Chapter 6
Foreign Exchange Markets and Exchange Rates

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Learning Goals

Contents

1. Definition, characteristics, participants and functions of foreign exchange market
2. Exchange rates: Definition, classification and the equilibrium exchange rates.
3. Factors that Influence Exchange Rates
4. Arbitrage, hedging and speculation in foreign exchange market

Factors that Influence Exchange Rates

Factors that Influence ER - *Interaction of Factors*

- Transactions within the FX markets facilitate either trade or financial flows.
  - Trade-related FX transactions are generally less responsive to news but financial flow transactions are very responsive to news. Why?
  - Because decisions to hold securities denominated in a particular currency are often dependent on anticipated changes in currency values.
- Trade-related factors and financial factors sometimes interact. ER movements may be simultaneously affected by these factors.

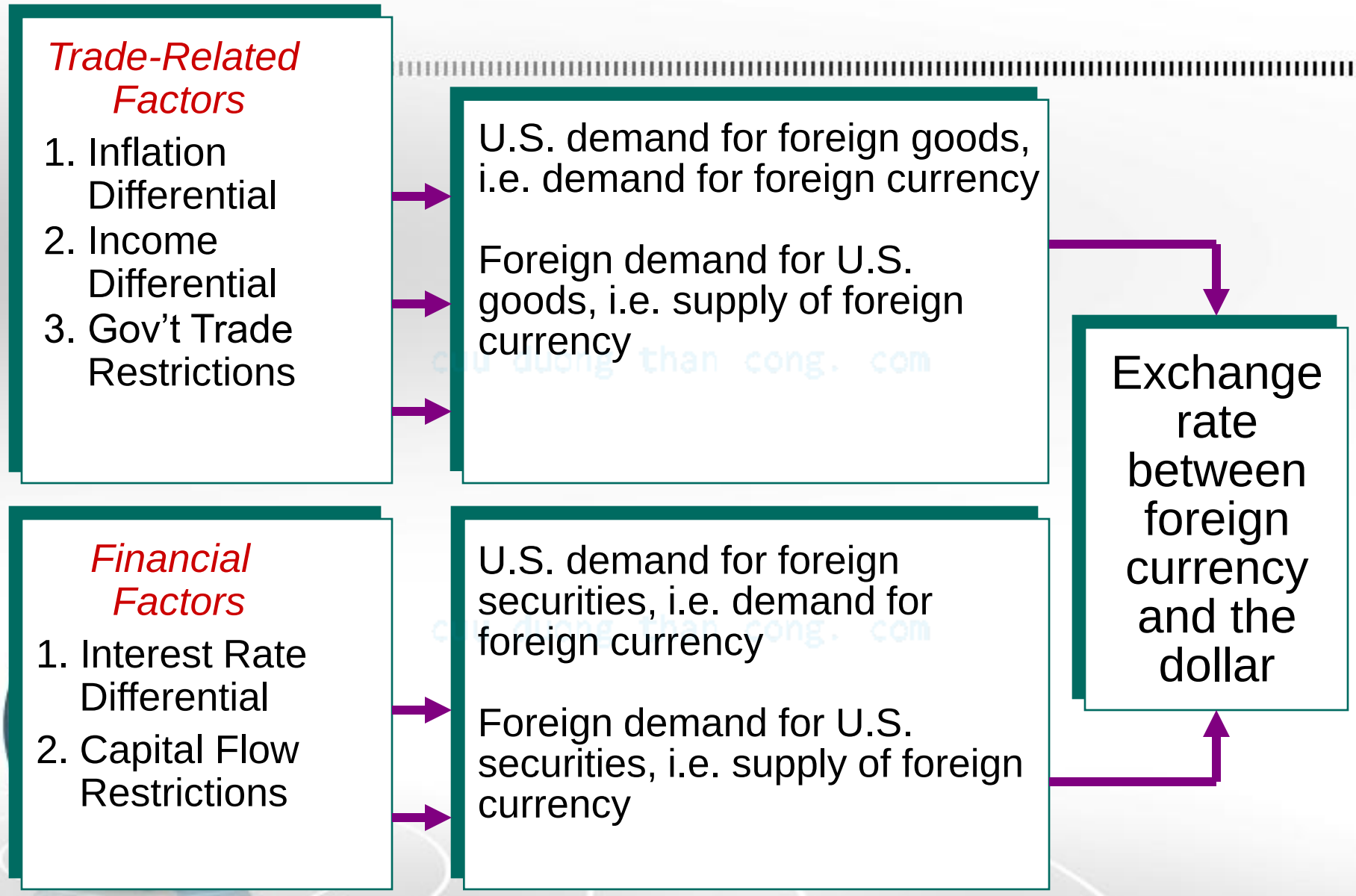
Factors that Influence ER - *Interaction of Factors*

