

CHAPTER 12

The Open Economy Revisited: the Mundell-Fleming Model and the Exchange-Rate Regime

MACROECONOMICS SIXTH EDITION
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PowerPoint® Slides by Ron Cronovich
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In this chapter, you will learn...

- the Mundell-Fleming model (*IS-LM* for the small open economy)
- arguments for fixed vs. floating exchange rates
- how to derive the aggregate demand curve for a small open economy

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The Mundell-Fleming model

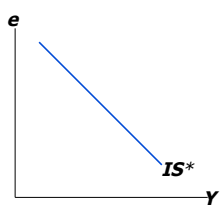
- Key assumption:**
Small open economy with perfect capital mobility.
 $r = r^*$
- Goods market equilibrium – the *IS** curve:
$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$
where
 e = nominal exchange rate
= foreign currency per unit domestic currency

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The *IS curve: Goods market eq'm**

$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$

The *IS** curve is drawn for a given value of r^* .
Intuition for the slope:
 $\downarrow e \Rightarrow \uparrow NX \Rightarrow \uparrow Y$



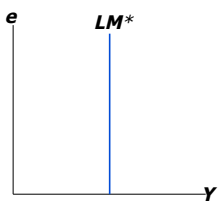
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The *LM curve: Money market eq'm**

$$\frac{\bar{M}}{\bar{P}} = L(r^*, Y)$$

The *LM** curve

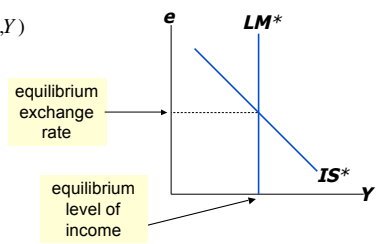
- is drawn for a given value of r^* .
- is vertical because: given r^* , there is only one value of Y that equates money demand with supply, regardless of e .



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Equilibrium in the Mundell-Fleming model

$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$

$$\frac{\bar{M}}{\bar{P}} = L(r^*, Y)$$


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Floating & fixed exchange rates

- In a system of **floating exchange rates**, e is allowed to fluctuate in response to changing economic conditions.
- In contrast, under **fixed exchange rates**, the central bank trades domestic for foreign currency at a predetermined price.
- Next, policy analysis –
 - first, in a floating exchange rate system
 - then, in a fixed exchange rate system



Fiscal policy under floating exchange rates

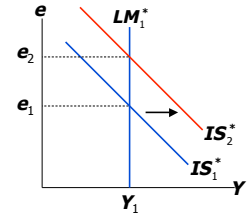
$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$

$$\frac{\bar{M}}{\bar{P}} = L(r^*, Y)$$

At any given value of e , a fiscal expansion increases Y , shifting IS^* to the right.

Results:

$$\Delta e > 0, \Delta Y = 0$$



Lessons about fiscal policy

- In a small open economy with perfect capital mobility, fiscal policy cannot affect real GDP.
- “Crowding out”
 - closed economy:** Fiscal policy crowds out investment by causing the interest rate to rise.
 - small open economy:** Fiscal policy crowds out net exports by causing the exchange rate to appreciate.



Monetary policy under floating exchange rates

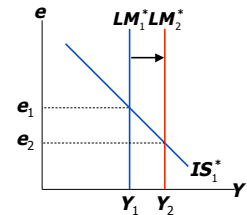
$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$

$$\frac{\bar{M}}{\bar{P}} = L(r^*, Y)$$

An increase in M shifts LM^* right because Y must rise to restore eq'm in the money market.

Results:

$$\Delta e < 0, \Delta Y > 0$$



Lessons about monetary policy

- Monetary policy affects output by affecting the components of aggregate demand:
 - closed economy: $\uparrow M \Rightarrow \downarrow r \Rightarrow \uparrow I \Rightarrow \uparrow Y$
 - small open economy: $\uparrow M \Rightarrow \downarrow e \Rightarrow \uparrow NX \Rightarrow \uparrow Y$
- Expansionary mon. policy does not raise world agg. demand, it merely shifts demand from foreign to domestic products. So, the increases in domestic income and employment are at the expense of losses abroad.



Trade policy under floating exchange rates

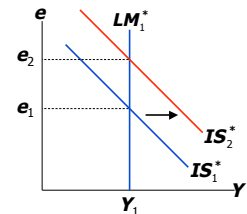
$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(e)$$

$$\frac{\bar{M}}{\bar{P}} = L(r^*, Y)$$

At any given value of e , a tariff or quota reduces imports, increases NX , and shifts IS^* to the right.

Results:

$$\Delta e > 0, \Delta Y = 0$$





Lessons about trade policy

- Import restrictions cannot reduce a trade deficit.
- Even though NX is unchanged, there is less trade:
 - the trade restriction reduces imports.
 - the exchange rate appreciation reduces exports.
- Less trade means fewer "gains from trade."



Lessons about trade policy, cont.

- Import restrictions on specific products save jobs in the domestic industries that produce those products, but destroy jobs in export-producing sectors.
- Hence, import restrictions fail to increase total employment.
- Also, import restrictions create "sectoral shifts," which cause frictional unemployment.



