



The Natural Rate of Interest: Drivers and Policy Implications

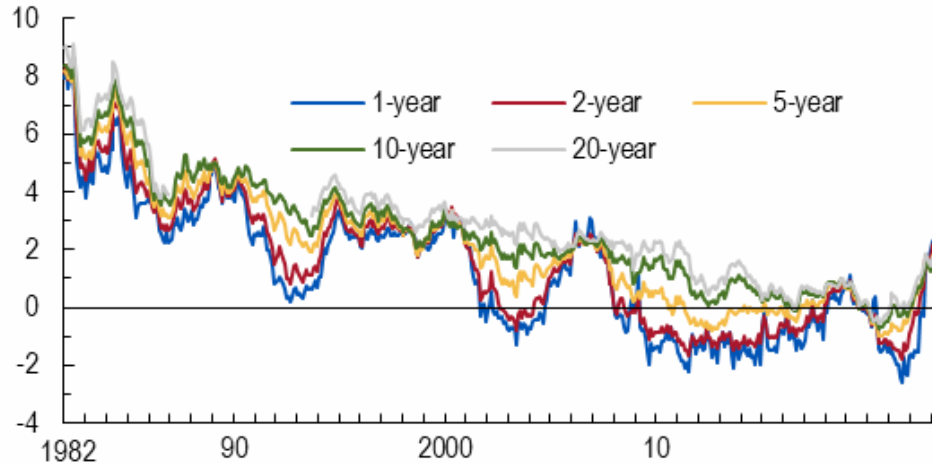
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Jean-Marc Natal
Deputy Division Chief WESD/RES

Background and motivation

Real Interest Rates in the US (ex ante)

(Percent)



- **Natural or neutral rate**

- ▶ Balances desired global saving and investment, and
- ▶ Consistent w/output at potential and inflation at target
- ▶ LT anchor for real rates
- ▶ So key for monetary ($r-r^*$) and fiscal policy ($r-g$)

- **Consensus before pandemic**

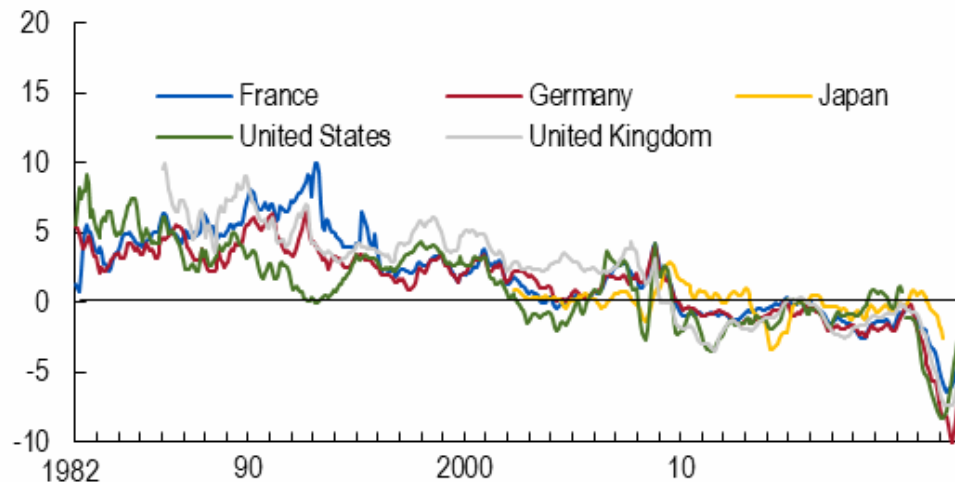
- ▶ ½ century downward trend in r^*

- **Back in focus since pandemic**

- ▶ How to interpret recent increase? Temporary or sign that anchor has shifted?
- ▶ Impact on future monetary and fiscal policy

Real Interest Rates in Advanced Economies (ex post)

(Percent)



Key questions

1. Estimating the natural rate.

- ▶ How has the natural rate evolved across different economies in the past?
- ▶ 2-pronged approach for robustness.

