Practice Questions for Part IV, Topics 4.3 and 4.4

Section 1. Multiple Choice Questions

Ch. 12. 1. In the model of the small **open** economy in the **short run** [ch.12] with a **FLOATING** exchange rate, the LM* curve is **vertical** because
A) the demand and supply of money are independent of the interest rate (r)
B) the demand and supply of money are independent of the level of income (Y)
C) the demand and supply of money are independent of the exchange rate (e)
D) all of the above

Ch. 12 2. In the model of the small **open** economy in the **short run** [ch. 12] with a **FLOATING** exchange rate, if there is a boom in foreign markets which causes an exogenous increase in net exports, then in the new IS*-LM* equilibrium, when compared to the old equilibrium:
A) the exchange rate is higher, but income and net exports are unchanged
B) the exchange rate is higher, net exports are higher, but income is unchanged.
C) the exchange rate is higher, income is higher, but net exports are unchanged.
D) the exchange rate is lower, net exports are higher, and income is unchanged.

Ch. 12 3. A key difference in structure between the IS*-LM* model with **FIXED** exchange rates compared to the IS*-LM* model with **FLOATING** exchange rates is that
A) under fixed exchange rates both money supply (M) and exchange rate (e) are **endogenous** variables
B) under fixed exchange rates both M and e are **exogenous** variables
C) under fixed exchange rates M is **endogenous** and e is **exogenous**
D) under fixed exchange rates M is **exogenous** and e is **endogenous**

Ch. 12 4. In the model of the small **open** economy in the **short run** [ch. 12] with a **FIXED** exchange rate, an increase in government spending [$\uparrow \overline{G}$] with no change in any other exogenous variable will:
A) shift both the IS* and LM* curves to the right, and raise Y with e unchanged
B) shift the IS* right with no change in Y but and increase in e
C) shift the LM* curve to the right with no shift in IS* and raise Y with e unchanged
D) shift the IS* curve to the right with no shift in LM* and raise Y with e unchanged

Ch. 12 5. In the model of the small **open** economy in the **short run** [ch. 12] with a **FIXED** exchange rate, an increase in money supply [$\uparrow \overline{M}$] with no change in any other exogenous variable will **in the new equilibrium**:
A) shift both the IS* and LM* curves to the right, and raise *Y* with *e* unchanged
B) shift the LM* curve to the right with no shift in the IS* curve and raise *Y* with *e* unchanged
C) shift the LM* curve to the right with no shift in IS*, raise *Y* and lower *e*
D) leave both the IS* curve and LM* curve in their original positions with no changes in *Y* and *e*

Ch. 12 6. In the model of the small **open** economy in the **short run** [ch. 12] with a **FIXED** exchange rate, if there is a boom in foreign markets which causes an exogenous increase in net exports, then in the new IS*-LM* equilibrium, when compared to the old equilibrium:
A) the exchange rate is higher, but income and net exports are unchanged
B) the exchange rate is unchanged, but net exports are higher and income is higher
C) the exchange rate is unchanged and net exports are unchanged but income is higher.
D) the exchange rate is unchanged and income is unchanged but net exports are higher

MPI. 7. Which of the following will **NOT** cause an **increase in the inflation rate** [$\uparrow \pi_t$] according to the Phillips curve equation?
A) an increase in the expected rate of inflation ($\uparrow \pi^e_t$)
B) an increase in the actual level of output ($\Uparrow Y_t$) with the natural level of output held constant
C) an adverse supply shock ($\Uparrow v_t$)
D) an increase in the natural level of output ($\Uparrow \overline{Y}$) with the actual level of output held constant

MPI. 8. According to the Phillips curve with adaptive expectations ($\pi_t^e = \pi_{t-1}$) when the actual level of output equals the natural level ($Y_t = \overline{Y}$), then
A) the current rate of inflation will be zero
B) the change in the rate of inflation from one period to the next will be zero
C) the expected rate of inflation will be zero
D) all of the above

MPI. 9. Suppose that in the equation of the Phillips curve $\pi^e_t = 4.0$, $\beta = 0.5$, and $v_t = 0$. Then if $Y_t = 102$ while $\overline{Y} = 100$, we can calculate the rate of price inflation in period t (π_t) to be
A) 1%
B) 2%
C) 5%
D) 6%

