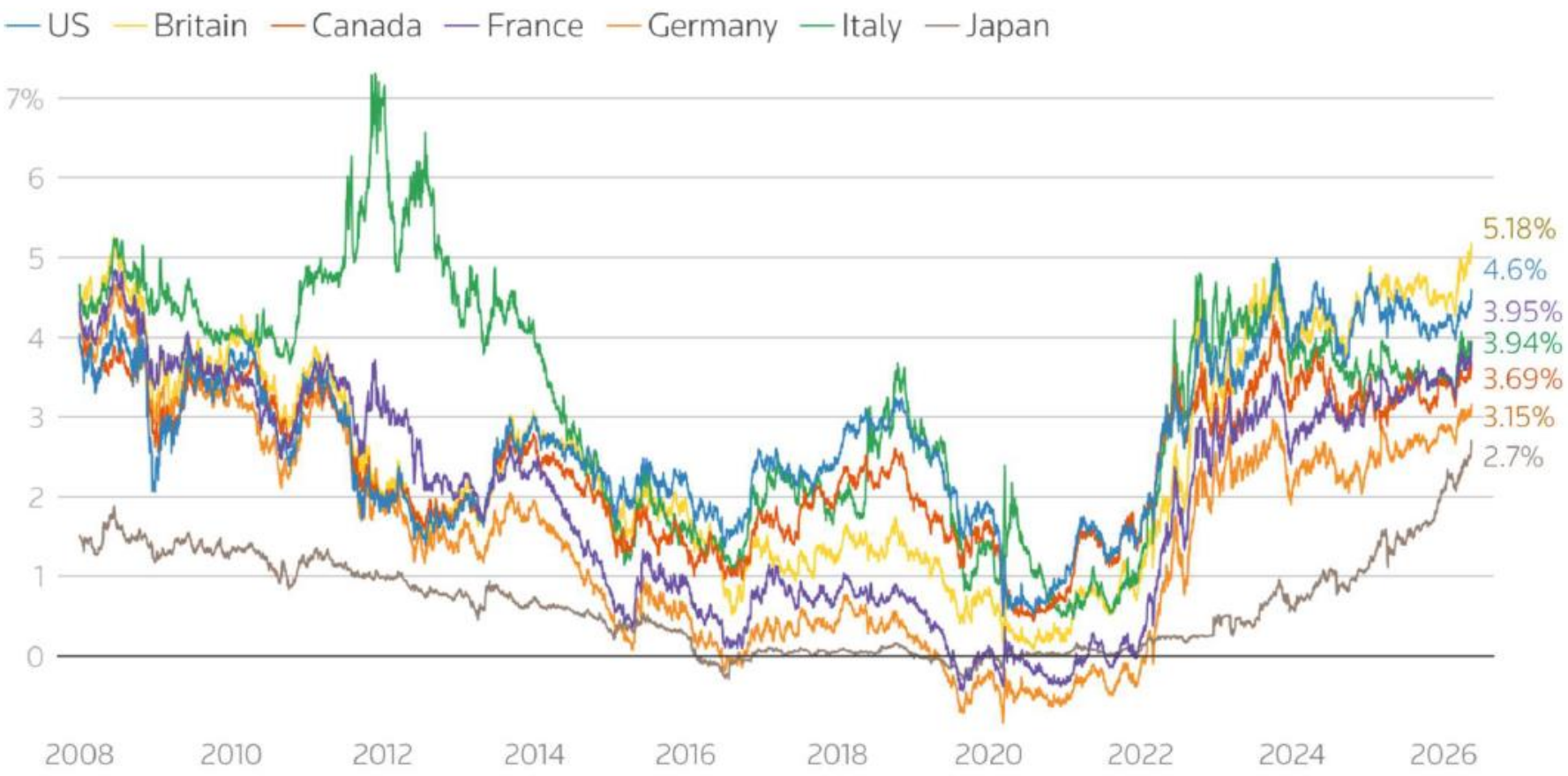
The broad objective of policy must be to break that ominous pattern. That is why dealing with inflation has properly been elevated to a position of high national priority. Success will require that policy be consistently and persistently oriented to that end. Vacillation and procrastination, out of fears of recession or otherwise, would run grave risks.

Amid the present uncertainties, stimulative policies could well be misdirected in the short run; more importantly, far from assuring more growth over time, by aggravating the inflationary process and psychology such policies would threaten more instability and unemployment.

