Lecture 17 - Notes

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Intermediate Macroeconomics, Econ 102

1 Real Exchange Rate Adjustment with Fixed Exchange Rates

We have seen before that under a fixed exchange rate, the real exchange rate is fixed in the short run. As a consequence, net exports are not stimulated following an expansionary monetary policy. However, things are different in the medium run. The economy then reaches a same level of real exchange rate whether it is in a fixed exchange rate or a flexible exchange rate. This is coming from a **Phillips Curve** type mechanism: in a fixed exchange rate regime, the adjustment occurs through changes inflation relative to foreign inflation, rather than through the nominal exchange rate. Let us first rewrite the (IS) curve in the following way:

$$Y = C(Y - T) + I(Y, r) + G - NX(Y, Y^*, \epsilon)$$

The real interest rate is:

$$r = i - \pi^e$$

The real exchange rate:

$$\epsilon = \frac{EP}{P^*}$$

Under fixed exchange rate, the nominal exchange rate is fixed and the interest rate is equal to the foreign interest rate:

$$E = \bar{E} \qquad i = i^*$$

Therefore:

$$Y = C(Y - T) + I(Y, i^* - \pi^e) + G + NX\left(Y, Y^*, \frac{\bar{E}P}{P^*}\right)$$

Finally:

$$\boxed{Y = Y\left(\frac{\bar{E}P}{P^*}, G, T, i^* - \pi^e, Y^*\right)}$$

In the medium run however, according to the Phillips curve curve (assume for simplicity that we have the "original" Phillips curve, with $\pi^e = \bar{\pi}$), prices actually adjust (remember that this equation comes from $\pi - \pi^e = -\alpha(u - u_n)$):

$$\pi - \bar{\pi} = \frac{\alpha}{L}(Y - Y_n)$$

Therefore, according to the theory of the Phillips Curve, real exchange rates will eventually adjust, although through differential inflation rates. In the short run, a fixed nominal exchange rate implies a fixed real exchange rate. In the medium run, the real exchange rate can adjust even if the nominal exchange rate is fixed: this adjustment is achieved through movements in the relative price levels over time

Keynes versus Churchill. In 1925, Britain decided to return to the Gold Standard, which it had left during the war. It was a system in which each country fixed its currency in terms of the price of Gold. During the war, inflation had been much higher in Britain than in other countries, which means that at the pre-war nominal exchange rate, the Britain real exchange rate was "overvalued" $\epsilon = EP/P^*$.

In the *Economic Consequences of Mr Churchill*, John Maynard Keynes argued that Britain should not return to the Gold standard, because of this overvaluation: "I would much rather leave the gold value of our currency where it was some months ago than embark on a struggle with every trade union in the country to reduce money wages." Keynes's prediction turned out to be right. While other countries were growing in the period, Britain would remain in recession for the rest of the decade. Note however that this, in itself, does not prove that the only problem was competitiveness. In particular, if some contracts were set in pounds, Churchill's policy was in fact favoring creditors with respect to debtors (the "rentier class") – as we saw earlier and as we shall see again during lecture 18, and to the extent that creditors have a lower Marginal Propensity to Consume than debtors, this could also have depressed consumption and output.

2 The dynamics of government debt

Government debt is something that we only alluded to only in passing when we were thinking about the paradox of thrift, the effects of deficit reduction, etc. In particular, one reason why one might want to have stimulative policies with negative $T - G$ is that they add up to the debt of the public sector.

If the interest rate that the government pays is given by r, then the law of motion of government debt is given by:

$$B_t = (1 + r)B_{t-1} + G_t - T_t$$

Therefore, the total government deficit, which is equal to the change in government debt ΔB_t, is equal to the sum of interest payments and the primary deficit $G_t - T_t$.

$$\text{Deficit}_t = \Delta B_t = B_t - B_{t-1} = \underbrace{rB_{t-1}}_{\text{Interest Payments}} + \underbrace{G_t - T_t}_{\text{Primary Deficit}}$$

From the above equation, the evolution of the debt to GDP ratio B_t/Y_t:

$$\frac{B_t}{Y_t} = (1 + r)\frac{Y_{t-1}}{Y_t}\frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}$$

Assume that GDP grows at rate g so that:

$$\frac{Y_t}{Y_{t-1}} = 1 + g \quad \Rightarrow \quad (1 + r)\frac{Y_{t-1}}{Y_t} = \frac{1 + r}{1 + g}$$

$$\frac{B_t}{Y_t} = \frac{1+r}{1+g}\frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}$$

Therefore:

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = \underbrace{\left(\frac{1+r}{1+g} - 1\right)}_{\frac{r-g}{1+g}}\frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}$$

Imagine that all future primary surpluses were equal to zero, that is:

$$\text{for all } t \geq t_0, \quad G_t = T_t$$

Then the debt to GDP ratio is given by:

$$\text{for all } t \geq t_0, \quad \frac{B_t}{Y_t} = \left(\frac{1+r}{1+g}\right)^{t-t_0}\frac{B_{t_0}}{Y_{t_0}}$$

There are three possible cases:

1. If $r < g$, the debt to GDP ratio goes to 0 automatically. Indeed, when $a < 1$, $a^t \to 0$ when $t \to +\infty$.
2. If $r = g$, the debt to GDP ratio stays constant.
3. If $r > g$, the debt to GDP ratio goes to infinity. Indeed, when $a > 1$, $a^t \to +\infty$ when $t \to +\infty$.

Up until now, it has been the case that $r < g$. (nominal GDP growth, inclusive of inflation, is larger than 3%, while the interest rate on government debt is close to 2%. The ratio of government debt to GDP does not appear to be on an unsustainable path so far. However, some economists are worried about the US government debt, and believe it should be reduced as soon as possible.