Impact of High Commodity Prices on Land Rent

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Factors/issues impacting land values
(alphabetical order)

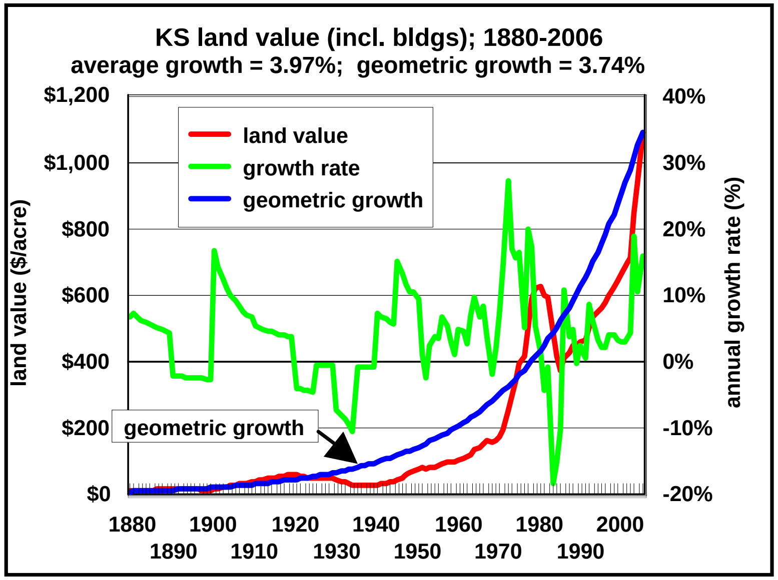
- Farm profitability
- Farm size
- Government programs
- Input costs (e.g., fuel and fertilizer)
- Interest rates
- Outside investors (i.e., stock market money)
- Recreation uses (e.g., hunting)
- Renewable fuels (ethanol and bio-diesel)
- Section 1031 tax exchanges
- Technology (e.g., no-till, precision ag, bio-tech, DNA)
- Urban sprawl
- Weather (i.e., drought, flood)

Returns to land

- Capital gains (growth)
- Cash returns (rent)

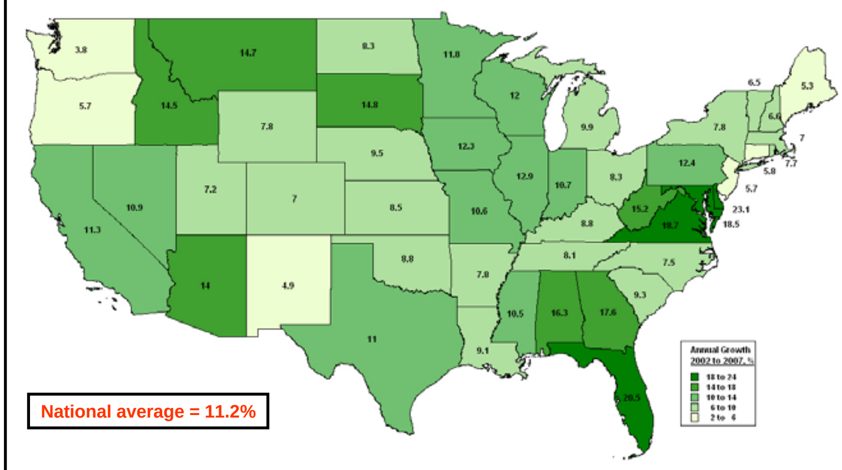
- The two returns to land are similar to other investments such as the stock market (capital gains and dividends)