MPI. 10. As currently conducted, monetary policy in Canada is designed to achieve:
A) price stability
B) a 2% target rate of growth of the money supply
C) a 2% target rate of inflation
D) a 2% target rate of growth in real GDP

Section 2: Problems

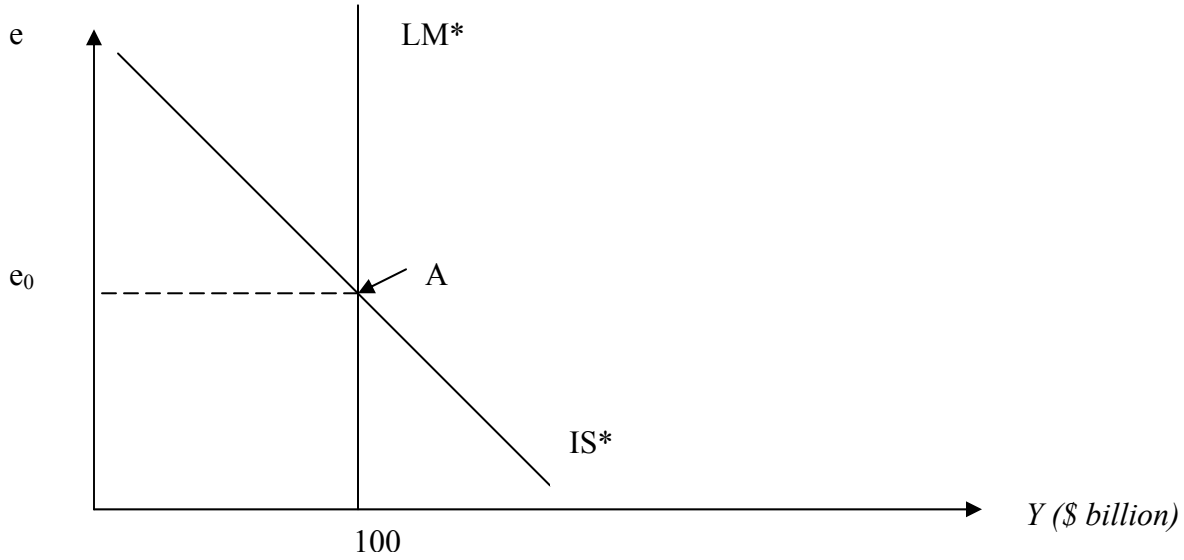
Chapter 12

12.1

Consider a small **open economy** operating under **flexible** exchange rates. The equations of the model in general form are:

$$Y = C(Y - \overline{T}) + I(r^*) + \overline{G} + NX(e)$$
$$\overline{M} / \overline{P} = L(r^*, Y)$$

Suppose that the economy is initially in equilibrium at point A as shown in the IS* and LM* diagram below. The current level of equilibrium output (Y) is \$100 billion. Assume that the initial equilibrium level of net exports (NX) is \$5.0 billion.



a) Suppose that **government spending (G) rises by \$5 billion** with no changes in any other exogenous variable.

i) On the diagram above show the effects of this \$5 billion increase in G. Identify the new equilibrium point as point "B". (Make sure that you can explain the process of adjustment of the economy between points A and B.)

ii) Between points A and B which of the components of expenditure (*C, I, G* and *NX*) have changed and which have remained unchanged? Explain your answers.

iii) Now suppose that the net export function assumes this particular linear form

$$NX = 95 - 100e, \qquad \text{where: } e = \$US/C\$1.00$$

Calculate the equilibrium nominal exchange rate **before** the increase in *G* (i.e the value of e_0) and the value of the equilibrium exchange rate (e_1) **after** the increase in *G*. [Recall that in the initial equilibrium $NX = 5$ ($billion).]

