Problem Set 3: Monetary Policy

Exercise 1. Using the Euler equation, determine the price of a bond paying off in three year's time. The level of consumption today is C_1 and the level of consumption in three year's time is C_4. If C_4 is much bigger than C_1, what do we know about the i) price and ii) rate of return on the bond. Explain the intuition.

Exercise 2. What are the implications of each of the following developments for the yield curve:

- The central bank is permanently made independent of the government today.

- News that the government will start running large budget deficits in ten years time, as a result of baby-boomers retiring and the attendant strain on social welfare systems. (Assume the economy is closed).

- A new policy that starts in 5 years time that raises savings.

- A permanent fall in money growth today.

Exercise 3. Suppose inflation rises by 5% in two countries, A and B. Financial markets know A follows a Taylor rule, but are unsure of the policies pursued by B. Explain what you think happens to long-run interest rates and the price of long-run bonds in both countries.

Exercise 4. In a widely cited paper, Orphanides argued that the inflation in the U.S. in the seventies was primarily cased by the central bank following a Taylor-type rule, but not having discerned there was a *productivity slowdown.* Explain his argument.

Exercise 5. In 2005, Donald Kohn, a FED Governor wrote

'Nothing better illustrates the need to properly account for risk premiums than the current interest rate environment: To what extent are long-term interest rates low because investors expect short-term rates to be low in the future...and to what extent do low long rates reflect narrow term premiums, perhaps induced by well-anchored inflation expectations or low macroeconomic volatility? Clearly, the policy implications of these two alternative explanations are very different.'

What does he mean by different policy implications?

Exercise 6. According to the Taylor rule, the federal funds rate should be

$$i^* = r_n + \pi + .5(\pi - \pi^*) + \psi(y - y^*)$$

a) Write this in terms of the target *real* rate.

b) Suppose the central bank intervenes to maintain the level of the nominal exchange rate at some value $\bar{\epsilon}$. Modify the Taylor rule to incorporate this objective.

c) Some central banks (i.e., "hawkish" ones) place more weight on their inflation objective than output stability. How could you represent this in the rule above?

Exercise 7. If the yield curve is flat, what do investors expect about short-run interest rates in the future?

Exercise 8. The *forward rate* f_2 is the short-run rate that you can be *guaranteed* of next year (say). If a two year bond pays i_{2l} and today's short-run rate is i_1, find an expression for the next year's forward rate f2.

Exercise 9. If output is at potential and inflation is at target, what does the Taylor rule prescribe? What is the best guess of the central bank's target rate in 10 year's time? What happens to the target if there is permanent rise in government expenditure?

Exercise 10. What would happen to the yield curve if the FED committed to keeping interest rates low for the next year *and* the level of investment demand rose permanently.

Exercise 11. Ireland currently 'needs' deflation to depreciate the real exchange rate. What implications does deflation have for the banking system and the credit channel of monetary policy?

Exercise 12. What are the implications for the credit channel of having debt denominated in foreign currencies?

Exercise 13. Multiple Choice Questions: 2010 Midterm, Questions 1-3, 5, 8-10; 2009 Midterm, Questions 1-8, 11.