Ch 2 Mechanics of Futures Markets

- vast majority of futures contracts do not lead to delivery
  – traders close out positions prior to delivery period specified in the contract
- possibility of final delivery ties the futures price to the spot price

Specification of a Futures Contract

- exchange must specify the following in the contract
  – asset
  – contract size
  – where and when delivery can be made

- when party with short position is ready to deliver it files a *notice of intention to deliver*
  – indicates grade of asset delivered and delivery location

The Asset

- when the asset is a commodity, there may be variation in the quality
  – exchange must stipulate the grade(s) that are acceptable
  – price may depend on the grade, with adjustments established by the exchange

The Contract Size

- contract size specifies the amount of the asset that has to be delivered under one contract
  – if too large: investors wishing to hedge small exposures or take small speculative positions cannot do so
  – if too small: trading may be expensive due to transaction costs
- exchanges have introduced “mini” contracts to attract smaller investors

Delivery Arrangements

- exchange must specify where delivery will be made
  – price received by party with short position may be adjusted according to location chosen by that party, when alternative delivery locations are specified
  – price tends to be higher for delivery locations far from the main source of the commodity

Delivery Months

- exchange must specify precise period during the month when delivery can be made
  – for many futures contracts the delivery period is the whole month
- contracts trade for closest delivery month and a number of subsequent delivery months

– exchange specifies when trading for a particular month's contract begins and ends
– trading usually ends a few days before the last day on which delivery can be made

Price Quotes

- exchange defines how prices will be quoted
  – example: dollars and cents, or dollars and thirty-seconds of a dollar

Price Limits and Position Limits

- exchange specifies daily price movement limits

limit down - price moves down from previous day's close by amount equal to daily price limit
limit up - price moves up from previous day's close by amount equal to daily price limit
limit move - move in either direction equal to daily price limit

- trading ceases for the day once contract is limit up or limit down
  – in some cases, the exchange can step in and change the limits

- purpose of daily price limits is to prevent large price movements due to speculative excesses
  – however, limits can become an artificial barrier to trading when price of underlying is changing rapidly

- position limits are max number of contracts that a speculator may hold
  – purpose is to prevent speculators from exercising undue influence on the market

Converge of Futures Price to Spot Price

- as delivery period approaches, futures price converges to spot price of underlying
  – when delivery period is reached, futures price equals spot price (roughly)
  – if not, arbitrage opportunities exist, causing prices to converge

Operation of Margin Accounts

- a key role of the exchange is to organize trading to avoid contract defaults

Daily Settlement

initial margin - amount that must be deposited at the time the contract is entered into

- at EOD the margin account is adjusted to reflect investor's gain/loss
  – known as *daily settlement* or *marking to market*

- investor can withdraw any balance in margin account excess of initial margin

maintenance margin - ensures balance in margin account never becomes negative

- lower than initial margin
- if balance in margin account falls below maintenance margin, investor receives a **margin call**
  – investor must fund margin account to the initial margin level by end of next day
  – extra funds known as *variation margin*
  – if investor fails to do so, broker closes out the position

Further Details

- most brokers pay investors interest on the balance in a margin account

- investor can deposit securities with the broker to satisfy initial margin requirements
  – but not for margin calls

- minimum margin levels set by exchange clearing house
  – individual brokers may require greater margins from clients than those set by clearing house
  – minimum margin levels determined by variability of price of underlying
  – higher variability leads to higher margin levels
  – maintenance margin is usually ~75% of initial margin

- margin requirements may depend on trader objectives
  – hedger may have lower margin requirements than a speculator due to less risk of default

day trade - trader announces to broker an intent to close out position in the same day
spread transaction - trader simultaneously buys a contract on an asset for one maturity month and sells a contact on the same asset for another maturity month

- day trades and spread transactions give rise to lower margin requirements than do hedge transactions

- short futures positions have same margin requirements as long futures positions
  – not true of spot markets, where taking a short position involves selling an asset that is not owned

The Clearing House and its Members

clearing house - acts as intermediary in futures transactions

- purpose is to keep track of all transactions that take place during a day to calculate net position of each of its members

- initial margin determination is based on number of contracts outstanding on a net basis
  – short positions are offset against long positions

- clearing house members required to contribute to a *guaranty fund*
  – used by clearing house in the event a member fails to provide variation margin and there are losses when the member's positions are closed out

Credit Risk

- in Oct 1987 the S&P 500 index declined sharply and traders with long positions in S&P 500 futures had negative margin balances
  – those who did not meet margin calls were closed out but owed brokers money
  – some did not pay so brokers went bankrupt
  – however, clearing houses had sufficient funds to ensure everyone who had a short futures position got paid

OTC Markets

- credit risk is a key feature of OTC derivatives markets

Central Counterparties

- there are clearing houses for OTC transactions much like exchange clearing houses
  – members required to provide initial margin, daily variation margin, and contribute to guaranty fund
- clearing house takes on credit risk of both parties
- if OTC market participant is not a member of a CCP, it can arrange to clear its trade via a CCP member

Bilateral Clearing

- OTC transactions not cleared via CCP are cleared bilaterally
  – two parties enter into a master agreement covering all their trades
  – often includes annex requiring one or both parties to provide collateral

Futures Trades vs OTC Trades

- initial margin when provided as cash usually earns interest
  – daily variation margin does not earn interest
- transactions in OTC market are not settled daily so daily variation margin provided by members does earn interest when provided as cash
- securities can be used to satisfy margin or collateral requirements
  – market value of securities is reduced to determine their value for margin purposes
  – reduction is known as **haircut**

Market Quotes

settlement price - price used for calculating daily gains/losses and margin requirements

