

Advanced Macroeconomics 23.09.2014.

Amendment to page 219

This text replaces the bottom of page 218 and the full page 219.

The level of the debt-income ratio and self-fulfilling expectations of default

We return to Case 1: $r > g_Y$. There will generally be an upper bound for the tax-income ratio deemed feasible by the government (think of the limits for the tax revenue implied by the Laffer curve, say). Similarly, there is a lower bound for the spending-income ratio be it for economic or political reasons. In the present framework we therefore let the government face the constraints $\tau \leq \bar{\tau}$ and $\gamma \geq \bar{\gamma}$, where $\bar{\tau}$ is the least upper bound for the tax-income ratio and $\bar{\gamma}$ is the greatest lower bound for the spending-income ratio. Then the actual primary surplus, s , can at most be equal to $\bar{s} \equiv \bar{\tau} - \bar{\gamma}$.

Suppose that at first the situation in the considered country is as in the second from the top panel in Fig. 6.2, p. 217. That is, initially,

$$s = \tau - \gamma = \hat{s} = (r - g_Y)b_0 \leq \bar{s} \equiv \bar{\tau} - \bar{\gamma}, \quad (*)$$

with $b_0 > 0$. Define \bar{r} to be the value of r satisfying

$$(\bar{r} - g_Y)b_0 = \bar{s}, \text{ i.e., } \bar{r} = \frac{\bar{s}}{b_0} + g_Y. \quad (**)$$

Thereby \bar{r} is the maximum interest rate on government bonds consistent with absence of an explosive debt-income ratio.

According to (*), key fundamentals (the spending- and tax-income ratios) are consistent with absence of an explosive debt-income ratio as long as r is unchanged. Nevertheless financial investors may be worried about default if b_0 is high. Investors are aware that a rise in the actual interest rate, r , may always happen and that if it does, a situation with $r > \bar{r}$ is looming, in particular if the country has high debt. Indeed, the larger is b_0 , the *lower* is the critical interest rate, \bar{r} , as witnessed by (**).

The worrying scenario is that if the new r , r' , exceeds \bar{r} , an unpleasant debt dynamics like that in the top panel of Fig. 6.2 sets in. To r' corresponds a new \hat{s} , \hat{s}' , defined by $\hat{s}' = (r' - g_Y)b_0$, meaning that \hat{s}' is the minimum primary surplus (as a share of GDP) required for a non-accelerating debt-income ratio in the new situation. Since $b_0 > 0$,

$$r' > \bar{r} \Rightarrow (\bar{r} - g_Y)b_0 < (r' - g_Y)b_0 \Rightarrow \bar{s} < \hat{s}',$$

with \bar{s} given in (*). The government could possibly increase its primary surplus, s , but at most up to \bar{s} , and this will not be enough because the required primary surplus, \hat{s}' , exceeds \bar{s} . So the situation would be as illustrated in the top panel of Fig. 6. 2 with b^* given as $\bar{s}/(r' - g_Y) < b_0$.

That is, *if* the actual interest rate should rise above the critical interest rate, \bar{r} , runaway debt dynamics would take off and debt default thereby be threatening. A fear that it *may* happen may be enough to trigger a fall in the market price of government bonds which means a rise in the actual interest rate, r .¹ So financial investors' fear can be a self-fulfilling prophesy. Moreover, as we saw in connection with (**), the risk that r becomes greater than \bar{r} is larger the larger is b_0 .

For countries with high $\bar{\gamma}$ or low $\bar{\tau}$ (low capability of collecting taxes as in Greece for instance) a high b_0 is therefore problematic. A high b_0 is especially problematic for a country without its own currency and a central bank that, in a temporary crisis, can step in and put a floor under bond prices.

Across countries there is no common threshold value for a “too large” public debt-to-income ratio. This is because such variables as $\bar{\tau}$, $\bar{\gamma}$, r , g_Y , net foreign debt position, and the current account deficit differ across countries. Late 2010 Greece had government debt of about 115 percent of GDP and the interest rate on 10-year government bonds skyrocketed. Conversely Japan had government debt of more than 200 percent of GDP while the interest rate on 10-year government bonds remained very low.

Discussion

In the above analysis we have simplified by assuming that several variables, including γ , τ , and r , are constants. The upward trend in the dependency ratio, due to a decreased birth rate and rising life expectancy, together with a rising request for medical care is likely to generate upward pressure on γ . Thereby a high initial debt-income ratio becomes *more* challenging.

On the other hand, rB_t is income to the private sector and can be taxed at the same average tax rate τ as factor income, Y_t . Then the benign inequality is no longer $r \leq g_Y$ but $(1 - \tau)r \leq g_Y$, which is more likely to hold (cf. Exercise 6.?).

Proceed with p. 220.

¹Several observers see the events in the South European part of the Eurozone in 2010-2012 as a manifestation of such a process (De Grauwe and Ji, 2013). The process came to a halt when the European Central Bank in September 2012 declared its willingness to effectively act as a “lender of last resort” (on a conditional basis).