

## Answers to Practice Questions for Part IV, Topics 4.3 and 4.4

### Section 1. Multiple Choice Questions

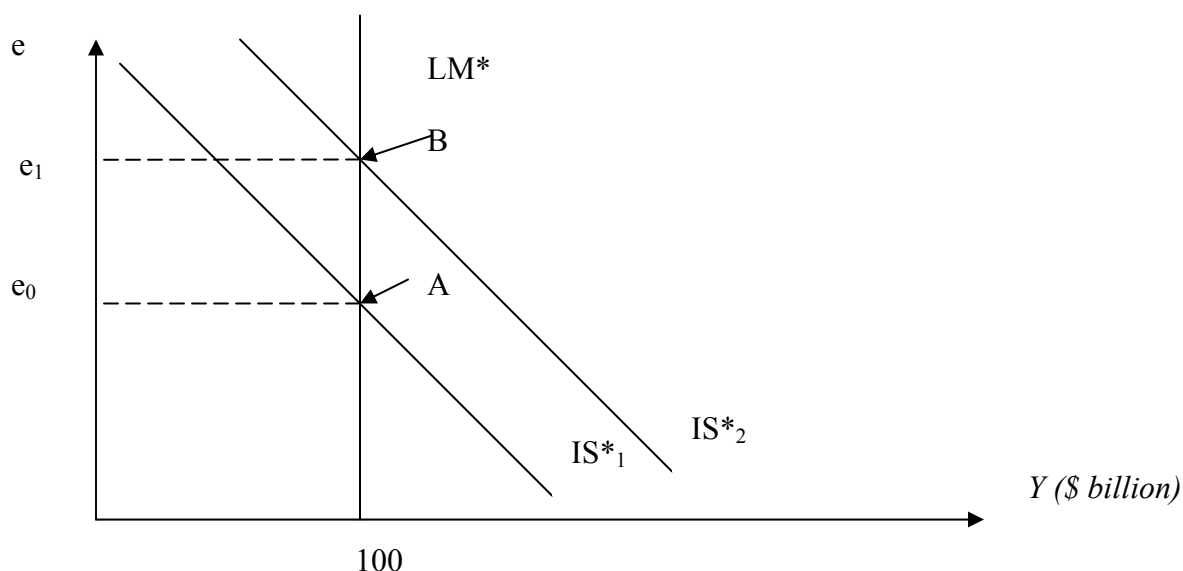
1. C); 2. A); 3. C); 4. A); 5. D); 6. B); 7. D); 8. B); 9. C); 10 C).

### Section 2: Problems

#### Chapter 12

##### 12.1

a) i)



The process of adjustment of the economy between points A and B is described in the Lecture Notes, Ch. 12 Pg. 4.

ii) Between points A and B: consumption ( $C$ ) has not changed because disposable income ( $Y-T$ ) has not changed; investment has not changed because  $I=I(r^*)$  and the world interest rate is exogenous; govt. spending has risen by \$5 billion; net exports have fallen by \$5 billion to zero, leaving total expenditure and output unchanged at \$100 billion.

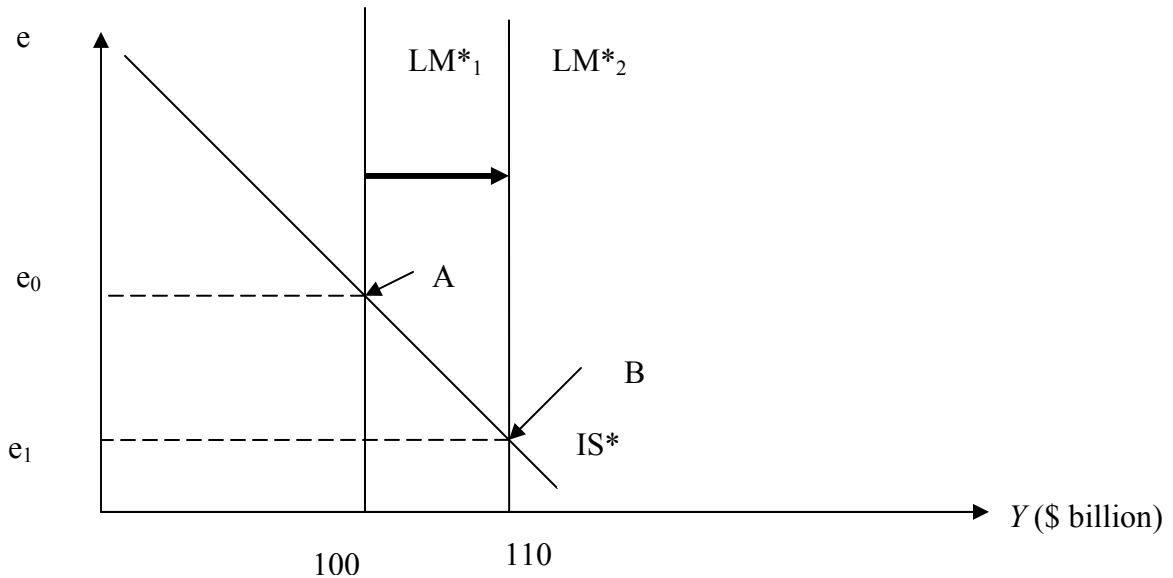
iii) In the initial equilibrium at point A,  $NX = \$5$  billion.

