Choosing the time to market grain is a difficult and important task. Here is the key question in deciding when to sell corn, soybeans, wheat, and oats: Will the price rise enough from harvest to the time of selling to more than cover the costs of holding grain?

Tom Hieronymus, 1966
Outline

- Estimate long-term seasonal price tendencies for corn and soybeans
  - Pre-harvest
  - Post-harvest
- Examine averages as well as variability
- Role in marketing plan

Theoretical Seasonality of Harvest Delivery Forward Contract Prices

On average, pre-harvest bids for delivery during harvest equal the harvest price.
Theoretical Seasonality of Harvest Delivery Forward Contract Prices

…for everyone who thinks the price is going up there is someone who thinks it is going down, and for everyone who trades with the flow of the market, there is someone trading against it.”
(Hieronymus, 1977)

Theoretical Seasonality of Post-Harvest Spot Prices

Includes physical storage costs and interest opportunity costs

Cost of storage from t₁ to t₂
Theoretical Seasonality of Pre- and Post-Harvest Prices

Price

Forward Prices

Spot Prices

Unadjusted

Storage Cost Adjusted

Previous Harvest
Pre-Harvest Period
Current Harvest
Post-Harvest Period
Next Harvest

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Theoretical Seasonality of Post-Harvest Spot Prices with "Convenience Yield"

Price

P_1
P_2
P_3

Convenience yield: value of having stocks on hand

Price increase less than cost of storage from t_1 to t_2

t_1 Current Harvest
t_2 Next Harvest

Time

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Theoretical Seasonality of Pre- and Post-Harvest Prices with “Convenience Yield”

Unadjusted

Storage Cost Adjusted

What We Observe


Define marketing window for a crop
- 12 months pre-harvest
- 12 months post-harvest

Determine representative sample period
- 1973-2009

Collect prices
- Pre-harvest: daily central IL forward bids for harvest delivery
- Post-harvest: daily central IL spot (cash) bids

Adjust post-harvest prices for storage costs
- Commercial physical storage costs
- Interest opportunity costs


<table>
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<th>Period</th>
<th>Corn</th>
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<td></td>
<td>1 cent per mo. after Jan.</td>
<td>1 cent per mo. after Jan.</td>
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<tr>
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<td>2.1 cent per mo. after Jan.</td>
<td>2.4 cent per mo. after Jan.</td>
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<td>2 cent per mo. after Dec.</td>
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<td>2.75 cent per mo. after Dec.</td>
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Interest Rate for Short-Term Farm Operating Loans, 1973-2009

The Basic Idea

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m31   | 3.14 | 2.46 | 2.38 | 1.44 | 1.70 | 1.74 | 2.42 | 4.79 | 2.63 | 2.89 | 2.10    |
|m32   | 3.12 | 2.56 | 2.36 | 1.34 | 1.64 | 1.66 | 2.57 | 4.10 | 2.76 | 3.09 | 2.08    |
|m33   | 3.15 | 2.60 | 2.27 | 1.32 | 1.70 | 1.53 | 2.52 | 4.22 | 2.58 | 3.09 | 2.09    |
|m34   | 3.10 | 2.60 | 2.26 | 1.24 | 1.71 | 1.59 | 2.66 | 4.71 | 2.50 | 3.22 | 2.10    |
|m35   | 2.98 | 2.54 | 2.29 | 1.20 | 1.64 | 1.65 | 2.43 | 4.73 | 2.54 | 3.21 | 2.05    |

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A Problem

Average Harvest Price of Corn in Central Illinois, 1973-2009


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Normalized Seasonal Price Index

- Average prices across the 24 month marketing window for each crop
  - 12 months pre-harvest forward bids
  - 12 months post-harvest spot bids net of storage costs
- Divide all prices in a marketing window by the 24 month average for that window
  - Prices in a marketing window then expressed as a percent of 24 month average
  - Average price for each crop = 100
- Finally, average the normalized prices for the same week in the marketing window across all years over 1973-2009

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Seasonal Price Index for Corn in Central Illinois, 1973-2009

Average price for each crop = 100


Average price for each crop = 100
Variability of Seasonal Price Index for Corn in Central Illinois, 1973-2009

Seasonal Price Index Range for Corn in Central Illinois, 1973-2009

Average price for each crop = 100

Average price for each crop = 100


Average price for each crop = 100


Average price for each crop = 100
Summary of Seasonal Price Index Results for Central Illinois, 1973-2009

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<thead>
<tr>
<th>Period</th>
<th>Corn</th>
<th>Soybeans</th>
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</tr>
<tr>
<td>Worst</td>
<td>92</td>
<td>96</td>
</tr>
</tbody>
</table>

- Best period for corn: April-May pre-harvest
- Best period for soybeans: June-July pre-harvest
- Worst period for corn: June-August post-harvest
- Worst period for soybeans: August post-harvest

Emerging Rules*

- Modest pre-harvest premium for corn but not soybeans
- Storage pays in soybeans but not corn
- Avoid holding grain into the next summer
- Seasonal component of prices is highly variable
- Be skeptical of “seasonal” trading systems

*with apologies to Tom Hieronymus