- What happen if there is an increase in U.S income levels?
  - The equilibrium ER is expected to rise.
  - But an increase in U.S income levels sometimes causes expectations of higher interest rates ➔ the ER is expected to fall
- The favorable financial flows may overwhelm the unfavorable trade flows ➔ an increase in income levels is frequently expected to strengthen the local currency.

Factors that Influence ER - *Interaction of Factors*

- Over a particular period, different factors may place opposing pressures on the value of a foreign currency.
- The sensitivity of the ER to these factors is dependent on the volume of international transactions between the two countries.
  - If the two countries engage in a large volume of international trade but a very small volume of international capital flows, the relative inflation rates will likely be more influential.
  - If the two countries engage in a large volume of capital flows, however, interest rate fluctuations may be more influential.

How Factors Can Affect Exchange Rates



Factors that Influence ER - *Interaction of Factors*

- Assume that Morgan Co., a U.S – based MNC, commonly purchases supplies from Venezuela and Japan and therefore desires to forecast the direction of the Venezuelan bolivar and the Japanese yen.
- Morgan's financial analysts have developed the following one-year projections for economic conditions.

Factors that Influence ER - *Interaction of Factors*

Factors	United States	Venezuela	Japan
Change in interest rates	-1%	-2%	-4%
Change in inflation	+2%	-3%	-6%

1. Assume that the U.S. and Venezuela conduct a large volume of international trade but engage in minimal capital flow transactions.
2. Also assume that the U.S. and Japan conduct very little international trade frequently engage in capital flow transactions.
3. What should Morgan expect regarding the future value of the Venezuelan bolivar and the Japanese yen?

Factors that Influence ER - *Interaction of Factors*

Factors	United States	Venezuela	Japan
Change in interest rates	-1%	-2%	-4%
Change in inflation	+2%	-3%	-6%

The boliavar should be influenced most by trade-related factors because of Venezuela's assumed heavy trade with the U.S. ➔ The expected inflationary changes should place upward pressure on the value of the bolivar.

Interest rates are expected to have little direct impact on the bolivar because of the assumed infrequent capital flow transactions between the U.S. and Venezuela.

Factors that Influence ER - *Interaction of Factors*

Factors	United States	Venezuela	Japan
Change in interest rates	-1%	-2%	-4%
Change in inflation	+2%	-3%	-6%

The Japanese yen should be most influenced by interest rates because of Japan's assumed heavy capital flow transactions with the U.S. ➔ The expected interest rate changes should palace downward pressure on the yen.

The inflationary changes are expected to have little direct impact on the yen because of the assumed infrequent trade between the two countries.

Foreign Exchange Operations

Arbitrage

- This refers to the purchase of a currency in the monetary center where it is cheaper, for immediate resale in the monetary center where it is more expensive, in order to make a profit.
- What would you do?
  - New York: $0.99 = €1
  - Frankfurt: $1.01 = €1

Buy € in NY, sell it in Frankfurt and make a profit.

Arbitrage

- New York: $0.99 = €1
- Frankfurt: $1.01 = €1

- What happen then if you buy € in NY, sell it in Frankfurt?
  - The arbitrage increases the demand for EUR in New York, and will have an upward pressure on the dollar price of EUR in New York.
  - At the same time, the sale of EUR in Frankfurt increases the supply of EUR there, thus it will have a downward pressure on the dollar price of EUR in Frankfurt.
- This continues until the dollar price of the euro becomes equal in New York and Frankfurt (say at $1 = € 1), thus eliminating the profitability of further arbitrage.

Arbitrage

- What is two-point arbitrage and three-point arbitrage?
  - The first one involves 2 currencies and 2 monetary centers.
  - The second one involves 3 currencies and 3 monetary centers.
- What if
  - **New York:** **$0.96 = €1**
  - **Frankfurt:** **€1 = £ 0.64**
  - **London:** **£0.64 = $1**
- Buy € in NY, exchange it for £ in Frankfurt and then exchange £ for $ in London, thus making a $0.04 profit on each euro.

