Problem sets 4: Open economy macroeconomics

EE312: Intermediate macroeconomics

Semester 1/2018

Instructor: Dr. Kittichai Saelee

Due on August 28th ,2018 at the BE office. (before 3 pm)

1) Explain why BP is an upward sloping curve. Should the slope of BP be steeper or flatter under the income inelastic demand for imports?

BP is the curve that represents the equilibrium where balance of payment is equal to zero. To understand why BP is an upward sloping curve, consider the initial situation where we attain an equilibrium in the balance of payment.

If the interest rate rise above the equilibrium level, capital account will improving. Given the fixed level of income, the balance of payments will be positive. To ensure that the BOP remains zero as before, the level of income can rise, so that domestic can import more, and offset the positive BOPs with a deterioration in the current account.

The sensitivity of the imports demand to income matters to the slope of the BP curve. Note first that an economy with higher degree of import sensitivity will imply a sharp deterioration in current account under the increase income. Under the increase in the interest rate, income needs to rise along so that the BOP would remain under equilibrium. (The intuition is explained above.) If demand for import is highly sensitive, an increase in income required must be small; otherwise we might have negative BOP if the increase in income were to be rising equally in both cases. Therefore, the slope of BP should be flat if import demand is highly sensitive.

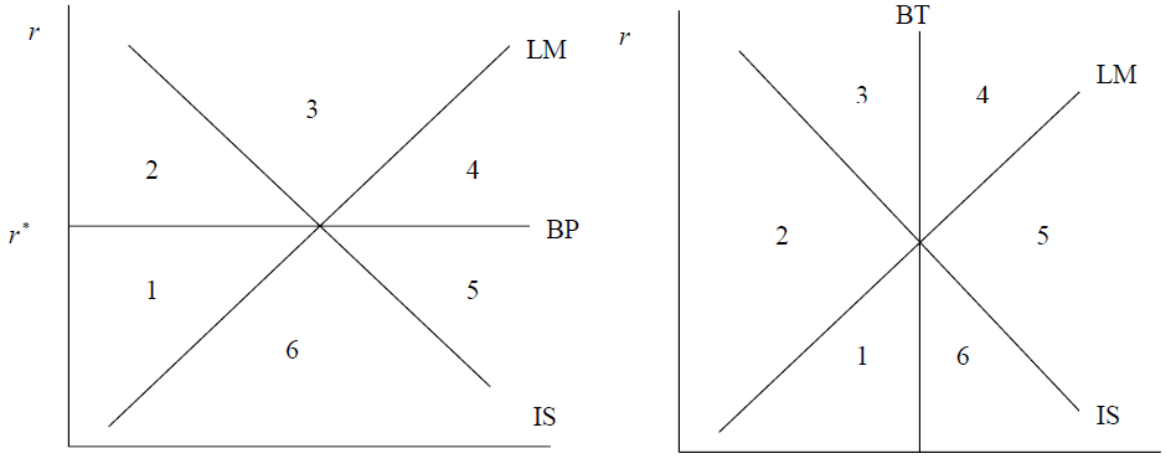
2) How does the increase in world GDP affect the three curves developed under the IS-LM-BP model?

Suppose we analyze the question under a perfect capital environment, i.e. a flat BP curve. The effect of an increase in world GDP depends on the choice of exchange rate regime.

If the exchange rate is fixed, the effect of an increase in world GDP will be strong. The increase in world GDP will generally cause IS to shift right; country can export more of the product, leading to an increase total spending. Market interest rate will rise. The level of interest rate will remain above the level of interest rate required to balance the BOP; this leads to the BOP surplus. Under the fixed exchange rate regime with a surplus in BOP, central bank intervene the foreign exchange market and absorb the excess amount of USD dollar. The action leads to the rise in the level of money supply, causing the lower interest rate. The lower interest rate further simulates the expansionary effect of world GDP. The effect of world GDP shocks is then very strong under the fixed exchange rate.

On the other hand, if the exchange rate is flexible, the effect would be ineffective. Similar to the above analysis, an increase in global GDP will cause a surplus in the balance of payment. Contrast to the fixed exchange rate system, the surplus in the balance of payments can be eliminated through the adjustment of exchange rate. With more demand of Thai baht, Thai baht will appreciate. An appreciation in Thai baht will undo the effect because Thai products are getting more expensive. Export will start to decline, and the original effect of global economic expansion will be fully offset; this can be captured by the shift of IS curve back to the original one.

