INTERMEDIATE MACROECONOMICS
9 – OUTPUT, DEMAND AND THE TRADE BALANCE

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Share 3 take-aways from the reading (textbook Chapter 18)

The Goods Market in an Open Economy

18

I n 2009, countries around the world worried about the risk of a recession in the United States, but their worries were not so much for the United States as they were for themselves. To them, a US recession meant lower exports to the United States, a deterioration of their trade position, and weaker growth at home.

Were their worries justified? Figure 17-1 from the previous chapter certainly suggested they were. The US recession clearly led to a world recession. To understand what happened, we must expand the treatment of the goods market in Chapter 3 and account for openness in the analysis of goods markets. This is what we do in this chapter.

Section 9: The roadmap

1. Aggregate demand in the open economy.

2. Equilibrium output & the trade balance.
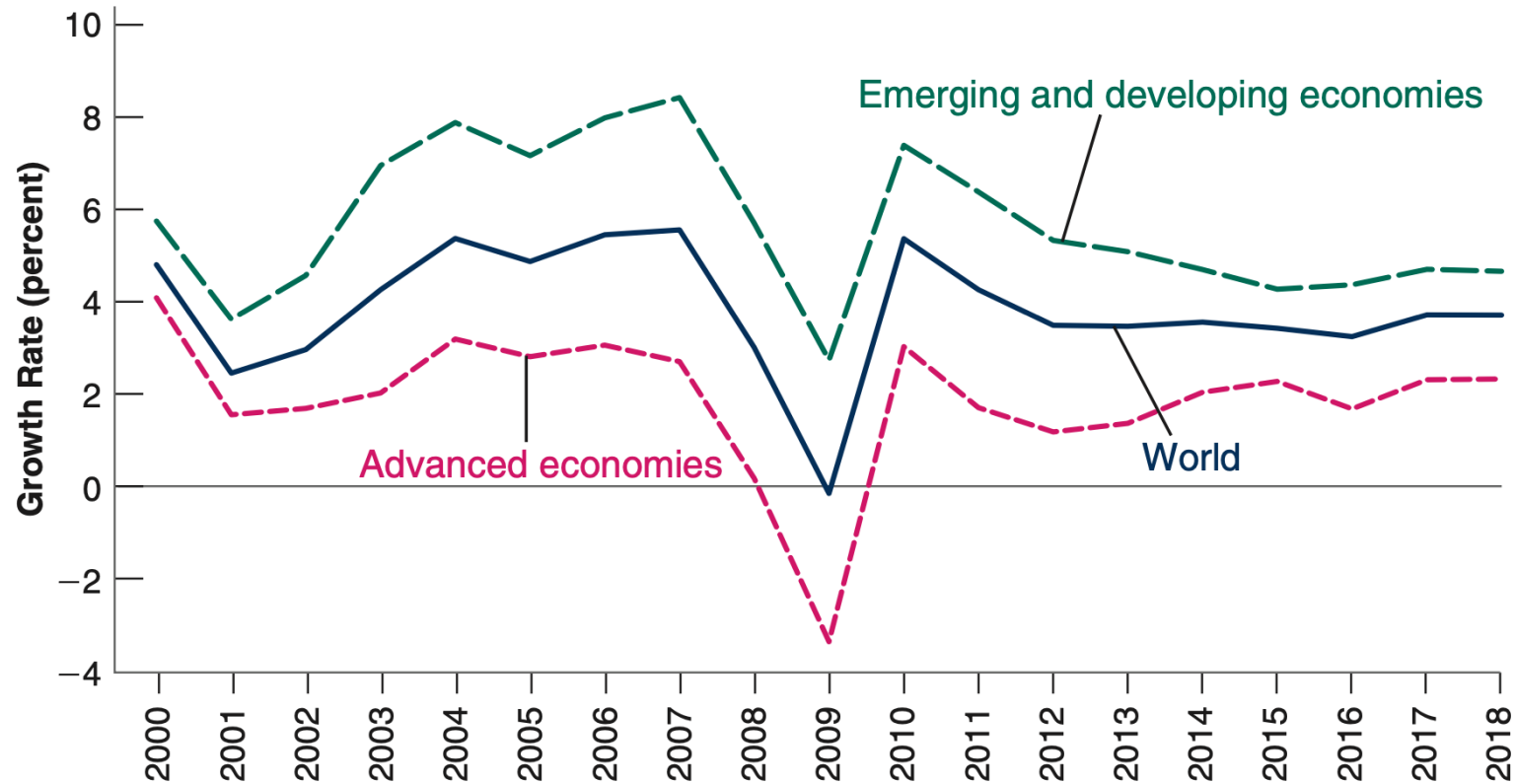
3. The effects of a depreciation.

Takeaways

- Other things being equal, the *multiplier effect* is smaller in an open economy.

- Changes in domestic demand affect the trade balance.

- Changes in foreign demand and in the real exchange rate affect domestic output.
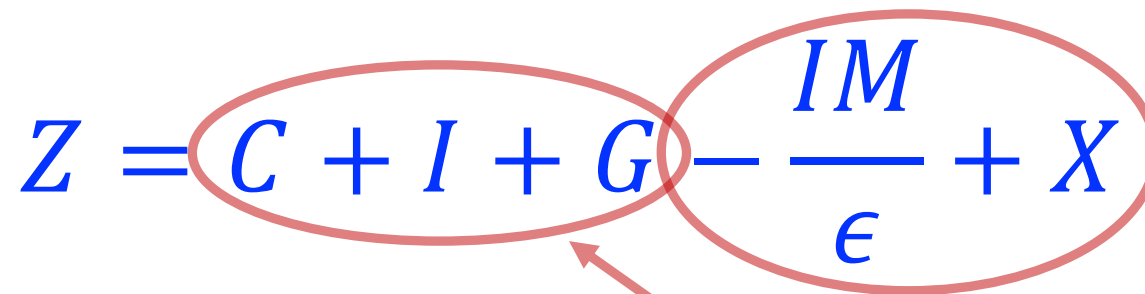
9.1 AGGREGATE DEMAND IN THE OPEN ECONOMY

