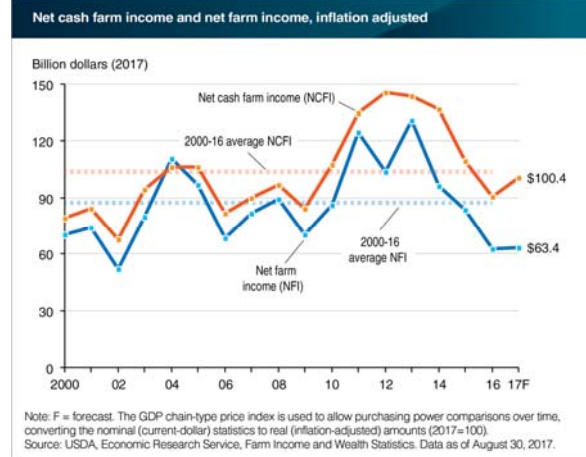


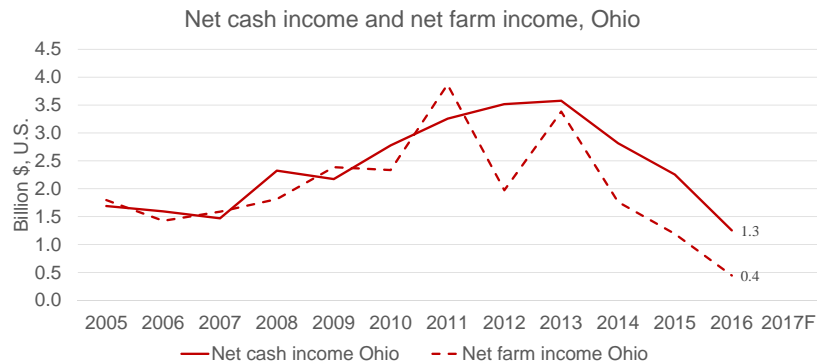
Examining the Ohio Farm Economy

Ag Lender Seminars Wooster

Barry Ward
Ohio State University Extension
The Ohio State University



Ohio net cash income (\$1.3B) and Ohio net farm income (\$0.4B) experienced a third straight year of decline in 2016



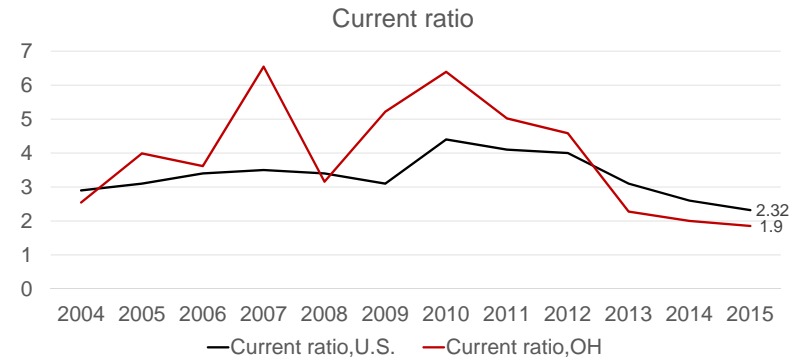
Year	Number of Farms	Tillable Acres (TA)	All Operators		Crop Returns/A \$	Livestock Ret. Above Feed/A \$	Net Mach. & Labor Cost/A** \$
			Net Farm Income \$	Labor-Mgmt. Income \$			
Grain Farms							
2016	2,305	1,200	93,829	33,455	745	2	182
2015	2,427	1,184	487	(65,153)	670	0	187
2014	2,448	1,158	101,389	32,157	794	12	197
2013	2,365	1,138	134,442	68,110	841	4	190
2012	2,492	1,139	310,193	246,548	994	2	175

Year	Number of Farms	Tillable Acres (TA)	All Operators		Crop Returns/A \$	Livestock Ret. Above Feed/A \$	Net Mach. & Labor Cost/A** \$
			Net Farm Income \$	Labor-Mgmt. Income \$			
Dairy Farms							
2016	48	486	9,117	(50,666)	720	704	736
2015	57	522	(5,757)	(63,367)	658	610	628
2014	54	476	257,571	194,163	755	1,203	714
2013	60	493	68,333	7,114	856	543	628
2012	58	505	166,458	100,900	1,073	455	613
Beef Farms							
2016	23	483	(46,914)	(108,322)	727	116	422
2015	31	466	(123,019)	(193,899)	628	(64)	390
2014	31	509	205,637	137,920	778	615	416
2013	37	511	41,340	(23,717)	801	182	367
2012	31	489	94,562	36,115	910	107	380

Illinois FBFM 2016

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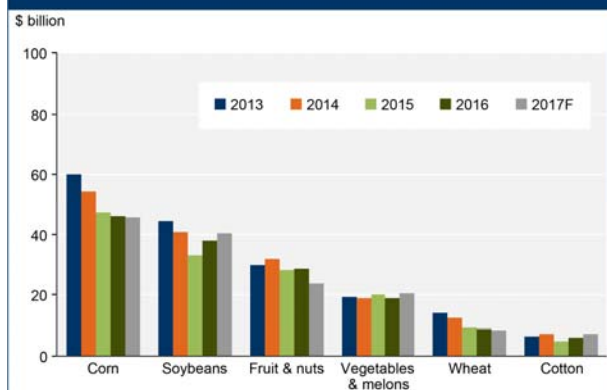
Farm liquidity declined



Source: USDA, ARMS.

6

U.S. cash receipts for selected crops, 2013-2017F



Note: F = forecast.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of August 30, 2017.

11/22/2017

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U.S. cash receipts for selected animals/products, 2013-2017F

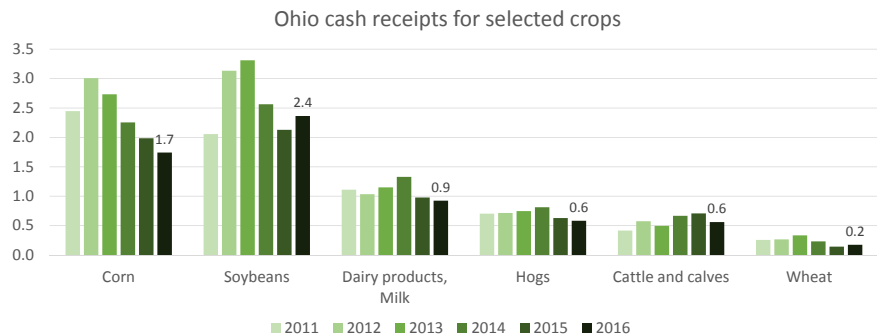


Note: F = forecast.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of August 30, 2017.

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Ohio cash receipts declined by 11.8% in 2016, due to decline in livestock receipts



Source: USDA, ERS, Farm Income and Wealth Statistics.

