

PARKIN ECONOMICS

TWELFTH EDITION





FPO

26

THE EXCHANGE RATE AND THE BALANCE OF PAYMENTS





The Foreign Exchange Market

To buy goods and services produced in another country we need money of that country.

Foreign bank notes, coins, and bank deposits are called **foreign currency**.

We get foreign currency in the foreign exchange market.



The Foreign Exchange Market

Trading Currencies

We get foreign currency and foreigners get U.S dollars in the foreign exchange market.

The **foreign exchange market** is the market in which the currency of one country is exchanged for the currency of another.



The Foreign Exchange Market

Exchange Rates

The price at which one currency exchanges for another is called a **foreign exchange rate**.

A fall in the value of one currency in terms of another currency is called **currency depreciation**.

A rise in value of one currency in terms of another currency is called **currency appreciation**.



The Foreign Exchange Market

Questions About the U.S. Dollar Exchange Rate

How is the exchange rate determined?

Why does the U.S. dollar sometimes appreciate and sometimes depreciate?

How does the Fed operate in the foreign exchange market?

How do exchange rate fluctuations influence the balance of trade and the balance of payments?



The Foreign Exchange Market

An Exchange Rate Is a Price

An exchange rate is the price—the price of one currency in terms of another.

Like all prices, an exchange rate is determined in a market—the foreign exchange market.

The U.S. dollar is demanded and supplied by thousands of traders every hour of every day.

With many traders and no restrictions, the foreign exchange market is a *competitive market*.



The Foreign Exchange Market

The Demand for One Money Is the Supply of Another Money

When people who are holding one money want to exchange it for U.S. dollars, they demand U.S. dollars and they supply that other country's money.

So the factors that influence the demand for U.S. dollars also influence the supply of Canadian dollars, E.U. euros, U.K. pounds, and Japanese yen.

And the factors that influence the demand for another country's money also influence the supply of U.S. dollars.



The Foreign Exchange Market

Demand in the Foreign Exchange Market

The quantity of U.S. dollars that traders plan to buy in the foreign exchange market during a given period depends on

1. The exchange rate
2. World demand for U.S. exports
3. Interest rates in the United States and other countries
4. The expected future exchange rate



The Foreign Exchange Market

The Law of Demand for Foreign Exchange

The demand for dollars is a *derived demand*.

People buy U.S. dollars so that they can buy U.S.-produced goods and services or U.S. assets.

Other things remaining the same, the higher the exchange rate, the smaller is the quantity of U.S. dollars demanded in the foreign exchange market.

The Foreign Exchange Market

The exchange rate influences the quantity of U.S. dollars demanded for two reasons:

- Exports effect
- Expected profit effect

Exports Effect

The larger the value of U.S. exports, the greater is the quantity of U.S. dollars demanded on the foreign exchange market.

The lower the exchange rate, the greater is the value of U.S. exports, so the greater is the quantity of U.S. dollars demanded.



The Foreign Exchange Market

Expected Profit Effect

The larger the expected profit from holding U.S. dollars, the greater is the quantity of U.S. dollars demanded today.

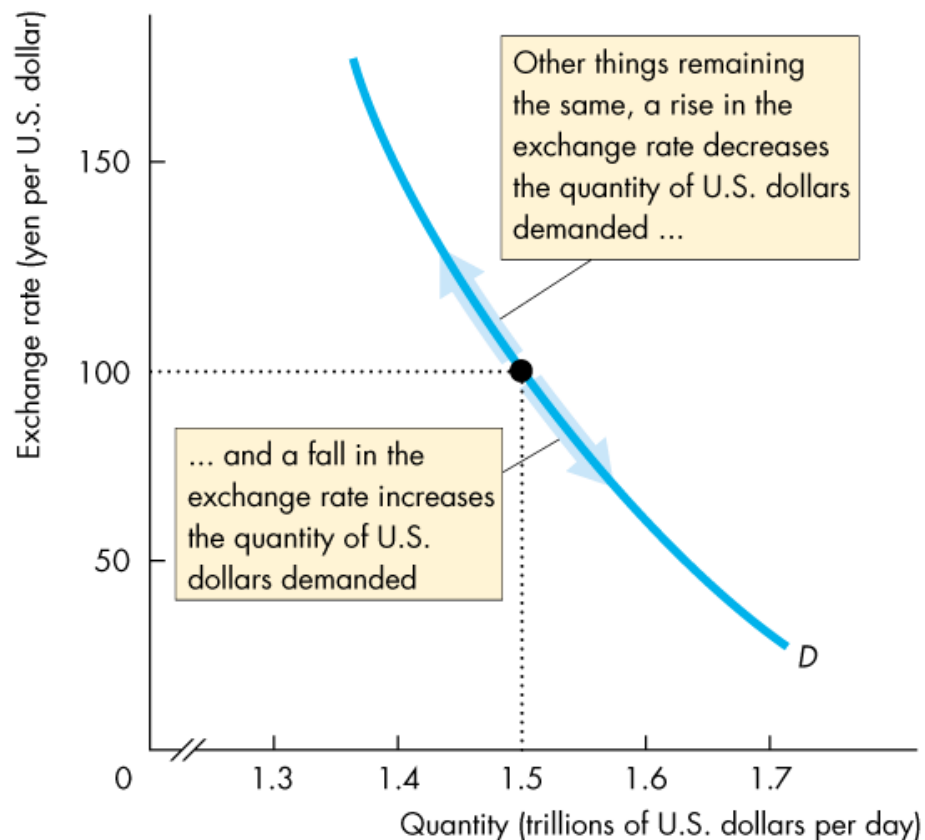
But expected profit depends on the exchange rate.

The lower today's exchange rate, other things remaining the same, the larger is the expected profit from buying U.S. dollars and the greater is the quantity of U.S. dollars demanded today.

The Foreign Exchange Market

Demand Curve for U.S. Dollars

Figure 26.1 illustrates the demand curve for U.S. dollars on the foreign exchange market.





The Foreign Exchange Market

Supply in the Foreign Exchange Market

The quantity of U.S. dollars supplied in the foreign exchange market is the amount that traders plan to sell during a given time period at a given exchange rate.

This quantity depends on many factors but the main ones are

1. The exchange rate
2. U.S. demand for imports
3. Interest rates in the United States and other countries
4. The expected future exchange rate



The Foreign Exchange Market

The Law of Supply of Foreign Exchange

Other things remaining the same, the higher the exchange rate, the greater is the quantity of U.S. dollars supplied in the foreign exchange market.

