



# Fiscal R-Star: Fiscal-Monetary Tensions and Implications for Policy

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Marijn A. Bolhuis, Jakree Koosakul, and Neil Shenai

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# Outline

Background and Motivation

Objectives and Key Findings

Defining/Estimating Fiscal R-Star and Fiscal-Monetary Gap

Implications of a Rising Fiscal-Monetary Gap

Forward-looking Estimates and Discussion

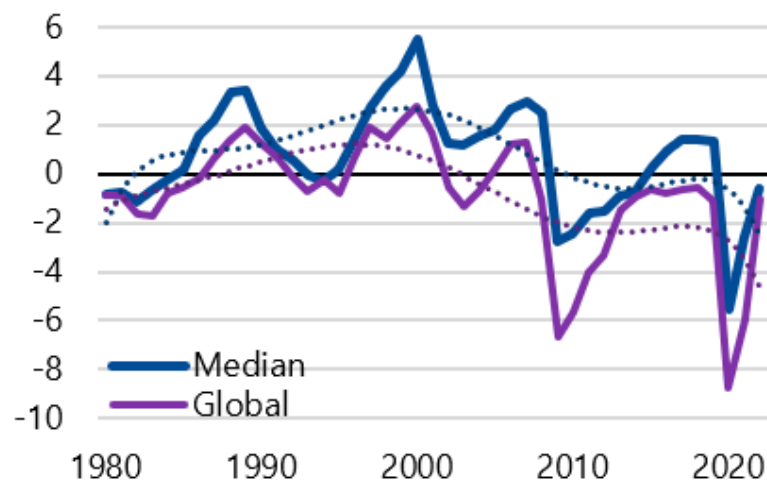
Conclusions

# Background

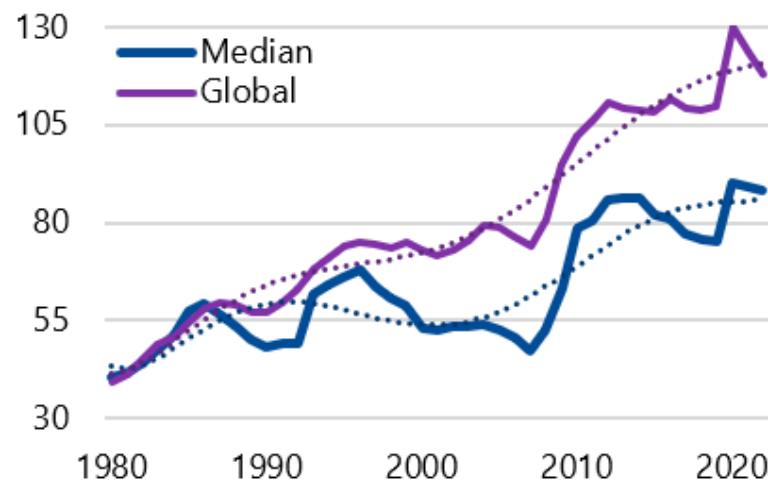
- Major economies currently face **challenging fiscal outlooks**, with rising debt ratios and spending pressures
  - Post-GFC and pandemic-related debt increases, especially in advanced economies
  - Expected future pressures from aging populations, rising entitlement spending, and discretionary expenditures related to climate, GEF

## Debt and Primary Balance Dynamics in Advanced Economies<sup>1</sup>

(A) Primary balances (percent of GDP)



(B) Public debt ratios (median, percent of GDP)



<sup>1</sup> Global variables are weighted by nominal GDP expressed in current USD. Trendlines are sixth-order polynomial.

**Source:** World Economic Outlook, Public Finances in Modern History, World Bank Development Indicators, and authors' calculations.

- ...at a time of high interest rates, reigniting discussions on **fiscal-monetary tensions**  
(e.g., Blanchard / Gopinath / Summers / Wolf, 2023)

# Background

## Questions:

1. How do we measure fiscal-monetary policy tensions?
2. How high are fiscal-monetary policy tensions now and in the near future?
3. What are the macroeconomic risks if tensions become acute?

# Objectives & Key Findings

## Our paper...

1. Provides new evidence on **increasing fiscal-monetary tensions** after GFC and the pandemic
2. Introduces “**fiscal r-star**” and the “**fiscal-monetary gap**” as a proxy for fiscal-monetary tensions
  - building on standard economic frameworks (IS/Phillips curves & debt accumulation)
  - theoretically-justified foundation for a measure of policy tensions and policy space
3. Based on **130 years of data**:
  - **macroeconomic implications** of higher tensions
    - rising debt, higher inflation, financial repression, and lower real asset returns,
    - elevated risks of future debt, currency, and housing crises
  - **evolution of the degree of fiscal-monetary tensions** over a long period of modern history
    - **AEs**: tensions are at **historic highs** last seen after World War II
    - **EMs\***: more **broadly stable**

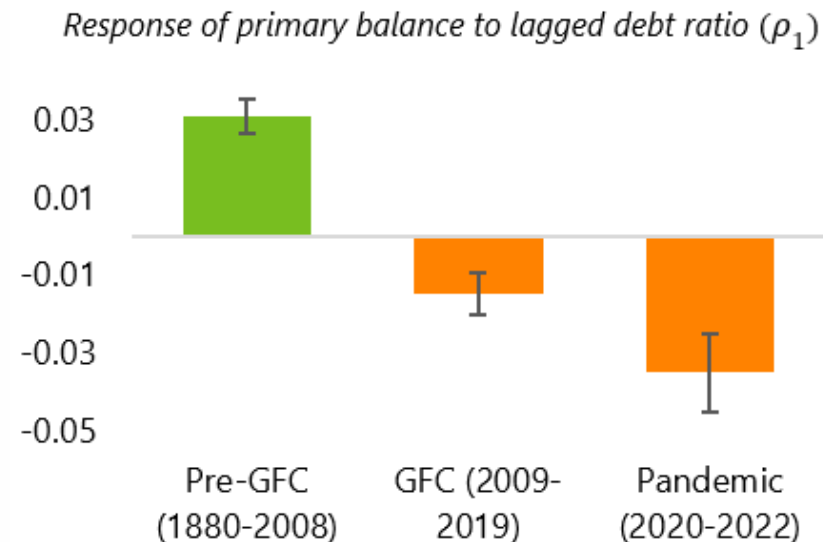
\* Based on more limited time series since 2014

