Forward, Futures, and Options Agreements

A Single Solution

- In the past two decades, financial prices have become more volatile
  - this had led to greater risks
- Risk-averse FIs and corporations use financial forward, futures, and options contracts to reduce the risks associated with these price fluctuations

Forward Transactions

- Financial forward transactions can be used to hedge the risks associated with price changes associated with any financial instrument
  - primarily used to deal with the risks created by the fluctuations in foreign exchange markets

Forward Transactions

- The exchange rates is the price of one currency in terms of another
- Exchange rate risk is the risk that changes in the exchange rate will cause someone to experience unexpected losses
  – the more unpredictable and unstable exchange rates are, the greater the exchange rate risk

Forward Transactions

- Spot rates are determined by supply and demand
  - the spot rate is the exchange rate of foreign currency for immediate delivery
- In financial forward agreements, the terms are set today for a transaction that will take place on a specified date in the future
  - the exchange rate in these agreements is known as the forward rate

Forward Transactions

- The forward rate for a foreign currency will gravitate toward the expected future spot rate for that currency
  - affected by the same factors that affect spot rates
    - the supply and demand for foreign exchange
    - expected inflation and interest rate differentials
    - economic outlook
    - domestic and foreign monetary and fiscal policies

Forward Transactions

- A typical foreign exchange rate forward agreement works in the following way
  - a bank has a customer that will receive 1 million euros in 6 months and another customer who will need 1 million euros in 6 months
    - both customers are worried that changes in the exchange rate could reduce their profits
  - the bank can buy a forward contract from the first customer and sell a forward contract to the other

Forward Transactions

- The bank will buy the forward contract at a slightly lower rate than it will sell the forward contract
  - this is the bank's profit margin on the transaction

Forward Transactions

- Why will the customers agree?
  - the customer expecting to receive the 1 million euros may be concerned that the exchange rate will fall
  - the customer needing the 1 million in 6 months may be concerned that the exchange rate will rise dramatically

Forward Transactions

- If the spot exchange rates 6 months from now are equal to the current forward rates, the customers both buying and selling forward agreements would be no better or worse off
  - if the actual spot rates happen to be different from the current forward rates, one customer would be better off and one would be worse off

The Mechanics of Spot and Forward Markets

	Current Spot Rates	Forward Rates Six Months Previous
Bid	1 euro = \$1.099	1 euro = \$1.109
Asked	1 euro = \$1.100	1 euro = \$1.110

No forward agreement (exchanges at current spot rates):
Customer A receives 1,000,000 euros and exchanges them for \$1,099,000
Customer B needs 1,000,000 euros and pays \$1,100,000 for them

With forward agreement entered into six months earlier:
Customer A receives 1,000,000 euros and exchanges them for \$1,109,000
Customer B needs 1,000,000 euros and exchanges \$1,110,000 for them

Reconciling
With no forward agreement, Customer A receives \$10,000 less (\$1,099,000 versus \$1,109,000), and Customer B pays \$10,000 less (\$1,100,000 versus \$1,110,000). Customer A is worse off and Customer B is better off.

With the forward agreement, Customer A receives \$10,000 more (\$1,109,000 versus \$1,099,000), and Customer B pays \$10,000 more (\$1,110,000 versus \$1,100,000). Customer A is better off and Customer B is worse off.

Forward Transactions

- Since it is not known what the future spot rate will be, both customers can reduce the uncertainty of the future exchange rate by engaging in a forward agreement
  - for reducing the probability of a loss, they are giving up the opportunity to gain
    - since the forward rate will converge to the market's expectation of the future spot rate, participants only give up the opportunity to gain if there are unexpected changes in the future spot rate

Forward Transactions

- Any market participant that holds foreign currency is exposed to exchange rate risk
  - this includes both financial and nonfinancial firms that operate in many different countries
- Since the forward agreements arranged between banks and customers are often not perfectly offsetting, the bank can also be exposed to exchange rate risk

Forward Transactions

- Forward agreements can also be used to speculate about future exchange rates
  - if the speculator believes that the future spot rate in 6 months will be lower than the current 6-month forward rate, he will enter into an agreement to sell at the forward rate
    - if he is correct, he could enter the spot market in 6 months and purchase the foreign exchange at a price lower than he sold it for in the forward market
  - the opposite is true as well

Limitations of Forward Agreements

- Finding partners may be difficult
  - transactions costs may be high and outweigh the possible gain
- One party to the agreement may default
  - getting compliance may require legal action and may be costly

Financial Futures

- Financial futures markets trade futures in financial instruments
- Financial futures are contracts in which two parties agree to trade standardized quantities of financial instruments on standardized future dates according to the terms determined today
  - used to reduce the risk associated with future price changes of financial instruments

Financial Futures

- Futures contracts differ from forward agreements in that the amounts and the delivery dates are standardized
  - forward agreements for specific amounts and dates are negotiated with the financial intermediary involved
  - futures contracts with standardized amounts and dates are traded on the floors of organized exchanges for a small fee

Financial Futures

- Financial futures markets trade a wide variety of financial instruments
  - government securities
  - stock market indexes
  - Eurodollars
  - numerous foreign currencies
- The contracts are traded on major exchanges around the world

Financial Futures

- A futures contract trades a fixed amount of a financial instrument for delivery on a specific date in the future
  - Treasury bond futures trade in contracts of $100,000 face value for delivery in March, June, September, and December
    - there are 4 prices today for delivery of $100,000 of Treasury bonds on the 4 future dates

Financial Futures

- A futures contract can be bought or sold on any given day between now and the future delivery date
  - the predicament for buyers and sellers is that the spot price on the delivery date may be different from the futures price agreed upon today

Financial Futures

- The buyer rarely takes physical possession of the securities on the delivery date and the seller rarely delivers
- If the price changes, the buyer or the seller merely settle up financially for any changes in value

Financial Futures

- Futures markets can also be used for speculation
  - if an investor believes that the spot price of a security is going to be higher in 6 months than today's futures price, he will buy a futures contract
    - if he is correct, he can resell the futures contract at the higher spot price on the delivery date
  - the opposite holds true as well

Financial Futures

- Because financial futures are written for standardized amounts for delivery on a few specific dates, perfect offsetting transactions between buyers and sellers are rarely made
  - risk can still be reduced by finding a close match
  - since a perfect match does not have to be found, high transactions costs are avoided

Financial Futures

- The futures price is set by bidding and offering in an auction-like setting
  - each financial instrument that is traded usually has its own pit where authorized brokers gather to buy and sell for their customers
  - bid and asked prices are called out until the brokers become aware of the prices in the market
  - the most favorable transactions are consummated

Financial Futures

- Once an agreement is struck, a clearinghouse takes on the responsibility of enforcing the contract
  - the seller looks to the clearinghouse to deliver
  - the buyer looks to the clearinghouse to pay the amount due on the delivery date
  - this reduces the default risk because the clearinghouse guarantees that the terms of the agreement will be met