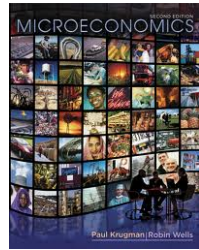


Economics 202 Principles Of Macroeconomics

Professor Yamin Ahmad

Lecture 12

- Balance of Payments Accounts
- The Exchange Rate and the Market for Foreign Exchange



Big Concepts

- Balance of Payments Equilibrium
 - The relationship between the current account, capital account and official settlements balance
 - The relationship between the current account and the trade balance (Net Exports)
- The definition of the exchange rate
- The Market for Foreign Exchange
 - The demand (and factors affecting the demand) for foreign exchange
 - The supply (and factors affecting the supply) of foreign exchange
 - Equilibrium

Note: These lecture notes are incomplete without having attended lectures

Financing International Trade

- When we buy something from another country, we use the currency of that country to make the transaction.
- We record international transactions in the balance of payments accounts.
- Balance of Payments Accounts
 - A country's **balance of payments accounts** records its international trading, borrowing and lending.

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts

- A country's balance of payments accounts accounts for its payments to and its receipts from foreigners.
- Each international transaction enters the accounts twice: once as a credit (+) and once as a debit (-).
 - Debit:- any transaction resulting in payment to foreigners.
 - Credit:- any transaction resulting in a receipt from foreigners.

Note: These lecture notes are incomplete without having attended lectures



Balance of Payments Accounts (cont.)

- The balance of payment accounts are separated into 3 broad accounts:
 - **current account:** accounts for flows of goods and services (imports and exports).
 - **financial account:** accounts for flows of financial assets (financial capital).
 - **capital account:** flows of special categories of assets (capital), typically non-market, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.

Note: These lecture notes are incomplete without having attended lectures



Examples of Balance of Payment Accounting

Example 1

- You import a DVD of Japanese anime by using your debit card.
- The Japanese producer of anime deposits the funds in its bank account in San Francisco. The bank credits the account by the amount of the deposit.

DVD purchase (current account)	-\$30
Credit (“sale”) of bank account by bank (financial account)	+\$30

Note: These lecture notes are incomplete without having attended lectures



Examples of Balance of Payment Accounting

Example 2

- You invest in the Japanese stock market by buying \$500 in Sony stock.
- Sony deposits your funds in its Los Angeles bank account. The bank credits the account by the amount of the deposit.

Purchase of stock (financial account)	-\$500
Credit (“sale”) of bank account by bank (financial account)	+\$500

Note: These lecture notes are incomplete without having attended lectures



Examples of Balance of Payment Accounting

Example 3

- US banks forgive a \$100 M debt owed by the government of Argentina through debt restructuring.
- US banks who hold the debt thereby reduce the debt by crediting Argentina's bank accounts.

Debt forgiveness: non-market transfer (capital account)	-\$100 M
Credit (“sale”) of bank account by bank (financial account)	+\$100 M

Note: These lecture notes are incomplete without having attended lectures

How Do the Balance of Payments Accounts Balance?

- Due to the double entry of each transaction, the balance of payments accounts will balance by the following equation:

$$\begin{aligned} & \text{current account} + \\ & \quad \text{financial account} + \\ & \quad \quad \text{capital account} = 0 \end{aligned}$$

- *This is the Fundamental Balance of Payments Identity!*

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts

- Each of the 3 broad accounts are more finely divided:
- **Current account:** imports and exports
 1. merchandise (goods like DVDs)
 2. services (payments for legal services, shipping services, tourist meals,...)
 3. income receipts (**interest and dividend payments**, earnings of firms and workers operating in foreign countries)
- **Current account:** *net unilateral transfers*
 - gifts (transfers) across countries that do not purchase a good or service nor serve as income
 - E.g. foreign aid, gifts and retirement pensions

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- **Capital account:**
 - Records special asset transfers
 - Includes primarily transactions involving debt forgiveness and financial assets accompanying migrant workers as they enter or leave the country.
 - Nonmarket activities
 - Acquisition or disposal of nonproduced, nonfinancial and possibly intangible assets (e.g. copyrights and trademarks).
 - However, this is a minor account for the US.

