Secular Drivers of the Natural Rate of Interest: Looking ahead

SUERF December 2023

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This talk: Give outlook on $r^*$ using structural model

- Peruffo and Platzer (2023): Secular Drivers of the Natural Rate of Interest in the United States: A Quantitative Evaluation
- International Monetary Fund (2023): Spring WEO, Chapter 2
  - 5 largest AEs and 3 largest EMs (ca. 70% of world GDP)
Comprehensive assessment of main drivers of $r^*$

- $r^*$ as endogenous outcome in quantitative model
  - $r^* \equiv$ rate that balances market for savings (demand = supply)
  - “long-run $r^*$” as in Platzer, Tietz and Linde (2022):
    - “long-run $r^*$”: long-run equilibrium with no price rigidities
    - “short-run $r^*$”: $r$ such that output gap closed no inflationary or deflationary pressure
1. **Households**
   - 74 overlapping generations
   - Heterogenous agents
   - Nonhomothetic utility

2. **Firms**
   - Exogenous productivity growth
   - Monopolistic competition → *markups*

3. **Government**
   - Public debt
   - Tax and transfer system, including social security

4. **Exogenous capital flows**
PP 2023: Drivers and Model Ingredients

Demographic change

- Life Expectancy at Birth - United States (UN)
- Population Growth (%) - United States (UN)
Public policy: Government debt and Consumption
Rising income inequality

**Top 10% Wage Income Share (Piketty Saez 2013)**

![Graph showing the top 10% wage income share from 1970 to 2010.](image1)

**Top 1% Wage Income Share (Piketty Saez 2013)**

![Graph showing the top 1% wage income share from 1970 to 2010.](image2)
Slowdown in productivity growth

![Growth in Business Sector TFP (Fernald 2014)](image)
Decline in the labor share

![Labor Share (Feenstra et al. (2014))](chart.png)
PP 2023: Drivers and Model Ingredients

Not in PP 2023: endogenous capital flows

Not in PP 2023: safe vs risky asset

Spring WEO: climate change, deglobalization
PP 2023: Model fit?

Source: International Monetary Fund (2023)
PP 2023: Model fit?

⇒ Match composition effect of inequality - Auclert et al. (2021)
Evolution of $r^*$ from 1950 and into the future

1. Initial steady state in 1950
2. Realized path of drivers until today
3. Estimates of drivers towards the future
   - Scenarios
   - Probabilistic
Scenario Analysis
Assumptions Regarding Future Path of Drivers

**Scenarios:** central, high, low

1. Demographics - estimates from the United Nations
   - **central** prediction from UN
   - high and low fertility scenarios

2. Permanent Inequality, Productivity, Labor Share
   - **central:** stabilize at current levels
   - revert (high)/continue (low) trend for another 20 years

3. Debt to GDP = up to 200% at 2080, then stabilize
Evolution of $r^*$ - Scenarios
Probabilistic Analysis
Mortality, Age Shares, and Fertility
- combination of models (United Nations 2022)
- from today to 2100
- Provided us with 2000 trajectories
  - $\phi_{gt}$ and $p_{gt}$
  - back out $n_t$
  - sample 400 trajectories
- Assumption: $B/Y = 1$
Evolution of $r^*$ - holding debt/Y = 1
Evolution of $r^*$ - Demographics Uncertainty
1. Demographics: UN

2. Others: probabilistic
   - Permanent Inequality
   - Productivity Growth
   - Labor Share
   - assume $\sim \mathcal{N}(x_{2015}, \sigma_x^2)$, $\sigma = \frac{|x_{1995} - x_{2015}|}{2}$

3. Assumption throughout: $B/Y \uparrow 200\%$
Evolution of $r^*$ - Uncertainty

![Graph showing the evolution of $r^*$ with uncertainty bands between 1980 and 2080.](Image)
Evolution of $r^*$ - Uncertainty
Evolution of $r^* - g$ - Uncertainty
THANKS
• Use PP 2023 for
  • 5 largest AE (US, DE, FR, UK, JP)
  • 3 largest EM (Brazil, China, India)

• non-US AEs: similar as US, but not as steep debt trajectory?
• EMs: $r^* \downarrow$ convergence to AEs, assuming...
  • ...demographic dynamics as per UN
  • ...productivity growth: convergence $\downarrow$ to AE
References

International Monetary Fund. 2023. “The Natural Rate of Interest: Drivers and Implications for Policy.” World Economic Outlook, April 2023.