# Motivating Evidence: “activeness” of fiscal policy

- Fiscal-monetary tensions not necessarily high under high interest rate if FP is “passive”
  - *Debt-raising effects of higher interest rates offset by adjustments in primary balances.*
- “Activeness” of FP assessed through responsiveness of PB to lagged debt levels (Bohn, 1998, and Mauro et al., 2015)

$$pb_{i,t} = \rho_1 \cdot debt_{i,t-1} + \alpha_1 \cdot output\_gap_{i,t} + \delta_t + \beta_i + \epsilon_{i,t},$$

- FP increasingly “active,” especially after the pandemic



Note: Solid lines indicate statistical significance at 90 percent significance level, where robust standard errors are used, clustered by year.

# Implication 1: debt sustainability & fiscal r-star

Standard debt accumulation framework for measuring debt sustainability

debt-stabilizing primary balance for a given interest-growth differential:

$$\Delta d_t = \frac{r_t - g_t}{1 + \pi_t + g_t} d_{t-1} - pb_t .$$

...*less helpful* as a measure of fiscal sustainability given lack of responsiveness of the primary balance

Complementary approach:

**Fiscal r-star:** debt-stabilizing real interest rate, for a given fiscal policy ( $\overline{pb}$  and  $\bar{d}$ )

$$r_f^* = \bar{g} + (1 + \bar{\pi} + \bar{g}) \frac{\overline{pb}}{\bar{d}}$$

# Implication 2: fiscal-monetary tensions & FM gap

Standard IS and Phillips curves (e.g., Gali, 2008)

$$\Delta\pi_t = \Phi_t - \phi(r_t - r_m^*);$$

Debt accumulation

$$\frac{\Delta d_t}{\bar{d}} = \frac{r_t - r_f^*}{1 + \bar{\pi} + \bar{g}} - \frac{pb_t - \bar{pb}}{\bar{d}},$$

Fiscal-monetary gap

$$r_m^* - r_f^* = \underbrace{\frac{\Delta d_t}{\bar{d}} (1 + \bar{\pi} + \bar{g})}_{\text{debt} \uparrow} + \underbrace{\sigma(\pi_t - \beta E\pi_{t+1})}_{\text{inflation} \uparrow} + \underbrace{\frac{pb_t - \bar{pb}}{\bar{d}}}_{\text{fiscal adjustment}}$$

**therefore:  $r_m^* - r_f^*$  is a measurable proxy for fiscal-monetary tensions**



# Fiscal-Monetary Gap & Debt/Inflation Dynamics

Fiscal-monetary gap  $r_m^* - r_f^* = \frac{\Delta d_t}{\bar{d}} (1 + \bar{\pi} + \bar{g}) + \sigma(\pi_t - \beta E \pi_{t+1}) + \frac{pb_t - \bar{pb}}{\bar{d}}$

## Key predictions

When the gap is positive,

# Fiscal-Monetary Gap & Debt/Inflation Dynamics

$$\text{Fiscal-monetary gap} \quad r_m^* - r_f^* = \frac{\Delta d_t}{\bar{d}} (1 + \bar{\pi} + \bar{g}) + \sigma \overbrace{(\pi_t - \beta E \pi_{t+1})}^{\text{MP unchanged}} + \overbrace{\frac{pb_t - \bar{pb}}{\bar{d}}}^{\text{FP unchanged}}$$

## Key predictions

When the gap is **positive**,

1. If neither FP or MP changes its stance, **debt will grow**

# Fiscal-Monetary Gap & Debt/Inflation Dynamics

$$\text{Fiscal-monetary gap} \quad \underbrace{r_m^* - r_f^*}_{\text{MP eases}} = \underbrace{\frac{\Delta d_t}{\bar{d}}}_{\text{FP unchanged}} (1 + \bar{\pi} + \bar{g}) + \sigma (\pi_t - \beta E \pi_{t+1}) + \frac{pb_t - \bar{pb}}{\bar{d}}$$

## Key predictions

When the gap is **positive**,

1. If neither FP or MP changes its stance, debt will grow.
2. If the monetary authority accommodates fiscal policy (passive MP) by lowering the real interest rate, **inflation will rise above target.**

# Fiscal-Monetary Gap & Debt/Inflation Dynamics

$$\text{Fiscal-monetary gap} \quad r_m^* - r_f^* = \frac{\Delta d_t}{\bar{d}} (1 + \bar{\pi} + \bar{g}) + \sigma \frac{\pi_t - \beta E \pi_{t+1}}{\bar{d}} + \frac{pb_t - \bar{pb}}{\bar{d}}$$