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- **Financial account:** the difference between sales of domestic assets to foreigners and purchases of foreign assets by domestic citizens.
- **Financial (capital) inflow**
 - Foreigners loan to domestic citizens by acquiring domestic assets.
 - Foreign owned (sold) assets in the domestic economy are a credit (+)
- **Financial (capital) outflow**
 - Domestic citizens loan to foreigners by acquiring foreign assets.
 - Domestically owned (purchased) assets in foreign economies are a debit (-)

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- **Financial account** has at least 3 categories:
 1. **Official (international) reserve assets**
 2. All other assets
 3. **Statistical discrepancy**

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- **Statistical discrepancy**
 - Data from a transaction may come from different sources that differ in coverage, accuracy, and timing.
 - The balance of payments accounts therefore seldom balance in practice.
 - The statistical discrepancy is the account added to or subtracted from the financial account to make it balance with the current account and capital account.

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- **Official (international) reserve assets**: foreign assets held by central banks to cushion against instability in international markets.
 - Assets include government bonds, currency, gold and accounts at the **International Monetary Fund**.
 - Official reserve assets owned by (sold to) foreign central banks are a credit (+).
 - Official reserve assets owned by (purchased by) the domestic central bank are a debit (-).

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- The negative value of the official reserve assets is called the **official settlements balance (OSB)** or **“balance of payments”**.
 - It is the sum of the current account, the capital account, the non-reserve portion of the financial account, and the statistical discrepancy.
 - i.e. it is:

$$\begin{aligned} \text{OSB (aka 'Balance of Payments')} \\ &= \text{Current Account} + \text{Capital Account} + \text{All other} \\ &\quad \text{assets in Financial Account} + \text{Statistical} \\ &\quad \text{Discrepancy in Financial Account} \\ &= - \text{Official Reserves Assets} \end{aligned}$$

Note: These lecture notes are incomplete without having attended lectures

Balance of Payments Accounts (cont.)

- A negative official settlements balance may indicate that a country is depleting its official international reserve assets or may be incurring debts to foreign central banks.
 - selling foreign currency by the domestic central bank and buying domestic assets by foreign central banks are credits for official international reserve assets, and therefore reduce the official settlements balance.

Note: These lecture notes are incomplete without having attended lectures

Financing International Trade

- There are three balance of payments accounts:
 - Current account
 - Financial Account
 - Official settlements account
- The **current account** records payments for imports of goods and services from abroad, receipts from exports of goods and services sold abroad, net interest paid abroad, and net transfers (such as foreign aid payments).
- The *current accounts balance* equals the sum of exports minus imports, net interest income and net transfers.

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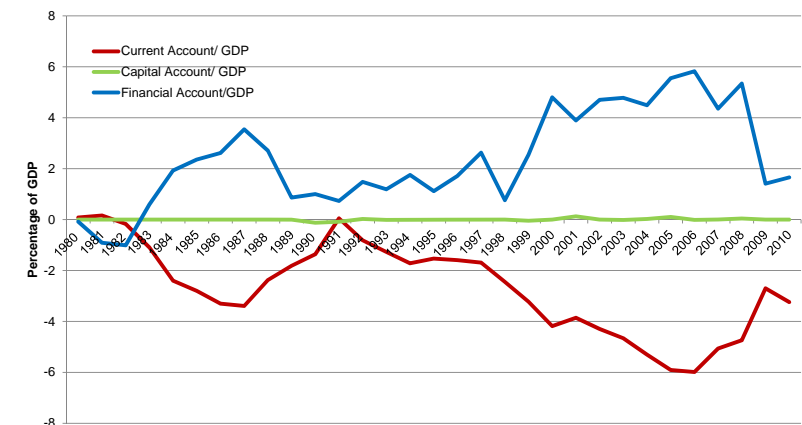
Financing International Trade

- The **capital account** records foreign investment in the United States minus U.S. investments abroad. (This account also has a statistical discrepancy that arises from errors and omissions in measuring capital transactions.)
- 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 balances of these three accounts sum to zero.

Note: These lecture notes are incomplete without having attended lectures

Financing International Trade

Figure 1 shows the balance of payments (as a percentage of GDP) over the period 1981 to 2001.