The exchange rate influences the quantity of U.S. dollars supplied for two reasons:

- Imports effect
- Expected profit effect



The Foreign Exchange Market

Imports Effect

The larger the value of U.S. imports, the larger is the quantity of U.S. dollars supplied on the foreign exchange market.

The higher the exchange rate, the greater is the value of U.S. imports, so the greater is the quantity of U.S. dollars supplied.



The Foreign Exchange Market

Expected Profit Effect

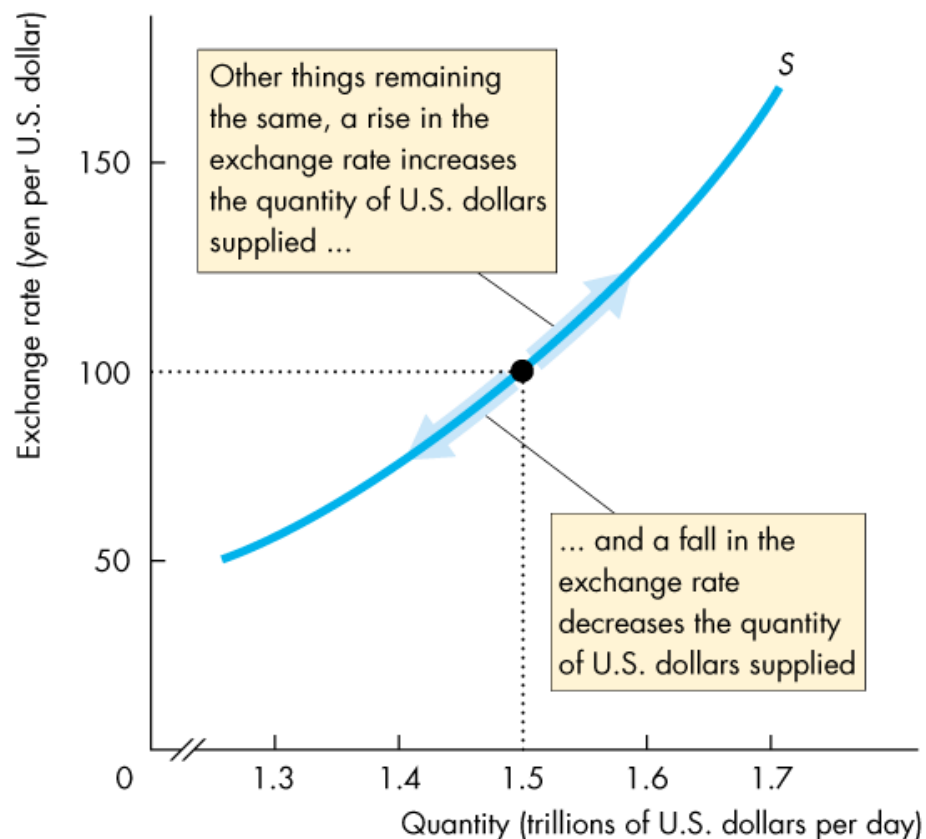
For a given expected future U.S. dollar exchange rate, the lower the current exchange rate,

the greater is the expected profit from holding U.S. dollars, and the smaller is the quantity of U.S. dollars supplied on the foreign exchange market.

The Foreign Exchange Market

Supply Curve for U.S. Dollars

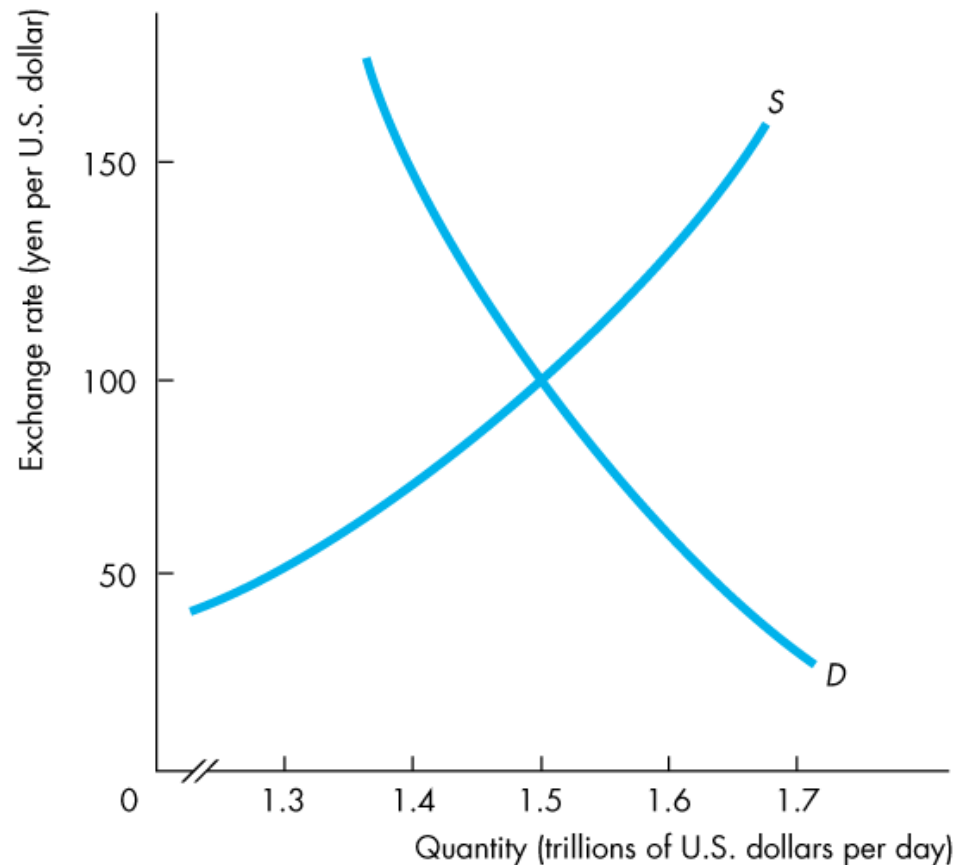
Figure 26.2 illustrates the supply curve of U.S. dollars in the foreign exchange market.



The Foreign Exchange Market

Market Equilibrium

Figure 26.3 shows how demand and supply in the foreign exchange market determine the exchange rate.