2. Historical drivers of the natural rate.

- ▶ What have been the drivers of the natural rate in major AEs and EMs?
- ▶ Are there common/global trends across countries?

3. Outlook for the natural rate.

- ▶ What is the outlook for those drivers in medium to long term?
- ▶ Alternative plausible scenarios post-pandemic: higher debt, energy transition, deglobalization

Conceptual framework: 2-pronged approach

I. Measure natural rate using simple aggregate macroeconomic relationships (HLW)

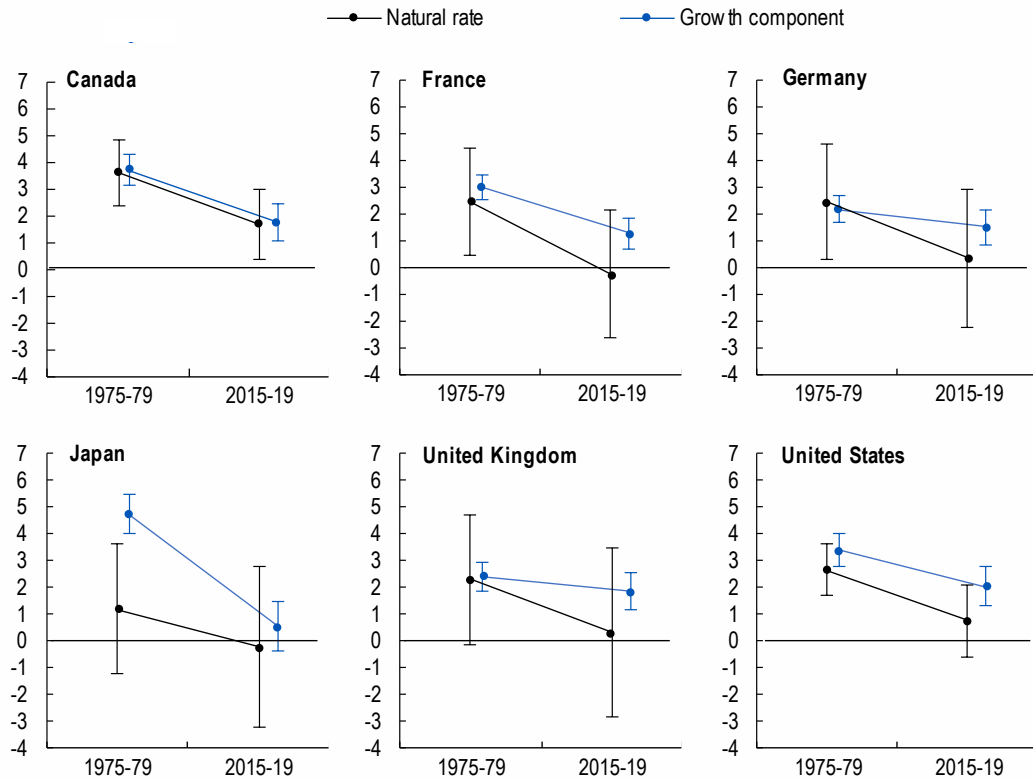
- ▶ Allows data to speak with minimum theoretical constraints (Holston, Laubach and Williams, HLW 2017)
- ▶ HLW can be extended to 2-country framework (Wynne and Zhang, 2018) – global forces
- ▶ BUT: only provides rough understanding of the primitive drivers

II. Use detailed theoretical framework (Platzer and Peruffo, 2022)

- ▶ Allows detailed understanding of primitive forces driving r^*
 - *Productivity growth, demographics, inequality, public debt, market power, international capital flows*
 - *Differences across largest AEs and EMs analyzed through individual calibrations*
 - *Model is used to project r^* in medium to long run*
- ▶ BUT: results are model-dependent

