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2019 Indiana and US Agriculture

Michael Gunderson

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Pete Loewen Retweeted

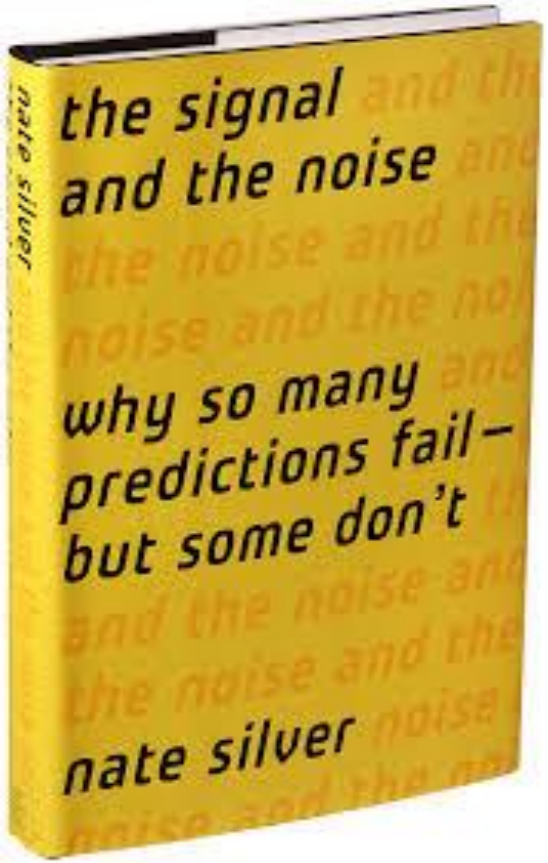
Sam Morse @smorse_farm · 27 Oct 2014

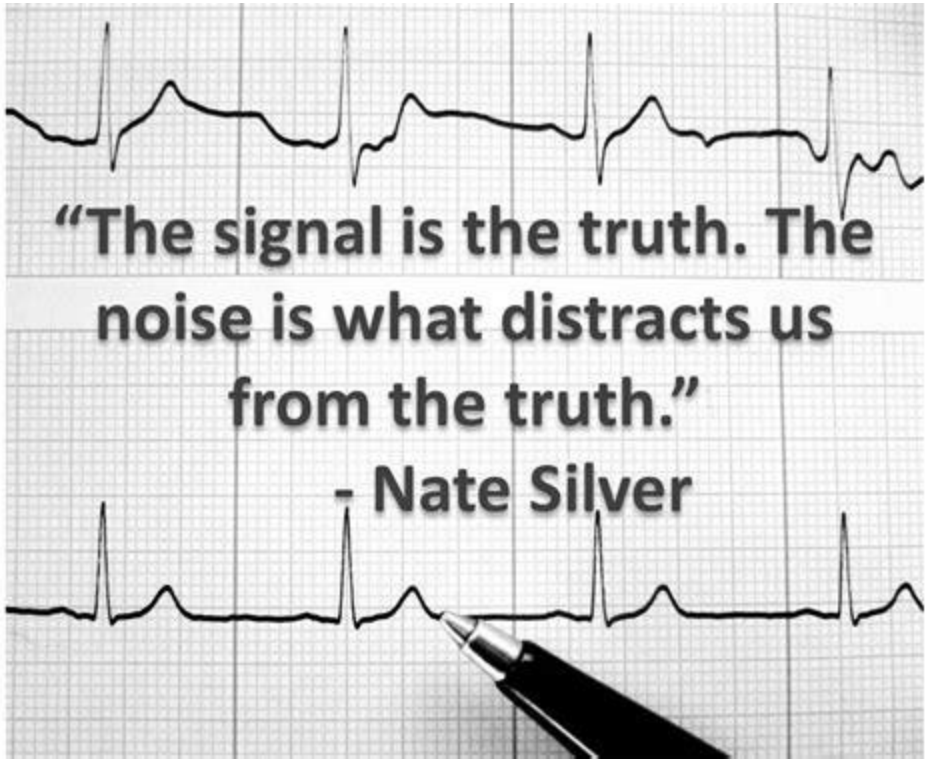
Ag Econ professor is trying to tell everyone that you can't grow corn for less than $4.50/bushel. That's why you're teaching and not farming

RETWEETS	LIKES
7	24

12:38 PM - 27 Oct 2014 · Details

Lely Astronaut


the signal
and the noise
why so many
predictions fail–
but some don't
nate silver


"The signal is the truth. The
noise is what distracts us
from the truth."
- Nate Silver

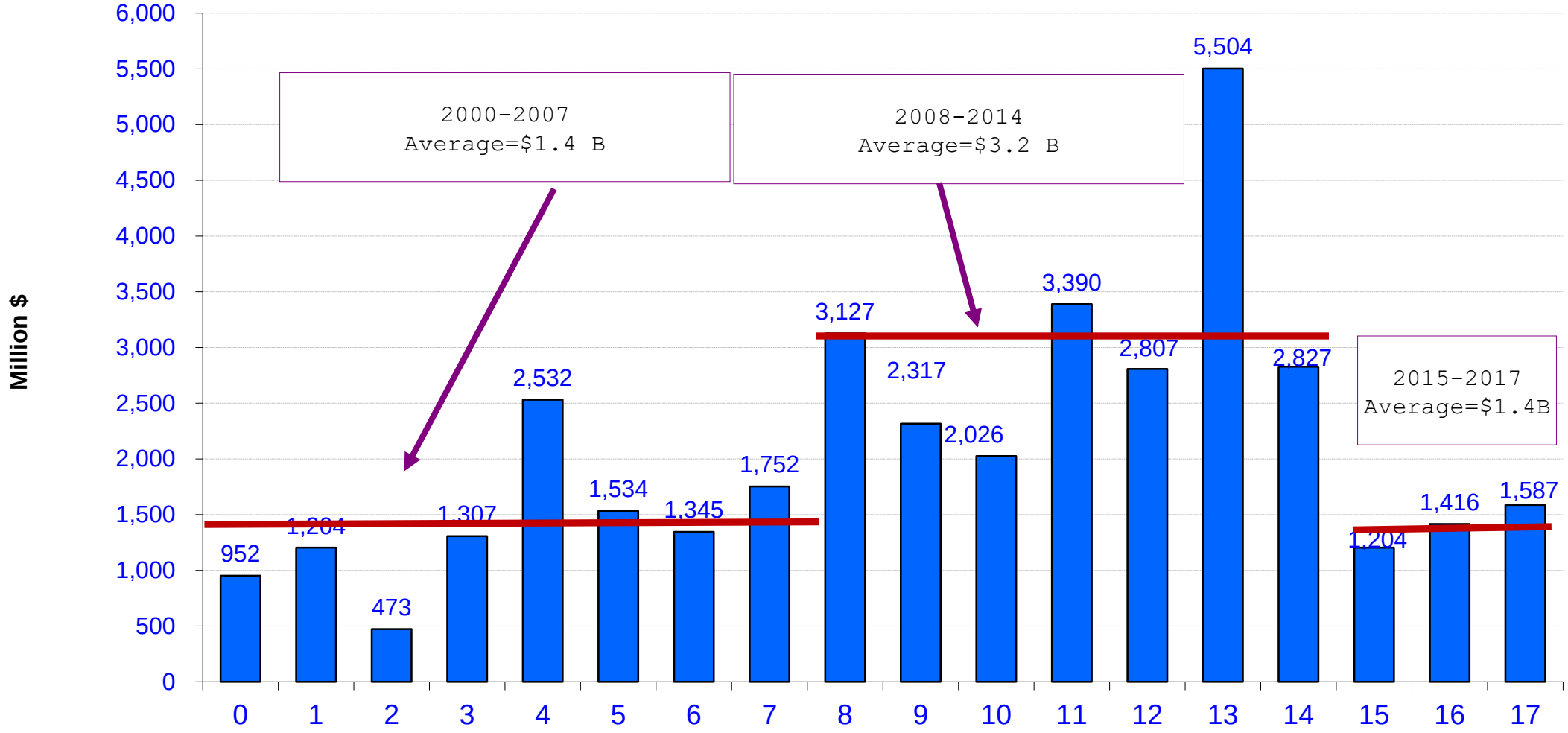
2019 Indiana and U.S. Agriculture

- Indiana Yields
- Higher Corn Prices
- Soybean Trade Assistance Payments
- Trade Conflicts Calming
- Higher 2019 Prices

What Happened to 2018-Crop Prices?

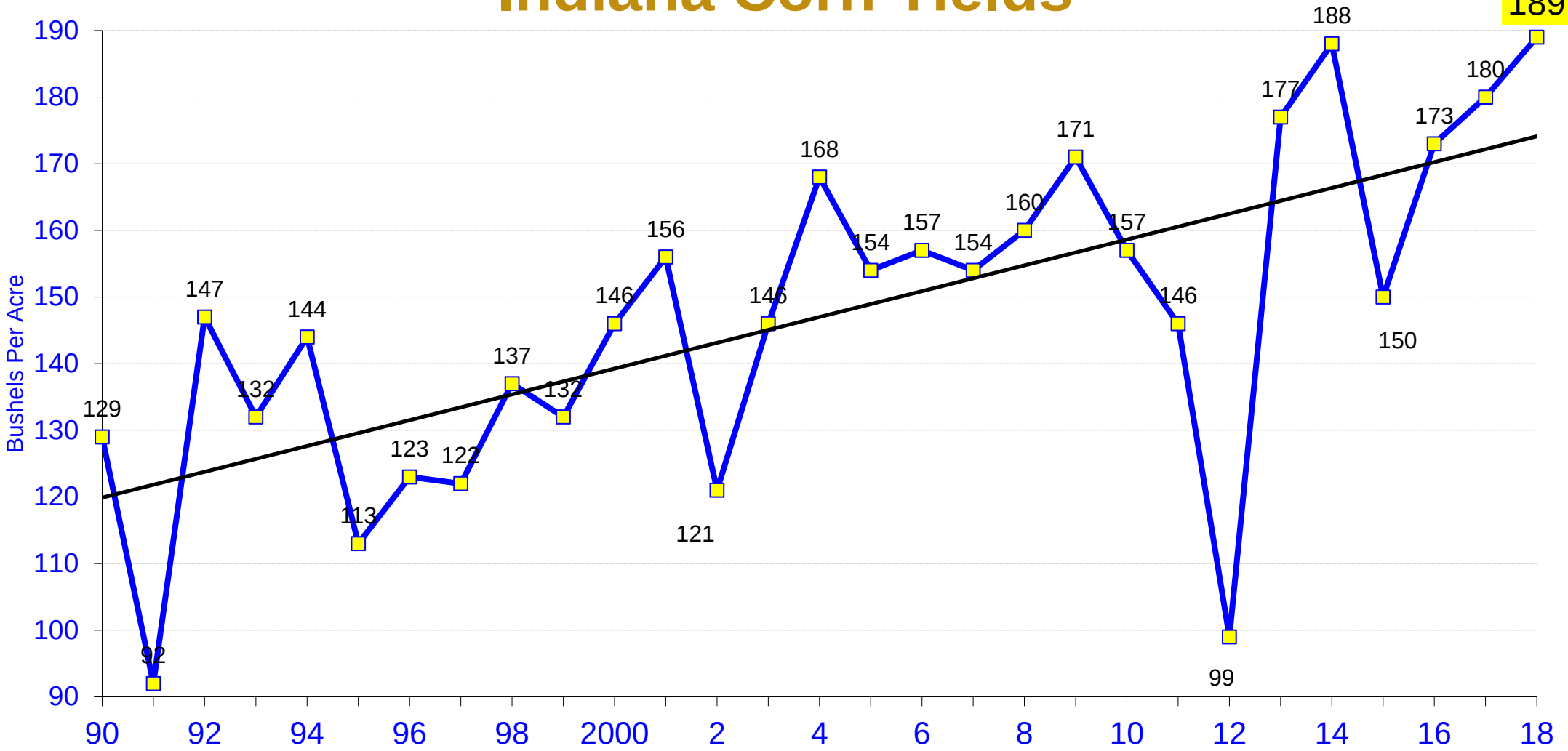
	Spring	Fall
Corn	$4.00	$3.00-$3.25
Beans	$10.00+	$7.70-$8.00

Indiana Net Farm Income: Actual $

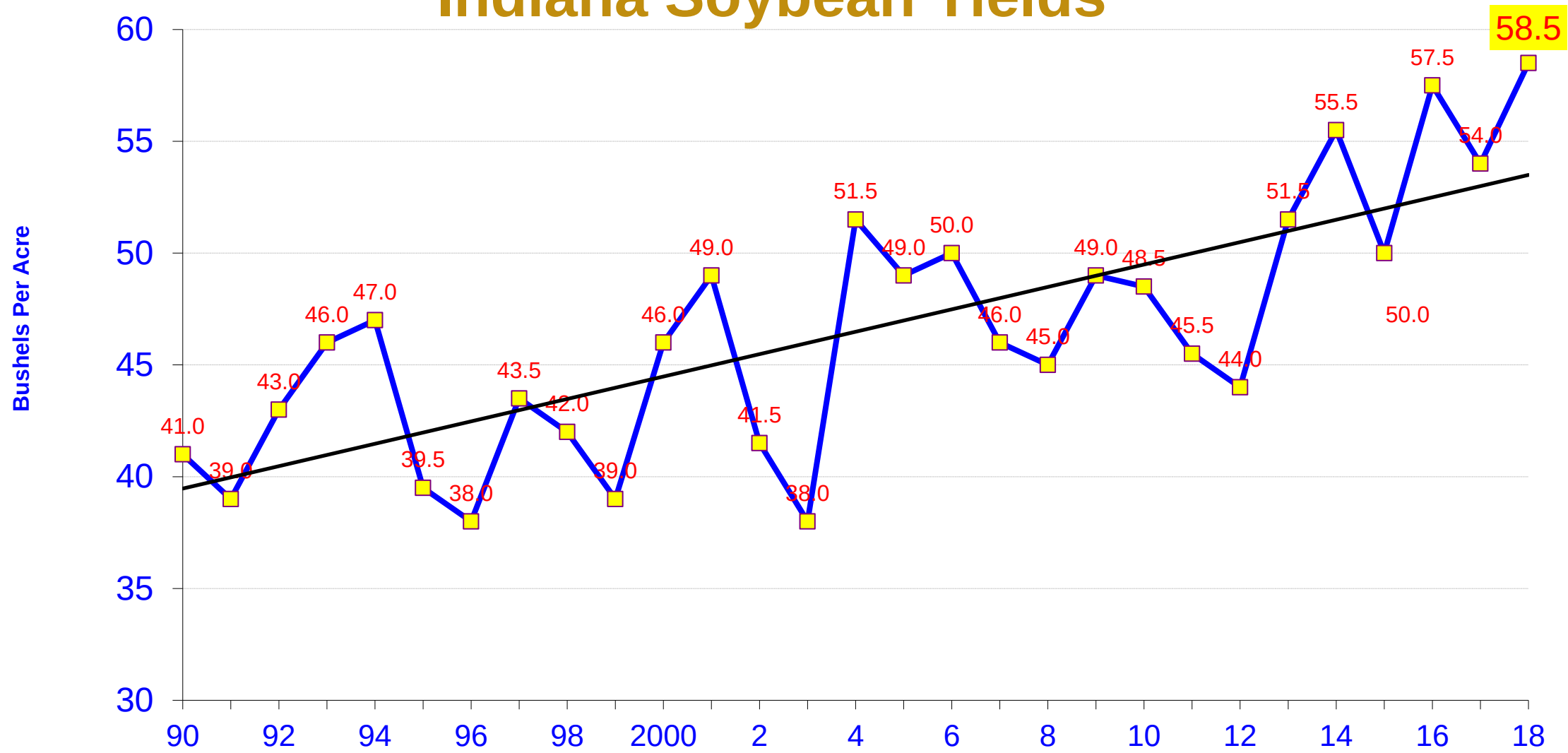


Source USDA

Indiana Corn Yields



Indiana Soybean Yields



2018

Corn

11/15/2018

1990-17 Trend '18	USDA Nov '18	Bu. from trend	% of Trend	
171.9	194.0	22	113%	*State Avg.*
176.3	187.0	11	106%	North West
174.1	190.0	16	109%	North Central
160.5	187.0	26	116%	North East
182.4	203.0	21	111%	West Central
173.8	208.0	34	120%	Central
164.9	188.0	23	114%	East Central
171.1	191.0	20	112%	South West
155.1	187.0	32	121%	South Central
158.7	182.0	23	115%	South East

2018

Soybeans

11/15/2018

1990-17 Trend 18	USDA Nov '18	Bu from Trend	% of Trend	
52.7	**60.0**	7.3	113.8%	**STATE**
53.2	**59.5**	6.3	111.8%	**North West**
52.9	**61.5**	8.6	116.3%	**North Central**
50.4	**60.0**	9.6	119.1%	**North East**
55.1	**61.5**	6.4	111.7%	**West Central**
55.3	**63.5**	8.2	114.9%	**Central**
53.3	**60.0**	6.7	112.6%	**East Central**
51.4	**55.0**	3.6	107.0%	**South West**
46.8	**55.5**	8.7	118.5%	**South Central**
47.4	**55.0**	7.6	116.2%	**South East**

	Corn		Beans	
	2017	**2018**	**2017**	**2018**
Yield	180	189	54	59
Ind Price	$3.56	$3.75	$9.61	$8.80
TradeAssistance		$0.01		$1.65
	$3.56	$3.76	$9.61	$10.45
Revenue/Acre	$640.80	$710.64	$518.94	$611.33
18 vs. 17		$69.84		$92.39
Higher Costs Per Acre		-$12		-$8
		$58		$84
Harvested Acres (Million)		5.2		5.90
Million $ Above 2017		$301		$498

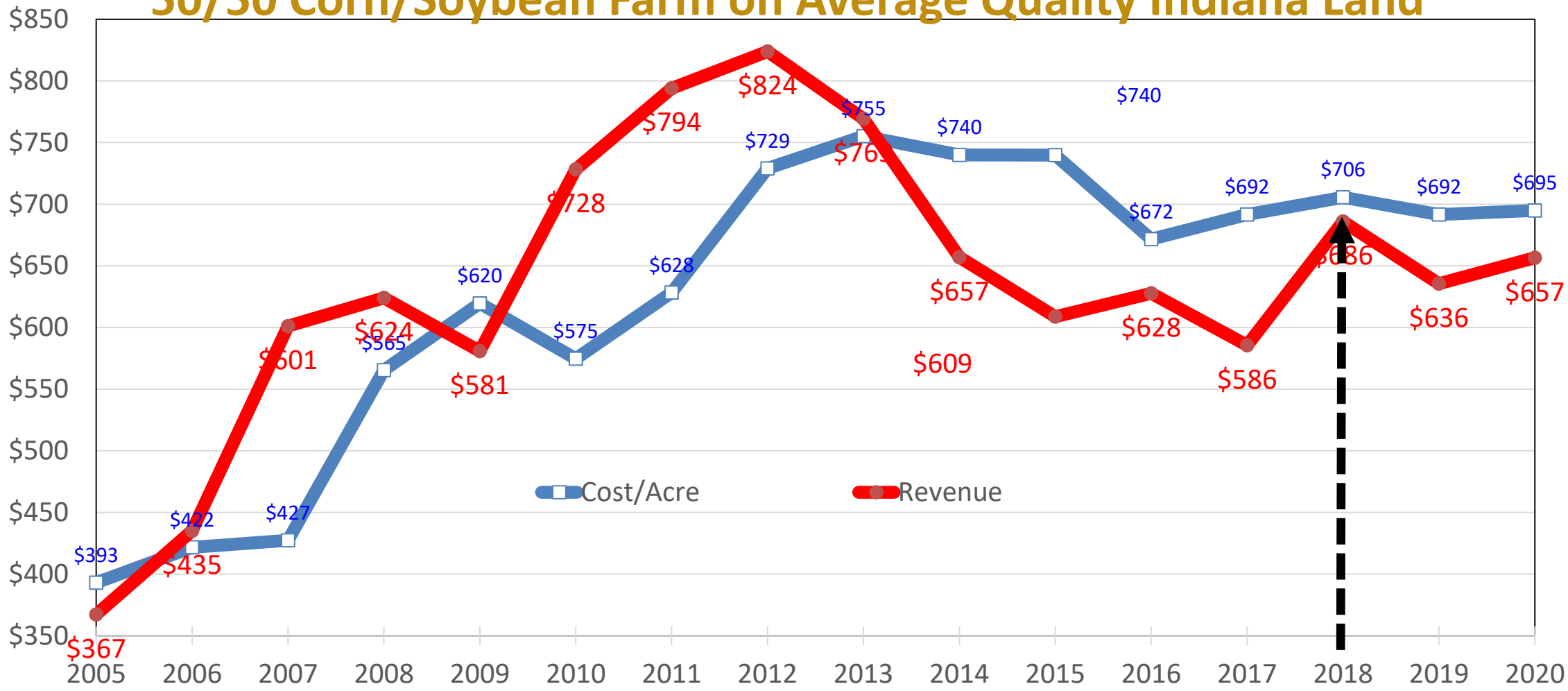
Indiana Farm Income 2017 = $1.6 billion + $799 million

Contribution to Higher Revenues/Acre vs. 2017

	Corn	Beans
Yield	$33.75	$39.60
Price	$34.20	-$43.74
Trade Assist	$1.89	$96.53
	$69.84	$92.39

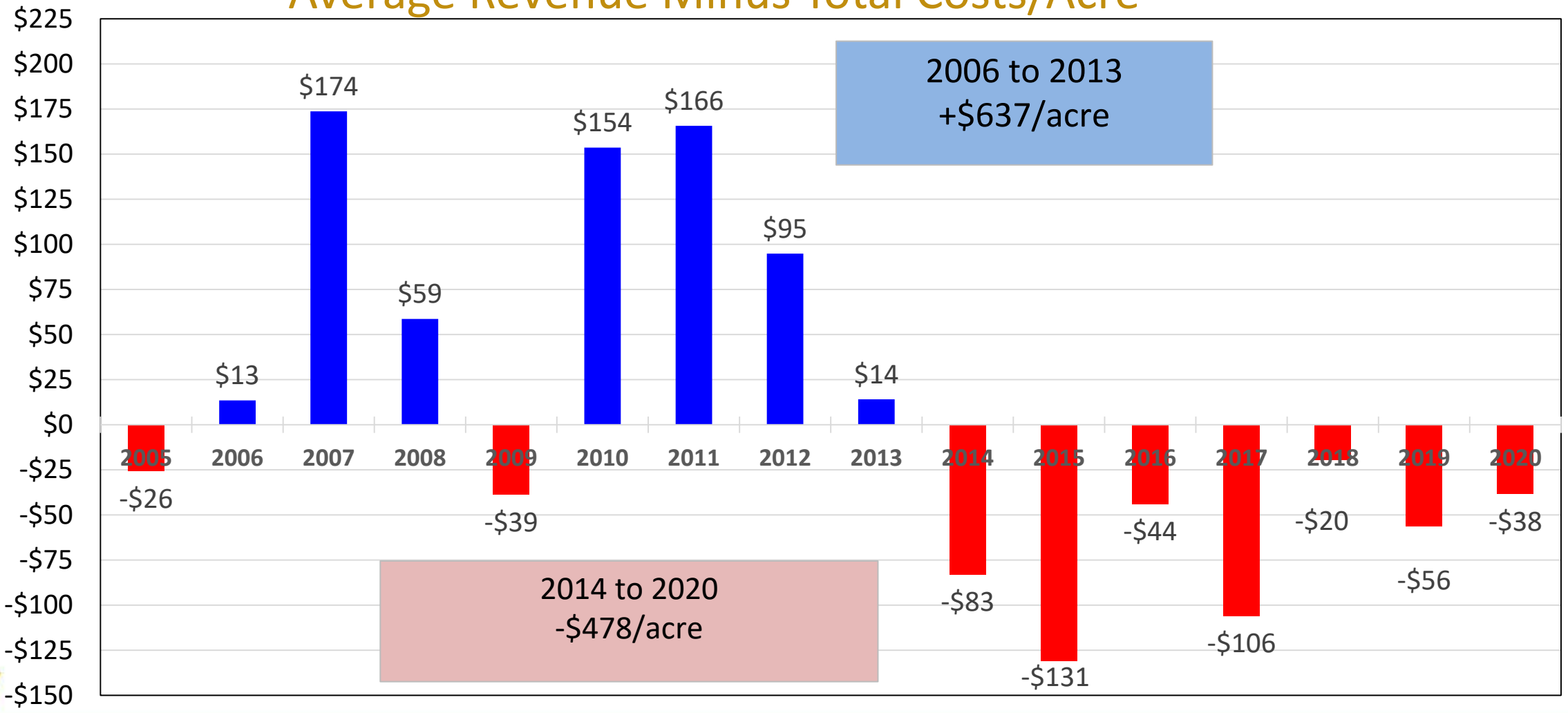
2019 and 2020 Can **not** count on High Yields and Trade Assistance