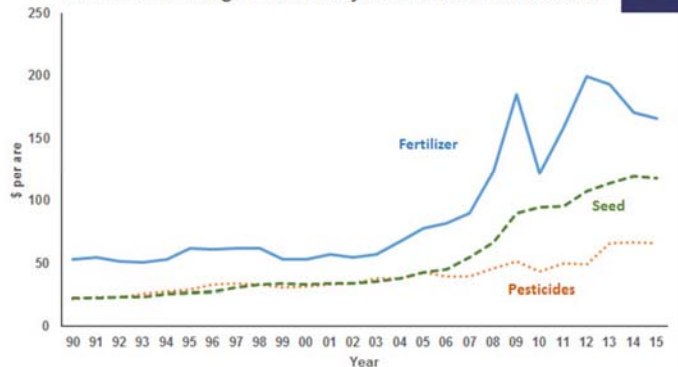
Corn Price – Last 20 Years

Source: macrotrends



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Figure 1. Fertilizer, Pesticide, and Seed Costs Per Acre, Corn Grown on High-Productivity Farmland in Central Illinois

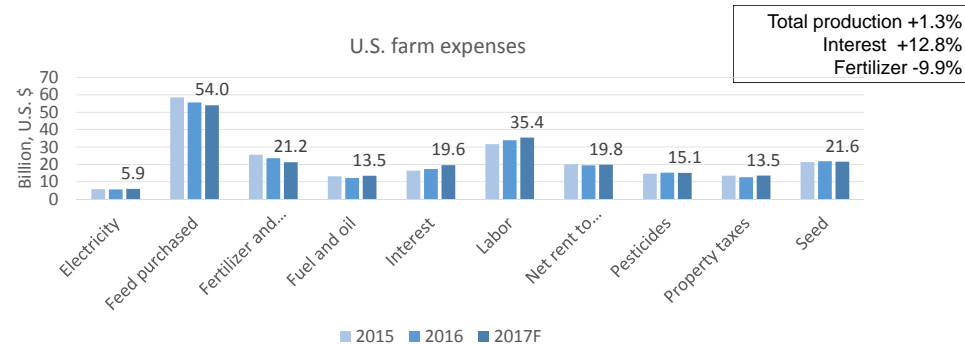


Source: Illinois Farm Business Farm Management

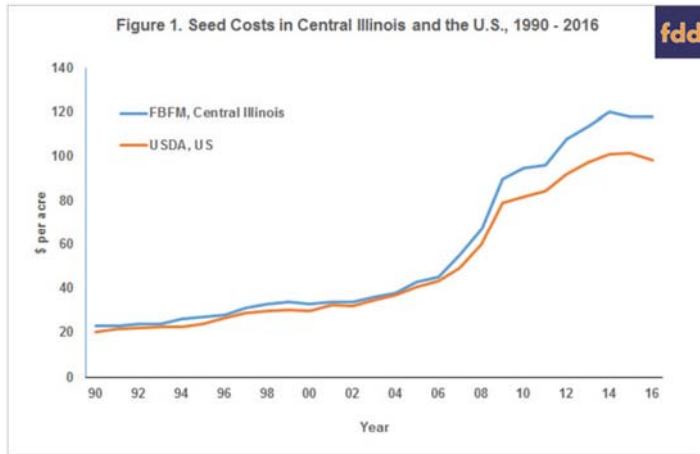
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Farm expenses expected to increase due to higher labor, interest and fuel expenses; declines in feed and fertilizer expenses

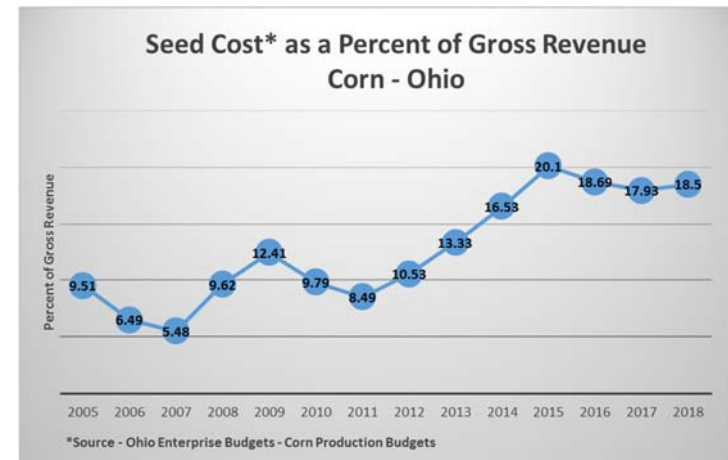


Source: USDA/ERS Farm Income and Wealth Statistics.



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*Source - Ohio Enterprise Budgets - Corn Production Budgets

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Current Ohio Fertilizer Prices

NH3	\$450	-18%
UAN(28%)	\$195	-7.5%
MAP	\$435	-NC
Potash	\$300	+NC

Source: DTN Fertilizer Index

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Energy Outlook

October 2017 Estimates EIA

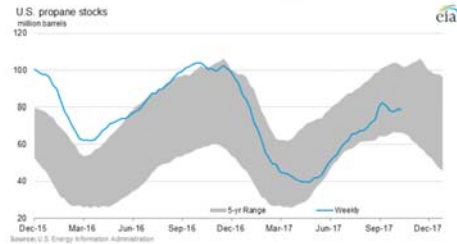
	2017	2018	'16-'17
WTI Crude (\$/brl)	49.69	50.57	1.8%
Brent Crude (\$/brl)	52.43	54.07	3.1%
Gasoline (\$/gal)	2.39	2.41	0.8%
Diesel (\$/gal)	2.64	2.79	5.7%
Nat. Gas (\$/mcf)	11.10	10.99	-1.0%

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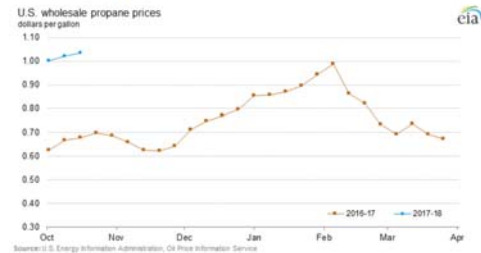
Propane Stocks/Wholesale Price

August 2017 Estimates EIA

Propane stocks (million barrels) and days of supply



Wholesale propane prices (dollars per gallon)



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Crop Input Costs

Energy – Flat to Modestly Higher

Fertilizer – Lower or Flat

Seed – Flat to Modestly Higher

Chemical – Prices: Flat to Modestly Higher

Depending on the Product – Costs: Higher

Machinery/Equipment Depreciation - Higher

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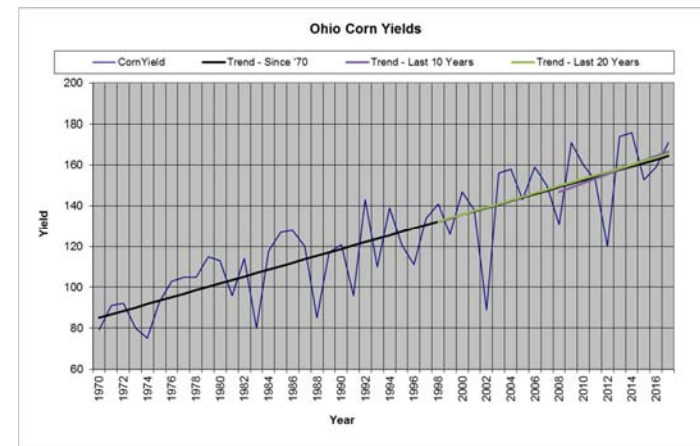
CORN SELECTED BUDGET STATS - 2018

Item	Input	Yield in bushels/acre	
Receipts		166	199
Corn Price	\$3.70 /bushel	\$614.57	\$737.41
ARC/PLC		\$0.00	\$0.00
Variable Costs			
Seed Cost	\$280 /bag	\$112.00	\$119.00
Nitrogen (NH ₃)	\$425 /ton	\$53.77	\$65.47
P ₂ O ₅ (MAP)	\$455 /ton	\$26.89	\$32.26
K ₂ O (Potash)	\$315 /ton	\$11.77	\$14.13
Chemicals		\$60.42	\$60.42
Fuel/Diesel	\$2.20 /gallon	\$12.66	\$12.66
Breakeven Cost / Bu		\$2.17	\$1.97
Fixed Costs			
Labor and Management		\$75.73	\$81.87
Machinery Cost		\$130.45	\$130.45
Land Rent		\$187.00	\$239.00
Breakeven Cost / Bu		\$4.67	\$4.35
Returns			
Return to Total Costs		-\$160.76	-\$129.52
Return to Variable Costs		\$254.41	\$343.79
Return to Land		\$26.24	\$109.48

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Ohio Trend Yields - Corn



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CORN SELECTED BUDGET STATS - 2018

