

Topics for Today

- 1.) Trade in Goods & Assets
 - Nominal vs. Real Exchange Rates
 - Uncovered Interest Parity
- 2.) IS-LM in a Small Open Economy (The "Mundell-Fleming Model")
 - Real Exchange Rates & Net Exports
 - Monetary & Fiscal Policies with Flexible Exchange Rates
 - Monetary & Fiscal Policies with Fixed Exchange Rates

- We are now going to extend the IS-LM model to an open economy, i.e., one that trades goods + assets with other countries.
- There are 2 key new variables:
 - 1.) The nominal exchange rate = The value of one currency in terms of another.

We will define the nominal exchange rate as the value of domestic currency

~~Domestic currency~~

$$e = \frac{\text{foreign currency}}{\text{domestic currency}}$$

Thus, $e \uparrow \Rightarrow$ domestic currency appreciates

$e \downarrow \Rightarrow$ domestic currency depreciates

2.) What matters for people's spending decisions is the real exchange rate, i.e., how many foreign goods can be acquired per unit of domestic goods?

$$\begin{aligned}\varepsilon = \text{Real Ex. Rate} &= \frac{e P}{P^*} \\ &= \frac{\frac{\text{for. curr.}}{\$} \times \frac{\$}{\text{dom. goods}}}{\frac{\text{for. curr.}}{\text{for. goods}}} \\ &= \frac{\text{foreign goods}}{\text{domestic goods}}\end{aligned}$$

$\varepsilon \uparrow \Rightarrow$ Real Ex. Rate Appreciation

$\varepsilon \downarrow \Rightarrow$ Real Ex. Rate Depreciation

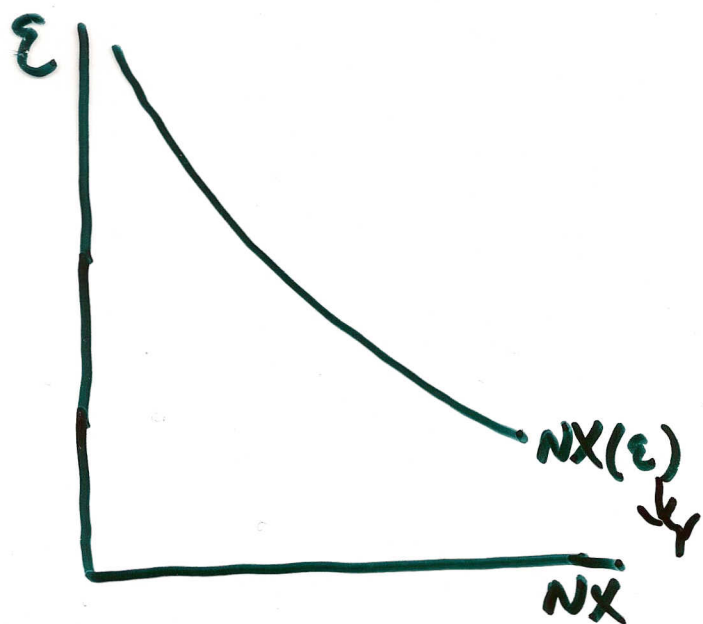
Uncovered Interest Parity

- In addition to trading goods, countries also exchange assets (borrow + lend).
- With open, integrated capital markets, assets denominated in different currencies must offer the same expected rate of return, when expressed in common currency units
- This equality is called "Uncovered Interest Parity". If r is the domestic interest rate and r^* is the foreign interest rate it says

$$r = r^* + (\text{expected rate of depreciation of the domestic currency})$$

- For example, if the domestic currency is expected to depreciate, then the only way you can get people to hold domestic assets is if they offer a higher interest rate
- Following the original Mundell-Fleming model, we will usually assume no expected change in the exchange rate, so $r = r^*$.

Open Economy IS-LM (The Mundell-Fleming Model)



e = Nominal Exchange Rate
(Value of domestic Currency)