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Instructor: Daniele Girardi

Another look at this graph

Aggregate demand in the open economy

$$Z = C + I + G - \frac{IM}{\epsilon} + X$$

Domestic Demand

Net Exports

- $C = C(Y - T)$
- $I = I(Y, r)$
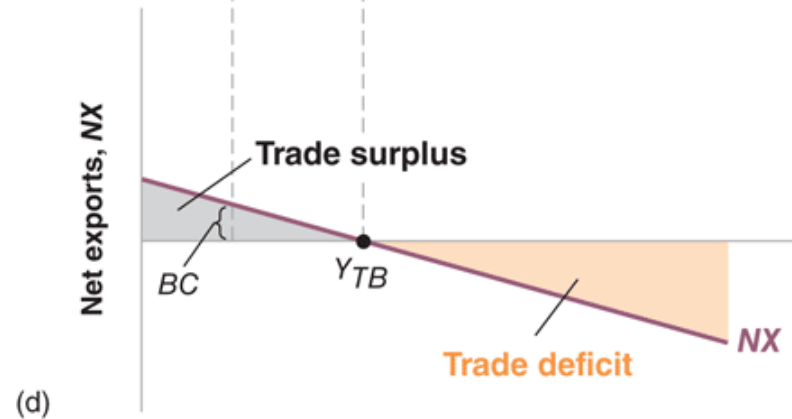- $G = \bar{G}$
- *What determines IM and X?*

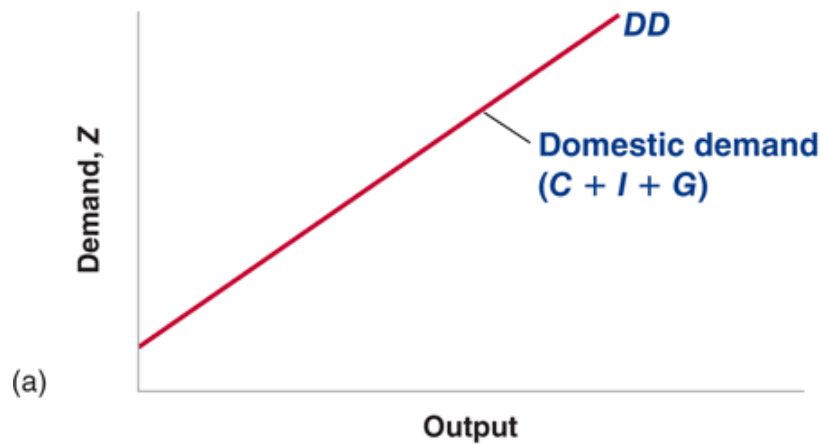# What determines imports and exports?

$$IM = IM(Y, \epsilon)$$
$$(+, +)$$

$$X = X(Y^*, \epsilon)$$
$$(+, -)$$

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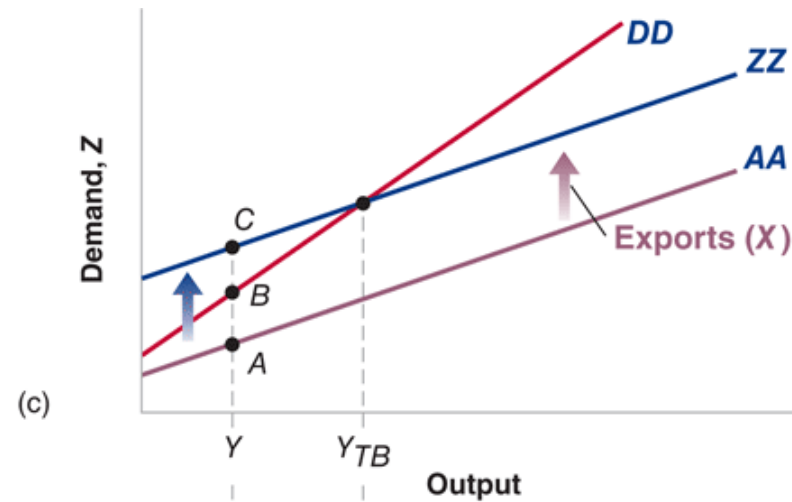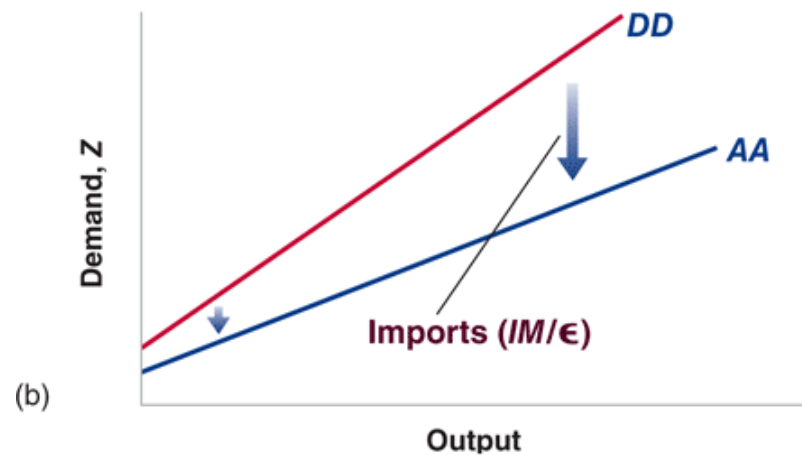
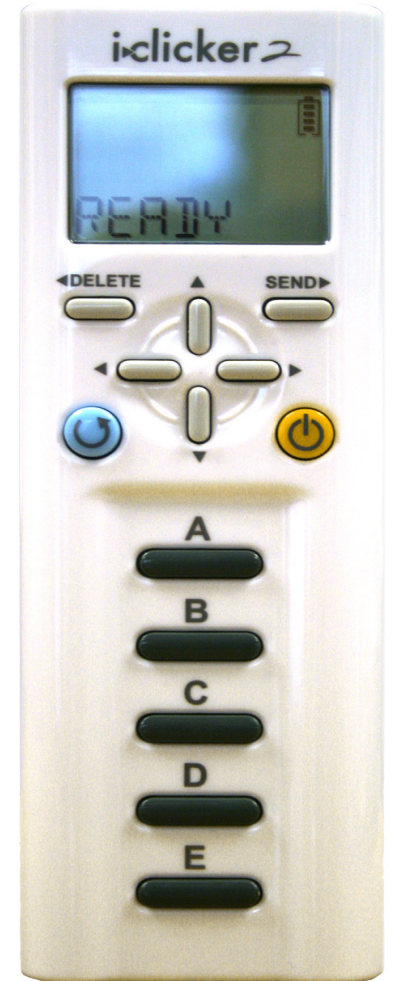(a) DD= Domestic demand
(b) AA= Domestic demand for domestic goods
(c) ZZ=Total demand for domestic goods
(d) Trade balance $NX = ZZ - DD$

Clicker question

Other things equal, is the multiplier higher in a closed economy or in an open economy?

