

Chapter 18 - Openness in Goods and Financial Markets

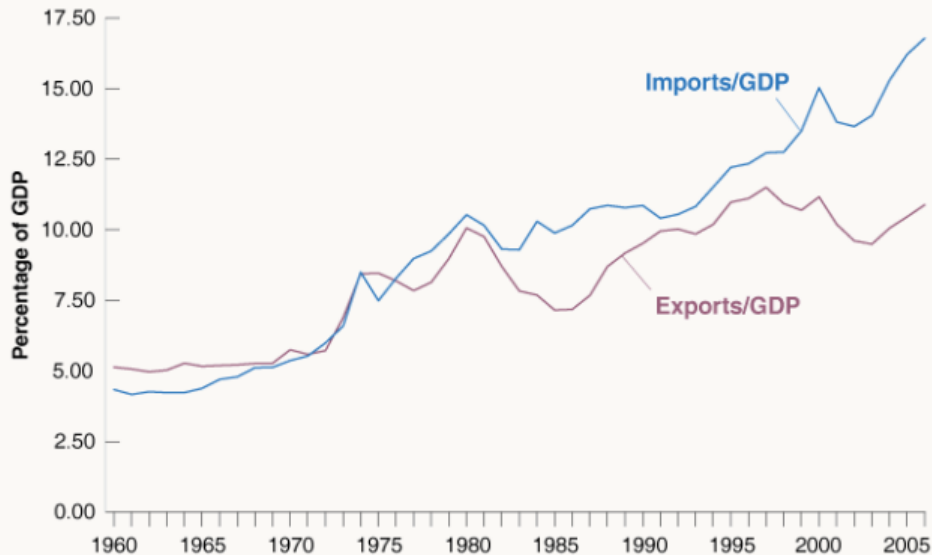
- Openness has three distinct dimensions:
 1. Openness in goods markets. Free trade restrictions include tariffs and quotas.
 2. Openness in financial markets. Capital controls place restrictions on the ownership of foreign assets.
 3. Openness in factor markets. The ability of firms to choose where to locate production, and workers to choose where to work.

Exports and Imports

■ **Figure 18 - 1**

U.S. Exports and Imports as Ratios of GDP since 1960

Since 1960, exports and imports have more than doubled in relation to GDP.



- Most of the world economies are becoming more open over time
- The difference between imports and exports leads trade surpluses and trade deficits
- A good index of openness is the proportion of aggregate output composed of tradable goods

Country	Export Ratio (%)	Country	Export Ratio (%)
United States	11	Switzerland	54
Japan	18	Austria	62
United Kingdom	30	Netherlands	80
Germany	48	Belgium	92

- The main factors behind differences in export ratios are geography and country size:
 - Distance from other markets.
 - Size also matters: The smaller the country, the more it must specialize in producing and exporting only a few products and rely on imports for other products.

Nominal Exchange Rates

- When the nominal exchange rate is the price of the foreign currency in terms of the domestic currency.
 - An appreciation of the domestic currency is an increase in the price of the domestic currency in terms of the foreign currency, which corresponds to an increase in the exchange rate.
 - A depreciation of the domestic currency is the otherwise.
- When countries operate under fixed exchange rates, use:
 - Revaluations, rather than appreciations, which are increases in the exchange rate, and
 - Devaluations, rather than depreciations, which are decreases in the exchange rate.

The Choice between Domestic Goods and Foreign Goods

- When goods markets are open, domestic consumers must decide to buy domestic goods or to buy foreign goods.
- Central to this decision is the price of domestic goods relative to foreign goods, or the real exchange rate, not the nominal one.

From Nominal to Real Exchange Rates

- Let's look at the real exchange rate between the United States and the UK.
 - If the price of a Cadillac in the US is \$40,000, and a dollar is worth 0.50 pounds, then the price of a Cadillac in pounds is $\$40,000 \times 0.50 = \text{£}20,000$.
 - If the price of a Jaguar in the UK is £30,000, then the price of a Cadillac in terms of Jaguars would be $\text{£}20,000 / \text{£}30,000 = 0.66$.

