# Lecture 2. Mechanics of Futures Markets

Detailed description of how the Futures Markets work

# Futures Markets

Future contracts concern the buying and selling of commodities.

We consider corn future contracts as an example.

- March 5. Investor in New York contacts broker to buy 5000 bushels of corn for delivery in July.
- Order is passed to a trader on the floor of Chicago Board of Trade for a *long* position in one contract (one corn contract = 5000 bushels of corn).
- Simultaneously an investor in Kansas instructs a broker to sell 5000 bushels of corn for July delivery.
- An order is sent to a trader on the floor of CBOT for a *short* one contract.
- The two traders meet and agree on a price for the July corn and seal the deal.

# Futures Markets

Example:

- The New York investor agreed to a **long futures position**.
- The Kansas investor agreed to a **short futures position**.
- The price agreed to on the CBOT floor is the current **futures price** for July corn.
- The price is determined by supply and demand
  - More traders wishing to buy long positions, the higher the price will go.
  - The higher the price goes, the more sellers will be attracted into trades.

Almost all futures contracts do not lead to delivery. Most traders choose to **close out** positions before the delivery date.

# Closing out positions

Example, cont.

- Our New York investor bought a long July corn futures contract on March 5th.
- On April 23, the New York investor closes out the position via selling a short one July corn contract.
- The Kansas investor can close out the position by buying a long July corn contract on May 12.
- The New York investor's total gain or loss is determined by the change in the futures price between March 5th and April 23.

Positions that are not closed out will be delivered. Trading places.

# Specifications of Futures Contacts

When the party with the short position is ready to deliver,
it will file a notice of intention to deliver

- Asset Quality: example grade of Orange Juice, quality of lumber. This is specified by the exchange. Financial assets are usually independent of quality (say Euros); however, bonds can have grades associated to them.

- Contract Size: specifies the amount of the asset for one contract. Some single contracts may be extremely large - certain Treasury Notes may cost $100,000 or more.

- Delivery Arrangements: specifies the place of delivery of the underlying asset. Example: Chicago Mercantile Exchange's random-length lumber contract stipulates:

  > On track and shall either be unitized in double-door boxcars or, at no additional cost to the buyer, each unit shall be individually paper-wrapped and loaded on flatcars. Par delivery of hem-fir in California, Idao, Montana, Nevada, Oregon, and Washington, and in the province of British Columbia.

# Specifications of Futures Contacts, cont.

- Delivery Months: a futures contract is referred to by its delivery month. A precise period during the month is specified. Example, live cattle on CME offers delivery months of February, April, June, August, October, December. Trading generally ceases a few days before the delivery date.

- Price Quotes: the price is quoted in a convenient and simple format. Prices are usually quoted in dollars and parts of one dollar.

- Price Limits and Position Limits: most contracts limit daily price movements. If a price goes down, the contract is said to limit down, and a contract price moving up is limit up. Finally, a limit move is a move in either direction equal to the daily price limit.

- Price limits artificially hold down the motion of rapidly moving prices. However, they prevent speculators from exercising influence on the market.