Item	Input	Yield in bushels/acre	
Receipts		169	203
Corn Price	\$3.70 /bushel	\$625.30	\$751.10
ARC/PLC		\$0.00	\$0.00
Variable Costs			
Seed Cost	\$280 /bag	\$112.00	\$119.00
Nitrogen (NH ₃)	\$425 /ton	\$54.79	\$66.77
P ₂ O ₅ (MAP)	\$455 /ton	\$27.36	\$32.86
K ₂ O (Potash)	\$315 /ton	\$11.98	\$14.39
Chemicals		\$60.42	\$60.42
Fuel/Diesel	\$2.20 /gallon	\$12.66	\$12.66
Breakeven Cost / Bu		\$2.14	\$1.95
Fixed Costs			
Labor and Management		\$76.27	\$82.56
Machinery Cost		\$130.45	\$130.45
Land Rent		\$187.00	\$239.00
Breakeven Cost / Bu		\$4.60	\$4.29
Returns			
Return to Total Costs		-\$152.68	-\$119.21
Return to Variable Costs		\$263.03	\$354.79
Return to Land		\$34.32	\$119.79

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SOYBEAN SELECTED BUDGET STATS - 2018

Item	Input	Yield in bushels/acre	
Receipts		51	61
Soybean Price	\$9.70 /bushel	\$489.85	\$587.82
ARC/PLC		\$0.00	\$0.00
Variable Costs			
Seed Cost	\$0.37 /1000 seeds	\$64.93	\$64.93
P ₂ O ₅ (MAP)	\$455 /ton	\$17.68	\$21.21
K ₂ O (Potash)	\$315 /ton	\$18.56	\$22.27
Chemicals		\$45.70	\$45.70
Fuel/Diesel	\$2.20 /gallon	\$7.18	\$7.18
Breakeven Cost / Bu		\$4.00	\$3.42
Fixed Costs			
Labor and Management		\$54.49	\$59.39
Machinery Cost		\$107.89	\$107.89
Land Rent		\$187.00	\$239.00
Breakeven Cost / Bu		\$11.21	\$10.21
Returns			
Return to Total Costs		-\$76.18	-\$43.72
Return to Variable Costs		\$287.71	\$377.06
Return to Land		\$110.82	\$195.28

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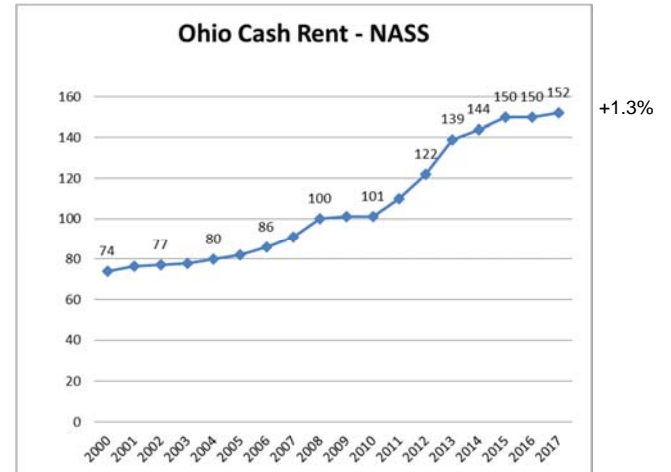
WHEAT SELECTED BUDGET STATS - 2018

Item	Input	Yield in bushels/acre	
Receipts		75	90
Wheat Price	\$4.65 /bushel	\$347.36	\$416.64
ARC/PLC		\$3.60	\$3.60
Variable Costs			
Seed Cost	0.031 /1000 seeds	\$43.40	\$43.40
N (UAN)	190	\$20.59	\$37.08
P ₂ O ₅ (MAP)	455 /ton	\$20.59	\$24.70
K ₂ O (Potash)	315 /ton	\$12.51	\$13.95
Chemicals		\$13.25	\$13.25
Fuel/Diesel	\$2.20 /gallon	\$9.90	\$9.90
Breakeven Cost / Bu		\$2.37	\$2.15
Fixed Costs			
Labor and Management		\$39.87	\$43.33
Machinery Cost		\$125.86	\$125.86
Land Rent		\$187.00	\$239.00
Breakeven Cost / Bu		\$8.47	\$7.76
Returns			
Return to Total Costs		-\$192.14	-\$192.14
Return to Variable Costs		\$173.59	\$227.75
Return to Land		-\$13.41	-\$11.25

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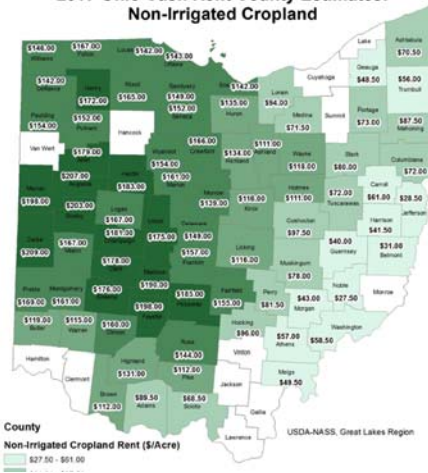
Ohio Cash Rent - NASS



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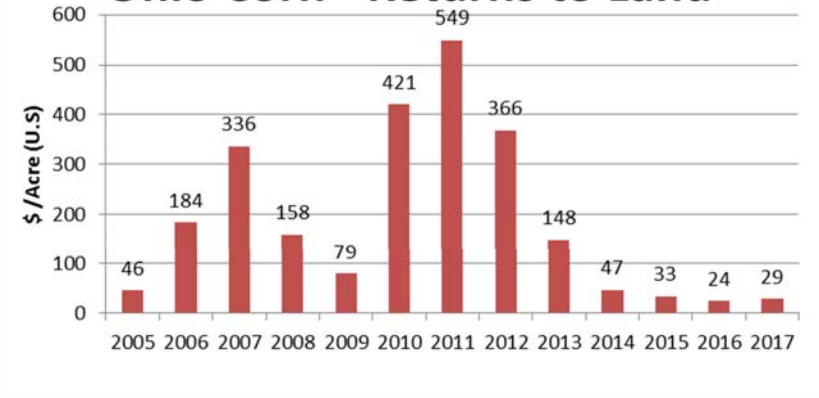
24

2017 Ohio Cash Rent County Estimates:
Non-Irrigated Cropland



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Ohio Corn - Returns to Land



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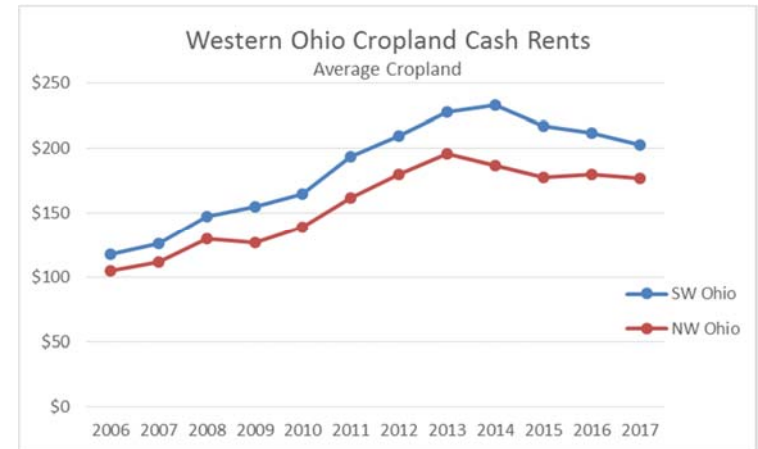
Farm sector solvency ratios, 1970-2017F



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Western Ohio Cropland Cash Rents
Average Cropland



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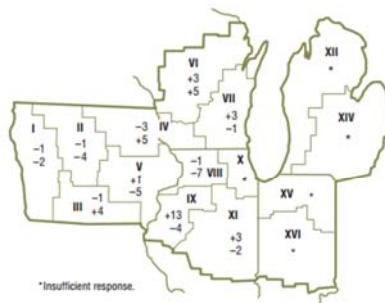
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Ohio Cropland Values and Cash Rents
NorthCentralEast Ohio Results