$$\text{Hence} \quad NX = 95 - 100e_0 = 5. \quad \text{Thus} \quad e_0 = 0.90$$

In the new equilibrium at point B,  $NX = 0$ ,

$$\text{Hence} \quad NX = 95 - 100e_1 = 0. \quad \text{Thus} \quad e_1 = 0.95$$

b) i) The increase in real money supply ( $\bar{M}/\bar{P}$ ) shifts the LM\* curve to the right, decreases the equilibrium exchange rate and increases the equilibrium level of output. The process of adjustment from point A to point B is described in the Lecture Notes Ch. 12 Pg. 5.



ii) Between points A and B: consumption has increased as a result of the increase in disposable income resulting from the increase in  $Y$ ; investment has not changed because  $I=I(r^*)$  and the world interest rate is exogenous; gov't. spending has not changed; net exports have increased due to the fall in the nominal (and real) exchange rate which has decreased the relative price of domestically-produced goods.

iii) In the new equilibrium at point B

$$(M/P)^d = 0.5Y - 1000r^* = \$25 \text{ billion}$$

Or, with  $r^*=0.03$ :  $(M/P)^d = 0.5Y - 30 = \$25 \text{ billion}$

$$\text{Hence, } Y = \$110 \text{ billion}$$

iv) Between points A and B:

$$\begin{aligned} \Delta Y &= \Delta C & + & \Delta NX \quad (\text{recall: } \Delta I = \Delta G = 0) \\ &= \text{MPC}_x \Delta Y & + & \Delta NX \end{aligned}$$

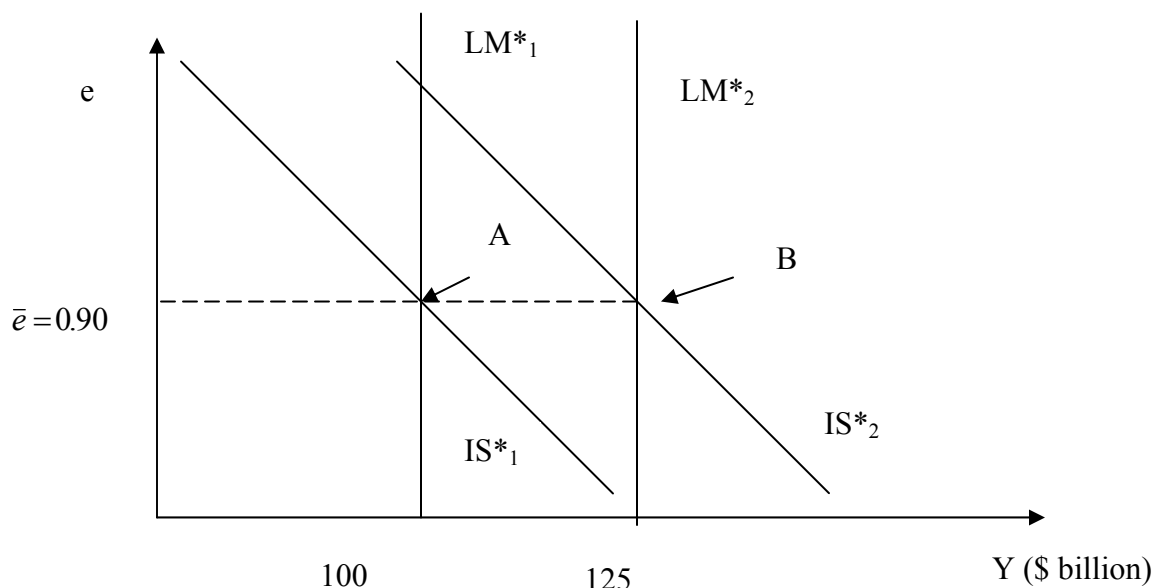
$$\begin{aligned} \$10\text{b} &= \text{MPC}_x \$10\text{b} + \Delta NX \\ &= \$8\text{b} + \Delta NX \end{aligned}$$

$$\Delta NX = \$2\text{b} \quad (\text{Net exports rise from } \$5 \text{ billion to } \$7 \text{ billion.})$$

$$NX = 95 - 100e_1 = 7 \quad \text{Hence } e_1 = 0.88$$

## 12.2

i)