A. Multiplier is higher in closed economy.

B. Multiplier is higher in open economy.

C. It is the same.

D. It is not possible to say.

9.2 EQUILIBRIUM OUTPUT & THE TRADE BALANCE

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Equilibrium output in the open economy

- Aggregate demand in the open economy:

$$Z = C(Y - \bar{T}) + I(Y, r) + \bar{G} - \frac{IM(Y, \varepsilon)}{\varepsilon} + X(Y^*, \varepsilon)$$

- Equilibrium condition $Y = Z$ means

$$Y = C(Y - \bar{T}) + I(Y, r) + \bar{G} - \frac{IM(Y, \varepsilon)}{\varepsilon} + X(Y^*, \varepsilon)$$

- Determines equilibrium Y as a function of the exogenous variables G, T, r and ε.

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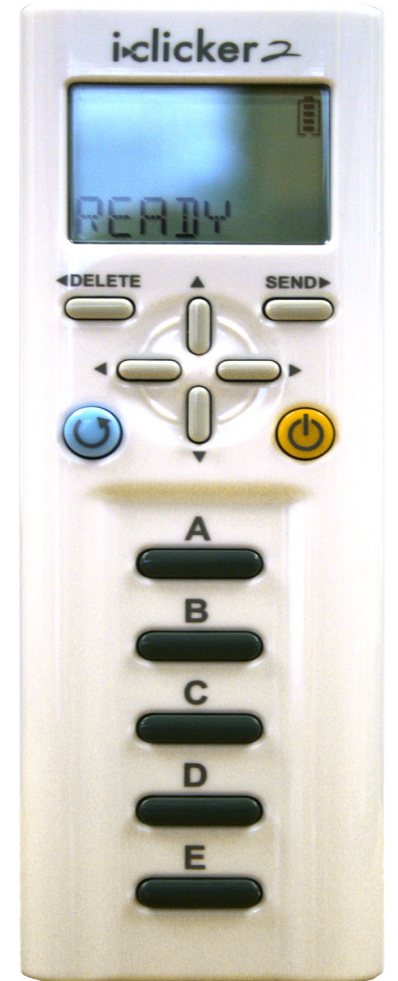
Equilibrium output and the trade balance

- Equilibrium Y = intersection of aggregate demand curve & 45-degrees line.

- Net exports = decreasing function of Y.