MP unchanged      FP tightens

## Key predictions

When the gap is **positive**,

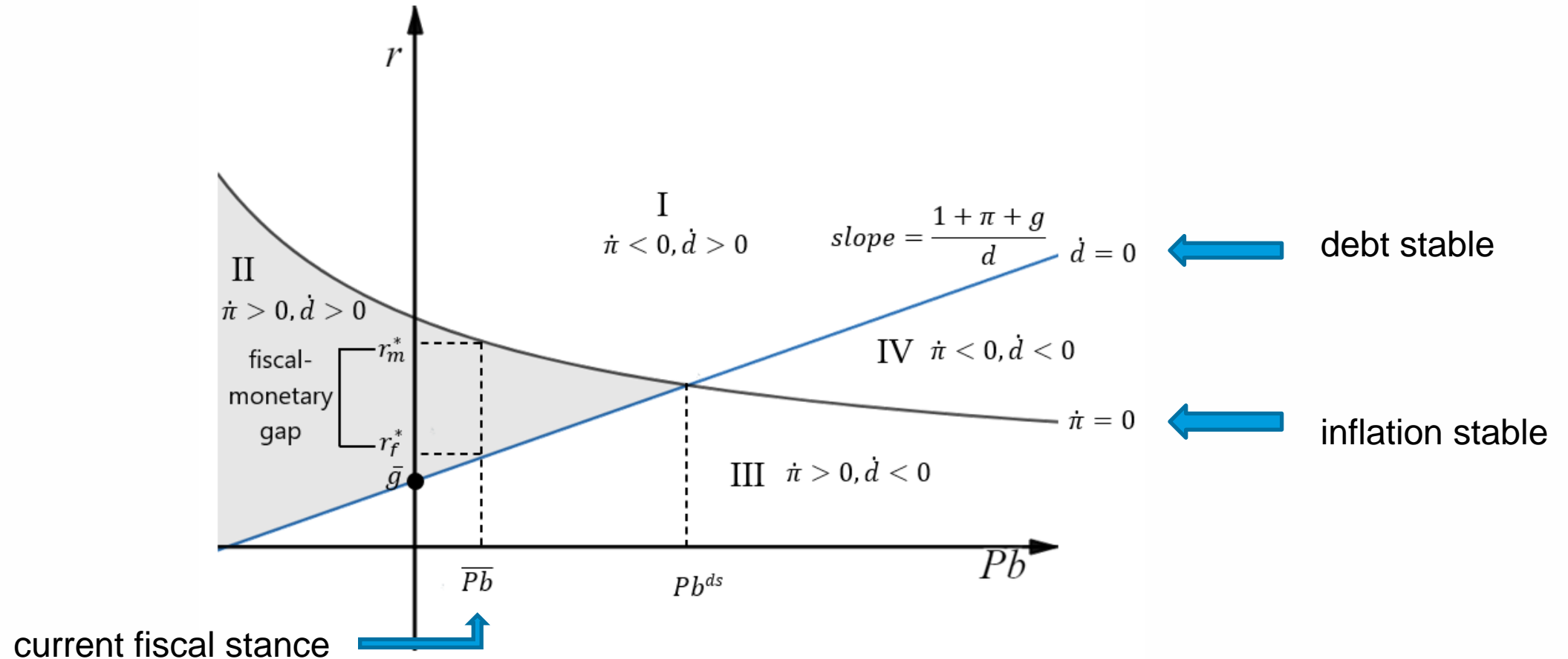
1. If neither FP or MP changes its stance, debt will grow.
2. If the monetary authority accommodates fiscal policy (passive MP) by lowering the real interest rate, inflation will rise.
3. Or, the gap can also be accommodated by **fiscal consolidation (passive FP)**, i.e., when the primary balance is adjusted upwards.

Empirically  
testable  
predictions

# Fiscal-Monetary Gap: Phase Diagram

Dynamics summarized in a phase diagram

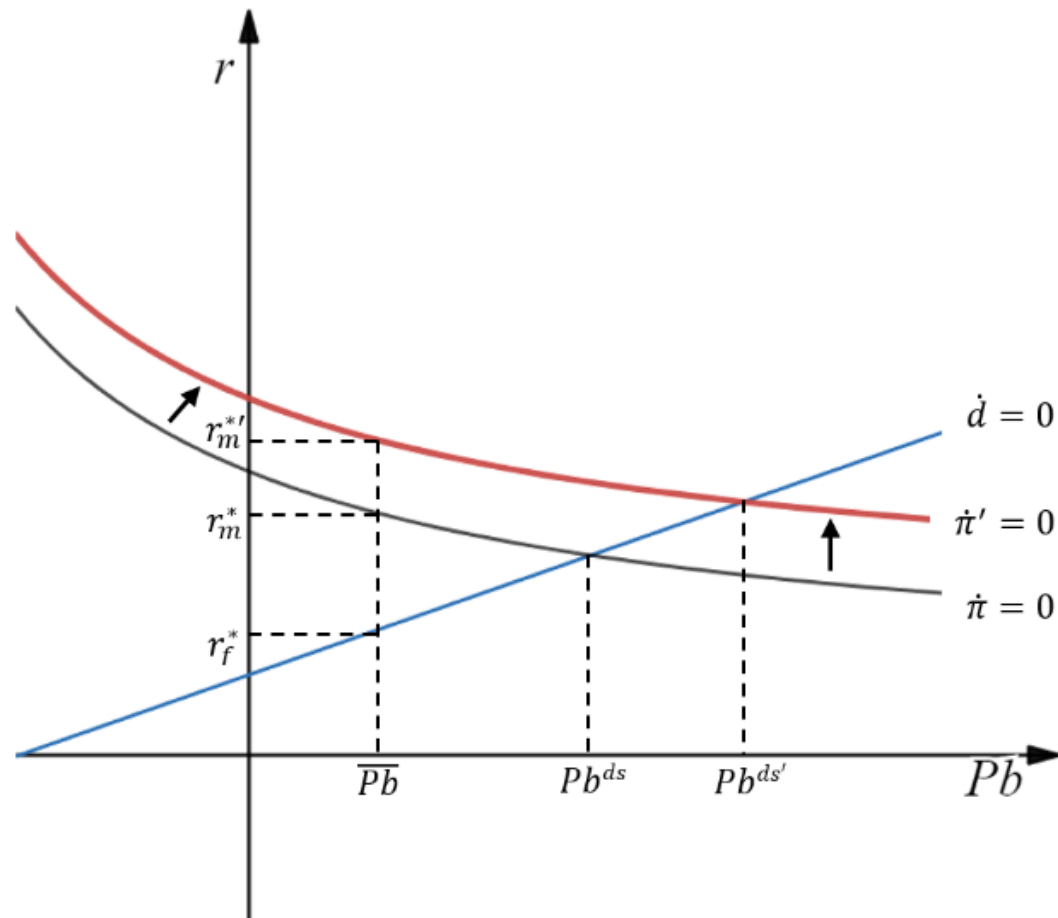
- 4 areas with **different inflation and debt dynamics** based on different real interest rate and primary balance scenarios
- Different monetary and fiscal r-star combinations & primary balance **affect fiscal-monetary tensions.**



