Openness in the Goods Market

EC 313, Macroeconomics

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Book Chapter 18 & 19

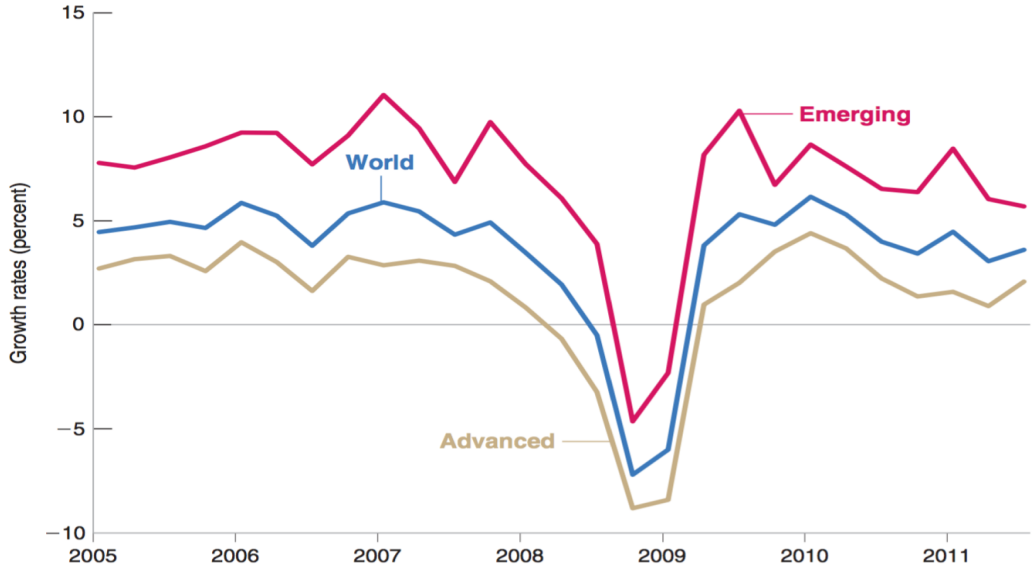
Overview

Overview

Closed Economy Assumption

We have been assuming the economy is closed in the previous chapters.

This is not the reality. The world is connected - we can see this from the great recession in 2009.



Overview

Three Dimensions of Openness

- Openness in **goods markets** (Lecture 15)
- Openness in **financial markets** (Lecture 16)
- Openness in **factor markets** (Won't be Covered)

Overview

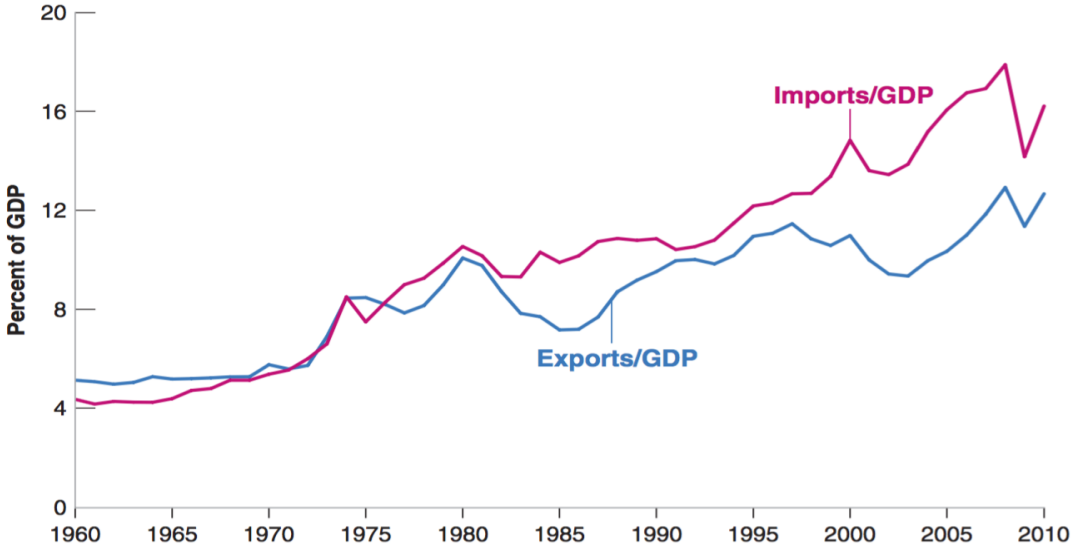
Openness in goods markets

- Choices between **domestic goods and foreign goods**.
- Tariffs (taxes on imported goods) **lower the openness in goods market**.
- Quotas (restrictions on the quantity of goods that can be imported) **lower the openness in goods market**.