- Changes in domestic demand affect the trade balance.
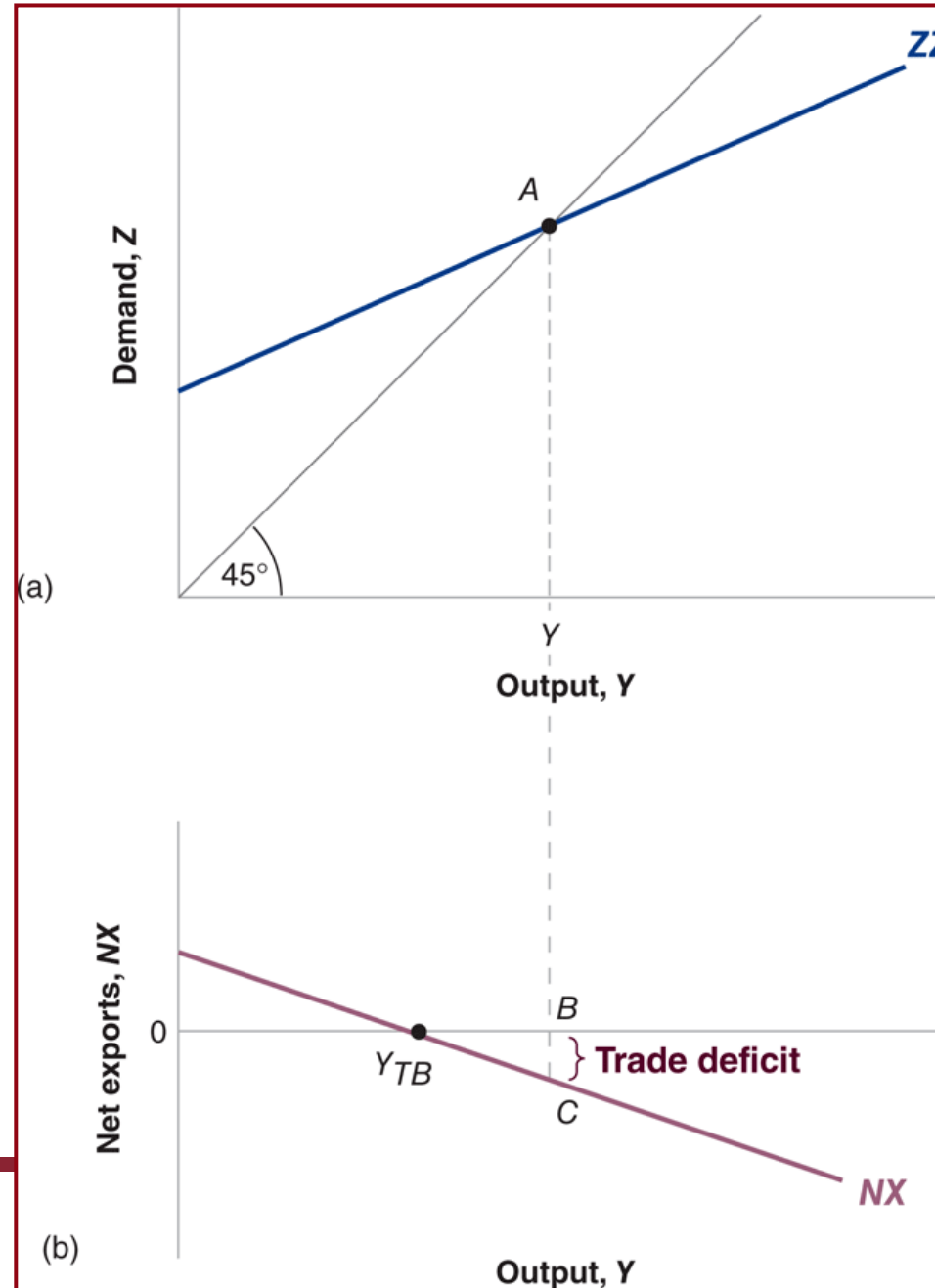
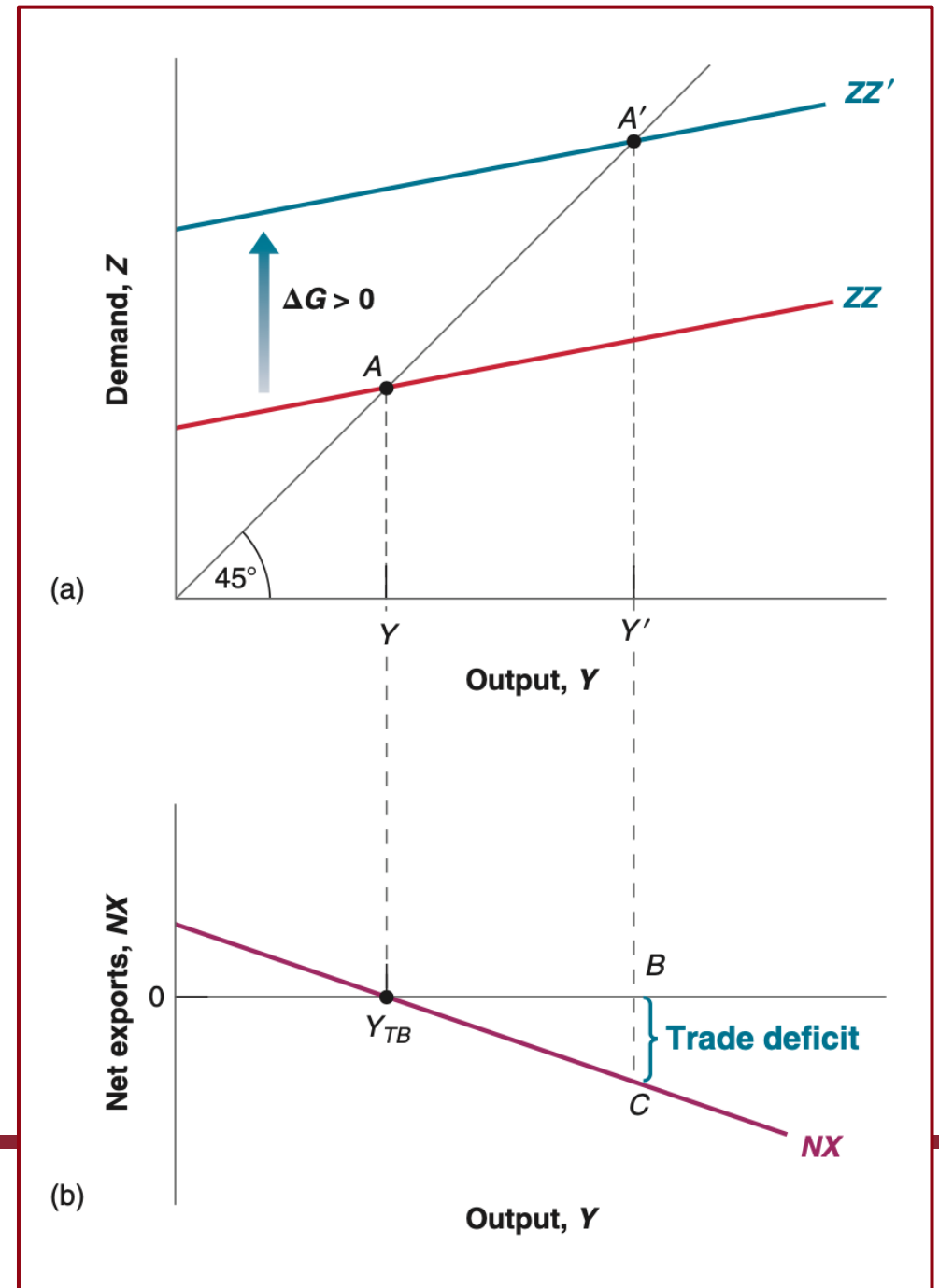# Clicker question

What is the effect of fiscal expansion
in an open economy?

A. Output and net exports go up.

B. Output and net exports go down.

C. Output up, net exports down.

D. Output down, net exports up.

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Fiscal expansion in the open economy

- Aggregate demand curve shifts up.

- Higher equilibrium output.

- Deterioration in the trade balance:
  - imports increase
  - exports are unchanged
 - lower net exports

PREVIOUSLY ON ECON 452…

- **Aggregate demand in the open economy**