Note: The Determinants of the Nominal Exchange Rate

- In the medium run we have seen that the supply and demand for home country goods and services determines their relative price (real exchange rate, ϵ)
- The real exchange rate, combined with countries' monetary policies, determine the nominal exchange rate.

$$E = \epsilon * (P^*/P)$$

- In the short run, on the other hand, changes in the demand and supply for home currency determines the nominal exchange rate. Since prices are not flexible, the changes in the nominal exchange rate affects the real exchange rate

$$\epsilon = E * (P/P^*)$$

■ **Figure 18 - 3**

**The Construction of the
Real Exchange Rate**



1. P = price of U.S. goods in dollars
2. P^* = price of British goods in pounds

$$\varepsilon = \frac{EP}{P^*}$$

- Like nominal exchange rates, real exchange rates move over time:
 - An increase in the relative price of domestic goods in terms of foreign goods is called a real appreciation, which corresponds to an increase in the real exchange rate, ε .
 - A decrease in the relative price of domestic goods in terms of foreign goods is called a real depreciation, which corresponds to a decrease in the real exchange rate, ε .

■ **Figure 18 - 4**

Real and Nominal Exchange Rates between the United States and the United Kingdom since 1970

Except for the difference in trend reflecting higher average inflation in the United Kingdom than in the United States, the nominal and the real exchange rates have moved largely together since 1970.



- While the nominal exchange rate went up during the period, the real exchange rate went down.

From Bilateral to Multilateral Exchange Rates

	Proportion of Exports to (%)	Proportion of Imports from (%)
Canada	14	12
Mexico	8	8
European Union	29	25
China	3	13
Japan	6	9
Rest of Asia*	14	11
Others	26	22

* Asia, excluding Japan and China

- Bilateral exchange rates are exchange rates between two countries. Multilateral exchange rates are exchange rates between several countries.

- For example, to measure the average price of U.S. goods relative to the average price of goods of U.S. trading partners (that is multilateral real U.S. exchange rate), we use weighted average of bilateral exchange rates, where weights are the U.S. share of import and export trade with

each country

Figure 18 - 5

The U.S. Multilateral Real Exchange Rate since 1973

The large real appreciation of U.S. goods in the first half of the 1980s was followed by a large real depreciation in the second half of the 1980s. This large swing in the 1980s is sometimes called the "dance of the dollar."



Openness in Financial Markets

- The purchase and sale of foreign assets implies buying or selling foreign currency. Openness in financial markets allows:
 - Financial investors to diversify—to hold both domestic and foreign assets.
 - Allows countries to run trade surpluses and deficits. A country that buys more goods than it sells must pay for the difference by borrowing from the rest of the world.

The Balance of Payments

- The balance of payments account summarizes a country's transactions with the rest of the world.
- Transactions on table 18.3 that are above the line are current account transactions. Transactions below the line are capital account transactions.
- The current account balance and the capital account balance should be equal, but because of data gathering errors they don't. For this reason, the account shows a statistical discrepancy.

Table 18-3 The U.S. Balance of Payments, 2006 (in billions of U.S. dollars)**Current Account**

Exports	1,436	
Imports	2,200	
Trade balance (deficit = -) (1)		-763
Investment income received	620	
Investment income paid	629	
Net investment income (2)		-9
Net transfers received (3)		-84
Current account balance (deficit = -) (1) + (2) + (3)		-856

