Is This Farm Boom Different?
A Farm Boom starting in 1900.

Nebraska and Iowa Farm Real Estate Values
1900

$Dollars per Acre
Constant 2011 dollars

- 0 - $499
- $500 - $999
- $1000 - $1999
- $2000 - $2999
- $3000 and up

Source: USDA
WWI and the “Golden Era for Agriculture” boost farmland values.

Nebraska and Iowa Farm Real Estate Values 1920

$Dollars per Acre
Constant 2011 dollars

- 0 - $499
- $500 - $999
- $1000 - $1999
- $2000 - $2999
- $3000 and up

Source: USDA
Farmland value decline during the “Roaring 20s”

Nebraska and Iowa Farm Real Estate Values 1930

$Dollars per Acre
Constant 2011 dollars
0 - $499
$500 - $999
$1000 - $1999
$2000 - $2999
$3000 and up

Source: USDA
The Great Depression pushed down farmland values further.

Nebraska and Iowa Farm Real Estate Values
1940

$Dollars per Acre
Constant 2011 dollars

Source: USDA
Enhanced productivity and rising exports lift farmland values during the 1950s and 1960s.

Nebraska and Iowa Farm Real Estate Values 1969

$Dollars per Acre
Constant 2011 dollars

0 - $499
$500 - $999
$1000 - $1999
$2000 - $2999
$3000 and up

Source: USDA
The Russian grain deal sparks the farm real estate boom.

Nebraska and Iowa Farm Real Estate Values
1974

$Dollars per Acre
Constant 2011 dollars

0 - $499
$500 - $999
$1000 - $1999
$2000 - $2999
$3000 and up

Source: USDA
By the late 1970s, farmland values are “hot”.

Nebraska and Iowa Farm Real Estate Values
1978

$Dollars per Acre
Constant 2011 dollars

- 0 - $499
- $500 - $999
- $1000 - $1999
- $2000 - $2999
- $3000 and up

Source: USDA
Higher interest rates and a trade restrictions begin to cool land values.

Nebraska and Iowa Farm Real Estate Values 1982

Dollars per Acre
Constant 2011 dollars

0 - $499
$500 - $999
$1000 - $1999
$2000 - $2999
$3000 and up

Source: USDA
At the end of the crisis land values are almost back to 1969 levels.

Nebraska and Iowa Farm Real Estate Values 1987

$Dollars per Acre
Constant 2011 dollars

Source: USDA
Is agriculture set up for another correction?

Iowa Corn Prices and Farm Real Estate Values

Dollars per acre (Constant 2011 dollars)

- Iowa (Left Scale)
- Corn Price - 5 year average (Right Scale)

Dollars per bushel

0 1 2 3 4 5 6

The Foundation of Agriculture’s Boom/Bust Cycles
The Foundations of Agricultural Cycles

What Ignites a Farm Boom?

The Kindling: Tight Global Supplies

The Wood: Strong Global Demand

The Matches: Low Interest Rates & Value of the Dollar.

The Gas Can: Debt and Leverage

The Actors
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.
Real interest rates were negative or zero during 1910s, 1940s, 1970s, and today.

Real Yield on 10-year Treasury Security

Calculations based on U.S. Department of Treasury data deflated with consumer price index from the Federal Reserve Bank of Minneapolis.
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.
What are the long-term risks to agriculture?
Will export demand continue to grow?

China’s GDP Growth and Ag Imports from U.S.

Billion dollars

Source: USDA

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

www.kansascityfed.org/omaha
Ethanol also faces export market risk.

U.S. Net Ethanol Exports

Million barrels per month

-2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0

2004 2005 2006 2007 2008 2009 2010 2011

Exports
Imports
What is the supply response of farmers from higher prices?

U.S. Corn Inventories and Prices

Percent of annual consumption

Dollars per bushel

Source: USDA
How does federal government debt affect farm policy?

Federal Government Debt as a Percent of GDP

Source: Congressional Budget Office
How much debt capacity does U.S. agriculture actually have?

**Farm sector debt and repayment capacity, 1970-2011**

- **Maximum feasible debt**
- **Unused repayment capacity**
- **Farm sector debt**

* Forecast for 2011

Note: Farm sector debt does not include debt for operators’ dwellings or for nonfarm uses. Maximum feasible debt is based on farm income and does not reflect nonfarm sources of debt repayment.

*Source: Economic Research Service, USDA.*
Will a ballooning monetary base trigger inflation? How will the Federal Reserve respond?

Federal Reserve Balance Sheet: Assets

Source: Federal Reserve Bank of Cleveland
When will interest rates turn higher?