  o = Domestic demand + Net exports.

  o Exports depend on Y^* and ε.

  o Imports depend on Y and ε.

- The multiplier is lower in the open economy (flatter demand curve)

- Changes in domestic demand affect the trade balance.

 o Fiscal expansion $\rightarrow$ higher output, but worse trade balance.

Clicker question

What is the effect of an increase in foreign output?

A. Output and net exports go up.

B. Output and net exports go down.

C. Output up, net exports down.

D. Output down, net exports up.

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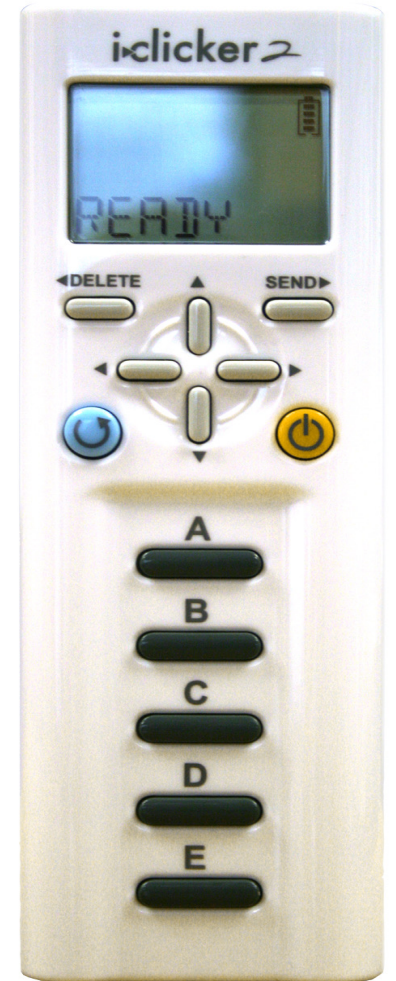
Effect of an increase in foreign demand

- Aggregate demand curve shifts up.