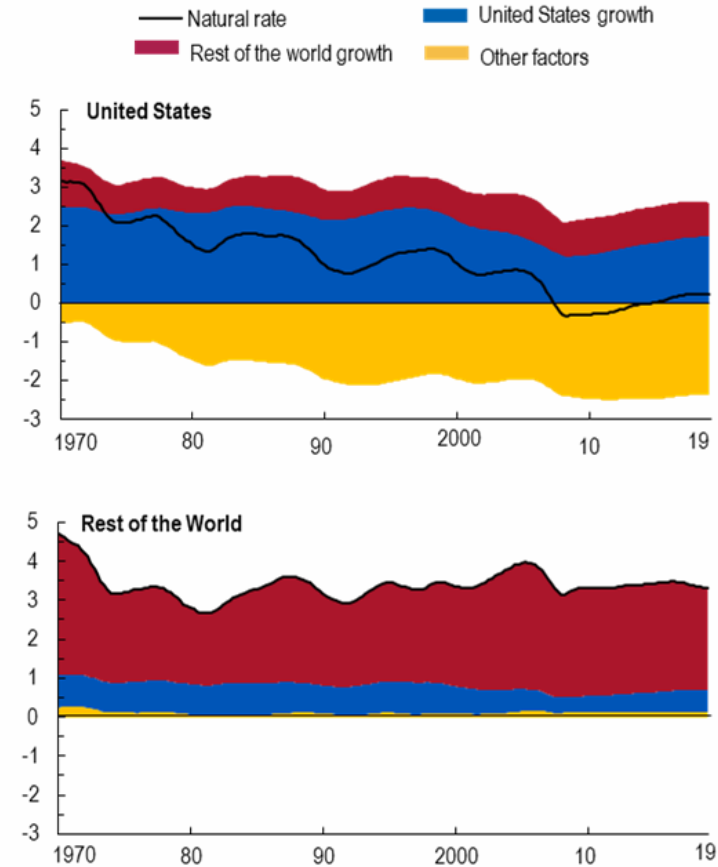
1. Estimating the natural rate – HLW approach

One country at a time ...



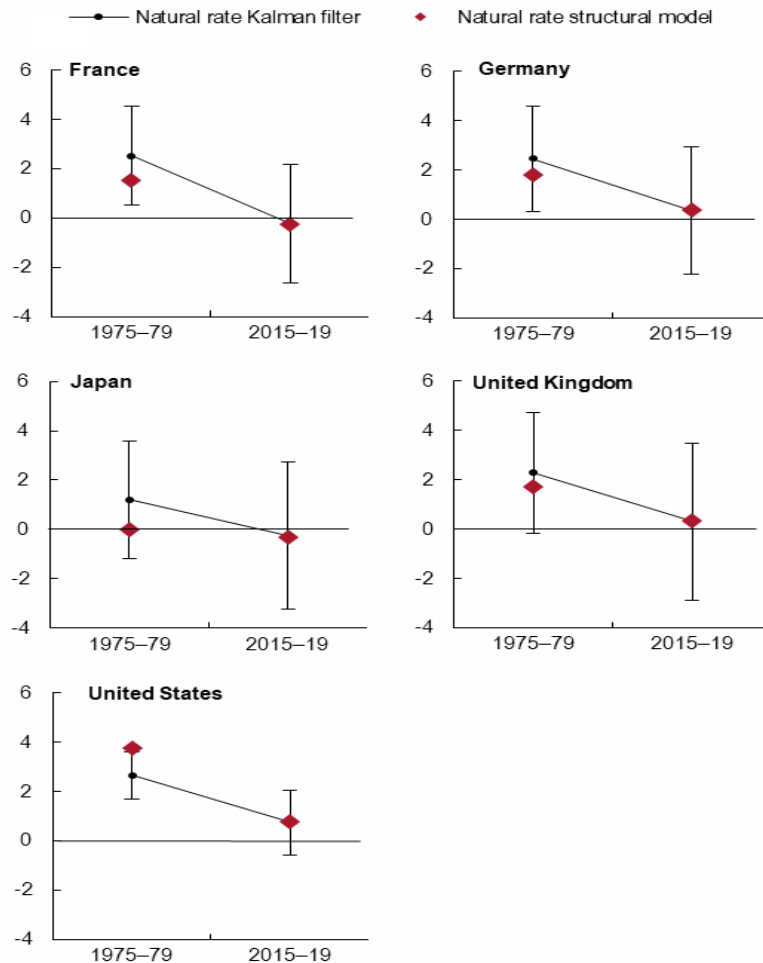
Sources: Holsten, Laubach and Williams (2017) and IMF staff calculations.
 Note: The ranges show 90 percent confidence intervals.

