



The Farm Economy and the North Central Region – A Cause for Concern

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Classic Farm Boom Bust Cycles

Farm Booms

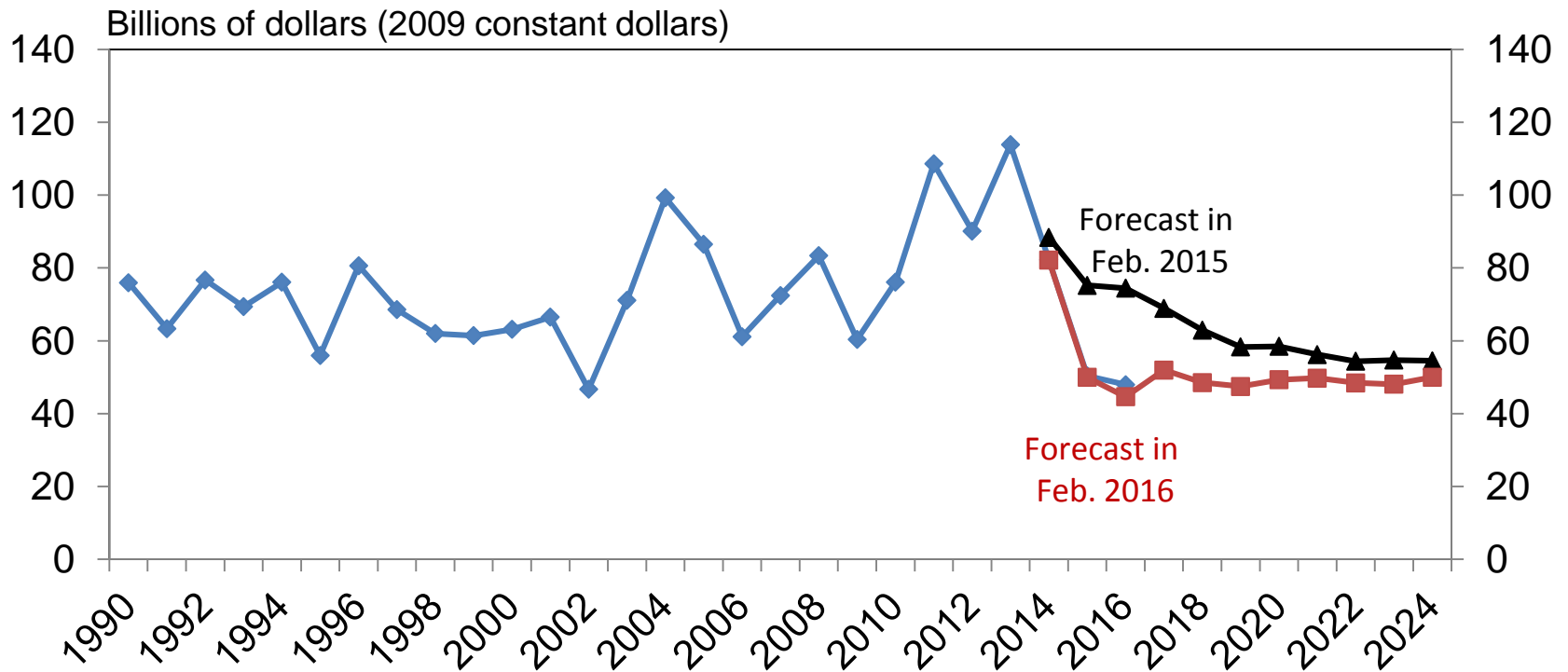
- Surging demand, often export demand
- Global supply constraints
- High inflation boosts commodity prices
- Low interest rates spur farm investments and debt

Farm Busts

- Farm incomes unexpectedly fall as demand plateaus amid bountiful supplies.
- Financial stress emerges in farm operating loans (Liquidity Crisis)

The Farm Boom Ends Faster than Expected.