3) The IS-LM-BP model defines six regions, each corresponding to disequilibrium in the money market, goods market and/or the balance of payments. Identify and describe each of these when capital is perfectly mobile, and when capital is perfectly immobile.



Solution

Perfect capital mobility

Zone	BP: Balance of payments	IS: Goods market	LM: Money market
1	Deficit $(r < r^*)$	Excess demand (Expenditure>output)	Excess supply (M^S>M^D)
2	Surplus $(r > r^*)$	Excess demand (Expenditure>output)	Excess supply (M^S>M^D)
3	Surplus $(r > r^*)$	Excess supply (Expenditure<output)	Excess supply (M^S>M^D)
4	Surplus $(r > r^*)$	Excess supply (Expenditure<output)	Excess demand (M^S<M^D)
5	Deficit $(r < r^*)$	Excess supply (Expenditure<output)	Excess demand (M^S<M^D)
6	Deficit $(r < r^*)$	Excess demand (Expenditure>output)	Excess demand (M^S<M^D)

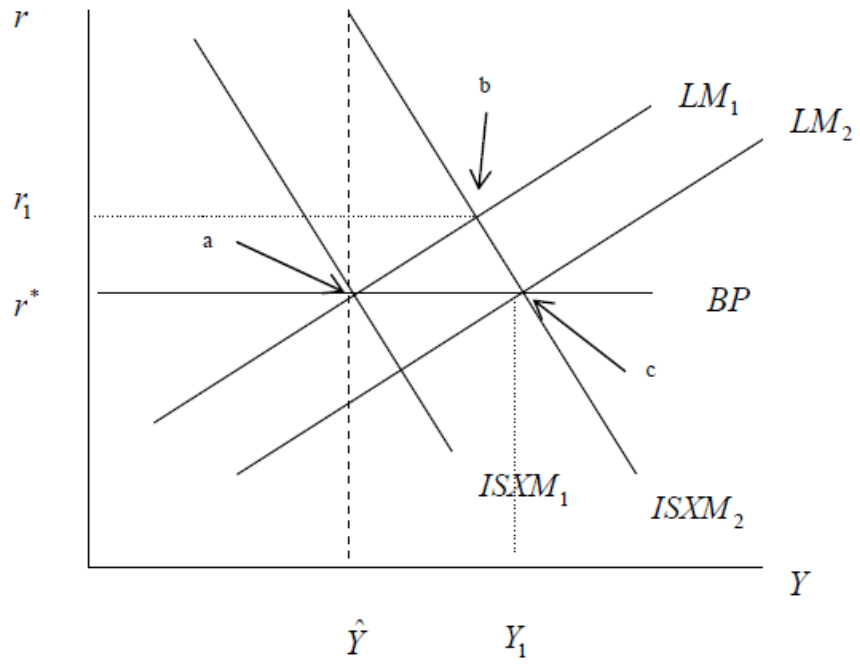
Perfectly immobile

Zone	BP: Balance of payments	IS: Goods market	LM: Money market
1	Surplus $(Y < Y_{TB})$	Excess demand (Expenditure>output)	Excess demand ($M^S<M^D$)
2	Surplus $(Y < Y_{TB})$	Excess demand (Expenditure>output)	Excess supply ($M^S>M^D$)
3	Surplus $(Y < Y_{TB})$	Excess supply (Expenditure<output)	Excess supply ($M^S>M^D$)
4	Deficit $(Y > Y_{TB})$	Excess supply (Expenditure<output)	Excess supply ($M^S>M^D$)
5	Deficit $(Y > Y_{TB})$	Excess supply (Expenditure<output)	Excess demand ($M^S<M^D$)
6	Deficit $(Y > Y_{TB})$	Excess demand (Expenditure>output)	Excess demand ($M^S<M^D$)

4) Using the Mundell-Fleming model (IS-LM-BP under perfect capital mobility) what will be the effects of the following

4.1) A boom in stock market prices with fixed exchange rates

Solution



An increase in stock market prices will shift the IS curve outwards. This is because it implies rising household wealth and consumption, and also a higher implicit valuation of firm investment opportunities. As a result, the domestic interest rate rises moving the economy into a position of balance of payments surplus.