Fixed exchange rates

- Under fixed exchange rates, the central bank stands ready to buy or sell the domestic currency for foreign currency at a predetermined rate.
- In the Mundell-Fleming model, the central bank shifts the LM^* curve as required to keep e at its preannounced rate.
- This system fixes the nominal exchange rate. In the long run, when prices are flexible, the real exchange rate can move even if the nominal rate is fixed.

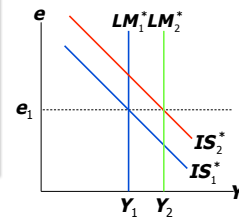


Fiscal policy under fixed exchange rates

Under floating rates, fiscal policy is ineffective at changing output.

Under fixed rates, fiscal policy is very effective at changing output.

Results:
 $\Delta e = 0, \Delta Y > 0$

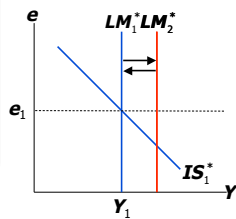


Monetary policy under fixed exchange rates

Under floating rates, monetary policy is very effective at changing output.

Under fixed rates, monetary policy cannot be used to affect output.

Results:
 $\Delta e = 0, \Delta Y = 0$

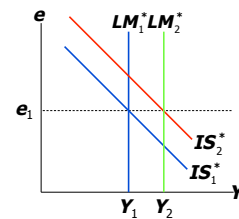


Trade policy under fixed exchange rates

Under floating rates, import restrictions do not affect Y or NX .

Under fixed rates, import restrictions increase Y and NX .

But, these gains come at the expense of other countries: the policy merely shifts demand from foreign to domestic goods.



Summary of policy effects in the Mundell-Fleming model

Policy	type of exchange rate regime:					
	floating			fixed		
	impact on:					
	Y	e	NX	Y	e	NX
fiscal expansion	0	↑	↓	↑	0	0
mon. expansion	↑	↓	↑	0	0	0
import restriction	0	↑	0	↑	0	↑

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Floating vs. fixed exchange rates

Argument for floating rates:

- allows monetary policy to be used to pursue other goals (stable growth, low inflation).

Arguments for fixed rates:

- avoids uncertainty and volatility, making international transactions easier.
- disciplines monetary policy to prevent excessive money growth & hyperinflation.

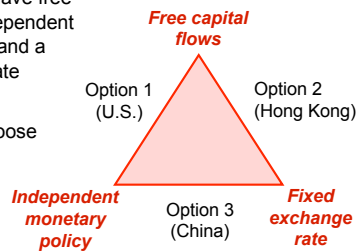
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The Impossible Trinity

A nation cannot have free capital flows, independent monetary policy, and a fixed exchange rate simultaneously.

A nation must choose one side of this triangle and give up the opposite corner.



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Mundell-Fleming and the AD curve

- So far in M-F model, P has been fixed.
- Next: to derive the AD curve, consider the impact of a change in P in the M-F model.

- We now write the M-F equations as:

$$Y = C(Y - \bar{T}) + I(r^*) + \bar{G} + NX(\epsilon)$$

$$\frac{\bar{M}}{P} = L(r^*, Y)$$

(Earlier in this chapter, P was fixed, so we could write NX as a function of e instead of ϵ .)

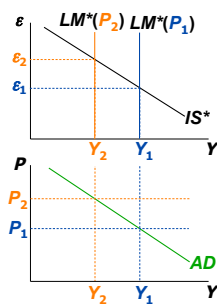
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Deriving the AD curve

Why AD curve has negative slope:

- $\uparrow P \Rightarrow \downarrow (M/P)$
- $\Rightarrow LM$ shifts left
- $\Rightarrow \uparrow \epsilon$
- $\Rightarrow \downarrow NX$
- $\Rightarrow \downarrow Y$



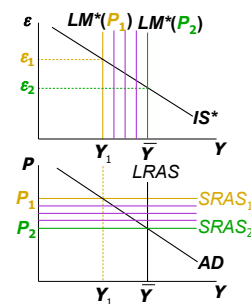
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From the short run to the long run

If $Y_1 < \bar{Y}$, then there is downward pressure on prices.

Over time, P will move down, causing $(M/P) \uparrow$
 $\epsilon \downarrow$
 $NX \uparrow$
 $Y \uparrow$



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Large: Between small and closed

- Many countries – including the U.S. – are neither closed nor small open economies.
- A large open economy is between the polar cases of closed & small open.
- Consider a monetary expansion:
 - Like in a closed economy,
 $\Delta M > 0 \Rightarrow \downarrow r \Rightarrow \uparrow I$ (though not as much)
 - Like in a small open economy,
 $\Delta M > 0 \Rightarrow \downarrow \varepsilon \Rightarrow \uparrow NX$ (though not as much)

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Chapter Summary

1. Mundell-Fleming model
 - the IS-LM model for a small open economy.
 - takes P as given.
 - can show how policies and shocks affect income and the exchange rate.
2. Fiscal policy
 - affects income under fixed exchange rates, but not under floating exchange rates.

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Chapter Summary

3. Monetary policy
 - affects income under floating exchange rates.
 - under fixed exchange rates, monetary policy is not available to affect output.
4. Fixed vs. floating exchange rates
 - Under floating rates, monetary policy is available for purposes other than maintaining exchange rate stability.
 - Fixed exchange rates reduce some of the uncertainty in international transactions.

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