How Does the Open Macroeconomy Work

(ch. 21-23)

International Economics

OUTLINE

- ***The Performance of a National Economy***

- ***Domestic Production Depends on Aggregate Demand***

- ***Trade Depends on Income***

- ***Equilibrium GDP and Spending Multipliers***

OUTLINE

- **■** ***Three Markets:***

  - Domestic Production

  - Money Market

  - Foreign Exchange Market (or Balance of Payments)

- **■** ***Trade Also Depends on Price Competitiveness***

The Performance of a National Economy

- ***Internal Balance* –** keeping actual domestic production up to the economy's capabilities
  - Full employment in labor and other resources
  - Price stability (low inflation)

The Performance of a National Economy

- ■ *External Balance –* achievement of reasonable and sustainable balance of payments with the rest of the world
- - *CA + KA =0* (so that government is not losing reserves)
- - *CA surplus*

Domestic Production Depends on Aggregate Demand

- GDP = Y = C + I (d) + G + (X - M)

- In SR domestic production is determined by AD (rewrite)

- Equilibrium occurs when domestic production Y or GDP equals desired demand for domestically produced goods and services

- Y = AD = C + I (d) + G + (X - M)

Domestic Production Depends on Aggregate Demand

National Expenditures (E)

$$E = C + I_d + G$$

- Consumption: $C = C(Y)$ ("+")

- Real Domestic Investment Spending: $I_d = I_d (i)$ ("-")

- Government Spending: G is a part of a country's fiscal policy and can be treated as political decision

Trade Depends on Income

- M = M(Y) ("+")
- Imports are often used as inputs into the domestic production
- Imports respond to the total real spending E
- Marginal Propensity to Import (m) = $\Delta M / \Delta Y$
- X depends on income of foreign countries

Equilibrium GDP and Spending Multipliers

- Equilibrium GDP
- $Y = AD(Y) = E(Y) + X - M(Y)$
- $S = I_d + I_f$
- AD: slope of the curve is $1 - s - m$
- Where s is the marginal propensity to save $\Delta S/\Delta Y$ and m is the marginal propensity to import $\Delta M/\Delta Y$
- $S - I_d$: slope $= s$
- $I_f = X - M$: slope $= -m$

Equilibrium GDP and Spending Multipliers

- The Spending Multiplier in a Small, Open Economy
- $\Delta Y = \Delta G + (1-s-m)\Delta Y$
- $\Delta Y (1 - 1 + s + m) = \Delta G$
- The Spending Multiplier in a Small, Open Economy $= \Delta Y/\Delta G = 1/ (s+m)$

Equilibrium GDP and Spending Multipliers

- Foreign-Income Repercussions (large country case)

- The more the country's imports affect foreign incomes, the more the true spending multiplier is underestimated

Equilibrium GDP and Spending Multipliers

Foreign-Income Repercussions
(large country case)

- ***G** ↑ →**Y** ↑ (*depends on **s**) → **M** ↑(*depends on **m**) → **Y_f** and **S_f** ↑*

- ***Y_f** and **S_f** ↑ → **our exports X**↑(*depends on **m_f**) → **Y** ↑ (*depends on **s**) →**our spending** ↑*

Equilibrium GDP and Spending Multipliers

How Aggregate Demand and Supply Can Affect the trade Balance

1. If our production and income are raised by increases in domestic spending, then trade balance will probably worsen (shift toward net imports)

2. If our production and income are raised by an international demand shift from foreign to home country goods and services, the home country's trade balance will clearly improve

3. If our production and income are raised by improvements in our supply capabilities, our trade balance will probably improve

A More Complete Framework: Three Markets

The Domestic Product Market

- ***IS (investment-saving) curve*** shows all combinations of domestic product level and interest rates for which domestic market is in equilibrium

- $Y = C + I(d) + G + (X - M)$ or $S = I_d + I_f$

- $S(Y)(+) = I_d(i)(-) + I_f(Y)(-)$

A More Complete Framework: Three Markets

The Money Market

- Demand for nominal money (L):

$$L = L(PY(+), i(-))$$

- The equilibrium between money supply and money demand

$$M^s = L(PY(+), I(-))$$

A More Complete Framework: Three Markets

The Money Market

- ***LM (liquidity-money) curve*** shows all combinations of production levels and interest rates for which the money market is in equilibrium.