Land Class		Average	Std	Range*	
Top	Avg Corn Yield (bu/a)	195.0	21.4	216.4	173.6
	Avg Soybean Yield (bu/a)	63.6	9.0	72.6	54.5
	Market Value per Acre	2015 \$10,446	\$4,895	\$15,341	\$5,551
		2016 \$10,568	\$5,686	\$16,254	\$4,882
	Rent per Acre	2015 \$164	\$51	\$214	\$113
		2016 \$161	\$48	\$209	\$113
Average	Avg Corn Yield (bu/a)	158.3	17.9	176.2	140.3
	Avg Soybean Yield (bu/a)	52.1	6.6	58.6	45.5
	Market Value per Acre	2015 \$8,811	\$4,439	\$13,250	\$4,372
		2016 \$9,023	\$5,042	\$14,065	\$3,981
	Rent per Acre	2015 \$129	\$42	\$171	\$87
		2016 \$126	\$40	\$166	\$86
Poor	Avg Corn Yield (bu/a)	120.2	28.6	148.7	91.6
	Avg Soybean Yield (bu/a)	38.9	5.5	44.5	33.4
	Market Value per Acre	2015 \$6,317	\$3,377	\$9,694	\$2,941
		2016 \$6,377	\$3,855	\$10,232	\$2,522
	Rent per Acre	2015 \$88	\$34	\$121	\$54
		2016 \$89	\$34	\$123	\$54



Land Rental Survey Data - % Changes

OSU AEDE (collected Jan-Mar 2016)

2016-2017 Top -4.0%, Avg -3.0%, Poor -2.6%

Purdue (Indiana) (collected June 2017)

June 16-June 17 Top -1.6%, Avg +0.5%, Poor +3.8%

Chicago Fed - 7th District (Collected April, 2017)

“Good” Farmland – Apr16 to Apr17

Entire District - 7%

Indiana (Northern ¾) - 8%

Michigan (LP) - 5%

Rental Rates: Outlook

Competing Fundamentals:

Crop Net Income low to negative

Balance sheets weakening generally

versus

Farm balance sheets are still healthy in an historical context

High CAUV values/property taxes

ARC Co Payments

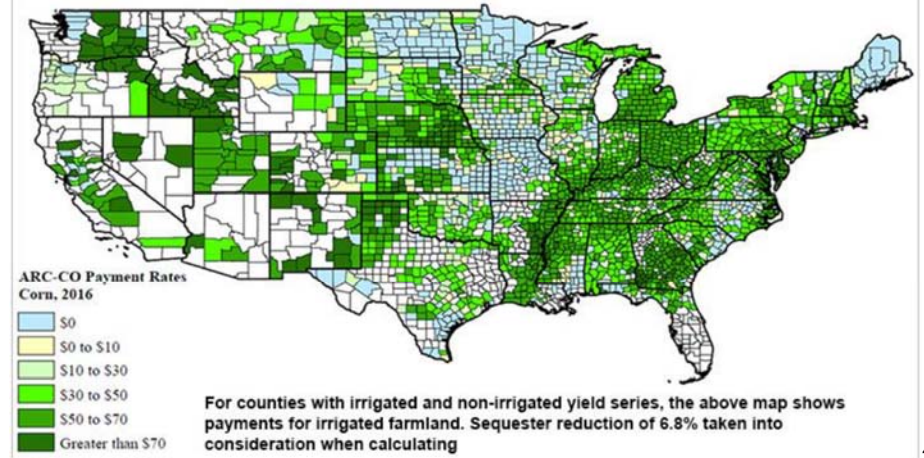
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Figure 1. 2016 ARC-CO Payments for Corn

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Figure 2. 2016 ARC-CO Payments for Soybeans

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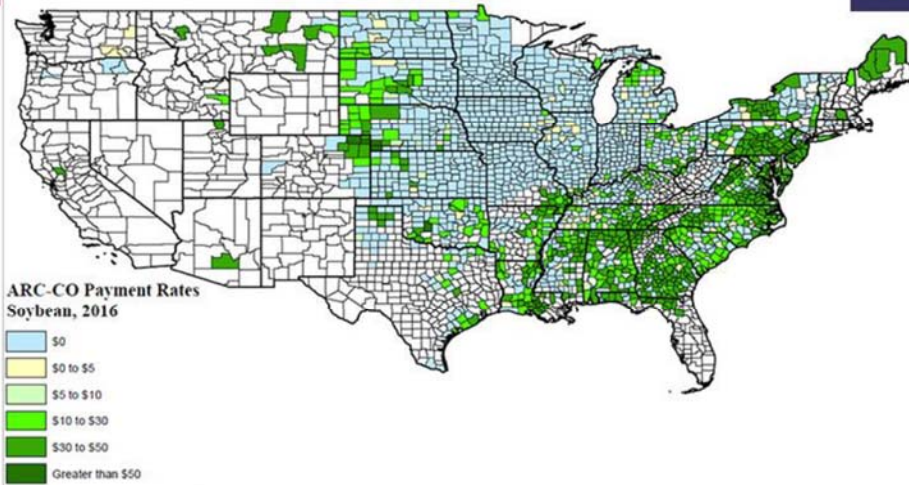
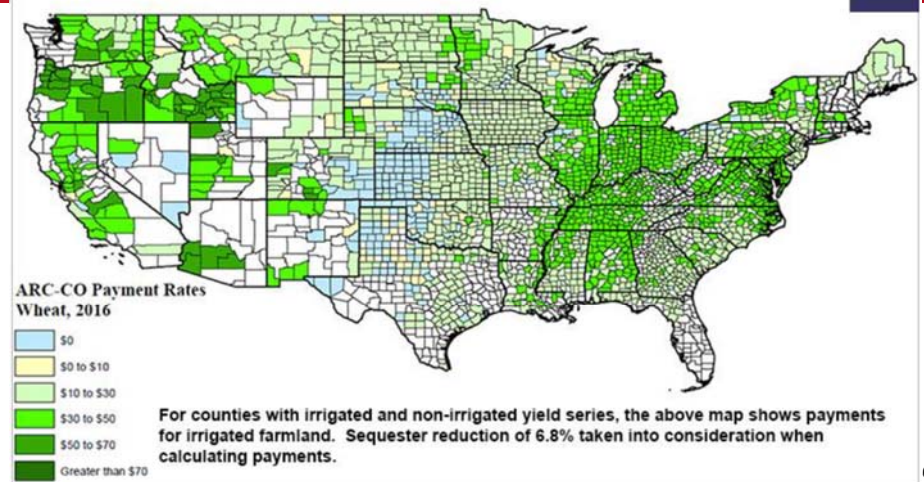
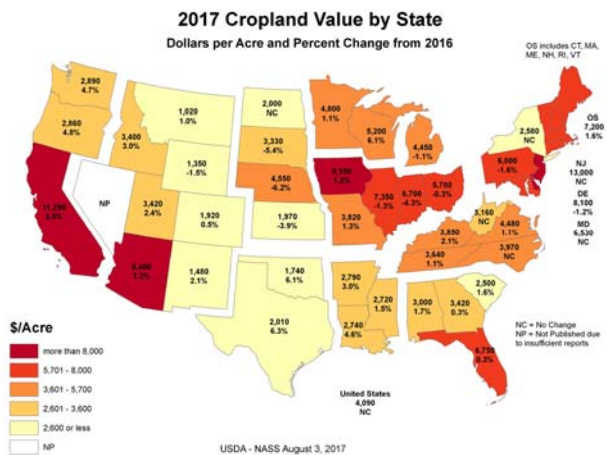


