The Agricultural Outlook
Crop markets are led by corn.
- How long will supplies be short?
- Will food and fuel demand remain strong?

Livestock profits driven by feed costs, production, and export demand.
- If animals eat corn, profits are thin.
- Will there be a rebound heading into 2013?

Farmland values surge.
- Is this time different?
Booming crop profits, especially for corn.

The combination of tight supplies and strong global demand boost crop prices and profits.

How long will this last?

U.S. Net Profits by Crop (Value of Production Less Operating Costs)

Calculations based on USDA cost of production and price data. Operating costs include seed, fertilizer, chemical, fuel and energy, repairs, custom operations and interest costs.
What is the “Best Cure for High Prices”?

Total Acres Planted (8 major crops)  
Up 1.7%

More Corn and Wheat  
Less Soybean, Cotton, & Rice

Source: USDA
How will drought conditions evolve over the summer?

While the focus is on U.S. drought conditions and production, how would global droughts impact crop production?
Record high crop exports in 2011.
Grain and feed exports - Up 40%
Soybean and product exports - Up 16%

In 2010, China became the #1 export destination for U.S. ag products

China’s economy has issues
Higher inflation in 2011.
Economic gains are slowing.

Will it be a hard or soft landing?
What are the implications for food consumption?

Chinese Imports of Corn and Soybeans

Million metric tons

Source: USDA
Will Ethanol hit the “Blend Wall”? 

**U.S. Motor Gasoline Use**
- Fell 2.6% in 2011
- 2015 forecast down 5%

**U.S. Ethanol Standard** is a 10% blend.

**Projections of 2015 Ethanol Consumption**
- In 2007, 15 billion gallons
- Today, 13.7 billion gallons

**Current Ethanol Production Capacity**
- 13.5 billion gallons with 522 million gallons under construction

![Bar chart showing U.S. Motor Gasoline Consumption from 2010 to 2015](chart.png)

Source: EIA
Crop prices are projected to soften and profits are expected to narrow.

### U.S. Crop Prices Received by Farmers (Dollars per bushel)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012- USDA</th>
<th>2012- FAPRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>5.18</td>
<td>6.2</td>
<td>5.0</td>
<td>4.81</td>
</tr>
<tr>
<td>Soybeans</td>
<td>11.3</td>
<td>12.6</td>
<td>11.0</td>
<td>11.37</td>
</tr>
<tr>
<td>Wheat</td>
<td>5.7</td>
<td>7.4</td>
<td>6.0</td>
<td>6.09</td>
</tr>
</tbody>
</table>

### U.S. Net Returns Above Variable Costs (Dollars per acre)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012- USDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>514</td>
<td>656</td>
<td>485</td>
</tr>
<tr>
<td>Soybeans</td>
<td>358</td>
<td>371</td>
<td>330</td>
</tr>
<tr>
<td>Wheat</td>
<td>159</td>
<td>201</td>
<td>142</td>
</tr>
</tbody>
</table>

But, the price ranges are wide.

**FAPRI Soybean Price Forecast**
- 10% probability that prices < $8 per bushel
- 10% probability that prices >$15 per bushel
Will Livestock Profits Rebound?
Livestock feeding operations struggle to make breakeven costs.

Production costs surge for cattle and hog operations

**Livestock feed costs**
Up 6% since 2011
Up 22% since 2010

**Livestock costs**
Up 16% since 2011
Up 40% since 2010

**Prices Paid by Livestock Producers**

Index (1990 to 1992 = 100)

Source: USDA
Milk prices cover variable costs but not fixed costs.

Milk profits have improved, with narrower losses.

Warm winter weather led to higher supplies and lower prices.

When prices rise toward total costs, the dairy herd expands.
- Up 1.4% in 2008
- Up 0.9% in 2011

When prices fall below operating costs, the dairy herd contracts.
- Down 1.2% in 2009
- Down 0.9% in 2010

Source: USDA

Milk Costs and Prices

Dollars per hundredweight

Jan-05 Jan-07 Jan-09 Jan-11

Source: USDA

Federal Reserve Bank of Kansas City – Omaha Branch
Regional, Public, Community Affairs Division

www.kansascityfed.org/omaha
With flat domestic consumption, exports are key to the livestock sector.

Asia and Mexico are key export destinations

**Asia**
- Half of livestock and meat exports
- A third of dairy product exports

**Mexico**
- A fifth of livestock and meat exports
- A quarter of dairy product exports

Will the economic gains of developing nations persist?

**U.S. Livestock and Dairy Exports**

- **Dairy Products (Left Scale)**
- **Livestock & Meats (Right Scale)**

Source: USDA
Economic growth is expected to rebound in 2013.

World GDP Growth

Annual percent change

Source: Blue Chip
Commodity prices are influenced by the value of the dollar.

Value of U.S. Dollar and Commodity Price Index

- Value of Dollar (Left Scale)
- Commodity Price Index (Right Scale)

Source: Blue Chip
Crop prices are projected to soften and profits are expected to narrow.