Historical data



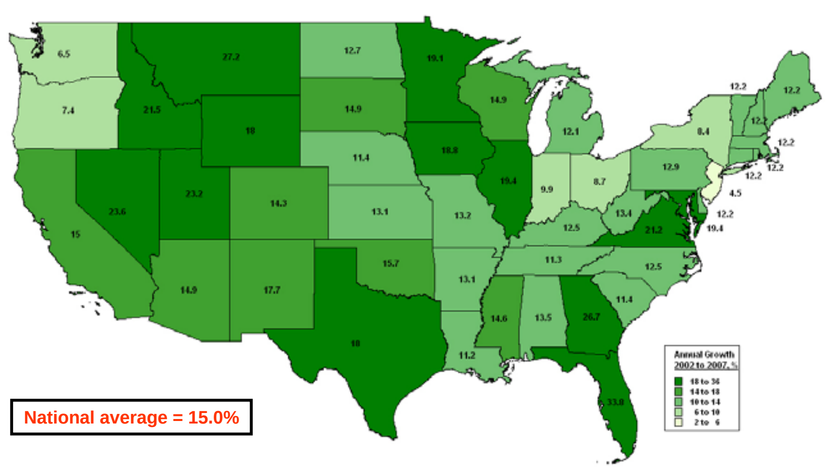
1879 starting land value for Kansas was $10.30

Crop Land Average Annual Growth Rate
Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



Source: USDA NASS *Land Values and Cash Rents 2007 Summary* and Dhuyvetter and Kastens, August 2007

Pasture Land Average Annual Growth Rate
Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



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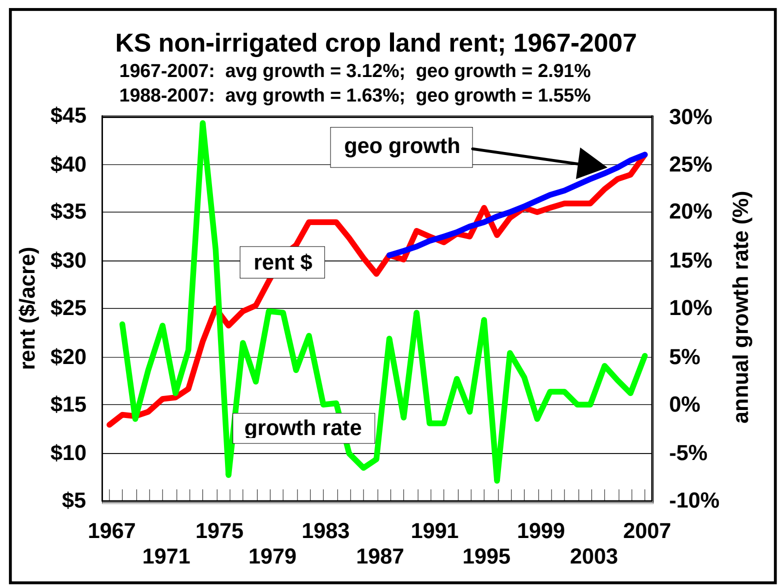
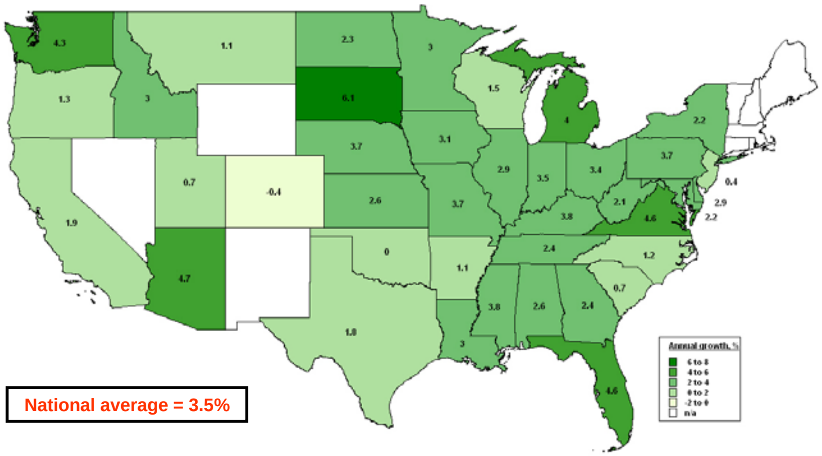
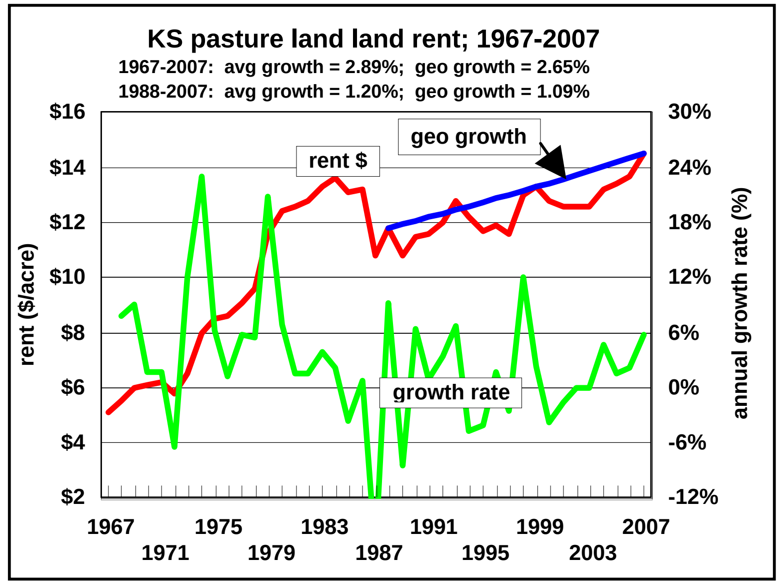