- Higher equilibrium output.

- Improvement in the trade balance:
  - Exports go up
  - Also imports go up
 - ZZ - DD increases.
  - so net exports increase.

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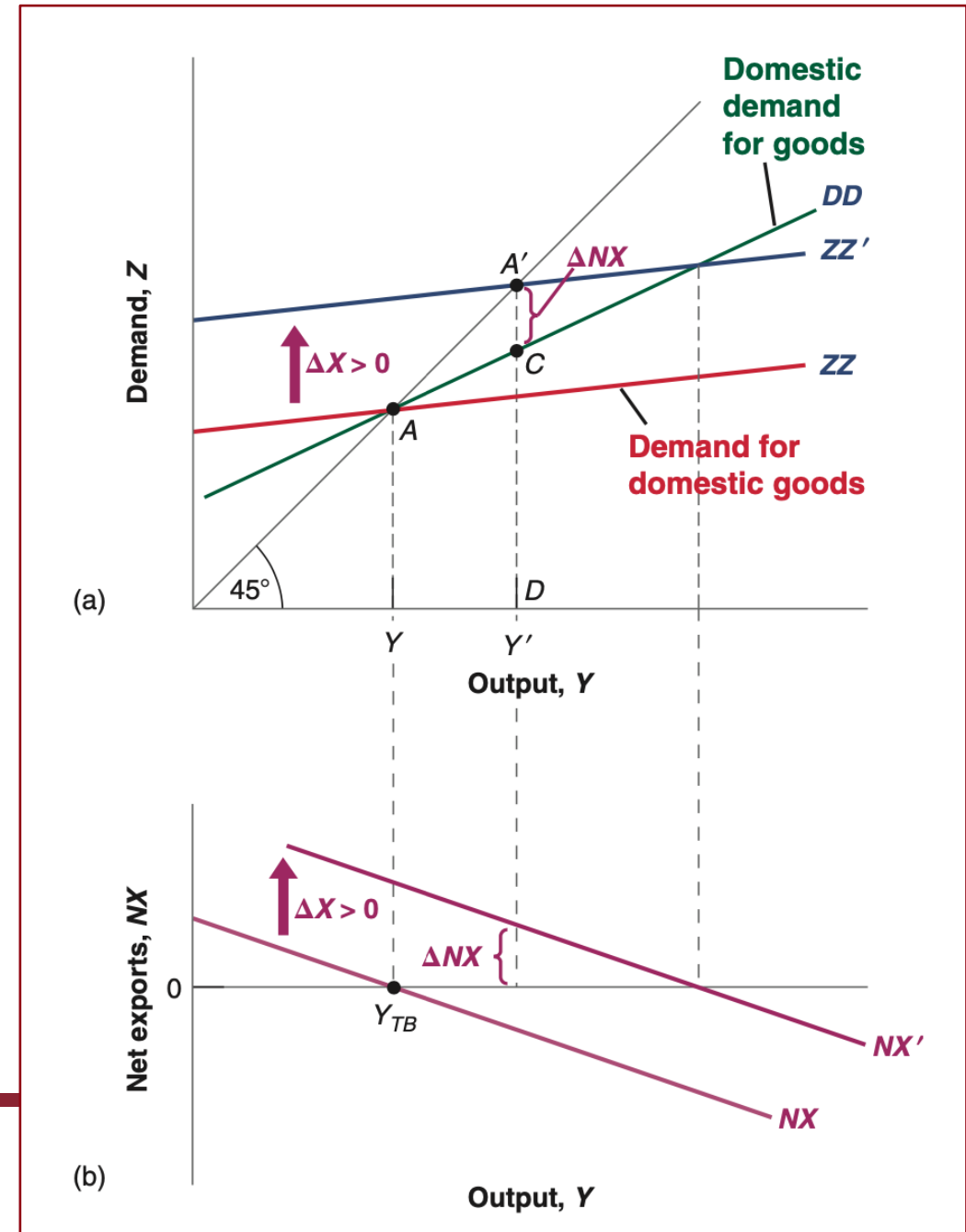
Policy Coordination

"The fiscal stimulus is now essential to restore global growth. Each country's fiscal stimulus can be twice as effective in raising domestic output growth if its major trading partners also have a stimulus package."

(Dominique Strauss-Kahn, IMF managing director, at the Nov 2008 G-20 summit in Washington)

9.3 THE EFFECTS OF A DEPRECIATION
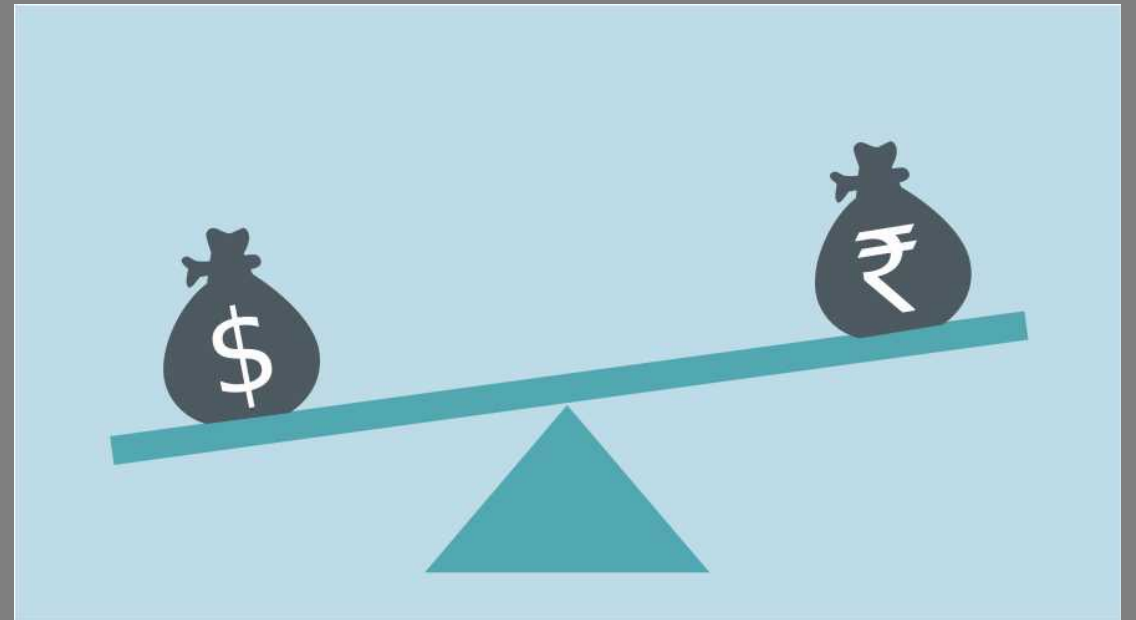
The effects of a depreciation

- Real Exchange Rate: $\varepsilon = \dfrac{EP}{P^*}$

- Net exports: $NX = X(Y^*, \varepsilon) - IM(Y, \varepsilon)/\varepsilon$

- 3 direct effects of a real depreciation:

  1. Exports (X) increase.

  2. Imports (IM) decrease.

  3. Imports (IM/ε) are more expensive.

Marshall-Lerner condition: if (1) and (2) together are stronger than (3), real depreciation leads to increase in net exports.