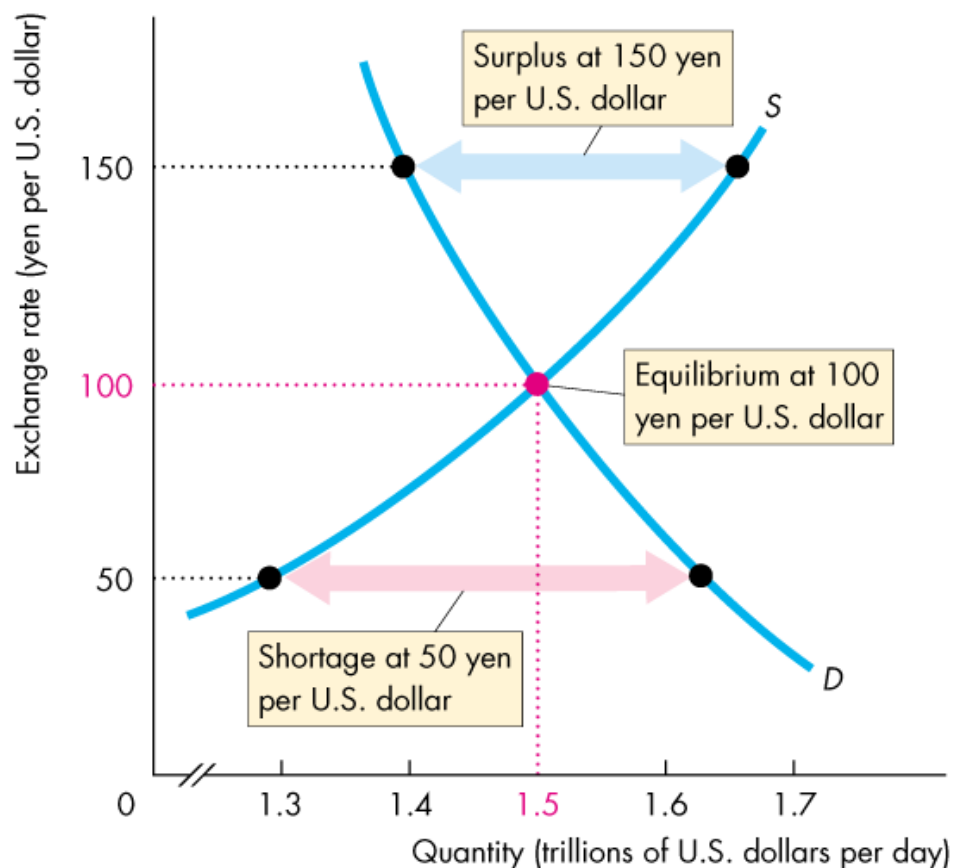


The Foreign Exchange Market

If the exchange rate is too high, a surplus of U.S. dollars drives it down.

If the exchange rate is too low, a shortage of U.S. dollars drives it up.

The market is pulled (quickly) to the equilibrium exchange rate at which there is neither a shortage nor a surplus.





Exchange Rate Fluctuations

Changes in the Demand for U.S. Dollars

A change in any influence on the quantity of U.S. dollars that people plan to buy, other than the exchange rate, brings a change in the demand for U.S. dollars.

These other influences are

- World demand for U.S. exports
- U.S. interest rate relative to the foreign interest rate
- The expected future exchange rate



Exchange Rate Fluctuations

World Demand for U.S. Exports

At a given exchange rate, if world demand for U.S. exports increases, the demand for U.S. dollars increases and the demand curve for U.S. dollars shifts rightward.

U.S. Interest Rate Relative to the Foreign Interest Rate

The U.S. interest rate minus the foreign interest rate is called the **U.S. interest rate differential**.

If the U.S. interest differential rises, the demand for U.S. dollars increases and the demand curve for U.S. dollars shifts rightward.



Exchange Rate Fluctuations

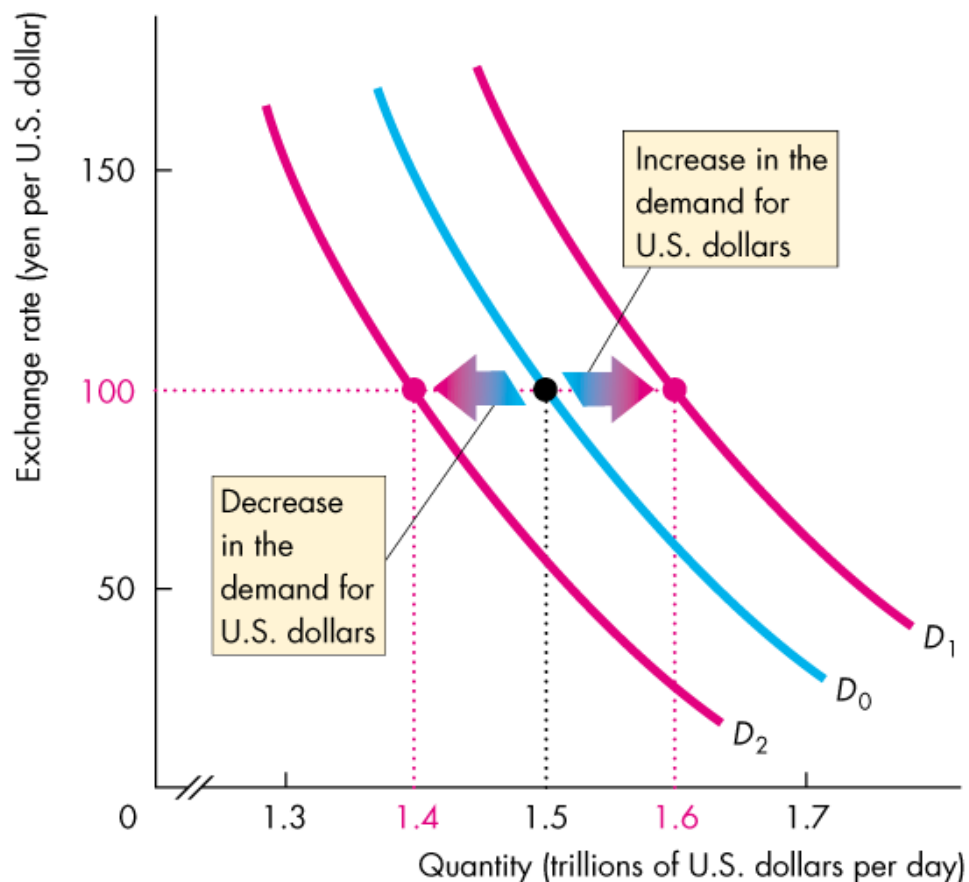
The Expected Future Exchange Rate

At a given current exchange rate, if the expected future exchange rate for U.S. dollars rises, the demand for U.S. dollars increases and the demand curve for dollars shifts rightward.