Suggested expected ag growth rate = 2.75% (but if ethanol continues . . . ?)

Cropland Rent Average Annual Growth Rate
Jan 1, 2002 to Jan 1, 2007, percent (geo mean)

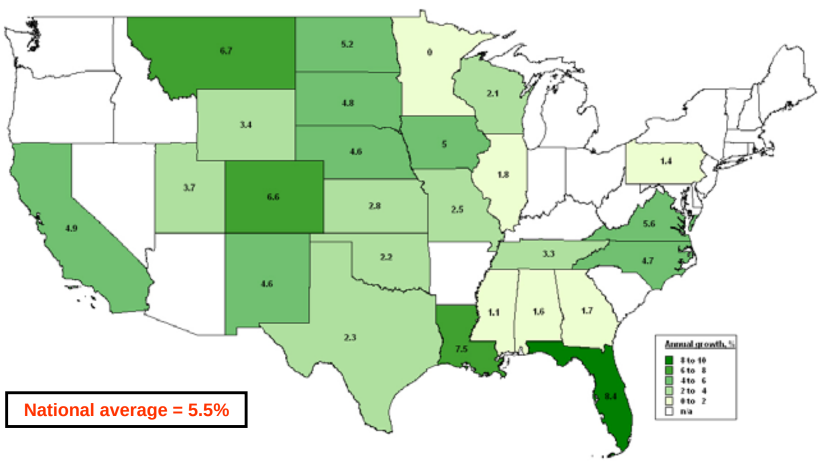


Source: USDA NASS *Land Values and Cash Rents 2007 Summary* and Dhuyvetter and Kastens, August 2007



Suggested expected ag growth rate = 2.47% (but if ethanol continues . . . ?)

Pasture Rent Average Annual Growth Rate
Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