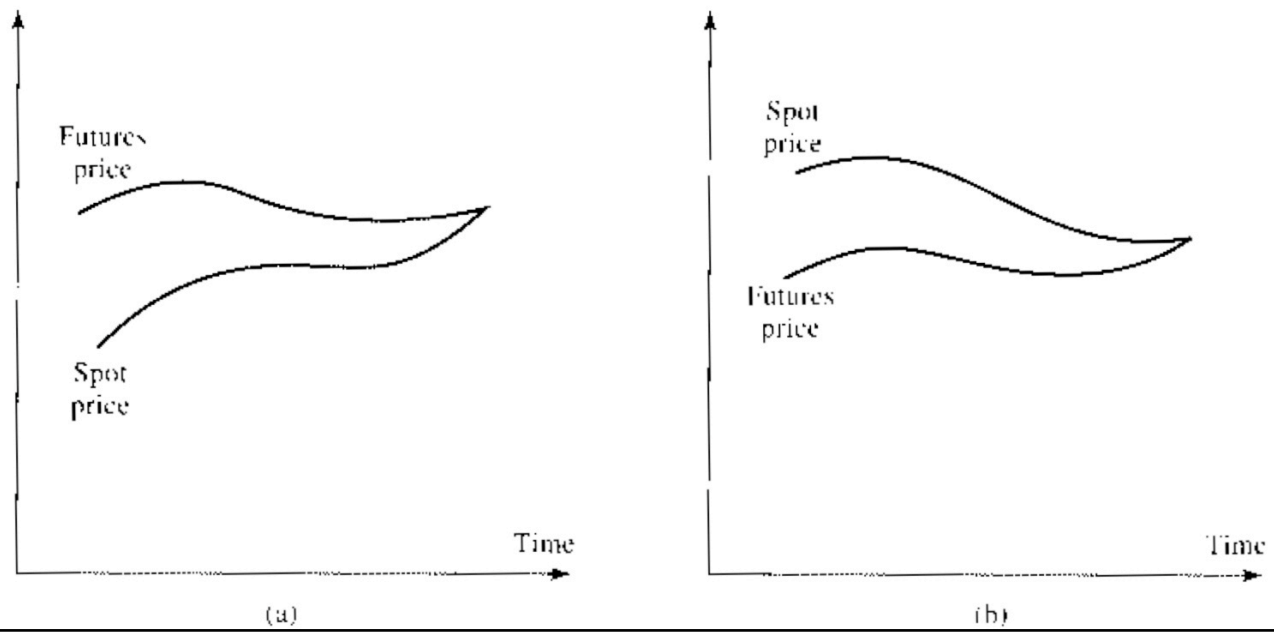
# Futures Price vs. Spot Price

As delivery period $\longrightarrow$ today, the futures price $\longrightarrow$ to the spot price.
Why? Otherwise an easy arbitrage opportunity.

How? Suppose futures price $>$ spot price during delivery period:

- Short a futures contract.
- Buy the asset.
- Make delivery.

**Figure 2.1** Relationship between futures price and spot price as the delivery period is approached: (a) Futures price above spot price; (b) futures price below spot price.



# Daily Settlement and Margins

Potential problems with futures contract agreements.

- Regret the deal
- Lack of resources to complete the deal

Margins prevent defaults on deals - organized by the exchange.

# Operations of Margins

Example: gold futures contracts.

- On June 5, Judy buys two December gold futures on the New York Commodity Exchange (COMEX). The current futures price is \$400 per ounce.
- A single contract contains 100 ounces, so Judy pays $\$400 \times 2 \times 100 = \$80,000$.
- The broker requires the investor to deposit funds in a margin account.
- The amount initially deposited at the time of the contract agreement is the initial margin.
- Suppose the broker requires \$2000 per contract, or total of \$4000 for the **initial margin**.

# Operations of Margins, cont.

- At the end of the trading day the margin account is adjusted to reflect Judy's gain or loss.
- This is known as marking to market the account.
- Suppose on June 5, the price of gold drops to \$397. Then the investor has lost

$$200 \times \$3 = \$600$$

- Balance of the margin account is reduced by \$600

$$\$4000 - \$600 = \$3400.$$

- Judy's broker is required to pay the exchange \$600.
- The exchange passes the \$600 onto the investor with the short position.

# Operations of Margins, cont.

- On the other hand if the price of gold rises to $405, then the balance of the margin account is increased to $5000, and the short position provides the $1000 to Judy's margin account.

- The investor is allowed to withdraw from the margin account in excess of the **initial margin**.

- The margin account may never be negative, so a maintenance margin (lower than the initial margin) is set.

- If the margin account dips below the maintenance margin, the investor receives a margin call - the investor then adds funds to move the margin account above the **initial margin**.

# Operations of Margins, cont.

- Extra funds to replenish a margin account is called the variation margin.
- If the investor does not provide the variation margin, the broker **closes out** the position by selling the contract. In Judy's case this would entail selling the 200 ounces of gold for December delivery.

# Operations of Margins, cont.

**Table 2.1** Operation of margins for a long position in two gold futures contracts. The initial margin is \$2,000 per contract, or \$4,000 in total, and the maintenance margin is \$1,500 per contract, or \$3,000 in total. The contract is entered into on June 5 at \$400 and closed out on June 26 at \$392.30. The numbers in the second column, except the first and the last, represent the futures prices at the close of trading.

