

## Lecture 12: Short-Run Macro Policy: Fixed Exchange Rates

### I. OVERVIEW

- In the last lecture we looked at the short-run impact of monetary and fiscal policy in small and large economies under a flexible exchange rate system. We showed that fiscal policy tends to be relatively less effective in an open economy under flexible exchange rates, while monetary policy tended to be more effective.
- We also showed that the large open economy case was in-between the small open economy case and the closed economy case.
- Today, we will focus on analyzing the impacts of fiscal and monetary policy in the case of an economy with fixed exchange rates; the impact of policy differs dramatically from the case of flexible exchange rates.

### II. THE KEY FEATURE OF POLICY ANALYSIS UNDER FIXED EXCHANGE RATES

- The basic gist of the analysis is identical. In moving from a closed economy to a small open economy, we need to worry about an additional complication: the change in interest rate will lead to either an inflow or an outflow of money.
- In the case of floating exchange rates, the inflow/outflow of money leads to a change in the exchange rate. Changes in the exchange rate, in turn, affect the value of the real exchange rate and net exports as well as affecting the expected depreciation of the domestic currency. The IS curve and the BP curve both shift until UIRP is restored.
- In the case of fixed exchange rates, the mechanism has to be different. After all we cannot have appreciation or depreciation of the currency if its value is fixed. In this case, changes in the money supply that come from buying and selling foreign currency is the mechanism through which UIRP is restored
- When domestic interest rates are higher than world interest rates there is an inflow of foreign money. Since the central bank fixes the exchange rate, it stands prepared to sell domestic currency in exchange for foreign currency to individuals who want to deposit their money in the domestic economy. When the central bank sells domestic currency it increases the domestic money supply, thus lowering interest rates.
- Conversely, when domestic interest rates are lower than world interest rates there is an outflow of foreign money. Since the central bank fixes the exchange rate, it stands prepared to buy domestic currency in exchange for foreign currency from individuals who want to deposit their money abroad. When the central bank buys domestic currency it decreases the domestic money supply, thus raising interest rates.

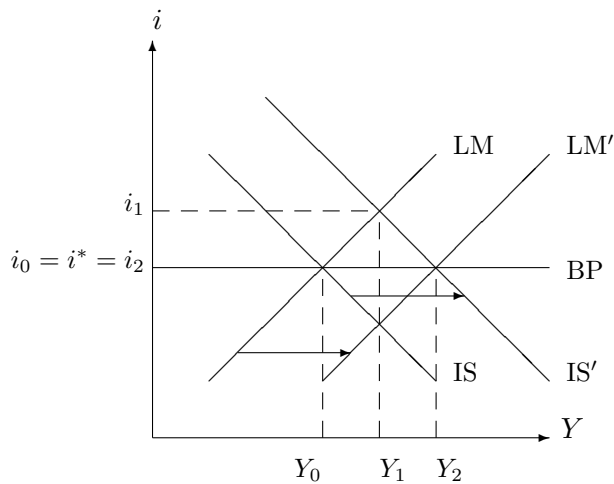
- The case of fixed exchange rates is in many ways easier to analyze than the case of flexible exchange rates. This is because a credible fixed exchange rate system will have  $e^E = e$  always, thus reducing UIRP to simply  $i = i^*$  (where  $i^*$  is the interest rate of the country whose currency you fix to and  $e$  is the exchange rate denoted in terms of domestic currency per unit of that country's currency). As a result, the BP curve is also just a horizontal line at the foreign interest rate.