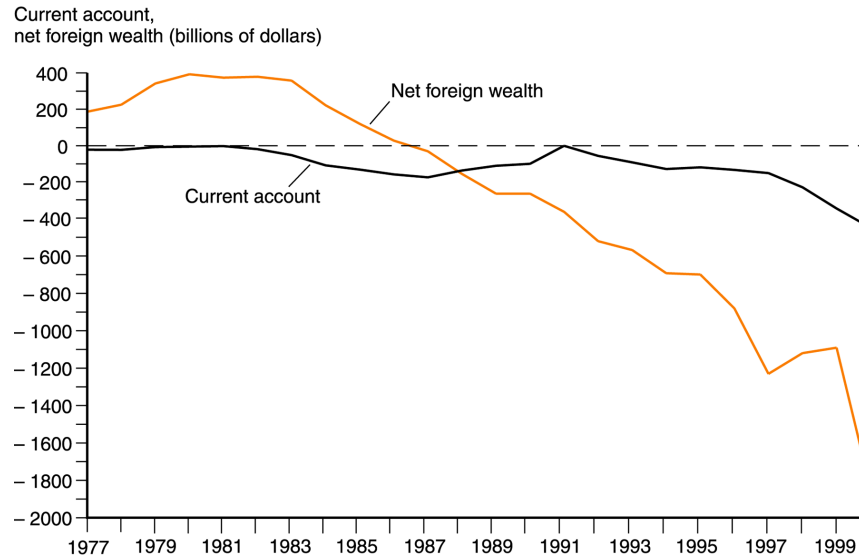
Capital Account

Increase in foreign holdings of U.S. assets (4)	1,764	
Increase in U.S. holdings of foreign assets (5)	1,049	
Capital account balance (deficit = -) (4) - (5)		715
Statistical discrepancy		141

The Current Account

- The transactions above the line record payments to and from the rest of the world are called current account transactions:
 - The first two lines record the exports and imports of goods and services.
 - U.S. residents receive investment income on their holdings of foreign assets and vice versa.
 - Countries give and receive foreign aid; the net value is recorded as net transfers received.
 - * A country has a CA surplus when its $CA > 0$.
 - * A country has a CA deficit when its $CA < 0$.

- The U.S. Current Account and Net Foreign Wealth Position, 1977-2000



A string of current account deficits in the 1980s reduced America's net foreign wealth until, by the decade's end, the country had accumulated a substantial net foreign debt.

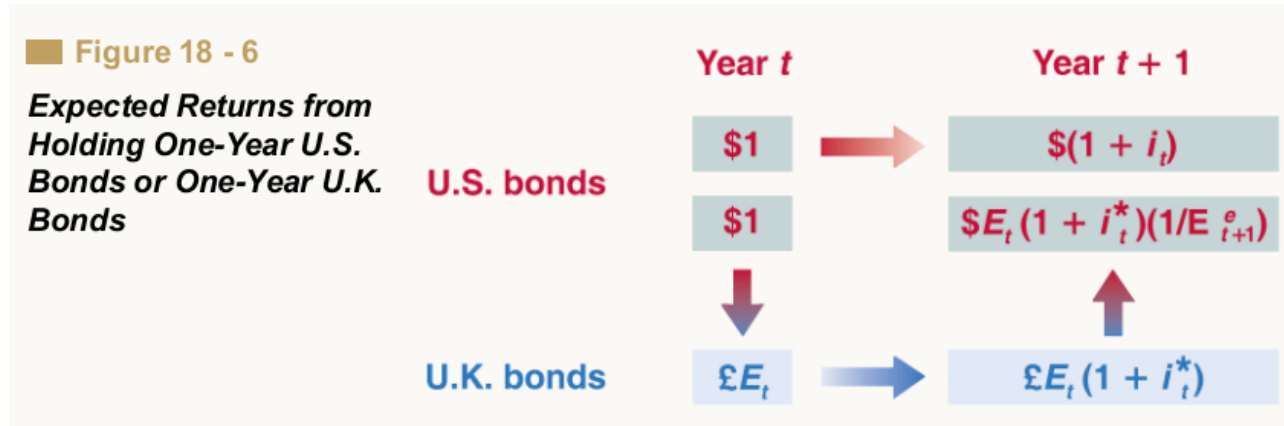
Source: U.S. Government Printing Office, *Economic Indicators*, March 1998, April 2001.

The Capital Account

- Transactions below the line are called capital account transactions.
- The capital account balance, also known as net capital flows can be positive if foreign holdings of U.S. assets are greater than U.S. holdings of foreign assets, in which case there is a capital account surplus
- The numbers for current and capital account transactions are constructed using different sources; although they should give the same answers, they typically do not. The difference between the two is call the statistical discrepancy.

The Choice between Domestic and Foreign Assets

- The decision whether to invest abroad or at home depends not only on interest rate differences, but also on your expectation of what will happen to the nominal exchange rate.



- If both U.K. bonds and U.S. bonds are to be held, they must have the same expected rate of return, so that the following arbitrage relation must hold:

$$(1 + i_t) = (E_t)(1 + i_t^*)\left(\frac{1}{E_{t+1}^e}\right)$$

- This equation is called the uncovered interest parity relation:
- Note: The assumption that financial investors will hold only the bonds with the highest expected rate of return ignores transaction costs and risk.