A More Complete Framework: Three Markets

The Foreign Exchange Market
(or Balance of Payments)

- *B = CA + KA*
- *SR: i ↑→ capital inflow*
- *LR: this effect stops:*

a. i ↑→ capital inflow as investors adjust their portfolios → inflow ↓since portfolios have been adjusted

b. i ↑→ capital inflow →B↑ in SR →opposite effect later since bonds mature and loans must be repaid

A More Complete Framework: Three Markets

The Foreign Exchange Market

- Rewrite: **B = CA (Y (+)) + KA (I (-))**

- **FE (foreign exchange) curve** shows the set of all interest and production combinations in our country that result in a zero value for the country's official settlements balance.
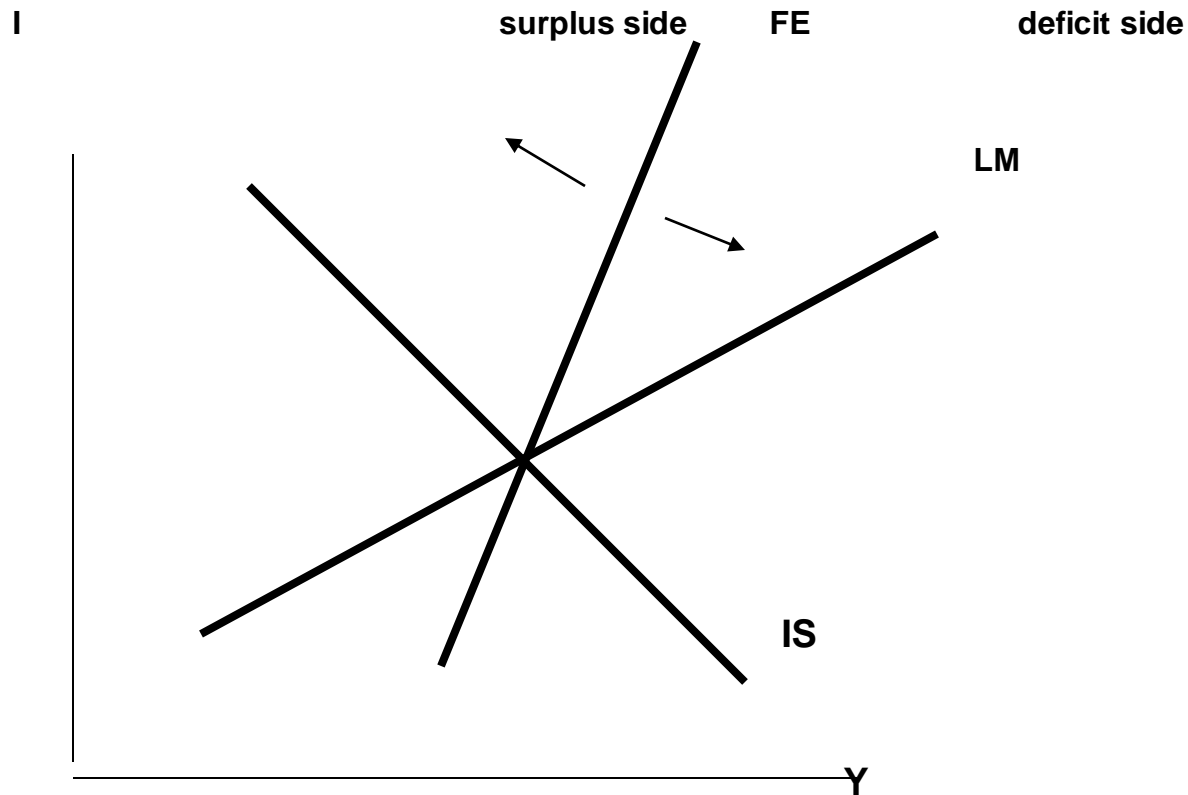
A More Complete Framework: Three Markets

The Foreign Exchange Market

- **FE (foreign exchange) curve** slopes upward since higher interest rate causes the surplus in B, but B could still be =0, if domestic product and income are higher

- The slope of the FE depend on sensitivity of capital flows to interest rates

- Perfect capital mobility case (capital flows are extremely sensitive to interest rates) – FE curve is horizontal line