### III. POLICY IN A SMALL OPEN ECONOMY

#### Fiscal Policy

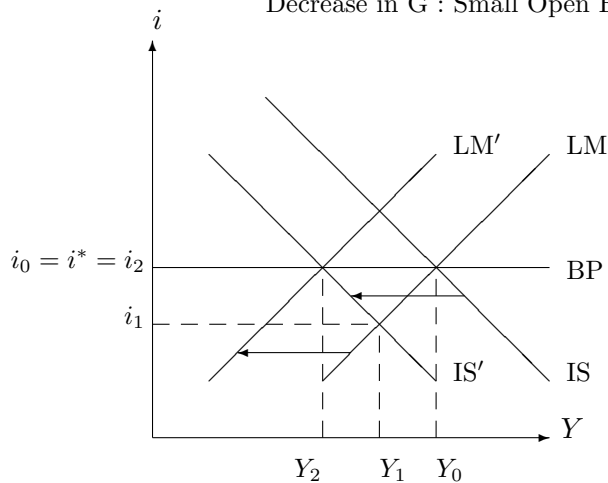
- We first focus on the small open economy case as before. Suppose the small open economy was initially in equilibrium with the interest rate of  $i_0$  (which also happens to be the foreign interest rate  $i^*$ ) and an output level of  $Y_0$ . We will consider an expansionary fiscal policy, an increase in  $G$ .
- The increase in  $G$  increases the expenditure on goods and services and raises production. This shifts the IS curve out to IS' and causes the interest rate to increase above  $i^*$ , to  $i_1$  and  $Y$  to increase to  $Y_1$ .
- When the domestic interest rate increases above the foreign interest rate UIRP is violated since  $i_1 > i^*$ . Domestic returns are higher so there is an inflow of money into the country; the central bank hands out domestic currency in exchange for foreign currency.
- The exchanging of domestic currency for foreign currency by the central bank increases the domestic money supply. This shifts the LM curve out. Unlike in the flexible exchange rate case there is no appreciation of the domestic currency and hence no impact on NX and the IS curve - the additional effects here are all on the LM side.
- Furthermore, since foreign interest rates are unaffected, the BP curve remains at  $i^*$ . Thus the inflow will continue until the LM curve has shifted out enough for  $i$  to return to  $i^*$  restoring UIRP at  $i = i^*$
- As can be seen in the figure below, the overall effect is that, under fixed exchange rates, expansionary fiscal policy increases output in a small open economy by more than in a closed economy.

### Increase in G : Small Open Economy (Fixed)



- Note that the same effects operate in reverse for contractionary fiscal policy, as seen in the figure below. A cut in government spending reduces output by more in a small open economy under fixed exchange rates compared to a closed economy.

### Decrease in G : Small Open Economy (Fixed)

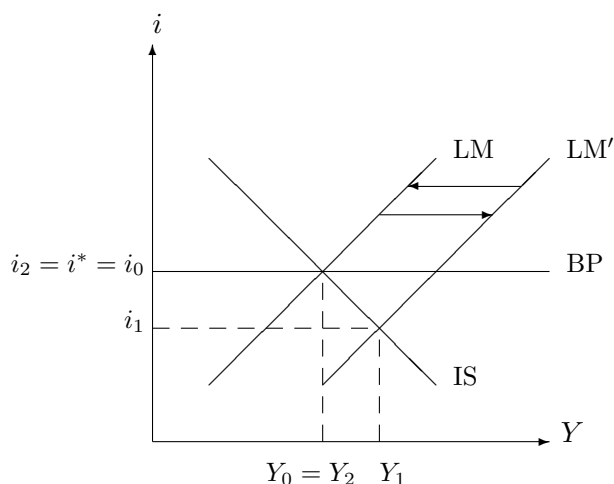


### Monetary Policy

- Suppose the small open economy was initially in equilibrium with the interest rate ( $i_0$ ) at the foreign interest rate ( $i^*$ ) and an output level of  $Y_0$ . We will first consider an expansionary monetary policy.
- The increase in money supply causes a shift out of the LM curve and brings about a fall in interest rate, which causes the interest rate to decrease below  $i^*$ , to  $i_1$  and  $Y$  to increase to  $Y_1$ .
- When the domestic interest rate decreases below the foreign interest rate UIRP is violated since  $i_1 < i^*$ : there is an outflow of money from the country; the central bank hands out foreign currency reserves in exchange for domestic currency. This reduces the domestic money supply and shifts the LM curve back.