Figure 3. 2016 ARC-CO Payments for Wheat

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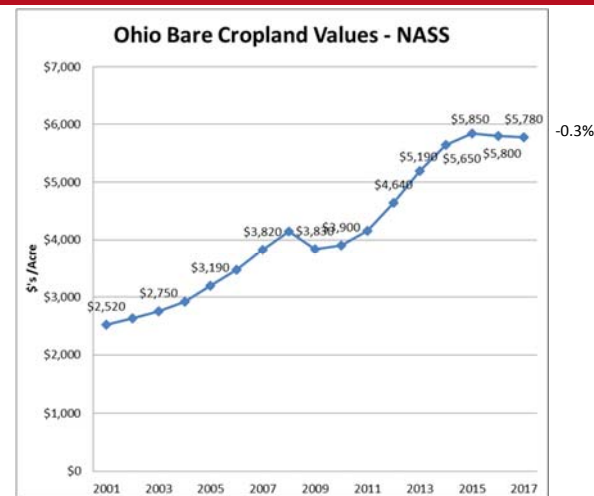


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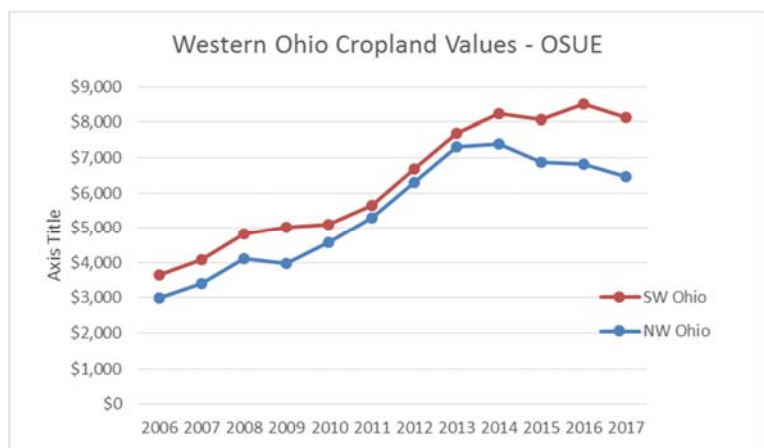
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Land Value Survey Data - % Changes

OSU AEDE (collected Jan-Mar 2017)
2016-2017 Top -4.9%, A -5.1%, P -8.0%

Purdue (Indiana) (collected June 2017)
June 16-June 17 T -0.2%, A -1.6%, P -1.4%

Chicago Fed (Collected)
Indiana - Northern 3/4 - "Good" Farmland
Yearly July16 - July17 -1% (District 7, +1%)
2nd Qtr. Change +2% (District 7, +1%)

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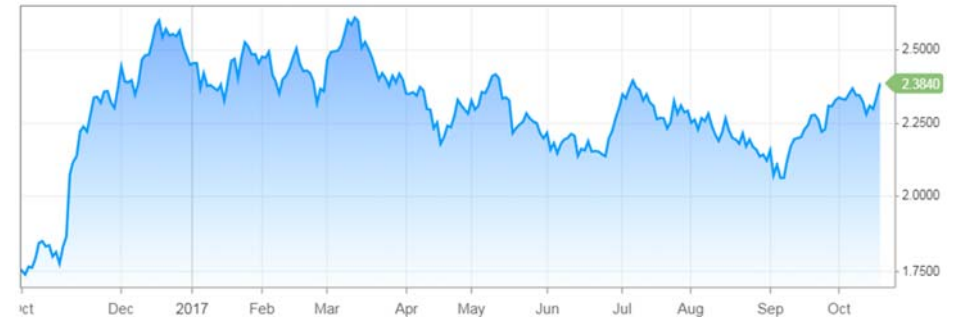
40

What has Driven Land Value?

- >> Crop Net Income – good to excellent '06-'13
 - lower in '14-'17 and likely '18
- >> Low interest rates (but higher than last yr.) – 10 Year T-Bill ~ 2.4%
- >> Farmer's (crop) equity still solid but will likely weaken again in 2018
 - U.S. Farms (USDA) Debt to Asset (D/A) Ratio ~ 12.7% (2017F)
 - (Down from 14.7% in 2002...up from the low of 11.26% in 2012)
 - Grain Farms (Illinois FBFM) D/A Ratio (Median) ~ 19.9% (2016)
 - (Down from 30.7% in 2002, 27.4% in 2005, up from low of 18.0% in 2012)

U.S. Treasuries – 10 Year T- Bills

Source: CNBC



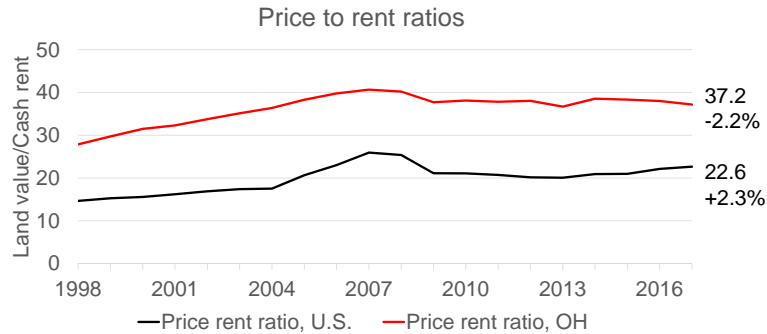
Interest Rates Going Forward

- >> Pace of Fed action?
 - >> Full employment? (~4.4% Unemployment)
 - >> Stronger U.S. economic growth
- vs.
- >> Low inflation
- >> Strong demand for U.S. treasuries v
- >> Federal debt prospects ^

Credit Conditions at Seventh District Agricultural Banks

	Loan Demand Index	Funds Availability Index	Loan Repayment Rates Index	Avg. Loan - Dep. Ratio percent	Interest Rates on Farm Loans		
					Operating Loans percent	Feeder Cattle percent	Real Estate percent
2016							
Jan-Mar	156	105	32	73.3	4.91	5.01	4.65
Apr-June	126	108	48	72.6	4.89	5.05	4.57
July-Sept	132	103	48	75.3	4.87	4.95	4.57
Oct-Dec	114	105	65	75	5.03	5.1	4.71
2017							
Jan-Mar	129	101	57	74.4	5.13	5.27	4.8
Apr-June	119	104	68	74.4	5.2	5.25	4.86

Price to rent ratios in Ohio follow a similar trend to that in the U.S. In 2017, price to rent ratio in Ohio declined while that in U.S. increased



Source: USDA, NASS.

Farmland Values: Outlook

Competing Fundamentals:

- Crop Net Income will again be low or negative
- Livestock/Dairy income mixed
- Farmer equity positions are healthy but weakening
- Higher interest rates

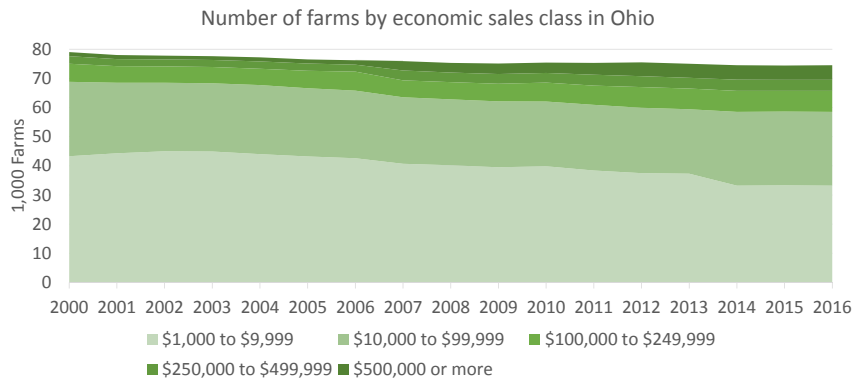
versus

- Farmer equity positions are healthy but weakening
- ARC/PLC payments (but will be low/zero in Oct 2018)

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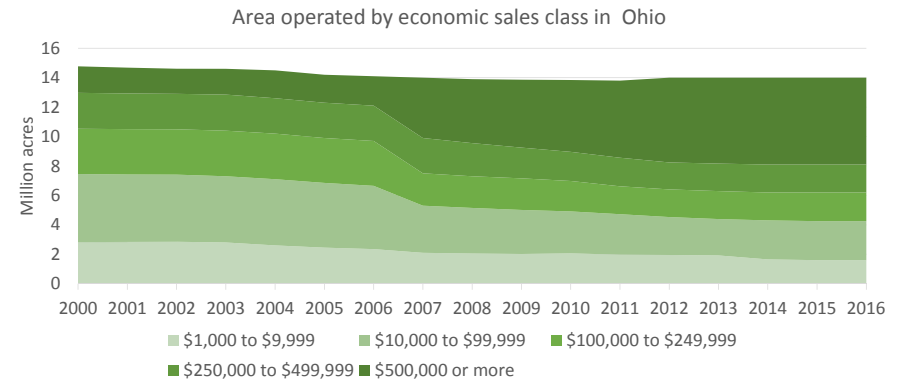
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Increasing number of large farms



Source: USDA, NASS.