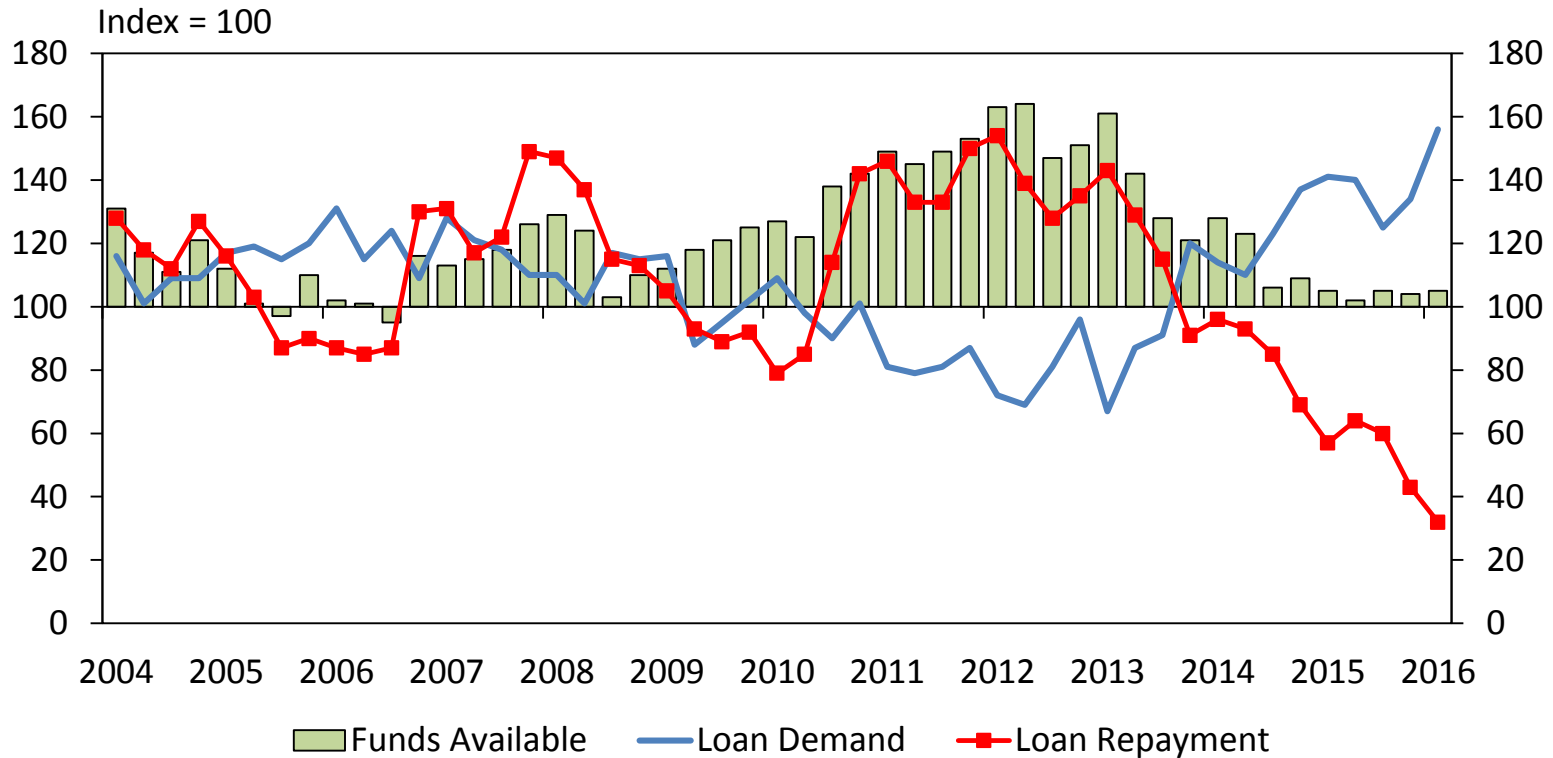
U.S. Farm Income



Calculations based on USDA data

Cash Crunch (Liquidity Crisis) on the Farm?

