ECO2142 B
Fall 2013

Assignment #4

Due date: November 13, at the beginning of the class

1. MS, Chapter 11, #1

2. MS, Chapter 11, #3. Use, however, the following equations:

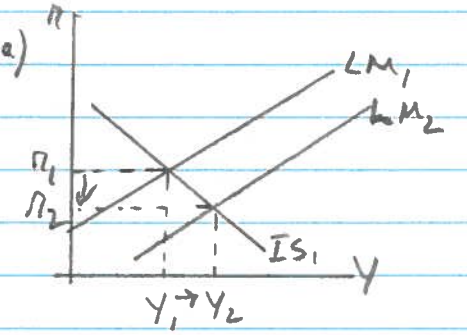
$$C = 200 + 0{,}8(Y-T)$$
$$I = 200 - 25r$$
$$(M/P)^d = Y - 200r$$

3. Suppose that firms become very optimistic about future business conditions and invest heavily in new capital equipment.
   a) Use *IS-LM* and *AD/AS* diagrams to show the short run effect of this optimism on the economy.
   b) Now use the diagrams from part (a) to show the new long-run equilibrium of the economy. Explain the transition from the short-run to the long-run equilibrium. (For now, assume there is no change in the long-run-aggregate-supply curve)
   c) How might the investment boom affect the long-run-aggregate-supply curve?

Assignment #4

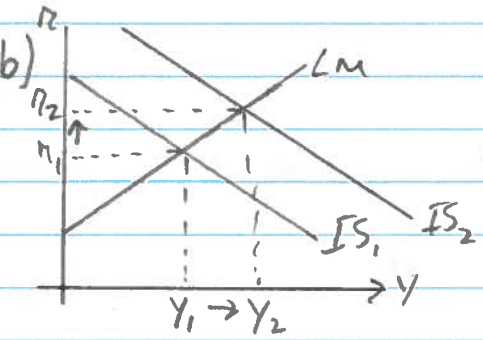
12 (3 points each)

1. a)



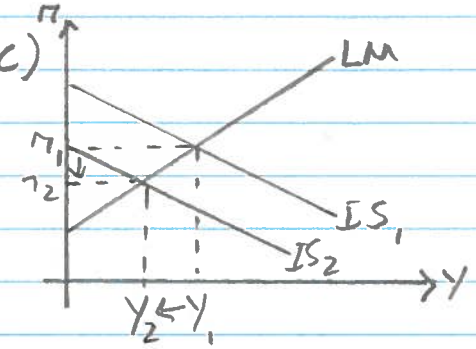
↑M ⇒ LM curve shifts right
⇒ ↓R, ↑I, ↑Y, ↑C

b)



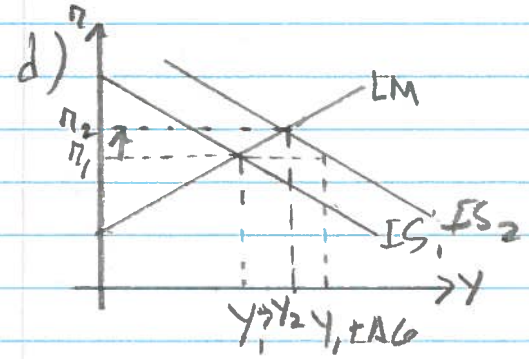
↑G ⇒ IS curve shifts upward
⇒ r↑, I↓, Y↑, C↑

c)



↑T ⇒ IS curve shifts left
⇒ r↓, I↑, C↓, Y↓

d)



If both G and T increased by same amount:

$\Delta Y = MPC\,\Delta Y - MPC\,\Delta G + \Delta G$

$(1-MPC)\Delta Y = (1-MPC)\Delta G$

$\Delta Y = \Delta G$

i.e. IS curve shifts horizontally by an amount ΔG

⇒ r↑, I↓, Y↑, C↑

2. (26 points)

$C = 200 + 0{,}8(Y-T)$ $\quad G = T = 100$

$I = 200 - 25r$

$(M/P)^d = Y - 200r$

a) Equilibrium condition on g & s market:

$Y = C + I + G$

(3) $\Rightarrow Y = 200 + 0{,}8(Y-100) + 200 - 25r + 100$

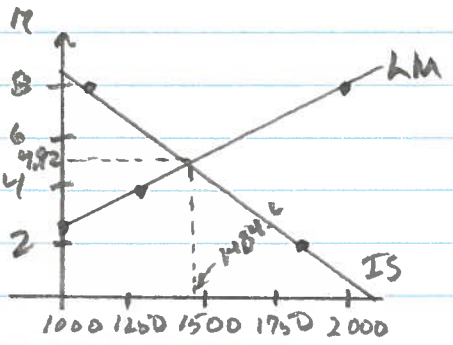
$0{,}2Y = 420 - 25r$

$\boxed{Y = 2100 - 125r}$: IS curve

If $r = 2\% \Rightarrow Y = 2100 - 250 = 1850$

$r = 8\% \Rightarrow Y = 2100 - 1000 = 1100$

$r = 0\% \Rightarrow Y = 2100$



b) Equilibrium condition on money market:

$M/P = Y - 200r$

(3) $\Rightarrow \frac{1000}{2} = Y - 200r$

$\Rightarrow \boxed{Y = 500 + 200r}$: LM curve

If $r = 2 \Rightarrow Y = 900$

$4 \Rightarrow Y = 1300$

$8 \Rightarrow Y = 2100$

c) $\underbrace{500 + 200r}_{LM} = \underbrace{2100 - 125r}_{IS}$

$325r = 1600$

(2) $\boxed{r = 4.92}$

$\boxed{Y = 1484.6}$

d) New IS curve: $Y = \frac{470 - 25r}{0,2}$

$$\boxed{Y = 2350 - 125r}$$

(3) ∴ The IS curve shifts 250 to the right.