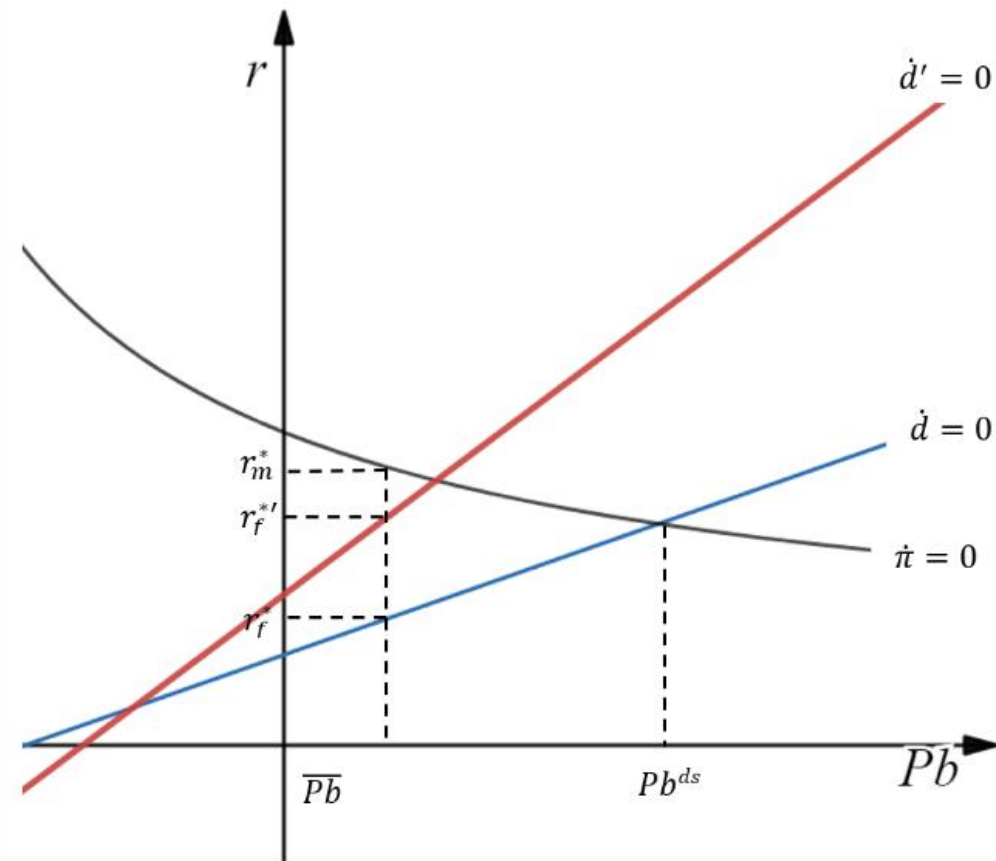
# Fiscal-Monetary Gap: Phase Diagram

## Comparative Statics (examples)

(A) Exogenous **increase monetary  $r$ -star** increases gap and tensions...



(B) ...while **increase in potential growth** reduces gap and tensions.