Estimated Revenue and Total Costs/Acre on a 50/50 Corn/Soybean Farm on Average Quality Indiana Land



C. Hurt, Purdue, January 2019

50/50 Corn/Soybean Indiana
Average Revenue Minus Total Costs/Acre



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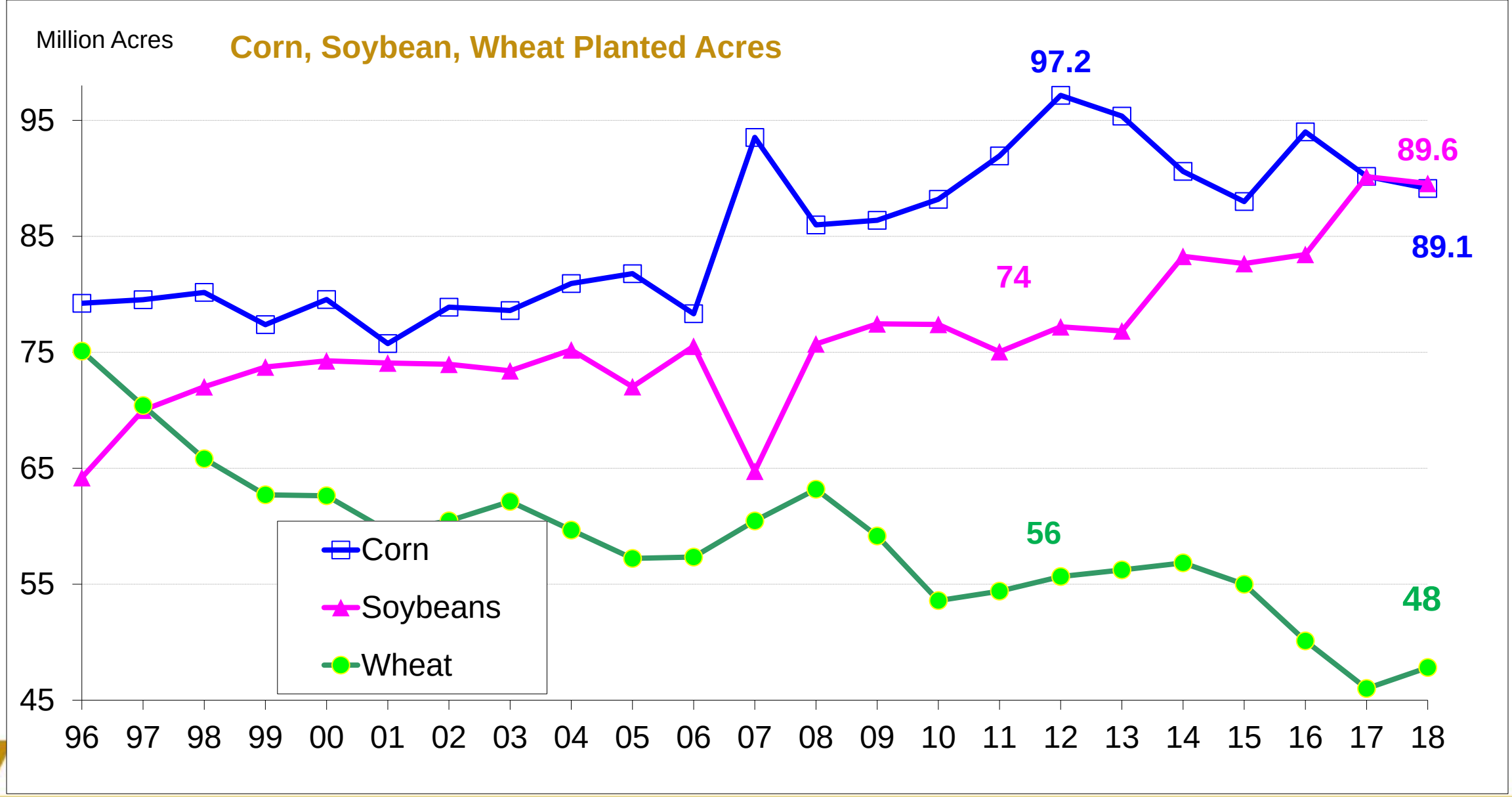
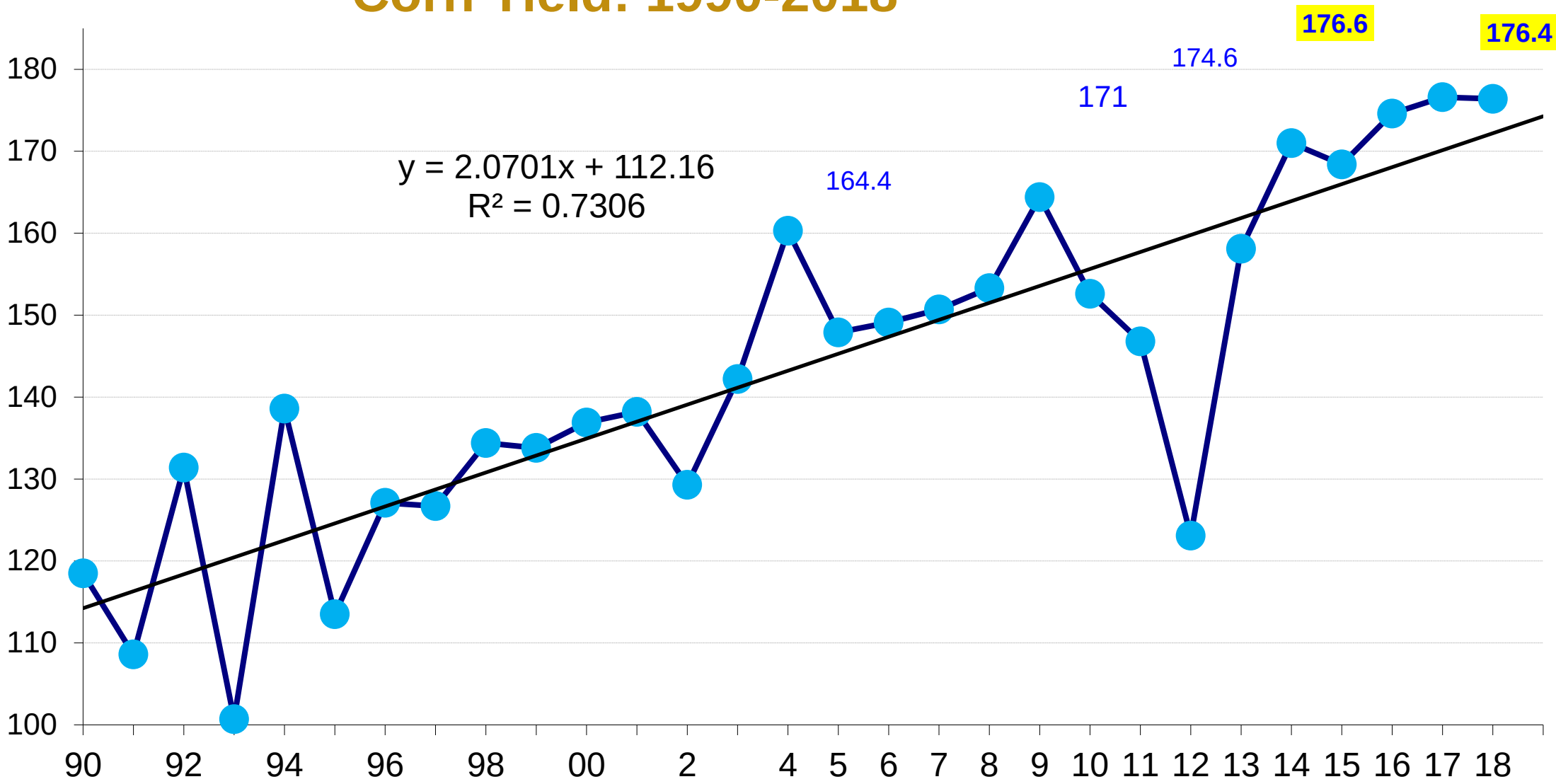
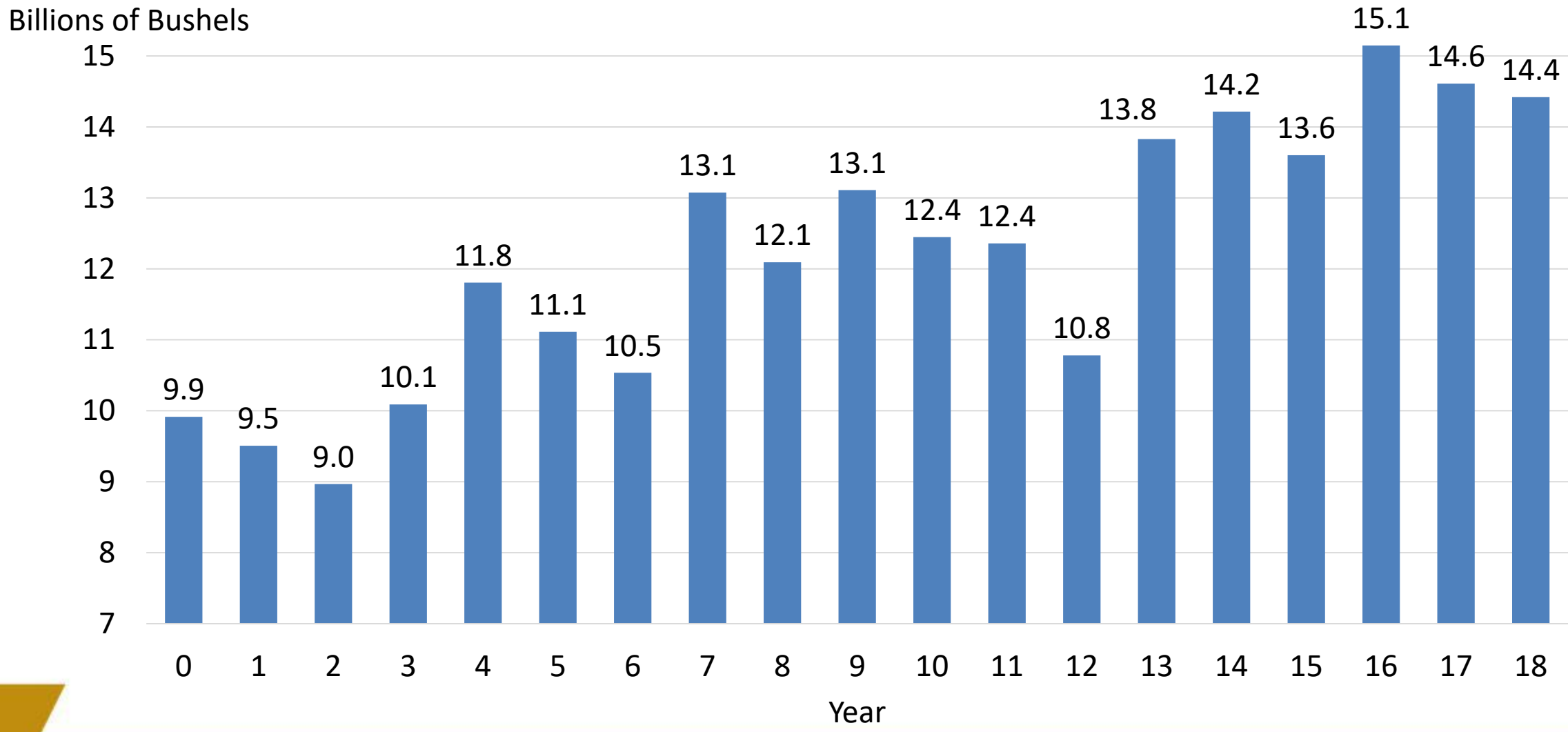

Million Acres
Corn, Soybean, Wheat Planted Acres
97.2
89.6
89.1
74
56
48
95
85
75
65
55
45
96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18
Corn
Soybeans
Wheat

Corn Yield: 1990-2018



Total U.S. Corn Production



Corn	2/8/19	USDA	USDA 176.4 bu. Down 2.5 bu. since Dec	89.1 to 92 Million 178.9 to 176.5
	16/17	17/18	18/19	19/20
Carry In	1,737	2,293	2,140	1,735
Production	15,148	14,604	14,420 (-206)	14,913
Total Supply	16,942	16,934	16,600	16.688
Feed & Residual	5,467	5,302	5,375 (-125)	5,550
FSI Non-Fuel	1,450	1,453	1,480	1,500
FSI Fuel (Ethanol)	5,439	5,601	5,575 (-25)	5,605
Export	2,293	2,438	2,450	2,425
Total Use	14,649	14,793	14,865	15,080
Ending Stocks	2,293	2,140	1,735 (-46)	1,608
US Farm Price	$3.36	$3.36	$3.60	$3.80

$3.35-$3.85

U.S. Ending Stocks to Use: Corn & Soybeans

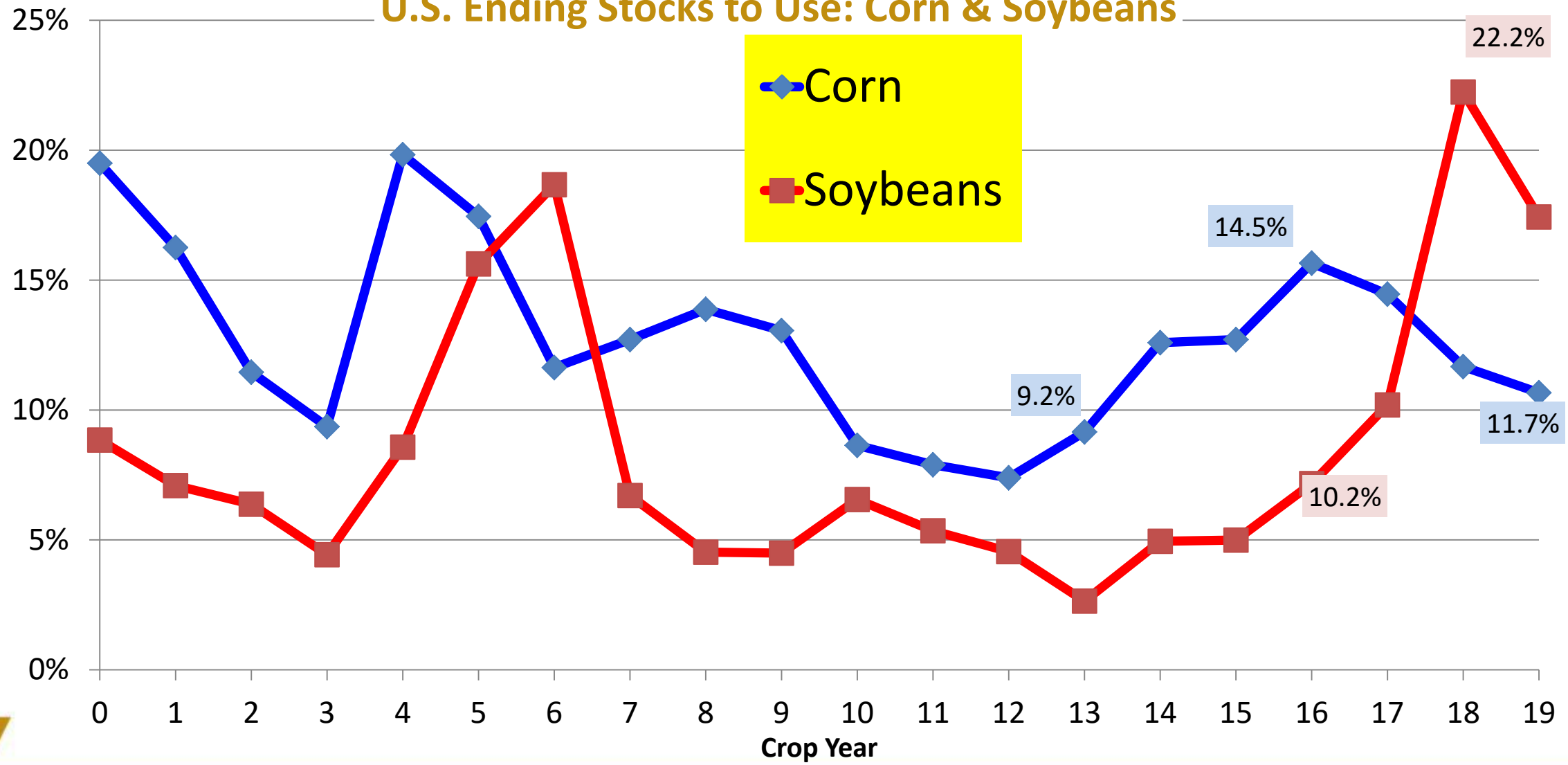
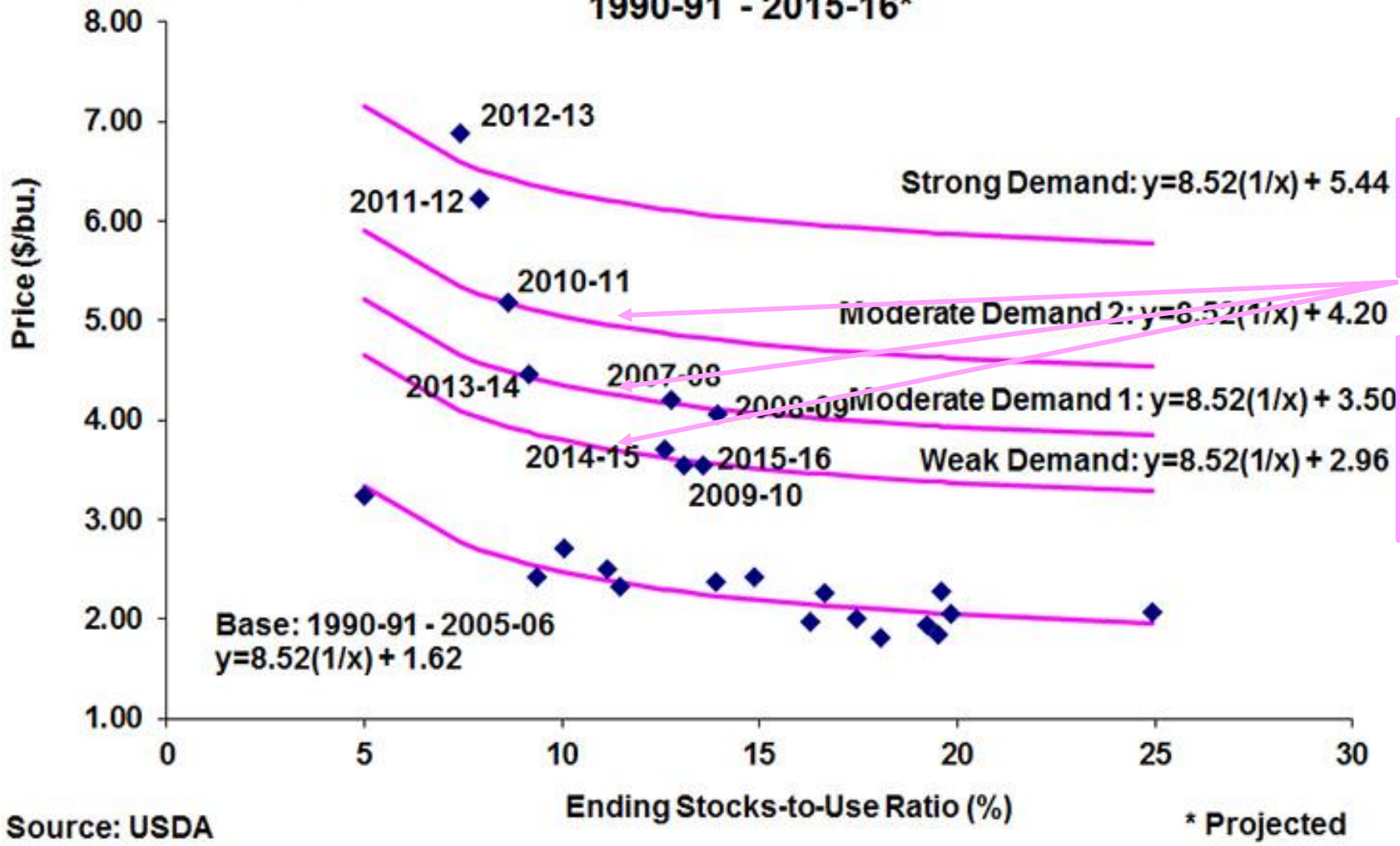


Figure 1. Reciprocal Regression Model Specification of U.S. Farm Price of Corn and U.S. Ending Stocks-to-Use Ratio, 1990-91 - 2015-16*



Source: USDA

* Projected

WASDE Feb. 2019
Ending Stocks to Use
= 10.7%

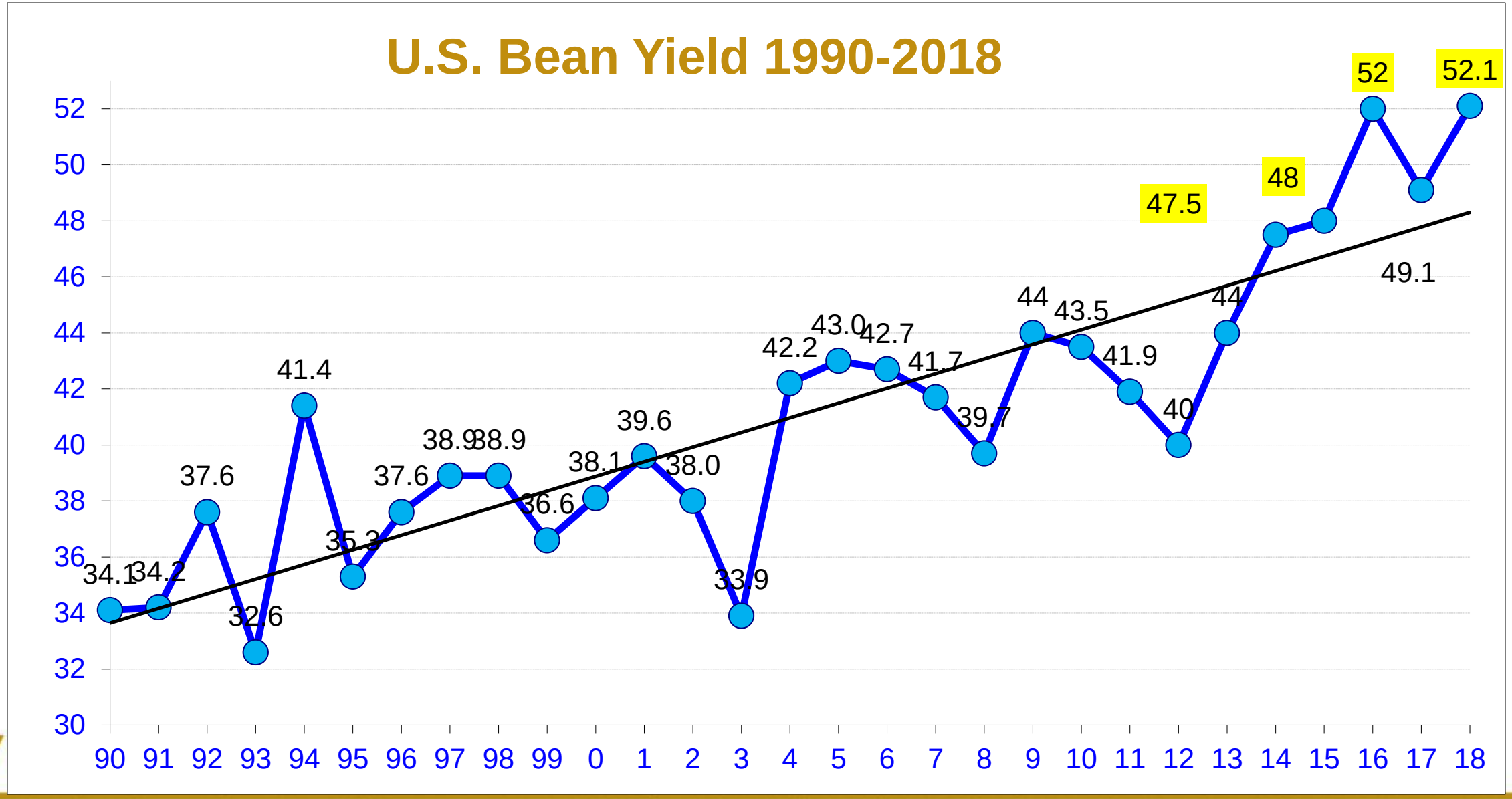
Corn Price
Moderate 2 = $5.00
Moderate 1 = $4.30
Weak = $3.76