Exchange Rates

Export and Import Ratio to GDP

Since 1960, exports and imports have more than doubled in relation to GDP. The United States has become a much more open economy.



Exchange Rates

Real Exchange Rate ϵ

When goods markets are open, domestic consumers face a second decision: whether to buy **domestic goods** or to buy **foreign goods**.

This decision is affected by **the price of domestic goods relative to foreign goods**. We call this relative price **the real exchange rate**.

The real exchange rate is **not directly observable**.

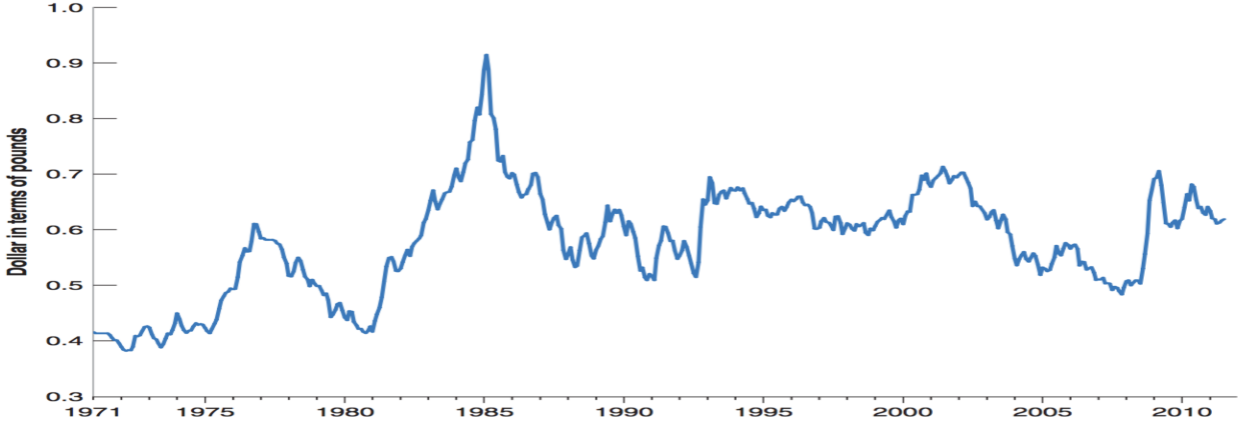
Exchange Rates

Nominal Exchange Rate E

What you see in newspapers are **nominal exchange rates**.

Say US dollar is the domestic currency, **the nominal exchange rate would be the price of a dollar in terms of other currency** (for example British Pounds).

If E goes up, we say dollars appreciate. If E goes down, we say dollars deppreciate.

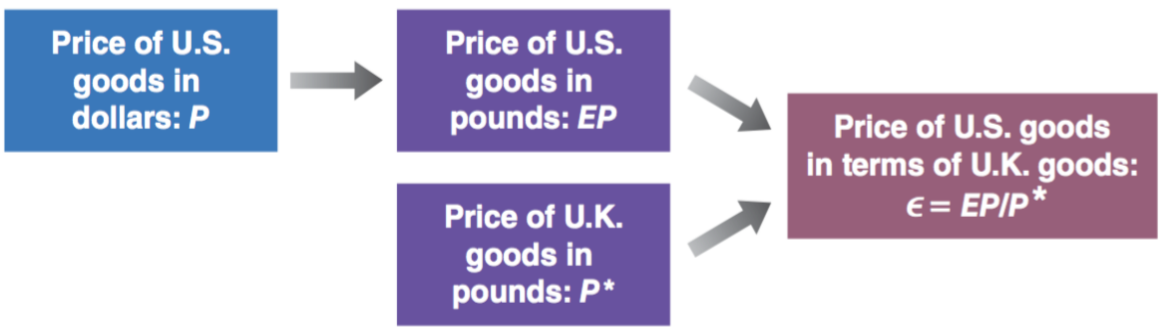


Exchange Rates

Nominal to Real: $E \rightarrow \epsilon$

How to compute the Real Exchange Rate:

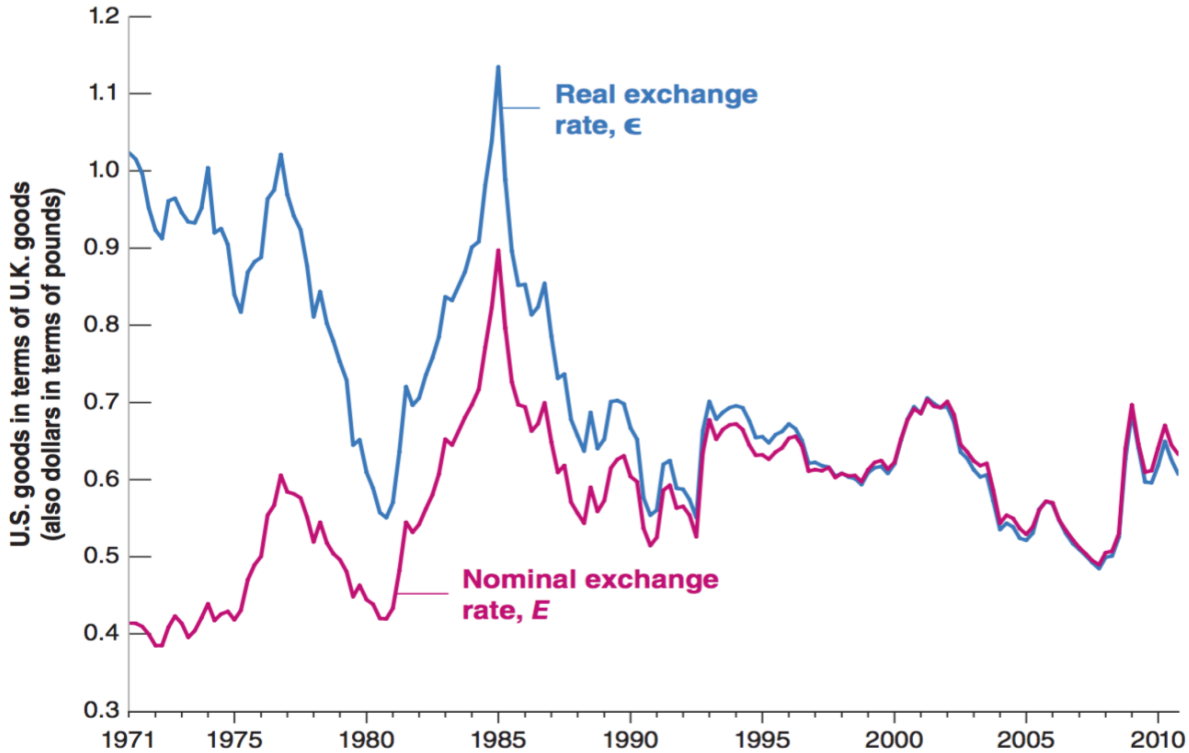
- The price of U.S. goods in dollars is P.
- The price of British goods in pounds is P*.
- The prices are **GDP deflators**.



Exchange Rates

Nominal to Real: $E \rightarrow \epsilon$

If the real exchange rate between the United States and the United Kingdom increases by 10%, this tells us U.S. goods are now 10% more expensive relative to British goods than they were before.