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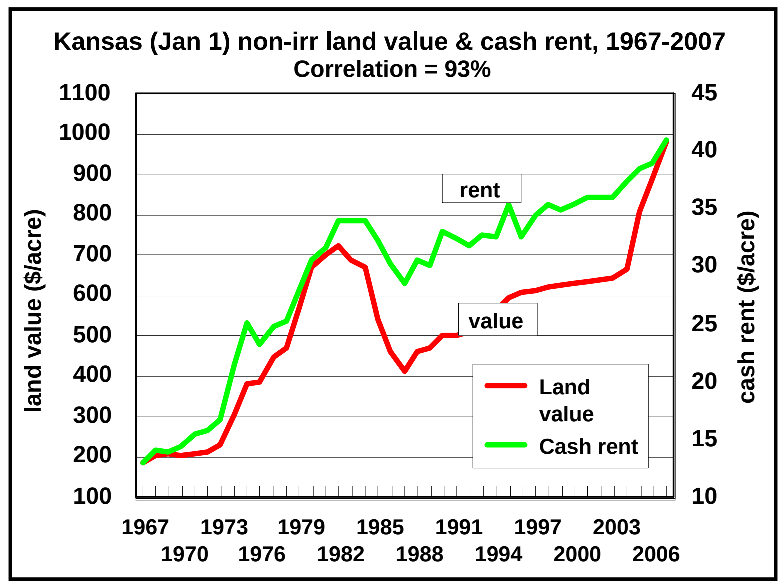
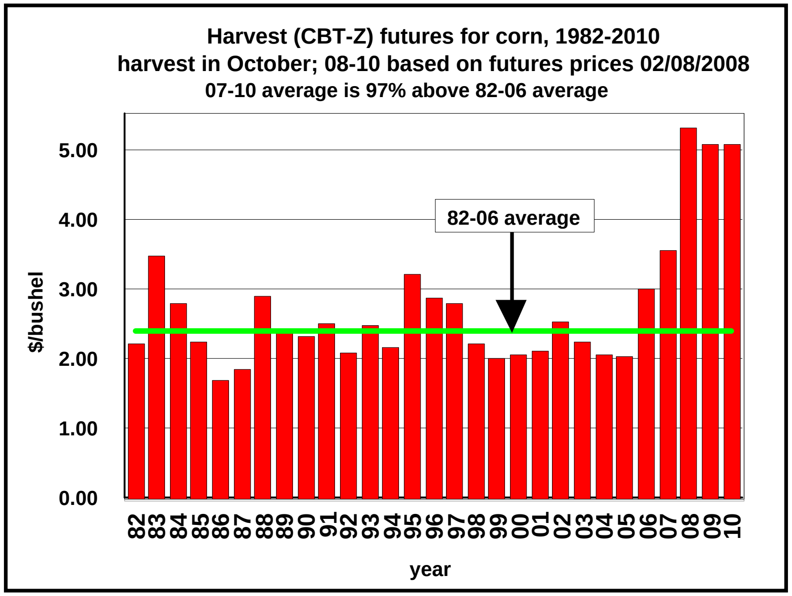


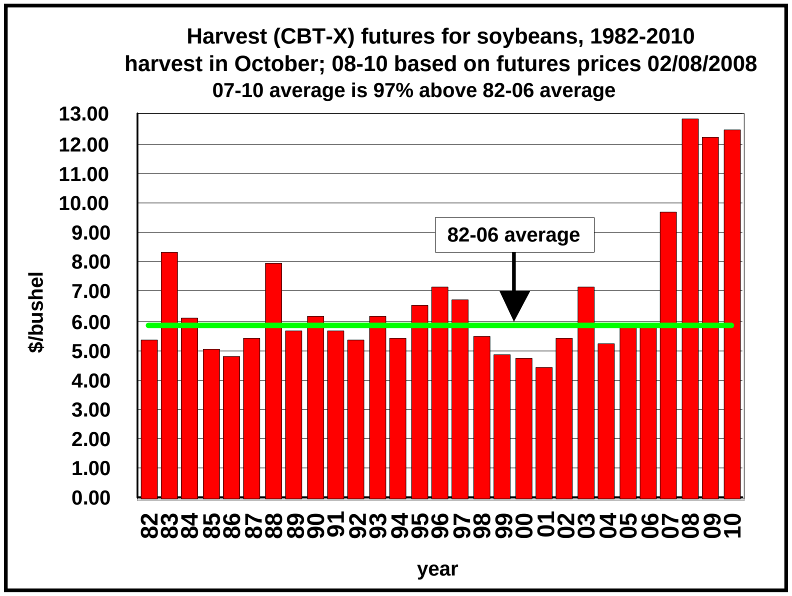
Result of ethanol push is higher commodity prices