Exchange Rate Fluctuations

Figure 26.4 shows how the demand curve for U.S. dollars shifts in response to changes in

- U.S. exports
- The U.S. interest rate differential
- The expected future exchange rate





Exchange Rate Fluctuations

Changes in the Supply of U.S. Dollars

A change in any influence on the quantity of U.S. dollars that people plan to sell, other than the exchange rate, brings a change in the supply of dollars.

These other influences are

- U.S. demand for imports
- U.S. interest rates relative to the foreign interest rate
- The expected future exchange rate



Exchange Rate Fluctuations

U.S. Demand for Imports

At a given exchange rate, if the U.S. demand for imports increases, the supply of U.S. dollars on the foreign exchange market increases and the supply curve of U.S. dollars shifts rightward.

U.S. Interest Rate Relative to the Foreign Interest Rate

If the U.S. interest differential rises, the supply of U.S. dollars decreases and the supply curve of U.S. dollars shifts leftward.



Exchange Rate Fluctuations

The Expected Future Exchange Rate

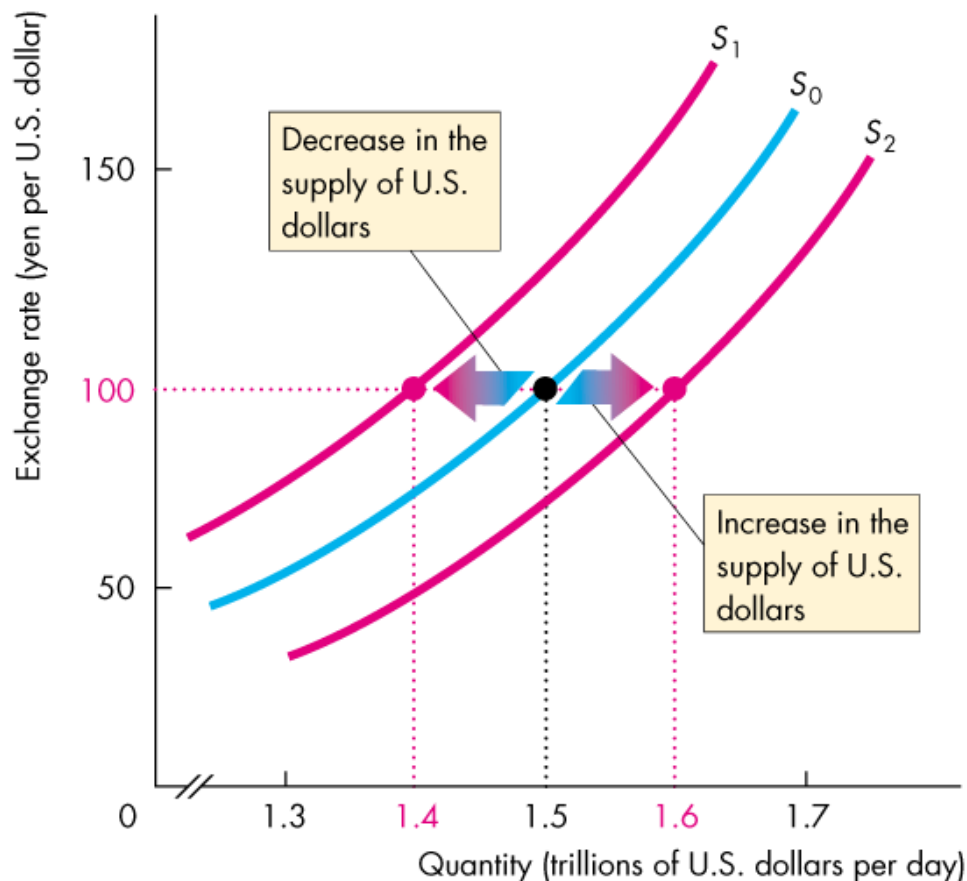
At a given current exchange rate, if the expected future exchange rate for U.S. dollars rises, ...

the supply of U.S. dollars decreases and the supply curve of U.S. dollars shifts leftward.

Exchange Rate Fluctuations

Figure 26.5 shows how the supply curve of U.S. dollars shifts in response to changes in

- U.S. demand for imports
- The U.S. interest rate differential
- The expected future exchange rate





Exchange Rate Fluctuations

Changes in the Exchange Rate

- If demand for U.S. dollars increases and supply does not change, the exchange rate rises.
- If demand for U.S. dollars decreases and supply does not change, the exchange rate falls.
- If supply of U.S. dollars increases and demand does not change, the exchange rate falls.
- If supply of U.S. dollars decreases and demand does not change, the exchange rate rises.



Arbitrage, Speculation, and Market Fundamentals

Arbitrage

Arbitrage is the practice of seeking to profit by buying in one market and selling for a higher price in another related market.

Arbitrage in the foreign exchange market and international loans and goods markets achieves four outcomes:

- The law of one price
- No round-trip profit
- Interest rate parity
- Purchasing power parity



Arbitrage, Speculation, and Market Fundamentals

The Law of One Price

The law of one price states that if an item can be traded in more than one place, the price will be the same in all locations.

No Round-Trip Profit

A round trip is using the currency A to buy currency B , and then using B to buy A .

Arbitrage removes profit from all transactions of this type.



Arbitrage, Speculation, and Market Fundamentals

Interest Rate Parity

A currency is worth what it can earn.

The return on a currency is the interest rate on that currency plus the expected rate of appreciation over a given period.

When the rates of returns on two currencies are equal, **interest rate parity** prevails.

Interest rate parity means *equal interest rates* when exchange rate changes are taken into account.

Market forces achieve interest rate parity very quickly.



Arbitrage, Speculation, and Market Fundamentals

Purchasing Power Parity

A currency is worth the value of goods and services that it will buy.