| *Day* | *Futures price* (\$) | *Daily gain (loss)* (\$) | *Cumulative gain (loss)* (\$) | *Margin account balance* (\$) | *Margin call* (\$) |
|---|---|---|---|---|---|
| | 400.00 | | | 4,000 | |
| June 5 | 397.00 | (600) | (600) | 3,400 | |
| June 6 | 396.10 | (180) | (780) | 3,220 | |
| June 9 | 398.20 | 420 | (360) | 3,640 | |
| June 10 | 397.10 | (220) | (580) | 3,420 | |
| June 11 | 396.70 | (80) | (660) | 3,340 | |
| June 12 | 395.40 | (260) | (920) | 3,080 | |
| June 13 | 393.30 | (420) | (1,340) | 2,660 | 1,340 |
| June 16 | 393.60 | 60 | (1,280) | 4,060 | |
| June 17 | 391.80 | (360) | (1,640) | 3,700 | |
| June 18 | 392.70 | 180 | (1,460) | 3,880 | |
| June 19 | 387.00 | (1,140) | (2,600) | 2,740 | 1,260 |
| June 20 | 387.00 | 0 | (2,600) | 4,000 | |
| June 23 | 388.10 | 220 | (2,380) | 4,220 | |
| June 24 | 388.70 | 120 | (2,260) | 4,340 | |
| June 25 | 391.00 | 460 | (1,800) | 4,800 | |
| June 26 | 392.30 | 260 | (1,540) | 5,060 | |

Figure 1: Example of a margin account

Notes: Margin excess on June 16, 23, 24, 25

# Further details on Margin accounts

- Brokers usually allow investors to earn interest on the balance in a margin account.

- To satisfy the initial margin an investor can sometimes deposit securities with the broker.

  – Treasury bills are accepted at about 90 % of their face value.
  – Stock shares are sometimes accepted, usually at 50 % of their face value.

- **Marking to market** effectively settles contracts daily rather than settling at the day of delivery. The investor's gain (loss) is added to (subtracted from) the margin account bringing the net value of the contract back to zero.

- Hence, a futures contract is in effect closed out and rewritten at a new price each day.

- Minimum levels for initial and maintenance margins are set by the exchange.

# Further details on Margin accounts, cont.

- Individual brokers may require larger margins than required by the exchange (but not lower).
- Margin levels are determined by the variability of the price of the underlying asset - the higher the variability, the higher the margin levels.
- Maintenance margin is usually about 75% of the initial margin.
- Margin requirements for hedgers are usually less than those for speculators
- Day trades and spread transactions have lower margin requirements than hedgers.
- **Day trades** are trades announced to a broker in which the position will be closed out on the same day.
- **Spread transactions** are long positions in a contract on an asset for one maturity month while simultaneously shorting the position on the same asset for a different maturity month.

# Further details on Margin accounts, cont.

Spot markets are difficult to day trade.

Some assets may not be day traded
due to complexity of delivery.

# Clearinghouse and Clearing Margins

- The exchange clearinghouse is adjunct to the exchange. Guarantees performance of the parties to each transaction.
- Brokers that are not members must channel their business through a member.
- Primary task is to keep track of all transactions taking place during a day, and so calculate the net position of each of its member.
- A clearinghouse member must keep a clearing margin with the clearinghouse.
- There is clearing margin, but not a maintenance margin. Clearing margin adjusted daily.
- Daily the account balance for each contract must maintained at an amount equal to the original margin times the number of contracts outstanding.
- Brokers who are not clearinghouse members must maintain a margin account with a member.

# Credit risk & Collateralization in OTC Markets

- Margin system ensures investors do not walk away from commitments.

- Credit risk more possible in OTC markets. Recently there are margin-type systems that ensure less defaults on contracts - collateralization.

Example:

- Consider two companies that enter into a collateralization OTC contract. If the value of the contract changes in the span of a day, the company losing value on the contract would be required to pay collateral equal to this increase to the other company.

- Collateralization reduces the credit risk in OTC contracts.

# Newspaper Quotes

**Table 2.2** Commodity futures quotes from the *Wall Street Journal*, February 5, 2004. (Columns show month, open, high, low, settle, change, lifetime high, lifetime low, and open interest, respectively.)

## Exchange Abbreviations

For commodity futures and futures options

**CBT**-Chicago Board of Trade;
**CME**-Chicago Mercantile Exchange;
**CSCE**-Coffee, Sugar & Cocoa Exchange, New York;
**CMX**-COMEX (Div. of New York Mercantile Exchange);
**EUREX**-European Exchange;
**FINEX**-Financial Exchange (Div. of New York Cotton Exchange);
**IPE** International Petroleum Exchange;
**KC**-Kansas City Board of Trade;
**LIFFE**-London International Financial Futures Exchange;
**MATIF**-Marche a Terme International de France;
**ME**-Montreal Exchange;
**MPLS**-Minneapolis Grain Exchange;
**NQLX**-NQLX (unit of Euronext.liffe)
**NYCE**-New York Cotton Exchange;
**NYFE**-New York Futures Exchange (Sub. of New York Cotton Exchange);
**NYM**-New York Mercantile Exchange;
**ONE**-OneChicago
**SFE**-Sydney Futures Exchange;
**SGX**-Singapore Exchange Ltd.;

