Futures Market Mechanics

Finance 6470 - Derivatives Markets

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Overview of Topics Discussed

- Clearing houses (FCMs, brokers, etc)
- Margin accounting and marking-to-market
  - Initial (original)
  - Maintenance (variation
- Cointegration

Clearinghouse

- Tasked with balancing all futures transactions/money flows
- Read Williams paper on *Origins of Futures Markets*
- Modern futures exchange a prime example of spontaneou order
- **CH:** separate corp. or dept. associated with each exchange

Clearninghouse Roles

- CH Roles:
  - Matches and reconciles all futures transactions
  - Assures financial integrity of transactions
  - Provides mechanism for delivery

- CH becomes obligor to every futures contract (reduces/manages counterparty risk)

- CH becomes party to and guarantees delivery

- Only members of exchanges can be clearing members (CM)

Clearninghouses Continued

- CMs deposit large sum of money into a guarantee fund
  - usually must purchase shares of the corp.
  - the guarantee fund is a reserve in case of trader default/bankruptcy
- Exchange members who are not CMs must clear trades through a CM and pay a fee for service
- CMs are large/financially sound companies
- Maintains market stability and promotes a secure public image

Futures Trading Mechanics

- Pit trading vs LOB
- Traders matched through the brokers in pit, or through the LOB
- CH then becomes the counterparty to each futures contract
  - CH is long to the shorts
  - CH is short to the longs
  - CH has no net position (aside from clerical errors)
    - has a so-called *flat book*
- This allows traders to originate and close out positions w/o search for counterparty
- CH transforms forward markets to be impersonal and easy to negotiate
- Traders can hold their positions for long durations while the otherside may turnover very often

Margin Accounting

- CH also performs a banking function
- Every trader must have an account w/ an FCM (possibly through an IB)
- For every trade, traders must deposit money called initial (original) margin
  - Serves as a performance bond
  - Both long and short must post margin
  - Usually around 10% of position (depends on trader, and volatility of the asset)
  - Brokers can require additional margin beyond exchange margin levels if necessary
- After initial margin, traders must often post additional deposits to keep a minimum margin level (usually 75% or 80% of initial margin)
  - Varies by contract (volatility)

Margin Accounting Continued

- Initial (original) and maintenance (variation) margin applies to members of the clearing corp., who in turn apply it to FCMs, and FCMs duplicate this for their customers (IBs, traders)
  - FCMs only need to post on their net positions
  - FCMs can deposit excess margin in interest bearing securities (a non-trivial source of income)

- Margin accounting has the following functions:
  - guarantee performance on futures contracts
  - allows source of funds for daily settlement
  - provides the financial integrity of the system

Marking-to-Market

- **Settlement price:** final price at the closing bell each day
  - Each delivery month of each contract has a daily settlement price
  - If a trader's position lost money for that day's trading session (depreciated in value) the CH debits the trader's account that day
  - If the trader's position appreciates the CH credits the trader's account that day
  - Also called *collects* and *pays*
  - This process is called *marking-to-market*

The Economic Role of Marking-to-Market

- **Q:** What economic (risk management) role does it play?

Example: Two Traders in Corn Futures

- Long/Short 5000 bushel contract at \$2.75 per bushel
- Initial margin: \$2000

Flow of Money Between Accounts

Table 2-3. The Flow of Money between Traders' Accounts

		Trader A (long)		Trader B (short)	
Day	Settlement price per bushel	Cumulative profits	Equity in account	Cumulative profits	Equity in account
1	$2.75	$ 0	$2,000	$ 0	$2,000
2	2.77	+100	2,100	−100	1,900
3	2.78	+150	2,150	−150	1,850
4	2.71	−200	1,800	+200	2,200

Margin Call

- When trader's equity in margin account falls below maintenance level, she receives a margin call from her broker/FCM

A Margin Call and Capital Withdrawal

- 5000 bushel corn contract (long) at \$2.75 per bushel
- Maintenance margin level is $\$1,750$
- See the actual contract specs: CME Corn Contract Specifications

A Margin Call and Capital Withdrawal Continued

Table 2-4. A Margin Call and Capital Withdrawal

	Settlement price per bushel	Cumulative profits	Capital	Equity in account
		Example 1		
Day 1	$2.75	$ 0	$2,000	$2,000
Day 2	2.76	+ 50	2,000	2,050
Day 3	2.73	−100	2,000	1,900
Day 4	2.68	−350	2,000	1,650
Margin call of $350		−350	2,350	2,000
		Example 2		
Day 1	2.75	0	2,000	2,000
Day 2	2.85	+500	2,000	2,500
Capital withdrawal of $500		+500	1,500	2,000