... and in a 2-country framework



Sources: Wynne and Zhang (2018); and IMF staff calculations.
 Note: Rest of the world comprises Australia, Austria, Belgium, Brazil, Canada, China, Finland, France, Germany, Greece, India, Ireland, Italy, Japan, Korea, The Netherlands, Norway, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

Estimating the natural rate – robustness



Sources: Holston, Laubach, and Williams (2017); Peruffo and Platzer (2022); and IMF staff calculations.

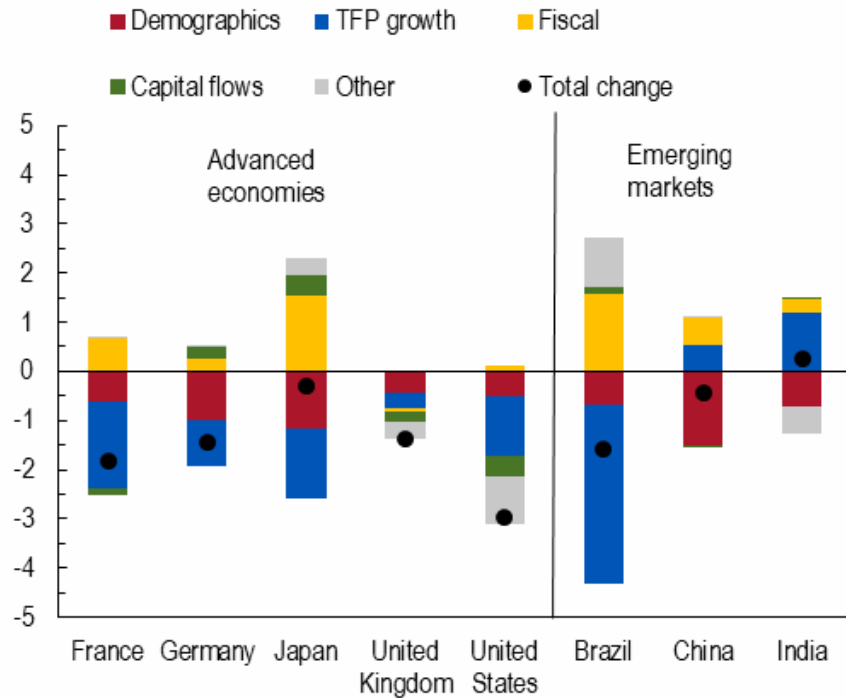
Note: The Kalman filter estimates are based on Holston, Laubach, and Williams (2017) and calibrated based on Peruffo and Platzer (2022). The ranges show 90 percent confidence intervals.

- **Filtering approach and theoretical model reach similar conclusions ...**
 - ▶ large confidence bands highlight need for 2-pronged approach
 - ▶ broadly similar decline in the natural rate since the late 1970s
- **But theoretical model allows to go “under the hood”**
 - ▶ incorporates most drivers likely to affect savings and investment.

2. Drivers of the natural rate – large AEs and EMs

Changes in the Natural Rate : 1975-79 to 2015-19

(Contributions in percentage points)



Sources: Peruffo and Platzer (2022); and IMF staff calculations.