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Effects of real depreciation

- Like an increase in foreign demand

- Aggregate demand curve shifts up.

- Higher equilibrium output.

- Improvement in the trade balance:
  - ZZ - DD increases.
  - so net exports increase.

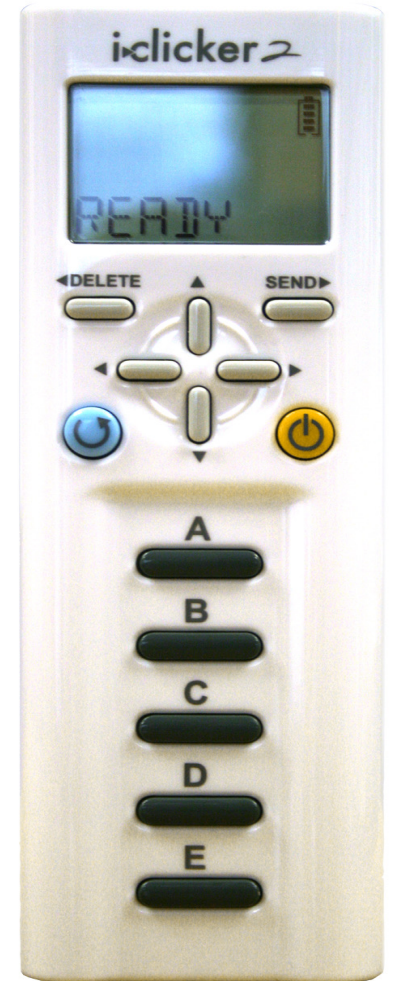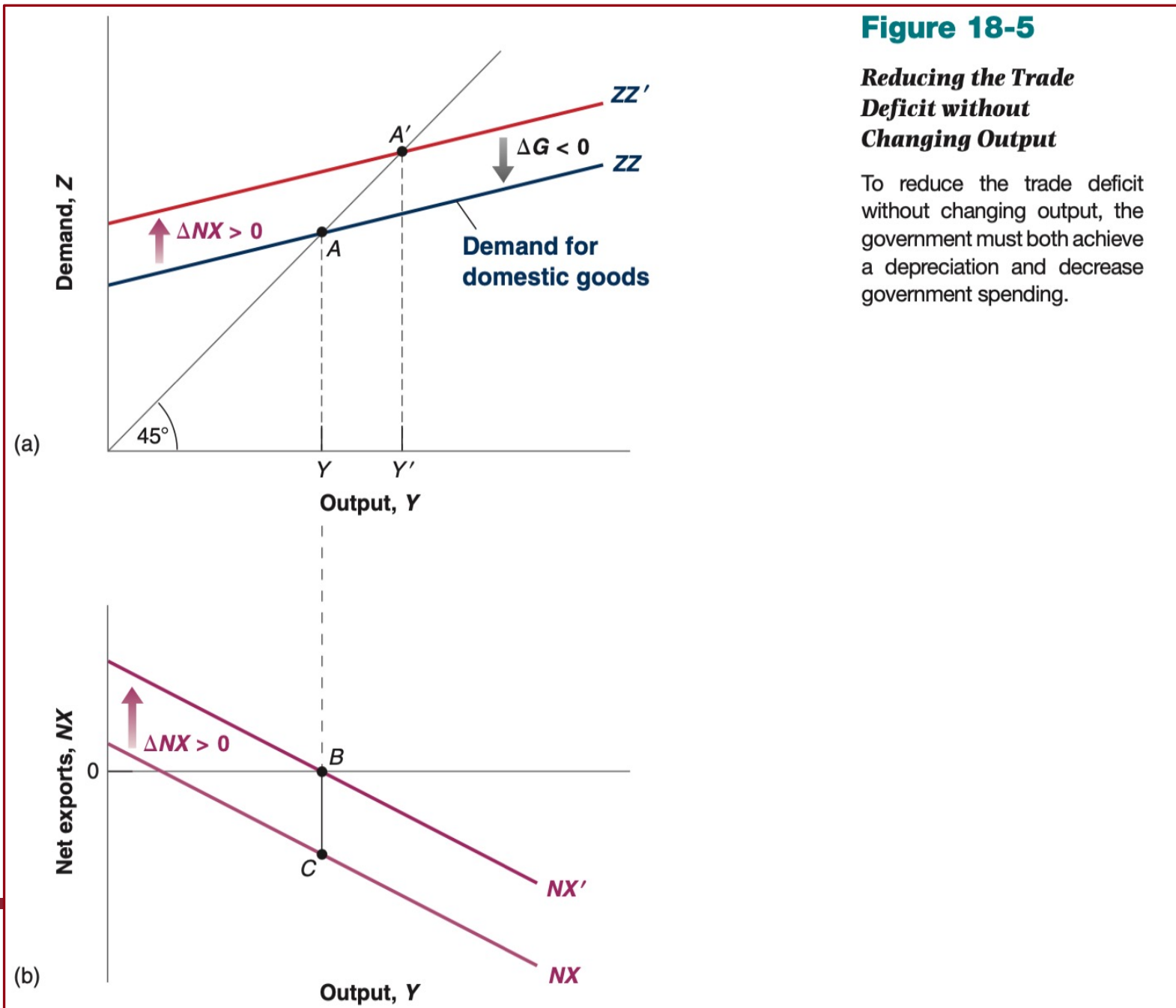University *of*
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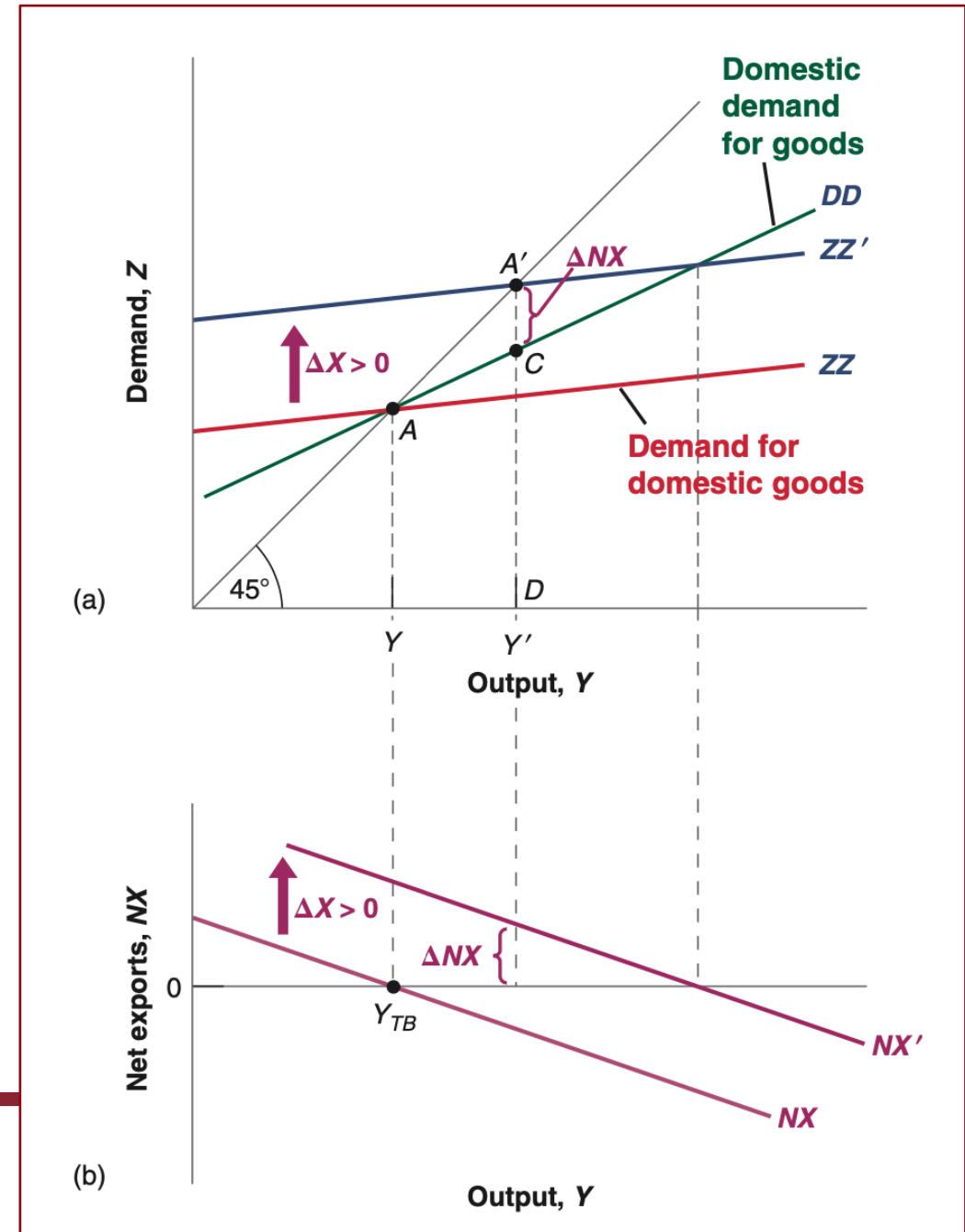
Clicker question