Interest Rates and Exchange Rates

- A good approximation of the the uncovered interest parity relation is given by:

$$i_t \approx i_t^* - \frac{E_{t+1}^e - E_t}{E_t}$$

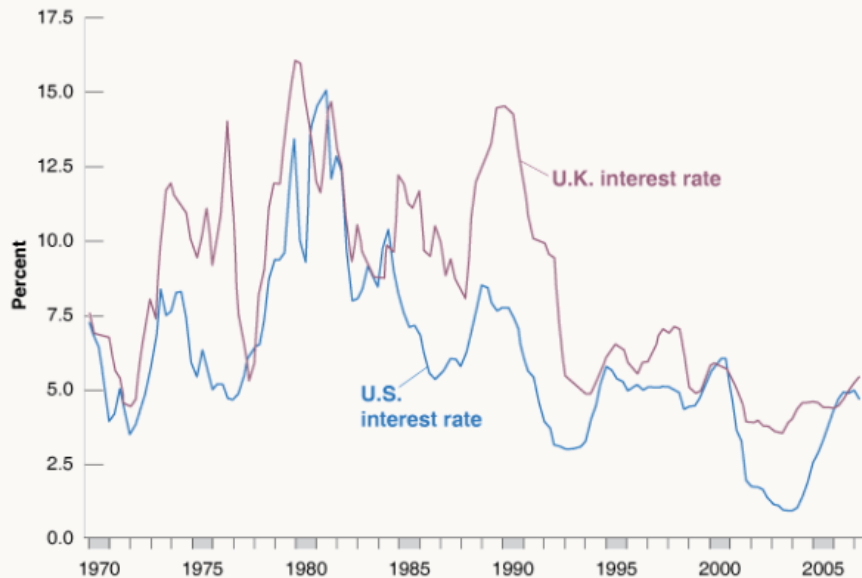
- Arbitrage implies that the domestic interest rate must be (approximately) equal to the foreign interest rate plus the expected depreciation rate of the domestic currency.

$$\text{if } E_{t+1}^e = E_t, \text{ then } i_t = i_t^*$$

■ **Figure 18 - 7**

Three-Month Nominal Interest Rates in the United States and in the United Kingdom since 1970

U.S. and U.K. nominal interest rates have largely moved together over the past 38 years.



An Additional Note on THE IMPOSSIBLE TRINITY

- Our model assumes model assumes perfect capital mobility
- Relaxing this assumption changes the conclusions we have reached thus far
- The Impossible Trinity is a set of three desirable objectives that a country may want to attain yet is unable to

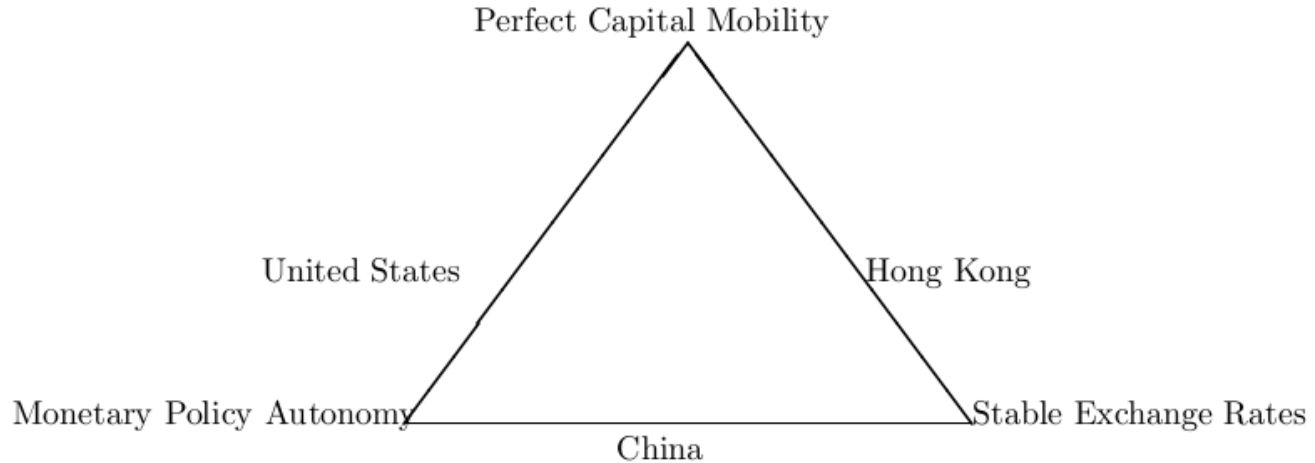
- Due to the UIRP condition (which needs to be satisfied when there is perfect capital mobility)