Farm Credit Conditions in the Chicago Federal Reserve District



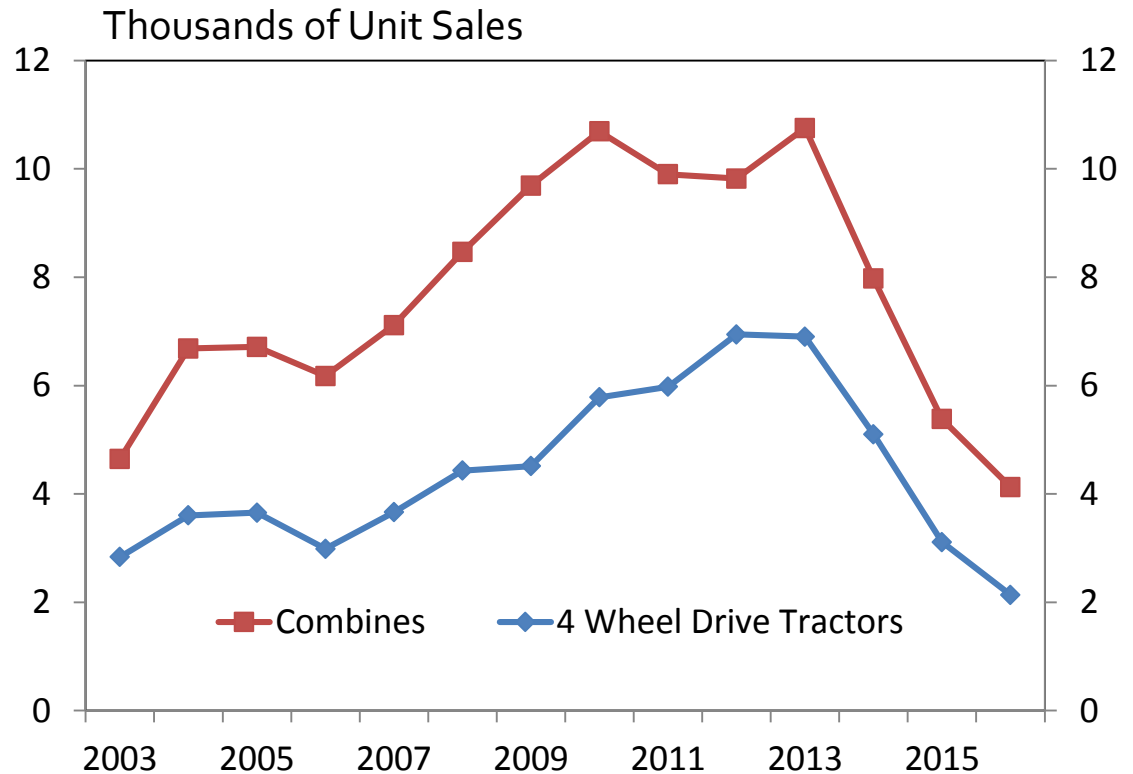
Source: Federal Reserve Bank of Chicago

Farm equipment sales begin to fall, but remain historically high

U.S. Tractor and Combine Sales



In 2016, combine sales and tractor sales are below pre-boom levels



Source: Association of Equipment Manufacturers
* Estimated based on sales through June 2016

Midwestern Farmland Values Edge Down in 2015.

