

Ch 13 : The Mundell - Fleming Model

- What determines the exchange rate?
- How do policy actions affect it ?

So far we assumed e was fixed exogenously and looked at how changes in real exchange rate affected rest of economy.

Now we jointly solve for Y , i , and e by extending closed economy IS- LM model.

Start with goods market Eq:

We know

$$NX = X(0, Y^*) - 0Q(0, Y),$$

as a short hand write $NX(Y, Y^*, 0)$

continue to assume that P and P^* are fixed

$\Rightarrow \left. \begin{matrix}) \\ , \end{matrix} \right) = \left. \begin{matrix}) \\ E \end{matrix} \right)$

\Rightarrow replace e with E in NX .

Then Goods market equilibrium condition is:

$$Y = C(Y-T) + I(Y, i) + G + NX(Y, Y^*, E)$$

$\quad + \quad \quad + \quad - \quad \quad \quad - \quad + \quad \quad +$

Equilibrium in Financial Markets

- Domestic interest rates are determined by domestic choice between money and bonds.

$$(M/P) = Y L(i)$$

- Interest rates are linked to exchange rates through choice between domestic and foreign bonds.
- Interest parity condition says both bonds should yield same expected return.

$$i_t = i_t^* + \frac{E_{t+1}^e - E_t}{E_t}$$

Taking the expected future exchange rate as given (E^e) and dropping time indexes

$$i = i^* + \frac{E^e - E}{E}$$

$$\Rightarrow E(1 + i - i^*) = E^e$$

$$\Rightarrow E = \frac{E^e}{1 + i - i^*}$$

– note the negative relationship between domestic interest rate i and nominal exchange rate E .

When $i \uparrow \Rightarrow$ appreciation of dollar.

Explanation:

Assume initially $i = i^*$.

Bank of Canada $\uparrow i \Rightarrow i > i^*$

\Rightarrow expected return on Canadian bonds \uparrow

\Rightarrow sell US Bonds, buy Cdn bonds

\Rightarrow sell US\$ and buy Cdn\$ \Rightarrow Excess Demand for Cdn\$

\Rightarrow Appreciation of Cdn \$ OR $E \uparrow$.

Example: $i = i^* = 4\%$.

i 8to 10 %. What happens to E ?

-- See Fig 13.1 for graph of $E - i$ relationship.

(Drawn holding expected future E constant
and foreign interest rate i^* constant)

When $i = i^* \Rightarrow E = E^e$ (point A on fig)

Combining Goods and Financial Markets

$$Y = C(Y-T) + I(Y, i) + G + NX (Y, Y^* , E)$$

+ + - - + +

$$(M/P) = Y L(i)$$

$$E = \frac{E^e}{1+i-i^*}$$

Replace E in IS relation:

$$Y = C(Y - T) + I(Y, i) + G + NX(Y, Y^*, \frac{E^e}{1 + i - i^*})$$

Now i^e has two effects

1. $i^e \Rightarrow Z \Rightarrow Y$.
2. $i^e \Rightarrow E \Rightarrow NX \Rightarrow Z \Rightarrow Y$.

See Fig. 13.2 for new IS-LM

IS curve is drawn holding T, G, Y^* , i^* , and E^e constant.

Intersection with LM gives us the equilibrium value of Y and i.

From eq. i we can calculate eq. Value of E!

So we have solved the problem we started out with, and jointly determined Y, i and E.

Fiscal Policy: (See fig. 13.3)

$G \uparrow \Rightarrow$ rightward shift in IS.
Same LM curve $\Rightarrow i \uparrow, Y \uparrow$
 $i \uparrow \Rightarrow E \downarrow$.

Why does $i, Y \uparrow$? Why does $E \downarrow$?

What happens to NX ?

- $Y \uparrow \Rightarrow Q \uparrow \Rightarrow NX \downarrow$.
- Also, $E \downarrow \Rightarrow NX \downarrow$.

Monetary Policy (See Fig. 13.4)

- $M \downarrow \Rightarrow$ leftward shift in LM curve , same IS curve
 $\Rightarrow i \uparrow, Y \downarrow$ (Why?)
 $i \uparrow \Rightarrow E \downarrow$

Homework: what happens to the other endogenous variables?

SKIP section on Fixed Exchange Rates