## Futures: Definitions

**The Wall Street Journal, Futures Prices**  
**Friday, August 5, 2005**

### Grain and Oilseed Futures

<table>
<thead>
<tr>
<th></th>
<th>Open</th>
<th>High</th>
<th>Low</th>
<th>Settle</th>
<th>Change</th>
<th>Lifetime</th>
<th>Open</th>
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<tbody>
<tr>
<td>Aug</td>
<td>215.50</td>
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<td>-2.50</td>
<td>211.25</td>
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<td>-2.50</td>
<td>257.50</td>
<td>260.375</td>
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</table>

Cents (0.5,000 lbs. per bu.)

Dollars (0.5,000 lbs. per unit)
FUTURES: DEFINITIONS

- Settlement price
- Daily trading limit
  - Maximum price range during one trading session permitted by the Exchange for a contract
    - CBOT:
      - Corn: $0.20/bu above or below previous day’s settlement price
      - Soybeans: $0.50/bu above or below previous day’s settlement price.
      - Wheat: $0.30/bu above or below previous day’s settlement price.
    - CME:
      - Feeder cattle: $0.03/lb above or below previous day’s settlement price
      - Live cattle: $0.03/lb above or below previous day’s settlement price
      - Lean Hogs: $0.02/lb above or below previous day’s settlement price

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**FUTURES PRICES**

**Grain and Oilseed Futures**

<table>
<thead>
<tr>
<th>Contract</th>
<th>Open</th>
<th>High</th>
<th>Low</th>
<th>Settle</th>
<th>Change</th>
<th>Lifetime High</th>
<th>Lifetime Low</th>
<th>Open Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn (2012-13)</td>
<td>5.688</td>
<td>5.735</td>
<td>5.650</td>
<td>5.676</td>
<td>-0.060</td>
<td>299.00</td>
<td>211.25</td>
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<td>Soybeans</td>
<td>13.400</td>
<td>13.500</td>
<td>13.375</td>
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<td>288.50</td>
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<td>Wheat</td>
<td>5.800</td>
<td>5.850</td>
<td>5.850</td>
<td>5.833</td>
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<td>-0.50</td>
<td>258.00</td>
<td>216.00</td>
<td>1414.00</td>
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</tbody>
</table>

### Futures: Definitions

**The Wall Street Journal**

**Futures Prices**

**Friday, August 5, 2005**

#### Grain and Oilseed Futures

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<th>Lifetime Low</th>
<th>Open Interest</th>
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<tbody>
<tr>
<td>Cents (2025 $0.08 b.)</td>
<td>221.50</td>
<td>221.25</td>
<td>221.00</td>
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<td>258.00</td>
<td>-1.50</td>
<td>258.50</td>
<td>251.00</td>
<td>259.140</td>
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</table>

End res: $220.32; ch Thu $1/13930; open res: 144.240, 4217.
### Futures: Definitions

**Volume and Open Interest:**

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
<th>Volume</th>
<th>Open Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First day of trading</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mary sells 3 contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peter buys 3 contracts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**FUTURES: DEFINITIONS**

- Volume and Open Interest:

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
<th>Volume</th>
<th>Open Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First day of trading&lt;br&gt;  Mary sells 3 contracts&lt;br&gt;  Peter buys 3 contracts</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Mary buys back 1 contract&lt;br&gt; Peter sells back 1 contract</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Mary buys back 2 contracts&lt;br&gt; Peter sells back 1 contract&lt;br&gt; Joe sells 1 contract</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Peter sells back 1 contract&lt;br&gt; Joe buys back 1 contract</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
FUTURES: DEFINITIONS

• BASIS = Local Spot Price
  – Futures Price
• BASIS = Local Spot Price
  – Futures Price

  Example 1: Lean hogs market
  – Today's local (e.g., Iowa) spot price = $63.00/cwt
  – Today's December futures price = $53.50/cwt

  Today's Iowa Basis = $63.00 - $53.50
  = $9.50/cwt
  (or $9.50/cwt OVER December)

  Example 2: Lean hogs market
  – Today's local (e.g., Iowa) spot price = $63.00/cwt
  – Today's June futures price = $69.80/cwt

  Today's Iowa Basis = $63.00 - $69.80
  = $6.80/cwt
  (or $9.50/cwt UNDER June)
FUTURES: DEFINITIONS

- BASIS = Local Spot Price - Futures Price

- There is a BASIS for each futures contract and for each location

- If futures contract not specified, basis implicitly calculated using “nearby” contract month
BASIS: GENERALITIES

- Spot and futures tend to move together.
- Futures price converges to spot price (at delivery location) as maturity gets closer.

BASIS: GENERALITIES

- Futures price converges to spot price (at delivery location) as maturity gets closer.
- Hence:
  - Basis converges to zero (at delivery location) as maturity gets closer.
BASIS: GENERALITIES

• For storable commodities at delivery location:

\[ \text{Current Futures Price} \leq \text{Current Spot price} + \text{Storage Cost} \]

BASIS: GENERALITIES

• Why Futures \( \leq \) Spot + Storage Cost?
• Suppose: July Futures = $2.50/bu
  Spot = $2.00/bu
  Storage Cost = $0.20/bu

Strategy to make riskless profits:
  - Now:
    • Sell July futures for $2.50/bu
    • Buy spot at $2.00 and store
  - July:
    • Deliver commodity and get paid $2.50/bu according to futures contract

\[
\text{Riskless Profit} = \text{July Price} - \text{Spot Price} - \text{Storage Cost}
\]

\[ = \$2.50 - \$2.00 - \$0.20 = \$0.30/bu \]
BASIS: GENERALITIES

• For storable commodities at delivery location:

\[
\text{Current Futures Price} \leq \text{Current Spot price} + \text{Storage Cost}
\]

• Hence:
  - Basis ≥ - Storage Cost

BASIS: GENERALITIES

• Basis reflects factors that affect local cash price relative to futures price at delivery point
  – Local supply and demand factors
    • Yield
    • Quality
    • Storage availability
    • Processing capacity
    • Rail car availability
    • Consumption
BASIS: GENERALITIES

- Basis generally follows seasonal patterns
  - Grains typically widest at harvest then narrow until the next harvest
  - Livestock varies, but follows the tendencies
    - Seasonal spot price
    - Converging at expiration
BASIS: GENERALITIES

- Spot prices and futures prices tend to move up and down together

- Hence:
  - Basis much less volatile than either spot or futures prices alone
  - Basis is “easy” to predict
    - Useful to make spot price forecasts
Distribution of Spot Price and Basis for ISM Lean Hogs, Difference from the Average, 1995-2004