Non-irrigated Farmland Values December 2015

Percent change from previous year



*Mountain States include Colorado, northern New Mexico and Wyoming, which are grouped because of limited survey responses from each state

Sources: Federal Reserve District Agricultural Credit Surveys (Chicago, Dallas, Kansas City and Minneapolis)

Classic Farm Boom Bust Cycles

Farm Booms

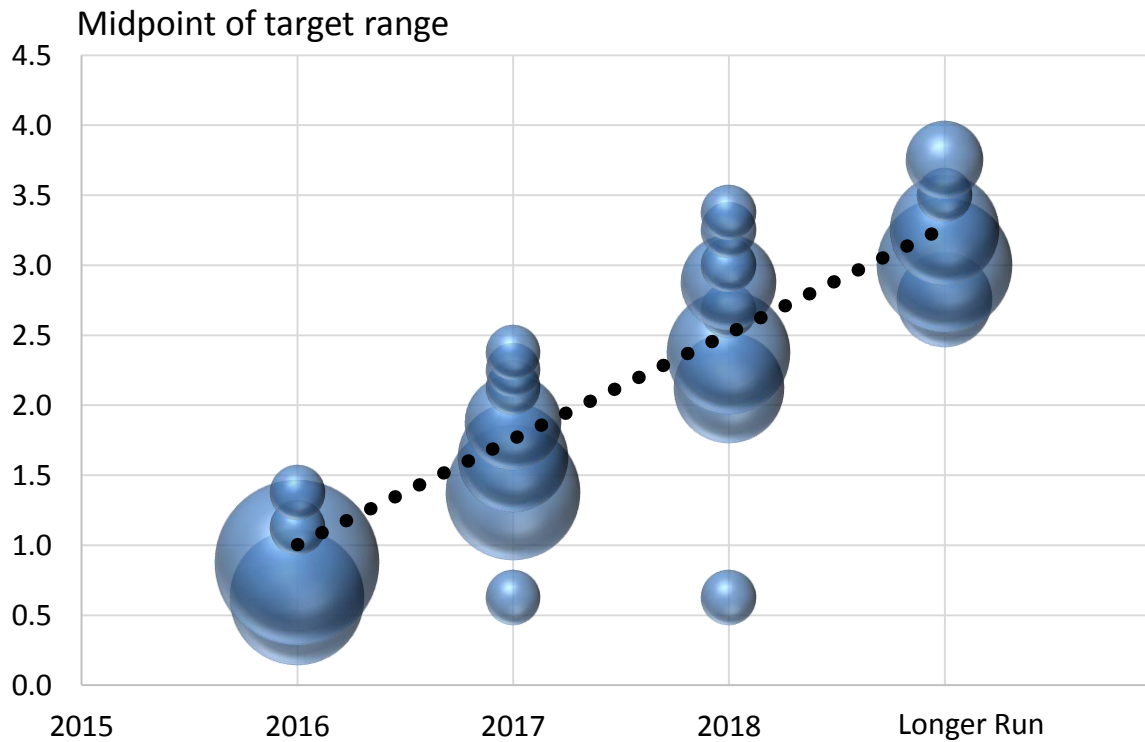
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Farm Busts

- Farm incomes unexpectedly fall as demand plateaus amid bountiful supplies.
- Financial stress emerges in farm operating loans (Liquidity Crisis)
- ***High interest rates slash farm asset values (Solvency Crisis)***

Will The Federal Reserve Ever Raise Rates?

Fed Funds Rates

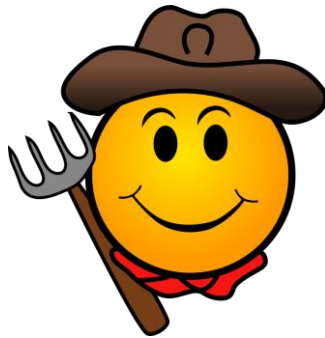


Source: Federal Reserve Board of Governors

Inflation Comes Before Higher Interest Rates

- Inflation:
 - Cost push: rising input costs push up consumer prices (Commodities)
 - Demand pull: rising demand pulls up consumer prices (Wages)

Is Inflation Good for Agriculture?