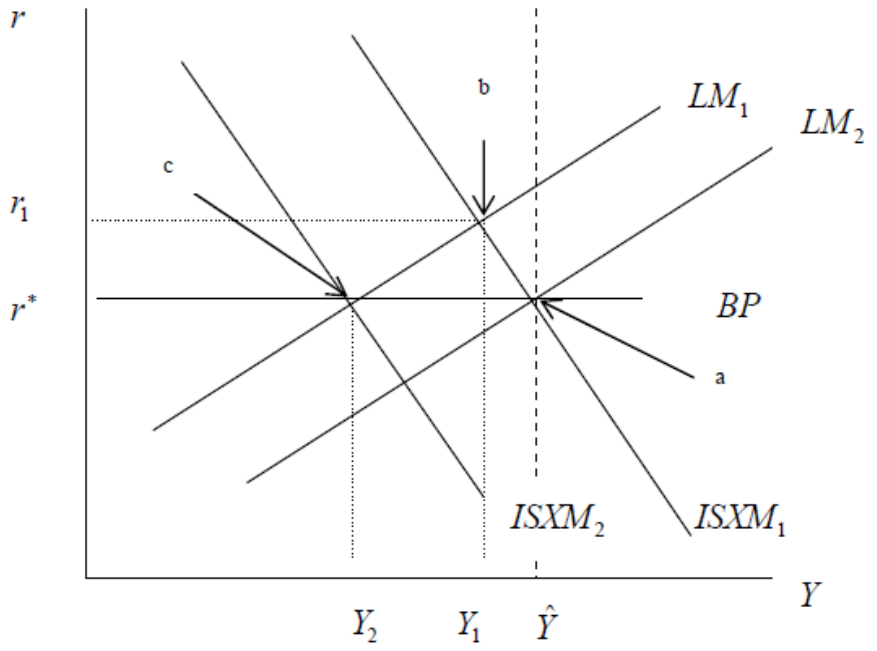
To prevent the exchange rate from appreciating, the interest rate rise has to be accommodated by an expansion in monetary policy. Hence the economy will expand even further. If we assume that the economy was originally at its full employment level, there is now a significant positive output gap. Through upward pressure on prices the economy will eventually return to its full employment level of output, but only in the long run.

4.2) An increase in ATM charges with floating exchange rates

Solution

This represents an increase in the cost of liquidating financial assets (assuming that bank accounts pay positive interest rates). Therefore, the demand for money at each level of income will increase putting upward pressure on interest rates. The LM curve will shift upwards.

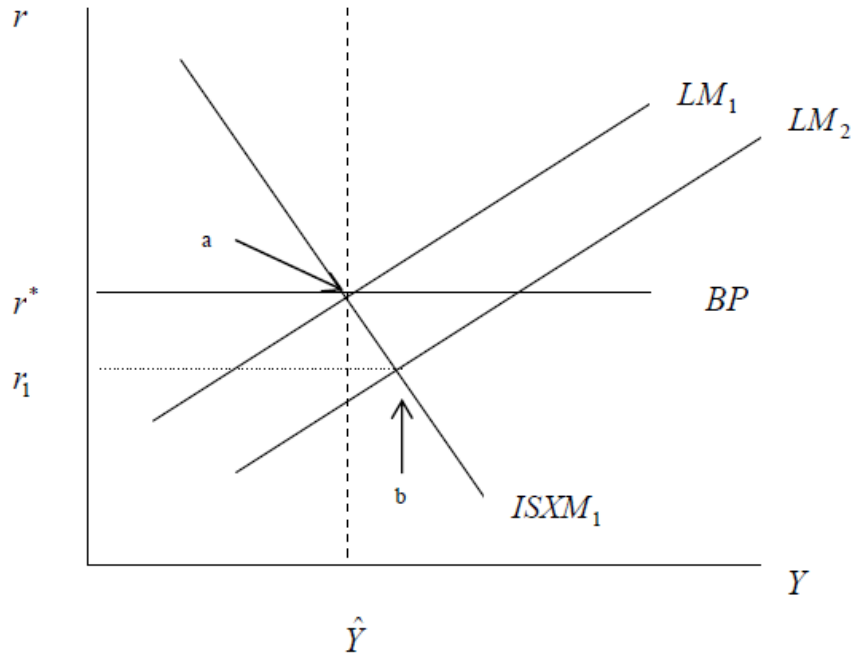
Upward pressure on domestic interest rates would move the balance of payments into surplus by attracting inflows of foreign capital. The exchange rate will then appreciate crowding out net-trade, hence the IS curve falls and the economy moves to point c.