- usually the price at which the contract traded immediately before the end of a day's trading session

trading volume - number of contracts traded in a day
open interest - number of contracts outstanding

normal market - futures prices increase with maturity
inverted market - futures prices decline with maturity

Delivery

- very few futures contracts lead to delivery of the underlying
- period during which delivery can be made is defined by the exchange
- decision on when to deliver is made by the party with the short position
  – notice of intention to deliver states how many contracts will be delivered and where delivery will be made and what grade will be delivered
- exchange chooses a party with a long position to accept delivery
  – usually the party with the oldest outstanding long position
- parties with long positions must accept delivery notices
  – may find another party with an outstanding long position to transfer the notice to
- party taking delivery is responsible for all warehousing costs

Three critical days for a contract

1. *first notice day* - first day on which a notice of intention to deliver can be submitted to the exchange
2. *last notice day* - last day on which a notice of intention to deliver can be submitted to the exchange
3. *last trading day* - usually a few days before the last notice day

- investor should close long positions prior to first notice day to avoid risk of having to take delivery

Cash Settlement

- some futures are settled in cash because it is inconvenient/impossible to deliver the underlying asset
- outstanding contracts are declared closed on a predetermined day
  – final settlement price equals spot price of the underlying asset at either open or close of trading on that day

Types of Traders and Types of Orders

Two main types of traders

1. *futures commission merchants* (FCMs)

– following instructions of their clients and charge a commission for doing so

2. *locals*
   – trading on their own account

scalpers - speculators watching for short-term trends and attempting to profit from small changes in the contract price; hold positions for only a few minutes

day traders - hold positions for less than one trading day

position traders - hold positions for much longer periods of time

Orders

market order - request trade be carried out immediately at best price available in the market

limit order - specifies a particular price

- order can be executed only at this price or at one more favorable to the investor
- no guarantee that order is executed at all

stop order (stop-loss order) - specifies a particular price

- order is executed at best available price one a bid or offer is made at the particular price or a less favorable price
- a stop order becomes a market order once the specified price has been reached
- purpose is to close out a position if unfavorable price movements take place
  – limits the loss that can be incurred

stop-limit order - combination of a stop order and a limit order

- becomes a limit order as soon as a bid or offer is made at a price equal to or less favorable than the stop price
- must specify both the stop price and the limit price

market-if-touched (MIT) order - executed at best available price after a trade occurs at a specified price or at a more favorable price than the specified price

- becomes a market order once the specified price has been reached
- also known as a *board order*
- designed to ensure profits are taken if sufficiently favorable price movements occur

discretionary order (market-not-held order) - traded as a market order except that execution may be delayed at the broker's discretion in an attempt to get a better price

time-of-day order - specifies a particular period of time during the day when the order can be executed

open order (good-til-canceled order) - in effect until executed or until end of trading in the particular contract

fill-or-kill order - must be executed immediately or not at all

Regulation

Futures markets in the US are regulated by Commodity Futures Trading Commission (CFTC)

- responsible for ensuring prices are communicated to the public
- futures traders must report outstanding positions if above certain levels
- licenses individuals who offer services to the public in futures trading
- deals with complaints brought by public and ensures disciplinary action is taken when appropriate
- has authority to force exchanges to take disciplinary action against members

National Futures Association (NFA) - organization of individuals who participate in the futures industry

- objective is to prevent fraud and to ensure market operates in best interests of the public
- authorized to monitor trading and take disciplinary action when appropriate
- has efficient system for arbitrating disputes between individuals and its members

Dodd-Frank act expanded role of CFTC

- now responsible for rules requiring that standard OTC derivates be traded on swap execution facilities and cleared through central counterparties

Trading Irregularities

- futures markets usually operate efficiently and in public interest

- one type of irregularity is when investors *corner the market*
  – investors take a huge long futures position and try to exercise control over supply of underlying commodity
  – as maturity approaches, investors do not close out positions, so number of outstanding futures contracts may exceed the amount of the commodity available for delivery
  – holders of short positions have difficulty delivering and try to close their positions
  – results in large rise in both futures and spot prices
  – regulators deal with this by increasing margin requirements or imposing stricter position limits or prohibiting trades that increase a speculator's open position or requiring market participants to close out their positions

- other irregularities
  – overcharging customers
  – not paying customers the full proceeds of sales
  – traders using knowledge of customer orders to first trade for themselves (**front running**)

Accounting and Tax

Accounting

- if contract does not qualify has a hedge
  – changes in market value of futures contract are recognized when they occur
- if contract does qualify as a hedge
  – gains/losses are recognized in the same period in which gains/losses from item being hedged are recognized (*hedge accounting*)

Tax

- gains/losses are either capital gains/losses or part of ordinary income
- for corporate taxpayers, capital gains are taxed at the same rate as ordinary income
  – ability to deduct losses is restricted
- positions in futures contracts treated as if closed out on last day of tax year
- gains/losses from hedging transactions are treated as ordinary income

Forward vs Futures Contracts

- both are agreements to buy or sell an asset for a certain price at a certain future time
  – forwards are traded in OTC markets with no standard contract size or standard delivery arrangements
  – futures have standardized contracts traded on an exchange

Profits from Forward and Futures Contracts

- with forwards, the whole gain or loss is realized at the end of life of the contract
- with futures, the gain or loss is realized day by day because of daily settlement procedures

Comparison

Forward	Futures
Private contract between two parties	Exchange-traded
Not standardized	Standardized contract
Usually one specified delivery date	Range of delivery dates
Settled at end of contract	Settled daily
Delivery usually takes place	Usually closed prior to maturity
Some credit risk	Virtually no credit risk