Exchange Rates

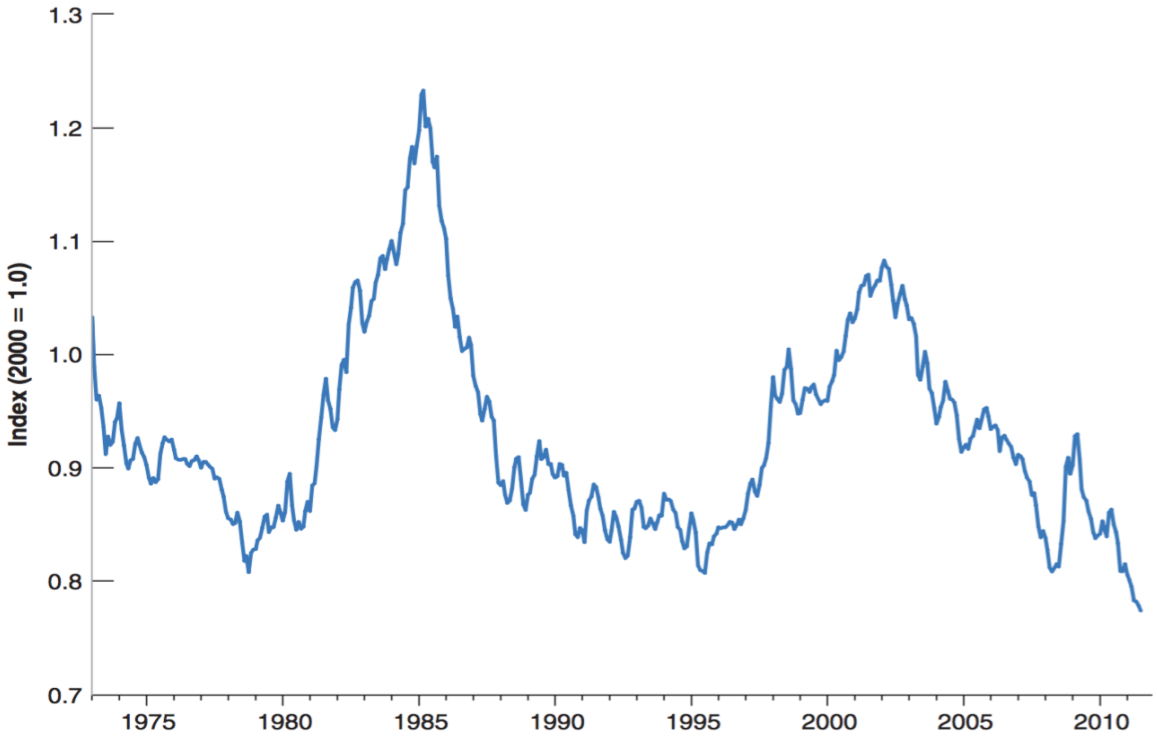
Multilateral Real Exchange Rate

- The US doesn't just trade with the UK. It trades with **the rest of the world**.
- There are probably over than 100 real exchange rates that matter (to different extents).
- There is a way to combine the 100 rates together and get a multilateral real exchange rate. This is the price in US relative to the rest of the world.

Exchange Rates

Multilateral Real Exchange Rate

"Dollar Cycle", or more graphically, "Dance of the Dollar"



Import and Real Exchange Rate

When the real exchange rate is higher,

- the goods price in the US is more expensive than the rest of the world.
- people in the US would want to buy more goods from a broad.
- import increases

Import (IM) increases as real exchange rate goes up.

Demand

Domestic Demand for Goods

Domestic demand for goods have three components:

- **Consumption**: **C**
- **Investment**: **I**
- **Government Spending**: **G**

In a closed economy,

Domestic Demand for Goods = **Demand for Domestic Goods**

The domestic demand for goods can be written as

$$D = C + I + G$$

Demand for Domestic Goods

In an open economy, we need to make **two adjustments** to go from **Domestic Demand for Goods** to **Demand for Domestic Goods**

- We must subtract imports IM/ϵ
- We must add exports X

The demand for domestic goods can be written as

$$Z = C + I + G - IM/\epsilon + X$$

Demand

Why Subtracting IM/ϵ?

Note **a more careful treatment** for the import component.

The Demand is the total **value measured in domestic goods**.

IM by itself is the imported **value measured in foreign goods**.

IM/ϵ is the imported **value measured in domestic goods**.

Demand

Determinants

The domestic demand for goods can be written as

$$D = C + I + G$$

The demand for domestic goods can be written as

$$Z = C + I + G - IM/\epsilon + X$$

- $C = C(\underbrace{Y - T}_{+})$ and $I = I(\underbrace{Y, r}_{+,-})$
- $IM = IM(\underbrace{Y, \epsilon}_{+,+})$ and $X = X(\underbrace{Y^*, \epsilon}_{+,-})$

Question: According to this model, out of C, I, IM, and X which one is an exogeneous variable?

Demand for Domestic Goods

The Demand Side

The Net Export $NX = X - IM(Y, \epsilon)/\epsilon$

Question: Is NX an endogeneous variable?

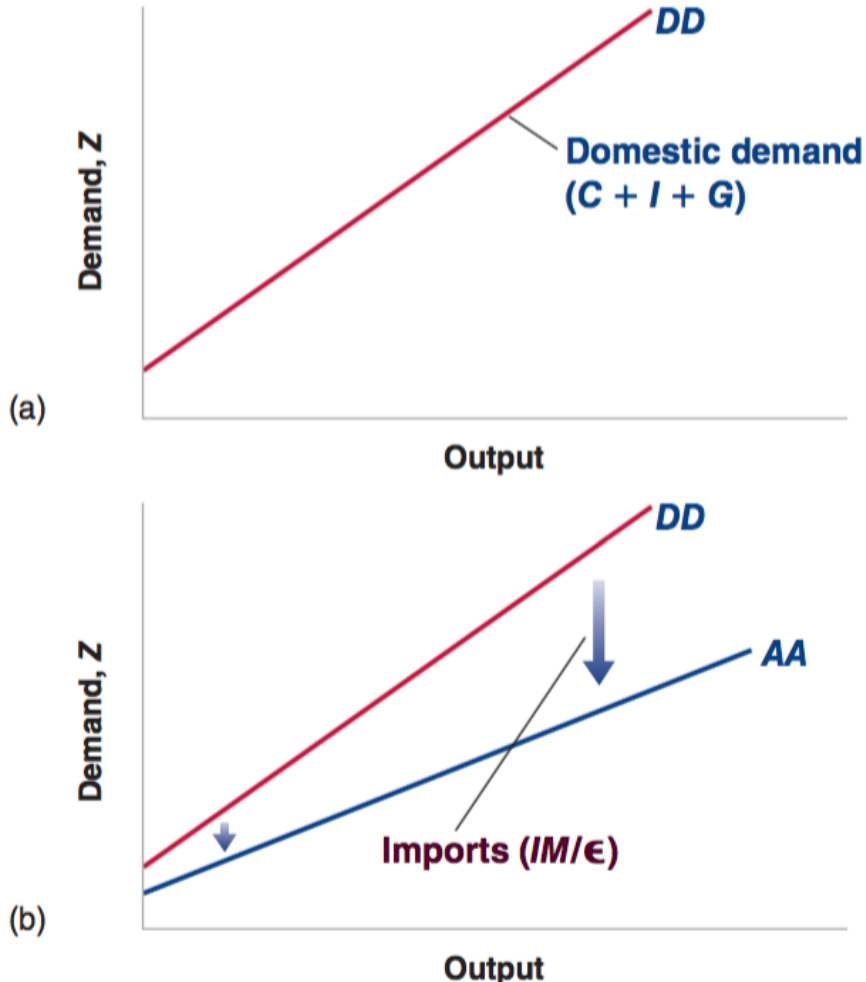
Answer: Yes, because NX depends on Y (through IM).