A More Complete Framework: Three Markets

- *Three Markets Together*

I   surplus side   FE   deficit side

                                                                    LM

                                                       IS

Y

Trade Also Depends on Price Competitiveness

Demand on Imports:

$$M = M(Y(+), P_f/P(-))$$

- Imports tends to be higher if our production and income is higher

- Imports lower if imports are relatively expensive (P_f/P *is high*)

Trade Also Depends on Price Competitiveness

## *Demand for our Exports:*

$$X = X(Y_f\,(+),\ P_f/P\,(+))$$

- Exports tends to be higher if foreign production and income is higher

- Exports higher if foreign substitute products are are relatively expensive (P_f/P *is high*)

Trade Also Depends on Price Competitiveness

Net Exports

- ***Net Exports (X - M)*** tend to be higher if the price competitiveness of our product is higher, since both X ↑ and M↓

Expansionary Monetary Policy with Fixed Rates
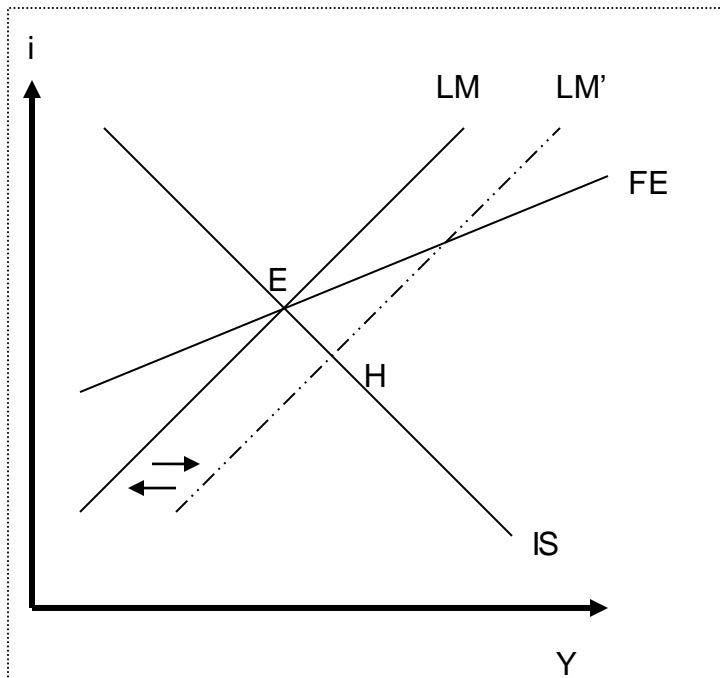
- Fixed exchange rates greatly constrain a country's ability to pursue an independent monetary policy

- $M^s\uparrow \rightarrow$ LM shifts to the right $\rightarrow$ Deficit in the balance of payments $\rightarrow$ Domestic currency depreciates $\rightarrow$ Intervention to defend fixed rate $\rightarrow M^s\downarrow \rightarrow$ LM shifts back reestablishing balance again at E

