14.02 Principles of Macroeconomics
Problem Set # 4
Due: October 30, 2009

October 27, 2009

1 True/False/Uncertain [10 points]

1. The IS curve is downward sloping because as r increases, both Investment and Consumption decreases, reducing the demand for goods.
2. According to the AD-AS model, the fact that the expansion of the 90s was mainly characterized by declining inflation is consistent with a positive demand shock.
3. An expansionary monetary policy shifts the LM curve to the right.
4. A contractionary fiscal policy shift the IS curve to the right.

2 Aggregate demand, aggregate supply, and policy [90 points]

1. Consider the following AD framework:

$$\frac{M^d}{P} = AD - r$$

$$C = 1 + 0.5 \cdot Y$$

$$I = 1 - 0.5 \cdot r$$

$$AD = C + I + G$$

$$\frac{M^d}{P} = \frac{M^s}{P}$$

   (a) Which variables are exogenous in this framework? Which are endogenous? [5 points]
   (b) Solve for the IS curve. [5 points]

(c) Solve for the LM curve (it is not necessary to do a detailed graph). [10 points]

(d) Sketch both curves on a graph. [5 points]

(e) Solve for the aggregate demand equation. Explain why AD depends on the variables you obtain in your solution. [5 points]

(f) Sketch your solution for AD on a graph (no details needed). [5 points]

2. Consider the following AS framework. The economy produces output according to a Cobb-Douglas production function

$$Y = K^{1/3}L^{2/3}$$

Labor supply is fixed at $\overline{L}$ and the nominal wage is fully flexible. Capital in the economy is constant at $\overline{K}$.

(a) Find labor demand. [5 points]

(b) Solve for the equilibrium real wage. [5 points]

(c) Solve for the AS. How do prices affect AS? How do they affect the nominal wage? [5 points]

(d) Sketch a graph of AS in the (P, Y) plane (no details needed). [5 points]

(e) What do we call this framework? [5 points]

3. Imagine AD and AS represent the main forces driving the business cycle in a country where you have been chosen as Treasury Secretary. Your country has been going through difficult economic times, as people are unhappy with their level of income. You decide to implement a policy to "jump-start" (=stimulate) the economy.

(a) You decide to increase G. What is the effect of this policy on AD and AS? [5 points]

(b) Sketch these effects on two separate graphs, one for each curve. No details needed. [5 points]

(c) Two years after the increase in G, you observe that prices in your economy have gone up. However, you don't have any data on the other variables you care about (Y, C, I). You hire an MIT student that took 14.02 to figure them out. What will she tell you? Did these variables go up, down or stay the same? Is there a single unambiguous answer? [5 points]

(d) Has the policy been beneficial for your country? In particular, what has happened to consumption and investment, and why? [5 points]

4. Can you relate this model to a particular historical episode in the world economy? [5 points]

5. Can you contrast this episode to two other dramatic ones? [5 points]