

Economics 101b; Fall 2003; Problem Set 6

Due in section October 23

1. Why do economists today tend to believe that monetary policy is superior to discretionary fiscal policy as a stabilization policy tool? In what circumstances that you can imagine would this belief be reversed?
2. Suppose that the government and central bank together want to keep GDP constant but raise the rate of investment. What policies can they follow to achieve this?
3. Suppose that the level of investment spending does not depend at all on the interest rate—that $I_r=0$. Does this mean that the IS curve is vertical? How could central bank changes in the real interest rate effect the sticky-price equilibrium level of real GDP?
4. Suppose that the consumption, investment, net exports, and exchange rate are:

$$Y = C + I + G + NX$$

$$C = C_0 + C_y(1-t)Y = \$3000 + 0.5(1-.4)Y$$

$$I = I_0 - I_r r = \$1200 - \$10000r$$

$$GX = X_f Y^f + X_\epsilon \epsilon = 0.1Y^f + \$4\epsilon$$

$$IM = IM_y Y = .2Y$$

$$NX = GX - IM$$

$$\epsilon = 100 + 1000(r^f - r)$$

Derive the IS curve for this economy: real GDP as a function of all the unspecified variables in the economy. Suppose that the foreign interest rate r^f is 5%, that total foreign income Y^f is \$10000, and that government spending G is \$3000. What then is equilibrium annual real GDP if the central bank sets the real interest rate r at 3%? At 5%? At 7%? (Note that in this version an interest rate of 3% corresponds to $r=0.03$.)

5. Suppose that the consumption, investment, net exports, and exchange rate functions are:

$$Y = C + I + G + NX$$

$$C = C_0 + C_y(1 - t)Y = \$3000 + 0.5(1 - .4)Y$$

$$I = I_0 - I_r r = \$1200 - \$10000r$$

$$GX = X_f Y^f + X_\varepsilon \varepsilon = 0.1Y^f + \$4\varepsilon$$

$$IM = IM_y Y = .2Y$$

$$NX = GX - IM$$

$$\varepsilon = 100 + 1000(r^f - r)$$

Suppose further that the government follows a balanced budget rule: government purchases G are equal to government tax collections:

$$T = tY = G$$

Derive the IS Curve for this economy. How much does equilibrium sticky-price real GDP fall for a 1% increase in the interest rate r ? (Note that in this version an interest rate of 3% corresponds to $r=0.03$.)

6. Suppose that the economy's Phillips curve is given by:

$$u = u^* - \beta(\pi - \pi^e)$$

with β equal to 0.4 and the natural rate of unemployment u^* equal to .06--six percent. Suppose that the economy has for a long time had a constant inflation rate π equal to 3% per year. Suddenly the government announces a new policy: it will use fiscal policy to push the unemployment rate down by 2%--and promises it will keep that expanded fiscal policy in place indefinitely.

Suppose, further that the dominant way of forming expectations in the economy is such that people have *adaptive expectations* of inflation--so that this year's expected inflation is equal to last year's actual inflation. What will be the course of inflation and unemployment in this economy in the years after the shift in fiscal policy? Track the economy out twenty years, assuming that there are no additional shocks.

7. Suppose that the economy's Phillips curve is given by:

$$u = u^* - \beta(\pi - \pi^e)$$

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Suppose that for each one percentage point that the inflation rate rises above three percent, the central bank raises nominal interest rates by two percentage points--and that each one percentage point increase in real GDP moves the economy along the IS curve sufficiently to shrink real GDP by one percent.

Suppose that agents in the economy have *rational expectations* of inflation--so that this year's expected inflation is what an economist knowing the structure of the economy and proposed economic policies would calculate actual inflation was likely to be. What will be the course of inflation and unemployment in this economy in the years after the shift in fiscal policy? Track the economy out twenty years, assuming that there are no additional shocks.

8. What are the *qualitative* effects, in the sticky-price IS-curve model, if the Federal Reserve holds short-term nominal interest rates constant, of:

- ...an increase in firms' optimism about future profits?
- ...a sudden increase in military spending?
- ...a boom abroad that raises foreign incomes?
- ...a decision by foreign central banks to raise interest rates abroad?
- ...a shift in opinion by foreign exchange speculators that reduces their confidence in the currency?

9. Suppose that the expected rate of inflation suddenly jumped. What would happen--with no other changes in the economic environment, and no change in the Federal Reserve's setting of the interest rate--to sticky-price equilibrium real GDP?