Bid Premium to June = 10-15 cents
On-Farm Interest = 6 cents

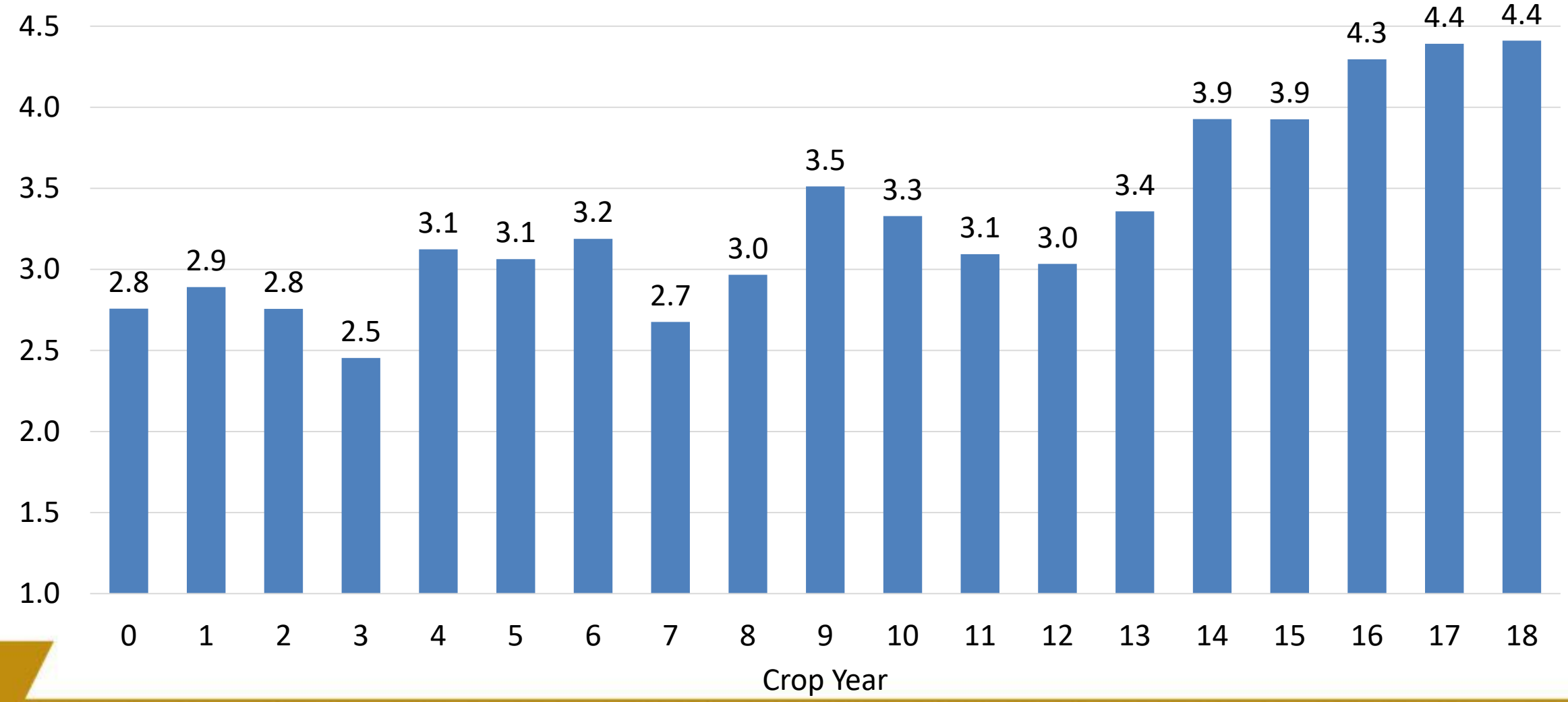
Return to storage = 4 to 9 cents

Corn Dec '19 (ZCZ19) - Barchart.com
$4.10-$4.20
$4.05
425-0
420-0
415-0
410-0
405-0
399-6
395-0
390-0
385-0
380-0
Mar '18
Apr '18
May '18
Jun '18
Jul '18
Aug '18
Sep '18
Oct '18
Nov '18
Dec '18
Jan '19
Feb '19

U.S. Bean Yield 1990-2018



Total U.S. Soybean Production



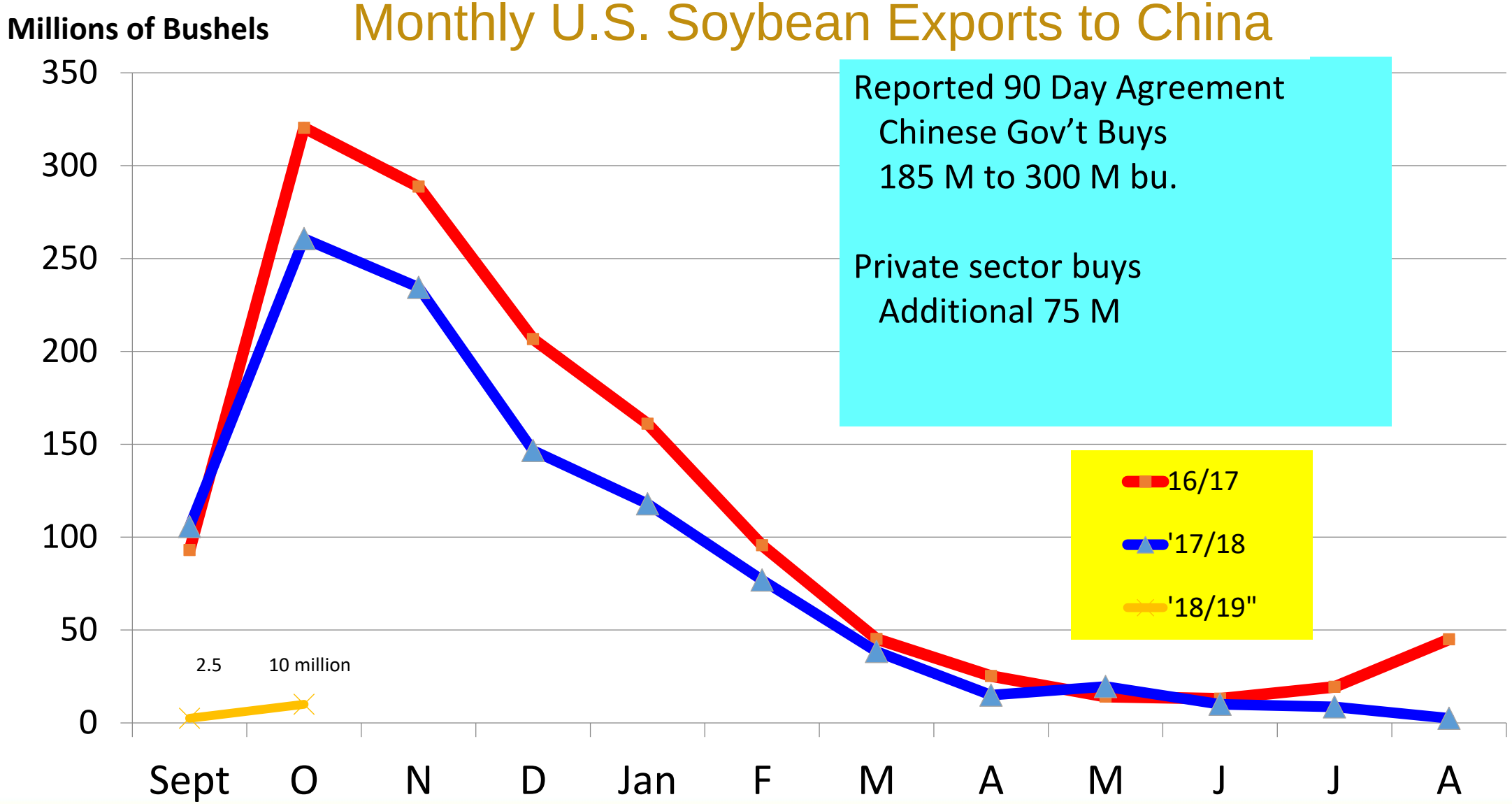
Soybeans	2/8/19	USDA	USDA 51.6 Down .5 bu since Dec	89.1 to 82.5 Million 51.6 to 50 bu.
	16/17	17/18	18/19	19/20
Carry in	197	302	438	910
Production	4,296	4,411	4,544 (-56)	4,085
Total Supply	4,515	4,734	5,002	5,020
Seed & Residual	140	112	127	120
Crush	1,899	2,055	2,090 (+10)	2,115
Exports	2,174	2,129	1,875 (-25)	2,040
Total Use	4,213	4,296	4,092	4,275
Ending Stock	302	438	910 (-45)	745
Farm Price	$9.47	$9.33	$8.60	$8.85
			$8.10-$9.10	

Change In Soybean Purchases 18/19 Vs. 17/18 Million Bushels as of 12/6/2018

Million Bushels

China Less	-772 m
Rest of World	+305 m
Total Purchases	-467 m

Monthly U.S. Soybean Exports to China



Brazilian Origin Vessels Carrying Soy: August 17, 2018

Bid Premium to June = 25-30 cents
On-Farm Interest = 15 cents

Return to storage = 10 to 15 cents

Soybean Nov '19 (ZSX19) - Barchart.com
$9.60-$9.80
1000-0
980-0
960-0
950-6
940-0
920-0
900-0
880-0
860-0
840-0
Mar '18
Apr '18
May '18
Jun '18
Jul '18
Aug '18
Sep '18
Oct '18
Nov '18
Dec '18
Jan '19
Feb '19

2019 Estimated Crop Budget

Indiana:
2/14/19

Overhead: Avg Qual	
Machinery	$ 80
Family Labor	$ 42
Cash Rent	$208
Overhead	$330

Prices	Corn	Beans	Wheat
Harvest Futures 2019	$4.00	$9.50	$5.19
Expected Basis	-0.25	-0.35	-0.30
Expected Cash Price	$3.75	$9.15	$4.89

Estimated Yield/Acre and Returns/Acre Above Variable Costs

	Rotation Corn		Rotation Soybeans		Single-Crop Wheat		Wheat/DC Bns
Land Quality	*bu./acre*	$/acre	*bu./acre*	$/acre	*bu./acre*	$/acre	$/acre
Low	*139*	$128	*43*	$162	*61*	$112	$187
Average	*174*	$218	*54*	$250	*77*	$169	$306
High	*209*	$328	*65*	$340	*92*	$221	$423

Budget: Purdue ID-166 (December 2018)

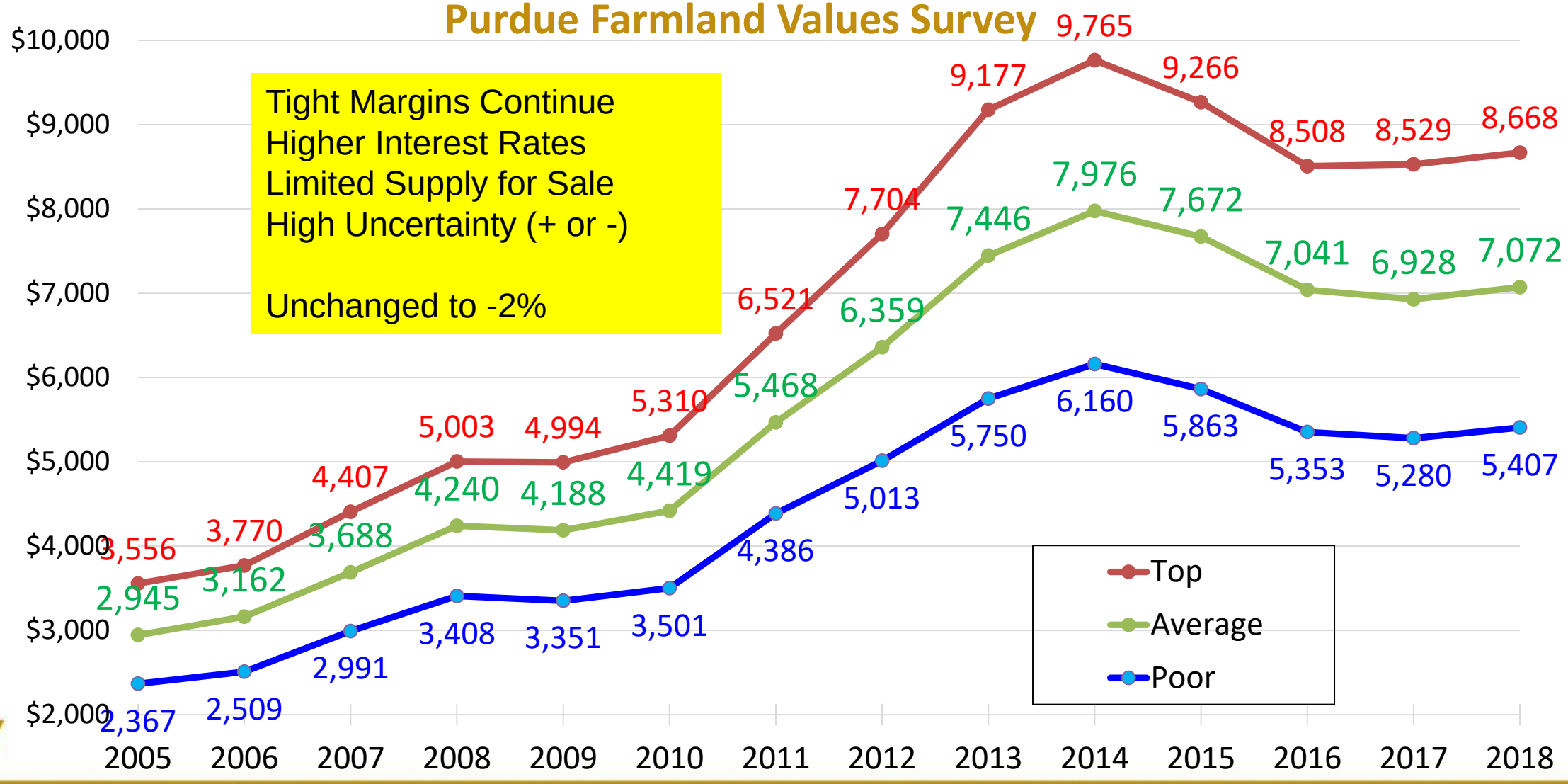
Price Prospects for Next 3 Years???

MYA Farm Price:
PAST and FUTURE

	2012	2013	2014	2015	2016	2017	2018 USDA	2019 Futr MYA	2020 Futr MYA	2021 MYA
Corn	$6.89	$4.46	$3.70	$3.61	$3.36	$3.36	$3.60	$3.90	$4.05	$4.10
Soybeans	$14.40	$13.00	$10.10	$8.95	$9.47	$9.33	$8.60	$9.10	$9.40	$9.50
Wheat	$7.77	$6.87	$5.99	$4.89	$3.89	$4.72	$5.15	$5.00	$5.15	$5.40

Low

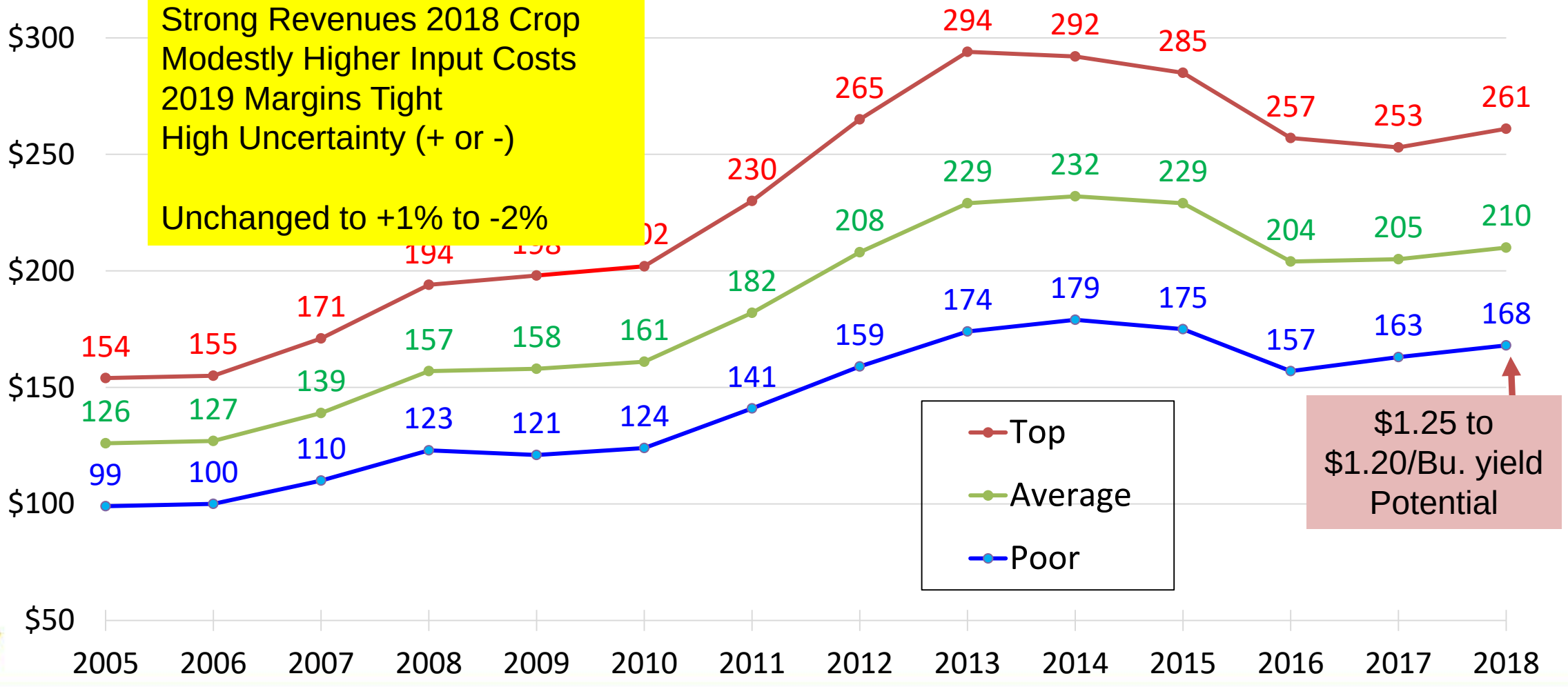
Indiana Land Values $/Acre
Purdue Farmland Values Survey

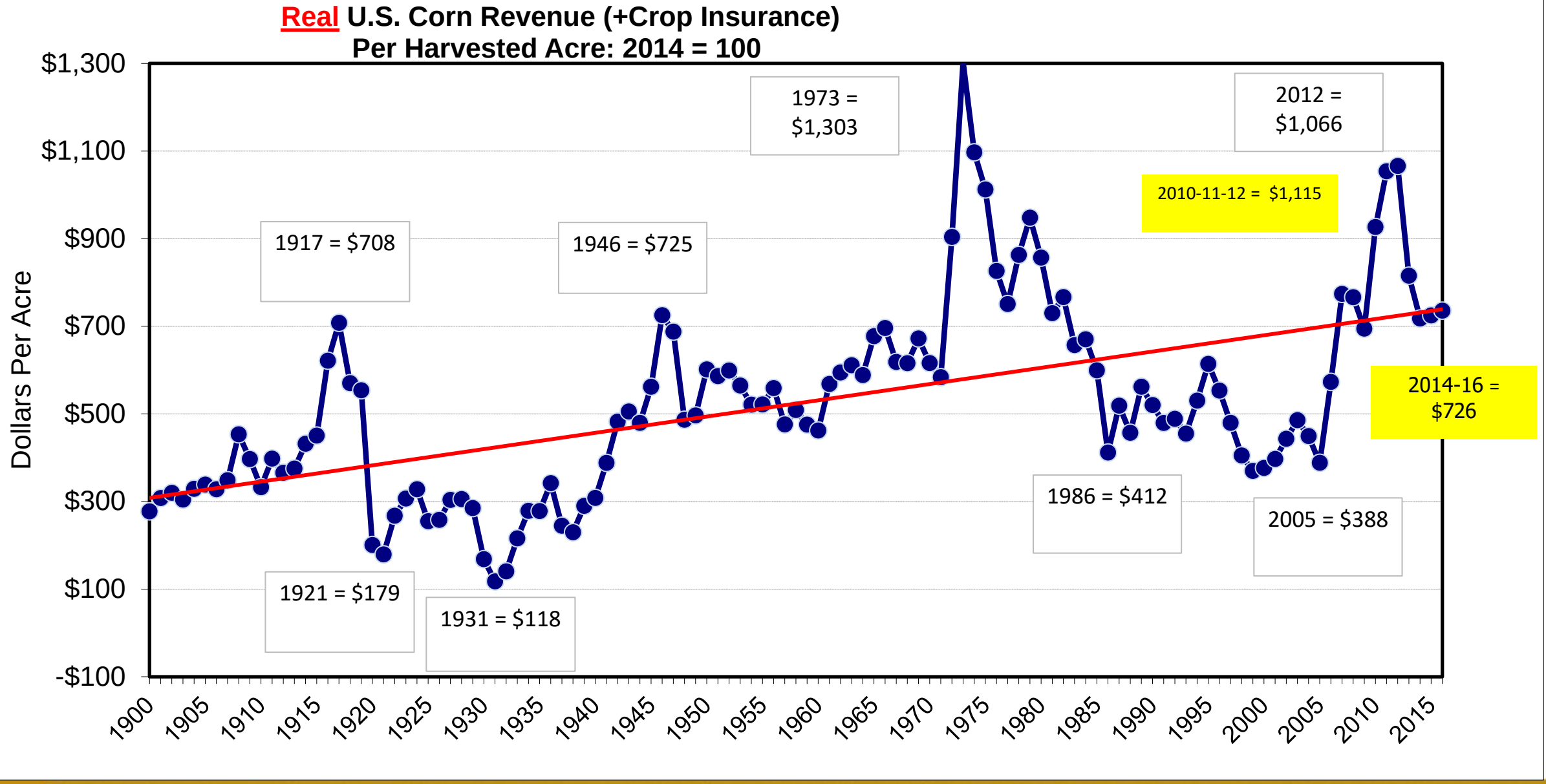


Indiana Cash Rents $/Acre
Purdue Farmland Values Survey

Strong Revenues 2018 Crop
Modestly Higher Input Costs
2019 Margins Tight
High Uncertainty (+ or -)

