Problem sets 4: Open economy macroeconomics
EE312: Intermediate macroeconomics
Semester 1/2019
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Ungraded assignment

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1) Suppose we start from an external equilibrium (ro,yo) on a BP curve. Then, something happens in our economy. Discuss the "direct" impact of these following situations on the balance of payments, and the BP curve.

1.1) An autonomous fall in countries' demand for exports

An exogenous export will worsen the initial condition of balance of payments. If we initially start with BOP = 0, under an exogenous fall in export, the BOP curve will shift left.

1.2) An increase in the domestic interest rate

An increase in the domestic interest rate will not affect the BOP curve. Instead, this will cause the movement along the same BOP curve.

1.3) An expected appreciation in USD

An expected appreciation in USD implies that Thai Baht is expected to depreciate. Foreign investors find more likely that the investment in Thai market will result in negative return. This is due to the adverse effect of exchange rate. Capital inflow will decrease. For Thai investors, they will find more profitable investment opportunity if they invest in the US market. More capital outflow is expected. All these will likely result in a deterioration in BOP. The BOP curve will shift up (left); as domestic interest rate is required to rise so that BOP can be in equilibrium under the new situation.

1.4) Government cuts income tax

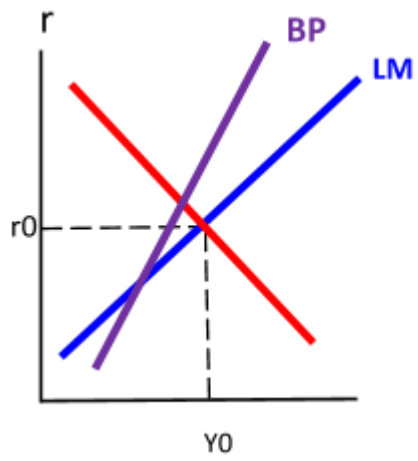
The income tax will not directly affect the BOP curve. Hence, the BOP curve should remain the same

1.5) An increase in productivity growth of foreign trading partners

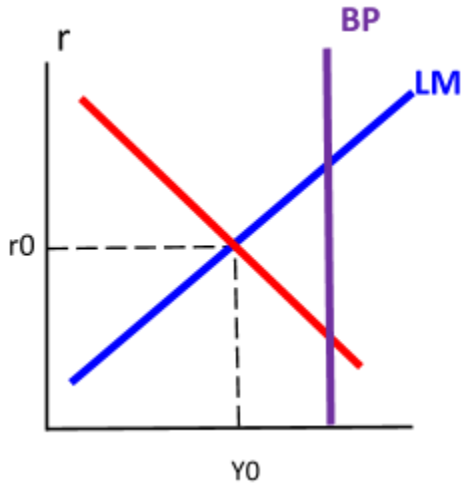
The increase in productivity growth of foreign country will likely cause a drop in their exports prices. Our net exports would likely get worsen, and hence the balance of payment. Given an initial equilibrium BOP, the BOP should be deficit; the BOP curve will shift left (up)

2) Consider two cases below. In each case, state out the type of disequilibrium. Then proceed with the discussion about the adjustment process towards the general equilibrium. Analyze the adjustment process under both flexible and fixed exchange rate systems.

Case 1



Case 2



Solution

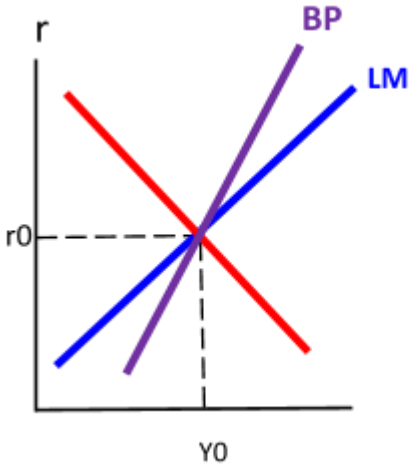
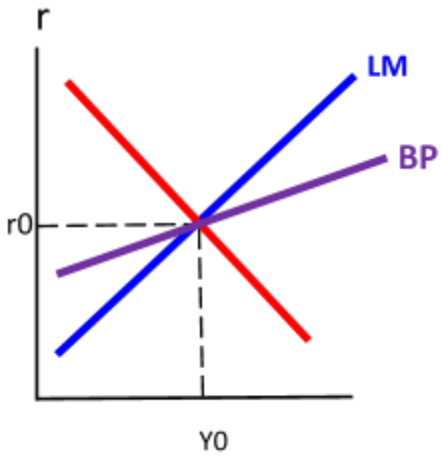
Case 1: BOP deficit as domestic interest is lower than the level required