Note: These lecture notes are incomplete without having attended lectures

Borrowers and Lenders, Debtors and Creditors

- 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**.
- The United States is currently a net borrower (but as late as the 1970s it was a net lender).
- The total net foreign borrowing in the year 2001 was \$2.8 trillion, about 2.8 percent of the total value of our nation's goods and services produced.

Note: These lecture notes are incomplete without having attended lectures

Financing International Trade

- 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.
- 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.

Note: These lecture notes are incomplete without having attended lectures

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.

Note: These lecture notes are incomplete without having attended lectures

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.

Note: These lecture notes are incomplete without having attended lectures

Net Exports

- **Net exports** is exports of goods and services, X , minus imports of goods and services, M .
- Net exports are determined by the government budget and by private saving and investment.

Note: These lecture notes are incomplete without having attended lectures

Financing International Trade

- The **government sector surplus or deficit** is equal to net taxes, T , minus government purchases of goods and services, G .
- The **private sector surplus or deficit** is saving, S , minus investment, I .
- Net exports is equal to the sum of private sector balance and government sector balance:

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

Note: These lecture notes are incomplete without having attended lectures

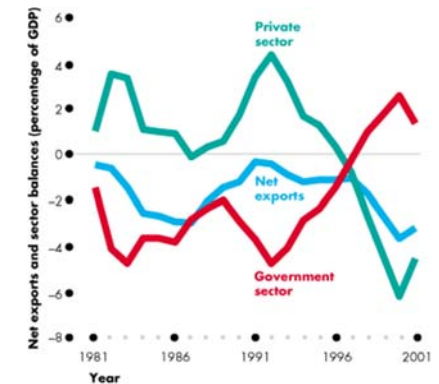
Financing International Trade

Net exports for the U.S. for 2001 (–\$330 billion) equals the sum of private sector balance—a deficit of \$690 billion—and government sector balance—a surplus of \$360 billion.

Note: These lecture notes are incomplete without having attended lectures

The Three Sector Balances

Figure 2 shows how the three balances have fluctuated for the United States from 1981 through 2001.

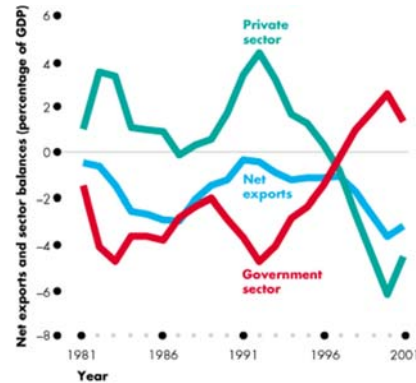


Note: These lecture notes are incomplete without having attended lectures



Financing International Trade

- The private sector balance has moved in the opposite direction from the government balance.
- There is not a strong relationship between net exports and the other two balances individually.



Note: These lecture notes are incomplete without having attended lectures



Financing International Trade

- Is U.S. Borrowing for Consumption or Investment?
 - U.S. borrowing from abroad finances investment.
 - It is much less than private investment and almost equal to government investment in public infrastructure capital.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

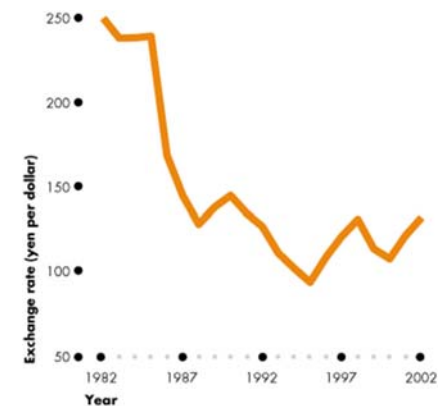
- We get foreign currency and foreigners get U.S. dollars in the **foreign exchange market**—the market in which the currency of one country is exchanged for the currency of another.
- The price at which one currency exchanges for another is called a **foreign exchange rate**.
- **Currency depreciation** is the fall in the value of the currency in terms of another currency.
- **Currency appreciation** is the rise in value of the currency in terms of another currency.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