Unchanged to +1% to -2%




Real U.S. Corn Revenue (+Crop Insurance)
Per Harvested Acre: 2014 = 100
Dollars Per Acre
$1,300
$1,100
$900
$700
$500
$300
$100
-$100
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
1917 = $708
1921 = $179
1931 = $118
1946 = $725
1973 = $1,303
1986 = $412
2005 = $388
2012 = $1,066
2010-11-12 = $1,115
2014-16 = $726

In 2017 Goods

We buy from China	$505 B
China buys from U.S.	$130 B
Goods Deficit China	-$375 B
Goods Deficit ROW	-$227 B

China Offers to Buy Nearly $70 Billion of American Goods if U.S. Halts Tariffs

Energy-Ag-Manufactured

New York Times June 5, 2018

Hope for U.S. Agriculture is that China agrees to buy much larger quantities of U.S. food and ag products????
A Better Trade Deal

Thank You!

munders@purdue.edu

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WORLD ECONOMIC GROWTH

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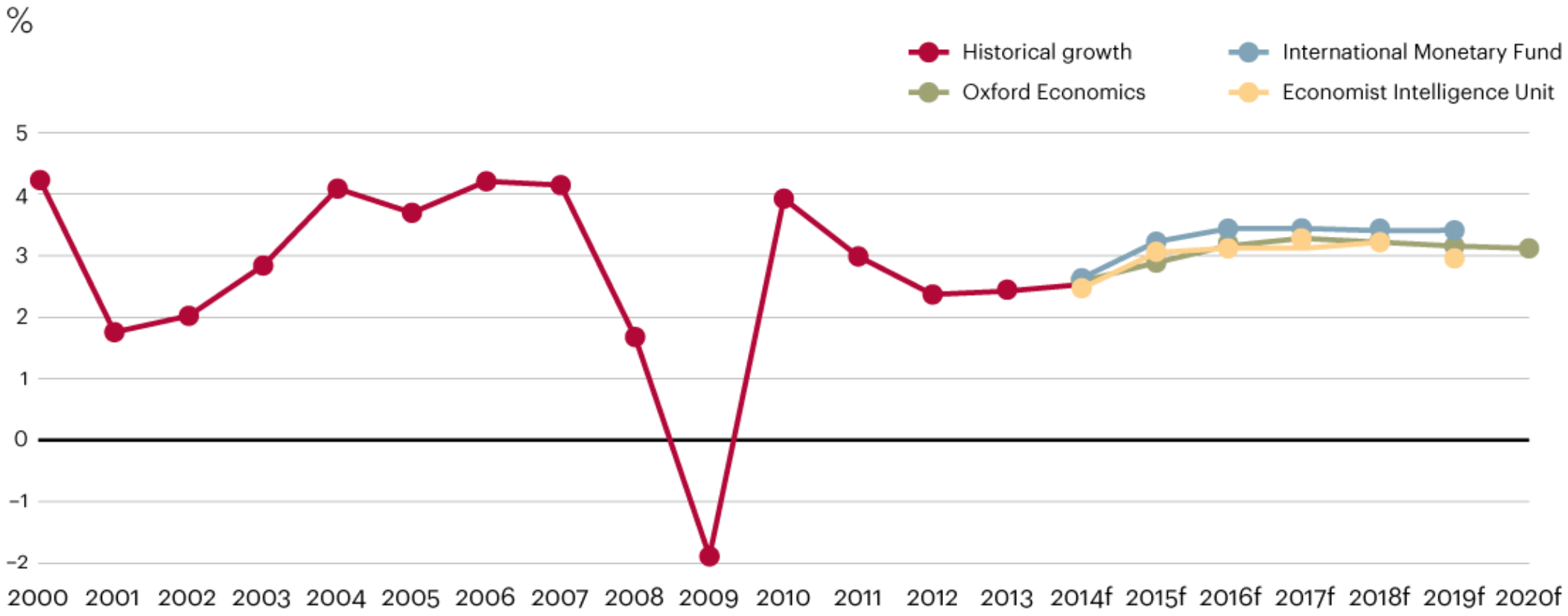
Global growth is expected to stabilize

Real annual GDP growth rate

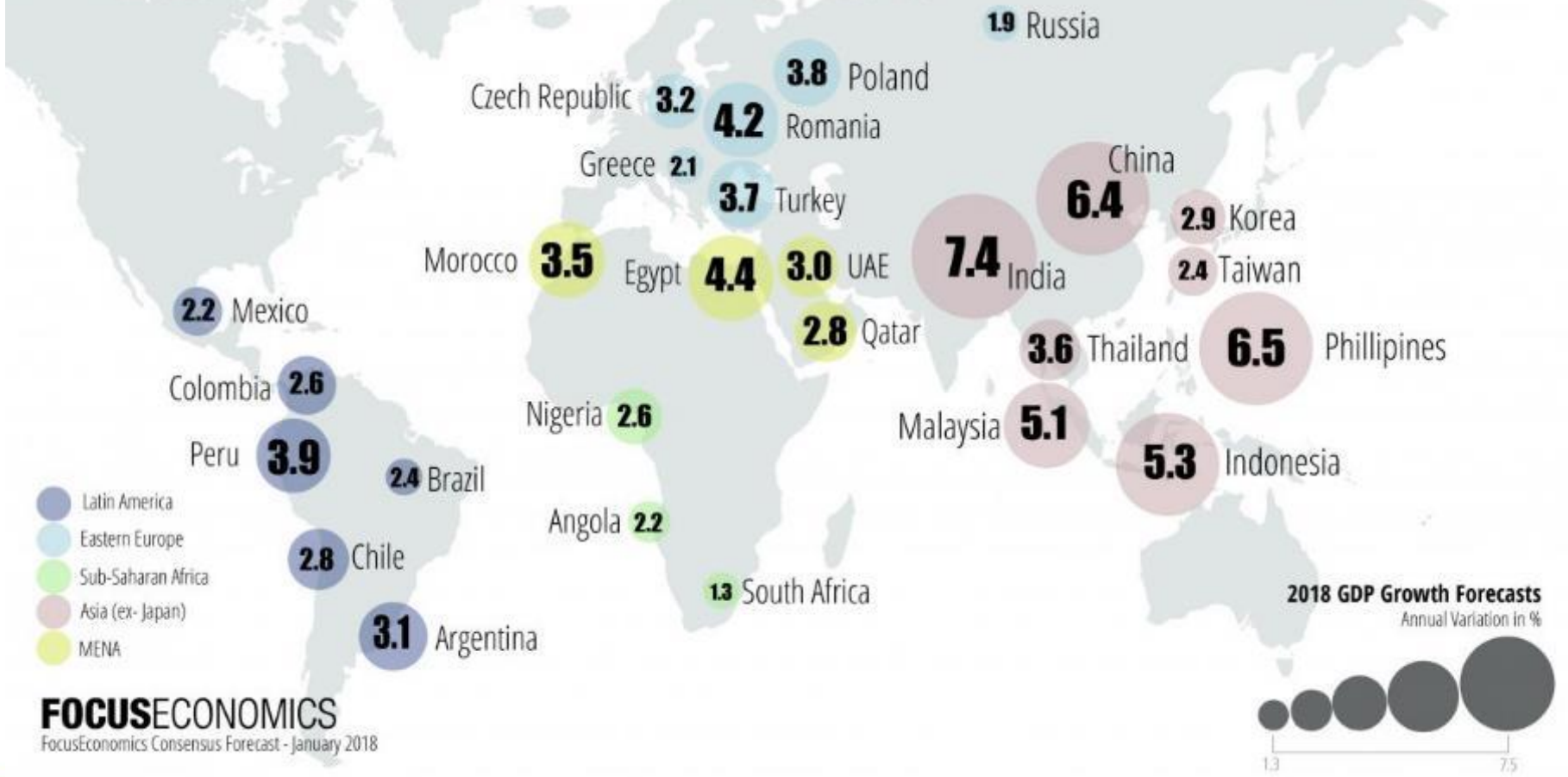


Note: Historical growth is an unweighted average of the three sources' GDP data at constant prices and market exchange rates.

Sources: Oxford Economics, International Monetary Fund World Economic Outlook (October 2014), Economist Intelligence Unit; A.T. Kearney analysis

Emerging Markets Economies in 2018

Higher commodity prices, resilient global growth and still accommodative monetary policies will boost economic activity

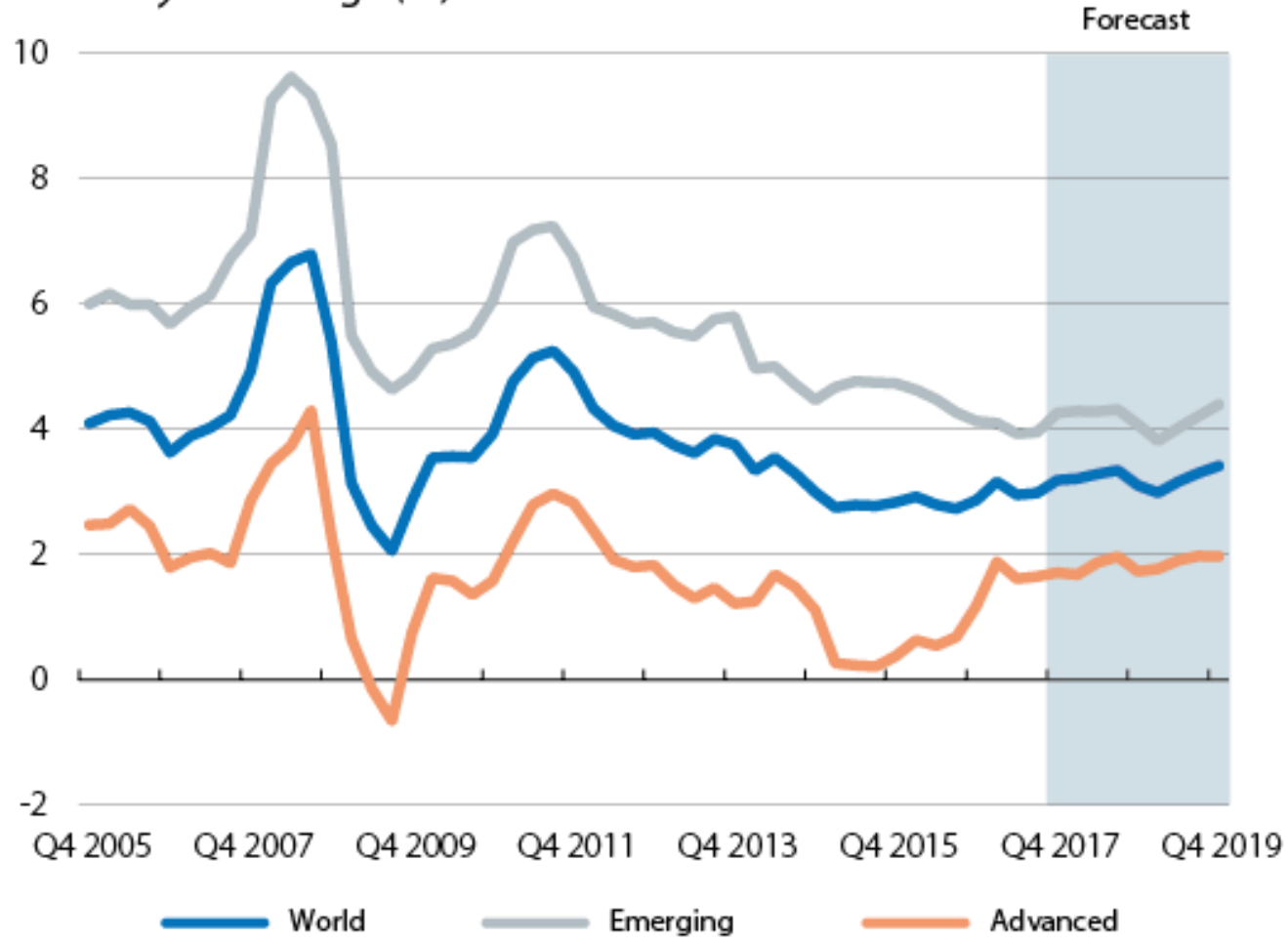


FOCUSECONOMICS

FocusEconomics Consensus Forecast - January 2018

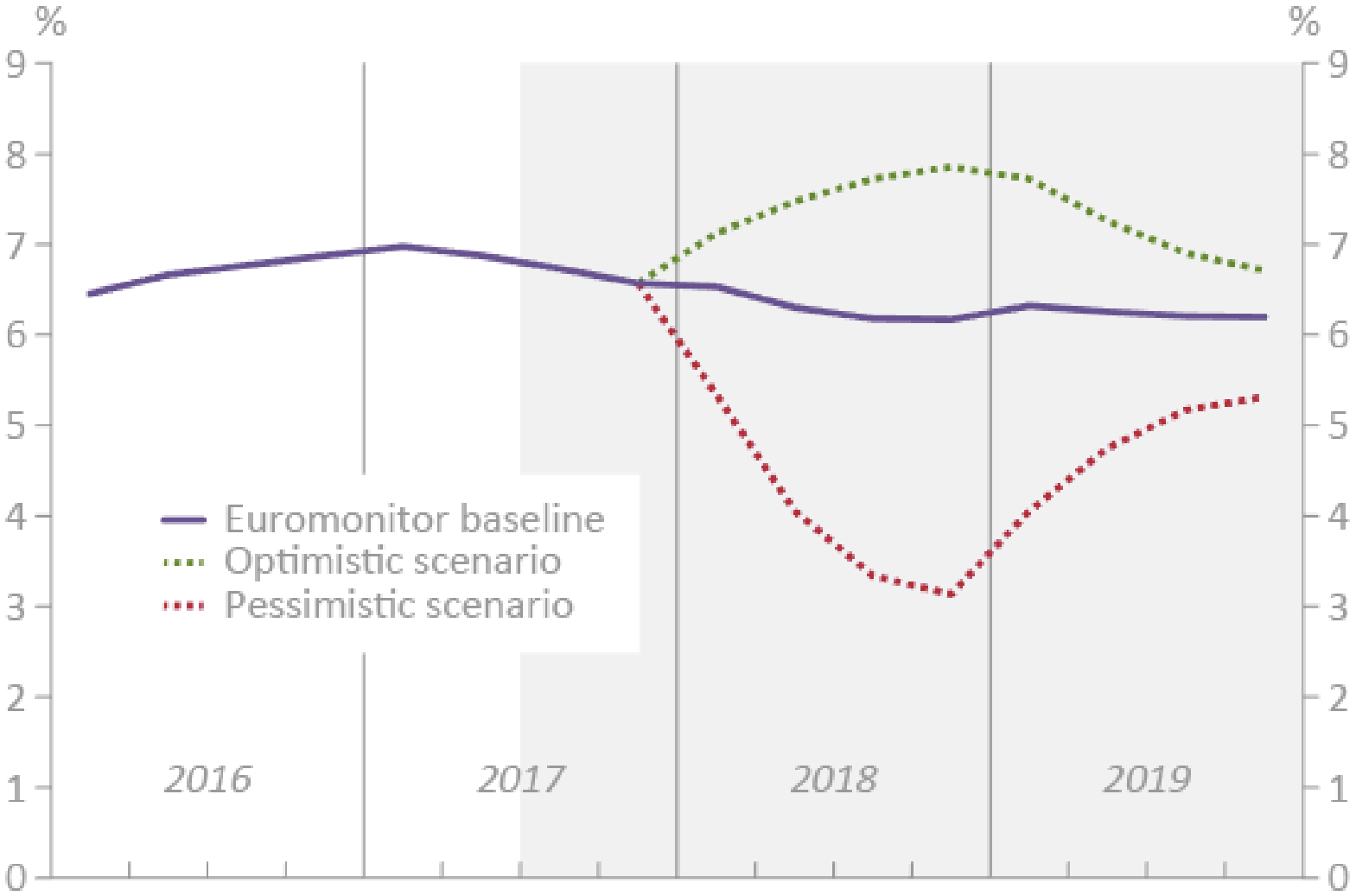
World: inflation

Year-on-year change (%)

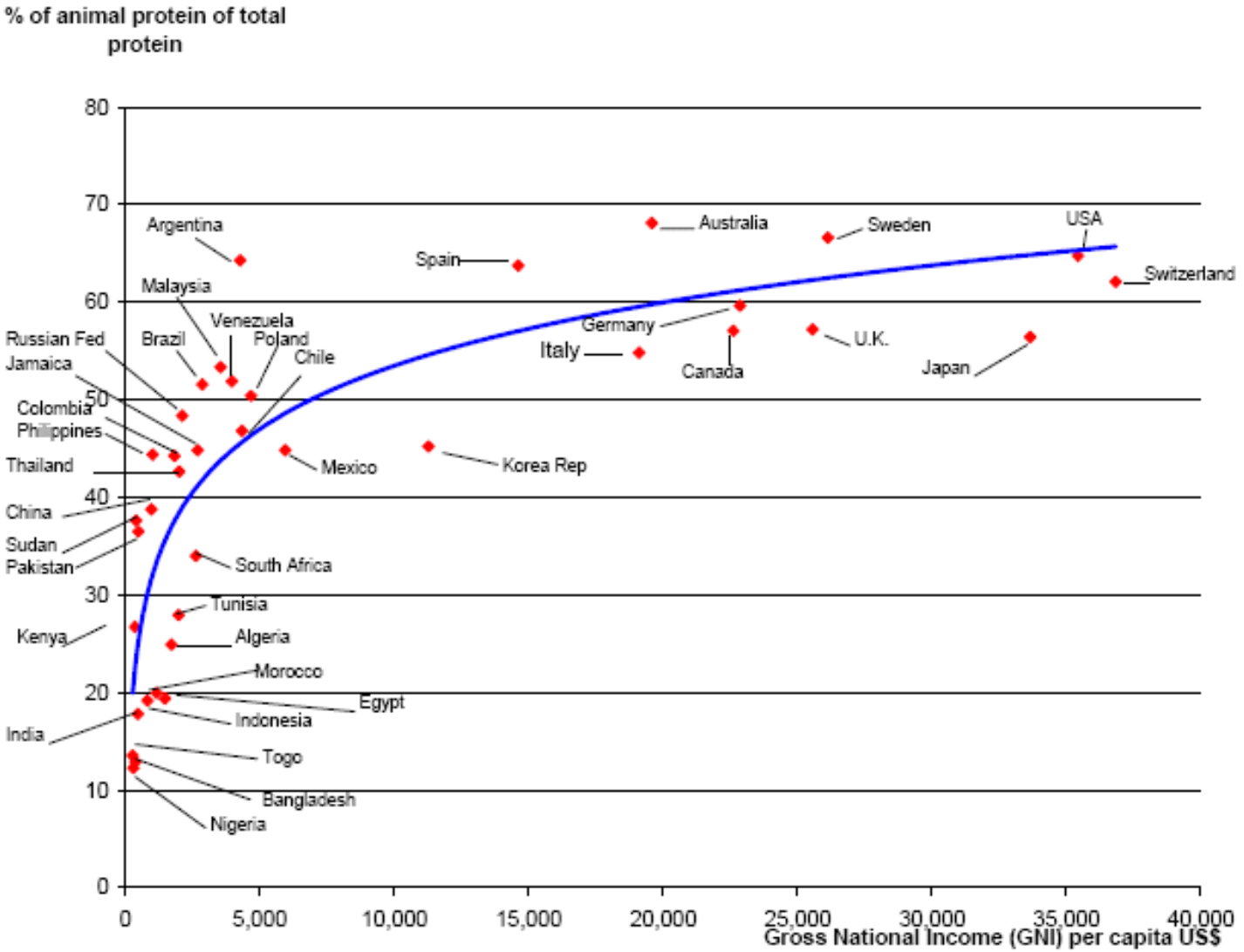


Source: *CaixaBank Research.*

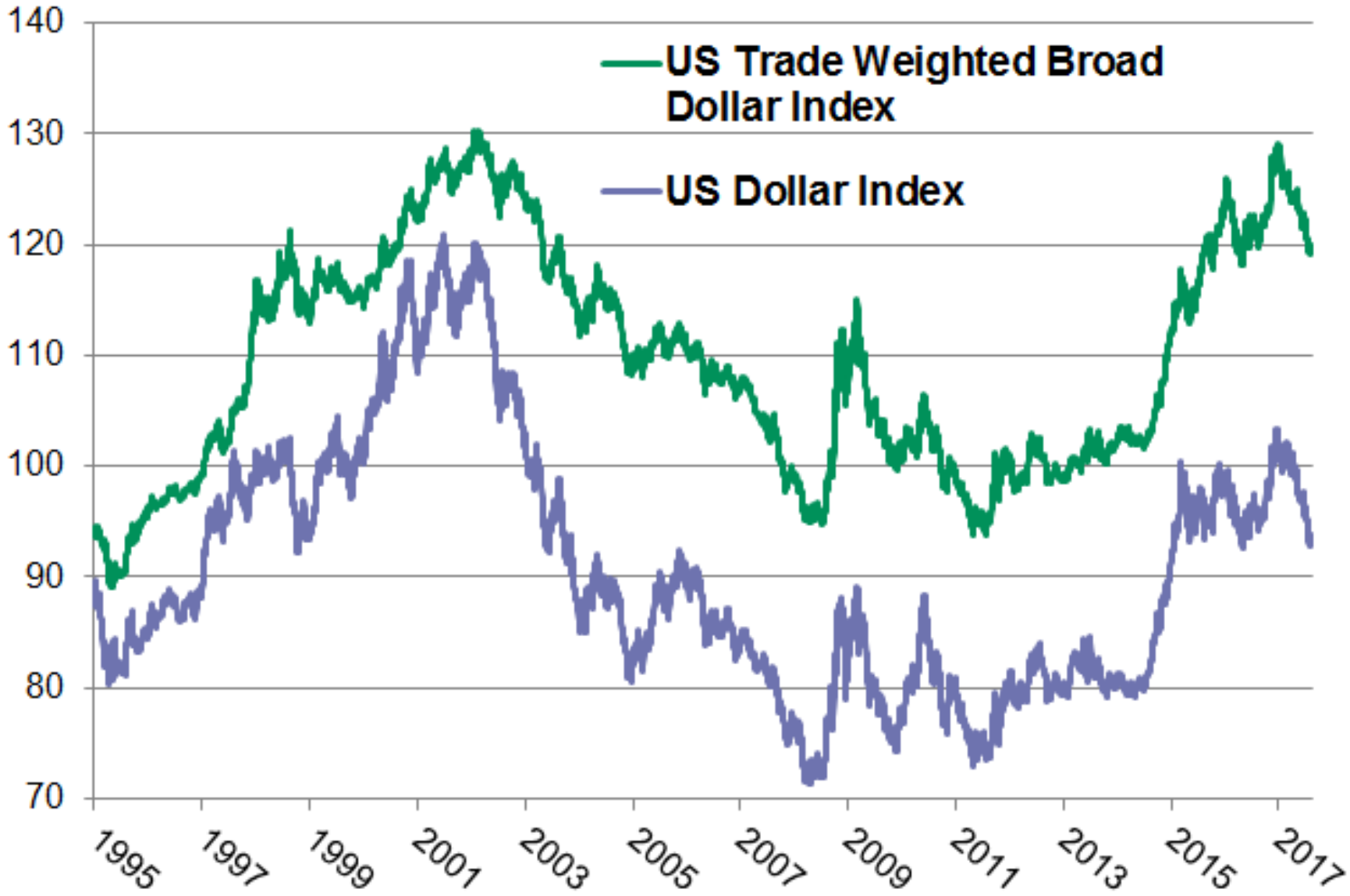
China Real GDP Growth Forecast



Source: Euromonitor International Macro Model



Source: Based on data through 2002 from FAO and World Bank.