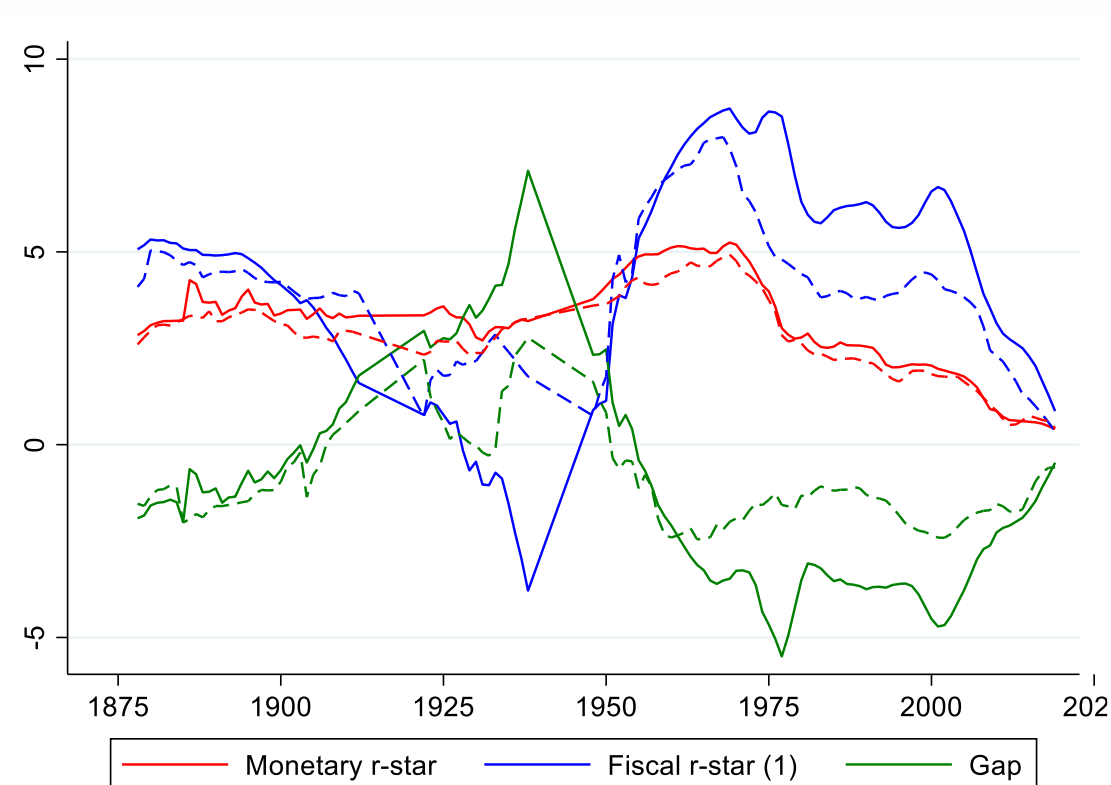


# Estimates of Fiscal R-Star and the Fiscal-Monetary Gap

- 16 AEs based on a 130 years of data (Jordà-Schularick-Taylor (JST) database)
- Filtering and moving averages of underlying variables (debt, PB) to extract trend component
- Monetary  $r$ -star and potential output growth from Platzer et al. (2023)

## Key results

- FM gap **peaked during WWII** amid war-era fiscal strains and low growth
- **Historic low in the mid-1970s** following post-war boom and demobilization
- Gap remained **low and stable during 1980s-2000s**, supported by the declining monetary  $r$ -star
- **Upward trajectory** since mid 2000s, reaching historic **highs** currently



- (1) Large historical variation in global FM gap
- (2) FM gap currently at highs not seen since 1950s

# Macroeconomic Implications of Rising Fiscal-Monetary Gap

*Local projections to compute dynamic impulse responses to variation in FM gaps*

- **Dependent variables**
  - Macroeconomic variables
  - Real asset returns
  - Probability of crisis
- **Control variables**
  - Lags of the outcome variable to capture persistence
  - Lags of the debt level, business cycle variables (i.e., output growth and inflation), policy variables (the primary balance and real policy rate) and monetary r-star
  - Country fixed effects

$$y_{i,t+h} - y_{i,t-1} = \beta^h gap_{i,t} + \alpha_i^h + \sum_{k=1}^3 \delta_k^h y_{i,t-k} + \Gamma^h X_{i,t} + u_{i,t+h} \quad , \quad h = 0, \dots, H \quad .$$

**Interpretation:** 1 p.p. higher fiscal-monetary gap predicts  $\beta^h$  p.p. higher outcome

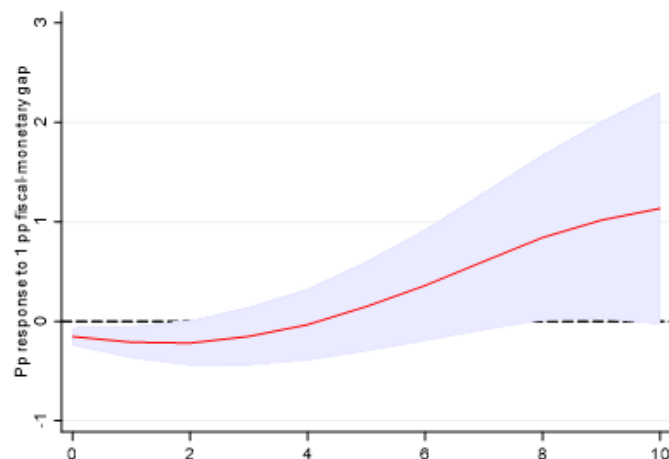


# Macroeconomic Implications of Higher Fiscal-Monetary Gap

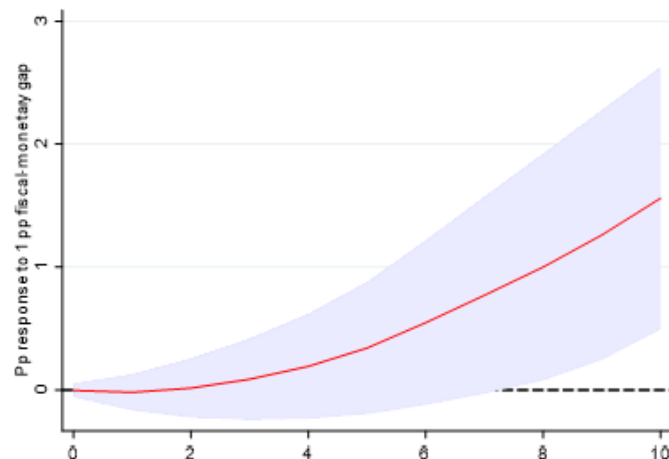
## Key results

Countries with higher gap subsequently experience **rising debt**, **higher inflation**, **financial repression**, and **lower real asset returns**.