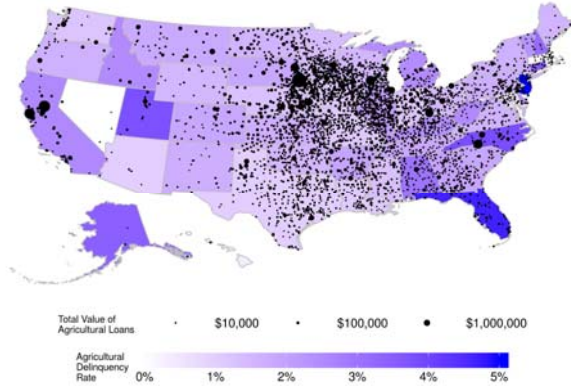
Increase in land operated by large farms



Source: USDA, NASS.

Concentration of ag loans in Corn Belt but low ag delinquency rates

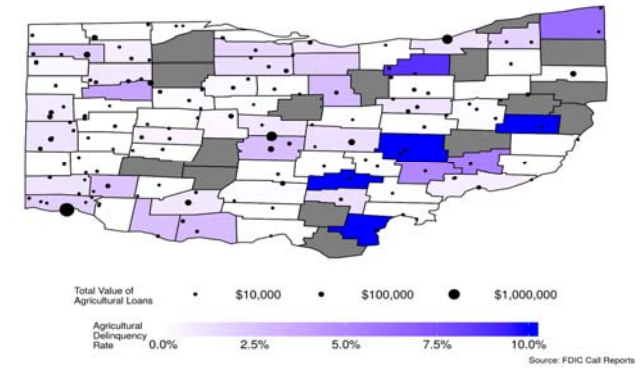
Commercial agricultural banking performance by state in 2017 Q2



Source: FDIC

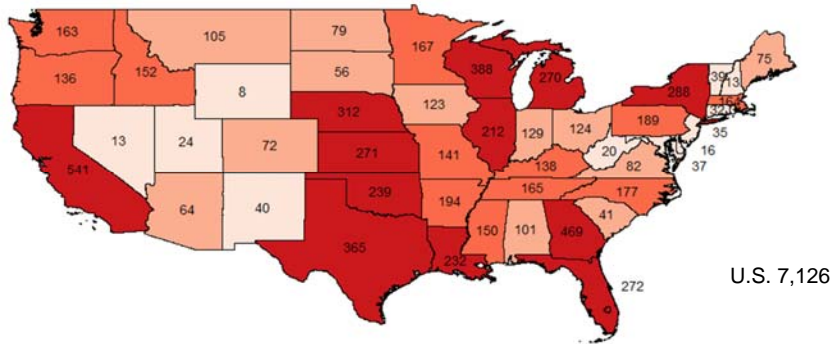
Ag loans and delinquency rates in Ohio

Commercial Agricultural Banking Performance from Q2 2017



Ohio has low farm bankruptcy (chapter 12) filings

Number of farmer bankruptcy (chapter 12) filings by state, 2001-2017 Q2



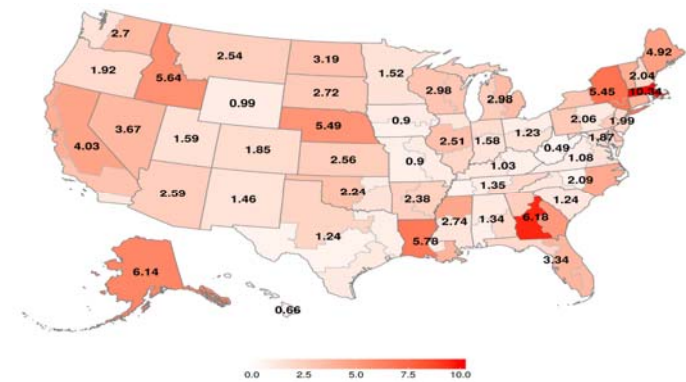
Number of farmer bankruptcies (chapter 12) filings since 2001: 7,126 for US and 129 for Ohio

Source: U.S. Courts, Table F-2

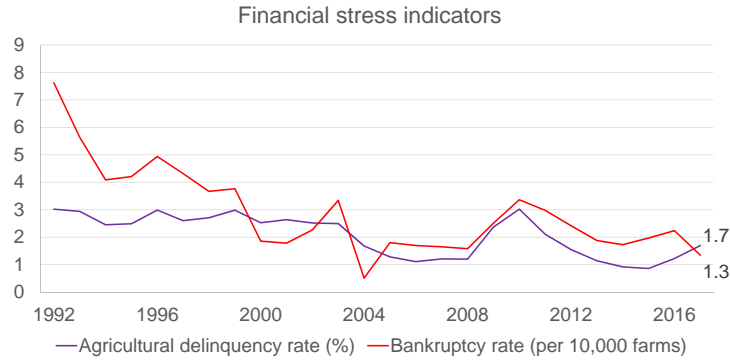
Ohio farm bankruptcy rate is half of the U.S. rate

Farm bankruptcies filed per 10,000 farms Annualized across 1997 to 2016: 2.33

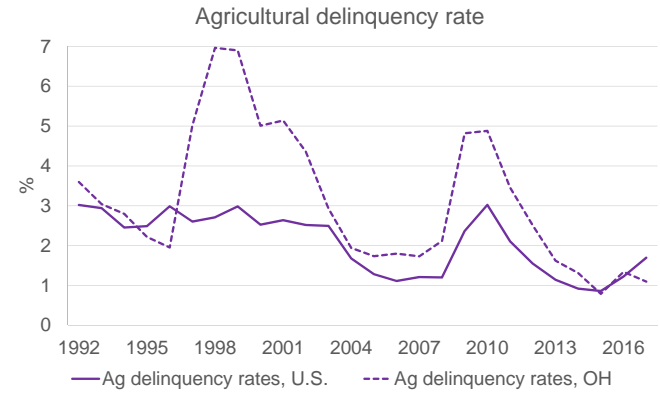
Source: U.S. Courts, Table F-2



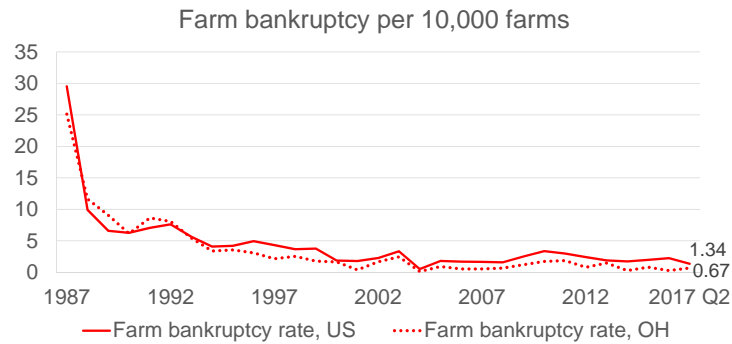
Agricultural delinquency rates and bankruptcy rates have declined over the last two decades



Ag delinquency rates are higher in Ohio during ag downturns

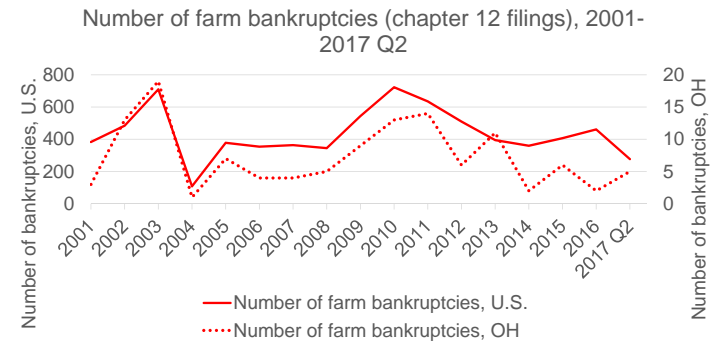


Farm bankruptcy rates have trended downward and seem to have flattened out. Ohio similar to US bankruptcy rates.