Output is equal to potential output ($Y = Y^*$), but the country is running a trade deficit ($NX < 0$).

In our model, how can the government reduce the trade deficit while leaving output unchanged?

A. Depreciation.

B. Depreciation & fiscal expansion.

C. Depreciation & fiscal consolidation.

D. Fiscal consolidation.

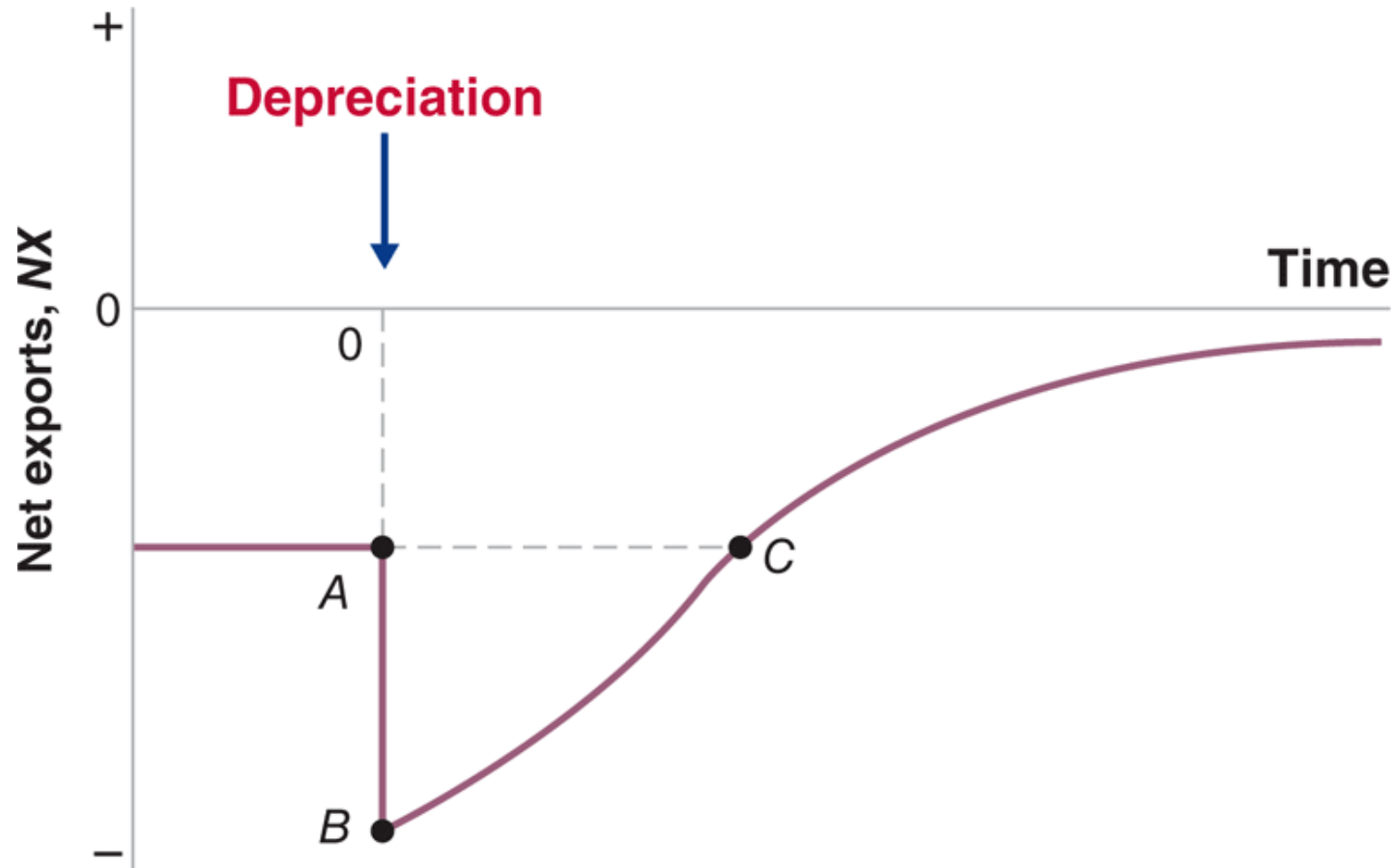University *of* Massachusetts Amherst

Figure 18-5

Reducing the Trade Deficit without Changing Output

To reduce the trade deficit without changing output, the government must both achieve a depreciation and decrease government spending.

Exchange rate & fiscal policy combinations

Initial Conditions	Trade Surplus	Trade Deficit
Low output	$\epsilon? \, G\uparrow$	$\epsilon\downarrow \, G?$
High output	$\epsilon\uparrow \, G?$	$\epsilon? \, G\downarrow$

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Dynamics: the J-curve

- In reality, things are a bit more complex and dynamic.

- The effect on the price of imports is immediate.

- The effect on behavior (people buying more domestic goods) is more gradual.

- So, depreciation initially *decreases* net exports.

- Only after some lag, net exports start increasing.

The J-curve in action
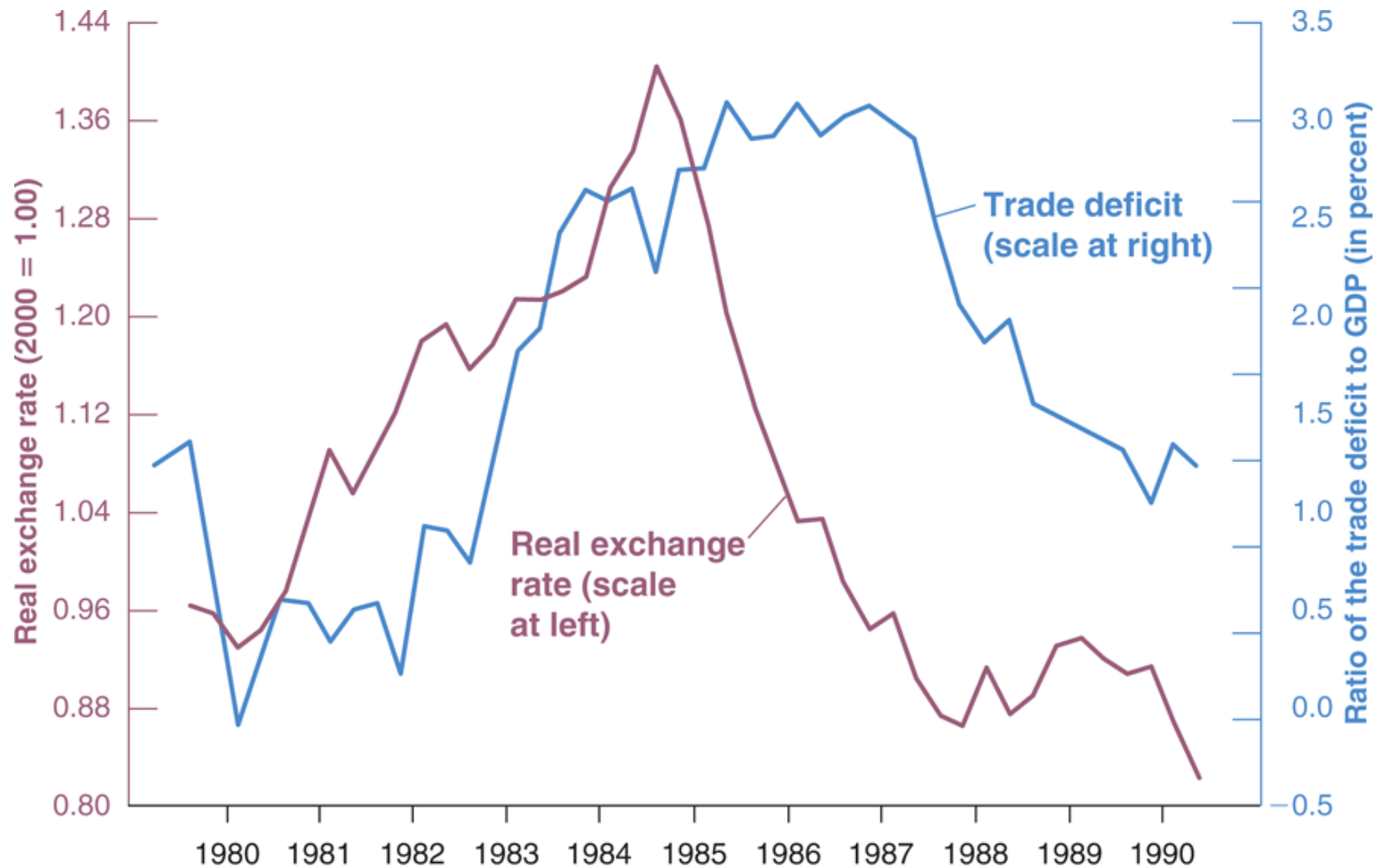
Source: See Figures 18-1 and 18-5

Saving, investment & the trade balance

- Closed economy:

$$I = S + (T - G)$$

- Open economy:

$$CA = S + (T - G) - I$$

- Trade surplus ➔ $I < S + (T - G)$

- Trade deficit ➔ $I > S + (T - G)$

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