Inflation Comes Before Higher Interest Rates

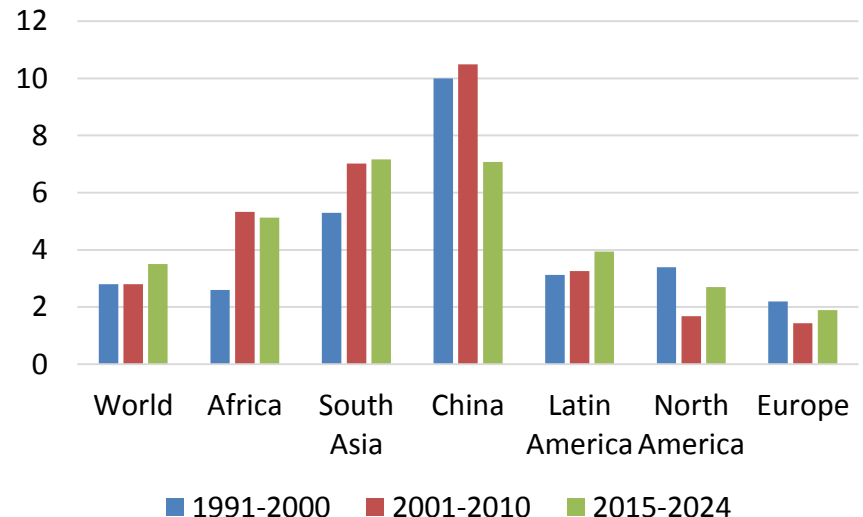
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- Five Drivers of Inflation

- Global Demand Growth



World Real GDP Growth
(Annual percent change)