Question: How does NX change according to Y?

Answer: NX decreases as Y increases

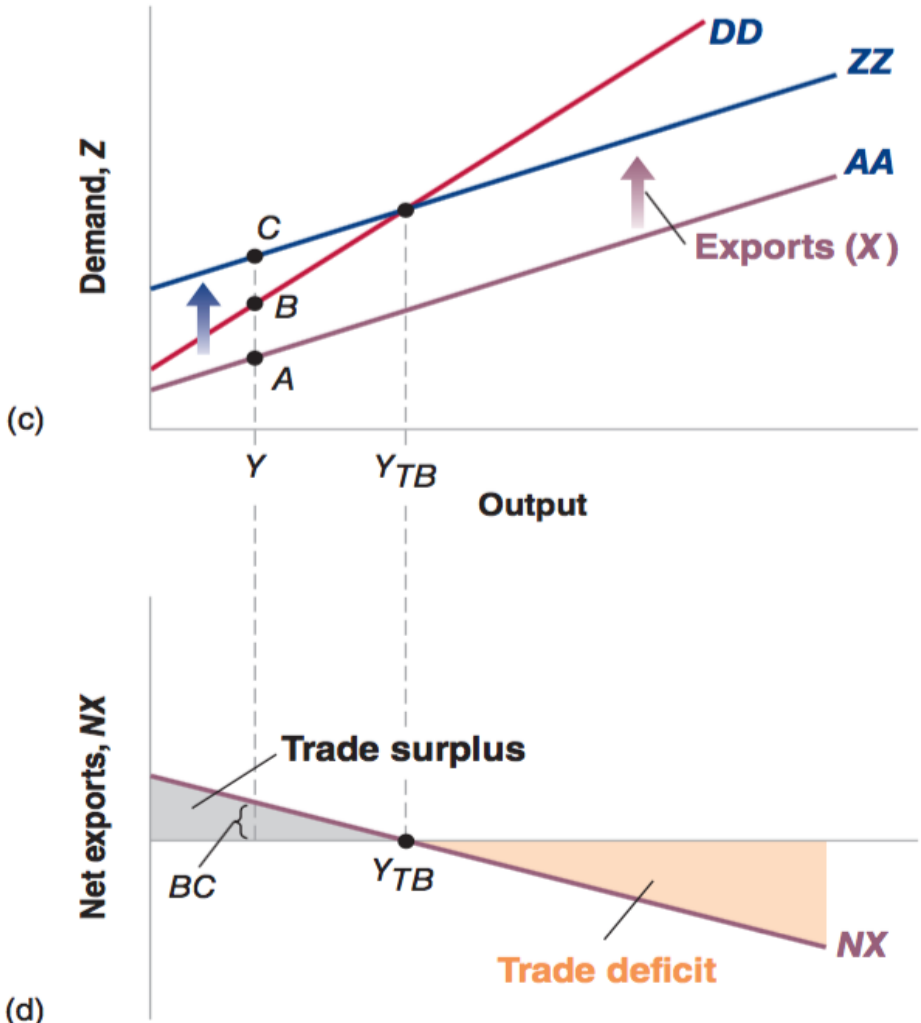
Demand

Graphically



Demand

Graphically



Trade Balance

Call Y_{TB} (TB for trade balance) **the level of output** at which **the value of imports** equals **the value of exports**, so that net exports are equal to zero.

Question: Does the **equilibrium output** have to be at the Y_{TB}?