**Futures prices reflect day and overnight trading**
**Open interest reflects previous day's trading**

**Wednesday, February 4, 2004**

## Grain and Oilseed Futures

| | OPEN | HIGH | LOW | SETTLE | CHG | LIFETIME HIGH | LIFETIME LOW | OPEN INT |
|---|---|---|---|---|---|---|---|---|
| **Corn** (CBT)-5,000 bu.; cents per bu. | | | | | | | | |
| Mar | 273.25 | 274.75 | 269.25 | 270.25 | -2.75 | 281.50 | 219.00 | 292,145 |
| May | 278.00 | 279.75 | 274.00 | 275.25 | -2.75 | 285.75 | 224.50 | 130,369 |
| July | 280.50 | 282.50 | 277.00 | 278.25 | -2.25 | 288.50 | 227.75 | 79,647 |
| Sept | 274.50 | 276.00 | 272.50 | 272.50 | -2.75 | 283.00 | 229.75 | 14,330 |
| Dec | 270.75 | 273.00 | 268.50 | 270.00 | -.75 | 278.75 | 232.50 | 105,132 |
| Mr05 | 274.25 | 276.00 | 272.25 | 273.50 | -1.00 | 281.50 | 239.00 | 7,662 |
| Dec | 252.50 | 252.75 | 252.50 | 252.75 | -.25 | 258.00 | 235.00 | 1,364 |

Est vol 54,315; vol Tue 81,306; open int 632,256, +1,555.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wheat** (CBT)-5,000 bu.; cents per bu. | | | | | | | | |
| Mar | 380.50 | 382.00 | 375.25 | 376.00 | -4.50 | 421.50 | 301.50 | 75,392 |
| May | 386.75 | 387.00 | 381.00 | 382.50 | -4.25 | 413.00 | 290.00 | 28,178 |
| July | 381.00 | 381.50 | 377.00 | 377.25 | -4.25 | 404.00 | 298.00 | 25,753 |
| Sept | 382.00 | 383.50 | 381.00 | 381.50 | -3.50 | 402.00 | 326.00 | 1,803 |
| Dec | 391.50 | 392.00 | 388.50 | 390.50 | -3.50 | 410.00 | 330.00 | 3,219 |

Est vol 18,516; vol Tue 24,710; open int 134,517, +36.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wheat** (KC)-5,000 bu.; cents per bu. | | | | | | | | |
| Mar | 386.00 | 387.50 | 380.00 | 380.50 | -7.00 | 416.00 | 314.00 | 35,068 |
| May | 385.75 | 387.00 | 379.00 | 380.50 | -6.75 | 412.00 | 315.00 | 14,006 |
| July | 383.50 | 384.00 | 380.00 | 380.50 | -4.75 | 408.00 | 313.00 | 11,690 |
| Sept | 384.50 | 386.00 | 383.50 | 386.00 | -2.00 | 405.00 | 330.50 | 1,938 |
| Dec | 392.50 | 393.50 | 390.00 | 390.00 | -5.50 | 408.50 | 341.00 | 1,273 |

Est vol 19,427; vol Tue 10,017; open int 63,983, -463.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wheat** (MPLS)-5,000 bu.; cents per bu. | | | | | | | | |
| Mar | 412.00 | 413.25 | 409.00 | 411.00 | -2.50 | 423.75 | 343.75 | 13,938 |
| May | 407.00 | 407.25 | 401.50 | 402.25 | -4.75 | 420.00 | 349.50 | 7,993 |
| July | 400.00 | 400.00 | 395.00 | 395.00 | -5.50 | 411.00 | 352.00 | 4,185 |
| Sept | 396.50 | 396.50 | 391.50 | 391.50 | -5.50 | 403.00 | 346.00 | 4,898 |
| Dec | 400.00 | 401.00 | 395.75 | 396.00 | -5.00 | 408.00 | 355.00 | 1,037 |

Est vol 7,695; vol Tue 6,203; open int 32,066, -868.

