EC1010: Tutorial Questions 4

February 12, 2010

1. From 1970 to 1995 the rate of growth of TFP slowed in developed economies, in what became known as the *productivity slowdown.*

   i.) What implications did this have for rising living standards in developed economies? For a poor country with a high savings rate, would this development have been as significant?

   ii.) One of the reasons cited for the productivity slowdown was the rising importance of the services sector in developed economies. Explain briefly how this development might have partly caused the slowdown in TFP growth.

2. When the production function is $Y = AK^{\frac{1}{3}}L^{\frac{2}{3}}$, it can be shown that

$$g_Y = g_A + \frac{1}{3}g_K + \frac{2}{3}g_L,$$

   where g_X denotes the growth rate of the variable X. (This is called the *growth accounting formula.*) If the growth rates of real GDP and the capital stock are both equal, while labour supply is constant, show that $g_Y = \frac{3}{2}g_A$.

3. If the inflation rate is 3 percent and the nominal interest rate is 5 percent, what is the *real* interest rate?

4. If the nominal rate is 4 percent rate and inflation is -1 percent, what is the *real* interest rate? More generally, what does *deflation* do to real interest rates? Give the intuition for your answer.

5. Suppose expected inflation over the next year in an economy is 11 percent. If a lender seeks a real return of 4 percent, what nominal rate would the lender demand? If inflation is unexpectedly high, what happens to the real return?

6. Suppose the savings function is $S(r) = \alpha + \beta r$, while the investment function is $I(r) = \gamma + \zeta r$. What are the signs of β and ζ? Find the equilibrium interest rate. If both $S(r)$ and $I(r)$ double, how does your answer change? Give the intuition for this result.

Problem Set 4

7. Suppose the government introduces a tax on investment profits. Using the *loanable funds theory*,

   i.) Illustrate graphically the effect of the tax. Explain clearly the dynamics of what occurs. What happens to savings, investment and the real interest rate in the new equilibrium?

   ii.) How would your answer change if savings in the economy were *less* responsive to changes in interest rates?

   iii.) In this analysis, we assume the economy is always at potential. In the new equilibrium, how does the *composition* of output change?

8. Suppose i) consumers become more nervous about the future; ii) the budget surplus rises; and iii) because of a new technological breakthrough, investment demand rises. Using the *loanable funds theory*, illustrate these changes graphically. Is the new real interest rate higher or lower than before?

9. Figure 1 below shows the real interest rate in the U.S. from 1998 to 2002. Using the loanable funds theory, give three possible reasons for the fall in the real interest rate in 2001.

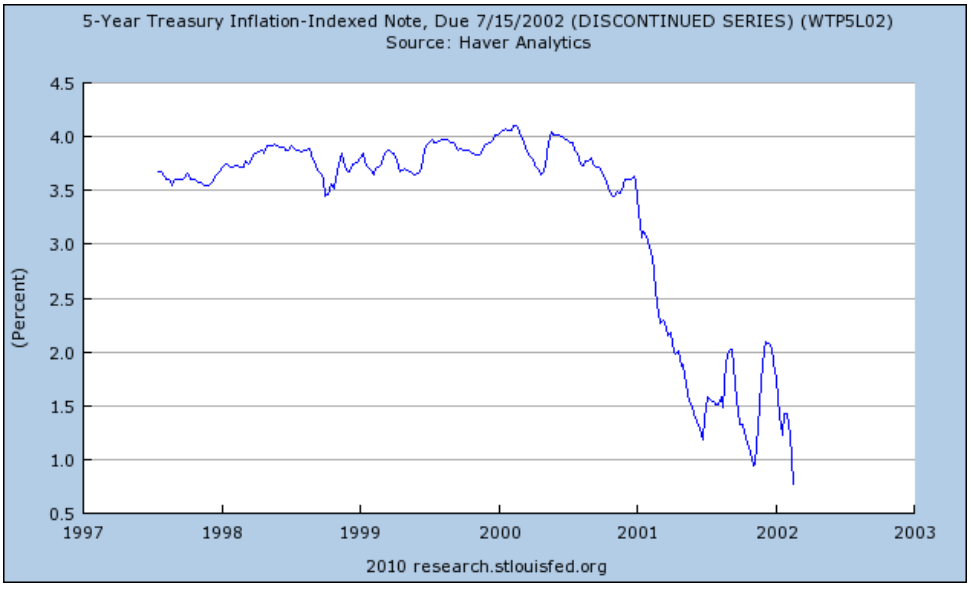

Figure 1: Real Interest Rate in the U.S., 1998-2002.