# *Effects of Expansionary Fiscal Policy with Fixed Exchange Rates*
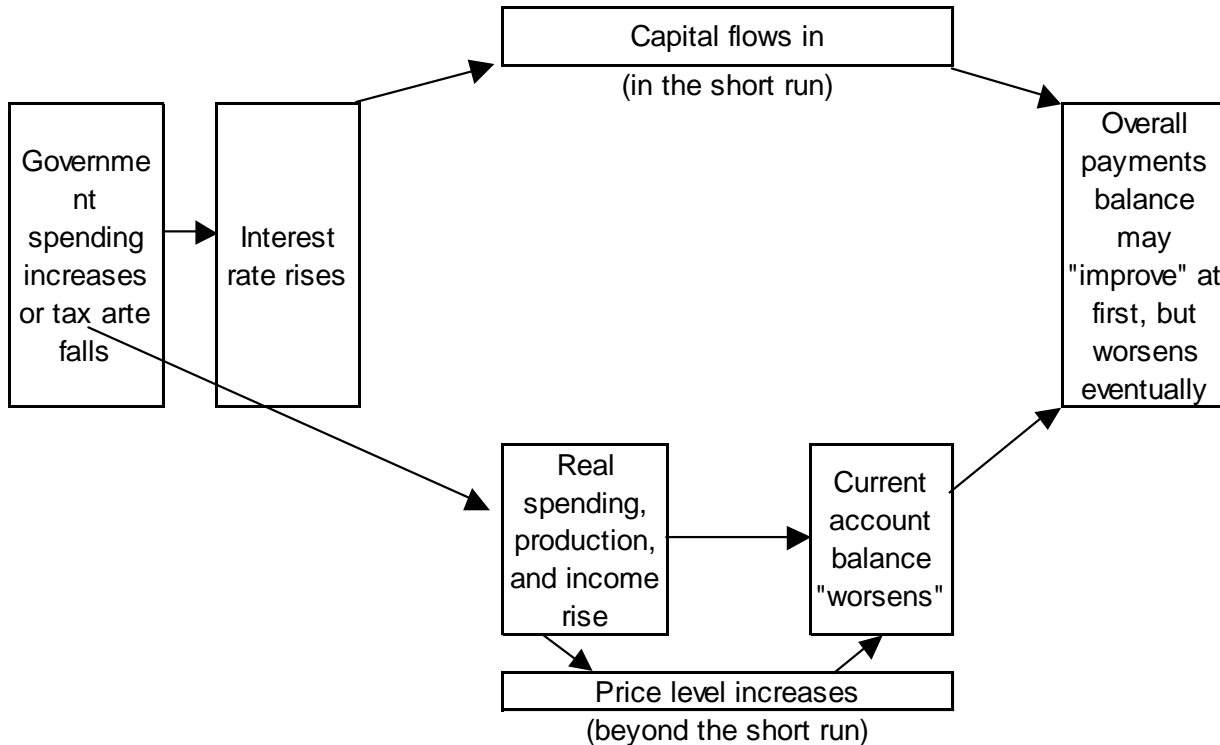
Expansionary Fiscal Policy with Fixed Rates
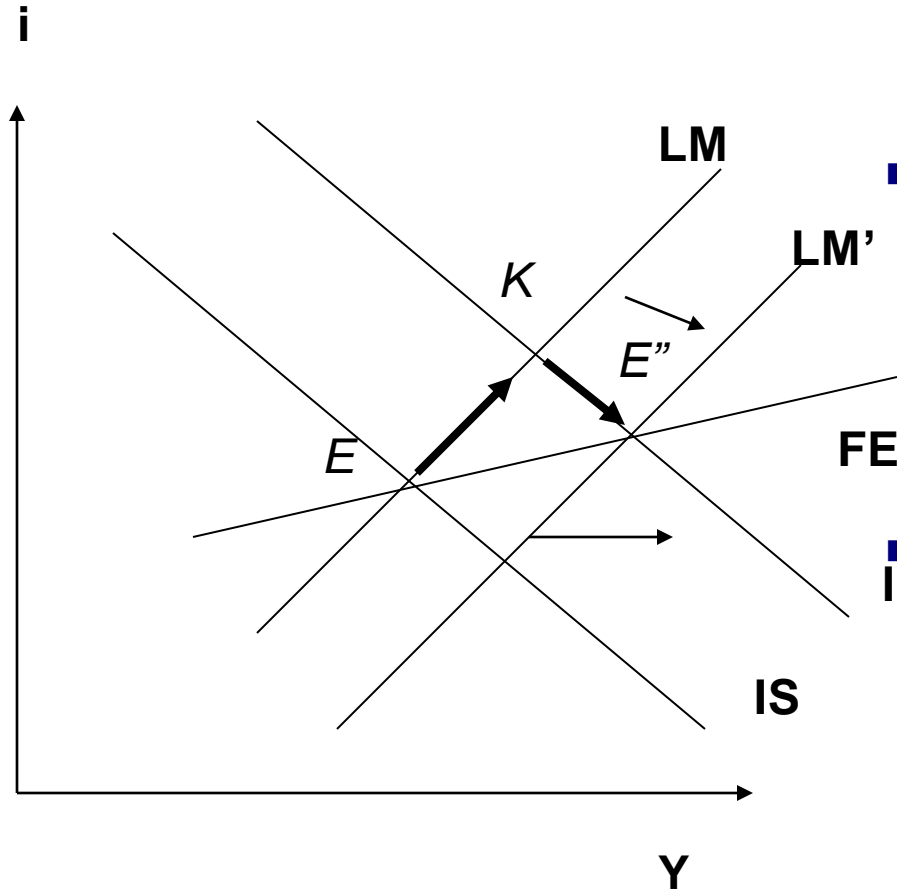

- Expansionary fiscal policy shifts the IS curve to the right and the IS-LM intersection shifts from E to K. The effects of fiscal policy depend on how strongly international capital flows respond to interest rates .