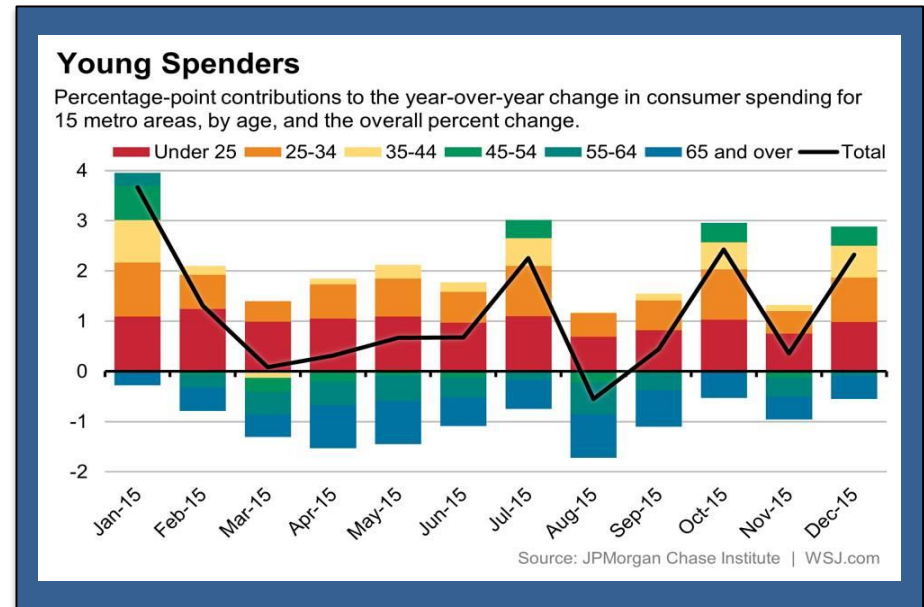


Source: USDA

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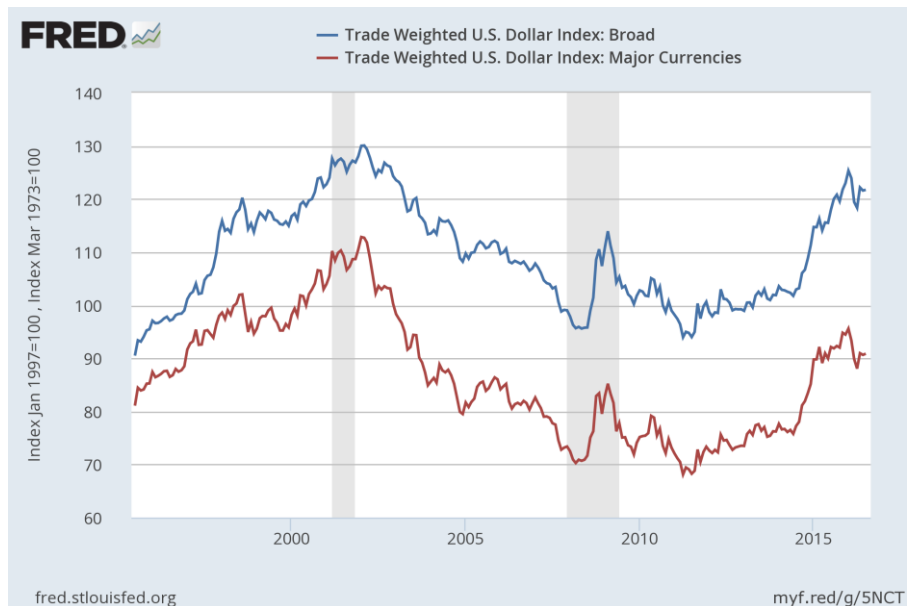
- Five Drivers of Inflation
 - Global Demand Growth
 - U.S. Demand Growth
 - Millennial spending: Homes, cars, families ...
 - Boomer spending: retirement, health care ...



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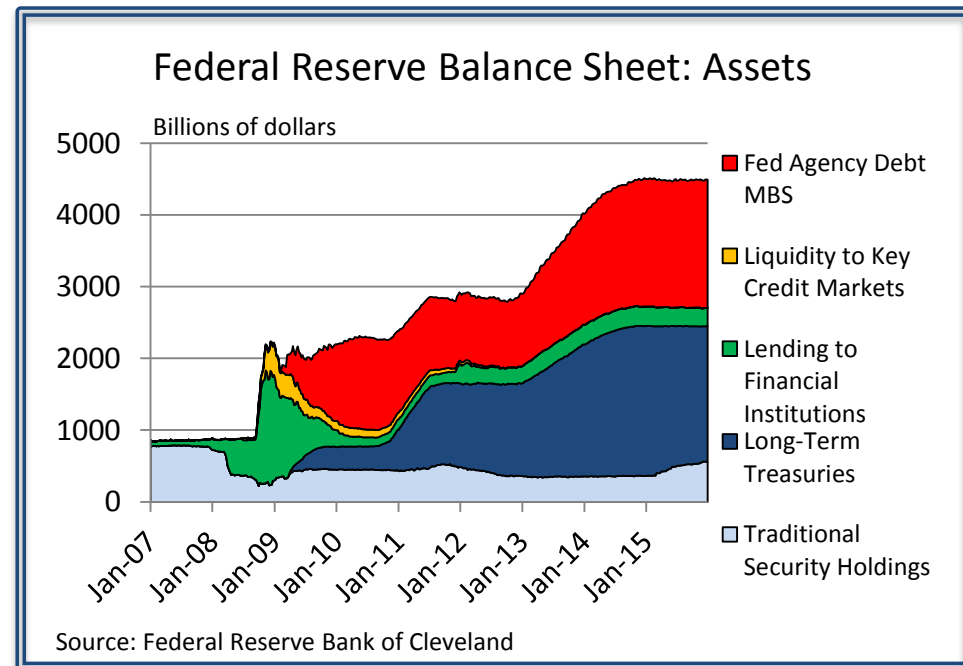
- Five Drivers of Inflation
 - Global Demand Growth
 - US Demand Growth
 - Exchange rates