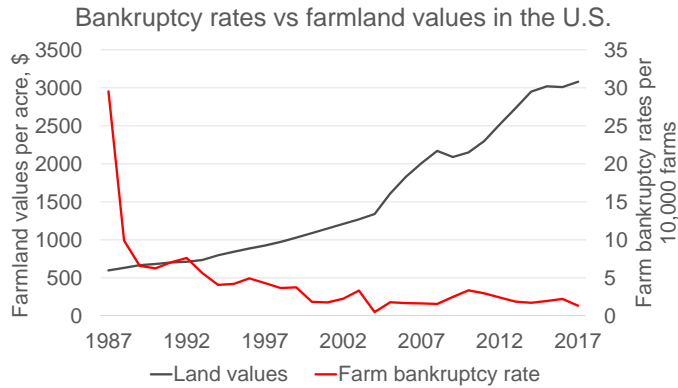
Note: The number of farms in 2017 were approximated using the number in 2016.

Number of farm bankruptcies (chapter 12 filings) in Ohio increased in 2017



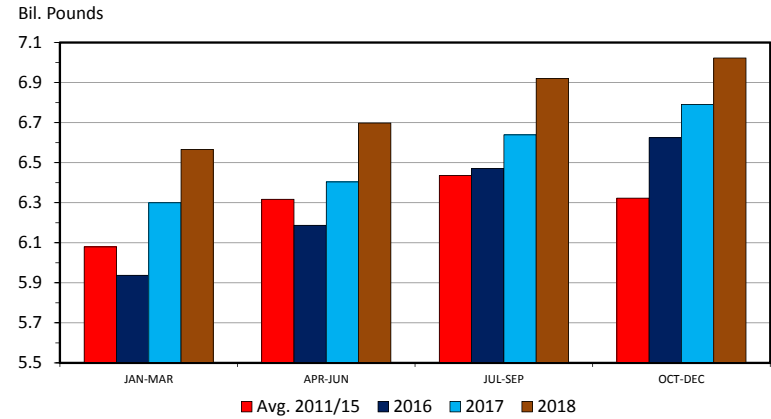
Source: U.S. Courts, Table F-2

Negative relationship between farmland values and bankruptcy rates



Note: 2017 bankruptcy information relates to the 2nd Quarter. The number of farms in 2017 were approximated using the number in 2016.

COMMERCIAL BEEF PRODUCTION US, Quarterly



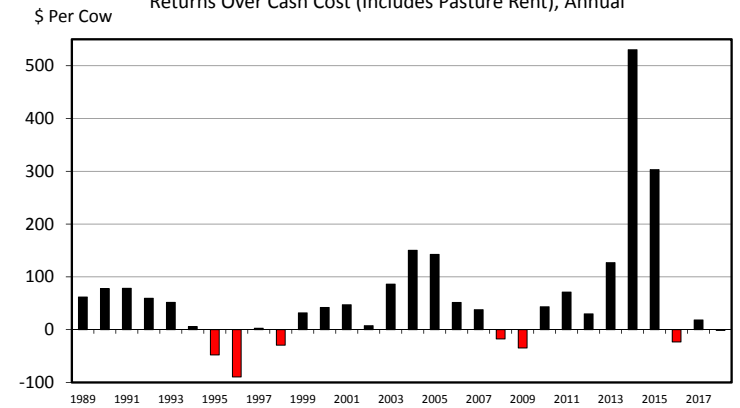
Data Source: USDA-NASS, Forecasts by LMIC

U.S. COMMERCIAL BEEF PRODUCTION, PER CAPITA CONS./DIS., AND CATTLE PRICES -- LMIC FORECASTS

Year	Comm'l Beef Production (Mil. Lbs.)	% Chg. from Year Ago	Per Capita Cons./Dis. (Retail Wt)	% Chg. from Year Ago	Live Slt. 5-Mkt Avg (\$/Cwt.)	% Chg. from Year Ago	Feeder Steer Price Southern Plains ^a 7-800# (\$/Cwt.)	5-600# (\$/Cwt.)
2012								
I	6282	-2.0	14.0	-0.6	125.30	13.8	154.25	182.41
II	6473	-1.3	14.6	0.8	120.91	7.2	152.65	178.65
III	6586	-2.2	14.7	0.3	119.69	4.9	141.82	150.57
IV	6572	1.3	14.2	1.3	125.54	2.9	146.50	161.42
Year	25913	-1.1	57.5	0.4	122.86	7.1	148.81	168.26
2016								
I	5938	4.8	13.6	3.7	134.81	-17.0	160.06	195.73
II	6187	5.7	13.9	2.0	127.68	-19.2	149.22	173.86
III	6472	6.6	14.0	0.9	113.22	-21.5	144.10	157.12
IV	6625	8.4	14.0	5.0	107.69	-15.7	129.07	138.44
Year	25221	6.4	55.4	2.8	120.85	-18.4	145.61	166.29
2017								
I	6300	6.1	14.0	3.3	122.96	-8.8	132.88	157.38
II	6404	3.5	14.2	1.9	132.76	4.0	149.30	170.49
III ^b	6639	2.6	14.0	0.2	117.118	3.8	150-152	164-166
IV ^c	6791	2.5	14.1	1.1	117-119	9.6	137-140	148-153
Year	26134	3.6	56.3	1.6	122-124	1.8	142-144	159-163
2018								
I	6566	4.2	14.1	1.0	118-121	-2.8	138-142	152-158
II	6698	4.6	14.3	1.3	120-124	-8.1	135-140	155-162
III	6921	4.2	14.4	2.9	112-117	-2.6	130-137	148-156
IV	7023	3.4	14.4	1.9	113-119	-1.7	126-134	141-150
Year	27208	4.1	57.3	1.8	116-120	-4.1	133-137	150-156

^a Projected Quarter ^c Forecast Quarters
^d Average of Kansas and Oklahoma Weekly Combined reports
Sources: Livestock Slaughter - USDA/NASS; Steer Prices - USDA/AMIS Livestock Market News; Projections and Forecasts by LMIC

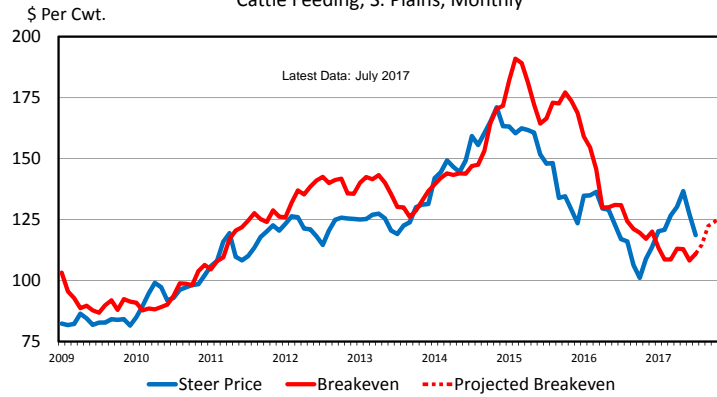
ESTIMATED AVERAGE COW CALF RETURNS Returns Over Cash Cost (Includes Pasture Rent), Annual