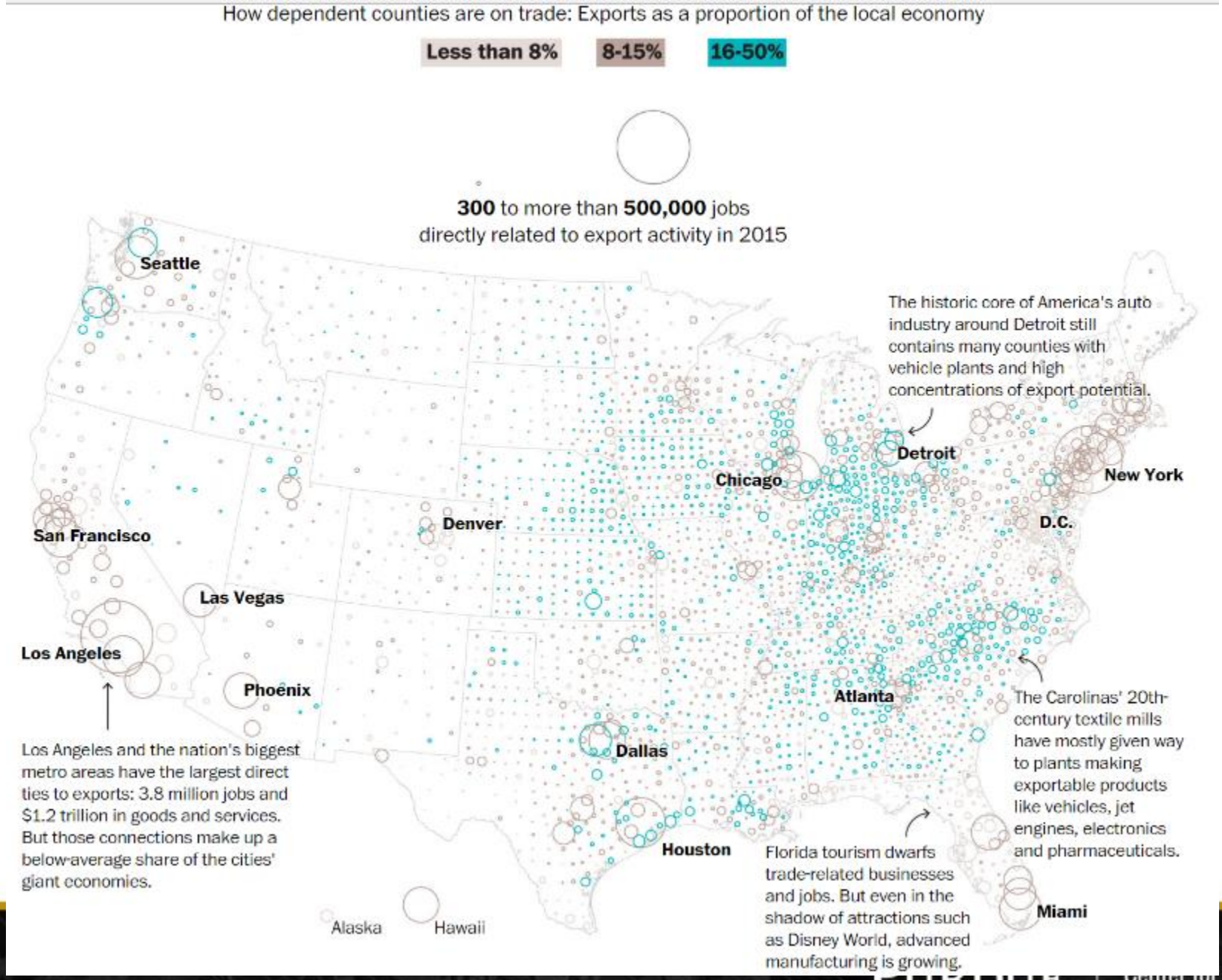
Source: Bloomberg, BNP Paribas Asset Management, as of 28/08/2017

American farmers’ share of the global grain trade has fallen from 65% in the mid-1970s to 30% today, giving them less sway over prices. More producers and more buyers around the world also mean more potential disruptions from bad weather, famine or political crisis.

The Next Americ

As farm sizes jumped, their numbers fell, from six million in 1945 to just over 2 million in 2015, nearing a threshold last seen in the mid-1800s. Total acres farmed in the U.S. have dropped 24% to 910 million acres.

Shrinking role in global grain market coupled with a strong


How dependent counties are on trade: Exports as a proportion of the local economy
Less than 8%
8-15%
16-50%
300 to more than 500,000 jobs directly related to export activity in 2015
Seattle
San Francisco
Las Vegas
Los Angeles
Phoenix
Denver
Chicago
Detroit
New York
D.C.
Atlanta
Dallas
Houston
Miami
Alaska
Hawaii
The historic core of America's auto industry around Detroit still contains many counties with vehicle plants and high concentrations of export potential.
Los Angeles and the nation's biggest metro areas have the largest direct ties to exports: 3.8 million jobs and $1.2 trillion in goods and services. But those connections make up a below-average share of the cities' giant economies.
The Carolinas' 20th-century textile mills have mostly given way to plants making exportable products like vehicles, jet engines, electronics and pharmaceuticals.
Florida tourism dwarfs trade-related businesses and jobs. But even in the shadow of attractions such as Disney World, advanced manufacturing is growing.

U.S. Agricultural Exports, FY 2016

United States Department of Agriculture
Foreign Agricultural Service

USDA

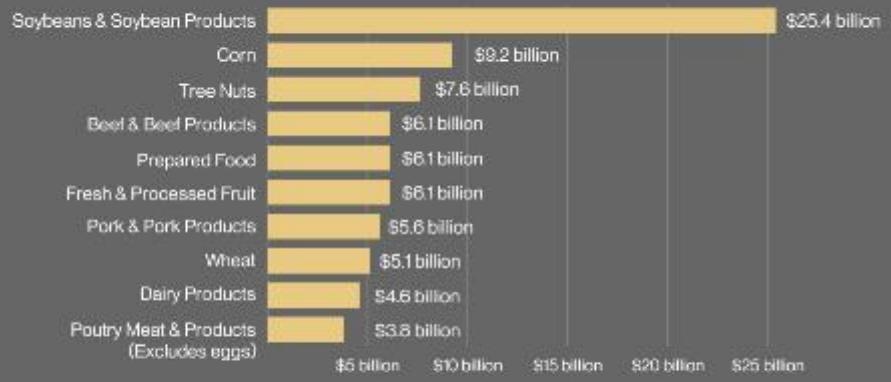
$129.7 Billion

Total value of U.S. agricultural exports in FY 2016, surpassing USDA's forecast.

$1 Trillion

Total value of U.S. agricultural exports between FY 2009 and FY 2016 - the strongest period for U.S. ag exports in history.

Top Products



Top Destinations

1 Canada
$20.3 billion
15.7% of total ag exports

2 China
$19.2 billion
14.8% of total ag exports

3 Mexico
$17.7 billion
13.6% of total ag exports

4 European Union
$11.6 billion
9.0% of total ag exports

5 Japan
$10.6 billion
8.2% of total ag exports

Twitter: **@USDAForeignAg** Website: **www.fas.usda.gov**

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Corn to Meet RFS2

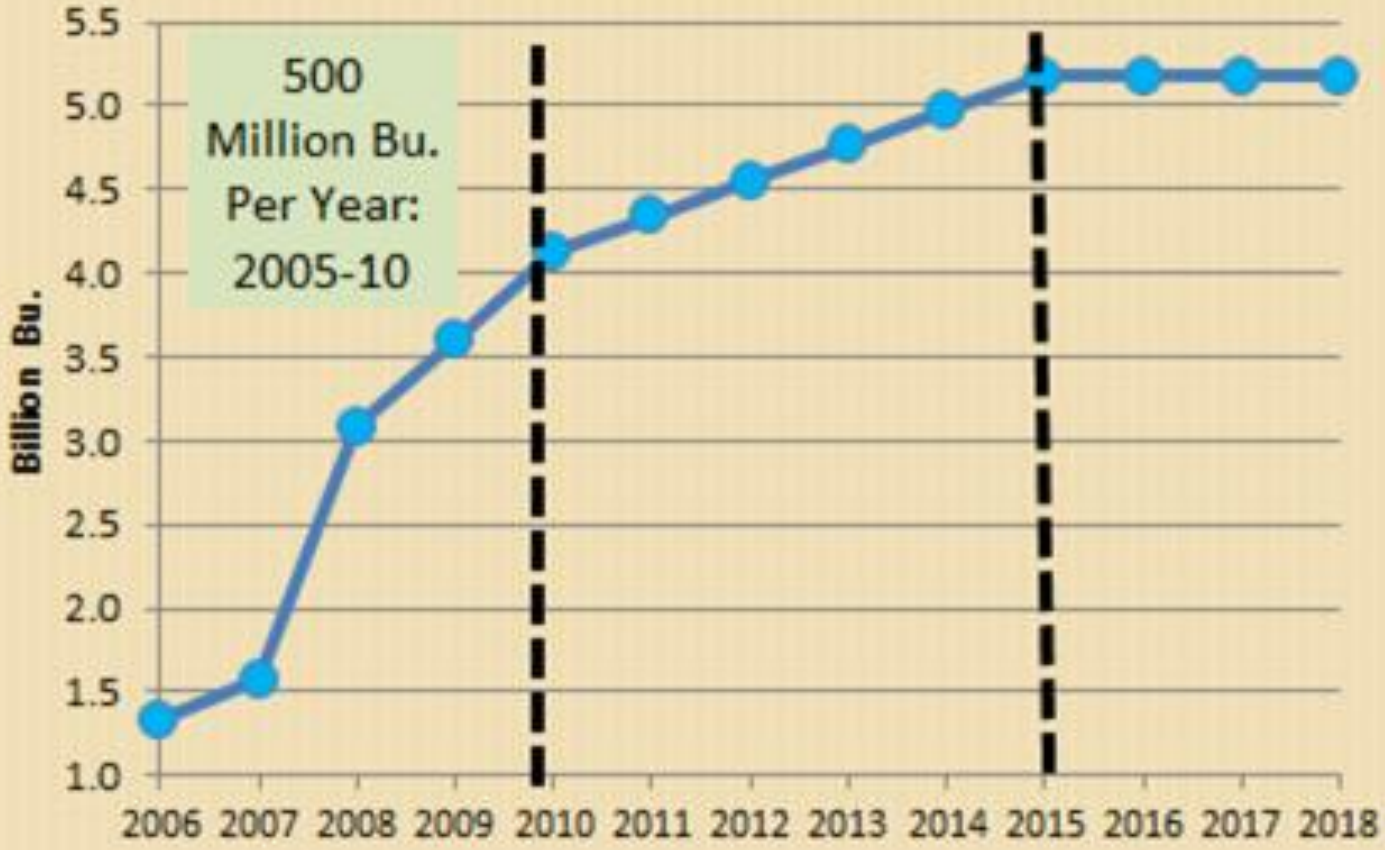
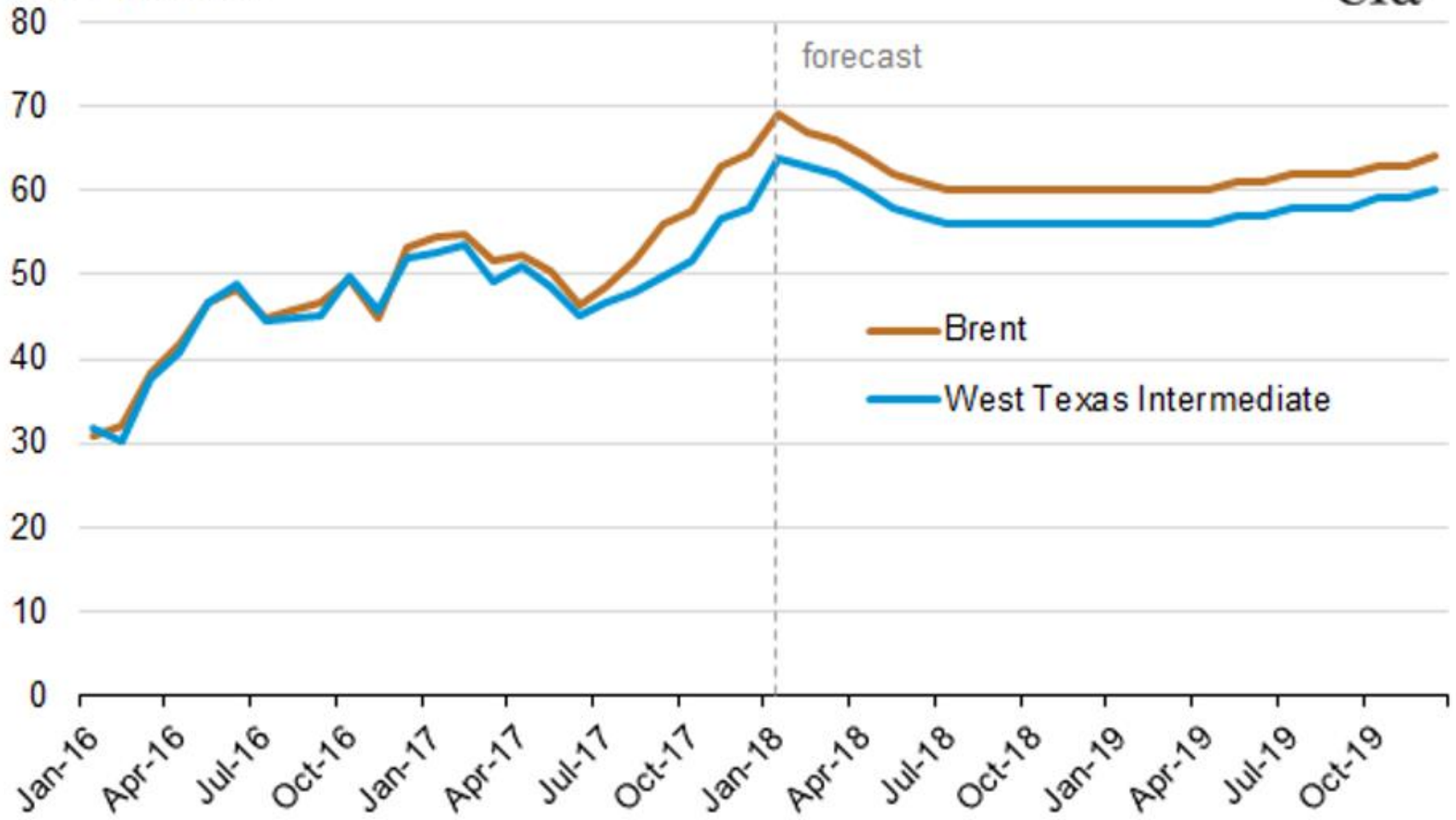


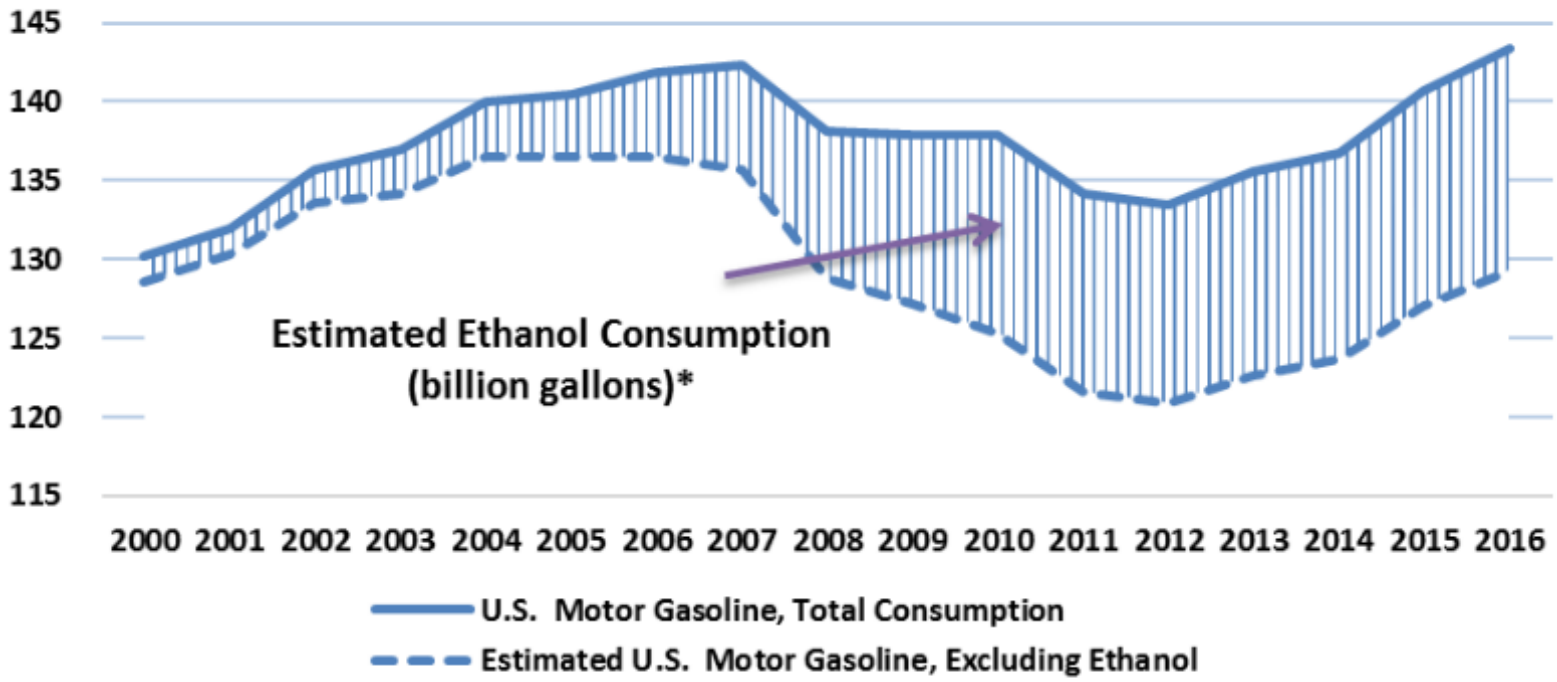
Figure 1. Monthly crude oil spot prices

dollars per barrel



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, February 2018

U.S. Annual Gasoline Consumption and Estimated Ethanol Consumption Blended into Motor Gasoline* (Billion Gallons)

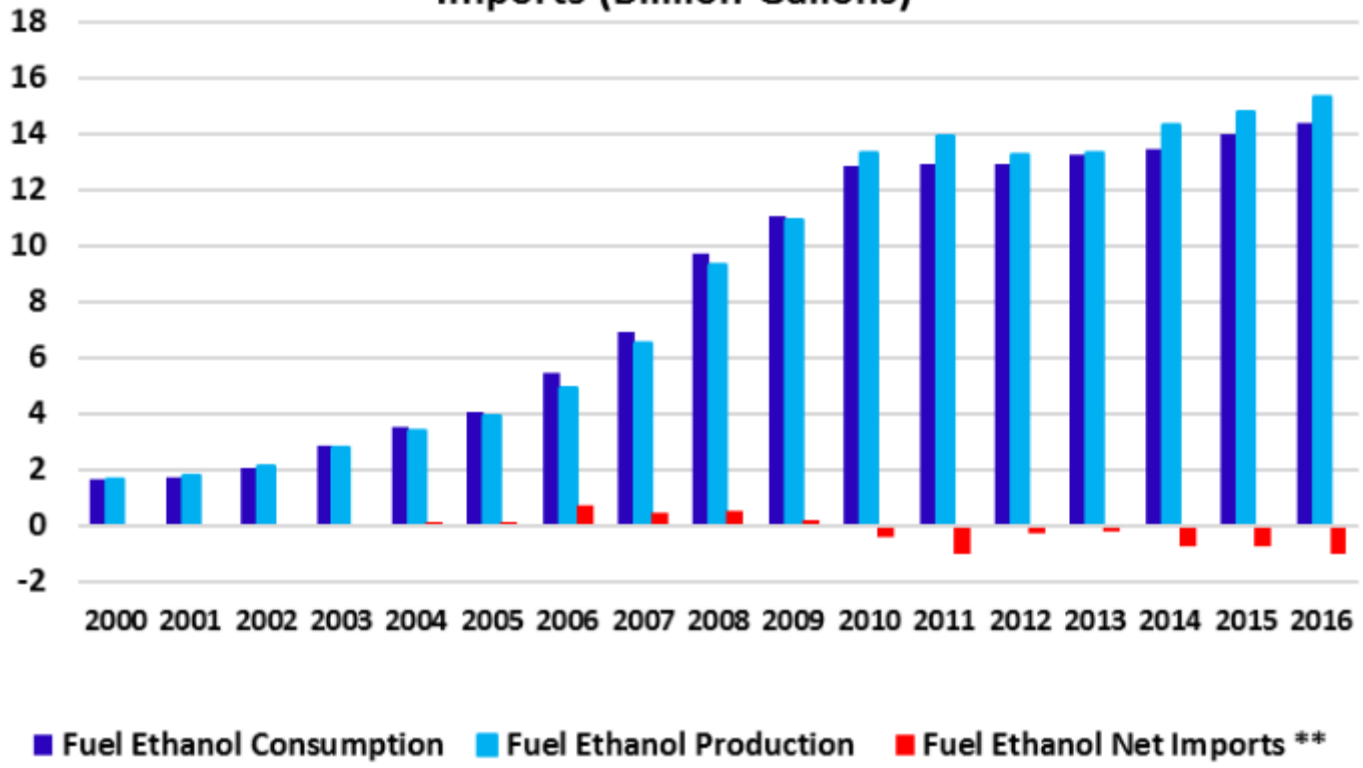


Data source: EIA.

* Estimated ethanol consumption blended into gasoline does not include denaturant and was estimated based on the proportion of denaturant included in ethanol each year. Estimated gasoline (excluding ethanol) was estimated as the difference between total gasoline consumption and ethanol consumption.

Decision Innovation Solutions
Bridging Your Information Research Needs

U.S. Fuel Ethanol: Production, Consumption, and Net Imports (Billlion Gallons)*



Data source: EIA

*Ethanol production and consumption include denaturant.

**Through 2009, data are for fuel ethanol imports only; data for fuel ethanol exports are not available. Beginning in 2010, data are for fuel ethanol imports minus fuel ethanol (including industrial alcohol) exports.

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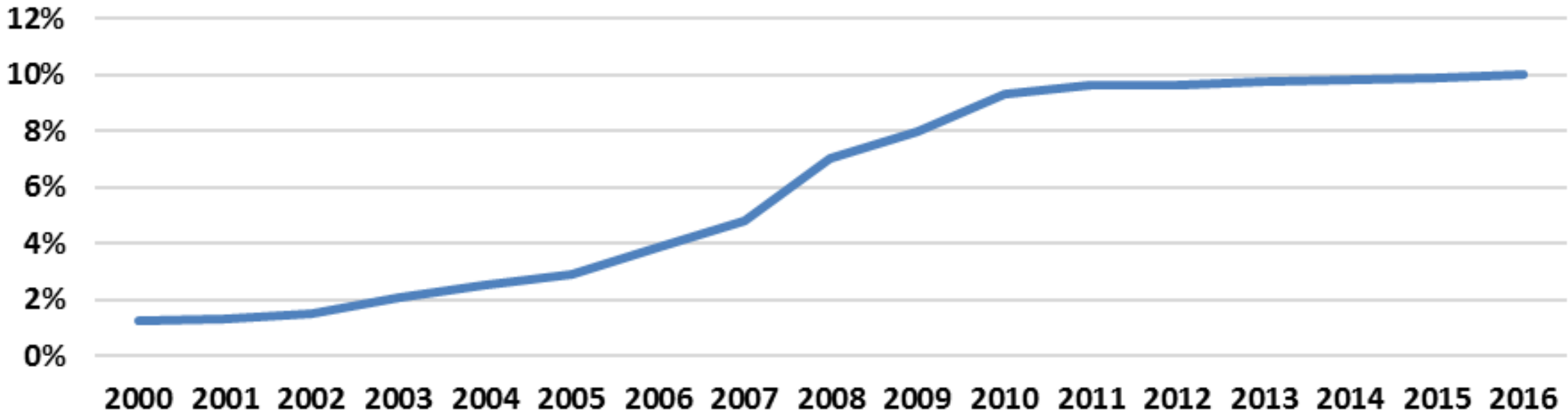
Percent Ethanol Blended into Gasoline*



Source: EIA.