## Livestock Futures

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Cattle-Feeder** (CME)-50,000 lbs.; cents per lb. | | | | | | | | |
| Mar | 83.70 | 83.80 | 82.22 | 82.22 | -1.50 | 97.45 | 77.50 | 5,192 |
| Apr | 85.30 | 85.40 | 83.92 | 83.92 | -1.50 | 94.90 | 78.30 | 2,260 |
| May | 85.85 | 85.85 | 84.35 | 84.35 | -1.50 | 93.90 | 79.10 | 3,739 |
| Aug | 88.10 | 88.20 | 86.77 | 86.77 | -1.50 | 93.25 | 81.60 | 2,316 |
| Sept | 87.75 | 87.75 | 87.00 | 87.00 | -1.50 | 92.00 | 81.70 | 297 |
| Oct | 88.25 | 88.25 | 87.00 | 87.00 | -1.50 | 92.00 | 81.95 | 317 |

Est vol 1,472; vol Tue 1,739; open int 14,199, +22.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Cattle-Live** (CME)-40,000 lbs.; cents per lb. | | | | | | | | |
| Feb | 76.30 | 76.45 | 74.82 | 74.82 | -1.50 | 94.95 | 71.00 | 18,526 |
| Apr | 72.87 | 73.05 | 71.37 | 71.37 | -1.50 | 85.55 | 68.60 | 42,771 |
| June | 69.95 | 70.15 | 68.42 | 68.42 | -1.50 | 78.75 | 66.50 | 15,578 |
| Aug | 72.45 | 72.55 | 70.95 | 70.95 | -1.50 | 77.20 | 68.00 | 8,444 |
| Oct | 75.50 | 75.55 | 74.02 | 74.20 | -1.32 | 78.80 | 69.50 | 10,518 |
| Dec | 77.07 | 77.15 | 75.65 | 76.12 | -1.02 | 78.90 | 72.00 | 3,520 |

Est vol 16,156; vol Tue 10,727; open int 100,345, +316.

# Newspaper Quotes, example

- Prices the first three numbers in each row show
  - The opening price
  - The highest price achieved in trading during the day
  - The lower price achieved in trading during the day
- Our example: Consider 5000 bushels wheat with March 2004 delivery. The opening price on Feb. 4, 2004 was 380.50 cents. The price traded between 382.00 cents and 375.25 cents.
- Settlement Price the fourth number is used for calculating daily gains and losses and margin requirements. Usually the price is taken as the price of the contract traded immediately before the bell signaling the end of trading for the day.
- Change the fifth number is the change in the settlement price from the previous day. On February 4th, 2004 we see March 2004 wheat futures had a settlement price of $376.00, down 4.50 cents from February 3rd, 2004.

# Newspaper Quotes, example

- Lifetime Highs and Lows the sixth and seventh numbers in the row show the highest futures price and the lowest futures price achieved in the trading of the particular contract over its lifetime.

- The March 2004 wheat contract has traded over a year and achieved a high of 421.50 and a low of 301.50.

- Open interest The final number shows the open interest for each contract. This is the total number of contracts outstanding, or the total number of long positions. Open-interest information is one trading day older than the price information.

- On Feb. 4th, 2004 the open interest for March 2004 contracts was 75, 392. (For trading on Feb. 3rd)

# Newspaper Quotes, example

- Volume of Trading the end of the section shows the estimated volume in trading in contracts of all maturities on Feb. 4th, 2004 and actually volume on Feb. 3rd, 2004.

- On Feb. 4th, 2004 the estimated trading volume was 18,516. On Feb. 3rd, 2004 the estimated trading volume for wheat 24,710. The open interest for all wheat futures was 134, 516, up 36 from the previous day.