b) Suppose that the money demand curve of this economy has the following equation

$$(M/P)^d = 0.5Y - 1000r^*$$

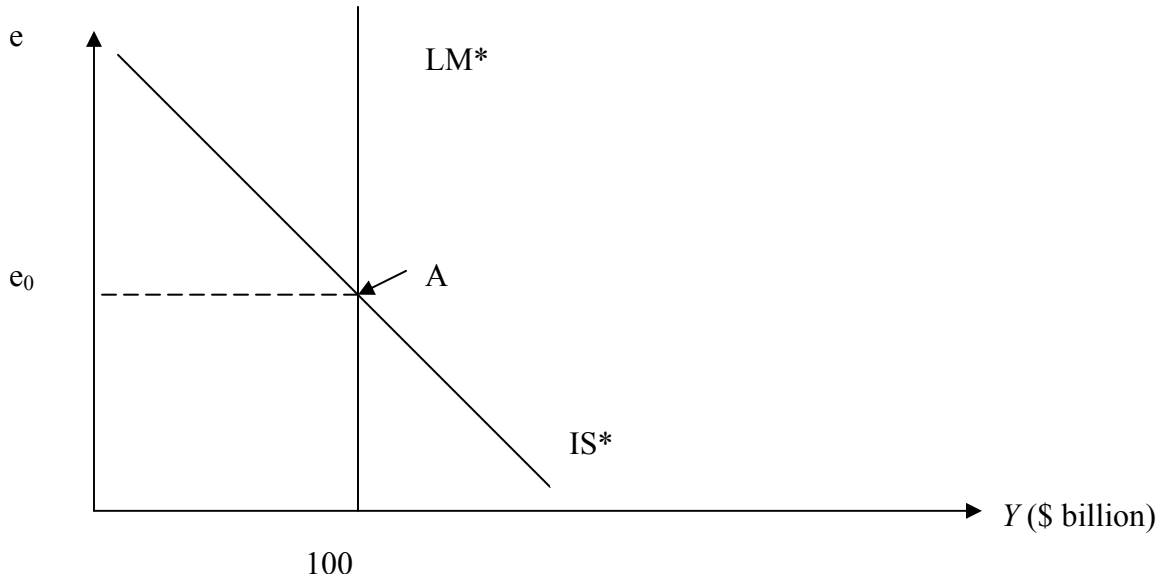
Suppose also that the world interest rate (r^*) has a value of 0.03 (3%) and the real money supply ($\overline{M}/\overline{P}$) is initially $20 billion. Now suppose that **the real money supply increases to $25 billion** with no change in any other exogenous variable.

i) On the IS*-LM* diagram below show the effects of this $5 billion increase in real money supply ($\overline{M}/\overline{P}$). Identify the new equilibrium point as point "B." Make sure that you can explain the process of adjustment of the economy between points A and B.

ii) Between points A and B which of the components of expenditure (*C, I, G* and *NX*) have changed and in response to this increase in money supply and which have remained unchanged? Explain your answers.

iii) Calculate the new equilibrium level of income.

iv) Assume that the marginal propensity to consume (MPC) in this economy is 0.8. Given that information calculate the new equilibrium level of net exports and the new equilibrium exchange rate. [Assume that the net export function is given by the equation $NX = 95 - 100e$ and recall that before the increase in money supply $NX = 5$ ($billion).]