*Ethanol-blended gasoline

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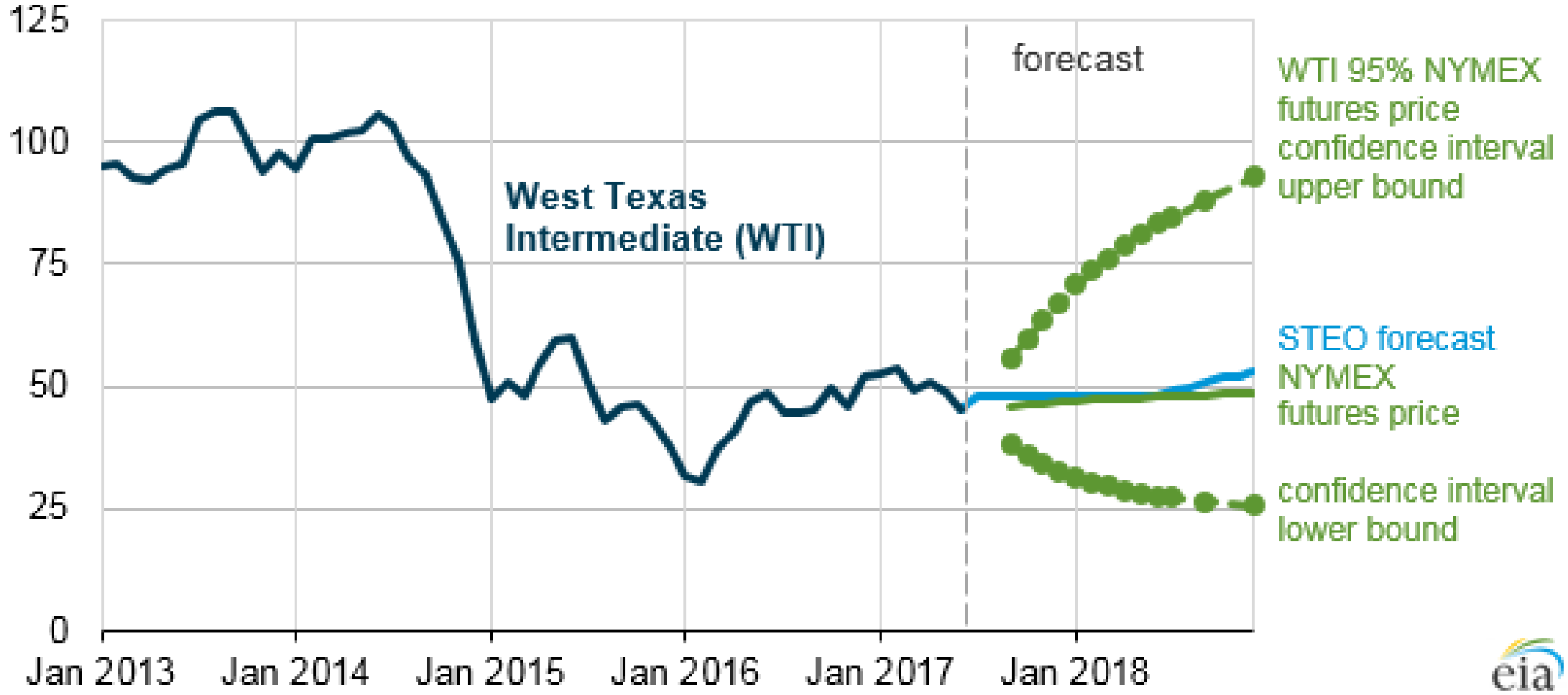
West Texas Intermediate crude oil price and NYMEX futures price (2013-2018)

dollars per barrel



eia

GLOBAL LAND EXPANSION

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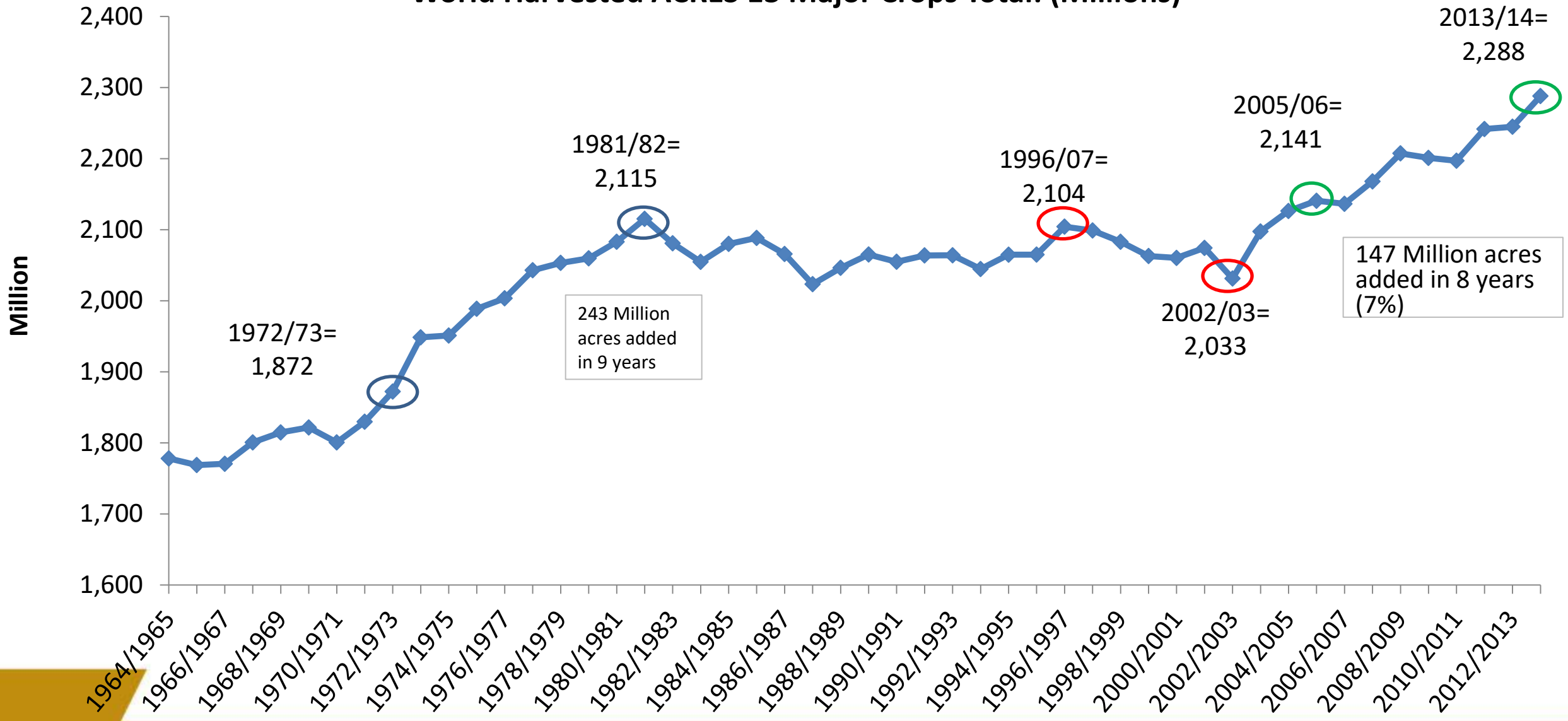
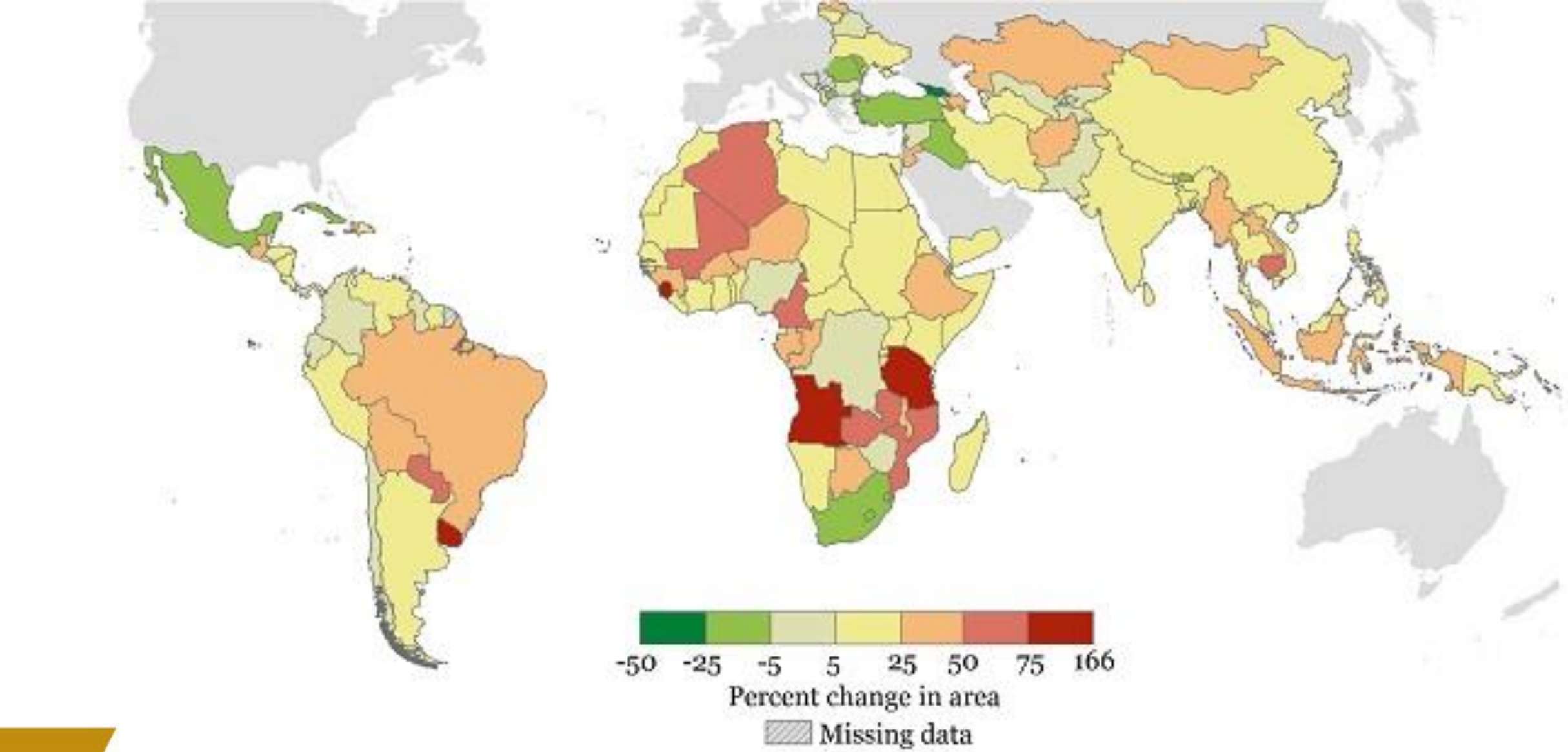
World Harvested ACRES 13 Major Crops Total: (Millions)

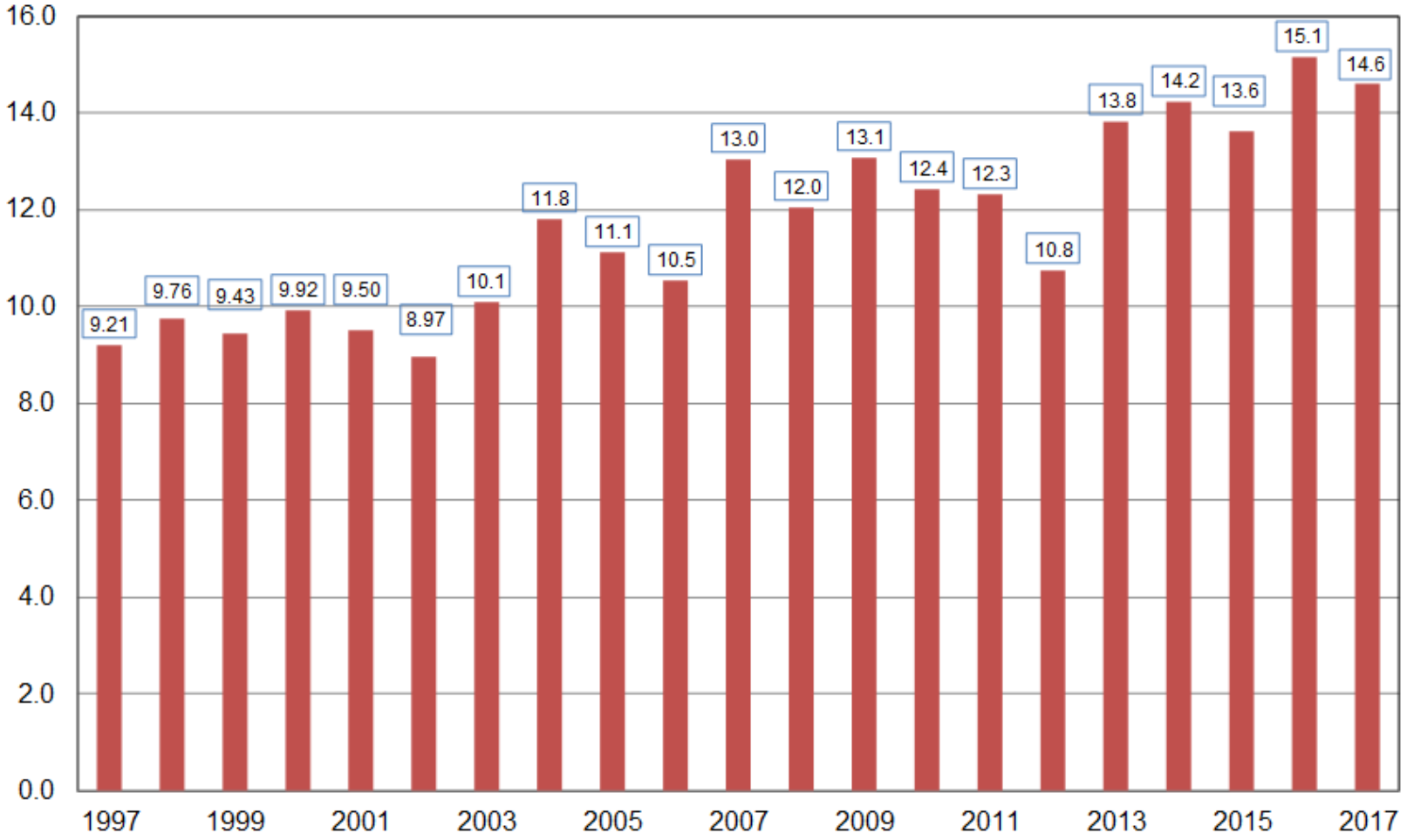




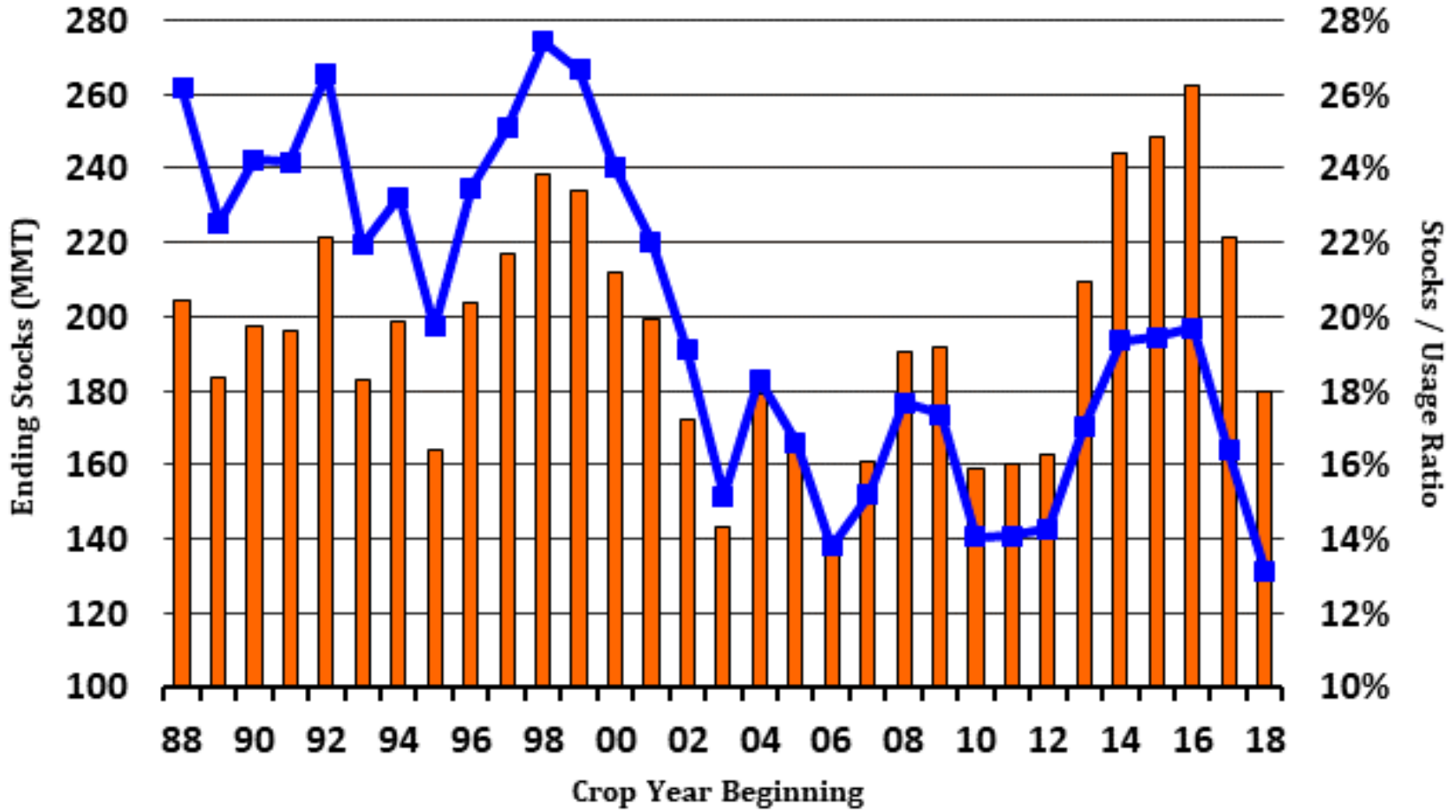
https://www.brookings.edu/blog/future-development/2016/03/21/where-does-the-worlds-food-grow/

