

Mechanics of Futures Markets

Chapter 2

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Outline

- Futures contract specifications
- Trades & margin requirement for futures
- Quotes
- Futures price & underlying asset price
- Forward contracts

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Futures contract

- Available on a wide range of underlyings
- Exchange traded
- Specifications need to be defined:
 - What can be delivered,
 - Where it can be delivered, &
 - When it can be delivered
- Settled daily

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What can be delivered (p. 22)

- Orange juice example: U.S. grade A, with Brix value of not less than 57 degrees, having a Brix value to acid ratio of not less than 13 to 1 nor more than 19 to 1, with factors of color and flavor each scoring 37 points or higher and 19 for defects, with a minimum score of 94.


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Delivery

- If a futures contract is not closed out before maturity, it is usually settled by delivering the assets underlying the contract. When there are alternatives about what is delivered, where it is delivered, and when it is delivered. The party with the short position chooses.
- First notice day and last notice day
- A few contracts (for example, those on stock indices and Eurodollars) are settled in cash

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Closing out a futures contract

- Most futures contracts are closed out and not delivered. Closing out a futures position involves entering into an offsetting trade
- Example: In June investor A longs 1 S&P futures and investor B shorts 1 S&P futures. In December investor A shorts 1 S&P futures and investor B longs 1 S&P futures. Zero contracts outstanding.

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Closing out a futures contract

- Example: In June investor A longs 1 S&P futures and investor B shorts 1 S&P futures. In December investor A shorts 1 S&P futures and investor D longs 1 S&P futures. One contract outstanding, but investor's A positions is closed out.

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Margins

- A margin is cash or marketable securities deposited by an investor with his or her broker
- The balance in the margin account is adjusted to reflect daily settlement
- Margins minimize the possibility of a loss through a default on a contract
- The initial margin the \$ amount an investor is required to deposit with the broker when he/she first enters into a futures position
- The maintenance margin is the \$ level that the investor must maintain in the margin account during the life of the futures
- Margin accounts are paid interest

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Example of a Futures Trade

- An investor takes a long position in 2 December gold futures contracts on June 5
 - contract size is 100 oz.
 - futures price is US\$400 per oz
 - Initial margin requirement is US\$2,000/contract (US\$4,000 in total)
 - maintenance margin is US\$1,500/contract (US\$3,000 in total)

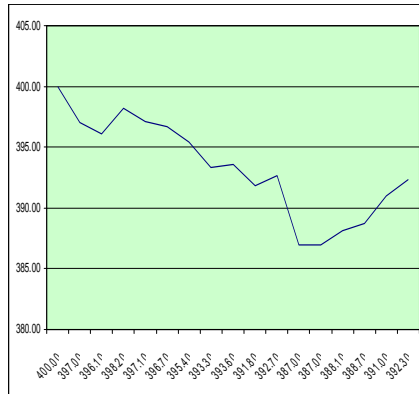
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Margin account

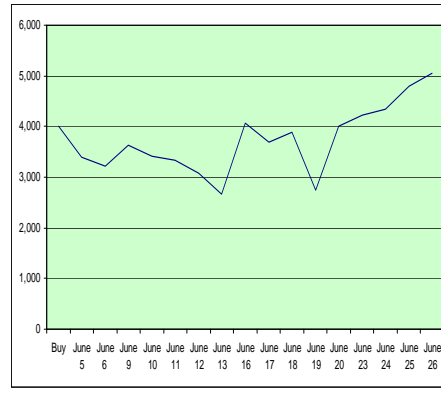
Day	Futures Price (US\$)	Daily Gain (Loss) (US\$)	Cumulative Gain (Loss) (US\$)	Account Balance (US\$)	Margin Call (US\$)
	400.00			4,000	
5-Jun	397.00	(600)	(600)	3,400	0
⋮	⋮	⋮	⋮	⋮	⋮
13-Jun	393.30	(420)	(1,340)	2,660	+ 1,340 = 4,000
⋮	⋮	⋮	⋮	⋮	< 3,000
19-Jun	387.00	(1,140)	(2,600)	2,740	+ 1,260 = 4,000
⋮	⋮	⋮	⋮	⋮	⋮
26-Jun	392.30	260	(1,540)	5,060	0

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Margin account



Gold price



Margin account

WSJ quotes

Grain and oil seed futures

	open	high	low	settle	CHG	life time high	life time low	open Int
Mar	273.25	274.75	269.25	270.25	-2.75	281.50	219.00	292,145

Est Vol 54,315



Some Terminology

- Settlement price: the price just before the final bell each day
 - used for the daily settlement process
- Life time high/low: highest and lowest price the future has traded during the life of the contract to date
- Volume of trading: the number of trades in 1 day

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Some Terminology

- Open interest: the total number of contracts outstanding
 - example

Time	Trading Activity	Open Interest
Jan 1	A buys 1 option and B sells 1 option contract	1
Jan 2	C buys 5 options and D sells 5 options contracts	6
Jan 3	A sells his 1 option and D buys 1 options contract	5
Jan 4	E buys 5 options from C who sells 5 options contracts	5

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Concept check



- Can the volume of trading in a day be greater than the open interest?