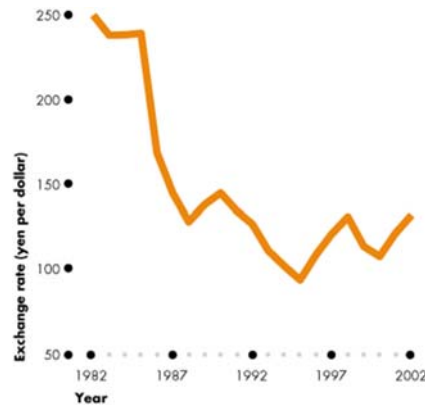
- Figure 3 shows how the exchange rate of Japanese yen for the U.S. dollar has changed from 1982 to 2002.
- The yen appreciated against the U.S. dollar during the early 1980s and has fluctuated in the range of 100 to 150 yen to the dollar since the late 1980s.



Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

The exchange rate is a price that is determined by demand and supply in the foreign exchange market.



Note: These lecture notes are incomplete without having attended lectures

Demand in the Foreign Exchange Market

- The quantity of dollars that traders plan to buy in the foreign exchange market during a given period depends on:
 - The **exchange rate**
 - **Interest rates** in the United States and other countries
 - The **expected future exchange rate**

Note: These lecture notes are incomplete without having attended lectures

The Law of Demand for Foreign Exchange

- The demand for dollars is a *derived demand*.
- People buy dollars so that they can buy U.S.-made goods and services or U.S. assets.
- Other things remaining the same, the higher the exchange rate, the smaller is the quantity of dollars demanded in the foreign exchange market.

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

- There are two sources of the derived demand for U.S. dollars:
 - Exports effect
 - Expected profit effect
- **Exports effect** The larger the value of U.S. exports, the greater is the quantity of dollars demanded on the foreign exchange market.
- And the lower the exchange rate, the greater is the value of U.S. exports, so the greater is the quantity of dollars demanded.

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

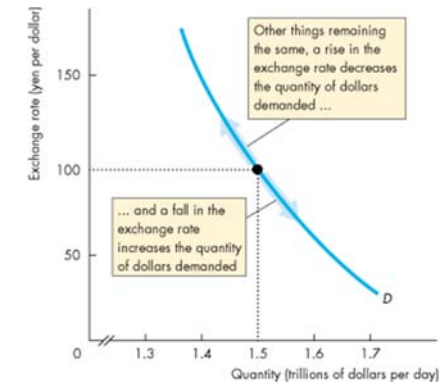
- **Expected profit effect:**

- For a given expected future U.S. dollar exchange rate, the lower the exchange rate, the greater is the expected profit from holding U.S. dollars, and the greater is the quantity of U.S. dollars demanded on the foreign exchange market.

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

Figure 4 illustrates the demand curve for U.S. dollars.



Note: These lecture notes are incomplete without having attended lectures

Changes in the Demand for Dollars

- A change in any influence on the quantity of dollars that people plan to buy, other than the exchange rate, brings a change in the demand for dollars and a shift in the demand curve for dollars.
- These other influences are:
 - Interest rates in the United States and in other countries
 - The expected future exchange rate

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

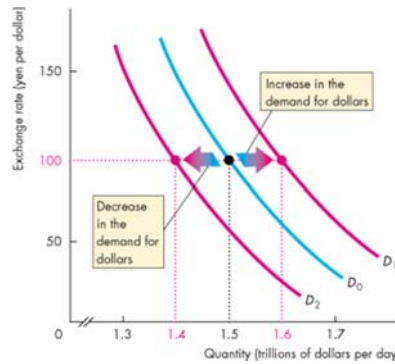
- **Interest rates in the United States and in other countries** The U.S. interest rate minus the foreign interest rate is called the **U.S. interest rate differential**.
- If the U.S. interest differential rate rises, the demand for U.S. dollars increases and the demand curve for dollars shifts rightward.
- **The expected future exchange rate:** At a given 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.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

Figure 5 shows how the demand curve for U.S. dollars shifts in response to changes in the U.S. interest rate differential and expectations of future exchange rates.



