AS/AD Model: Fixed Exchange Rate

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Objectives

In this section you will learn:

1. how to set up an open economy AS/AD model
2. how to analyze shocks for fixed exchange rates (floating exchange rates are next up)

Fixed Exchange Rate Model

We need to clear these markets:

1. Foreign exchange: $i = i^*$
2. **Money** market:

$$M/P = YL(i^*) \tag{1}$$

3. **Goods** market:
   3.1 demand:

$$Y = C(Y-T) + I(Y, i^*) + G + NX(Y, Y^*, P/(\bar{E}P^*)) \tag{2}$$

   3.2 supply:

$$Y = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right) \tag{3}$$

Endogenous: Y, M, P (note that M is endogenous!)

Market Clearing

Short run:

- P^e fixed
- AS is upward sloping

Medium run:

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

$$Y_n/L = F\left(\frac{1}{1+m}, z\right) \tag{4}$$

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 ($i = i^*$ holds).

Aggregate Demand

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

$$Y = C(Y - T) + I(Y, i^*) + G + NX(Y, Y^*, P/(\bar{E}P^*)) \tag{5}$$

Simplify:

$$Y = Y\left(P/(\bar{E}P^*), G, T\right) \tag{6}$$

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

- 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 FX market and just analyze

AS:

$$Y/L = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right) \tag{7}$$

AD:

$$Y = Y\left(P/(\bar{E}P^*), G, T\right) \tag{8}$$

Short run: P^e is given.

Medium run: $P^e = P$.

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

Analysis: Medium Run

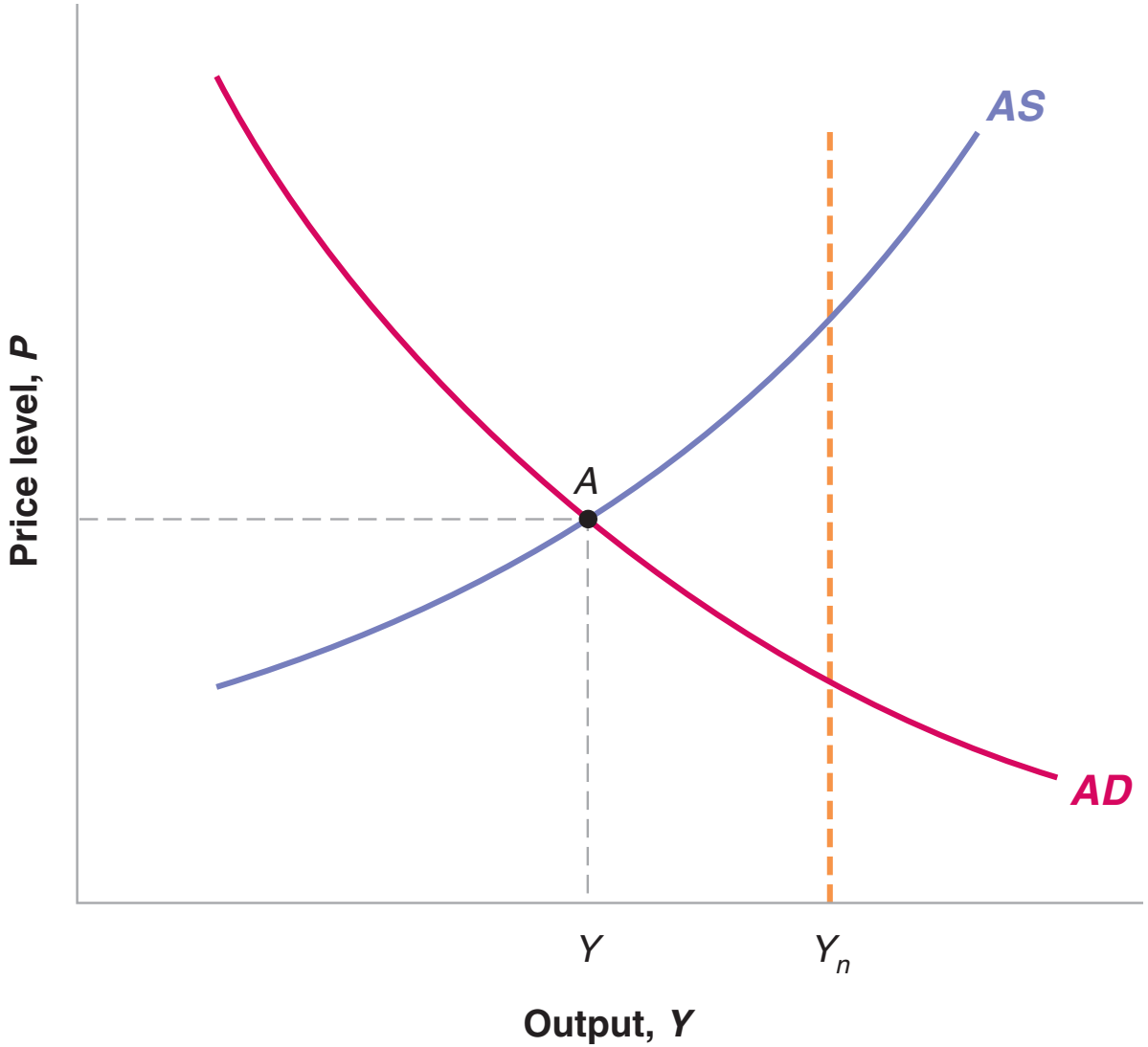
$P = P^e$: AS is vertical and determines Y_n:

$$Y = F\left(\frac{1}{1+m}, z\right) \tag{9}$$

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

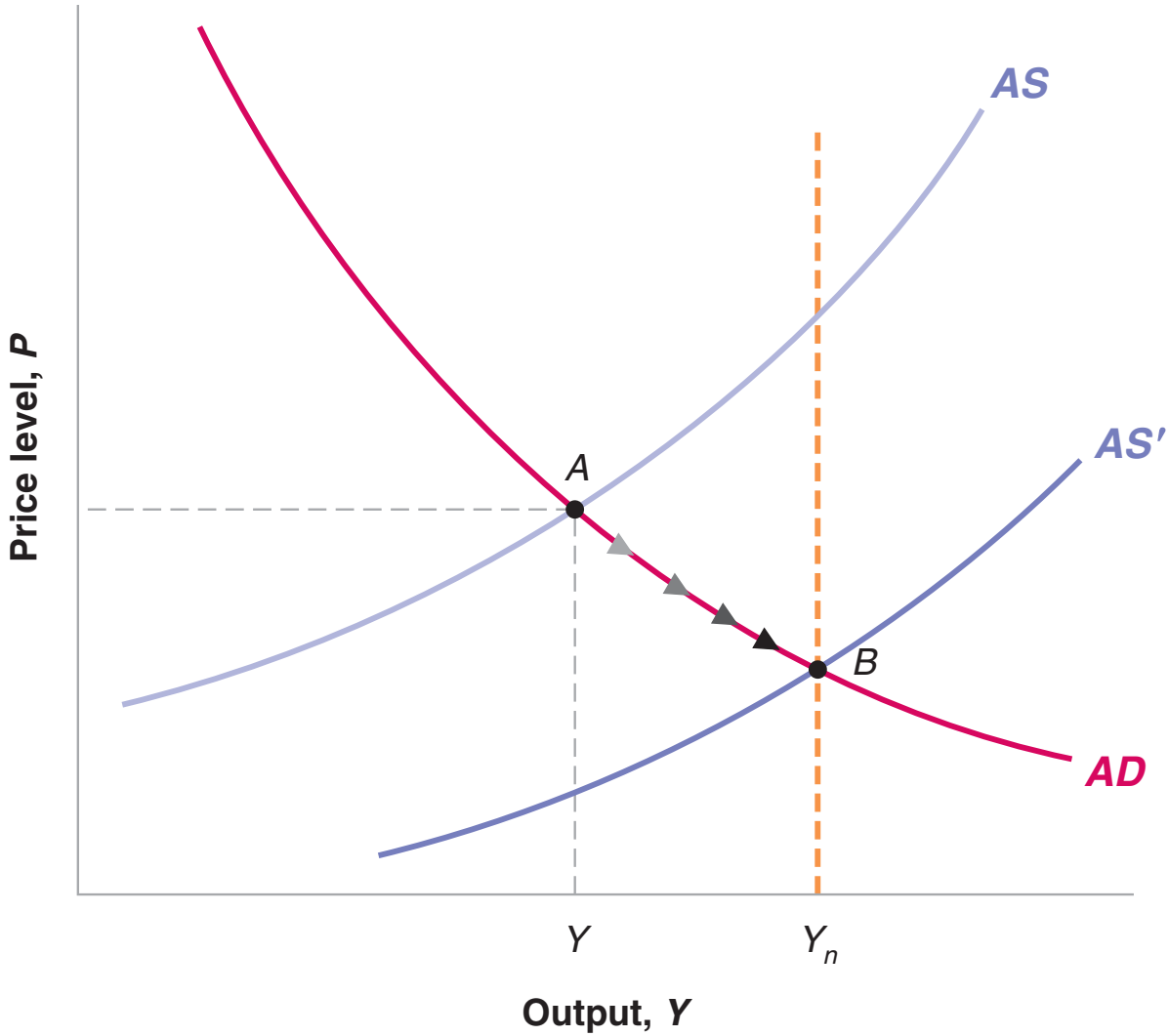
$$Y_n = Y\left(P/(\bar{E}P^*), G, T\right) \rightarrow P$$

AS/AD Graph



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

Adjustment Over Time



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

What Differs From Closed Economy?

The graph looks exactly like a closed economy.

What differs?

Closed economy:

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

Open economy:

- $P \downarrow \Longrightarrow NX \uparrow$

Understanding the Transition

Start from $P < P^e$.

AS implies: $Y < Y_n$.

Prices fall. NX improves. AD rises.

Money market: $M/P = YL(i^*)$

- Higher $Y \implies$ Households need more (real) money (M/P).
- But also lower $P \implies$ change in M ambiguous.
- Let's say households want higher M (otherwise change signs)
- Households try to buy bonds.
- i rises $\implies$ capital inflows
- Fed must sell dollars $\implies M \uparrow$

Key Points

With fixed exchange rates, the money market becomes irrelevant

- the Fed is busy fixing $i = i^*$
- that breaks any transmission to the real sector

The economy "works" much like a closed economy

- but foreign shocks now transmit into the home economy (in the short run)
- and monetary policy is gone

Reading

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

Additional reading:

- Jones, Macroeconomics, ch. 15.