Arbitrage

- What if
  - New York: $1.04 = €1
  - Frankfurt: €1 = £ 0.64
  - London: £ 0.64 = $1
- Buy £ in London, exchange it for € in Frankfurt and then exchange € for $ in NY, thus making a profit of $0.04 on each euro so transferred.

Currency Swaps

Currency Swaps

- What does Citibank do to lower brokerage fees?
  - Citibank would incur lower brokerage fees by swapping the $1 million into EUR with Frankfurt's Deutsche Bank as part of a single transaction than selling dollars for EUR in the spot market today and at the same time repurchasing dollars for EUR in the forward market for delivery in three months - in two separate transactions.
- The swap rate is the difference between the spot and forward rates.

Foreign Exchange Futures

- A foreign exchange futures is a forward contract for standardized currency amounts and selected calendar dates traded on an organized market (exchange).
  - Currencies traded on the International Monetary Market (IMM): JPY, CAD, GBP, CHF, AUD, MXP, EUR
  - IMM trading is done in contracts of standard size: ¥12.5 million; £62,500; €125,000
  - Only four dates per year are available: the third Wednesday in March, June, September, and December.

Foreign Exchange Futures

- The IMM imposes a daily limit on ER fluctuations. Buyers and sellers pay a brokerage commission and are required to post a security deposit or margin (of about 4% of the value of the contract).
- Futures contracts are usually for smaller amounts than forward contracts and thus are more useful to small firms than to large ones but are somewhat more expensive.
- Futures contracts can also be sold at any time up until maturity on an organized futures market

Foreign Exchange Options

- A foreign exchange option is a contract giving the purchaser the right, but not the obligation, to buy (a call option) or to sell (a put option) a standard amount of a traded currency on a stated date (the European option) or at any time before a stated date (the American option) and at a stated price (the strike or exercise price).

Foreign Exchange Options

- Foreign exchange options are in standard sizes equal to those of futures IMM contracts.
- The buyer of the option has the choice to purchase or forego the purchase if it turns out to be unprofitable.
- The seller of the option, however, must fulfill the contract if the buyer so desires.
- The buyer pays the seller a premium (the option price) ranging from 1 to 5 percent of the contract's value for this privilege when he or she enters the contract.

Foreign Exchange Risks

- Through time, a nation's demand and supply curves for foreign exchange shift, causing the spot and forward rate to vary frequently.
- Change in tastes, relative rates of interest, expectations; Different growth and inflation rates in different nations;….

Foreign exchange risk

- Risks of exchange rate movements
  - Contracted future foreign currency payments may become more expensive if the domestic currency falls in value.
  - Example
    - A contract requires a €100,000 payment in three months time.
    - If the exchange rate is currently $1/€1, the expected dollar cost is $100,000.
    - If the exchange rate changes to $1.10/ €1 in the intervening months, the dollar cost rises to $110,000.

Foreign exchange risk

- Risks of exchange rate movements
  - Contracted future foreign currency receipts may fall in value if the domestic currency increases in value.
  - Example
    - A producer expects to receive a payment of €100,000 in three months time.
    - If the exchange rate is currently $1/€1, the expected dollar receipt is $100,000.
    - If the exchange rate changes to $0.90/ €1 in the intervening months, the dollar receipt falls to $90,000.

Hedging

- Hedging refers to the avoidance of a foreign exchange risk, or the covering of an open position.
- How does the importer do to avoid FX risks if he have to pay €100,000 in three months?
  - He could borrow €l00,000 at SR= $1/€l and leave this sum in a bank (to earn interest) for 3 months ➔ the importer avoids the risk that the spot rate in 3 months will be higher than today's spot rate and that he would have to pay more than $100,000 for imports.

- What is the cost here?
  - The cost is the difference between the interest rate the importer has to pay on the loan of €l00,000 and the lower interest rate he or she earns on the deposit of €l00,000.

Hedging

- How does the exporter do to avoid FX risks if he expects to receive a payment of €100,000 in three months time?
  - He could borrow €l00,000 today, exchange this sum for $100,000 at SR = $1/€l, and deposit the $100,000 in a bank to earn interest. After 3 months, the exporter would repay the loan of €l00,000 with the payment of €l00,000 he receives.
- What is the cost here?
  - The cost is the difference between the borrowing and deposit rates of interest.

Hedging

- Hedging in the spot market has a serious disadvantage. What?
  - The importer must borrow or tie up his own funds for 3 months
    ➔ To avoid this, he can use hedging in the forward market. How?
- The importer could buy EUR forward for delivery in 3 months at today's 3-month forward rate. If the euro is at a 3-month forward premium of 4% per year, the importer will have to pay $101,000 in 3 months for the €l00,000. Therefore, the hedging cost will be $1,000.