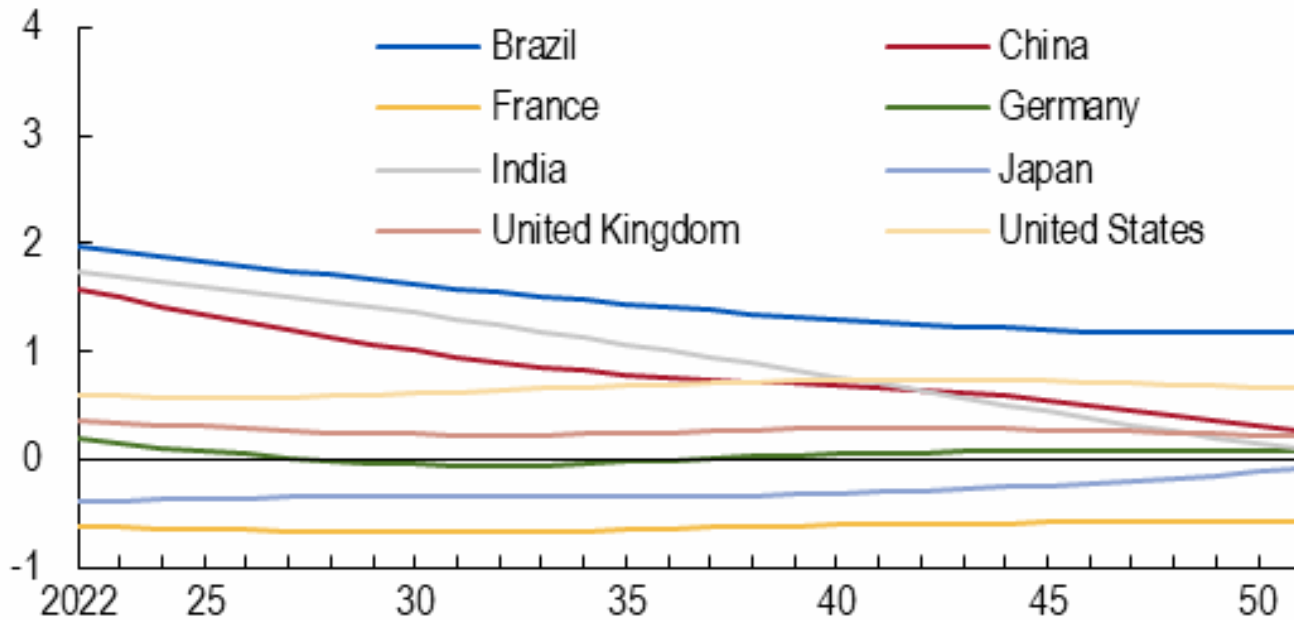
Note: TFP = total factor productivity.

- **Look under the hood: detailed structural model**
 - ▶ calibrated for large AEs and EMs (70% of global GDP)
- **Secular decline in AEs**
 - ▶ Main drivers: demographic forces and TFP growth
 - ▶ international spillovers important but impact limited on balance (offsetting effects)
- **No obvious trend in EMs**
- **Fiscal factors pushed up r^* everywhere**

3. Outlook for natural interest rates – baseline

Baseline Projections

(Percent)