As point c is below the full employment level of output the economy will eventually return to point a if there is downward adjustment in wages and prices.

4.3) A reduction in money supply with fixed rates

Solution

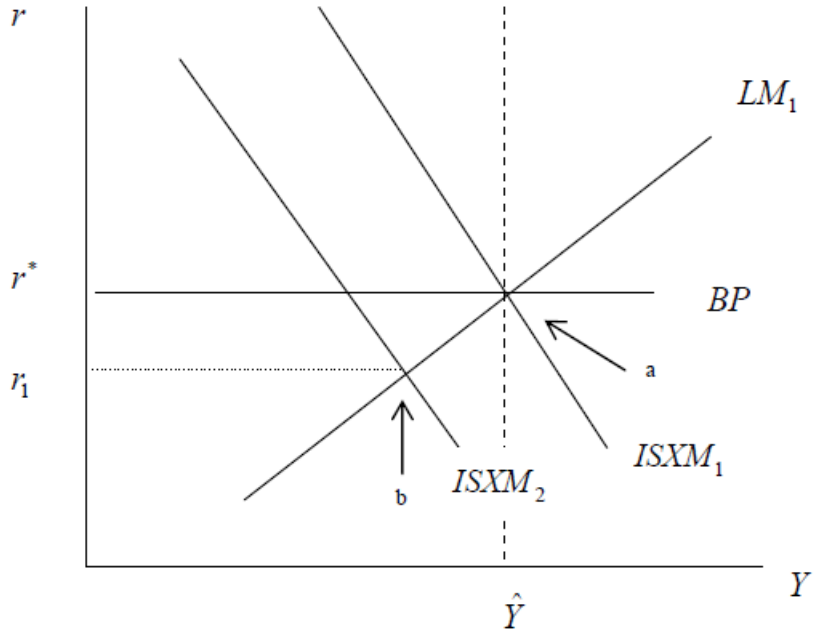


This is simple. A monetary expansion places downward pressure on domestic interest rates. This leads to a world-wide substitution away from domestic into foreign bonds, moving the balance of payments into deficit and putting depreciative pressure on the exchange rate. To maintain a fixed exchange rate it is necessary for the government to offset the original monetary policy expansion.

4.4) A reduction in government spending with floating exchange rates

Solution

A fall in government spending shifts the IS curve inwards, reduces domestic interest rates, and moves the balance of payments into deficit due to a net outflow of capital. However, the exchange rate will depreciate, increasing competitiveness and through an expansion in net exports shift the IS curve back to its original position. Overall, the level of output remains unchanged, but it now consists of a higher level of net exports and a lower level of government spending.



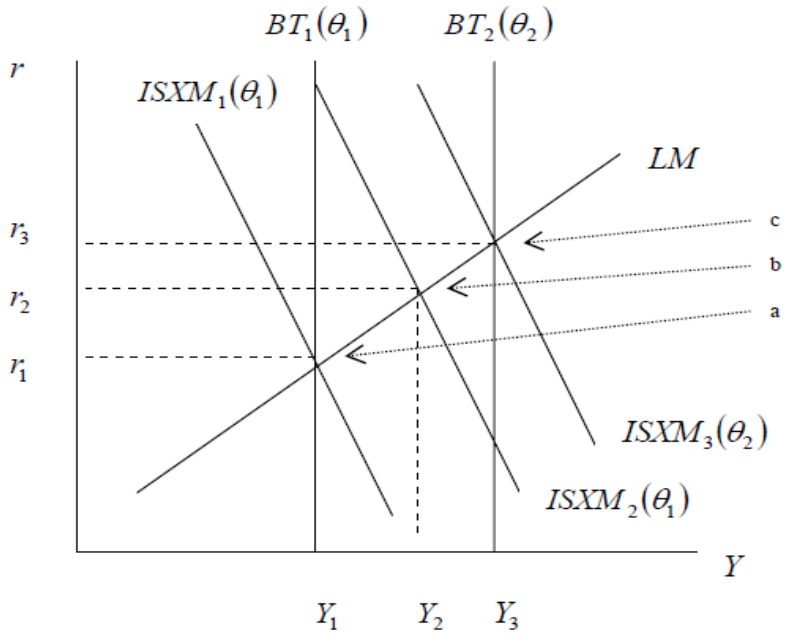
5) In a floating exchange rate regime- to what extent does the effectiveness of fiscal policy depend on the degree of capital mobility?
(Hint: Analyze the effect of fiscal policy under two extreme cases: (i) when BP is vertical and (ii) when BP is a horizontal one.)