ϵ = Real Exchange Rate
= Foreign Goods per
domestic goods

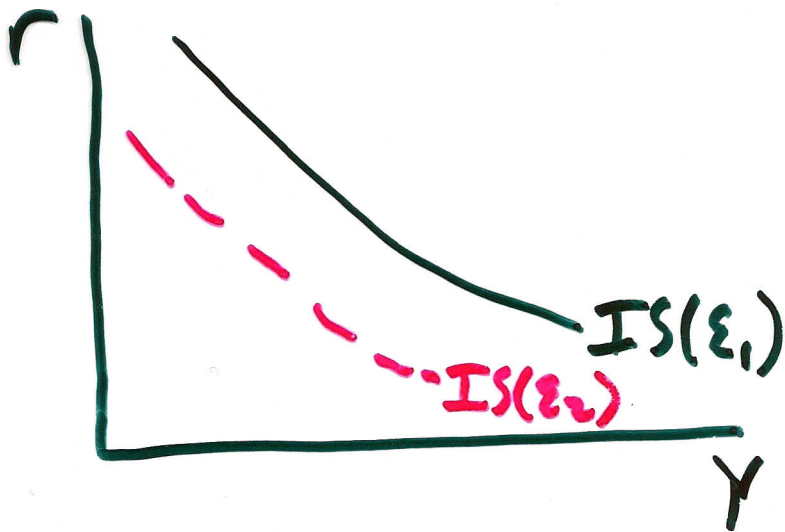
$$= \frac{eP}{P^*}$$

In the short-run, with prices sticky,
 ϵ is proportional to e .

$$Y = C(Y-T) + I(r) + G + NX(\epsilon)$$

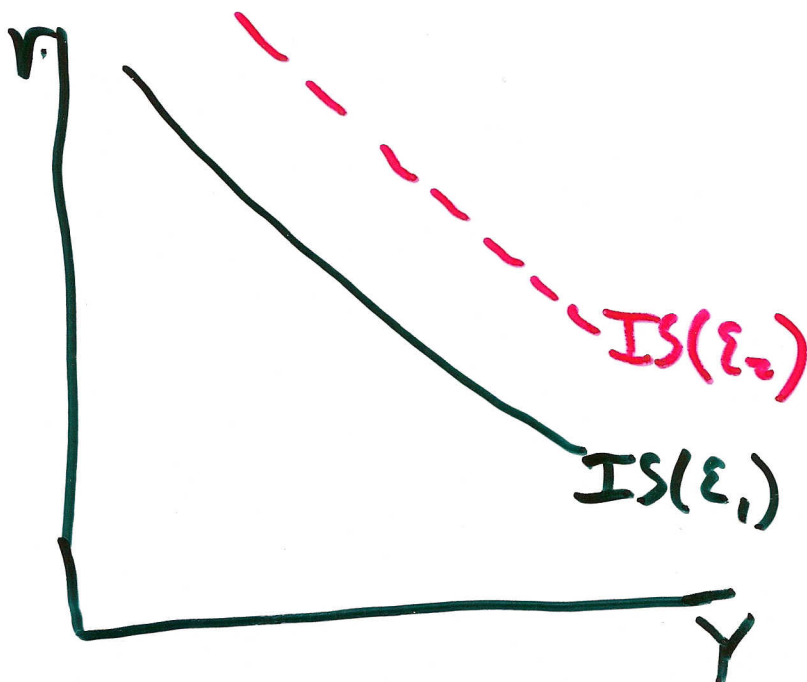
↑ Goods
Mkt.
Equil.
 $\hat{Y}$

$\varepsilon \uparrow \Rightarrow NX \downarrow \Rightarrow IS \text{ shifts left}$



$$\varepsilon_2 > \varepsilon_1$$

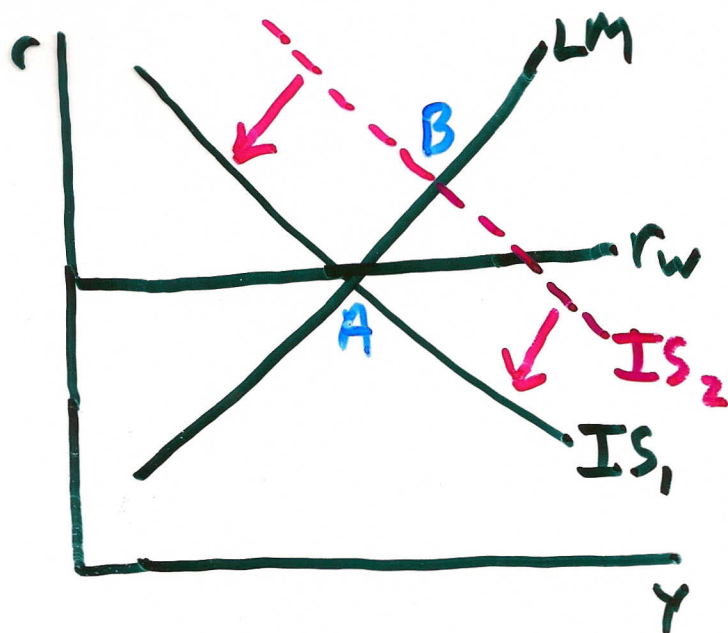
$\varepsilon \downarrow \Rightarrow NX \uparrow \Rightarrow IS \text{ shifts right}$



