

## Economics 101b; Fall 2000; Problem Set 7

*Due in class October 31*

1. What are the *qualitative* effects, in the IS-LM model, of...
  - ...an increase in firms' optimism about future profits?
  - ...a sudden improvement in banking technology that makes checks clear two days faster?
  - ...a wave of credit card fraud that leads people to use cash for purchases more often?
  - ...a banking crisis that diminishes banks' willingness to accept deposits?
  - ...a sudden military spending program?
2. Explain why the LM curve—money supply equals money demand with the money stock held constant, plotted with the interest rate on the vertical and real GDP on the horizontal axis--slopes upward. What changes in the economic environment can you think of that would increase its slope?
3. Suppose that the expected rate of inflation suddenly jumped. What would happen--with no other changes in the economic environment--to the IS-LM equilibrium? Would equilibrium real GDP go up or down? Would the equilibrium real interest rate go up or down?
4. In 2000 the unemployment rate averaged 4.0 percent, and the rate of growth of potential output was 3.5 percent per year. Assuming that the rate of growth of potential output remains unchanged and that Okun's law holds, how much higher would you

expect real GDP to be in 2002 than in 1999 if in year 2002 the unemployment rate averages 6 percent?

5. Suppose that the Federal Reserve is wondering whether it should follow a policy of stabilizing the money stock or one of stabilizing the real interest rate. Suppose that all shocks to the economy are shocks to autonomous spending: which policy leads to smaller shifts in real GDP in response to shocks? Suppose that all of the shocks to the economy are shocks to the parameters of money demand--to the parameters  $L_0$  and  $L_i$  in the money demand equation:

$$\frac{M^d}{P} = \frac{Y}{(V_0 + V_i \times (r + \pi))}$$

and in the LM equation:

$$Y = (V_0 + V_i \times (r + \pi)) \times \frac{M}{P}$$

which policy is now best in terms of leading to smaller shifts in real GDP? Suppose that the only shocks to the economy are changes in assessments of expected inflation  $\pi$ . Now what is your answer?

6. 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?

7. Suppose that the level of investment spending does not depend at all on the interest rate. Does this mean that the IS curve is vertical? If not, how can it be that central bank changes in the real interest rate effect the equilibrium level of real GDP?

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

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

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

$$I = I_0 - I_r r = \$1200 - \$100r$$

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

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

$$NX = GX - IM$$

$$\varepsilon = 100 + 10(r^f - r)$$

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 at 3%? At 5%? At 7%?

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

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

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

$$NX = GX - IM$$

$$\varepsilon = 100 + 10(r^f - r)$$

Suppose further that the government follows a balanced budget rule: government purchases  $G$  are equal to government tax collections  $tY$ . Derive the IS for this economy: real GDP as a function of all the unspecified variables in the economy. Is the level of real GDP along the IS curve more or less sensitive to changes in interest rates than in problem 8? Why or why not?