Public Debt and the r-star

chatGPT explores how Public Debt could affect r-star

Generated by ChatGPT

2024-10-20

Introduction

Public debt has always been a hot topic for economists and policymakers. It's not just about whether a government should borrow more or less, but about how this borrowing impacts broader economic variables like **r-star**—the natural rate of interest. But what exactly is the link between public debt and r-star? In this post, we'll break down the key channels through which public debt influences r-star and why debt sustainability is critical in this relationship.

What is r-star?

Before diving into the details, let's quickly recap what **r-star** is. The natural rate of interest, or r-star, is the real interest rate that neither stimulates nor slows down the economy. It reflects the balance between savings and investment in the economy. In a healthy economy, r-star keeps inflation stable and helps maintain full employment.

The Debt Sustainability Condition

To understand how public debt affects r-star, we need to grasp a simple but powerful concept: the **debt sustainability condition**. This condition ensures that a government's debt doesn't grow faster than its ability to repay it. Mathematically, this is represented as:

$\Delta d_t \leq (r - g)d\_t - 1$

Where:

- d_t = debt-to-GDP ratio
- r = real interest rate (the cost of borrowing)
- g = real GDP growth rate.

For debt to be sustainable, the growth rate of debt should not exceed the difference between the interest rate on the debt and the economy's growth rate. When this condition holds, markets stay confident that the government can manage its debt, which keeps long-term interest rates stable. But if the condition isn't met, debt grows faster than GDP, which can lead to rising long-term interest rates.

Transmission Channels: How Debt Affects r-star

Public debt influences r-star through various channels. Here's how:

- Crowding Out Private Investment

When a government borrows excessively, it competes with private borrowers for funds. This can push up interest rates, making borrowing more expensive for private firms. When private investment is crowded out, the balance between savings and investment shifts, putting upward pressure on r-star. However, if debt is sustainable, this effect is minimized, and r-star remains stable.

- Market Perception and Risk Premium

Investors closely monitor a government's debt levels. If they believe the debt is becoming unsustainable, they demand higher returns to compensate for the risk of default. This risk premium increases long-term interest rates, which, in turn, drives up r-star. Conversely, when debt is sustainable, confidence remains high, and risk premiums stay low, keeping r-star in check.

- Expectations of Fiscal Policy Adjustments

High debt levels often lead to expectations of future fiscal tightening (such as higher taxes or reduced government spending) to stabilize the debt. These expectations can lead households and firms to increase precautionary savings, which lowers r-star. However, if debt is under control, these adjustments aren't expected, and r-star reflects more fundamental factors like productivity and population growth rather than fears of future austerity.

- Fiscal Policy Flexibility

When debt is sustainable, governments have more room to use fiscal policy actively. They can stimulate the economy during downturns without spooking markets. This flexibility helps smooth fluctuations in r-star over time. On the other hand, if debt is too high, fiscal policy options become limited, and r-star can fall as future growth expectations deteriorate.

- Global Capital Flows

Public debt in major economies can influence global interest rates. If markets perceive a major economy's debt as risky, global investors demand higher returns, raising interest rates globally. This "global crowding out" effect increases r-star even in other countries. Conversely, when public debt is sustainable, it helps keep global interest rates and r-star stable.

Conclusion

The sustainability condition places a critical constraint on how much public debt can be sustained without leading to higher long-term interest rates. If debt grows too fast relative to GDP, it raises borrowing costs across the economy, including r-star. However, when debt is under control, r-star remains stable, reflecting fundamental economic factors instead of debt-related risks.

Public debt plays a significant role in determining r-star, the natural rate of interest. Through channels like crowding out, risk premiums, and expectations of future fiscal adjustments, public debt can either push r-star up or allow it to remain stable. The key lies in maintaining debt sustainability—when the debt-to-GDP ratio grows at a manageable pace, r-star stays aligned with long-term economic fundamentals, allowing for balanced and sustainable economic growth.