Note: These lecture notes are incomplete without having attended lectures



Supply in the Foreign Exchange Market

- Other things remaining the same, the higher the exchange rate, the greater is the quantity of dollars supplied in the foreign exchange market.
- There are two sources of the supply of U.S. dollars:
 - Imports effect
 - Expected profit effect

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

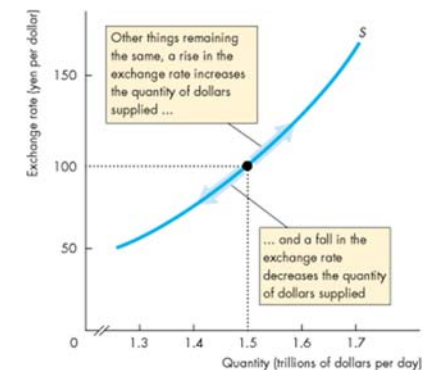
- **Imports effect** The larger the value of U.S. imports, the larger is the quantity of dollars supplied on the foreign exchange market.
- And the higher the exchange rate, the greater is the value of U.S. imports, so the greater is the quantity of dollars supplied.
- **Expected profit effect:** For a given expected future U.S. dollar exchange rate, the lower the 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.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

Figure 6 illustrates the supply curve of U.S. dollars.



Note: These lecture notes are incomplete without having attended lectures



Changes in the Supply of Dollars

- A change in any influence on the quantity of dollars that people plan to sell, other than the exchange rate, brings a change in the supply of dollars and a shift in the supply curve of dollars.
- These other influences are:
 - Interest rates in the United States and in other countries
 - The expected future exchange rate

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

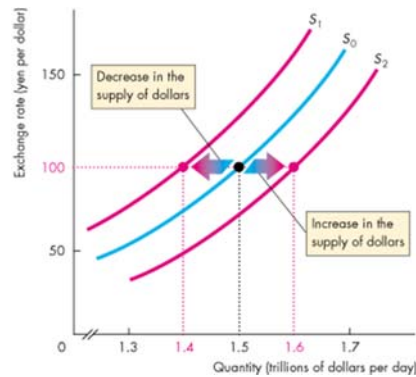
- **Interest rates in the United States and in other countries** If the U.S. interest differential rate rises, the supply for U.S. dollars decreases and the supply curve of dollars shifts leftward.
- **The expected future exchange rate** At a given exchange rate, if the expected future exchange rate for U.S. dollars rises, the supply of U.S. dollars decreases and the demand curve for dollars shifts leftward.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

Figure 7 shows how the supply curve of U.S. dollars shifts in response to changes in the U.S. interest rate differential and expectations of future exchange rates.

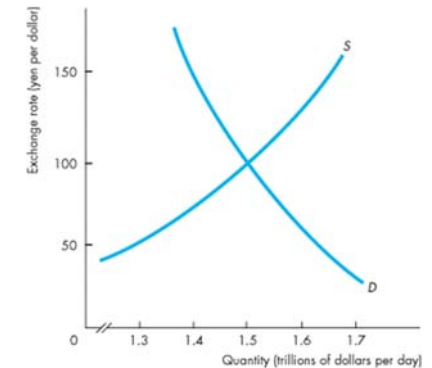


Note: These lecture notes are incomplete without having attended lectures



Market Equilibrium

Figure 8 shows how demand and supply in the foreign exchange market determine the exchange rate.

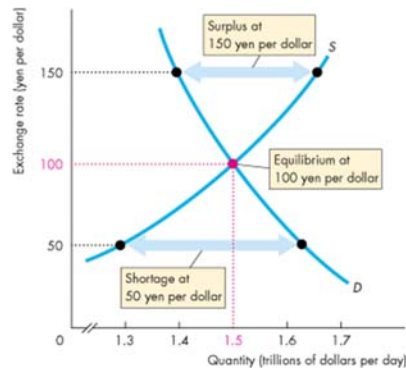


Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

- If the exchange rate is too high, a surplus of dollars drives it down.
- If the exchange rate is too low, a shortage of dollars drives it up.
- The market is pulled (quickly) to the equilibrium exchange rate at which there is neither a shortage nor a surplus.