# Newspaper Quotes, example

| | OPEN | HIGH | LOW | SETTLE | CHG | LIFETIME HIGH | LIFETIME LOW | OPEN INT |
|---|---|---|---|---|---|---|---|---|
| **Cocoa** (CSCE)-10 metric tons; $ per ton. | | | | | | | | |
| Mar | 1,606 | 1,615 | 1,578 | 1,581 | −19 | 2,358 | 1,250 | 22,360 |
| May | 1,596 | 1,599 | 1,565 | 1,569 | −21 | 2,265 | 1,345 | 13,766 |
| July | 1,595 | 1,596 | 1,572 | 1,564 | −23 | 2,307 | 1,350 | 12,922 |
| Sept | 1,590 | 1,590 | 1,562 | 1,563 | −24 | 2,402 | 1,370 | 8,710 |
| Est vol 9,057; vol Tue 9,675; open int 87,295, −1,218. | | | | | | | | |
| **Coffee** (CSCE)-37,500 lbs.; cents per lb. | | | | | | | | |
| Mar | 73.75 | 74.00 | 71.60 | 72.60 | −2.05 | 83.00 | 59.65 | 59,048 |
| May | 75.60 | 75.80 | 73.70 | 74.65 | −1.95 | 82.00 | 61.75 | 26,054 |
| July | 77.00 | 77.70 | 75.70 | 76.45 | −1.95 | 82.50 | 63.90 | 8,737 |
| Sept | 78.40 | 79.20 | 77.40 | 78.15 | −1.90 | 83.45 | 65.75 | 7,837 |
| Dec | 80.15 | 81.25 | 80.15 | 80.75 | −1.90 | 85.95 | 68.50 | 4,577 |
| Mr05 | 83.40 | 83.70 | 83.40 | 83.30 | −1.85 | 87.90 | 71.00 | 2,948 |
| Est vol 32,220; vol Tue 15,761; open int 109,783, +1,170. | | | | | | | | |
| **Sugar-World** (CSCE)-112,000 lbs.; cents per lb. | | | | | | | | |
| Mar | 5.74 | 5.77 | 5.66 | 5.68 | −.07 | 7.65 | 5.50 | 131,494 |
| May | 5.94 | 5.97 | 5.87 | 5.88 | −.07 | 7.32 | 5.54 | 50,135 |
| July | 5.97 | 6.00 | 5.92 | 5.93 | −.06 | 6.95 | 5.50 | 37,213 |
| Oct | 6.09 | 6.10 | 6.02 | 6.03 | −.06 | 6.88 | 5.55 | 25,822 |
| Mr05 | 6.33 | 6.33 | 6.27 | 6.28 | −.04 | 6.82 | 6.24 | 11,411 |
| May | 6.32 | 6.33 | 6.30 | 6.30 | −.03 | 6.57 | 6.20 | 4,813 |
| July | 6.28 | 6.29 | 6.28 | 6.25 | −.03 | 6.42 | 6.15 | 2,901 |
| Est vol 23,839; vol Tue 32,525; open int 265,575, −1,048. | | | | | | | | |
| **Sugar-Domestic** (CSCE)-112,000 lbs.; cents per lb. | | | | | | | | |
| Mar | 20.35 | 20.40 | 20.35 | 20.40 | .04 | 22.02 | 20.20 | 884 |
| May | 20.35 | 20.35 | 20.35 | 20.35 | ... | 22.07 | 20.15 | 3,835 |
| July | 20.50 | 20.50 | 20.50 | 20.50 | ... | 22.10 | 20.25 | 3,280 |
| Sept | 20.74 | 20.74 | 20.74 | 20.74 | −.01 | 22.07 | 20.63 | 3,087 |
| Nov | 21.05 | 21.05 | 21.05 | 21.05 | ... | 21.70 | 20.94 | 855 |
| Ja05 | 20.80 | 20.80 | 20.80 | 20.80 | ... | 21.40 | 20.80 | 285 |
| Est vol 43; vol Tue 203; open int 12,510, −112. | | | | | | | | |
| **Cotton** (NYCE)-50,000 lbs.; cents per lb. | | | | | | | | |
| Mar | 69.10 | 69.90 | 68.70 | 69.25 | .35 | 86.00 | 45.60 | 43,633 |
| May | 71.20 | 71.95 | 70.75 | 71.27 | .44 | 86.00 | 51.50 | 27,184 |
| July | 72.35 | 73.00 | 71.80 | 72.30 | .35 | 85.50 | 56.75 | 8,924 |
| Dec | 68.00 | 68.25 | 67.50 | 67.75 | .05 | 71.00 | 59.00 | 6,330 |
| Est vol 12,611; vol Tue 21,022; open int 88,074, +239. | | | | | | | | |
| **Orange Juice** (NYCE)-15,000 lbs.; cents per lb. | | | | | | | | |
| Mar | 61.20 | 62.00 | 60.80 | 61.65 | .25 | 103.50 | 60.60 | 25,803 |
| May | 64.50 | 64.70 | 64.00 | 64.45 | .25 | 105.00 | 63.50 | 7,488 |
| July | 67.20 | 67.30 | 66.50 | 67.05 | .35 | 106.00 | 66.40 | 1,518 |
| July | 616.5 | 621.0 | 611.0 | 617.4 | 2.6 | 673.0 | 436.0 | 5,063 |
| Dec | 618.5 | 623.0 | 613.0 | 619.9 | 2.6 | 677.0 | 440.0 | 12,458 |
| Dc05 | 627.0 | 627.0 | 627.0 | 624.6 | 3.9 | 675.0 | 436.0 | 1,564 |
| Est vol 16,000; vol Tue 15,059; open int 107,432, −482. | | | | | | | | |