Fixed exchange rate: Central bank needs to sell USD to intervene the forex market. Given the intervention, domestic money supply will fall. The decrease in money supply will push up the interest rate; capital inflows start to get attracted into the market. Eventually, the imbalance of BOP will be resolved. The open-economy equilibrium can be sustained where interest rate decreases to r1, along with the decline in output from yo to y1 (see figure 2.1)

Flexible exchange rate: Given the deficit in BOP, exchange rate will depreciate. The depreciation in domestic currency will result in an increase in net exports. The effect of an increase in net exports can be captured by a right shift of BOP, and a right shift of IS curve. The open-economy equilibrium will be attained where interest rate rises from ro to r1, and output increases from yo to y1. (see figure 2.2)

Case 2: Discussed in class. Solution will not be provided here!

3) Suppose we start from a general equilibrium (ro,yo). Given the two possible cases below, discuss the effect of monetary expansion under both fixed and flexible exchange rate systems. Under the same exchange rate regime, does monetary expansion generate the same outcome to output, exchange rate and net exports. Provide some economic intuitions.

Case 1: BP is steeper than LM	**Case 2**: BP is flatter than LM
	

The slope of BP will not affect the qualitative impact of monetary expansion on key aggregate variables. What matters to the effect of monetary policy is the choice of exchange rate. Under the flexible exchange rate, monetary policy is highly effective. For the fixed exchange rate, monetary policy is NOT effective.

To see all the points summarized above, one can diagrammatically capture the effect of monetary expansion by having the LM curve shifted right. Given the increase money supply, domestic interest rate will fall and hence resulting in a stimulus effect of real economic activities. The balance of payment will be under deficit; both capital and current account should be deteriorating.

The adjustment will differ across the exchange rate regime. Under the fixed exchange rate regime, central bank must sell USD so as to the fixed exchange rate can be maintained. This intervention policy will lead to a decline in money supply, which will neutralize the initial increase in money supply. The LM curve will shift back to the original. Open-economy equilibrium remains unchanged; monetary policy is NOT effective.

The adjustment process under flexible exchange rate will start off differently. Given the BOP deficit, Thai baht will depreciate. The depreciation in domestic currency will result in an increase in net exports. The effect of an increase in net exports can be captured by a right shift of BOP, and a right shift of IS curve. The open-economy equilibrium will be attained

where interest rate rises from ro to r1, and output increases from yo to y1. The effect of monetary policy is strongly amplified under the flexible exchange rate. (see figure 3.1)

4. Using the Mundell-Fleming model (IS-LM-BP under perfect capital mobility) what will be the effects of the followings on aggregate income, trade balance, consumption and investment

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

Solution

A bust in stock market prices will shift the IS curve to the left. This is because it implies decreasing household wealth and consumption, and also lower implicit valuation of firm investment opportunities. As a result, the domestic interest rate decreases moving the economy into a position of balance of payment deficit.

To prevent the exchange rate from depreciating. there need to increase the interest rate by contractionary monetary policy. Hence, the economy will have lower output (see figure 4.1)

4.2) An decrease in ATM charges with floating exchange rates

Solution

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

Downward pressure on domestic interest rates would move the balance of payment into deficit by incentivizing outflow of domestic capital. The exchange rate will then depreciate. Net-trade improve as a result. This leads to an increase in aggregate spending; the effect can be capture by a right shift of IS curve. Economy will attain new equilibrium where output is higher. (see figure 4.2)

4.3) An increase in money supply with fixed rates

Solution

A monetary expansion places downward pressure on domestic interest rates. This lead 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. (see figure 4.3)

4.4) A reduction in tax rate with floating exchange rates

Solution

A reduction in tax rate shift the IS curve outwards, increase domestic interest rates, and moves the balance of payments into surplus due to a net inflow of capital. However, the exchange rate will appreciate, reducing competitiveness and through a reduction in net exports shift the IS curve back to its origin position. Overall, the level of output remains unchanged, but it now consists of the lower level of net exports and a higher level of consumption. (see figure 4.4)