$$\varepsilon_2 < \varepsilon_1$$

Flexible Exchange Rates

Fiscal Policy



At B $r > r_w$

$\Rightarrow$ capital inflow

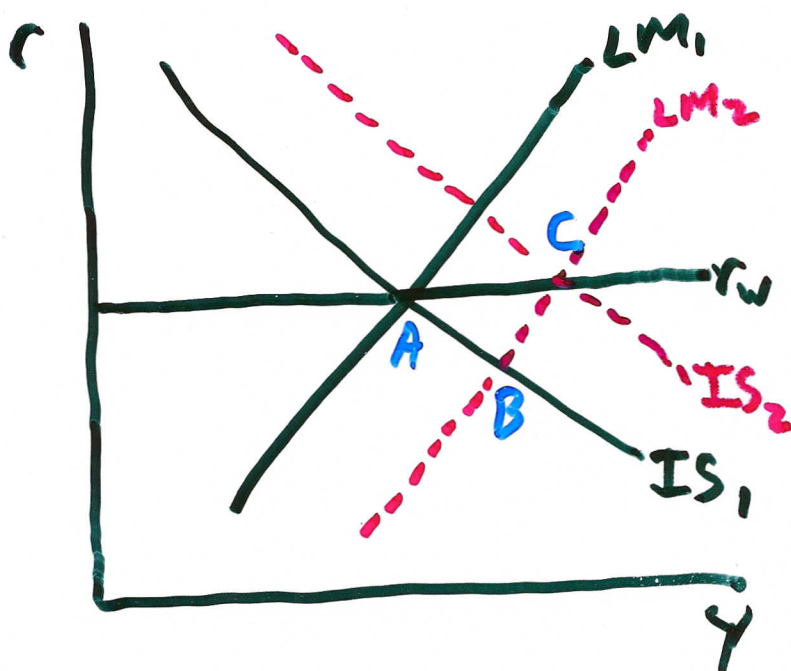
$\Rightarrow$ Currency Appreciation

$\Rightarrow NX \downarrow$

$\Rightarrow IS$ shifts left

$\Rightarrow$ Return to A

Monetary Policy



At B $r < r_w$

$\Rightarrow$ capital outflow

$\Rightarrow$ Currency Depreciation

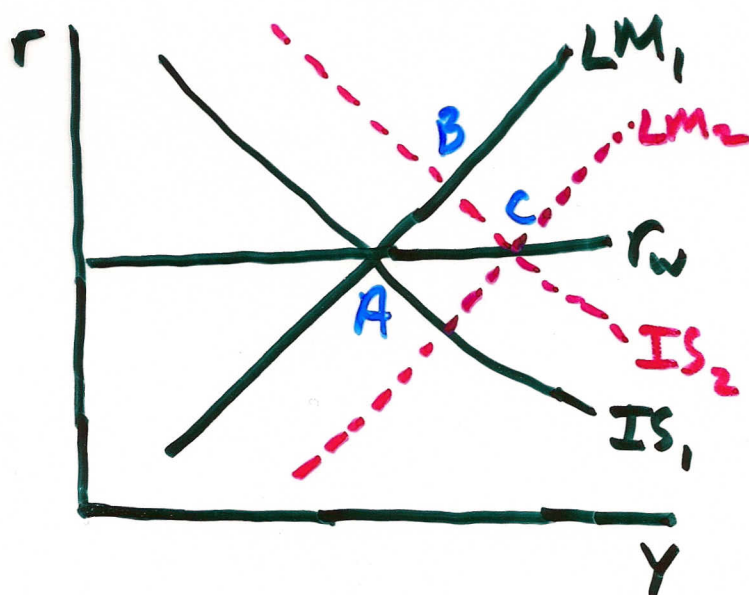
$\Rightarrow NX \uparrow$

$\Rightarrow IS$ shifts right

$\Rightarrow$ Go to C

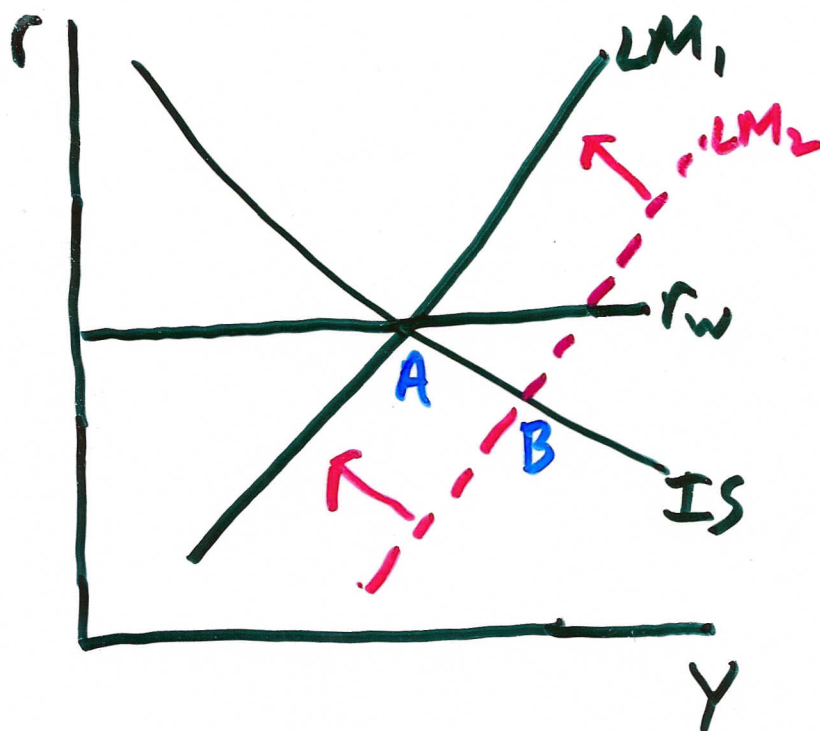
