Transitions in U.S. Agriculture
The U.S. economy continues to advance slowly.

U.S. Real GDP Growth

Percent change from year ago

Change from previous quarter
Change from year ago

Blue Chip Forecast

Calculations based on BEA and Blue Chip Forecast August 2013
Unemployment rates trend down.

Unemployment Rate

Percent

Source: Bureau of Labor Statistics
Underlying the modest growth is a shift in market performance.

**Booming sectors plateau in 2012**

- Commodities
- Exports
- Manufacturing

**The Wildcards**

- Investment
- Government

**A Rebound in Household Spending**

- Housing
- Consumer Spending
Consumer spending and housing drive growth.

Consumer Spending and Housing

Percent change from a year ago

- Personal Consumption Expenditures (left scale)
- Existing Home Sales (right scale)

Source: Bureau of Economic Analysis and National Association of Realtors
Long-term fiscal policy remains uncertain.

Federal Government Debt as a Percent of GDP

Source: Congressional Budget Office
Investment: uncertainty is a heavy burden.

- Potential changes in tax law sparked an increase in business investment at the end of 2012.
- Businesses report that increased economic, fiscal policy, and regulatory uncertainty are weighing on investments.

Source: Bureau of Economic Analysis
Export growth has slowed and manufacturing has weakened.

Real U.S. Net Exports and Manufacturing

Source: Bureau of Economic Analysis and Institute for Supply Management
Compared with equities, commodity markets are no longer booming.

Commodity Prices and Performance vs. Equities

Source: Commodity Research Bureau, Yahoo! Finance, and author’s calculations

* Commodities include: natural gas, gasoline, WTI crude oil, copper, gold, platinum, corn, wheat, live cattle, cocoa, coffee, and sugar. Equities include the S&P 500 index.
Are commodities driving a transition in U.S. agriculture?
Awash in corn and crude oil?

U.S. Corn Inventories and Crude Oil Production

Source: USDA, EIA Short-Term Energy Outlook, and EIA Annual Energy Outlook 2013
Initially similar to 2012, expected corn prices are now drifting lower.

Soybean harvest prices are expected to be lower than last year at this time.

November Soybean Futures Price

Dollars per Bushel

How likely is $7 corn now?

December Corn Futures Price Distribution
Based on Implied Volatility from Options Prices

![Graph showing probability distribution for December corn futures prices between May 29, 2013, and Aug. 15, 2013.]

- **Probability of corn less than $4**
  - May 29: 12%
  - Aug. 15: 25%
- **Probability of corn more than $7**
  - May 29: 24%
  - Aug. 15: 6%

Source: Author’s calculations based on data obtained from barchart.com.
Crop sector profits are projected to fall in 2014.

Net Returns
(Returns less variable costs)

Source: USDA Agricultural Baseline Projections, various years
Livestock profitability has been poor, particularly in the cattle sector.

**U.S. Livestock Prices and Breakeven Costs**

- **Breakeven Costs**
- **Cattle Price**
- **Hog Price**

Source: USDA and Iowa State University
Yet, livestock profits are projected to rise.

Feed Price Ratios

Source: USDA Agricultural Baseline Projections
Could the transition in agriculture lead to a bust?
There are many potential risks.

- Farm Incomes
- Farmland Values
- Agricultural Exports
- Global Competition
- Energy Policy
- Farm Debt
- Interest Rates
Farm incomes are projected to drop sharply in 2014.
Income has started falling in the 10th Federal Reserve District according to bankers.

Source: Federal Reserve Bank of Kansas City, Agricultural Credit Survey

* Bankers responded to each item by indicating whether conditions during the current quarter were higher than, lower than, or the same as in the year-earlier period. The index numbers are computed by subtracting the percent of bankers that responded "lower" from the percent that responded "higher" and adding 100.
Farmland values continue to set new records.