Corn for Grain Production

United States

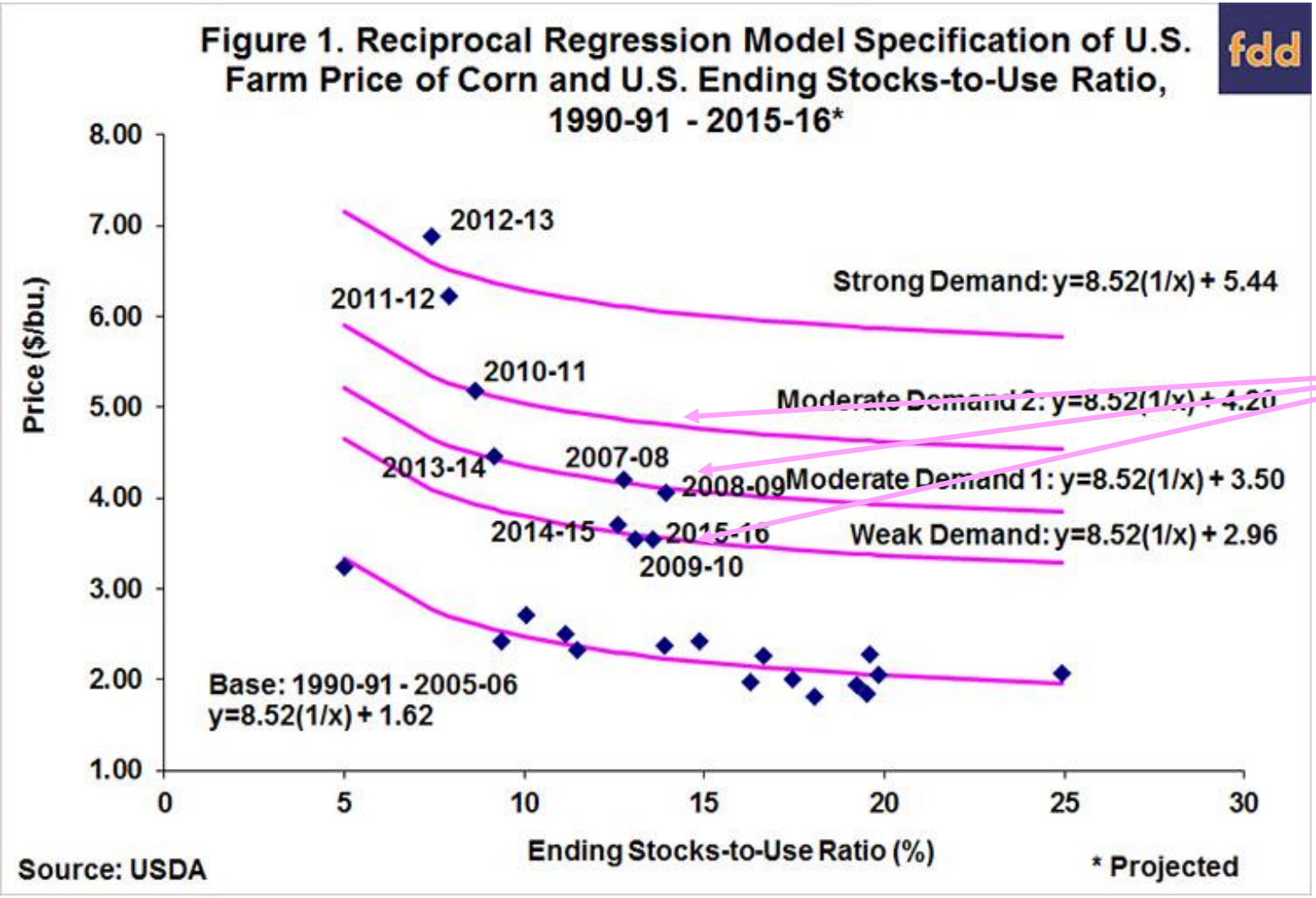


World Coarse Grains - Ending Stocks vs. Stocks / Usage Ratio



The Hightower Report | Source: USDA

Most Recent: As Of 07/12/2018



WASDE Nov. 2016
Ending Stocks to Use
= 14%

Corn Price
Moderate 2 = $4.79
Moderate 1 = $4.09
Weak = $3.55

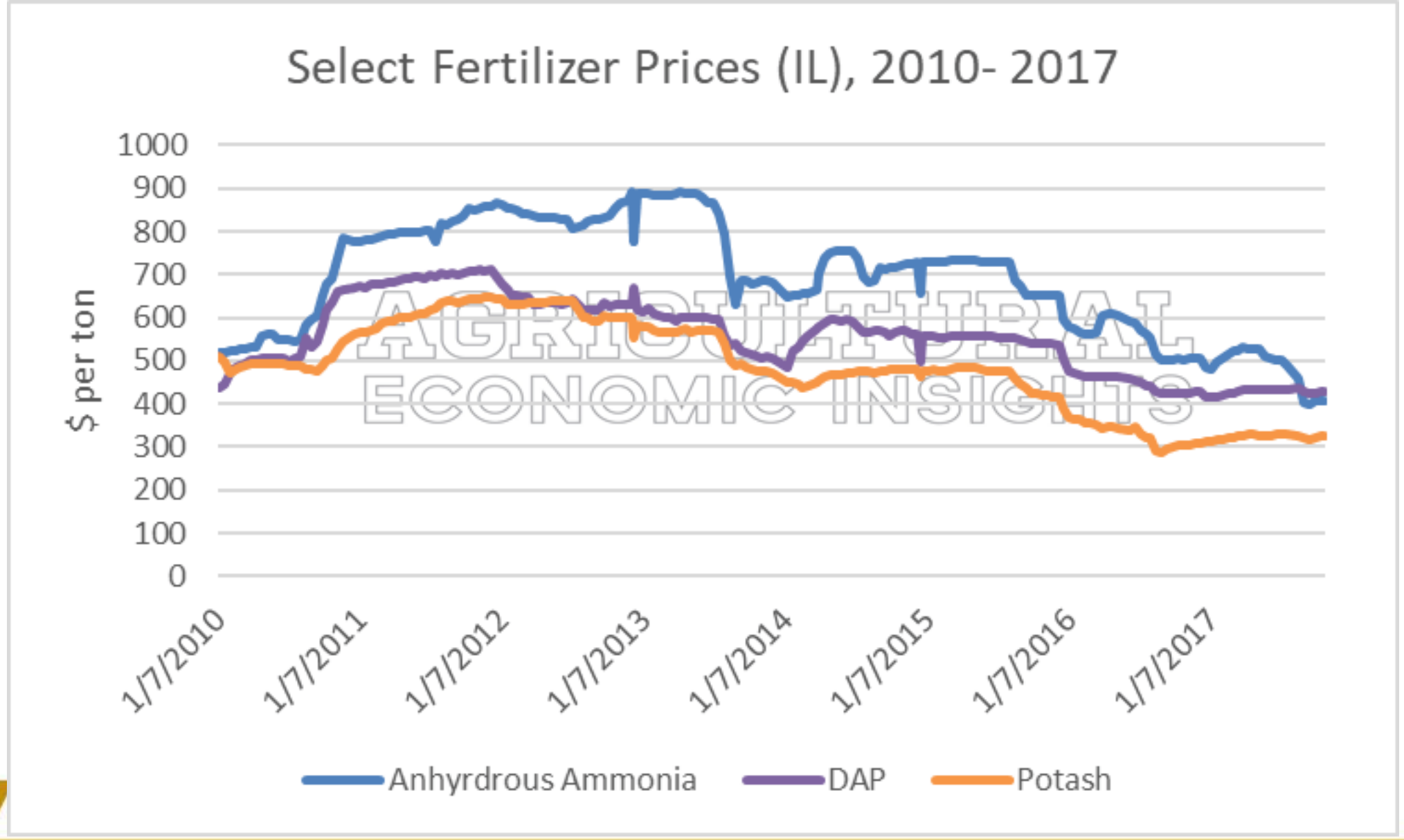
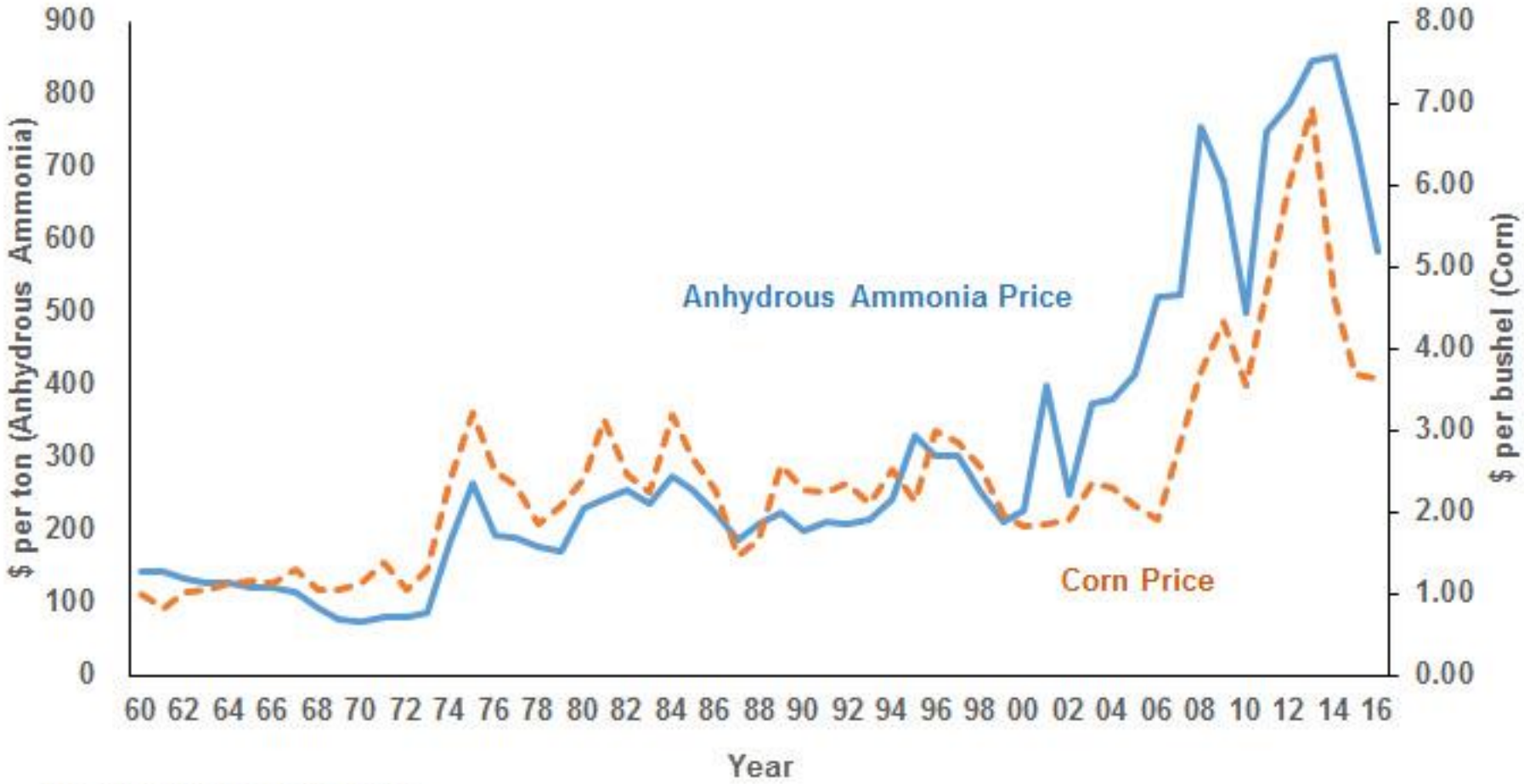
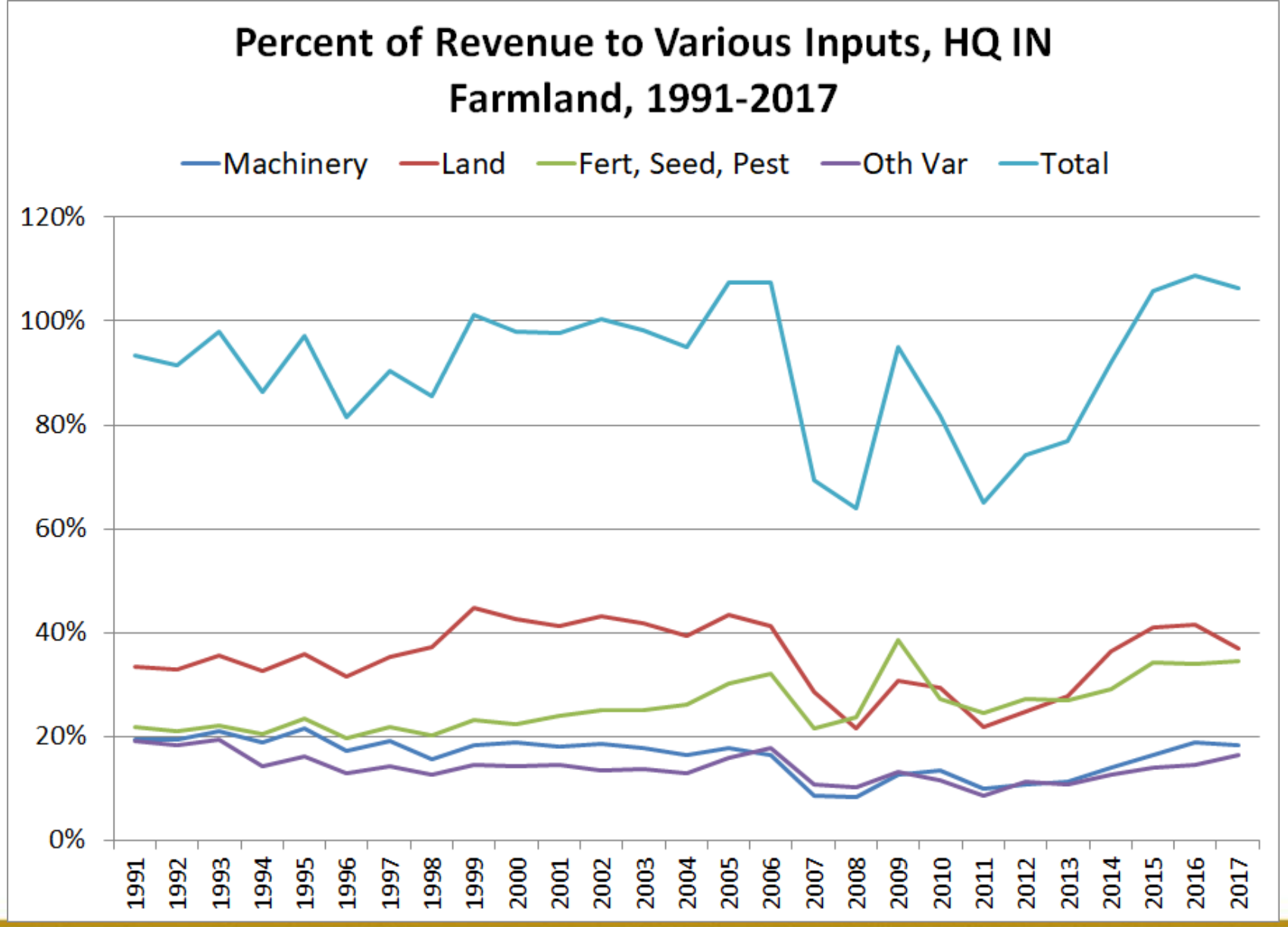
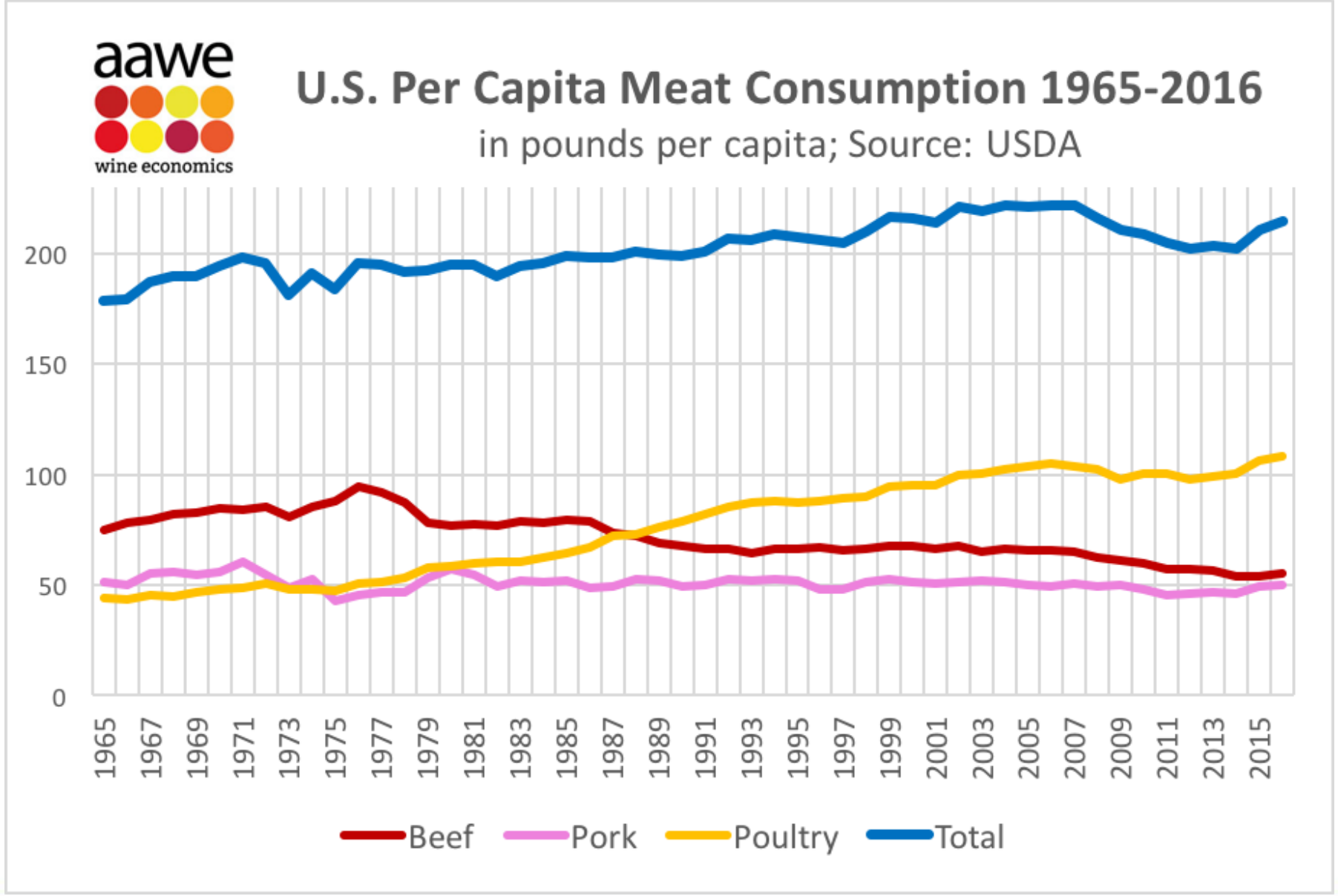

Select Fertilizer Prices (IL), 2010- 2017
$ per ton
1000
900
800
700
600
500
400
300
200
100
0
1/7/2010
1/7/2011
1/7/2012
1/7/2013
1/7/2014
1/7/2015
1/7/2016
1/7/2017
AGRICULTURAL ECONOMIC INSIGHTS
Anhyrdrous Ammonia
DAP
Potash

Figure 1. Anhydrous Ammonia Prices and National Market Year Average Corn Prices



See text for source of prices.


Percent of Revenue to Various Inputs, HQ IN Farmland, 1991-2017
Machinery
Land
Fert, Seed, Pest
Oth Var
Total
120%
100%
80%
60%
40%
20%
0%
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


aawe
wine economics
U.S. Per Capita Meat Consumption 1965-2016
in pounds per capita; Source: USDA
200
150
100
50
0
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Beef
Pork
Poultry
Total

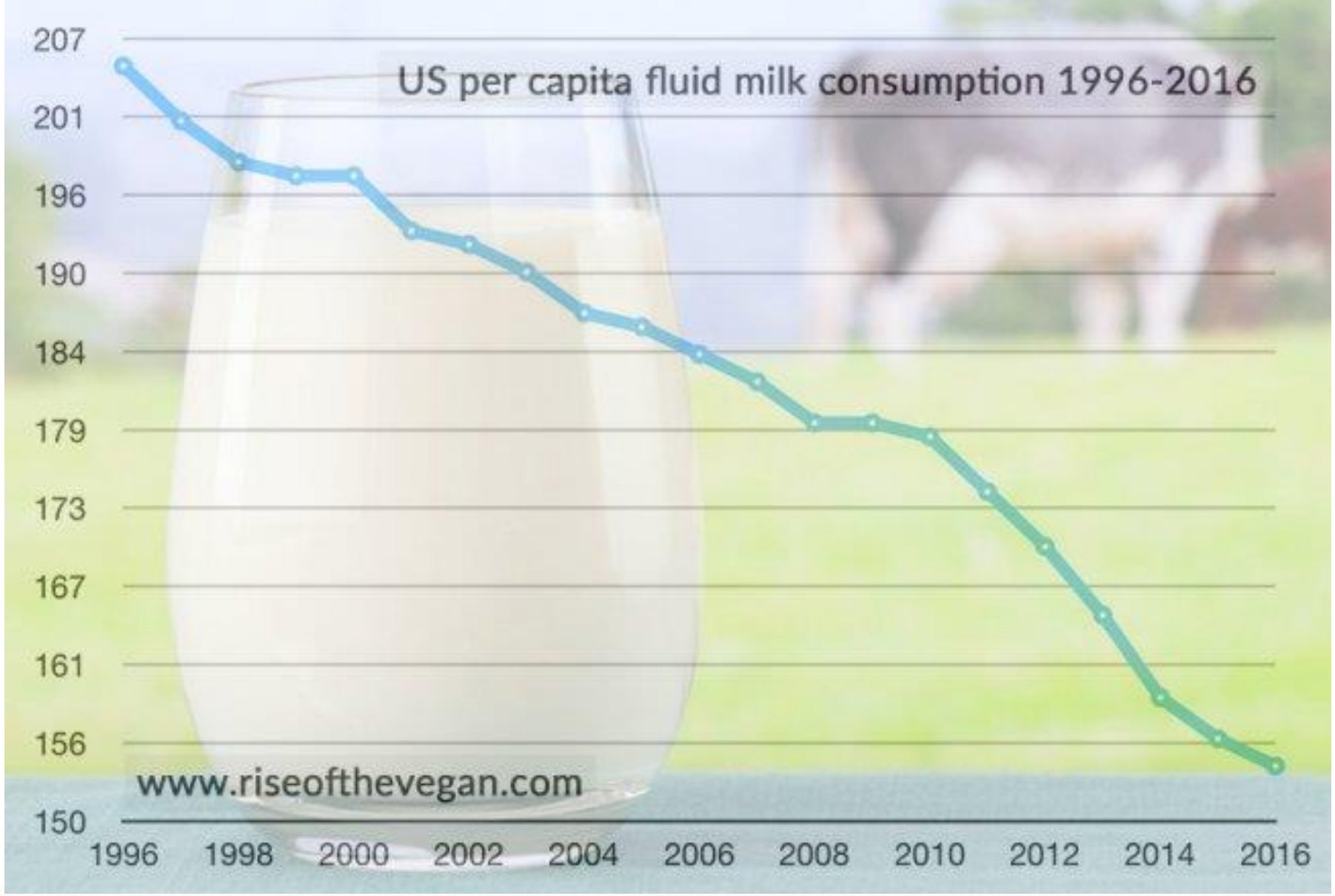
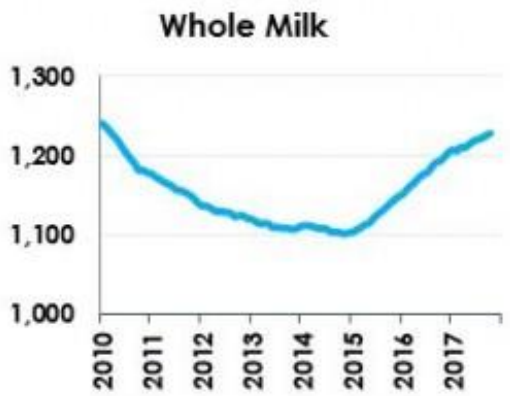
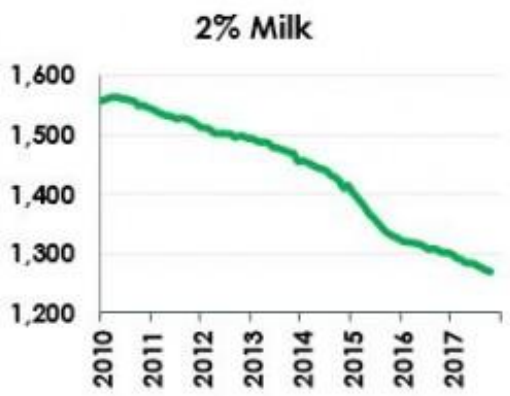
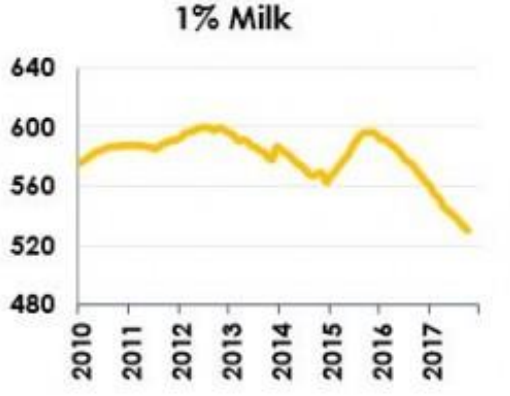

US per capita fluid milk consumption 1996-2016
207
201
196
190
184
179
173
167
161
156
150
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
www.riseofthevegan.com

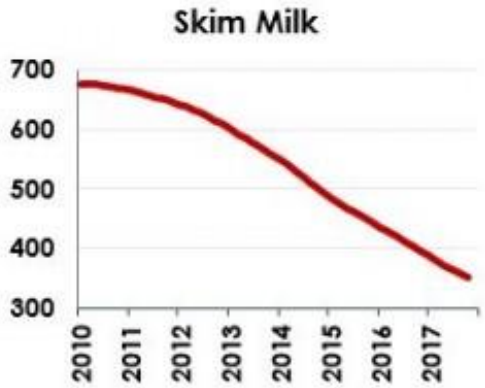
Figure 2. Conventional Fluid Milk Product Sales in Million Pounds