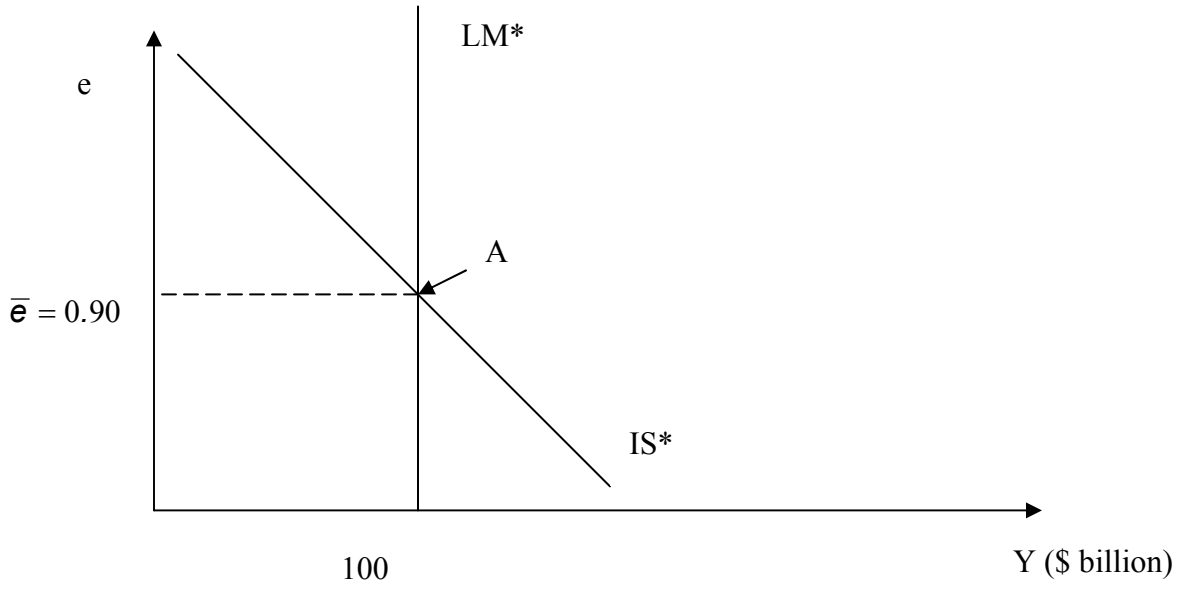


12.2

Consider a small **open economy** operating under **fixed** exchange rates. The equations of the model are

$$Y = C(Y - \overline{T}) + I(r^*) + \overline{G} + NX(\overline{e})$$
$$M / \overline{P} = L(r^*, Y)$$

Suppose that the economy is initially in equilibrium at point A as shown in the IS* and LM* diagram below. The current level of equilibrium output (Y) is \$100 billion and the initial equilibrium level of net exports \$5.0 billion (NX = 95 – 100e).



a) Suppose that **government spending rises by \$5 billion** with no changes in any other exogenous variable.

i) On the diagram above show the effects of this \$5 billion increase in *G*. Identify the new equilibrium point as point "B". (Make sure that you can explain the process of adjustment of the economy between points A and B.)

ii) Between points A and B which of the components of expenditure (*C, I, G* and *NX*) have changed and which have remained unchanged? Explain your answers

iii) Assuming that the MPC has a value of 0.8, what is the value of the new equilibrium level of output (*Y*) at point B?

iv) Assume that the money demand function has the form:

$$(M/P)^d = 0.5Y - 1000r^* \quad , \quad \text{where } r^* = 0.03$$

What is the value of the real money supply consistent with IS*-LM* equilibrium **after** the increase in government spending?

Monetary Policy and Inflation (MPI)

MPI. 1.

Consider an economy in which the rate of inflation in period *t* is determined by a Phillips curve equation with adaptive expectations as follows:

$$\pi_t = \pi_{t-1} + \beta(Y_t - \overline{Y}) + \mathrm{v_t} \quad \text{where: } \mathrm{v_t} = 0,\ \beta = 0.25,\ \text{and } \overline{Y} = 100$$

The central bank of this economy practices inflation targeting where the target rate of inflation is denoted as $\overline{\pi}$.

To achieve and maintain the target rate of inflation the central bank sets the real interest rate in accordance with the following monetary policy rule:

$$r_t = \overline{r} + \theta(\pi_t - \overline{\pi}) \quad \text{where } \overline{r} = 4.0\,(\%) \ \text{ and } \theta = 0.5$$

Actual output is related to the rate of inflation by the following dynamic aggregate demand curve (DAD):

$$Y_t = C(Y_t - \overline{T}) + I(\overline{r} + \theta\pi_t - \theta\overline{\pi}) + \overline{G} + \gamma_t \ \ (\text{assume } \gamma_t = 0)$$

Assume that in 2008 the economy was in **long run equilibrium** with output and the real interest rate equal to their natural levels and inflation fully anticipated and equal to the current target rate of 2%:

$$Y_{2008} = \overline{Y} = 100\ ;\ r_{2008} = \overline{r} = 4.0;\ \pi_{2008} = \pi_{2007} = \overline{\pi}_{2008} = 2.0$$

Then in 2009 the government of this economy **adopts a higher target rate of inflation of 3%:**

$$\overline{\pi}_{2009} = 3.0$$

a) In the diagram below show the position of the economy in 2008 and then show how output and the rate of inflation will change in 2009 as a result of the change in the target rate of inflation. Explain why the level of output and rate of inflation have changed between 2008 and 2009.

b) If the level of output in 2009 is **$102 billion** ($Y_{2009} = 102$) calculate the rate of inflation in this economy in 2009.

c) Assuming that the target rate of inflation remains at 3% and there are no demand or supply shocks, explain, using the diagram below, how and why the level of output and rate of inflation will continue to change in the years beyond 2009. On the diagram identify the new long-run equilibrium combination of output and inflation.

$\overline{Y} = 100$