The quantity of goods and services that one unit of a particular currency will buy differs from the quantity of goods and services that one unit of another currency will buy.

When two quantities of money can buy the same quantity of goods and services, the situation is called **purchasing power parity** (or PPP), which means *equal value of money*.



Arbitrage, Speculation, and Market Fundamentals

Speculation

Speculation is trading on the *expectation* of making a profit.

Speculation contrast with arbitrage, which is trading on the certainty of making a profit.

Most foreign exchange transactions are based on speculation.

The expected future exchange rate influences both supply and demand, so it influences the current equilibrium exchange rate.



Arbitrage, Speculation, and Market Fundamentals

The Expected Future Exchange Rate

An expectation is a forecast.

Exchange rate forecasts, like weather forecasts, are made over horizons that run from a few hours to many months and perhaps years.

But exchange rate forecasts are hedged with a lot of uncertainty, there are many divergent forecasts, and the forecasts influence the outcome.

The dependence of today's exchange rate on forecasts of tomorrow's exchange rate can give rise to exchange rate volatility in the short run.



Arbitrage, Speculation, and Market Fundamentals

Exchange Rate Volatility

An exchange rate might rise one day and fall the next, as news about the influences on the exchange rate change the expected future exchange rate.

The influences of expectations and the constant arrival of news about the influences on supply and demand, make changes in the exchange rate impossible to predict.

But trends around which the exchange rate fluctuates are predictable and depend on market fundamentals.



Arbitrage, Speculation, and Market Fundamentals

The Real Exchange Rate

The **real exchange rate** is the relative price of U.S.-produced goods and services to foreign-produced goods and services.

It measures the quantity of real GDP of other countries that a unit of U.S. real GDP buys.

The equation that links the nominal exchange rate (E) and real exchange rate (RER) is

$$RER = (E \times P) / P^*$$

where P is the U.S. price level and P^* is the Japanese price level.



Arbitrage, Speculation, and Market Fundamentals

If both countries produce identical goods, then the price levels expressed in the same currency would be the same and RER would equal 1.

In reality, countries produce different bundles of goods and the forces of demand and supply on goods markets determine P and P^* and the real exchange rate equals

$$RER = (E \times P) / P^* .$$

So, if the nominal exchange rate changes, P and P^* do not change and the change in E brings an equivalent change in RER .



Arbitrage, Speculation, and Market Fundamentals

Price Levels and Money

In the long run, RER is determined by the real forces of demand and supply in the markets for goods and services.

So in the long run, E is determined by RER and the price levels. That is,

$$E = RER \times (P^*/P).$$

In the long run, the quantity of money in each country determines the price level in that country.

For a given real exchange rate, a change in the quantity of money brings a change in the price level *and* a change in the exchange rate.



Exchange Rate Policy

Three possible exchange rate policies are

- Flexible exchange rate
- Fixed exchange rate
- Crawling peg

Flexible Exchange Rate

A **flexible exchange rate** policy is one that permits the exchange rate to be determined by demand and supply with *no* direct intervention in the foreign exchange market by the central bank.



Exchange Rate Policy

Fixed Exchange Rate

A **fixed exchange rate** policy is one that pegs the exchange rate at a value decided by the government or central bank and is achieved by direct intervention in the foreign exchange market to block unregulated forces of demand and supply.

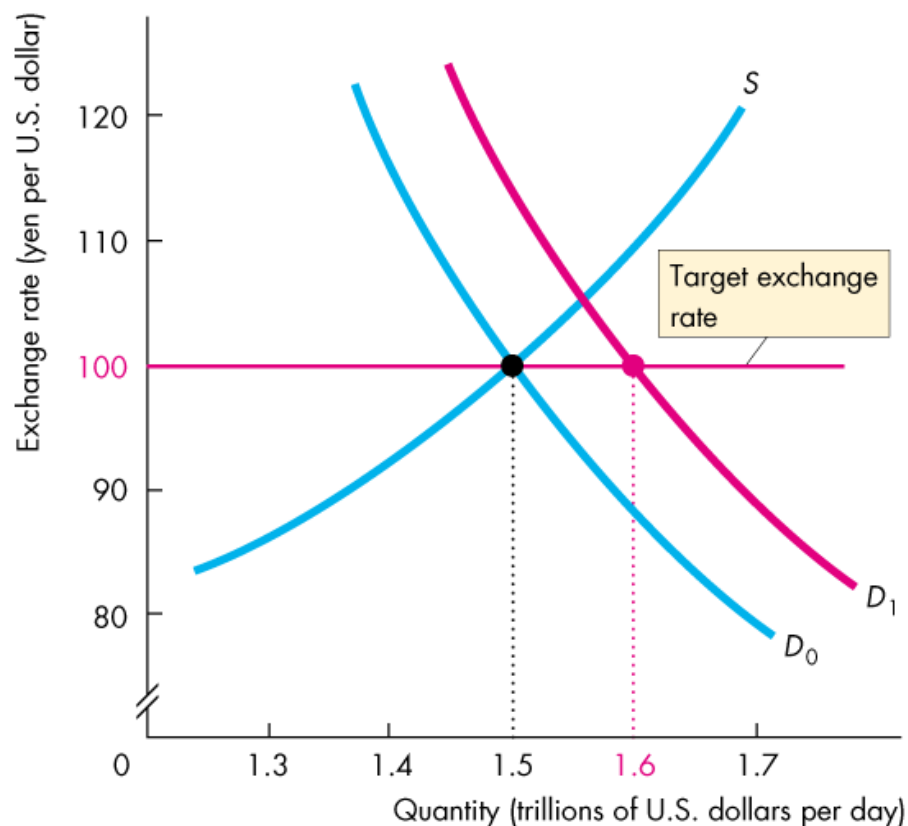
A fixed exchange rate requires active intervention in the foreign exchange market.

Exchange Rate Policy

Figure 26.6 shows how the Fed can intervene in the foreign exchange market to keep the exchange rate close to a target rate.

Suppose that the target is 100 yen per U.S. dollar.