Data Source: USDA & LMIC, Compiled by LMIC

CHOICE STEER PRICE vs BREAKEVEN

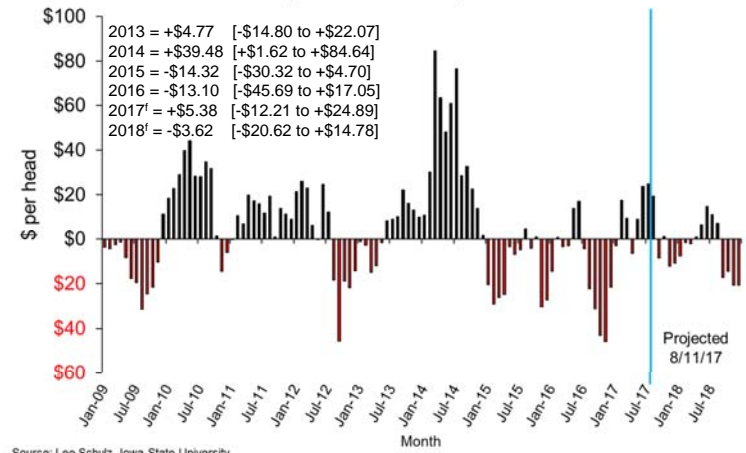
Cattle Feeding, S. Plains, Monthly



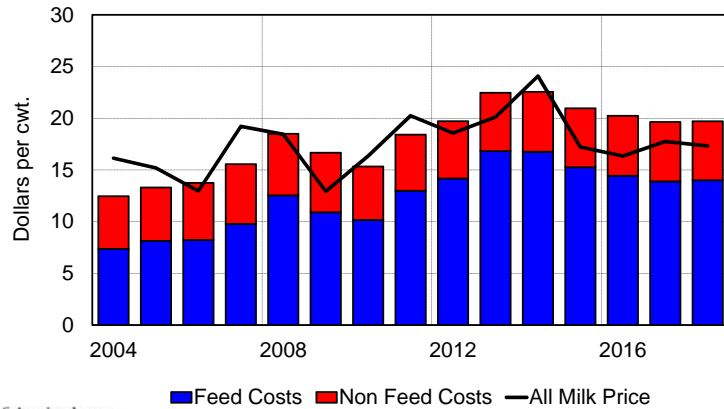
Data Source: USDA-AMS & USDA-NASS, Compiled & Analysis by LMIC

Estimated Returns to Wean to Finish, Iowa

Past and Projected with Basis Adjusted Futures



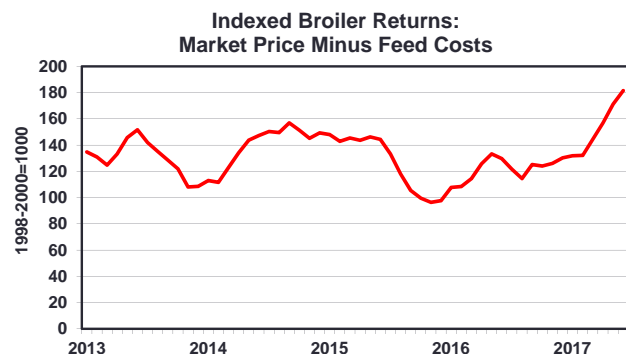
US Milk Returns



Forecast

	2016	2017	2018
Milk Production (billion pounds)	212.4	216.7	219.8
Milk Price (\$/cwt.)	16.34	17.74	17.50
Butter Price (\$/pound)	2.08	2.22	2.20
Cheese Price (\$/pound)	1.58	1.60	1.56
Nonfat Dry Milk Price (\$/pound)	0.85	0.92	1.01

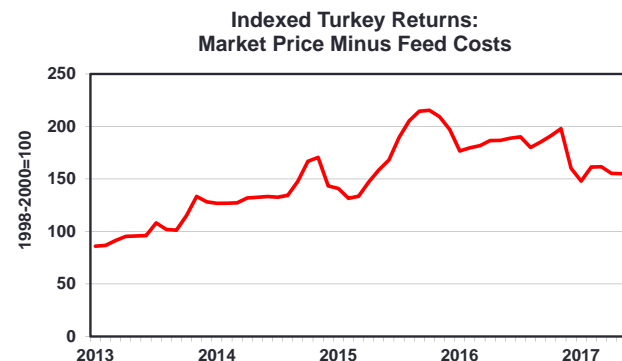
Broiler Returns Stronger



Source: ERS, USDA



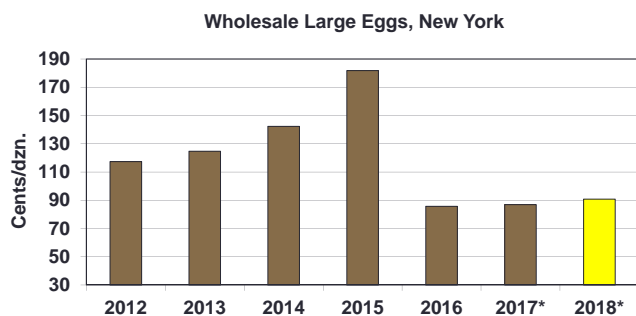
Turkey Returns Flat



Source: ERS, USDA



Egg Prices Stronger in 2017 and 2018



* Forecast



Reevaluating for 2018

1. Re-evaluate crop production inputs - re-examine ROI with \$3.50-\$4.00 Corn
Specialty fertility products, prophylactic fungicide usage, consider generic crop production products, seeding rates, seed treatments....
2. Re-evaluate P and K fertilizer applications (where possible according to soil tests)
3. Re-evaluate N rates and application timing
4. Re-evaluate seed technology investment - re-examine ROI with \$3.50-\$4 Corn
5. Re-evaluate machinery and equipment line, sizing and add-ons
6. Renegotiate cash leases – lease decreases may decline in symmetry with the manner in which they increased
7. Reconsider hired labor and purchased service - consider more self repair and services (equipment repair, spraying, soil sampling etc.)
8. Re-evaluate farm yield ratios together with price ratios when determining crop mix
9. **Re-examine family living expenses**

11/22/2017

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Management Reminders

Seek corroborating research and evidence – don't rely on one advisor only

Borrowing Capacity Check – Many growers have borrowed little operating funds lately

Stress Test - Conduct Balance sheet Sensitivity analysis – 5, 10 and 20% land value decrease

Farm financial analysis – FINPACK

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Last Words.....

Tax legislation?

Farm Bill?

Trade

Fed Chair Choice

Ag Seed/Chem Company Mergers – Long Term Concerns with Industry Consolidation and Competition

Debt restructuring and bankruptcies

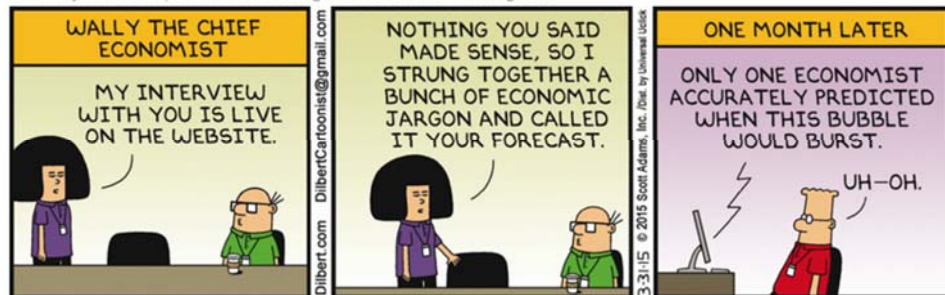
Current Downturn Will Result in Additional Farm Consolidation

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Tuesday March 31, 2015 *Tina Strings Economic Words Together*



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