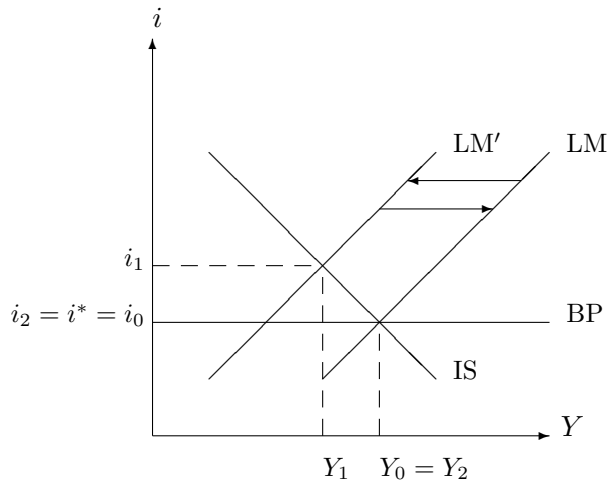
- Unlike in the flexible exchange rate case there is no depreciation of the domestic currency and hence no impact on NX and the IS curve - once again, the additional effects here are all on the LM side.
- Furthermore, since foreign interest rates are unaffected, the BP curve remains at  $i^*$ . Thus the outflow will continue until the LM curve has shifted back enough for  $i$  to return to  $i^*$  restoring UIRP at  $i = i^*$  - in other words, until LM returns to the original state.
- Interest rates and output are exactly the same as it was before: expansionary monetary policy has NO short-run effect in a small open economy under fixed exchange rates.
- So even though expansionary fiscal policy has extremely powerful short-run effects in a small open economy under fixed exchange rates, expansionary monetary policy has no effect at all.
- The general intuition is that expansionary fiscal policy tends to raise interest rates, which results in a monetary inflow that expands the money supply, which adds to the increase in domestic output. On the other hand, expansionary monetary policy tends to lower interest rates, resulting in a monetary outflow that reduces the money supply, which raises interest rates and therefore reduces output.

Increase in  $M^s$ : Small Open Economy (Fixed)



- The process works in reverse for contractionary policy. Interest rates and output are exactly the same as it was before: contractionary monetary policy has NO short-run effect in a small open economy under fixed exchange rates.

Decrease in  $M^s$ : Small Open Economy (Fixed)



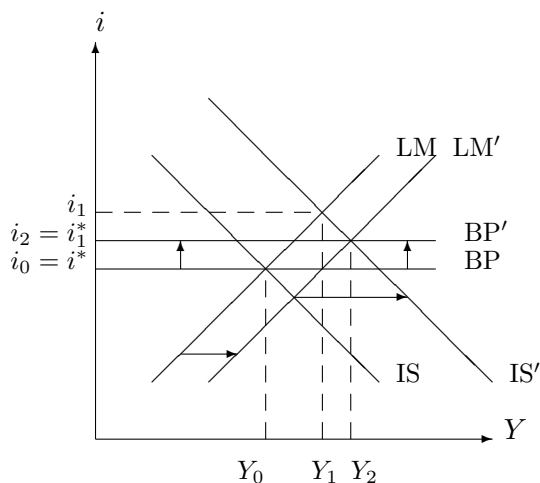
#### IV. ANALYZING THE IMPACT OF POLICY IN A LARGE OPEN ECONOMY

- The primary difference with the large open economy case is that even though domestic and world interest rates are going to eventually be equal, a policy change will affect interest rates in the rest of the world.
- Other than that the analysis is similar to the small open economy case, a deviation from the world interest rate will result in large capital flows that change the domestic money supply, through the buying or selling of foreign exchange by the central bank, until the interest rate is driven to equal the world interest rate, which itself has changed unlike in the small open economy case.