Hedging

- Similarly, the exporter could sell EUR forward for delivery in 3 months at today's 3-month forward rate, in anticipation of receiving the payment of €l00,000 for the exports.
  - **Since no transfer of funds takes place until three months later, the exporter need not borrow or tie up his or her own funds now.**
- If the euro is at a three-month forward discount of 4% per year, the exporter will get only $99,000 for the €l00,000 he delivers in 3 months.
- On the other hand, if the euro is at a 4% forward premium, the exporter will receive $101,000 in 3 months with certainty by hedging.

Hedging

- A FX risk can also be hedged in the option markets. How?
  - The importer could:
    - purchase an option to purchase €100,000 in 3 months, say at $1/€l, and pay now the premium of 1% ($1,000 on the $100,000 option).
  - If in 3 months the spot rate is SR = $0.98/€l, what the importer do?
    - let the option expire unexercised and get the €l00,000 at the cost of only $98,000 on the spot market. In that case, the $1,000 premium can be regarded as an insurance policy and the importer will save $2,000 over the forward contract (if the importer purchase a €100,000 forward)

Hedging - Options for the importer

- Buy at the current spot rate and deposit the receipts in an interest earning account until the funds are needed.
  - Keeps funds tied into a foreign currency until needed.
- Buy a forward contract
  - Typically this will entail paying a forward premium which increases the cost of the transaction.
- Buy a call option
  - If not exercised, the premium is lost.

Speculation

- Speculation is the opposite of hedging.
  - Whereas a hedger seeks to cover a foreign exchange risk, a speculator accepts and even seeks out a foreign exchange risk, or an open position, in the hope of making a profit.
  - If the speculator correctly anticipates future changes in spot rates, he makes a profit; otherwise, he incurs a loss.

- As in the case of hedging, speculation can take place in the spot, forward, futures, or options markets - usually in the forward market.

Speculation - Spot Market

- If a speculator believes that the spot rate of a particular foreign currency will rise, what can he do?
- He can purchase the currency now and hold it on deposit in a bank for resale later.
  - If he is correct, he earns a profit on each unit of the foreign currency equal to the spread between the previous lower spot rate at which he purchased the foreign currency and the higher subsequent spot rate at which he resells it.
  - If he is wrong, he incurs a loss because he must resell the foreign currency at a price lower than the purchase price.

Speculation - Spot Market

- If, on the other hand, the speculator believes that the spot rate will fall, what can he do?
- He borrows the foreign currency for 3 months, exchanges it for the domestic currency at the prevailing spot rate, and deposits the domestic currency in a bank to earn interest.
  - After 3 months, if the spot rate is lower, he earns a profit by purchasing the currency (to repay the foreign exchange loan) at the lower spot rate.
  - If the spot rate in three months is higher rather than lower, he incurs a loss.

Speculation - Forward Market

- If the speculator believes that the spot rate of a certain foreign currency will be higher in 3 months than its present 3-month forward rate, what will he do?
- He purchases a specified amount of the foreign currency forward for delivery (and payment) in 3 months.
  - After 3 months, if he is correct, he receives delivery of the foreign currency at the lower agreed forward rate and immediately resells it at the higher spot rate, thus realizing a profit.
  - Of course, if he is wrong, he incurs a loss.
- In any event, no currency changes hands until the 3 months are over (except for the normal 10 percent security margin that the speculator is required to pay at the time he or she signs the forward contract).

Speculation - Options Market

- Alternatively, the speculator could purchase an option to sell a specific amount of EUR in 3 months at the rate of $1.01/€l.
  - If he is correct and the spot rate of the euro in 3 months is indeed $0.99/€l, he will exercise the option, by buying EUR in the spot market at $0.99/€1, and receive $1.01/€1. Then, he earns 2 cents per euro.
- In this case, the result is the same as with the forward contract, except that the option price may exceed the commission on the forward contract so that his net profit with the option may be a little less.

Speculation - Options Market

- On the other hand, if he is wrong and the spot rate of the euro is much higher, he will let the option contract expire unexercised and incur only the cost of the premium or option price.

Speculation

- Stabilizing speculation
  - Speculation that acts to moderate fluctuations in currency values.
- Destabilizing speculation
  - Speculation that serves to amplify fluctuations in exchange rate values.

Thank You!