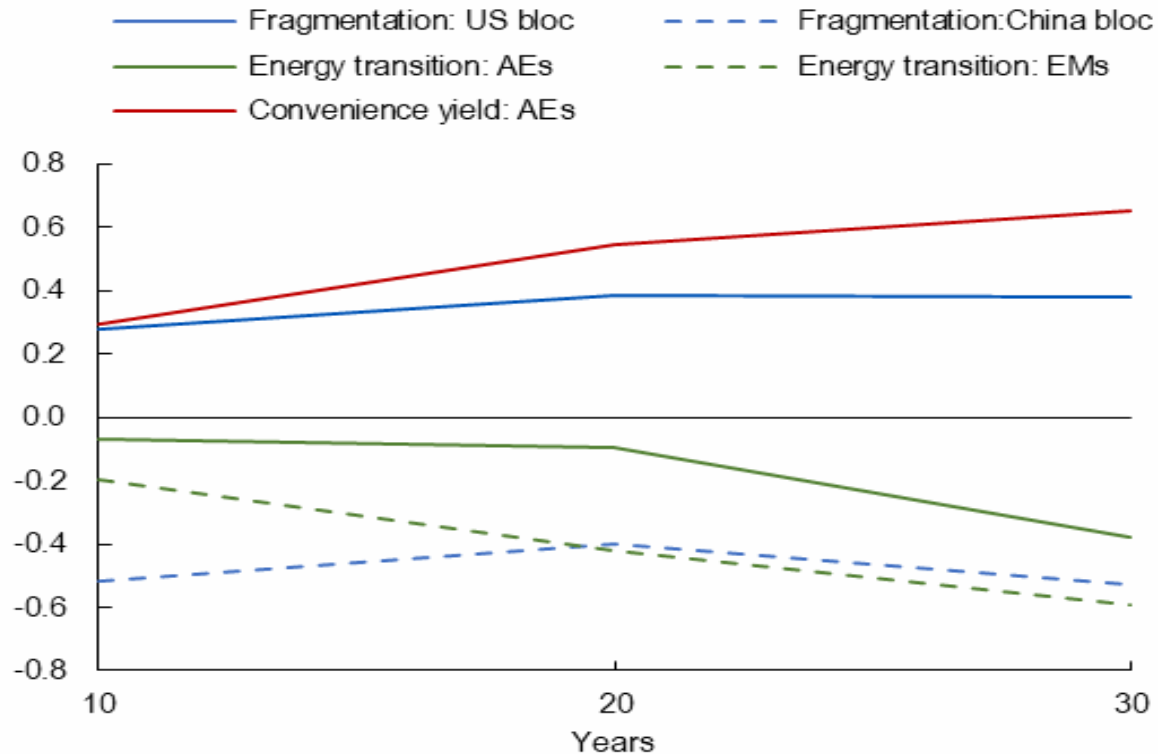
Sources: Platzer and Peruffo (2022); and IMF staff estimates.

- **Baseline projection**
 - ▶ Demographics: UN long-term projections
 - ▶ TFP growth: EMs to converge to AEs
 - ▶ Debt ratios: WEO projections
- **Natural rates to converge in the LR**
- **Narrow range**

Outlook for natural interest rates – alternative scenarios

Alternative Scenarios

(Percentage point deviation from baseline)



Sources: G-cubed model; Global Integrated Monetary and Fiscal Model (GIMF); Platzer and Peruffo (2022); and IMF staff estimates. Note: The fragmentation scenario encompasses both trade and financial fragmentation and is run with GIMF. The energy transition assumes balanced budget and is run with the G-cubed model. The convenience yield scenario was performed with the Platzer and Peruffo model. The US bloc includes United States, the European Union plus Switzerland, and other advanced economies; The China bloc includes China, Hong Kong SAR, South-East Asia, Russia, South Africa, Türkiye, Africa, the Caribbean, Central Asia, Latin America excluding Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, and Peru, the Middle East, and Oceania. AEs = advanced economies; EMs: emerging market economies. See Chapter 4 of the April 2023 *World Economic Outlook* for more details on the blocs.

