

Open Economy AS/AD Model

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Objectives

In this section you will learn:

1. how to analyze an open economy in the medium run (AS/AD model)
2. how the effects of policies and shocks differ from the short run
3. why the medium run outcomes under floating and pegging are similar

Short vs Medium Run

Short run:

- ▶ P is fixed.
- ▶ Any adjustment of the real exchange rate must work through the nominal exchange rate:

$$\varepsilon = EP/P^* \quad (1)$$

Medium run:

- ▶ P adjusts
- ▶ Any change in E can be mimicked by a change in P
 - ▶ same effect on ε
 - ▶ no other real effects of money in the medium run

Fixed Exchange Rates

Fixed Exchange Rate Model

We need to clear these markets:

1. Foreign exchange: UIP with fixed E implies: $i = i^*$
2. Money:

$$M/P = YL(i^*) \quad (2)$$

Endogenous: $M/P, Y$

3. Goods:

3.1 demand:

$$Y = C(Y - T) + I(Y, i^* - \pi^e) + G + NX(Y, Y^*, \bar{E}P/P^*) \quad (3)$$

3.2 supply:

$$Y/L = F\left(\frac{P}{P^e} \frac{1}{1+m}, z\right) \quad (4)$$

Endogenous: Y, P (really also π^e , but let's set that aside)

Market Clearing

Short run:

- ▶ P^e fixed
- ▶ AS is upward sloping

Medium run:

- ▶ $P^e = P$
- ▶ vertical AS curve determines Y_n by itself:

$$Y_n/L = F\left(\frac{1}{1+m}, z\right) \quad (5)$$

Irrelevance of Money

We show:

- ▶ The goods market determines Y and P
- ▶ The money market determines M
 - ▶ so that $i = i^*$ holds at all times
- ▶ The Fed has no control over the money supply
- ▶ This is true in short run and medium run
- ▶ Key assumption: high capital mobility (UIP holds).

Aggregate Demand

Start from IS with $i = i^*$:

$$Y = C(Y - T) + I(Y, i^* - \pi^e) + G + NX(Y, Y^*, \bar{E}P/P^*) \quad (6)$$

Simplify:

$$Y = Y(\bar{E}P/P^*, G, T) \quad (7)$$

Negative slope: $P \uparrow \implies Y \downarrow$

► this works through the real exchange rate and NX

New shifters: Y^*, i^*, P^*, E

Aggregate Demand

M/P no longer shifts AD

Why not?

Analyzing the Model

We can forget about the money market and UIP and just analyze

AS:

$$Y/L = F\left(\frac{P}{P^e} \frac{1}{1+m}, z\right) \quad (8)$$

AD:

$$Y = Y(\bar{E}P/P^*, G, T) \quad (9)$$

Short run: P^e is given.

Medium run: $P^e = P$.

Transition: $P^e \rightarrow P$ shifts AS.

Analysis: Medium Run

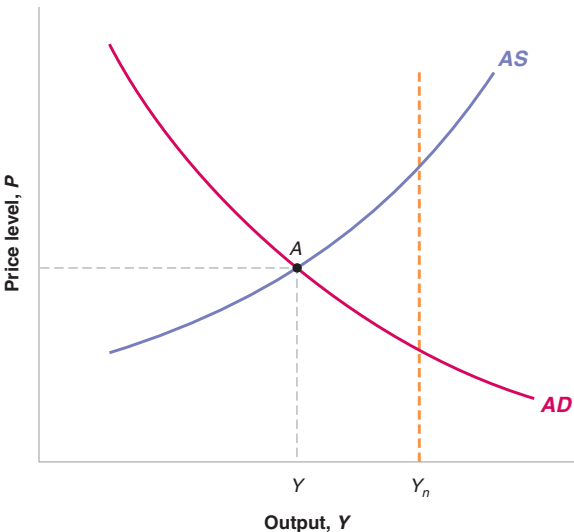
$P = P^e$: AS is vertical and determines Y_n :

$$Y/L = F\left(\frac{1}{1+m}, z\right) \quad (10)$$

P adjusts to get the “right” real exchange rate, such that $AD = Y_n$:

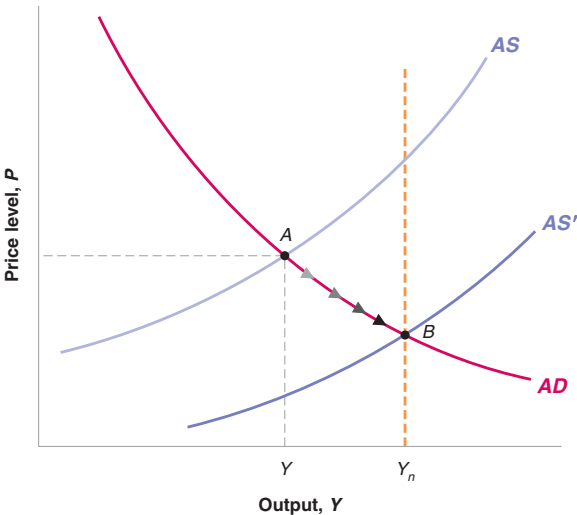
$$Y_n = Y(\bar{E}P/P^*, G, T) \rightarrow P$$

AS/AD Graph



Short run: P^e is fixed.
Output is not at the natural rate.

Adjustment Over Time



Initially: $P^e > P$.
 W/P too high.
 P^e falls over time.
 AS shifts down

What Differs From Closed Economy?

Closed economy:

$$\blacktriangleright P \downarrow \implies M/P \uparrow \implies i \downarrow \implies I \uparrow$$

Open economy:

$$\blacktriangleright P \downarrow \implies NX \uparrow$$

Reading

- ▶ Blanchard / Johnson, Macroeconomics, 6th ed., ch. 21

Additional reading:

- ▶ Jones, Macroeconomics, ch. 15.