- In this panel overall payments balance goes into surplus (K is to the left of FE). Intervention to defend the fixed rate increases the money supply, shifting LM curve, and the economy shifts towards equilibrium at a point E"

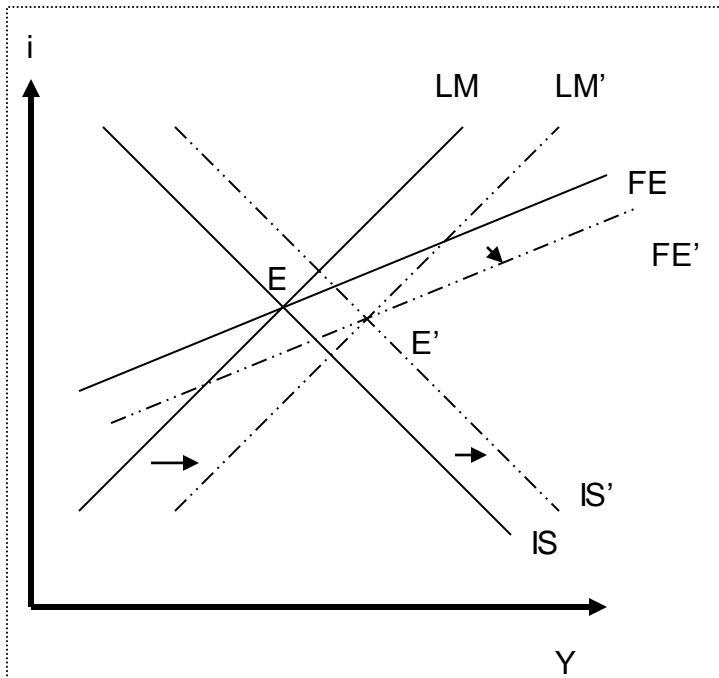# *Effects of Expanding the Money Supply with Fixed Exchange Rates*
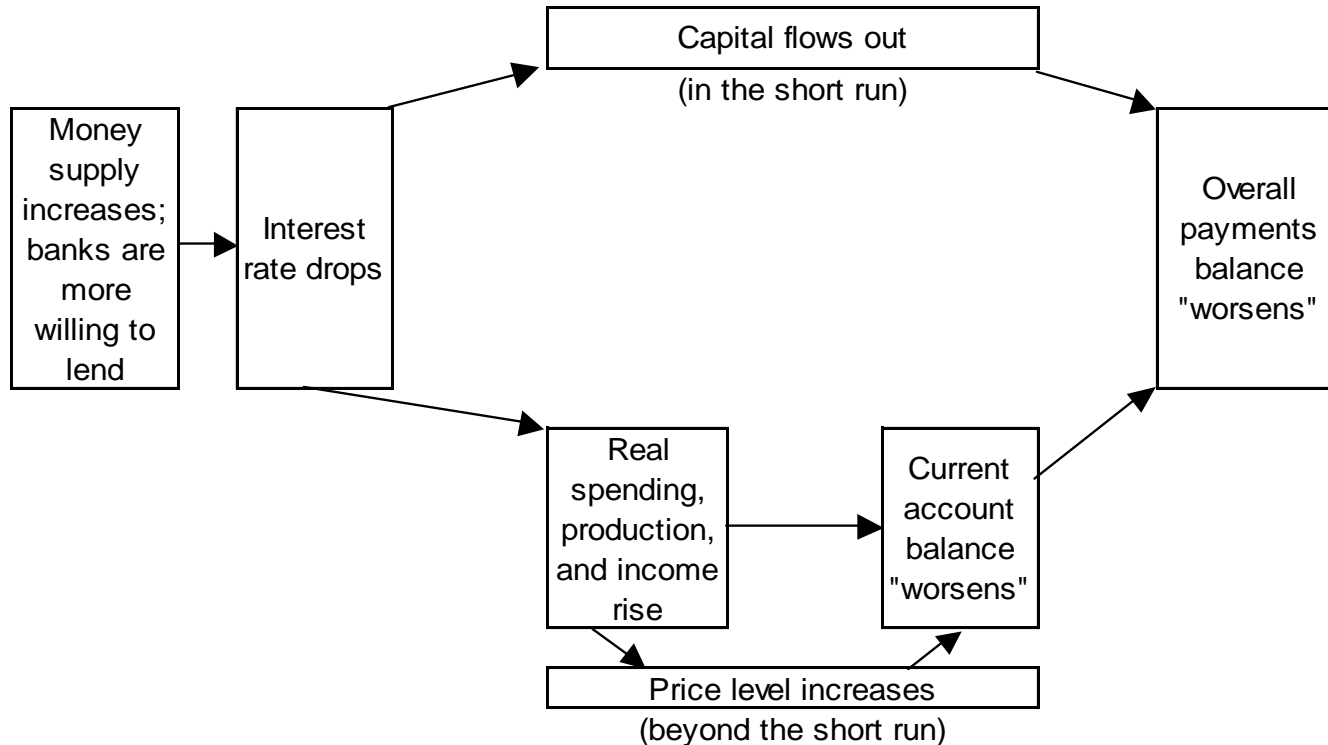
Perfect Capital Mobility Case (small country case)
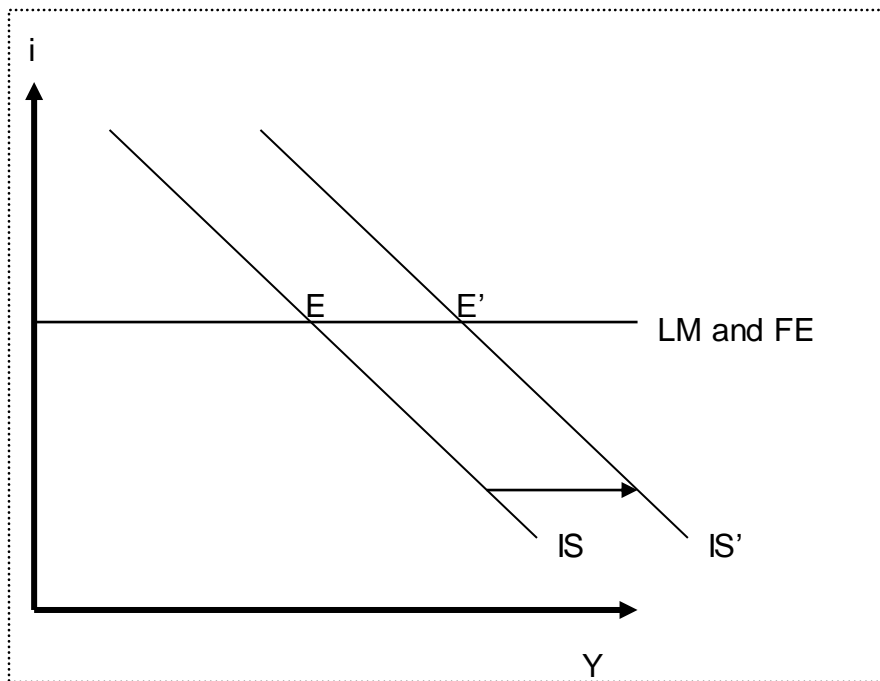
- Perfect capital mobility means that a practically unlimited amount of international capital flows in response to the slightest change in one country's interest rates
- Fiscal policy is powerful, but monetary is not.
- $M^s \downarrow \rightarrow i \uparrow \rightarrow$ Capital inflow→ Domestic currency appreciates → Intervention to defend fixed rate → $M^s \uparrow \rightarrow i$ returns back

Expansionary Monetary Policy with Floating Exchange Rate

- $M^s \uparrow \rightarrow$ LM shifts to the right $\rightarrow$ Deficit in the balance of payments$\rightarrow$ Domestic currency depreciates $\rightarrow$ FE and IS curves shift to the right reestablishing external balance at E' $\rightarrow$ i $\downarrow$ and Y $\uparrow$

Effects of Expanding the Money Supply with Floating Exchange Rates