The IS\* curve shifts right and the LM\* curve shifts right as the real money supply rises to maintain the exchange rate constant at 0.90. The process of adjustment is described in the Lecture Notes Ch. 12 Pg. 9.

ii) Between points A and B: consumption has increased as a result of the increase in disposable income resulting from the increase in  $Y$ ; investment has not changed because  $I = I(r^*)$  and the world interest rate is exogenous; gov't. spending has increased by \$5 billion; net exports have not changed because  $NX = NX(e)$  and the exchange rate ( $e$ ) has not changed.

iii) Between points A and B:

$$\begin{aligned}
 \Delta Y &= \Delta C & + & \Delta G & \text{ (recall: } \Delta I = \Delta NX = 0) \\
 &= \text{MPC}_x \Delta Y & + & \$5\text{b} \\
 &= 0.8 \Delta Y & + & \$5\text{b} \\
 \Delta Y &= \$25\text{b}
 \end{aligned}$$

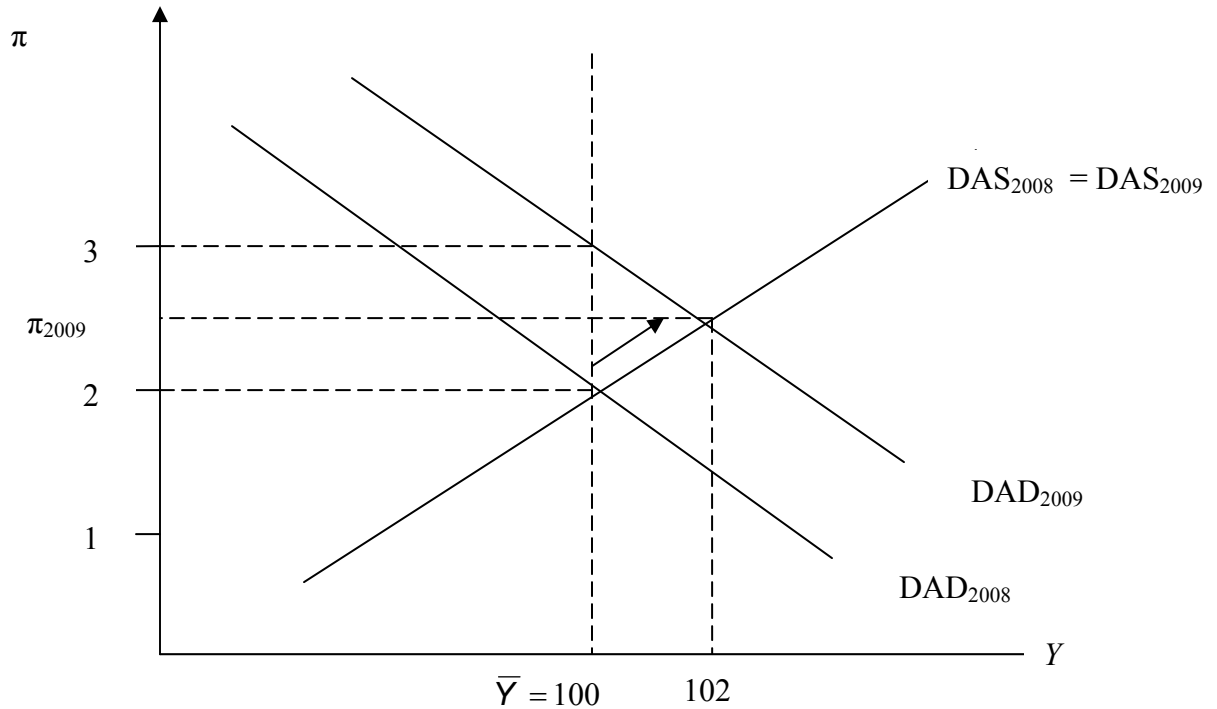
Hence the new equilibrium level of output is \$125 billion.

iv) At point B

$$\begin{aligned}
 (M/P)^s &= (M/P)^d = 0.5Y - 1000r^* , \text{ where } r^* = 0.03 \\
 &= 0.5(\$125 \text{ b}) - \$30\text{b} \\
 &= \$32.5 \text{ b}
 \end{aligned}$$

## Monetary Policy and Inflation (MPI)

### MPI. 1.



a) The effect of the increase in the target rate of inflation from 2% to 3% is to shift the dynamic aggregate demand (DAD) curve for 2009 vertically upwards by the change in the target rate of inflation, or 1%.

Because the actual (2008) rate of inflation (2%) is less than the new higher target rate of inflation (3%) the central bank lowers the real interest rate in accordance with the monetary policy rule:  $r_t = \bar{r} + \theta(\pi_t - \bar{\pi})$ ,  $\theta > 0$

Specifically, the real interest rate falls to  $4.0 - \theta$  (percent).

