Macro 7007 Qualifier – 2010

PART I: (33%)

Answer one of the following two questions:

1. Suppose that the Central Bank minimizes the loss function:

$$L = \frac{\beta}{2}(y_1 - y_e)^2 + \frac{1-\beta}{2}(\pi_2 - \pi^T)^2 \qquad 1 > \beta > 0$$

subject to the Philips Curve:

$$\pi_1 = \pi_0 + \alpha(y_0 - y_e) \qquad \alpha > 0.$$

The commodity market is described by the IS curve:

$$y_1 - y_e = -a(r_0 - r_S) \qquad a > 0.$$

y: log of real income
y_e: long run equilibrium value of y
π: inflation rate
π^T: target inflation rate
r: real interest rate
r_S: stabilizing real interest rate
Subscripts denote time.

    a. Derive the monetary rule followed by the Central Bank as a relationship between π_1 and y_0.

    b. Derive the Taylor rule for this economy. Interpret the lag structure behind this Taylor rule (that is when the Central Banks takes an action today, when does it affect output? inflation?).

    c. For the European Central Bank beta is very small. For the Fed it is higher. Why? Explain the implications of the value of β for the conduct of monetary policy in the US and the EU when these economies experience a contraction.

    d. Explain implications of parameters a and α for the conduct of monetary policy.

2. The IS and LM equations are respectively given as:

$$Y = Y(r) \qquad Y' < 0$$

$$m/p = L(r + \pi, Y) \qquad L_{r+\pi} < 0, L_{Y>0}$$

Y: real income
π: expected inflation rate
r: real interest rate

m: log of money stock
p: log of price level

    a. Suppose price level is constant and expected rate of inflation is zero. Derive the *dr/dm* and explain how an increase in money supply affects real interest rate.

    b. Suppose *dp/dm* responds partially to changes in money stock and is constant lying in the [0,1] interval. Derive the *dr/dm* and explain how an increase in money supply affects real interest rate. How does the size of the multiplier compare with what you obtained in part (a)? Why?

    c. Suppose dπ/dm>0 and 0<*dp/dm*<1 and both are exogenous. Find *dr/dm*. How does the size of the multiplier compare with what you obtained in part (b)? Why?

    d. Suppose there is complete and instantaneous price adjustment: dπ/dm=0 and *dp/dm*=. Find *dr/dm*. How does the size of the multiplier compare with what you obtained in part (c)? Why?

Section II: (66%)

Answer two of the following four questions:

1. Compare and contrast critically microfoundations of the new-Classical and disequilibrium (quantity-constrained) macroeconomic models. Make sure that you explain what is meant by microfoundations.

2. Explain in detail the significance of real rigidities in the new-Keynesian theory. Make sure that you discuss rigorously where they come from and their theoretical significance.

3. Use the government budget constrain to derive the conditions under which the government would be insolvent (assume that the Central Bank keeps real money supply constant).

4. "Unemployment equilibrium persists if markets are not competitive."
    a. Present a model where imperfect competition in the product market explains recessionary gap.
    b. Present a model where imperfect competition in the labor market explains recessionary gap.
Graphical representation of models would suffice. In your responses make sure that you illustrate the gaps in each part by comparing unemployment and full-employment equilibria.