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:

$$\varepsilon = EP/P^* \tag{1}$$

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:
$$M/P = YL(i^*) \tag{2}$$
   Endogenous: $M/P, Y$
3. Goods:
   3.1 demand:
$$Y = C(Y-T) + I(Y, i^* - \pi^e) + G + NX(Y, Y^*, \bar{E}P/P^*) \tag{3}$$
   3.2 supply:
$$Y/L = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right) \tag{4}$$
   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:

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

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 $i = i^*$:

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

Simplify:

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

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:

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

AD:

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

Short run: P^e is given.

Medium run: $P^e = P$.

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

Analysis: Medium Run

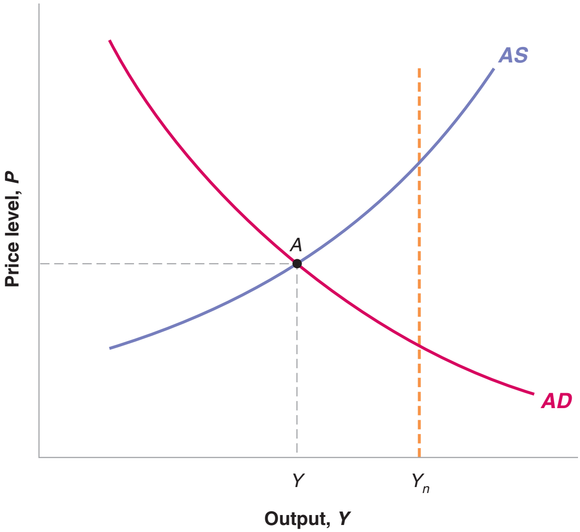
$P = P^e$: AS is vertical and determines Y_n:

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

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

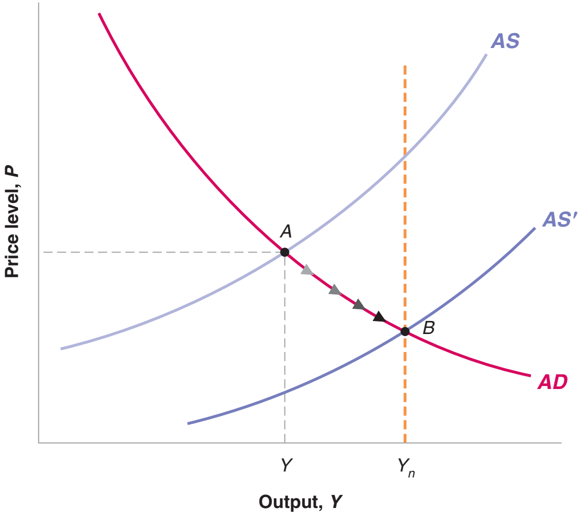
$$Y_n = Y\left(\bar{E}P/P^*, G, T\right) \rightarrow P$$

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:

- $P \downarrow \Longrightarrow M/P \uparrow \Longrightarrow i \downarrow \Longrightarrow I \uparrow$

Open economy:

- $P \downarrow \Longrightarrow NX \uparrow$

Reading

- Blanchard / Johson, Macroeconomics, 6th ed., ch. 21

Additional reading:

- Jones, Macroeconomics, ch. 15.