##### Fiscal Policy

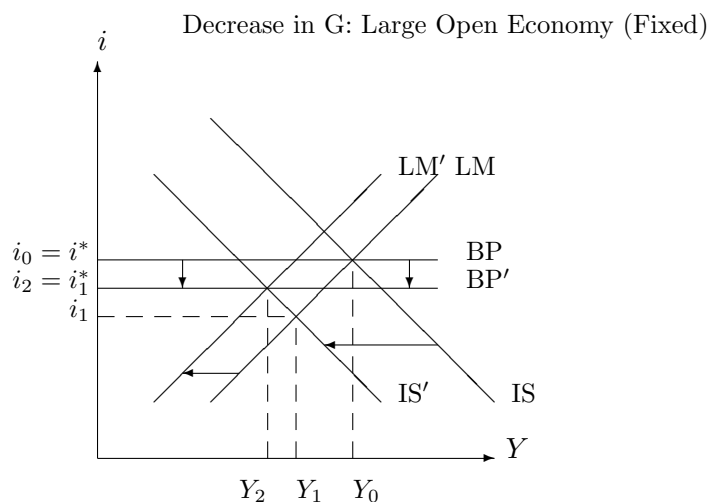
- Suppose the large open economy was initially in equilibrium with the interest rate of  $i_0$  (which also happens to be the foreign interest rate  $i^*$ ) and an output level of  $Y_0$ . Consider an increase in  $G$ .
- The increase in  $G$  shifts the IS curve out to  $IS'$  as a result the interest rate increases to  $i_1$  and  $Y$  increases to  $Y_1$ . It also increases the world interest rate, by a lesser amount to  $i_1^*$ .
- Since the domestic interest rate is still above the world interest rate there is an inflow of money into the country; the central bank exchanges domestic currency for foreign currency.
- This results in an increase in the domestic money supply and shifts the LM curve out. This will continue until  $i$  reaches the new world interest rate at  $i_2 = i_1^*$  with an output level of  $Y_2$ .
- Expansionary fiscal policy in a large open economy increases output by more than in a closed economy but by less than in a small open economy, where the expansion would have continued until the interest returned to the original world interest rate level.

Increase in  $G$ : Large Open Economy (Fixed)



- Under fixed exchange rates, contractionary fiscal policy in a large open economy decreases output by more than in a closed economy but by less than in a small open economy, where

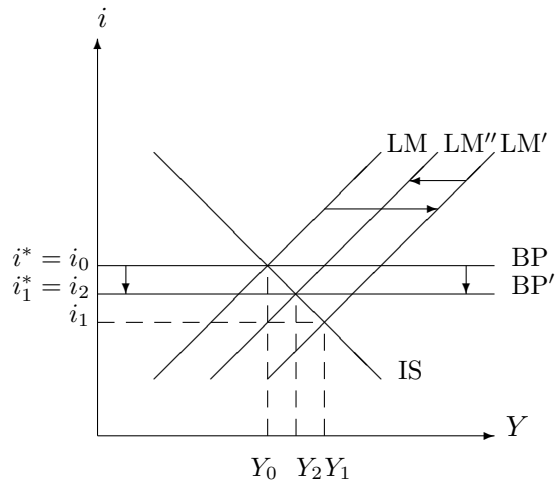
the contraction would have continued until the interest returned to the original world interest rate level.



## Monetary Policy

- Again suppose the large open economy was initially in equilibrium with the interest rate at the world interest rate and an output level of  $Y_0$  and first consider an expansionary policy.
- The increase in money supply brings about a fall in interest rates and an increase in output to  $i_1$  and  $Y_1$  respectively.
- Since this is a large open economy, the increase in money supply also lowers the world interest rate, by a lesser degree, to  $i_1^*$ .
- When the domestic interest rate decreases below the foreign interest rate UIRP is violated since  $i_1 < i_1^*$ : there is an outflow of money from the country; the central bank hands out foreign currency reserves in exchange for domestic currency. This reduces the domestic money supply and shifts the LM curve back.
- The outflow will continue until the LM curve has shifted back enough to intersect with the IS curve and the BP curve at the new foreign interest rate  $i_1^*$  restoring UIRP at  $i_2 = i_1^*$ , with an output level of  $Y_2$ .
- Under fixed exchange rates, expansionary monetary policy in a large open economy increases output by more than in a small open economy but by less than in a closed economy.

Increase in  $M^s$ : Large Open Economy (Fixed)



- Under fixed exchange rates, contractionary monetary policy in a large open economy decreases output by more than in a small open economy but by less than in a closed economy.

Decrease in  $M^s$ : Large Open Economy (Fixed)