Appendix slides

G7 bond yields

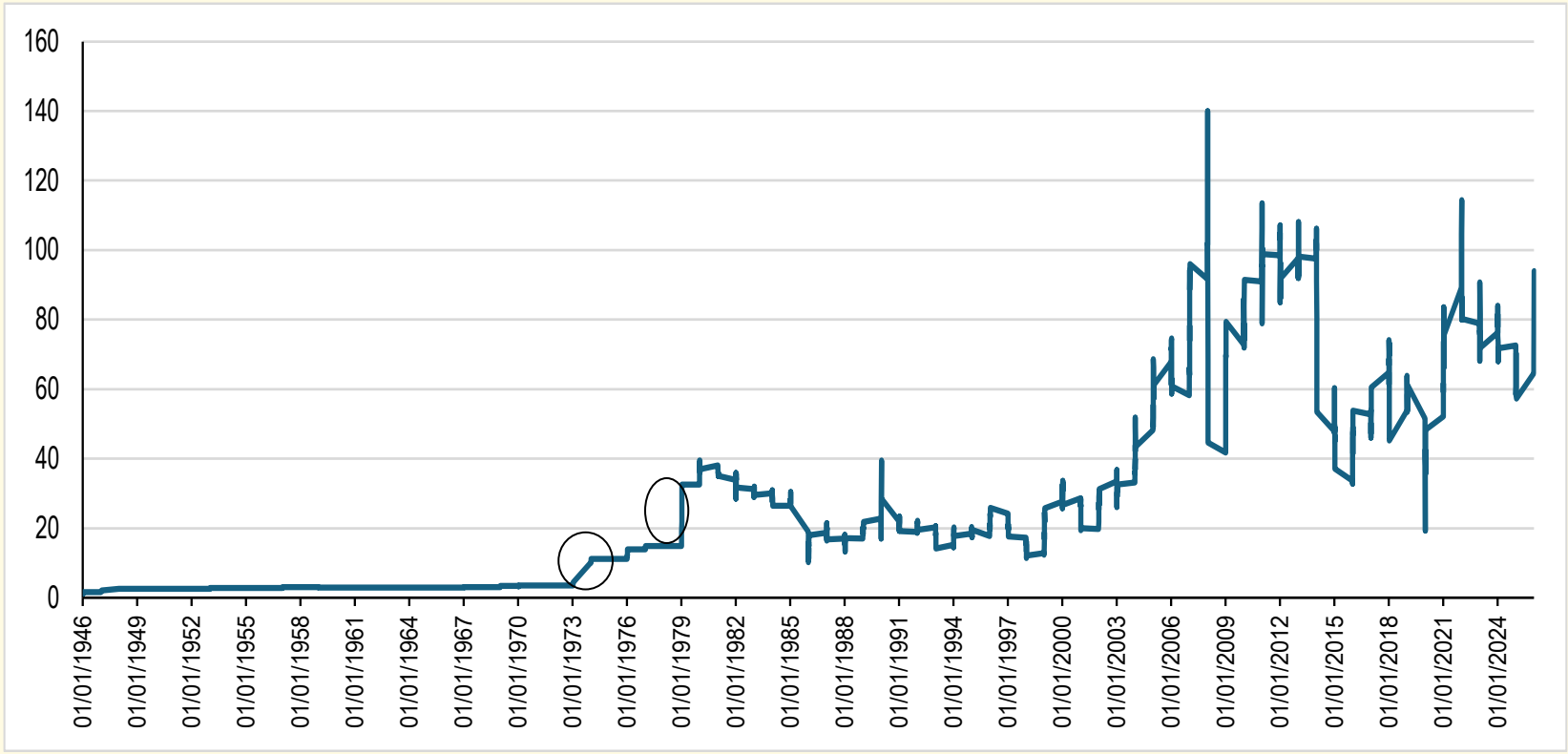
Benchmark 10-year government bonds



Source: LSEG

First oil shock Oct. 1973., second Nov. 1979.

Oil price, 1946–2026, WTI, $/bbl



Source: Macrotrends.

Autofreier Sonntag am Autobahn, 1973


BANKGESELLSCHAF


Bern Basel
Chur
Luzern Gotthard
Schaffhauserplatz
Schaffhausen
Flughafen
Oerlikon