The fall in real interest rate stimulates investment spending, leading to an increase in aggregate expenditure and output from 100 to 102.

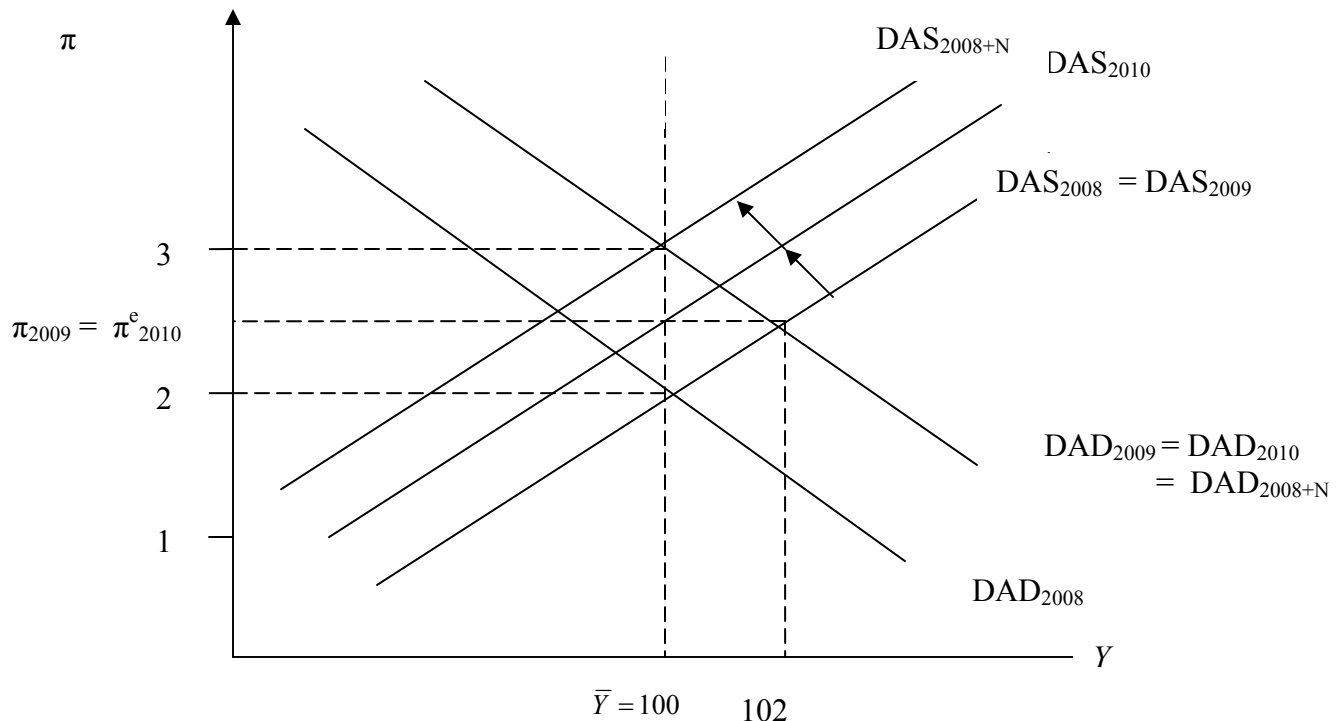
A positive output gap ( $Y = 102 > \bar{Y} = 100$ ) leads to shortages of labour and other inputs which causes wages and other input prices to increase at a faster rate causing the actual rate of inflation to increase and to exceed the expected rate of price inflation:

$$\uparrow Y \rightarrow Y > \bar{Y} \rightarrow \uparrow \pi \rightarrow \pi > \pi^e$$

b) The rate of inflation in 2009 is calculated as follows

$$\begin{aligned}\pi_{2009} &= \pi_{2008} + \beta(Y_{2009} - \bar{Y}) \quad \text{where } \beta = 0.25, \bar{Y} = 100 \\ &= 2 + 0.25(102 - 100) \\ &= 2 + 0.5 \\ &= 2.5\%\end{aligned}$$

c)



In 2010 the expected rate of inflation increases from 2% to 2.5% shifting the DAS curve (or Phillips curve) upwards by 0.5 percentage point. The increase in the expected rate of inflation causes the actual rate of inflation in 2010 to increase.

As the actual rate of inflation adjusts upwards towards the target rate the central bank increases the real interest rate causing a decrease in output along the dynamic aggregate demand curve for 2010.

The process of adjustment in inflation and output continues until a new long-run equilibrium is reached in year 2008+N where:

$$Y_{2008+N} = \bar{Y} = 100; r_{2008+N} = \bar{r} = 4.0; \pi_{2008+N} = \pi_{2008+N}^e = \bar{\pi} = 3.0$$