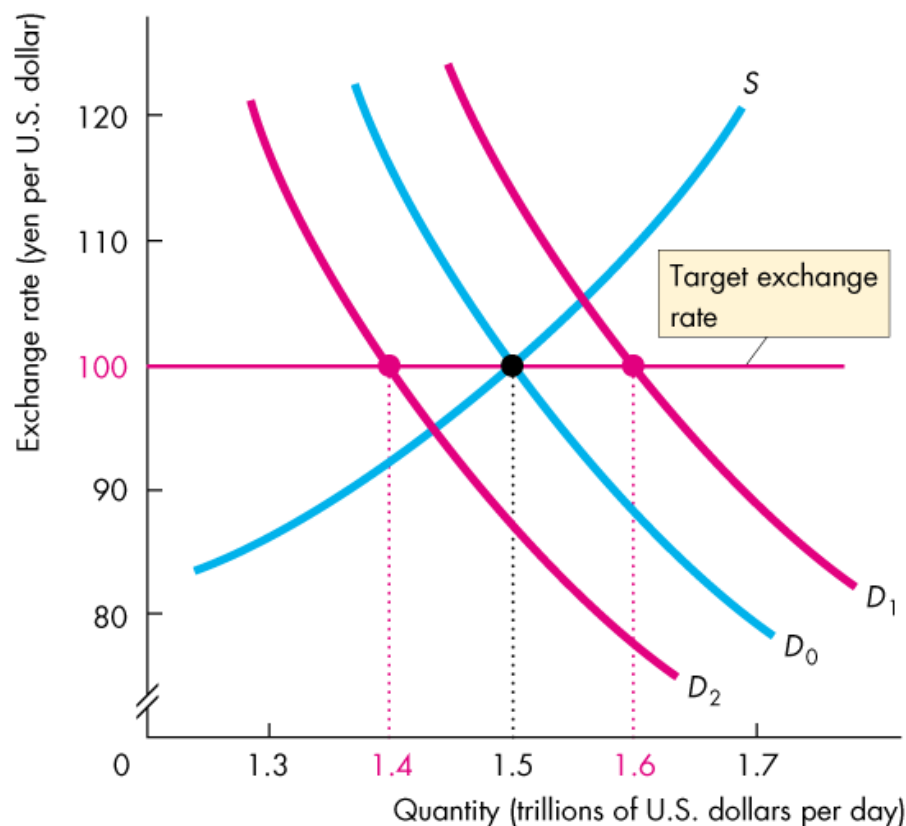
If the demand for U.S. dollars increases, the Fed sells U.S. dollars to increase supply.



Exchange Rate Policy

If demand for the U.S. dollar decreases, the Fed buys U.S. dollars to decrease supply.

Persistent intervention on one side of the foreign exchange market cannot be sustained.





Exchange Rate Policy

Crawling Peg

A **crawling peg** is an exchange rate that follows a path determined by a decision of the government or the central bank and is achieved by active intervention in the market.

China is a country that operates a crawling peg.

A crawling peg works like a fixed exchange rate except that the target value changes.

The idea behind a crawling peg is to avoid wild swings in the exchange rate that might happen if expectations became volatile and to avoid the problem of running out of reserves, which can happen with a fixed exchange rate.



Financing International Trade

We've seen how the exchange rate is determined, but what is the effect of the exchange rate?

How does currency appreciation or depreciation influence U.S. international trade?

We record international transactions in the balance of payments accounts.



Financing International Trade

Balance of Payments Accounts

A country's **balance of payments accounts** records its international trading, borrowing, and lending.

There are three balance of payments accounts:

1. Current account
2. Capital and financial account
3. Official settlements account



Financing International Trade

The **current account** records

- receipts from exports of goods and services sold abroad,
- payments for imports of goods and services from abroad,
- net interest paid abroad, and
- net transfers (such as foreign aid payments).

The *current accounts balance* = exports - imports + net interest income + net transfers.



Financing International Trade

The **capital and financial account** records foreign investment in the United States minus U.S. investment abroad.

The **official settlements account** records the change in U.S. official reserves.

U.S. official reserves are the government's holdings of foreign currency.

If U.S. official reserves *increase*, the official settlements account is *negative*.

The sum of the balances of the three accounts always equals zero.



Financing International Trade

Borrowers and Lenders

A country that is borrowing more from the rest of the world than it is lending to it is called a **net borrower**.

A country that is lending more to the rest of the world than it is borrowing from it is called a **net lender**.

Since the early 1980s, except for 1991, the United States has been a net borrower from the rest of the world.

In 2010, the United States borrowed more than \$400 billion from the rest of the world, mostly from China.



Financing International Trade

The Global Loanable Funds Market

The loanable funds market is global, not national.

Lenders want to earn the highest possible real interest rate and they will seek it by looking around the world.

Borrowers want to pay the lowest possible real interest rate and they will seek it by looking around the world.

Financial capital is mobile: It moves to the best advantage of lenders and borrowers.



Financing International Trade

Because lenders are free to seek the highest real interest rate and borrowers are free to seek the lowest real interest rate, the loanable funds market is a single, integrated, global market.

Funds flow into the country in which the real interest rate is highest and out of the country in which the real interest rate is lowest.



Financing International Trade

A country's loanable funds market connects with the global market through net exports.

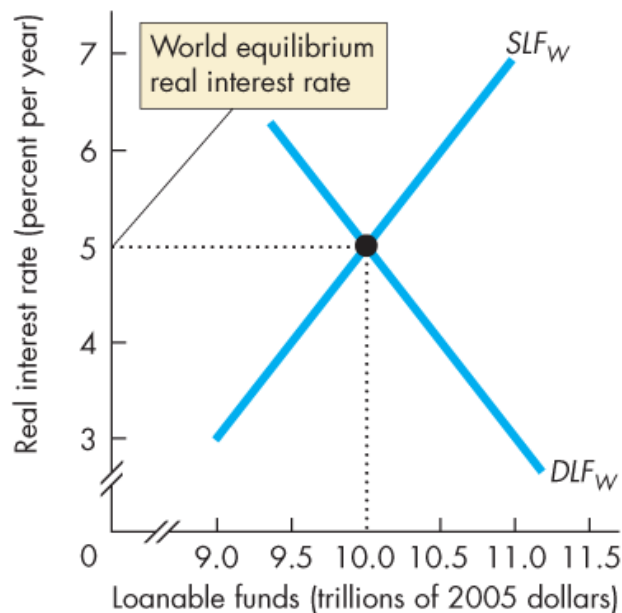
If a country's net exports are *negative*, the rest of the world supplies funds to that country and the quantity of loanable funds in that country is greater than national saving.