$$i = i^* - \frac{E^e - E}{E}$$

A country can only achieve two of these objectives

- With perfect capital mobility and a stable exchange rate, a country has to give up monetary policy autonomy
- A country that wants to have perfect capital mobility and monetary policy autonomy has to let its exchange rate float.
- A country that wants to have a stable exchange rate and conduct an independent monetary policy will have to restrict the mobility of capital.

The Impossible Trinity



- We can also understand the impossible trinity by taking a closer look at the UIRP equation

$$i = i^* - \frac{e^E - e}{e}$$

- The UIRP was derived under the assumption of perfect capital mobility. The freedom to set i means that $(e^E - e)/e \neq 0$ (i.e. for monetary autonomy you have to give up stable exchange rates)
- Similarly, suppose we decide to have a fixed exchange rate, i.e. set $(e^E - e)/e = 0$
 - Then it follows from UIRP that $i = i^*$ (if we have perfect capital mobility, we have no autonomous monetary policy)
 - Suppose we set i to whatever value we want. Then we give up on perfect capital mobility (no = sign in the UIRP equation)

- U.S with a strong monetary policy maker and a general belief in the freedom of money to move around the world have chosen to sacrifice a stable exchange rate and allow the dollar to float
- Countries like Argentina (in the 1990s) and Hong Kong which share the general trend towards relaxing the mobility of capital but, which have had unfortunate experiences with irresponsible monetary policy making, at some point chose to give up monetary policy autonomy and adapt a stable exchange rate system and perfect capital mobility
- Finally countries like China and Malaysia have chosen to have a fixed exchange rate and have monetary policy autonomy. However, they have only been able to do so by imposing restrictions on the movement of money to and from the country.

Conclusions and a Look Ahead

- The choice between domestic goods and foreign goods depends primarily on the real exchange rate.
- The choice between domestic assets and foreign assets depends primarily on their relative rates of return, which depend on domestic interest rates and foreign interest rates, and on the expected depreciation of the domestic currency.

Chapter 19 - The Goods Market in an Open Economy

The International Flows of Goods

(Let d and f represents domestic and foreign goods respectively)

- In an open economy the domestic production (Y) can be either used domestically or exported

$$Y = C^d + I^d + G^d + X$$

- Open economies also import goods for domestic consumption

$$IM = C^f + I^f + G^f$$

- First multiplying the second equation with the price of foreign goods in terms of domestic goods, then combining the previous two equations

yields

$$Y = (C^d + C^f/\varepsilon) + (I^d + I^f/\varepsilon) + (G^d + G^f/\varepsilon) + X - IM/\varepsilon$$

- which can be written as

$$Y = C + I + G + X - IM/\varepsilon$$

- This final equation gives us the national equilibrium identity in an open economy

The IS Relation in an Open Economy

- In an open economy, the demand for domestic goods, Z is given by

$$Z \equiv C(Y - T) + I(Y, r) + G + X - IM/\varepsilon$$

- The first three terms—consumption, C , investment, I , and government spending, G —constitute the domestic demand for goods
- We then subtract imports—the part of the domestic demand that falls on foreign goods rather than on domestic goods
- and add exports—the part of the demand for domestic goods that comes from abroad.

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

- An increase in domestic income leads to an increase in imports.
- An increase in the real exchange rate leads to an increase in imports

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

- An increase in foreign income, Y^* , leads to an increase in exports.
- An increase in the real exchange rate leads to a decrease in exports.