Overview of Federal Open Market Committee (FOMC) Participants Assessments of Appropriate Monetary Policy (Appropriate Timing of Policy Firming)

Number of Participants

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>3</td>
</tr>
<tr>
<td>2013</td>
<td>3</td>
</tr>
<tr>
<td>2014</td>
<td>5</td>
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<tr>
<td>2015</td>
<td>4</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
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</tbody>
</table>

Source: Federal Reserve Board of Governors
Is there a farmland bubble?

Land values should equal capitalized revenues

\[
\text{Land Values} = \frac{\text{Net Returns to Land}}{\text{Capitalization Rate}}
\]

Net Returns to Land = Crop Price * Yield * % of gross revenues capitalized into land

Assumptions:
- Corn Price: $6.00 per bushel
- 25% of gross revenues go to land

<table>
<thead>
<tr>
<th>Yield (bushel per acre)</th>
<th>150 bushels</th>
<th>200 bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitalization rate</td>
<td>5.1 %</td>
<td>5.1 %</td>
</tr>
<tr>
<td>Land Value</td>
<td>3933</td>
<td>5245</td>
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</tbody>
</table>
# Capitalized Value of Corn Production

<table>
<thead>
<tr>
<th>Capitalization Rate (percent)</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
<th>7%</th>
<th>8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn Price (dollars per bushel)</td>
<td>$3.00</td>
<td>$4.00</td>
<td>$5.00</td>
<td>$6.00</td>
<td>$7.00</td>
<td>$8.00</td>
</tr>
<tr>
<td>3%</td>
<td>$3750</td>
<td>$5000</td>
<td>$6250</td>
<td>$7500</td>
<td>$8750</td>
<td>$10,000</td>
</tr>
<tr>
<td>4%</td>
<td>2813</td>
<td>3750</td>
<td>4688</td>
<td>5625</td>
<td>6563</td>
<td>7500</td>
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<tr>
<td>5%</td>
<td>2250</td>
<td>3000</td>
<td>3750</td>
<td>4500</td>
<td>5250</td>
<td>6000</td>
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<tr>
<td>6%</td>
<td>1875</td>
<td>2500</td>
<td>3125</td>
<td>3750</td>
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<td>5000</td>
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<tr>
<td>7%</td>
<td>1607</td>
<td>2143</td>
<td>2679</td>
<td>3214</td>
<td>3750</td>
<td>4286</td>
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<tr>
<td>8%</td>
<td>1406</td>
<td>1875</td>
<td>2344</td>
<td>2813</td>
<td>3281</td>
<td>3750</td>
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</tbody>
</table>

Assumptions: corn yield 150 bushels/acre, 25% of gross revenues capitalized into land
### Capitalized Value of Corn Production

<table>
<thead>
<tr>
<th>Capitalization Rate (percent)</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
<th>7%</th>
<th>8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn Price (dollars per bushel)</td>
<td>$3.00</td>
<td>$4.00</td>
<td>$5.00</td>
<td>$6.00</td>
<td>$7.00</td>
<td>$8.00</td>
</tr>
<tr>
<td>3%</td>
<td>$6600</td>
<td>$8800</td>
<td>$11,000</td>
<td>$13,200</td>
<td>$15,400</td>
<td>$17,600</td>
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<tr>
<td>4%</td>
<td>$4950</td>
<td>$6600</td>
<td>$8250</td>
<td>$9900</td>
<td>$11,550</td>
<td>$13,200</td>
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<tr>
<td>5%</td>
<td>$3960</td>
<td>$5280</td>
<td>$6600</td>
<td>$7920</td>
<td>$9240</td>
<td>$10,560</td>
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<tr>
<td>6%</td>
<td>$3300</td>
<td>$4400</td>
<td>$5500</td>
<td>$6600</td>
<td>$7700</td>
<td>$8800</td>
</tr>
<tr>
<td>7%</td>
<td>$2829</td>
<td>$3771</td>
<td>$4714</td>
<td>$5657</td>
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<td>$7543</td>
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<tr>
<td>8%</td>
<td>$2475</td>
<td>$3300</td>
<td>$4125</td>
<td>$4950</td>
<td>$5775</td>
<td>$6600</td>
</tr>
</tbody>
</table>

Assumptions: corn yield 200 bushels/acre, 33% of gross revenues capitalized into land
Conclusions

- Agriculture appears to be in another farm boom.
- Rising export activity, a low U.S. dollar, and low interest rates are fueling the boom.
- Going forward, agriculture faces many risks.
- The striking difference is farm debt.

**Will low farm debt levels be enough to keep this “Golden Era” from turning into fool’s gold?**
For More Information on The Midwestern Economy and Rural America

www.kansascityfed.org/omaha