If a country's net exports are *positive*, the country is a net supplier of funds to the rest of the world and the quantity of loanable funds in that country is less than national saving.

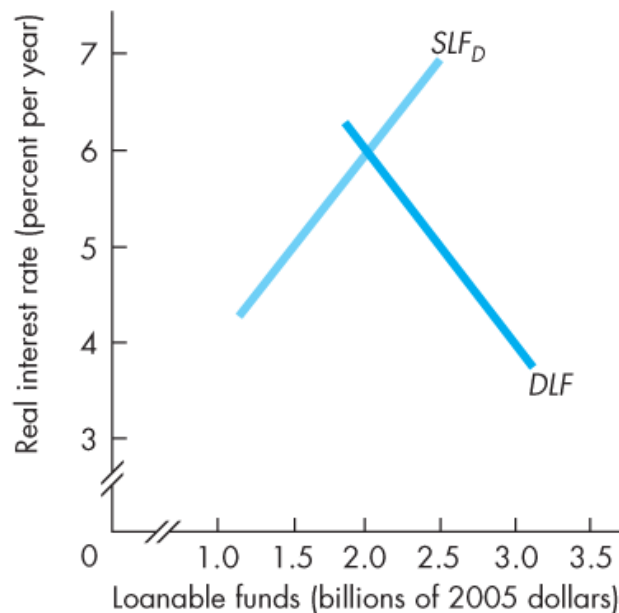
Financing International Trade

Figure 26.7(a) illustrates the global market.

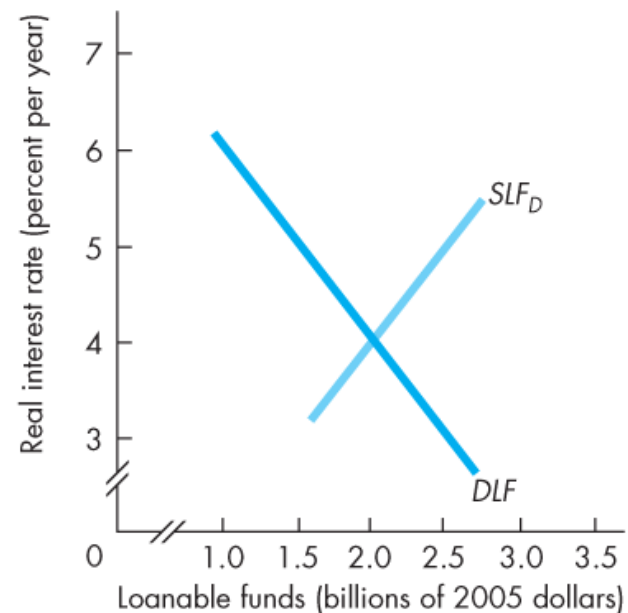
The world equilibrium real interest rate is 5 percent a year.



(a) The global market



(b) An international borrower



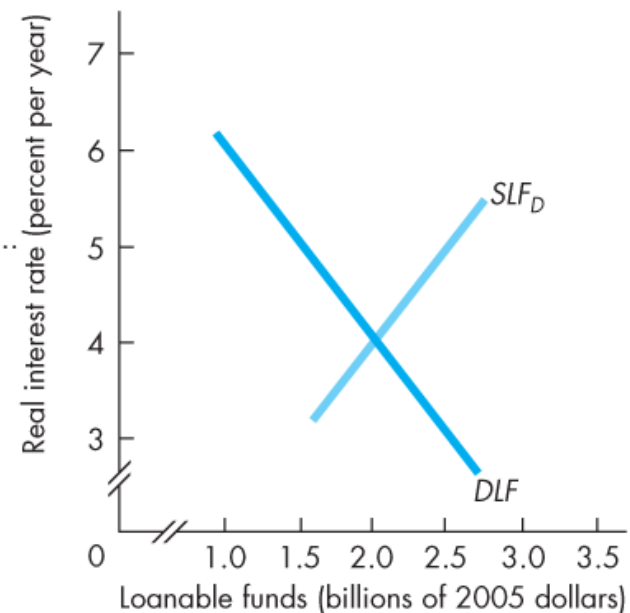
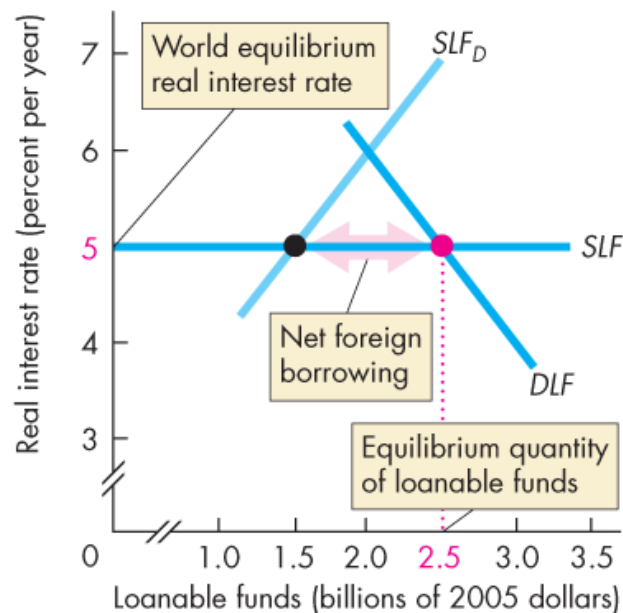
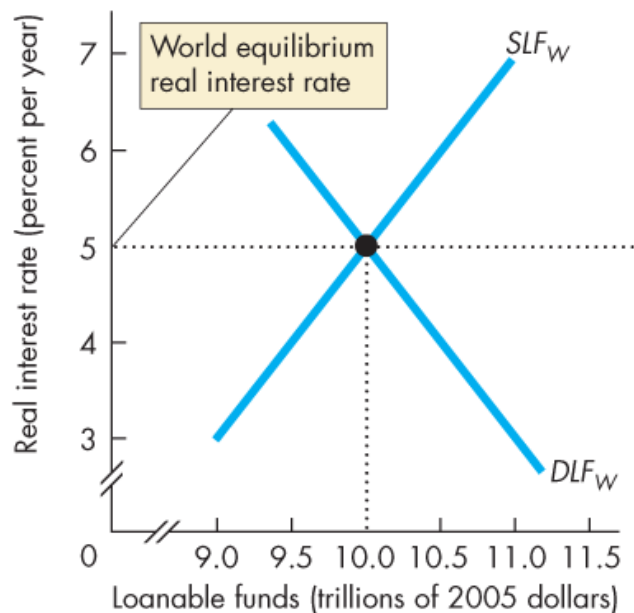
(c) An international lender



Financing International Trade

In part (b), at the world real interest rate, borrowers want more funds than the quantity supplied by domestic lenders.