Inflation Comes Before Higher Interest Rates

- Inflation:
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- Five Drivers of Inflation
 - Exchange rates
 - Global Demand Growth
 - U.S. Demand Growth
 - Federal Reserve Targets
 - Shrinking the balance sheet to forestall inflation requires higher interest rates



Slower Labor Force Growth is Expected to Trim Potential GDP

US Potential GDP
(Average Annual Growth)

	1950 - 1973	1974- 1981	1982- 1990	1991- 2001	2002- 2007	2008- 2014	2015- 2025
Potential GDP	4.0	3.3	3.2	3.2	2.8	1.4	2.1
Potential Labor Force	1.6	2.5	1.6	1.3	0.9	0.5	0.5
Potential Labor Force Productivity	2.4	0.8	1.6	1.9	1.9	0.9	1.6

Source: Congressional Budget Office

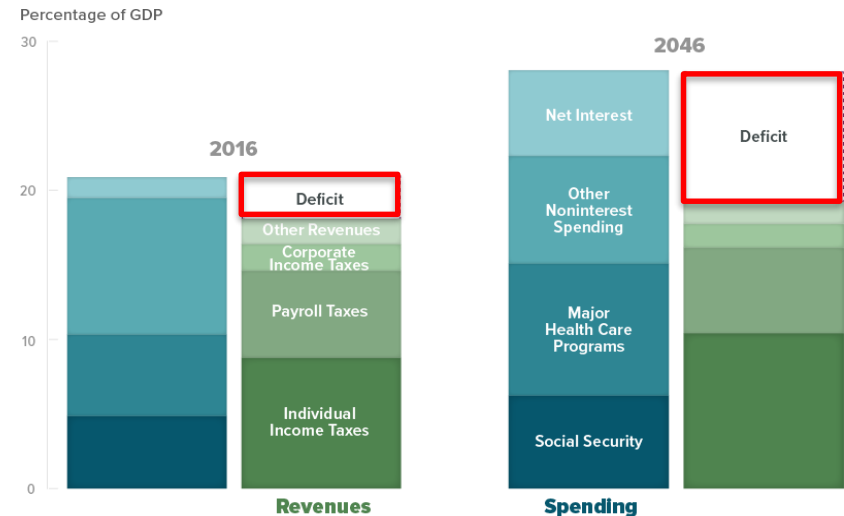
Lower Potential GDP Suggests Inflation Rises at Lower Growth Rates.

Inflation Comes Before Higher Interest Rates

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 - Cost push: rising input costs push up consumer prices (Commodities)
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- Five Drivers of Inflation
 - Exchange rates
 - Global Demand Growth
 - U.S. Demand Growth
 - Federal Reserve Targets
 - Federal Government Debt
 - Austerity is deflationary
 - Leveraging is inflationary

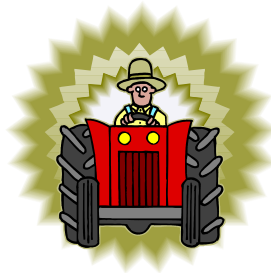
Long Term Budget Outlook



Source: Congressional Budget Office

What should bankers expect from farmers?

- 1) Lock in low rates on existing debt
- 2) Build working capital (cash)
- 3) Evaluate risk management plans
- 4) Drive efficiency in their operations
- 5) Focus on productivity when making investments



What Can Land Grant Universities Do?

Scenario 1: No Inflation and Status Quo
Scenario 2: Inflation and Higher Interest Rates

Assist Agriculture in Boosting Productivity

$$\begin{array}{ccccc} \textit{Productivity} & = & \textit{Value} & \times & \textit{Efficiency} \\ \textit{(Dollars per Input)} & & \textit{(Dollars per output)} & & \textit{(Output per Input)} \end{array}$$

Enhancing Value

Risk Management Tools
New Markets
Product Development

Enhancing Efficiency

Feed Efficiency
Boosting Yields
Input Management