Fixed Exchange Rates

Fiscal Policy



- At B $r > r_w$
- $\Rightarrow$ capital inflow
- $\Rightarrow$ Pressure for currency to Appreciate
- $\Rightarrow$ Central Bank increases the Money Supply (buys Foreign Exchange)
- $\Rightarrow$ LM shifts right
- $\Rightarrow$ Go to C

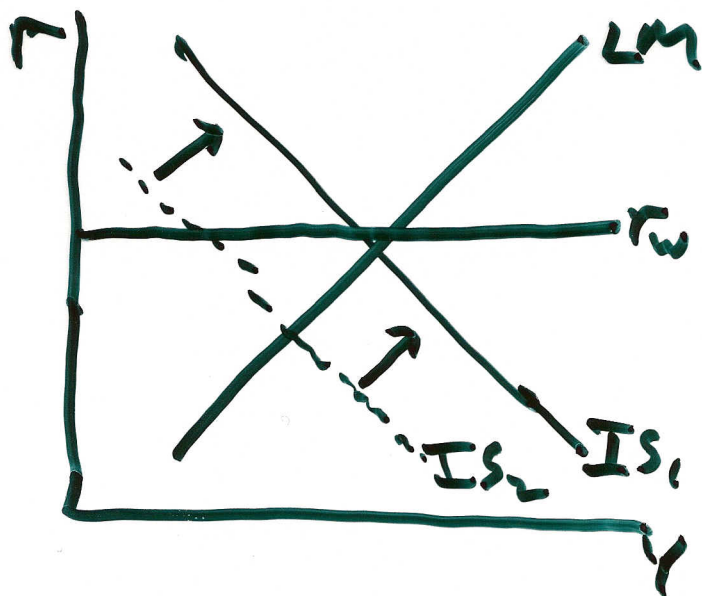
Monetary Policy



- At B $r < r_w$
- $\Rightarrow$ Capital Outflow
- $\Rightarrow$ Pressure for currency to Depreciate
- $\Rightarrow$ Central Bank Must decrease the Money Supply (Sell FX).
- $\Rightarrow$ LM shifts left
- $\Rightarrow$ Return to A