<table>
<thead>
<tr>
<th>U.S. Livestock Prices Received by Farmers (Dollars per cwt)</th>
<th>2010</th>
<th>2011</th>
<th>2012-USDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef Cattle</td>
<td>91.97</td>
<td>111.70</td>
<td>119.35</td>
</tr>
<tr>
<td>Calves</td>
<td>120.75</td>
<td>141.19</td>
<td>151.63</td>
</tr>
<tr>
<td>Steers</td>
<td>95.38</td>
<td>113.98</td>
<td>121.75</td>
</tr>
<tr>
<td>Hogs</td>
<td>55.04</td>
<td>66.67</td>
<td>65.7</td>
</tr>
<tr>
<td>Broilers, farm</td>
<td>49.3</td>
<td>46.5</td>
<td>48.7</td>
</tr>
<tr>
<td>Turkeys</td>
<td>61.2</td>
<td>68.0</td>
<td>66.2</td>
</tr>
<tr>
<td>Milk</td>
<td>16.26</td>
<td>20.15</td>
<td>18.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U.S. Net Returns Above Cash Costs</th>
<th>2010</th>
<th>2011</th>
<th>2012-USDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow-Calf ($ per cow)</td>
<td>96.11</td>
<td>182.78</td>
<td>178.92</td>
</tr>
<tr>
<td>Hogs – farrow to finish ($ per cwt)</td>
<td>2.07</td>
<td>3.24</td>
<td>-2.98</td>
</tr>
<tr>
<td>Chickens ($ per cwt)</td>
<td>5.40</td>
<td>-8.02</td>
<td>-10.05</td>
</tr>
<tr>
<td>Turkeys ($ per cwt)</td>
<td>15.46</td>
<td>16.87</td>
<td>7.80</td>
</tr>
</tbody>
</table>

Source: USDA
Will Record High Farmland Values Hold?
Farmland values are booming.

Non-irrigated Cropland Values
Fourth Quarter 2011
Percent change from prior year

Source: Agricultural Finance Databook,
Federal Reserve Bank of Kansas City
Past farm booms were characterized by

- Surging exports
- Tight global supplies
- Negative real interest rates
- Expectations of continued growth

Is agriculture set up for another correction?
Elevated export trends similar to the 1950s could keep farm prices high.

U.S. Agricultural Exports and Farm Prices

Billion dollars (2005 constant dollars)

- Agricultural Exports (Left Scale)
- Prices Received by Farmers (Right Scale)

Exports Double During WWI
Exports More than Double During WWII
Exports Double In 1970s
Exports Double Between 2006 and 2011

Calculations based on U.S. Census Bureau and U.S. Department of Agriculture data deflated with consumer price index from the Federal Reserve Bank of Minneapolis and USDA inflation expectations.
What made the 1940s different? FARM DEBT

U.S. Farm Debt

Billion dollars (2005 constant dollars)

Calculations based on U.S. Census Bureau and U.S. Department of Agriculture data deflated with consumer price index from the Federal Reserve Bank of Minneapolis.
Debt is being used to finance land purchases.

Financing Farmland Purchases in the Tenth District

<table>
<thead>
<tr>
<th>Percent of total financing</th>
<th>2011 First Quarter</th>
<th>2011 Third Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Down Payment</td>
<td>19.8</td>
<td>21.2</td>
</tr>
<tr>
<td>Pledged Existing Equity</td>
<td>29.1</td>
<td>31.6</td>
</tr>
<tr>
<td>New Debt Financed</td>
<td>51.1</td>
<td>47.2</td>
</tr>
</tbody>
</table>

Source: Federal Reserve Bank of Kansas City
How much debt was used to finance capital spending?.

In 2012:Q1,
non-real-estate loans at commercial banks jumped 20+%

The biggest gains were outside of equipment and machinery

U.S. Tractor and Combine Sales

Source: Association of Equipment Manufacturers
Higher interest rates …
- boost debt service costs,
- can trigger lower farm incomes if the value of the dollar rises and exports fall, and
- raise capitalization rates, which lowers farmland values.
What happens to farmland values if prices decline or interest rates rise?

**Net Present Values tell us that**
**Land Values should equal expected capitalized revenues**

### Capitalized Value Formula

\[
\text{Capitalized Value} = \frac{0.3 \times \text{Expected Price} \times \text{Yield}}{\text{Capitalization Rate}}
\]

- 30% is land’s share of Total production costs.

#### Assumption corn yields 160 bushels per acre

### Corn Price (dollars per bushel)

<table>
<thead>
<tr>
<th>Capitalization Rate (percent)</th>
<th>$3.00</th>
<th>$4.00</th>
<th>$5.00</th>
<th>$6.00</th>
<th>$7.00</th>
<th>$8.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>4,800</td>
<td>6,400</td>
<td>8,000</td>
<td>9,600</td>
<td>11,200</td>
<td>12,800</td>
</tr>
<tr>
<td>4%</td>
<td>3,600</td>
<td>4,800</td>
<td>6,000</td>
<td>7,200</td>
<td>8,400</td>
<td>9,600</td>
</tr>
<tr>
<td>5%</td>
<td>2,880</td>
<td>3,840</td>
<td>4,800</td>
<td>5,760</td>
<td>6,720</td>
<td>7,680</td>
</tr>
<tr>
<td>6%</td>
<td>2,400</td>
<td>3,200</td>
<td>4,000</td>
<td>4,800</td>
<td>5,600</td>
<td>6,400</td>
</tr>
<tr>
<td>7%</td>
<td>2,057</td>
<td>2,743</td>
<td>3,429</td>
<td>4,114</td>
<td>4,800</td>
<td>5,486</td>
</tr>
<tr>
<td>8%</td>
<td>1,800</td>
<td>2,400</td>
<td>3,000</td>
<td>3,600</td>
<td>4,200</td>
<td>4,800</td>
</tr>
</tbody>
</table>

Assumption corn yields 160 bushels per acre
Conclusions

- Crop producers enjoy booming farm incomes.
- High feed costs squeeze livestock prices.
- Export demand is key for future farm incomes.
- Rising incomes and low interest rates fuel a land boom.
- Going forward, agriculture faces many risks.
- The striking difference is farm debt.

*If margins narrow, will farmers leverage long-term assets to build working capital?*
To Receive an Invitation to the Federal Reserve Bank of Kansas City’s 2012 Agricultural Symposium Please email AgSymposium@kc.frb.org