$$\underbrace{500 + 200r}_{LM} = \underbrace{2350 - 125r}_{IS}$$

$$325r = 1850$$

$$\boxed{r = 5,69\%}$$
$$\boxed{Y = 1638.46}$$

e) New LM curve: $Y = \frac{1200}{2} + 200r$

$$\boxed{Y = 600 + 200r}$$

(3) ∴ LM curve shifts 100 to the right

$$\Rightarrow 600 + 200r = 2100 - 125r$$

$$325r = 1500$$

$$\boxed{r = 4,62\%}$$
$$\boxed{Y = 1525.07}$$

5) Si P passe de 2 à 4, la courbe LM devient

$$Y = \frac{1000}{4} + 200r$$

(3) $\boxed{Y = 250 + 200r}$; courbe LM

∴ courbe LM se déplace horizontalement de −250 unités (vers la gauche.

$$\Rightarrow 250 + 200r = 2100 - 125r$$

$$325r = 1850$$

$$\boxed{r = 5,69}$$
$$\boxed{Y = 1388.46}$$

g) i) AD curve: combinations of Y and P when both the g&s market and the money market are in equilibrium.

⇒ from the IS curve

$$r = \frac{2100 - Y}{125}$$

Substituting in the LM curve

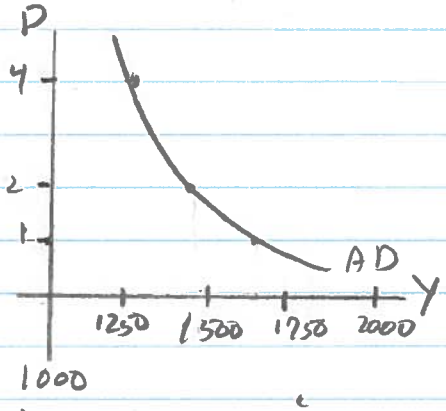
$$\frac{1000}{P} = Y - 200\left(\frac{2100 - Y}{125}\right)$$

(3)

$$\Rightarrow \frac{1000}{P} = Y - 1.6(2100 - Y)$$

$$\Rightarrow \frac{1000}{P} = 2.6Y - 3360$$

$$\Rightarrow \boxed{Y = 1292.31 + \frac{384.62}{P}} \text{ : AD curve}$$



if P = 1, Y = 1676.9
2, Y = 1484.6
4, Y = 1388.46

ii) If G increased to 1150, then

IS curve: $Y = 2350 - 125r \Rightarrow r = \frac{2350 - Y}{125}$

LM curve: $\frac{1000}{P} = Y - 200r$

(3)

$$\Rightarrow \frac{1000}{P} = Y - 1.6(2350 - Y)$$

$$\Rightarrow \boxed{Y = 1446.15 + 384.62} \text{ : new AD curve}$$

∴ AD curve shifts $(1446.15 - 1292.31) = 153.84$ to the right

iii. if $M \uparrow$ to 1200,

$\Rightarrow LM: \frac{1200}{P} = Y - 200r$

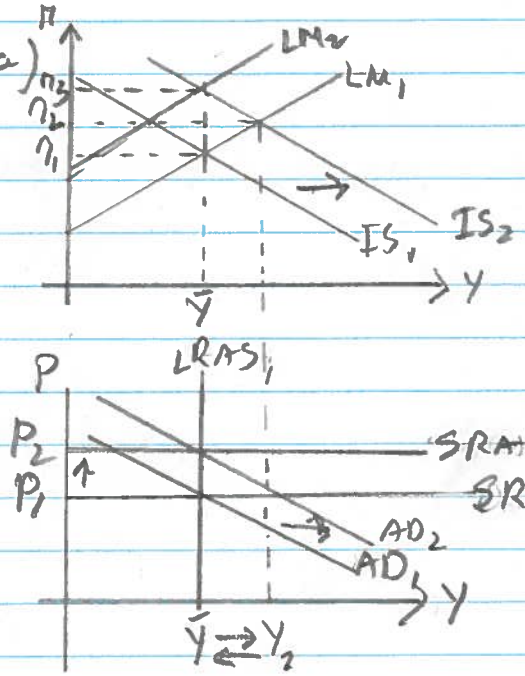
$\Rightarrow \frac{1200}{P} = Y - 1.6(2100 - Y)$ (3)

$\Rightarrow 2.6Y = 3360 + \frac{1200}{P}$

$\Rightarrow \boxed{Y = 1292.31 + \frac{461.54}{P}}$; New AD curve

$\therefore$ The AD curve shifts right.

3. (13)

a) 

(5)

short term:

↑ optimism $\Rightarrow \uparrow I$

$\Rightarrow$ IS curve shifts right

$\Rightarrow$ AD curve shifts right

$\Rightarrow Y\uparrow, r\uparrow$

b) Since $Y_2 > \bar{Y}$, $P\uparrow$ to P_2 in the long run

$\Rightarrow$ LM curve shifts left to LM_2

$\Rightarrow$ Y returns to its full employment level and $r\uparrow$ even more (5)

c) If the hours last $\Rightarrow$ productivity $\uparrow$

$\Rightarrow Y\uparrow$

$\Rightarrow$ LRAS curve shifts right (3)