Depreciation, the Trade Balance, and Output

- Recall that the real exchange rate is given by :

$$\varepsilon \equiv \frac{EP}{P^*}$$

- The real exchange rate, ε , is equal to the nominal exchange rate, E , times the domestic price level, P , divided by the foreign price level, P^* .
- In the short-run, the price levels are rather sticky. Hence, changes in nominal exchange rate are reflected on the real exchange rate

Depreciation and the Trade Balance: The Marshall–Lerner Condition

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

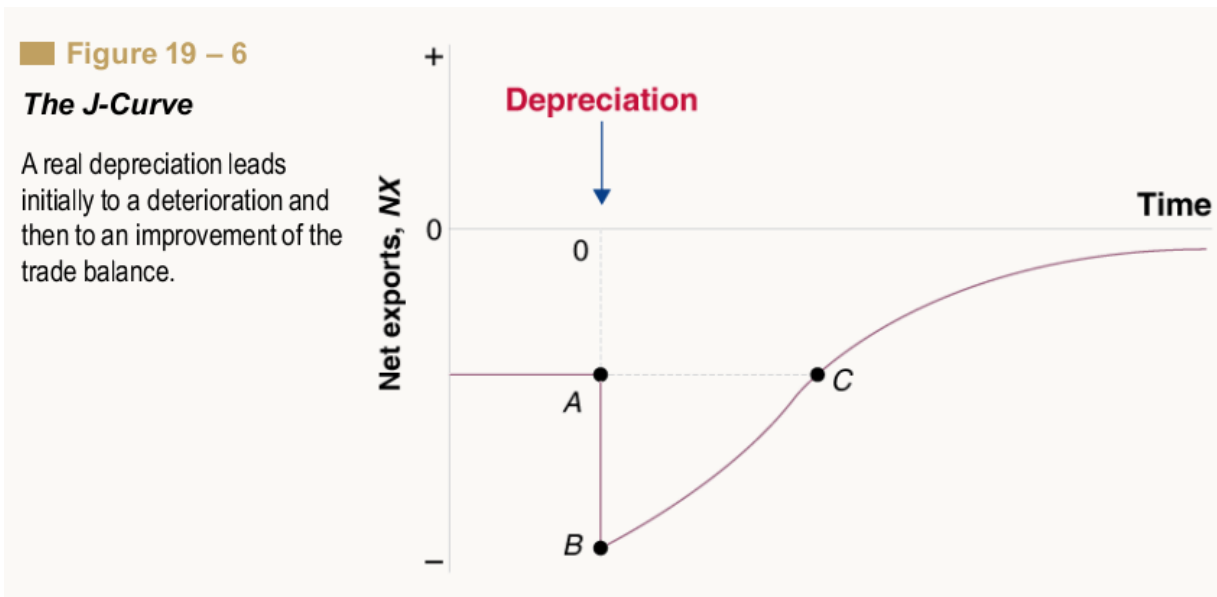
- As the real exchange rate ε enters the right side of the equation in three places, this makes it clear that the real depreciation (a fall in ε) affects the trade balance through three separate channels:
 - Foreign consumers will buy more of our exports. Exports, X , increase (increases the net exports)
 - Domestic consumers will buy fewer imports. Imports, IM , decrease (increases the net exports)
 - The relative price of foreign goods in terms of domestic goods, $1/\varepsilon$, increases so that the cost of imports will be higher (decreases the net exports)

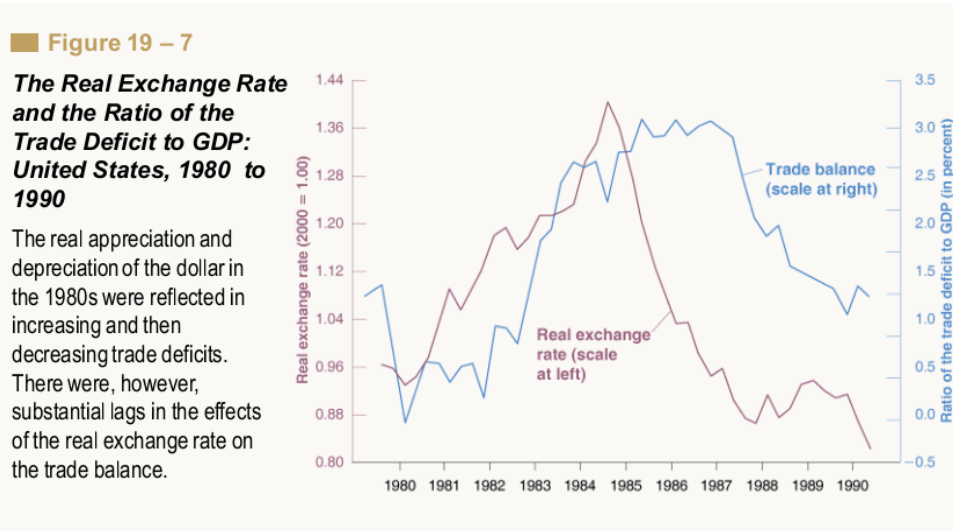
- Whether the net effect of real depreciation on the trade balance is positive or negative depends on whether or not the quantity effect outweighs the cost effect; if the quantity effect is greater (i.e. real depreciation leads to an increase in net exports.), then we say that the Marshall–Lerner condition is met.