- **Alternative scenarios : limited Impact on r^* [-60bp; +60bp] in LT**
 - ▶ Public debt perceived as less safe or liquid (erosion of convenience yield)
 - ▶ Energy transition (WEO 2020 scenario)
 - ▶ Fragmentation (trade and financial)

Takeaways and policy implications

- **Outlook.**

- ▶ Real interest rates likely to converge towards pre-pandemic levels in AEs when inflation is brought back to target.
- ▶ How close depends on level of public debt, on how energy transition is financed, extent of deglobalization

- **Policy implications.**

- ▶ Monetary policy: effective lower bound (ELB) likely binding again in the LT
- ▶ Fiscal policy:
 - LT debt sustainability requires significant deficit reduction (potential growth, endogeneity of interest to debt)
 - Tradeoff: delayed consolidation requires more consolidation overall

Additional Material

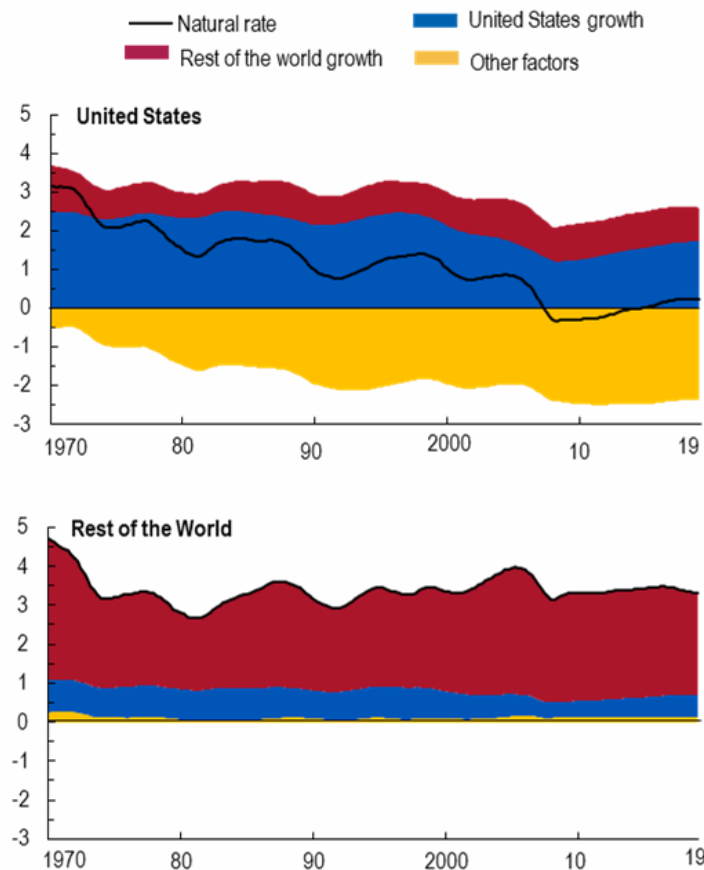
Drivers of the natural rate – primitive forces (OLG model)

| Increase in | Demand for Savings | Supply of Savings | R^* |
|---------------------------------|--------------------|-------------------|-------|
| TFP growth | + | - | + |
| Life expectancy | | + | - |
| Population aging | +/- | +/- | +/- |
| Inequality | | + | - |
| Public debt | + | | + |
| Government consumption | | - | + |
| Market power | - | - | +/- |
| Net international capital flows | | + | - |

Drivers of the natural rate – foreign or domestic factors?

Domestic and Foreign Drivers of the Natural Rate

(Percentage point contributions)