Solution

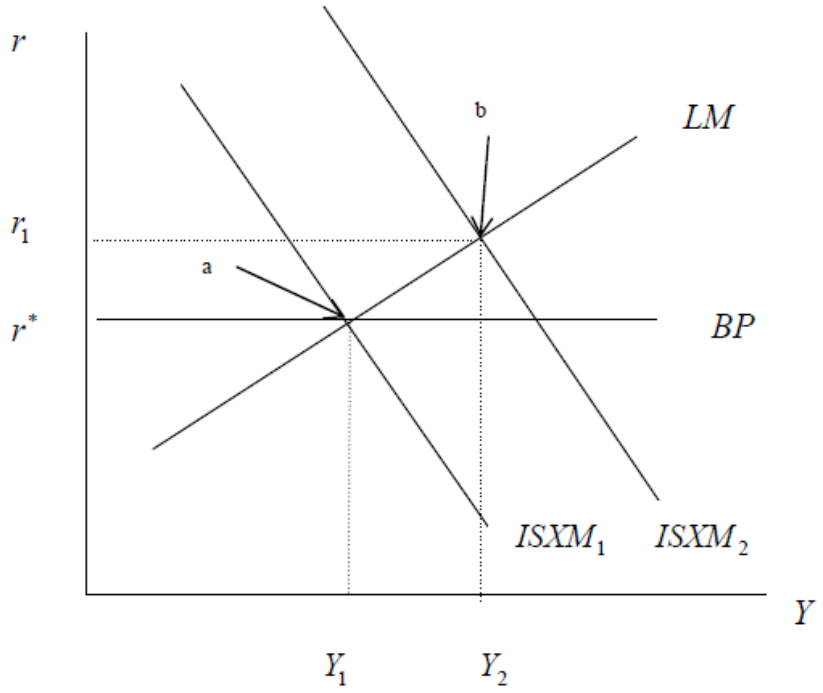
When capital is immobile, the balance of payments position is accounted for by the balance of trade. Because exports are determined by overseas demand, and imports by domestic demand, there is a level of income Y_{TB} where the trade balance is in equilibrium.

The economy starts off at point a, a fiscal expansion shifts the IS curve to the right and as a result the economy moves to point b, but because $Y_2 > Y_{TB} = Y_1$ the trade balance has now moved into deficit. This represents an increase in the relative demand for foreign currency and an increase in the supply of domestic currency-

hence the exchange rate depreciates. This however improves competitiveness, leading to a rise in exports and a fall in imports. The ISD curve and the BT curve will therefore shift to the right and the economy will settle at point c.



When capital is perfect mobile, the balance of payments is in equilibrium when the domestic interest rate equals that overseas. Any deviation would lead to large scale capital flows in and out of the country..



In this case a fiscal expansion moves the balance of payments into surplus. By raising the domestic interest rate international investors will purchase domestic bonds and the capital account will improve. However, as a result the domestic exchange rate will appreciate, which then crowds out net trade returning the economy to its original position.

When capital is immobile, a fiscal expansion (contraction) generates a balance of payments deficit (surplus), whereas when capital is perfect mobile a fiscal expansion (contraction) moves the balance of payments into surplus (deficit). Under a floating exchange rate regime, the exchange rate will adjust to restore balance of payments equilibrium. Therefore, fiscal policy has a larger impact on the domestic economy when capital is immobile, because the policy is reinforced rather than offset by exchange rate movements.