Trends in Farm Income and Land Values

Nathan Kauffman
Omaha Branch Executive and Economist
Federal Reserve Bank of Kansas City

January 11, 2016

The views expressed are those of the author and do not necessarily reflect the opinions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.
Of the 12 Fed Districts, the 10th District is the most concentrated in agriculture by some measures.

Average Farm Income as a Share of Total Personal Income
Average Across Counties by Fed District

Proportion of “Farm Dependent” Counties

Source: BEA, USDA, and staff calculations
Monitoring trends in agriculture remains a key area of focus for the Omaha Branch.

• Omaha Branch Agricultural Efforts
  • Research & analysis, outreach, bank supervision

• Tenth District Survey of Agricultural Credit Conditions
  • District farm income, farmland values, loan repayment rates, etc.

• Agricultural Finance Databook
  • National survey of agricultural lending at commercial banks

• Annual Agricultural Symposium
  • 2016 – “Agriculture’s Water Economy”
  • 2015 – “Responding to Future Food Demands”
  • 2014 – “Structural Transitions in Global Agriculture”
Farm income dropped significantly in 2015.

**U.S. Real Net Farm Income**

Source: USDA.

* Forecast for 2015.
Sharp losses in the cattle sector have added to the pessimism.

Livestock Breakevens and Price

Sources: USDA and Iowa State University.
Weaker profits in the crop sector, though, have been a primary driver of reduced farm income.

Source: USDA.

*Forecast for 2015
Part of the reason for declining crop prices is due to higher levels of global supplies.

**Stocks-to-Use Ratios**

*Estimate for 2014/2015 crop year
**Forecast for 2015/2016 crop year
Source: USDA FAS PSD Database
Key demand factors have also softened considerably.

U.S. Corn Prices and Key Demand Factors

Index (2005 = 0)

- Ethanol Production
- U.S. Ag Exports to China

* 2015 ethanol production calculated based on data through November 20th. Ag exports to China calculated from data through November 2015.

Sources: USDA, Renewable Fuels Association, and EIA.
Credit conditions have gradually deteriorated.

**Tenth District Credit Conditions**

2015, Third Quarter

Source: Federal Reserve Bank of Kansas City, Survey of Ag Credit Conditions
Farmland values, however, have remained relatively steady.

Changes in High Quality Farmland Values

Source: Federal Reserve Banks of Kansas City and Chicago.
Farmland values have, in many ways, defied expectations associated with lower crop prices.

**Corn and Farmland Values**
Quarterly Changes in Iowa since 2002

- % change in corn prices, annualized
- % change in farmland prices, annualized

**Soybean and Farmland Values**
Quarterly Changes in Iowa since 2002

- % change in soybean prices, annualized
- % change in farmland prices, annualized

Source: Federal Reserve Bank of Chicago, Haver Analytics
Bankers have noted several key factors that have shaped the path of farmland values.

### Factors Contributing to Farmland Values

2015, Second Quarter

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percent of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rates</td>
<td>14%</td>
</tr>
<tr>
<td>Farm sector wealth level</td>
<td>21%</td>
</tr>
<tr>
<td>Lack of investment options</td>
<td>34%</td>
</tr>
<tr>
<td>Expectation of net farm income for 2015</td>
<td>14%</td>
</tr>
<tr>
<td>Expectation of net farm income for 2016 or later</td>
<td>16%</td>
</tr>
<tr>
<td>Revenue from mineral rights</td>
<td>14%</td>
</tr>
<tr>
<td>Real estate tax policies</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: Federal Reserve Bank of Kansas City
Despite only modest reductions in average farmland values, the variation has increased dramatically.

**Value of Non-irrigated Cropland, Third Quarter 2015**

- Percent change from previous year:
  - North Dakota: 1.7%
  - South Dakota: -5.5%
  - Nebraska: 0.10%
  - Kansas: -0.30%
  - Oklahoma: 6.9%
  - Texas: 4.2%
  - Mountain States*: 2.5%
  - Minnesota: -5.2%
  - Iowa: -1.0%
  - Northern Illinois: -4.0%
  - Southern Wisconsin: 4.0%
  - Western Missouri: -1.6%
  - Southern Indiana: 0.0%

**Distribution of Tenth District Irrigated Farmland Values**

- Probability (percent):
  - 2001: Mean: $1,194
  - 2007: Mean: $1,921
  - 2015: Mean: $5,008

Source: Federal Reserve Bank of Kansas City
Which developments will be important to monitor in 2016 and beyond?
Land prices have increased faster than rents, but both have been slow to adjust. Pressure building?

**Ratio of Land Values-to-Cash Rent in the Tenth District**

- **Nonirrigated Cropland**
- **Irrigated Cropland**
- **S&P 500**
Operating debt has risen dramatically.
What will liquidity look like in 6 months?

**Ratio of Commercial Farm Loan Volume to Farm Income**

*Ratio equals four-quarter average loan volume (billion dollars) from Ag Finance Databook divided by nominal net farm income (billion dollars) from USDA Farm Income and Wealth Statistics

**USDA nominal net farm income forecasts for 2014 and 2015; loan volumes forecast for the last three quarters of 2015

Sources: Agricultural Finance Databook Table A.3 and USDA

FEDERAL RESERVE BANK OF KANSAS CITY
Global crop inventories have risen, as has the value of the U.S. dollar. What happens to global market share?

**Currency Exchange Rates**

- **Argentina (Peso/US$)**
- **Brazil (Real/US$)**
- **Russia (Ruble/US$)**
- **Broad Index***

*Nominal broad trade-weighted exchange value of the U.S. dollar

Sources: FRB, IMF and Haver Analytics.
China’s economy has shown some cracks. How strong will Chinese export demand be?

Sources: China National Bureau of Statistics, Haver Analytics and Caixin.
But economic sluggishness has been global. Will global growth support commodity demand?

Global GDP Growth

Annual percent change

- 2013
- 2014
- 2015 *
- 2016 *
- 1996 - 2006 Average Annual Rate

Canada | Euro Area | Mexico | Japan | China

* Forecast
Source: IMF October 2015 Update
The Fed raised short-term rates, albeit modestly. How will a rising rate environment shape U.S. ag?

Federal Funds Target Rate

Sources: Federal Reserve Board and Haver Analytics
Concluding Points on the Agricultural Economy

• U.S. agriculture, and farm-dependent rural areas:
  • Near-term adjustments and intensifying financial stress.
  • Long-term optimism, just not like 2010 – 2013.

• Supply and demand risks.
  • Supply: competition in South America.
  • Demand: weakening Chinese economy.

• A 1980s-style bust remains unlikely. However…
  • Cash flow is becoming a more significant concern, with potential pressure on land values.
  • Farm consolidation could intensify as producers face mounting financial stress.
Questions?

Nathan Kauffman
Omaha Branch Executive and Economist
Federal Reserve Bank of Kansas City
Email: nathan.kauffman@kc.frb.org
Website: http://www.kansascityfed.org/omaha/