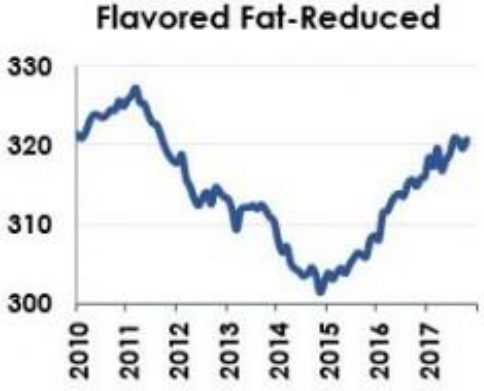
12-Month Moving Average

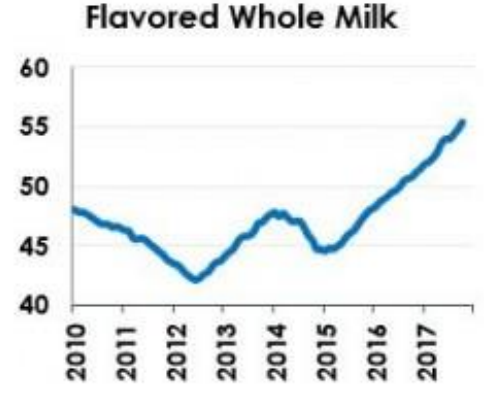












FARM BUREAU®

Source: USDA AMS

Total Demand for U.S. Milk
based on total solids

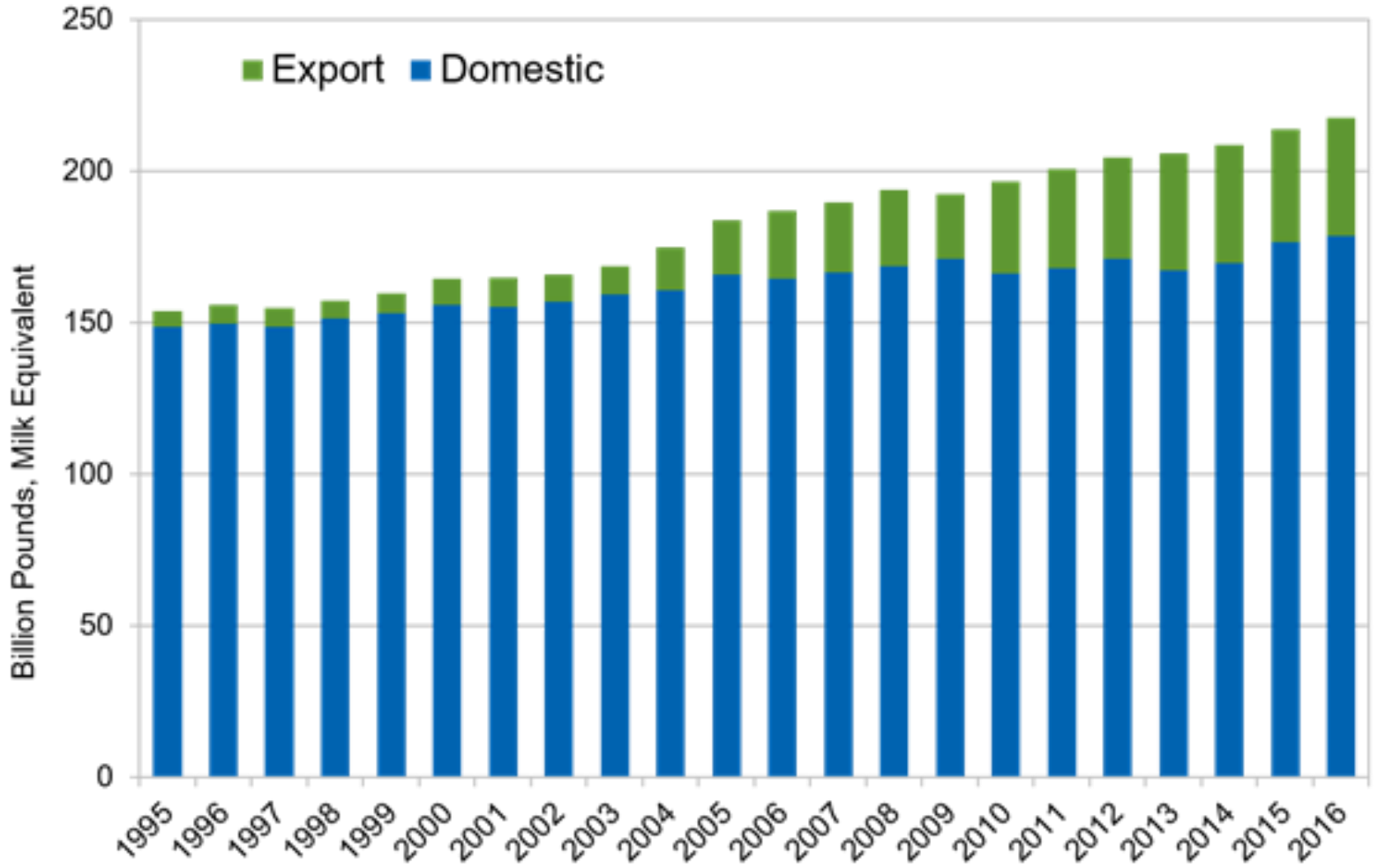


Figure 1: USDA - ERS, CoBank

FARM INCOME

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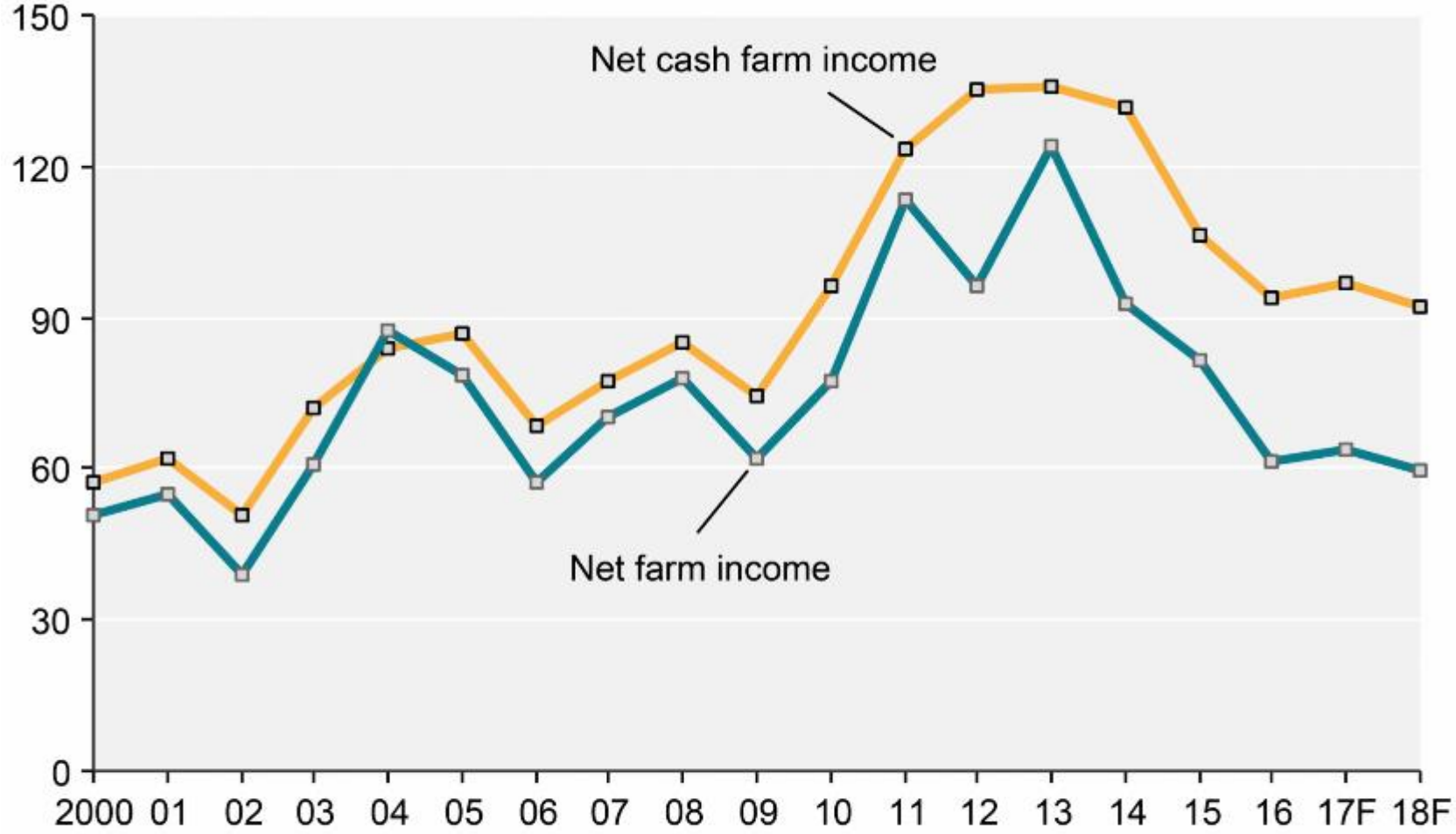
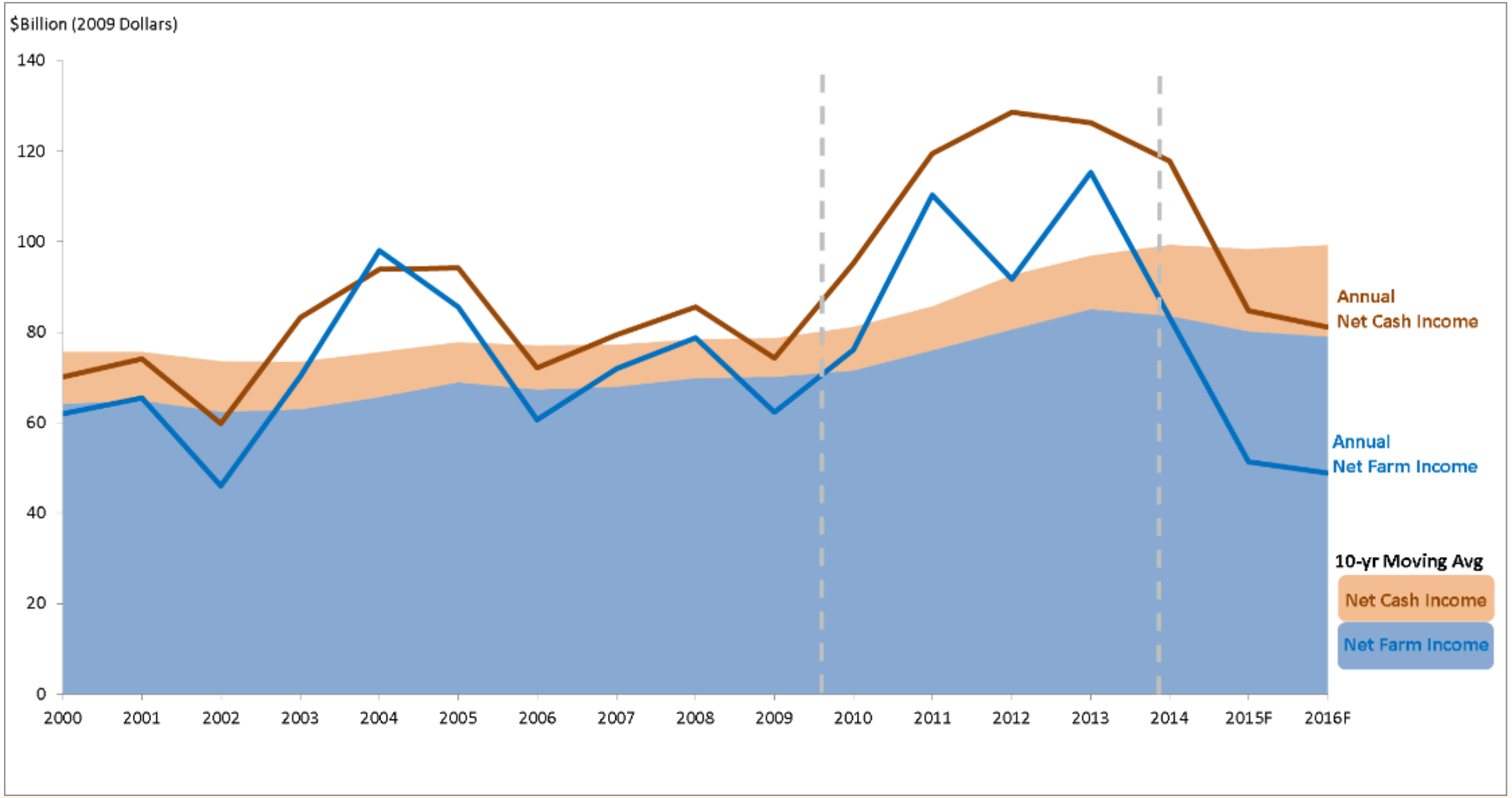
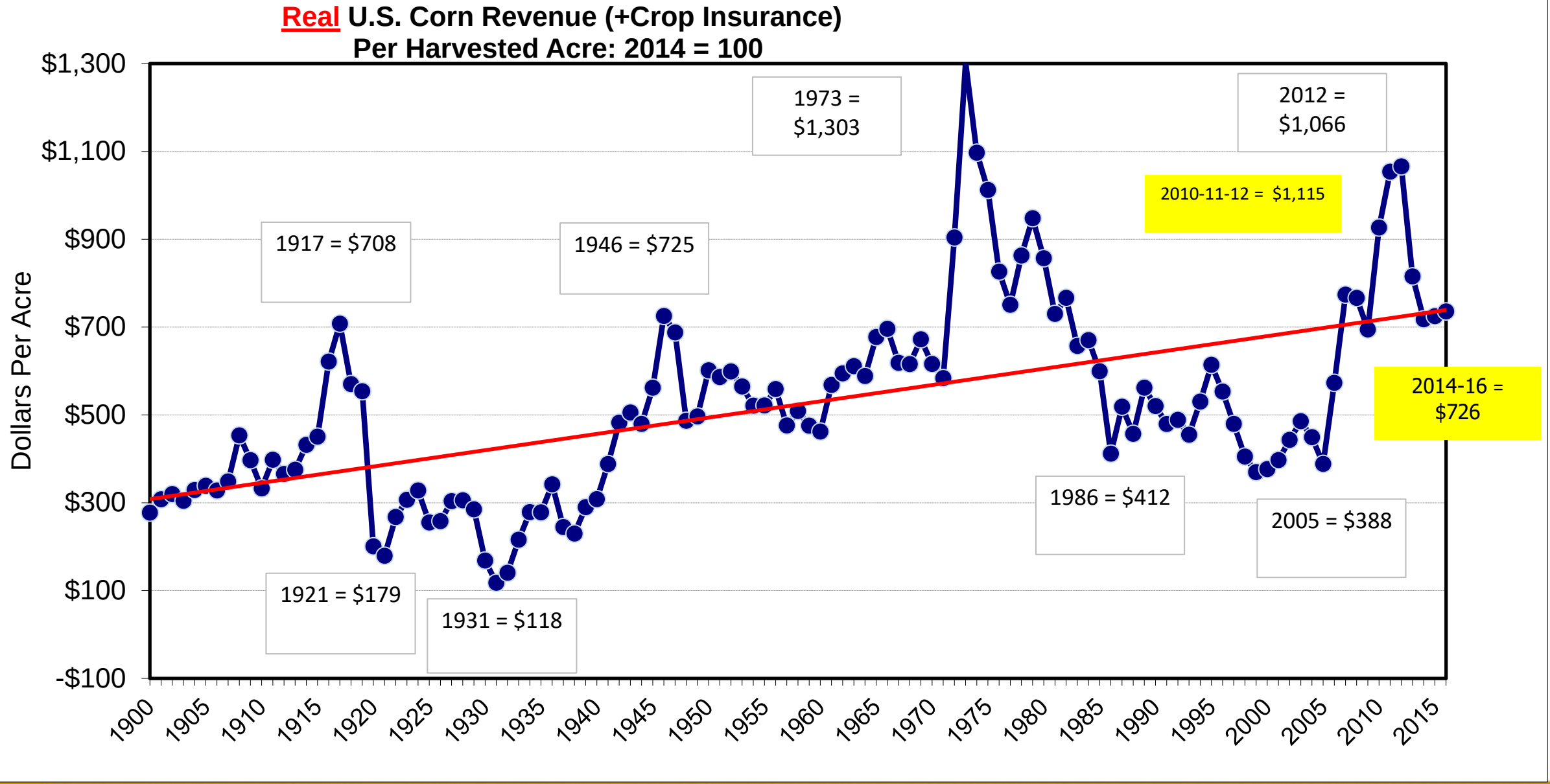
$ billion, nominal



Note: F = forecast.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of February 7, 2018.


$Billion (2009 Dollars)
140
120
100
80
60
40
20
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015F
2016F
Annual
Net Cash Income
Annual
Net Farm Income
10-yr Moving Avg
Net Cash Income
Net Farm Income


Real U.S. Corn Revenue (+Crop Insurance)
Per Harvested Acre: 2014 = 100
Dollars Per Acre
$1,300
$1,100
$900
$700
$500
$300
$100
-$100
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
1917 = $708
1921 = $179
1931 = $118
1946 = $725
1973 = $1,303
1986 = $412
2005 = $388
2012 = $1,066
2010-11-12 = $1,115
2014-16 = $726

LAND VALUES

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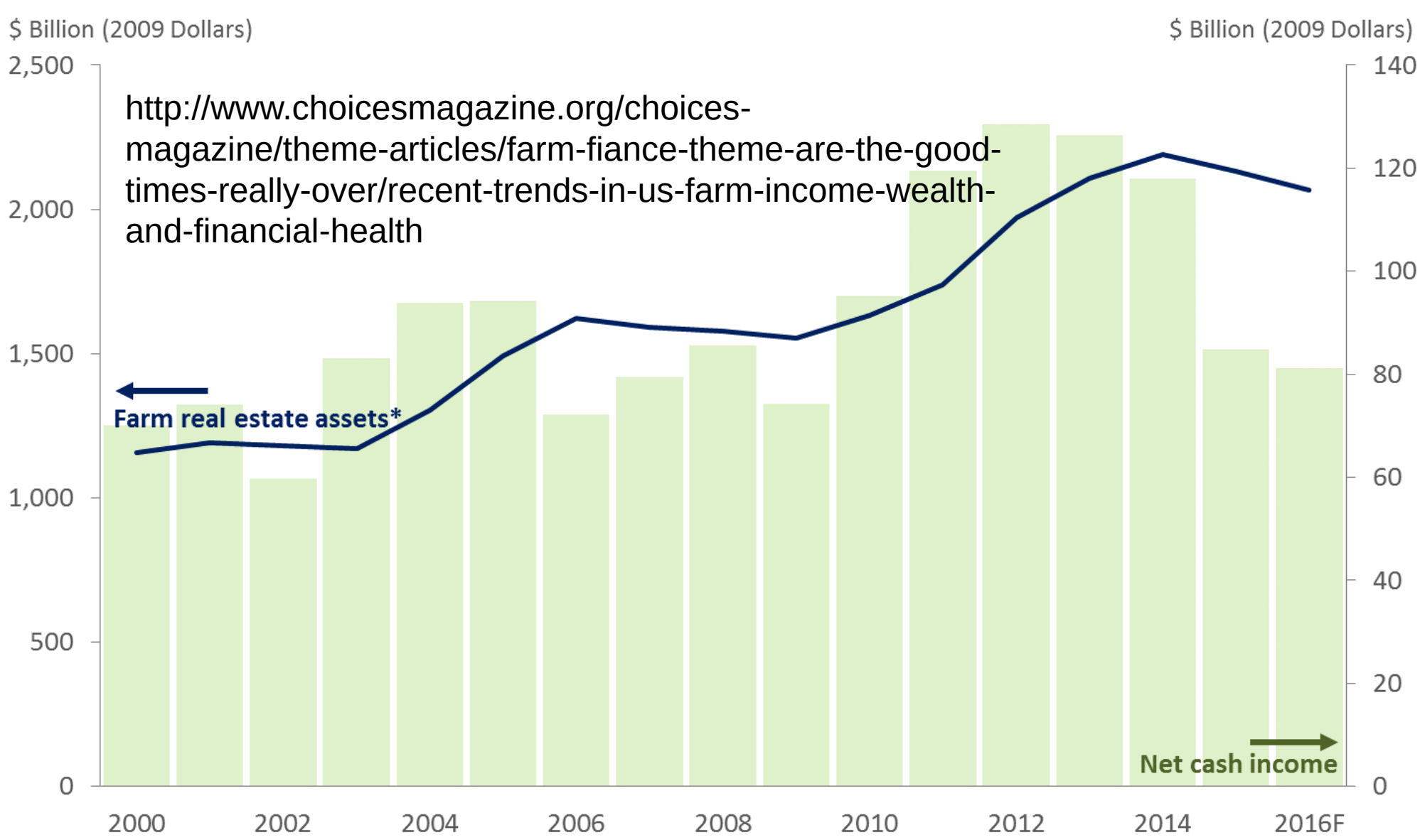
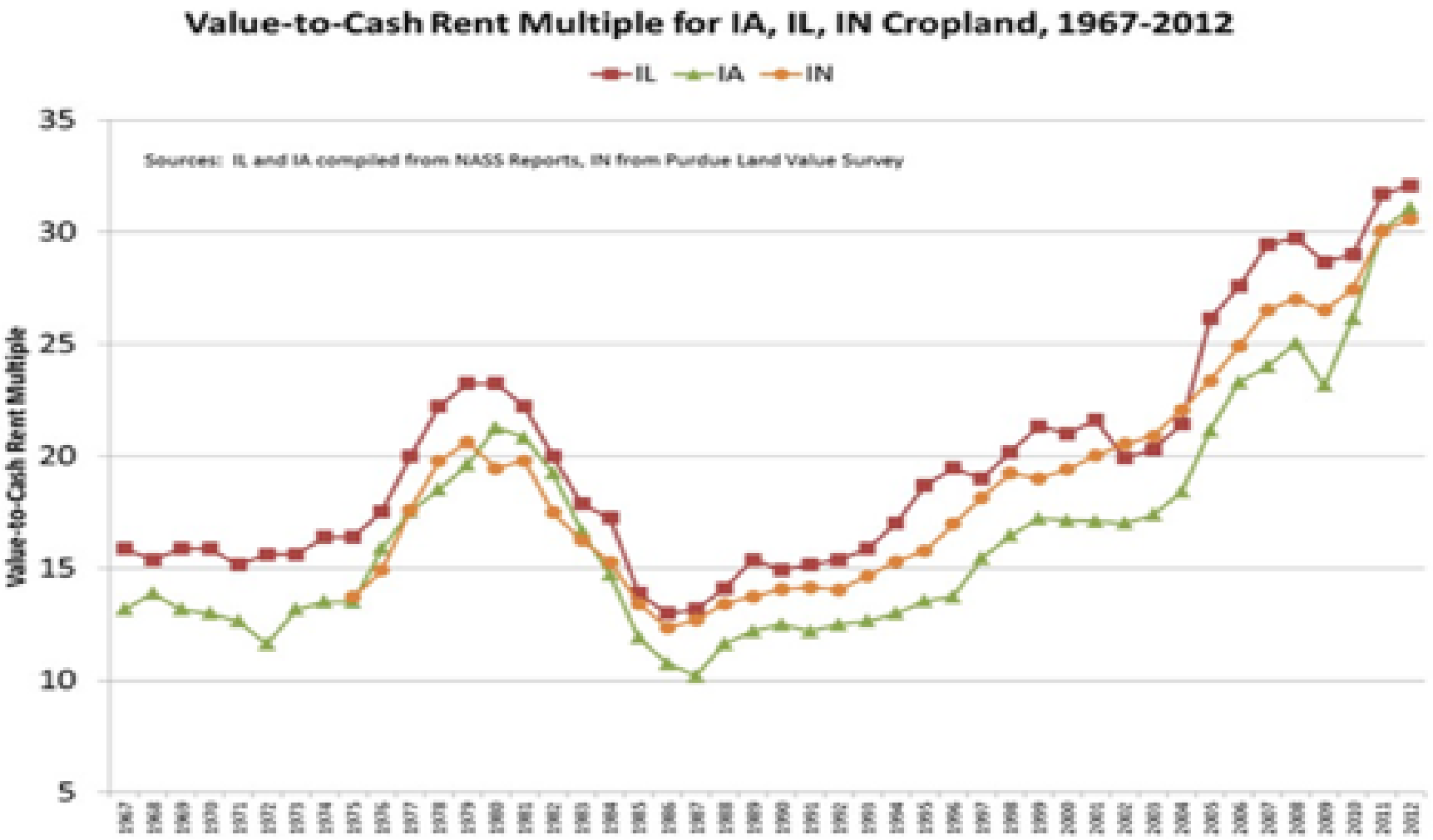

$ Billion (2009 Dollars)
$ Billion (2009 Dollars)
2,500
2,000
1,500
1,000
500
0
140
120
100
80
60
40
20
0
http://www.choicesmagazine.org/choices-magazine/theme-articles/farm-fiance-theme-are-the-good-times-really-over/recent-trends-in-us-farm-income-wealth-and-financial-health
Farm real estate assets*
Net cash income
2000
2002
2004
2006
2008
2010
2012
2014
2016F

Land Values


Value-to-Cash Rent Multiple for IA, IL, IN Cropland, 1967-2012
IL
IA
IN
Sources: IL and IA compiled from NASS Reports, IN from Purdue Land Value Survey
Value-to-Cash Rent Multiple
35
30
25
20
15
10
5

Land Values

- Prices showing softness
- Increasing number of “no sales”
- Market has topped out
- Prices down plus or minus 10%
- Don’t expect at 1980s bust

KEY FARM FINANCIAL VULNERABILITIES

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1. Working Capital = Current Assets – Current Liabilities

- Goal – 30% of gross revenue
- Burn rate – reduction due to losses ($50 to $100 per acre)
- First line of defense against financial stress

Thoughts

- Long-term future of agriculture is very bright
- Short-term agriculture is in an economic downturn
  - The downturn is likely not a "bust"
- The recovery is likely to be sluggish
  - Short peak, long trough
  - Improvement comes primarily from cost reductions

Thoughts

- Primary vulnerability is liquidity
  - Cash shortfalls
  - Working capital burn rate
  - Repayment capacity
- Most vulnerable are renters and highly levered
  - Rents/costs decline slowly
  - Declining machinery values
  - Public sector safety net is weak and has (growing) holes

Thoughts for Staying Up to Date

- Read
  - *Wall Street Journal, Financial Times, The Economist*
- Tweet
  - More business-y and less personal than Facebook
- Email
  - https://farmdocdaily.illinois.edu/
  - The Daily Shot from the WSJ: https://blogs.wsj.com/dailyshot/?mod=djemDailyShot

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