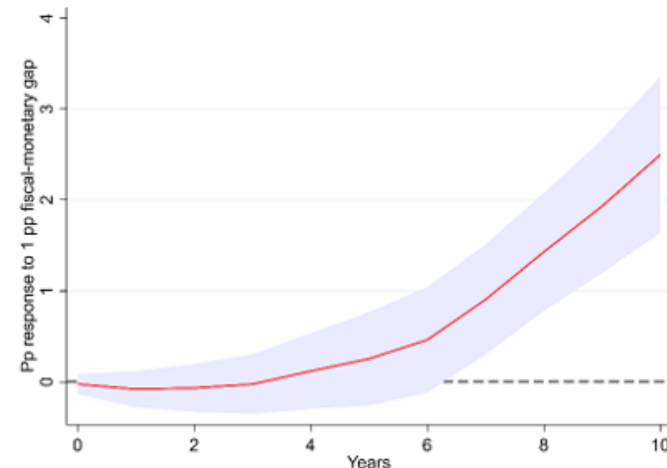
*Expected change in the debt ratio*



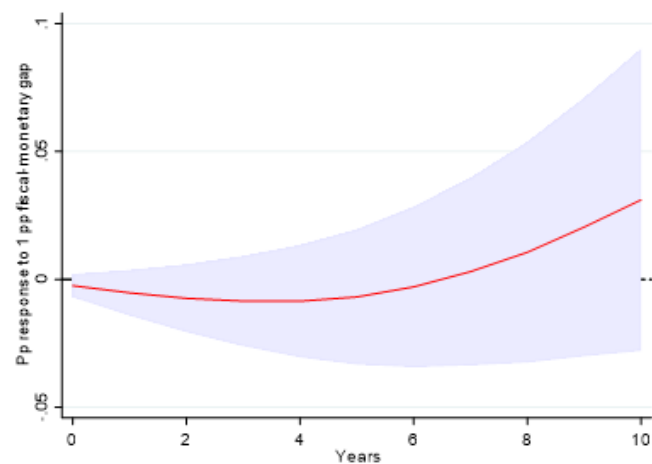
*Expected change in the price level*



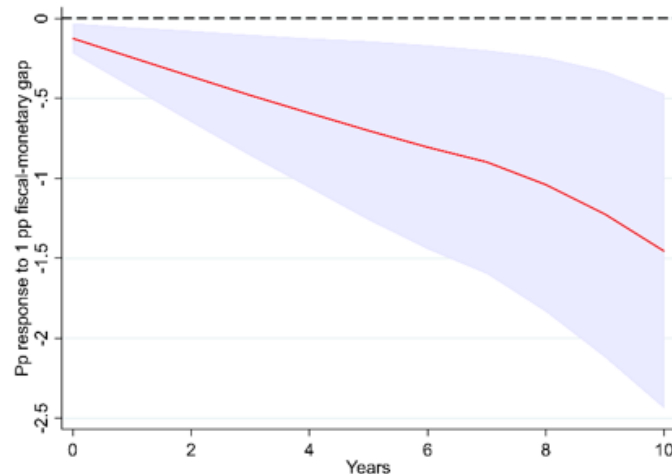
*Cumulative nominal depreciation relative to USD<sup>1</sup>*



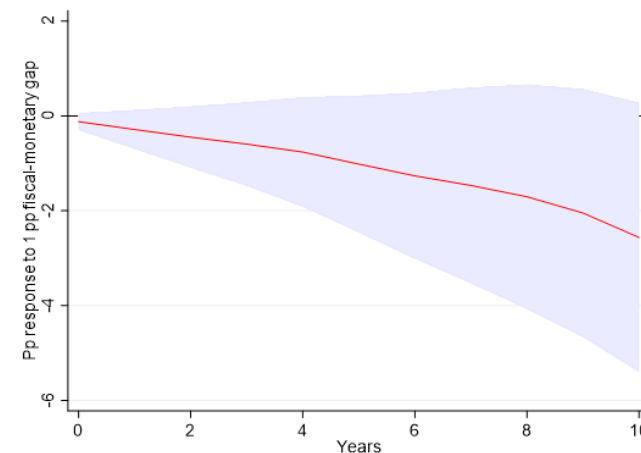
*Cumulative fiscal consolidation<sup>3</sup>*