Answer: No, it does not have to be. It could be though.

Trade Deficits

Governments do not like to run trade deficits, and for good reasons. The main reason:

- A country that consistently runs a trade deficit accumulates debt vis à vis the rest of the world, and therefore has to pay **steadily higher interest payments** to the rest of the world.
    - Recall: NX = -NCI
    - If NX is negative (trade deficit), NCI is positive which means there is a net capital inflow.
    - If a country experiences net capital inflows. this country is borrowing money from the rest of the world.

Equilibrium

IS Relation in the Open Market

Equilibrium when domestic output equals the demand

$$Y = Z$$

Collecting the relations we got for Z, we get

$$Y = C(Y - T) + I(Y, r) + G - IM(Y, \epsilon)/\epsilon + X(Y^*, \epsilon)$$

This equation describes how **equilibrium output Y** behaves in the goods market equilibrium.

Note that NX is an endogeneous variable, so we can also decribe the bahavior of **equilibrium net export NX**.

Fiscal Policy

Higher Government Spending

Suppose the economy is at the trade balance NX = 0 in the initial equilibrium. What happens to Y and NX in equilibrium if G goes up?

We can answer this quesiton using

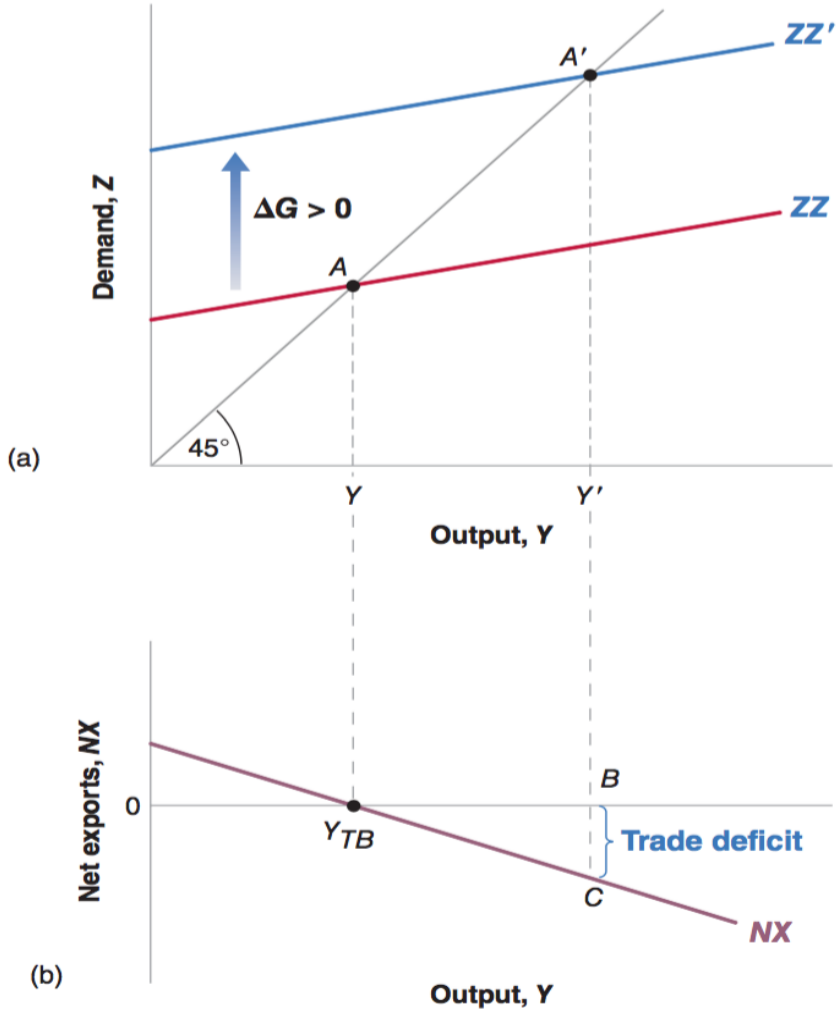
- Words for both **equilibrium Y** and **equilibrium NX**
- Graphs for both **equilibrium Y** and **equilibrium NX**

Higher Government Spending - Using Words

- Government Spending goes up.
- Demand goes up
- **Equilibrium output Y goes up**
- Import goes up
- Export doesn't change
- **Equilibrium Net Export goes down.**
- NX started at 0 - economy runs into **trade deficit**.

Fiscal Policy

Higher Government Spending - Using Graphs



Increases in Foreign Demand

Suppose the economy is at the trade balance NX = 0 in the initial equilibrium. What happens to **equilibrium output Y** and **equilibrium net export NX** if the foreign economy performs well (higher Y^*).

