

Problem #1 (Problem 5, Chapter 5)

Higher interest rates will discourage investment. Firms want to invest in projects with higher rate of the return. If the interest rate is high, the opportunity cost of using those funds on your own investment rises because the firm could easily lend this money at a high interest rate. So even if the firm has its own money to invest, high interest rates still discourage investment because there is still that outside option to lend the money to someone else at a high interest rate.

Problem #2 (Problem 7, Chapter 5)

- a) Lower income taxes will shift the demand curve in Keynesian cross model upwards, in turn IS curve will shift to the right. On the other side, expansive monetary policy will shift money supply curve to the right which will shift LM curve to the right.
- b) As you can see in Figure 1 on page 103 in Blanchard's book Clinton-Greenspan mix shifts IS curve to the left and LM curve to the right.
- c) Output declined substantially in the last quarter of 2001. The terrorist attacks substantially reduced consumer confidence, causing an inward shift in the IS curve. Furthermore, interest rates decreased in the last quarter of 2001, which is consistent with such a shift in the IS curve (As an example of one such decrease in the interest rate, the 3-month T-bill rate in the secondary market went from 3.36 percent in August to 1.69 in December).

Problem #3 (Problem 8, Chapter 5)

- a) Increase G and increase money supply.
- b) Decrease G and increase money supply (Figure 1 on page 104, Blanchard)

Problem #4:

$$C = c_0 + c_1 Y_D = c_0 + c_1(Y - T), \quad c_0 = 200, c_1 = 0.25$$

$$I = \bar{T} + qY - bi, \quad \bar{T} = 150, q = 0.25, b = 1000$$

$$G = 250$$

$$T = 200$$

$$\left(\frac{M}{P}\right)^D = a_0 Y - a_1 i, \quad a_0 = 2, a_1 = 8000$$

$$\frac{M}{P} = 1600$$

(i) (a) T = 200

IS

$$Y = Z(Y)$$

$$Y = C + I + G$$

$$= c_0 + c_1(Y - T) + \bar{T} + qY - bi + G$$

LM

$$\frac{M}{P} = a_0 Y - a_1 i$$

$$i = \frac{1}{a_1} \left[a_0 Y - \frac{M}{P} \right]$$

Combining IS & LM yields (plug i from LM into equation for IS)

$$Y = c_0 + c_1(Y - T) + \bar{T} + qY - \frac{b}{a_1} \left[a_0 Y - \frac{M}{P} \right] + G$$

After rearranging

$$Y = \frac{1}{1 - c_1 - q + b \frac{a_0}{a_1}} \left[c_0 - c_1 T + \bar{T} + \frac{b}{a_1} \frac{M}{P} + G \right]$$

Plug in the numbers

$$Y = \frac{1}{1 - 0.25 - 0.25 + 1000 \frac{2}{8000}} \left[200 - 0.25 * 200 + 150 + \frac{1000}{8000} 1600 + 250 \right] = 1000$$

$$i = \frac{1}{a_1} \left[a_0 Y - \frac{M}{P} \right] = 0.05$$

$$C = c_0 + c_1(Y - T) = 400$$

$$S = Y - T - C = 400$$

$$I = \bar{I} + qY - bi = 350$$

A great way to check if you got the right result is by computing investment from equation

$$I = S + T - G$$

Nedless to say, both equations for I should give you the same number in equilibrium.

(b) T = 150
 Plug in the numbers

$$Y = 1016.66$$

$$i = 0.054$$

$$C = 416.67$$

$$S = 450$$

$$I = 350$$

(ii) No accelerator: q = 0
 (a) T = 200
 Using the same equations as above

$$\begin{aligned}
 Y &= 750 \\
 i &= -0.0125 \\
 C &= 337.5 \\
 S &= 212.5 \\
 I &= 162.5
 \end{aligned}$$

(b) $T = 150$

$$\begin{aligned}
 Y &= 762.5 \\
 i &= -0.009375 \\
 C &= 353.125 \\
 S &= 259.375 \\
 I &= 159.375
 \end{aligned}$$

(iii) We see that in part (i) Y increases by 16.66 which is obviously more than in part (ii) where Y increases by 12.5. In part (i) we use accelerator which additionally increases output through increase in investment, in part (ii) we don't have an accelerator and therefore the increase in Y is smaller. With other words, model with accelerator has a larger multiplier.

Notice that in part (i) we don't have a crowding out, I stays the same after we decreased T . This is because the increase of Y offsets the negative effect of interest rate on I . In part (ii) we don't have an accelerator and therefore higher interest rates decrease investments by approximately 3.