Federal Reserve 10th District Farmland Value Gains

Percent change from a year ago

-5 0 5 10 15 20 25 30 35

Source: FRB KC, Survey of Agricultural Credit Conditions
What is driving farmland values?

Factors Contributing to the Value of Farmland

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percent of Responses</th>
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</thead>
<tbody>
<tr>
<td>Interest rate environment</td>
<td>16%</td>
</tr>
<tr>
<td>Overall wealth level of farm sector</td>
<td>35%</td>
</tr>
<tr>
<td>Lack of alternative investment options</td>
<td>20%</td>
</tr>
<tr>
<td>Expectation of net farm income for 2013</td>
<td>13%</td>
</tr>
<tr>
<td>Expectation of net farm income for 2014 or later</td>
<td>7%</td>
</tr>
<tr>
<td>Land-lease revenue from mineral rights</td>
<td>4%</td>
</tr>
<tr>
<td>Real estate tax policies</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Federal Reserve Bank of Kansas City, Agricultural Credit Survey
Is farmland overvalued?

Cropland Value-to-Cash Rent Ratios

Percent change from previous year

- Iowa Cropland
- Kansas Non-irrigated Cropland

Source: NASS, USDA and Iowa State University

Investors will spend $32 for every dollar of revenue. Implies a capitalization rate of 3.1%
Agricultural exports have surged, especially to China.

U.S. Agricultural Exports

Billion Dollars

Source: USDA
Note: 2013 agricultural exports forecast based on year-to-date 2013 annual growth rate.
* China’s share of total U.S. agricultural exports in parentheses.
Will export demand continue to grow?

U.S. Agricultural Export Growth

Billion dollars

Source: USDA
Will the U.S. lose market share?

Global Corn, Soybean, and Wheat Expansion

Acreage Index (2000 = 100)

Percent


* Black Sea Region includes Russia, Ukraine, and Kazakhstan
Source: USDA
What will happen to Renewable Energy Policy?

U.S. Gasoline Consumption, Ethanol Production, and Mandates

Billion Gallons

- U.S. Gasoline Consumption (Left Scale)
- Ethanol Production (Right Scale)*
- 2015 Mandate (Right Scale)

Source: Energy Information Administration.
* Ethanol Production is net of trade
How will investments and debt respond to income changes?

U.S. Farm Profits and Capital Investments per Farm

- Net Returns to Farm Operators (Left Scale)
- Farm Capital Expenditures (Right Scale)

Source: USDA
Farm debt started to rise in 2012.

Farm Debt Outstanding at Commercial Banks

Percent change from previous year

Source: FDIC, Call Report data
Farm debt appears to be concentrated.

- **KS Farm Management Farms:**
  - **Average Debt-to-Asset Ratio**
    - 1979 – 24.6%
    - 2010 – 26.8%
  - **Debt-to-Asset Ratio >40%**
    - 1979 – 19.4%
    - 2010 – 25.6%
  - **Debt-to-Asset Ratio >70%**
    - 1979 – 1.3%
    - 2010 – 5.9%

Monetary Policy
Low inflation leads to accommodative monetary policy.

Personal Consumption Expenditures Price Index

Percent change from previous year

Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13

Overall PCE Price Index
PCE Price Index - Excluding Food and Energy

Source: Bureau of Economic Analysis
Interest rates are expected to rise.

Source: Federal Reserve Board, Summary of Economic Projections, June 2013
What is the exit strategy?

Federal Reserve Balance Sheet: Assets

Billion Dollars

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

Source: Federal Reserve Board of Governors
Conclusions

- Modest economic recovery continues, but in transition.

- Commodities drive a transition in U.S. agriculture.
  - Softer crop sector profits
  - Strengthening livestock profits

- In the transition, there are risks to U.S. agriculture, possibly beyond 2013.
  - Farm incomes, farmland values, export markets, global competition, ethanol, farm debt, and interest rates
For More Information on The Midwestern Economy and Rural America

www.kansascityfed.org/omaha