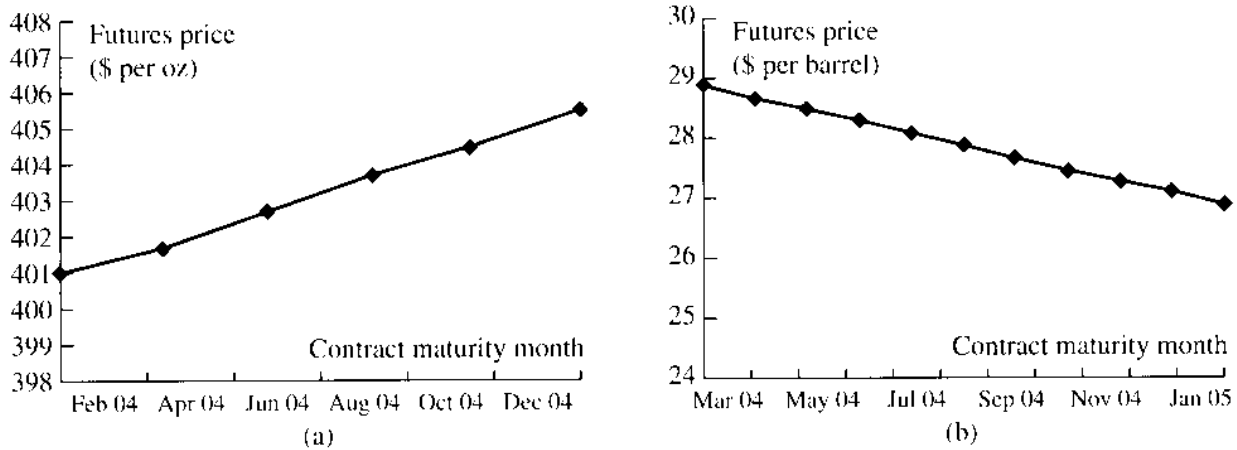
## Petroleum Futures

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Crude Oil, Light Sweet** (NYM)-1,000 bbls.; $ per bbl. | | | | | | | | |
| Mar | 34.09 | 34.45 | 32.95 | 33.10 | −1.00 | 35.25 | 20.35 | 196,160 |
| Apr | 32.82 | 33.25 | 31.85 | 31.99 | −0.83 | 34.50 | 20.35 | 91,932 |
| May | 32.11 | 32.20 | 31.25 | 31.32 | −0.72 | 33.85 | 20.35 | 42,864 |
| June | 31.55 | 31.65 | 30.80 | 30.84 | −0.63 | 33.25 | 20.53 | 39,700 |
| July | 31.00 | 31.10 | 30.40 | 30.37 | −0.60 | 32.60 | 20.86 | 29,920 |
| Aug | 30.57 | 30.60 | 30.10 | 29.93 | −0.58 | 32.15 | 20.84 | 19,040 |
| Sept | 30.21 | 30.21 | 29.65 | 29.58 | −0.56 | 31.61 | 20.82 | 26,690 |
| Oct | 29.93 | 29.93 | 29.93 | 29.33 | −0.54 | 31.20 | 23.75 | 17,830 |
| Nov | 29.59 | 29.70 | 29.59 | 29.11 | −0.53 | 30.85 | 24.75 | 14,370 |
| Dec | 29.60 | 29.60 | 29.00 | 28.92 | −0.52 | 30.69 | 16.35 | 51,129 |
| Ja05 | 29.00 | 29.00 | 29.00 | 28.67 | −0.50 | 30.33 | 23.25 | 15,606 |
| Feb | 28.75 | 28.75 | 28.75 | 28.48 | −0.49 | 30.07 | 23.85 | 5,061 |
| June | 28.24 | 28.24 | 28.24 | 27.79 | −0.45 | 29.05 | 22.40 | 10,556 |
| Dec | 27.42 | 27.52 | 27.20 | 27.03 | −0.39 | 28.31 | 17.00 | 25,454 |
| Dc06 | 26.77 | 26.77 | 26.60 | 26.38 | −0.39 | 27.65 | 19.10 | 16,726 |
| Dc07 | 26.45 | 26.50 | 26.40 | 26.18 | −0.34 | 27.35 | 19.50 | 9,971 |
| Dc08 | 26.50 | 26.50 | 26.50 | 26.18 | −0.34 | 27.15 | 19.75 | 7,354 |
| Est vol 225,976; vol Tue 219,163; open int 663,890, +1,691. | | | | | | | | |
| **Heating Oil No. 2** (NYM)-42,000 gal.; $ per gal. | | | | | | | | |
| Mar | .9142 | .9280 | .8830 | .8897 | −.0245 | 1.0129 | .6370 | 64,063 |
| Apr | .8770 | .8840 | .8505 | .8586 | −.0166 | .9417 | .6275 | 22,296 |
| May | .8436 | .8436 | .8200 | .8251 | −.0151 | .8881 | .6140 | 10,010 |
| June | .8174 | .8185 | .7950 | .8016 | −.0136 | .8581 | .6354 | 11,337 |
| July | .7800 | .7910 | .7800 | .7896 | −.0131 | .8380 | .6415 | 7,713 |
| Aug | .7925 | .7925 | .7750 | .7876 | −.0126 | .8373 | .6455 | 5,437 |
| Oct | .8050 | .8050 | .8050 | .7986 | −.0121 | .8425 | .6655 | 1,466 |
| Nov | .8100 | .8100 | .8100 | .8046 | −.0121 | .8480 | .6820 | 1,548 |
| Dec | .8175 | .8175 | .8100 | .8106 | −.0121 | .8540 | .6937 | 10,047 |
| Est vol 66,129; vol Tue 49,216; open int 141,064, +3,503. | | | | | | | | |
| **Gasoline-NY Unleaded** (NYM)-42,000 gal.; $ per gal. | | | | | | | | |
| Mar | 1.0015 | 1.0150 | .9740 | .9857 | −.0158 | 1.0410 | .7325 | 67,894 |
| Apr | 1.0475 | 1.0530 | 1.0190 | 1.0305 | −.0124 | 1.0800 | .7975 | 27,871 |
| May | 1.0310 | 1.0310 | 1.0130 | 1.0150 | −.0119 | 1.0655 | .8080 | 13,375 |
| June | 1.0050 | 1.0100 | .9920 | .9895 | −.0109 | 1.0410 | .8070 | 6,390 |
| July | .9550 | .9650 | .9550 | .9615 | −.0104 | 1.0100 | .9300 | 3,617 |
| Sept | .9090 | .9090 | .9050 | .8940 | −.0089 | .9380 | .8530 | 5,260 |
| Est vol 46,056; vol Tue 48,469; open int 131,831, +2,200. | | | | | | | | |