The shortage of funds is made up by international borrowing.



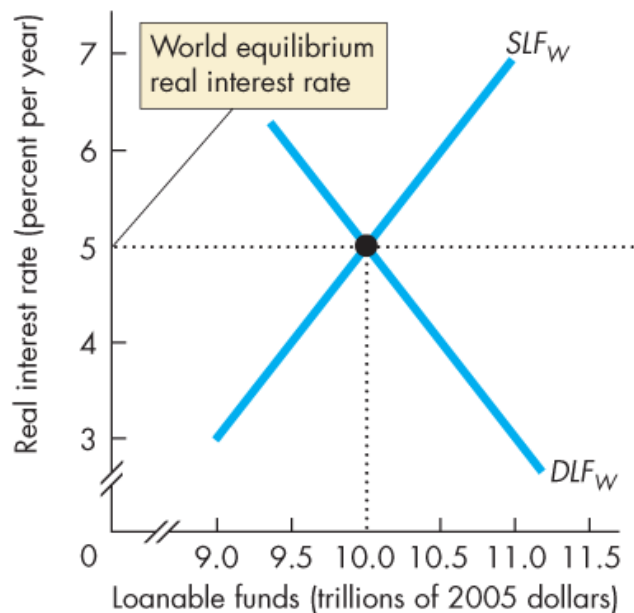
(a) The global market

(b) An international borrower

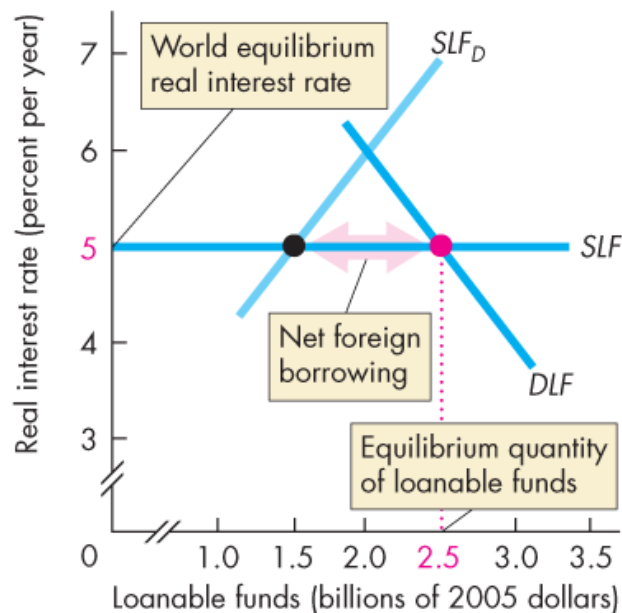
(c) An international lender

Financing International Trade

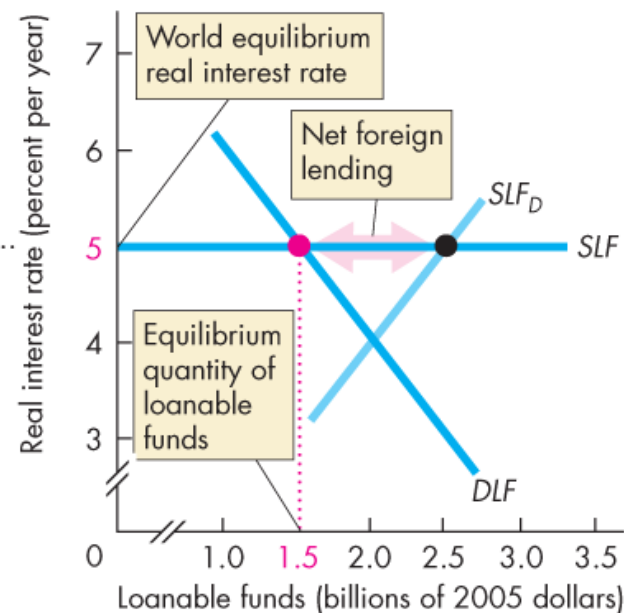
In part (c), at the world real interest rate, the quantity supplied by domestic lenders exceeds what domestic borrowers want. The excess quantity supplied goes to foreign borrowers.



(a) The global market



(b) An international borrower



(c) An international lender



Financing International Trade

Debtors and Creditors

A **debtor nation** is a country that during its entire history has borrowed more from the rest of the world than it has lent to it.

Since 1986, the United States has been a debtor nation.

A **creditor nation** is a country that has invested more in the rest of the world than other countries have invested in it.

The difference between being a borrower/lender nation and being a creditor/debtor nation is the difference between stocks and flows of financial capital.



Financing International Trade

Being a net borrower is not a problem provided the borrowed funds are used to finance capital accumulation that increases income.

Being a net borrower is a problem if the borrowed funds are used to finance consumption.

Financing International Trade

Current Account Balance

The current account balance (*CAB*) is

$$CAB = NX + \text{Net interest income} + \text{Net transfers}$$

The main item in the current account balance is net exports (*NX*).

The other two items are much smaller and don't fluctuate much.



Financing International Trade

The **government sector surplus or deficit** is equal to net taxes, T , minus government expenditure on goods and services G .

The **private sector surplus or deficit** is saving, S , minus investment, I .

Net exports is equal to the sum of government sector balance and private sector balance:

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



Financing International Trade

For the United States in 2014,

- Net exports were – \$564 billion.
- Government sector balance was – \$800 billion
- Private sector balance was \$236 billion

Net exports equals the sum of the government sector balance and the private sector balance.



Financing International Trade

Where is the Exchange Rate?

In the short run, a fall in the nominal exchange rate lowers the real exchange rate, which makes our imports more costly and our exports more competitive.

So in the short run, a fall in the nominal exchange rate decreases the current account deficit.

But in the long run, a change in the nominal exchange rate leaves the real exchange rate unchanged.

So in the long run, the nominal exchange rate plays no role in influencing the current account balance.