G) Yes

R) No

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Concept check



- What should be the price of a futures contract at maturity?

G) Equal to spot price (underlying asset price)

Y) Higher than spot price

R) Future price is determined independently of the underlying asset

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Concept check



- What happens if at maturity the futures price is higher than the spot price?

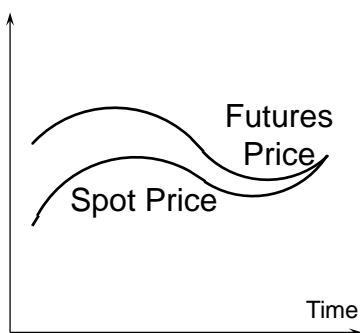
G) Arbitrage: short futures and buy spot

Y) Arbitrage: long futures and short spot

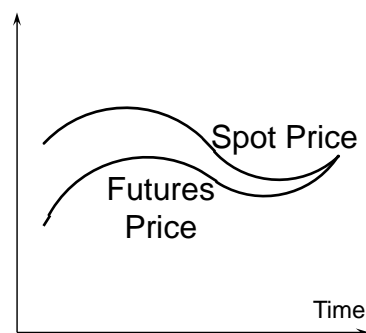
R) Do nothing. Prices are what they are

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Convergence of Futures to Spot



(a)



(b)

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Regulation of Futures

- Commodity Futures Trading Commission (CFTC)
- Regulation is designed to protect the public interest
- Regulators try to prevent questionable trading practices by either individuals on the floor of the exchange or outside groups

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Accounting & Tax

Sept 2004: company takes long position in one Mar corn futures contract @250 cents

End of 2004: futures price is 270 cents

Feb 2005: contract is closed out, price is 280 cents

Not a hedge:

Acc profit 2004 = $5000 \times 20c = 1000$

Acc profit 2005 = $5000 \times 10c = 500$

Hedge

Acc profit 2004 = 0

Acc profit 2005 = $5000 \times 30c = 1500$

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Accounting & Tax

- It is logical to recognize profits and losses from speculation on a mark to market basis
- It is logical to recognize hedging profits (losses) at the same time as the losses (profits) on the item being hedged
- Roughly speaking, this is what the accounting and tax treatment of futures in the U.S. and many other countries attempts to achieve

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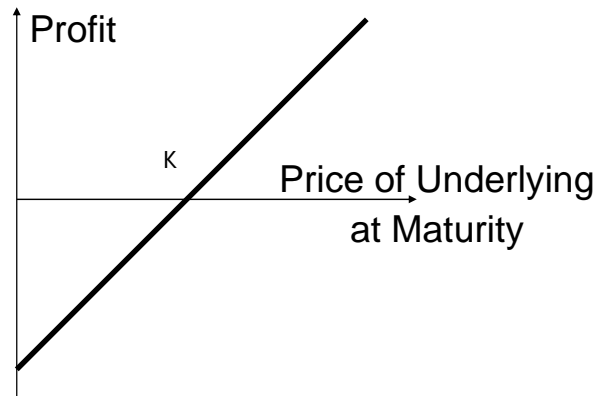


Forward Contracts

- A forward contract is an OTC agreement to buy or sell an asset at a certain time in the future for a certain price
- There is no daily settlement (unless a collateralization agreement requires it). At the end of the life of the contract one party buys the asset for the agreed price from the other party

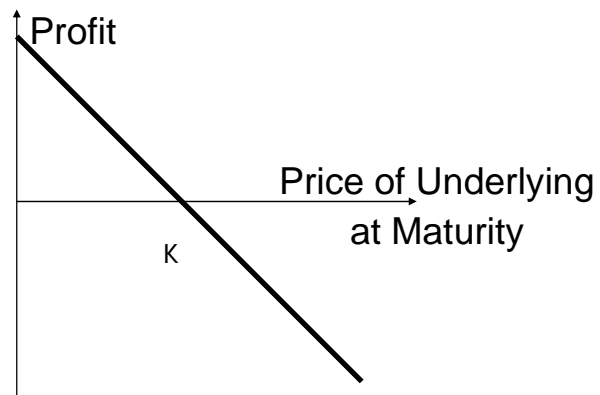
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Profit from a Long Forward or Futures Position



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Profit from a Short Forward or Futures Position



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Forward Contracts vs Futures Contracts

Usually 1 specified delivery date

FORWARDS	FUTURES
Private contract between 2 parties	Exchange traded
Not standardized	Standard contract
Settled at maturity	Settled daily or mark-to market
Delivery or final cash settlement usually occurs	Contract usually closed out prior to maturity
Some credit risk	Virtually no credit risk

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Collateralization in OTC Markets

- It is becoming increasingly common for contracts to be collateralized in OTC markets
- They are then similar to futures contracts in that they are settled regularly (e.g. every day or every week)

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Foreign Exchange Quotes

- Futures exchange rates are quoted as the number of USD per unit of the foreign currency
- Forward exchange rates are quoted in the same way as spot exchange rates. This means that GBP, EUR, AUD, and NZD are USD per unit of foreign currency. Other currencies (e.g., CAD and JPY) are quoted as units of the foreign currency per USD.

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Summary

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- Quotes
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