# Patterns of Futures Prices

Consider futures prices for the gold contract trading on COMEX and Brent crude oil contract trading on the International Petroleum Exchange.

**Figure 2.2** Settlement futures price as a function of time to maturity on February 4, 2004, for (a) gold and (b) Brent crude oil.




- Futures price of gold increases as the time to maturity increases. This is a Normal Market.

- Futures price of crude oil is decreasing function of maturity. This is an Inverted Market.

# Delivery

- Few futures contracts that are entered lead to delivery, but eventual delivery determines future prices.
- The decision on when to deliver is made by the party with the short position, say Joe.
- When Joe decides to deliver, his broker issues a notice of intention to deliver to the exchange clearinghouse. The notice states how many contracts will be delivered and where the delivery will be made and what grade the asset is.
- The exchange then chooses a party with a long position to accept delivery.
- Suppose Mary was on the other side of the contract for the long position. Mary may not be the party accepting the commodity, since she may have closed out the position by trading to Ben.

# Delivery, cont.

- Notice of intention to delivery is usually sent to the party with the oldest outstanding long position.
- Parties with long positions must accept delivery notices.
- If the notices are transferable - there are short periods of time in which the long investor may transfer the notice of intention to delivery.
- Usually delivery entails accepting a warehouse receipt in return for immediate payment.
- For financial futures, delivery entails a wire transfer.

# Delivery, cont.

- Entire delivery process takes two - three days.
- First notice day - is the first day on which a notice of intention to delivery can be submitted to the exchange
- Last notice day - is the last such day.
- Last trading day - is generally a few days before the last notice day.
- Some financial futures are settled in cash because of the difficulty in delivering the underlying asset. Example, futures contract on Wilshire 500 stocks.

# Types of Traders

- Commission brokers - follow the instruction of their clients and charge a commission to do so.
- Locals - trade on their own account.
- Individuals taking positions, in either case, can be categorized as Hedgers, Speculators, and Arbitrageurs.
- Speculators can be classified as Scalpers, Day Traders, or Position Traders
- Scalpers look for very short-term trends and attempt to profit from small changes in the contract price.
- Day Traders hold their position for less than one trading day. Unwilling to take rish that adverse news will occur overnight.
- Position Traders hold their positions for much longer periods of time. Hope to make profits from major shifts in the market.

# Types of Orders

- Limit Order
- Stop Order or Stop-loss Order
- Stop-Limit Order
- Market-If-Touched (MIT) Order
- Discretionary Order or Market-Not-Held Order
- Time-Of-Day Order
- Open Order or Good-Till-Canceled Order