This could be due to **an increase in foreign government spending**, **a lower tax in the foreign economy**, or **a higher consumer confidence in the foreign economy**, etc.

We can answer this quesiton using

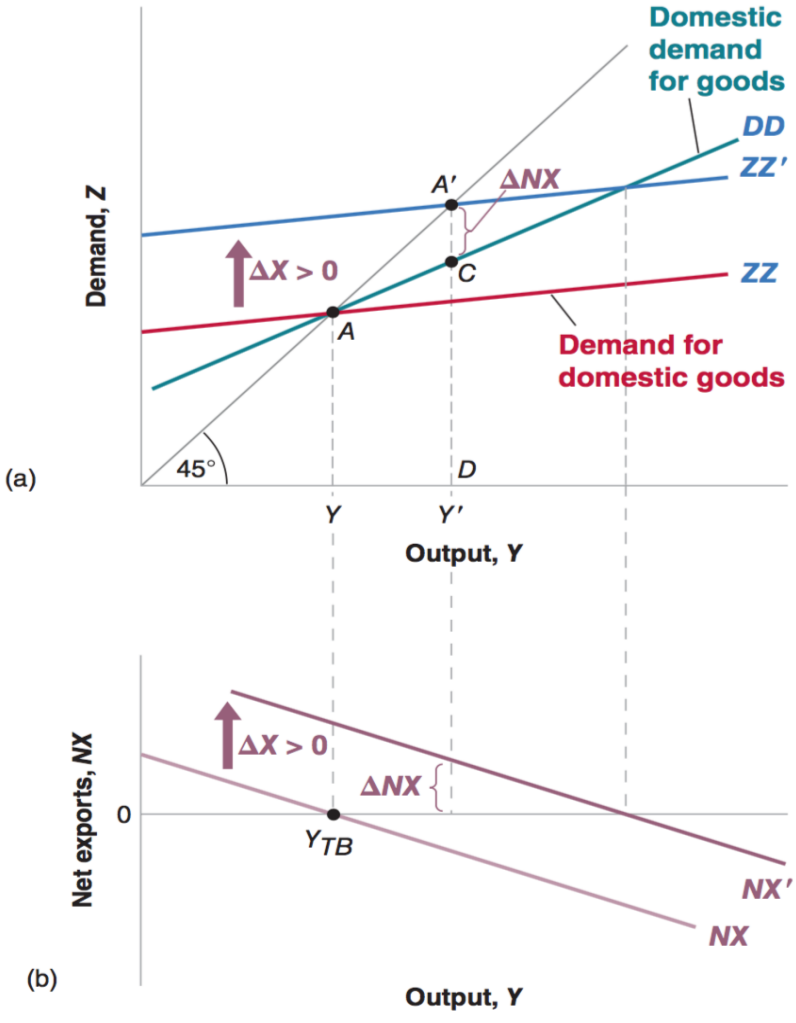
- Words for **only** **equilibrium Y** **but not** **equilibrium NX**
- Graphs for both **equilibrium Y** and **equilibrium NX**

Increases in Foreign Demand - Using Words

- The foreign economy performs well - Y^* goes up
- Export $X(Y^*, \epsilon)$ goes up
- **Equilibrium output Y goes up**
- Import goes up
- **Equilibrium Net Export can't be decided (Export goes up and Import goes up)**

Fiscal Policy

Increases in Foreign Demand - Using Graphs



Increases in Foreign Demand - Using Graphs

Graphically, we see that if foreign economy performs better, domestically

- Equilibrium output goes up
- Equilibrium net export goes up

The intuition is that even though both export and import go up, **but the increase in import does not offset the increase in exports**, and **the economy runs into trade surplus**.

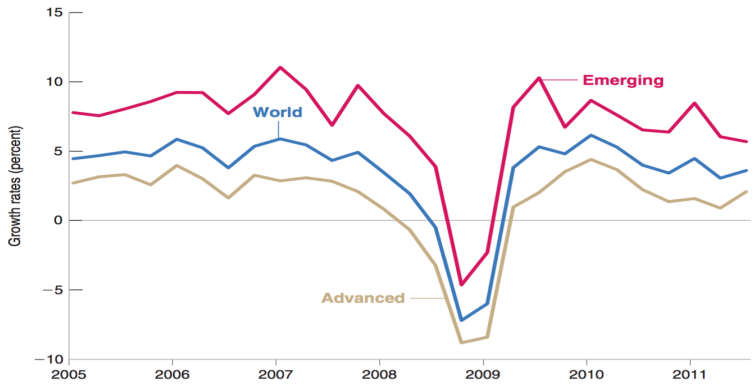
Fiscal Policy

Conclusion:

- **An increase in domestic demand** (expansionary fiscal policy domestically) leads to
    1. an increase in domestic output
    2. a deterioration of the trade balance.
- **An increase in foreign demand** (expansionary fiscal policy abroad) leads to
    1. an increase in domestic output
    2. an improvement of the trade balance.