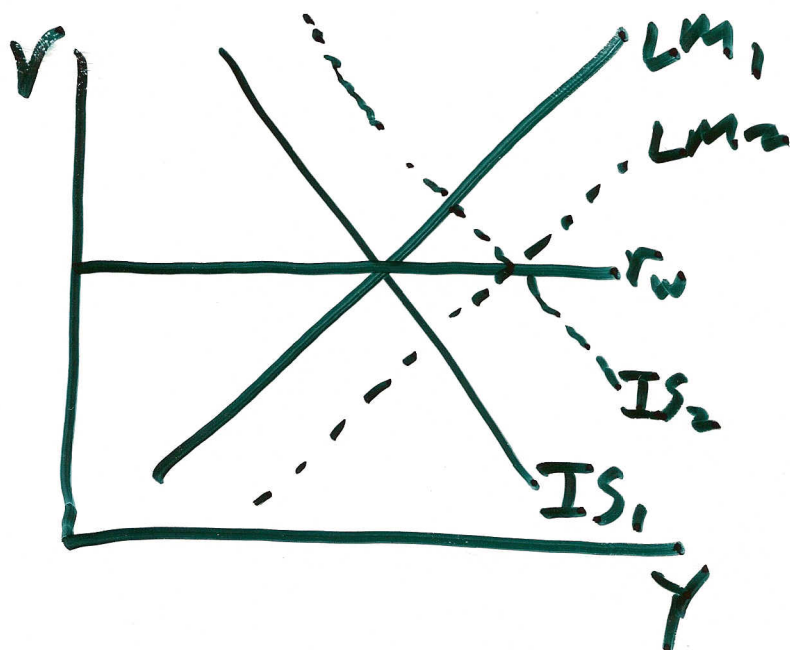
Flexible Ex. Rates

IS Shocks



Flex. rates
insulates
economy from
IS shocks

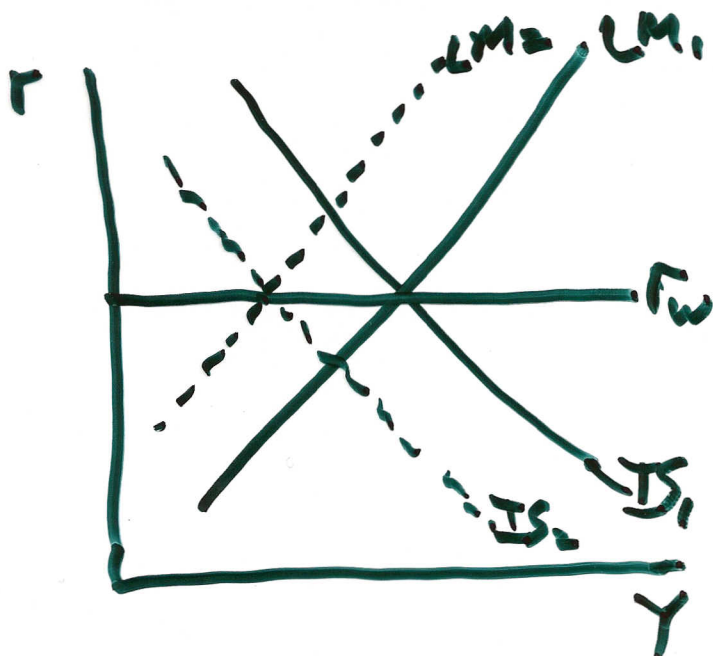
LM Shocks



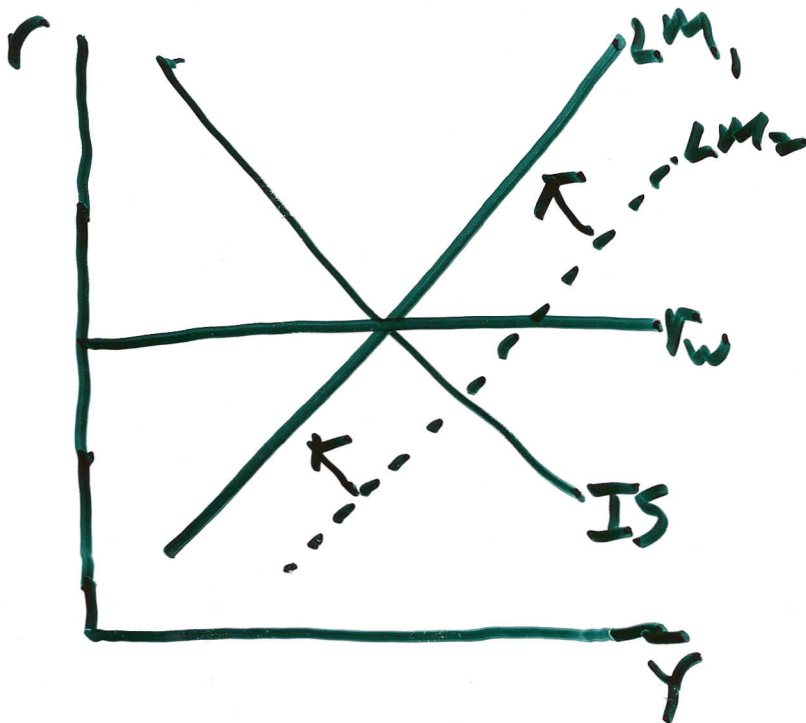
Flex. rates
accentuate
the economy's
response to
LM shocks

Fixed Ex. Rates

IS Shocks



Fixed rates
accentuate
the economy's
response to
IS shocks



Fixed rates
insulate the
economy
from LM
shocks.