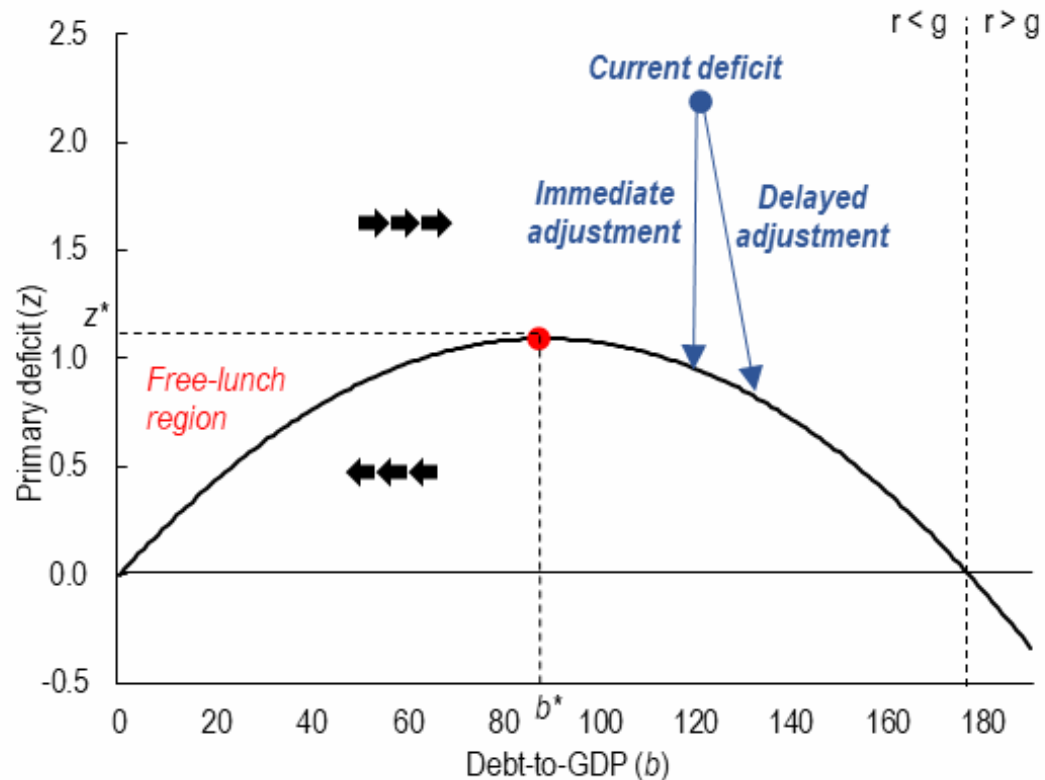


Sources: Wynne and Zhang (2018); and IMF staff calculations.

Note: Rest of the world comprises Australia, Austria, Belgium, Brazil, Canada, China, Finland, France, Germany, Greece, India, Ireland, Italy, Japan, Korea, The Netherlands, Norway, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

- **2-country general equilibrium model US and RoW**
 - ▶ exploits simple macroeconomic relationships and based on aggregate data
- **Main findings**
 - ▶ steady decline in US r^* , stable in RoW: large EMs
 - ▶ domestic growth more important than foreign
 - ▶ international spillovers play an important role, but offsetting forces over the period.
- **Model is too coarse**
 - ▶ what is driving growth? what are other factors?

Implications for fiscal policy – consolidation needed



Source: IMF staff calculations.

- **Goldilock fiscal policy (Mian, Straub, Sufi, 2021)**
 - ▶ Natural rate endogeneity pins down unique sustainable deficit/debt
 - ▶ Free lunch region for low debt/deficit countries when $r < g$
 - ▶ Delaying consolidation leads to more consolidation eventually

Implications for fiscal policy – consolidation needed

Required fiscal adjustment under different scenarios

(change in the primary deficit, Percentage points)

| | Scenarios | | |
|---|-----------|-------------|-------------------|
| | Baseline | Higher debt | 1970s labor share |
| Near-term adjustment | | | |
| United States | -3.71 | -3.94 | -3.75 |
| China | -7.63 | -7.69 | -7.63 |
| Additional consolidation needed for medium-term adjustment (3 years) | | | |
| United States | -0.17 | -0.18 | -0.17 |
| China | -0.47 | -0.49 | -0.47 |
| Additional consolidation needed for medium-term adjustment (5 years) | | | |
| United States | -0.29 | -0.32 | -0.29 |
| China | -0.87 | -0.93 | -0.87 |

Source: IMF staff calculations.

Note: The required fiscal adjustment is the gap from the long-run debt-stabilization level, calculated as the difference between the 2022 primary deficit from the *World Economic Outlook database* and the model-based estimate of the primary deficit that stabilizes debt-to-GDP at the long run given projections for the natural rate of interest and growth.