Looking at Dynamics: The J-Curve

- X nor IM adjusts very much initially in response to a real depreciation. Hence, a depreciation may lead to an initial deterioration of the trade balance as $1/\varepsilon$ increases.
- Eventually, exports and imports respond, and depreciation leads to an improvement of the trade balance.

- From point B onwards we say that Marshall Lerner condition is met





- Figure plots the U.S. trade deficit against the U.S. real exchange rate in the 1980s. Turning to the trade deficit, which is expressed as a ratio to GDP, two facts are clear:

1. Movements in the real exchange rate were reflected in parallel movements in net exports.
2. There were substantial lags in the response of the trade balance (deficit) to changes in the real exchange rate.

Saving, Investment, and the Trade Balance

- The alternative way of looking at equilibrium from the condition that investment equals saving has an important meaning:

$$Y = C + I + G + NX$$

- Reorganize to get:

$$NX = Y - C - G - I$$

- Remember that $Y - C - G$ equals public saving + private saving

$$NX = (Y - C - T) + (T - G) - I$$

hence;

$$NX = S - I$$

- An increase in investment must be reflected in either an increase in private saving or public saving, or in a deterioration of the trade balance.
- An increase in the budget deficit must be reflected in an increase in either private saving, or a decrease in investment, or a deterioration of the trade balance.
- A country with a high saving rate must have either a high investment rate or a large trade surplus.

The U.S. Trade Deficit: Origins and Implications

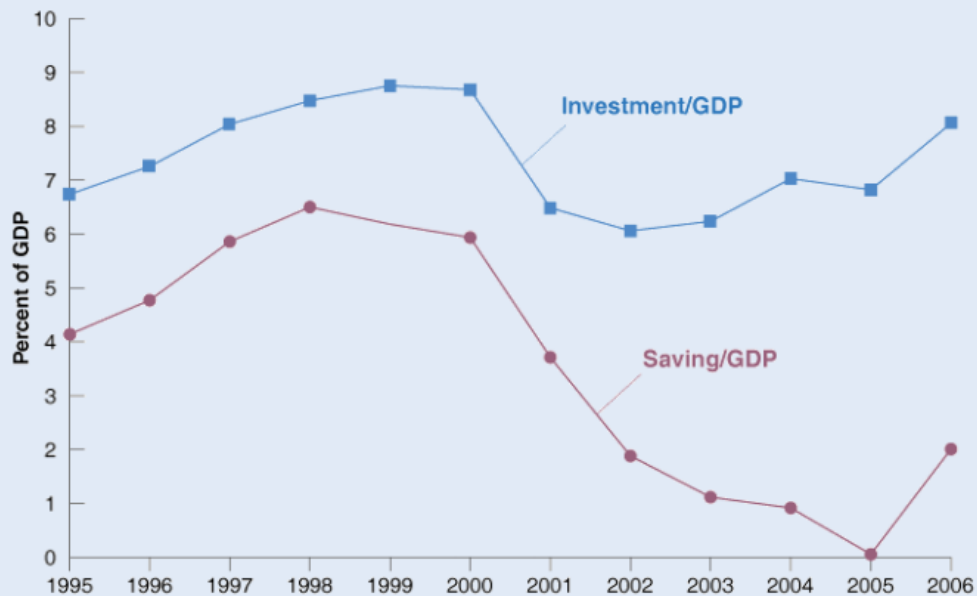


Figure 1 U.S. Net Saving and Net Investment since 1996 (percent of GDP)