What is the Market Telling You?
An Important Look Ahead ...
Crop Prices Spike with Resurgent Demand and Tight Supplies.

U.S. Crop Prices

Constant 2005 dollars (billions)

Source: Commodity Research Bureau
Implications of High Crop Prices

- Record profits for crop producers.
  - Biggest gains for fall crops – corn, soybeans, and cotton.

- Rising feed costs trim livestock profits.
  - Biggest struggles in the dairy sector.
  - Cattle and hog profits at breakeven levels.
  - Will livestock and dairy revenues rise?
  - Will there be further liquidations?
Stronger farm incomes boost agricultural equipment sales.

Source: Association of Equipment Manufacturers and USDA

* Tractor Sales data are year-to-date through November and Net Farm Income forecast for 2010 dated November 30, 2010.
Cropland values surge across the Corn Belt.

Non-irrigated Cropland Values
(Percent change 2009:Q3 to 2010:Q3)

Source: Federal Reserve District Surveys
(Chicago, Minneapolis, Kansas City, Dallas)
Land values rise faster than cash rents, pushing rent to value ratios to record lows.

### Cropland Cash Rent to Land Value Ratio

**January 1, 2010**

- **Lake States**: 3.4%
- **Northern Plains**: 5.1%
- **Mountain**: 4.9%
- **Pacific**: 4.3%
- **Corn Belt**: 3.8%
- **Delta States**: 4.4%
- **Southern Plains**: 2.4%

Calculations based on USDA Land Values and Cash Rents, August 2010
Capitalized Revenues from Corn Production

Land values should equal capitalized revenues

\[
\text{Land Values} = \frac{\text{Expected Revenues}}{\text{Capitalization Rate}}
\]

Assumptions:
- Corn Price: $5.35 per bushel
- 25% of gross revenues go to land

Indiana average yield was 160 from 2006 to 2010
U.S. average annual price $5.35 per bushel

<table>
<thead>
<tr>
<th>Yield (bushel per acre)</th>
<th>160 bushels</th>
<th>200 bushels</th>
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</thead>
<tbody>
<tr>
<td>Capitalization rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>4280</td>
<td>5350</td>
</tr>
<tr>
<td>4%</td>
<td>5350</td>
<td>6690</td>
</tr>
<tr>
<td>3%</td>
<td>7133</td>
<td>8920</td>
</tr>
</tbody>
</table>
Current land values assume historically high prices and historically low interest rates.

**Capitalized Land Revenues from Corn Production**

<table>
<thead>
<tr>
<th>Capitalization Rate</th>
<th>Dollars per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>4%</td>
<td>0</td>
</tr>
<tr>
<td>5%</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Purdue University

**Indiana Average Land Value**

June 2010 ($4420 per acre*)

Based on 160 bushel yield

*Source: Purdue University
What happens if capitalization rates and interest rates rise?

Capitalized Revenues from Corn Production

Dollars per acre

Dollars per bushel

- Capitalized Value at 7% capitalization rate and 160 bushel yield
- Average Indiana Cropland Value (June 2010)

61% 48% 35%

2 3 4 5 6 7 8 9
How do interest rates affect farm incomes?

Falling interest rates …
- Weakens the dollar,
- Lifts exports,
- Raises commodity prices,
- Boosts farm incomes

Rising interest rates …
- Strengthens the dollar,
- Shrinks exports,
- Lowers commodity prices,
- Cuts farm incomes

Sources: USDA, Federal Reserve, BLS
Agriculture Faces Huge Interest Rate Risk
U.S. Monetary Policy: A Risk Management Approach

What is the Risk?

Economic Malaise And Deflation

Robust Job Growth And Inflation
Federal Reserve economic growth projections fell sharply at the end of 2010

U.S. GDP Growth Projections (Central Tendency)

Core PCE Inflation (Central Tendency)

Source: Federal Reserve Board of Governors
Quantitative easing (QE) is designed to expand the Federal Reserve balance sheet to lower long term rates.

Federal Reserve Balance Sheet: Assets

- Fed Agency Debt MBS Purchases
- Liquidity to Key Credit Markets
- Lending to Financial Institutions
- Long Term Treasury Purchases
- Traditional Security Holdings

Source: Federal Reserve Bank of Cleveland
Have the Risks Changed?
Inflation is based on money and velocity.

**Quantity Theory of Money**

\[
\text{Price} = \frac{\text{Money} \times \text{Velocity}}{\text{Quantity}}
\]

**Definition of Inflation:**

Too much money \( M \uparrow \) chasing too few goods \( Q \downarrow \)

Too much money \( M \uparrow \) chasing \( V \uparrow \) too few goods \( Q \downarrow \)
After a summer lull, consumer spending is on the rise.

U.S. Monthly Retail and Food Sales

Source: U.S. Census Bureau
U.S. food expenditures have rebounded.

U.S. Retail Sales at Grocery Stores and Restaurants

Percent change from year ago

Source: Census Bureau
Housing markets slump after the tax credits.

Source: U.S. Census Bureau and National Association of Realtors
Business investment is beginning to rebound.

Nonresidential Fixed Investment

Percent change from year ago

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

Equipment and Software
Structures

Source: Bureau of Economic Analysis
Despite higher exports, net export activity has fallen with stronger imports.
U.S. agricultural exports are expected to rise.

U.S. Agricultural Exports

Constant 2005 dollars (billions)

Source: Census Bureau
Job openings are on the rise, will hiring follow?

Job Openings and Labor Turnover

Source: Bureau of Labor Statistics
Will a stronger economy lift inflation?

Consumer Price Inflation – Less Food and Energy

Percent change from year ago

Source: Bureau of Labor Statistics
Conclusions

- Farm incomes are booming from stronger demand and tight supplies.
- Farmers are buying tractors, land, and more.
- Agriculture faces major interest rate risk.
- Monetary policy is risk management.
- Have the risks changed from deflation to inflation?

**Agricultural Landscapes Change with Interest Rates**