Two Implications

- Economic shocks to demand in one country affect all other countries.



- Every government wants the foreign government to do expansionary fiscal policy, so they can get a higher output and improvement in trade deficit **"for free"**. **[Coordination Problem]**

Monetary Policy

Depreciation

- Suppose there is **a decrease in the nominal exchange rate** E due to a monetary policy. Real exchange rate, or the relative price for domestic goods, $\epsilon = EP/P^*$ decreases.

Question: What happens to the Net Export and Output in Equilibrium?

From the equation alone, we don't know how NX changes:

$$NX = X(Y^*, \epsilon) - IM(Y, \epsilon)/\epsilon$$

Marshall-Lerner condition: decrease in real exchange rate improves trade balance (NX increases).

In Equilibrium, a depreciation of domestic currency leads to:

An improvement of trade balance and a higher output

Depreciation

Although **a depreciation** and **an increase in foreign output** have the same effects on domestic output and the trade balance, there is a **caveat**:

- A depreciation works by **making foreign goods relatively more expensive**.
- People now have to pay more to buy foreign goods because of the depreciation.
- But equilibrium output, which is the national income, does go up, can the increase in income offset the higher prices for foreign goods?

Depreciation

This was the case in Mexico, for example, where the large depreciation of the peso in 1994–1995—from 29 cents per peso in November 1994 to 17 cents per peso in May 1995—led to **a large decline in workers' living standards and to social unrest.**

Depreciation: Dynamics

Following the depreciation, the effect is likely to be reflected much more in real prices than in quantities.

- It takes a while for consumers to realize that relative prices have changed
- It takes a while for firms to shift to cheaper suppliers

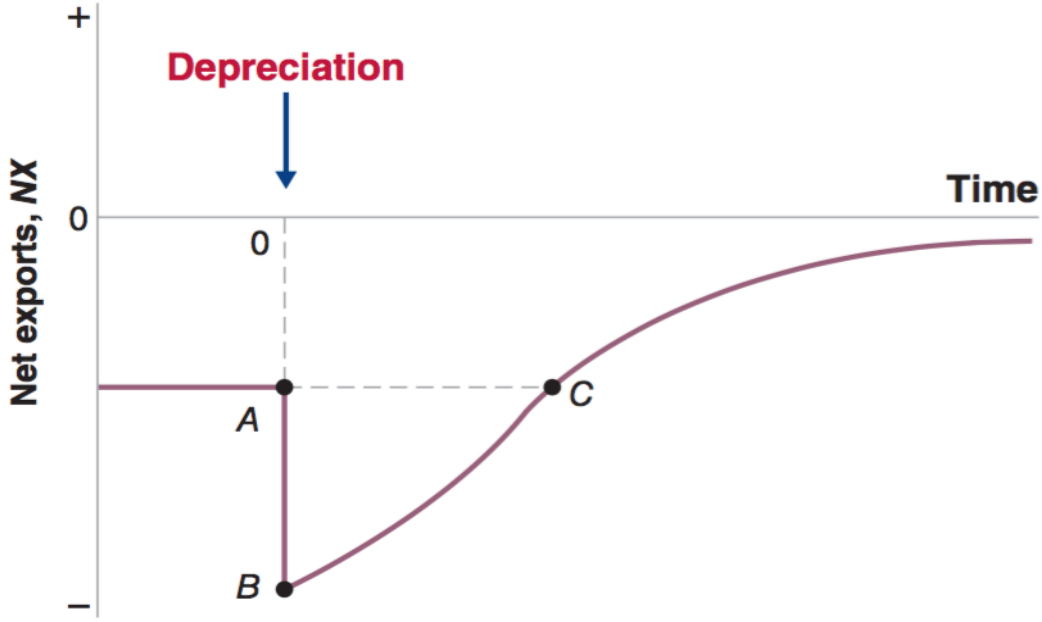
Initially neither X nor IM adjust. Only ϵ decreases. NX decreases.

$$NX = X(Y^*, \epsilon) - IM(Y, \epsilon)/\epsilon$$

Afterwards, import goes down, and export goes up. NX increases more than the initial decrease (Marshall-Learner Condition)

Depreciation: Dynamics (J Curve)

A real depreciation leads initially to a deterioration (only ϵ changes) and then to an improvement (IM and X change subsequently) of the trade balance.



Depreciation: Dynamics (J Curve)

There is **a lag in the response of NX** to the changes in real exchange rate.