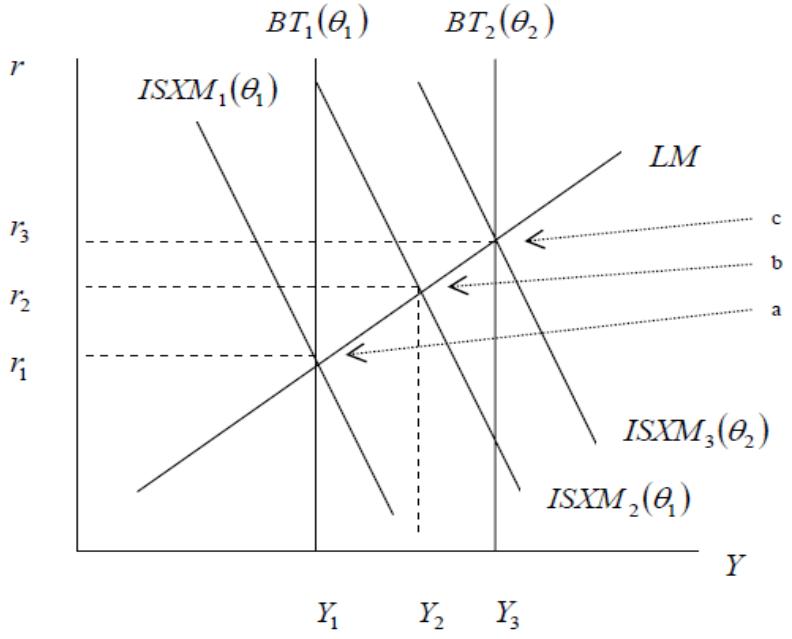
5) In a floating exchange rate regime- to what extent does the effectiveness of fiscal policy depend on the degree of capital mobility?
(Hint: Analyze the effect of fiscal policy under two extreme cases: (i) when BP is vertical and (ii) when BP is a horizontal one.)

Solution

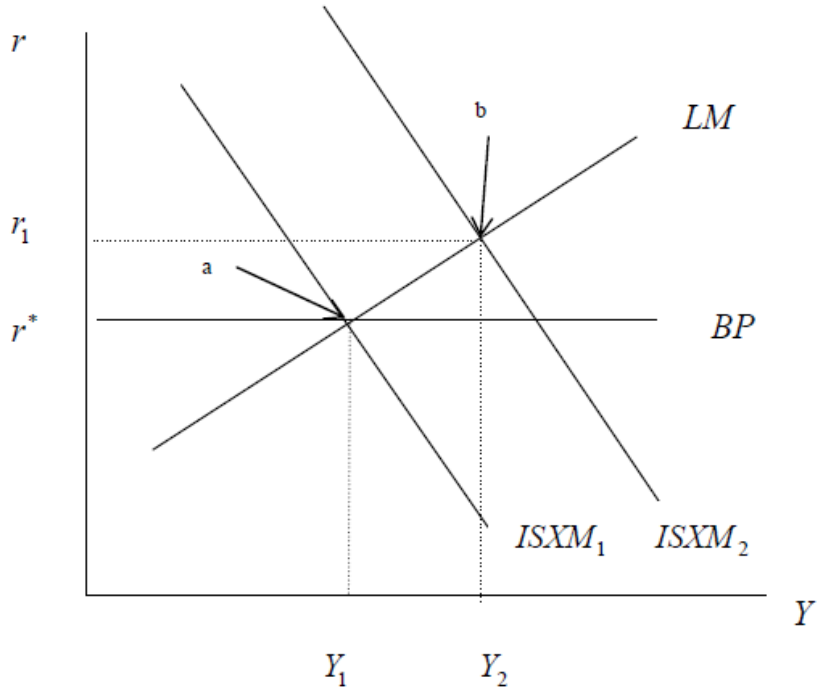
When capital is immobile, the balance of payments position is accounted for by the balance of trade. Because exports are determined by overseas demand, and imports by domestic demand, there is a level of income Y_{TB} where the trade balance is in equilibrium.

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.

Lists of figures below.