Note: These lecture notes are incomplete without having attended lectures



Changes in the Exchange Rate

- Changes in demand and supply in the foreign exchange market change the exchange rate (just like they change the price in any market).
 - If demand increases, the exchange rate rises.
 - If demand decreases, the exchange rate falls.
 - If supply increases, the exchange rate falls.
 - If supply decreases, the exchange rate rises.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

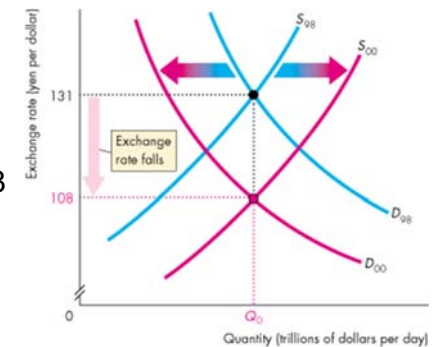
- The exchange rate is sometimes volatile because a change in the interest differential or in the expected future exchange rate change both demand and supply and in opposite directions, so they bring a large change in the exchange rate.

Note: These lecture notes are incomplete without having attended lectures



The Exchange Rate

Figure 9(a) shows how changes in expectations changed the demand for U.S. dollars and the supply of U.S. dollars between 1998 and 2000 and brought a fall in the U.S. dollar exchange rate.

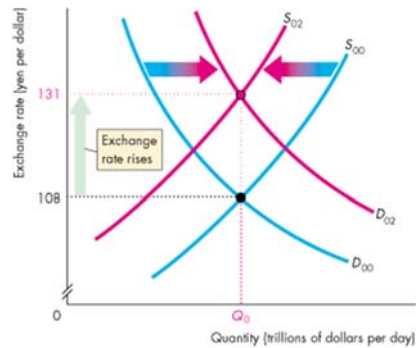


(a) 1998 to 2000

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

Figure 9(b) shows how changes in expectations changed the demand for U.S. dollars and the supply of U.S. dollars between 2000 and 2002 and brought a rise in the U.S. dollar exchange rate.



(b) 2000 to 2002

Note: These lecture notes are incomplete without having attended lectures

Exchange Rate Expectations

- The exchange rate changes when it is *expected to change*.
- But expectations about the exchange rate are driven by deeper forces. Two of them are
 - Purchasing power parity
 - Interest rate parity

Note: These lecture notes are incomplete without having attended lectures

Purchasing power parity

- **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 will differ 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**.

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

- If one U.S. dollar exchanges for 100 Japanese yen, then purchasing power parity is attained when one U.S. dollar buys the same quantity of goods and services in the United States as 100 yen buys in Japan.
- If one U.S. dollar buys more goods and services in the United States than 100 yen buys in Japan, people will expect that the dollar will eventually appreciate.
- Similarly, if one U.S. dollar buys less goods and services in the United States than 100 yen buys in Japan, people will expect that the dollar will eventually depreciate.

Note: These lecture notes are incomplete without having attended lectures

Interest rate parity

- **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 returns on two currencies are equal, **interest rate parity** prevails.
- Market forces achieve interest rate parity very quickly.

Note: These lecture notes are incomplete without having attended lectures

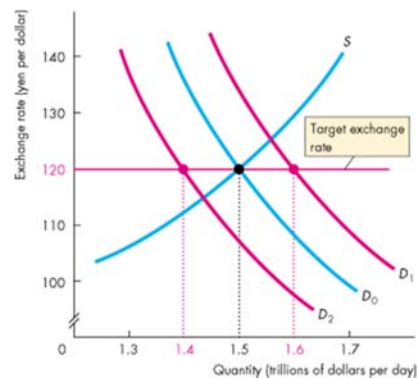
The Fed in the Foreign Exchange Market

- The U.S. interest rate is determined by the demand for and supply of money.
- The Fed determines the supply of money and through its influence on the interest rate influences the exchange rate.
- The Fed can also intervene directly in the foreign exchange market.
- If the demand for U.S. dollars falls and the Fed wants to hold the exchange rate steady, it can do so by buying dollars in the foreign exchange market.

Note: These lecture notes are incomplete without having attended lectures

The Exchange Rate

- If the demand for dollars increases and the Fed wants to hold the exchange rate steady, it can do so by selling dollars in the foreign exchange market.
- Figure 10 shows how the Fed can achieve a target exchange rate in the face of changes in the demand for dollars.



Note: These lecture notes are incomplete without having attended lectures