*Cumulative debt liquidation*



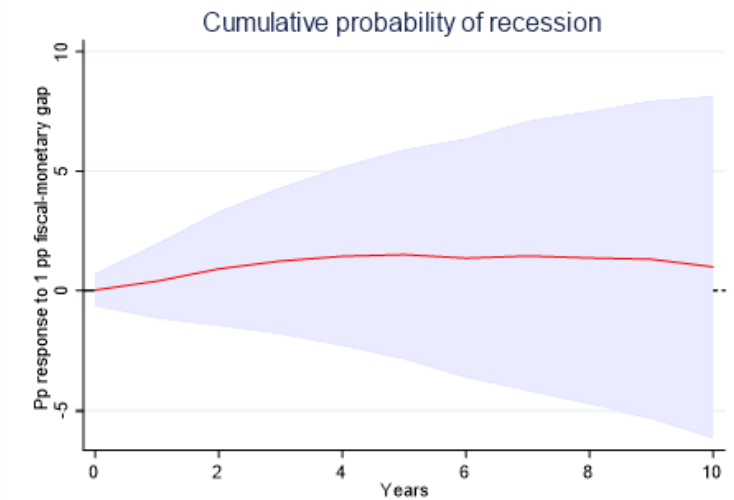
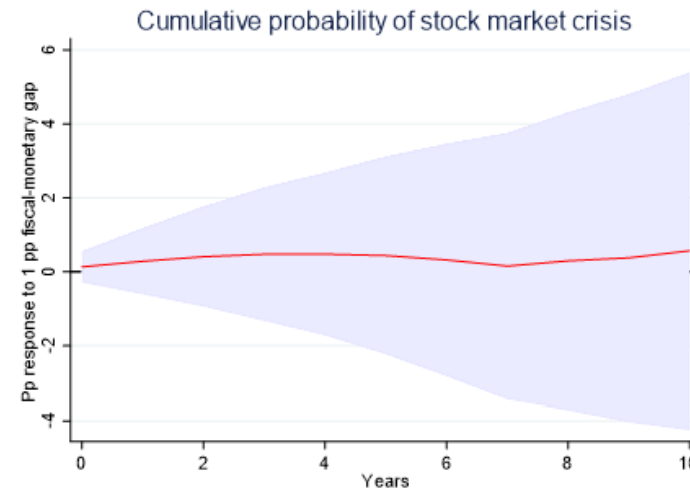
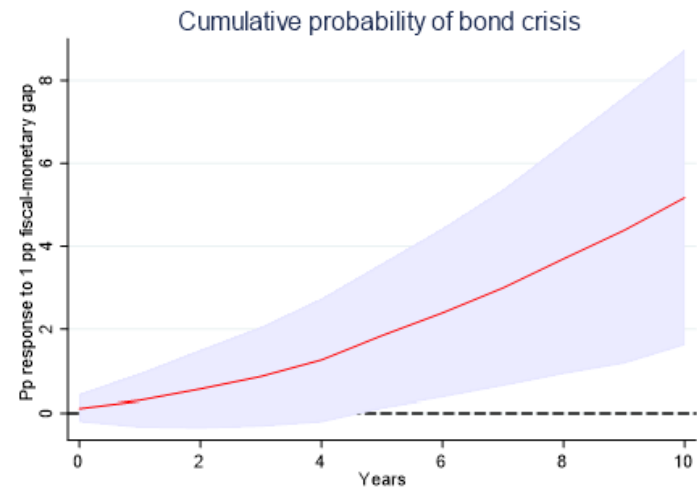
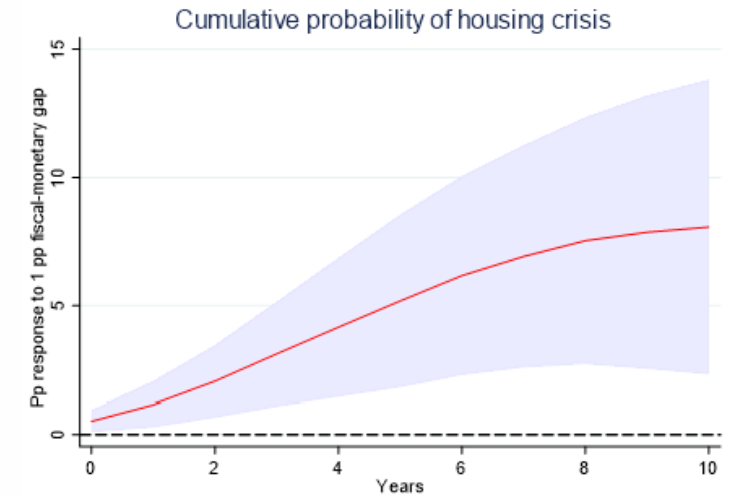
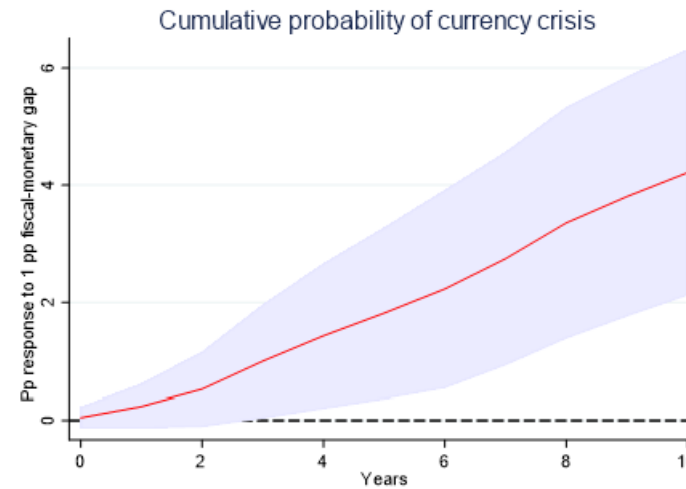
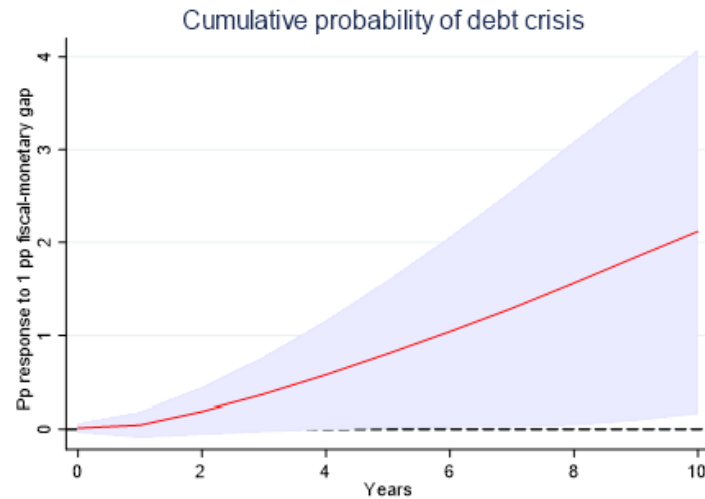
*Bond-returns<sup>2</sup>*



# Macroeconomic Implications of Higher Fiscal-Monetary Gap

## Key results

...as well as **elevated risks of future debt, currency, bond, and housing crises.**



# Recent Forward-Looking Estimates of Fiscal R-Star and FM Gap

- 17 AEs & 37 EMs based on IMF World Economic Outlook dataset
- 5-year ahead projections to capture trends in underlying variables

## Key results

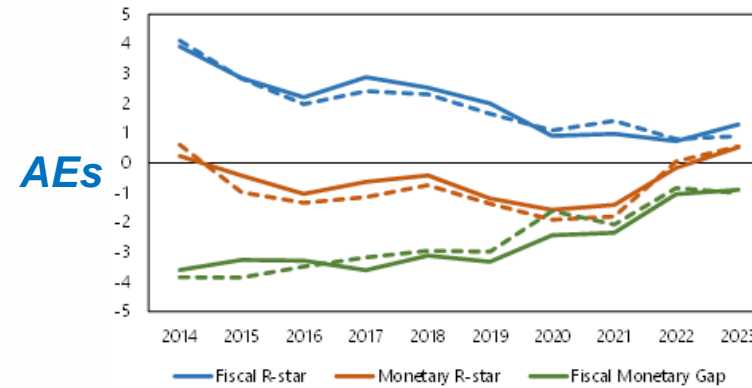
**AEs: significant upward trend in FM gap reaching record high, on the back of declining fiscal r-star and recent surge in monetary r-star**

- driven by slower growth, rising post-Covid debt, and declining PB

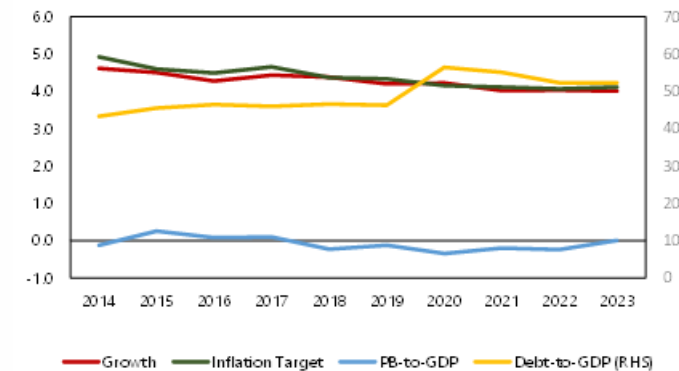
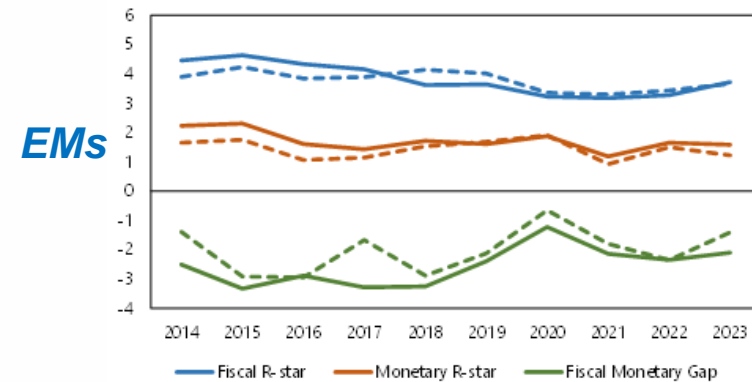
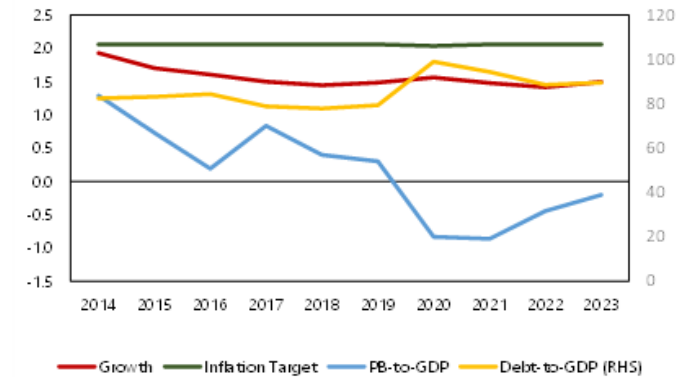
**EMs: slight upward trend with gap still well below zero**

- driven by slower growth & rising post-Covid debt, amid stable PB

*Fiscal & monetary r-star, and FM gap\**



*Underlying macro variables*



\* Dashed lines represent medians of samples, while solid lines represent unweighted means (excluding top and bottom 10% outliers).

# Policy Implications and Conclusions

1. Our paper provides motivating evidence on the **increasing activeness of FP** and therefore **increasing fiscal-monetary tensions**
2. We introduce the concepts of “**fiscal r-star**” and the “**fiscal-monetary gap**” as a proxy for fiscal-monetary tensions
  - building on standard economic frameworks (IS/Phillips curves & debt accumulation)
  - theoretically justified foundation for a measure of tensions and (inversely) policy space
3. We show that when the **fiscal-monetary gap increases**, countries subsequently experience rising debt levels, higher inflation, financial repression, and lower real asset returns, with elevated risks of future debt, currency, and housing crises.
4. Current and forward-looking estimates for **AEs** show **historic high** fiscal-monetary tensions while for **EMs** tensions are more **broadly stable**.
5. History suggests that without successful **fiscal adjustments** and **growth-enhancing reforms**, it will be hard for AEs to keep debt burdens stable and inflation at target without engaging in **financial repression**