Higher crop prices lead to higher land rents

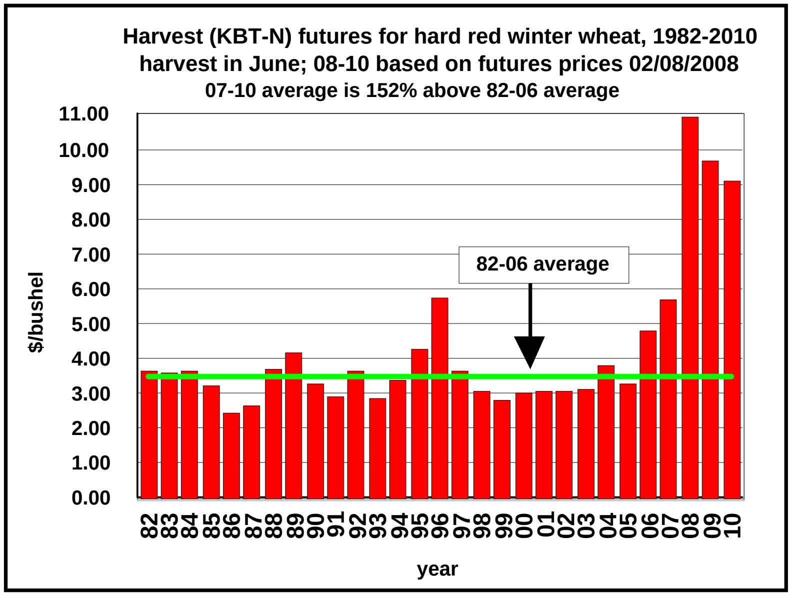
How long will strong prices stick around?



How long will strong prices stick around?



How long will strong prices stick around?

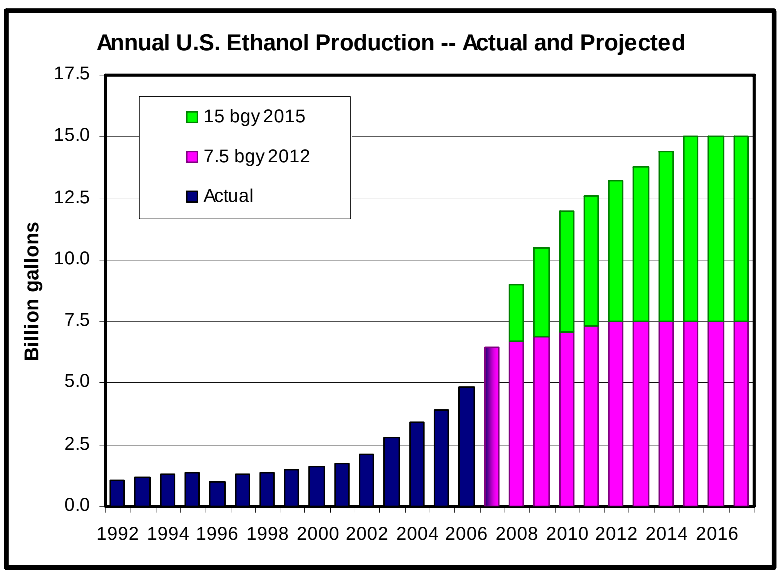


Some negatives are creeping in . . .

- Corn for ethanol increases food prices
  - Probably okay on this one (at least in the U.S.)
    - CARD: 30% higher corn price: 1.1% higher food prices
- Ethanol is dirty environmentally
  - Probably okay on this one (i.e., it is fairly clean)
- Livestock industries are getting louder
- Infrastructure & technical issues
  - Ethanol/gasoline separation; small refineries
  - Cars can use 10% (14 bgy); 5% (7 bgy) easily
    - 25% of cars will be FFV since foreign car makers aren't making that pledge (they sell half the cars)

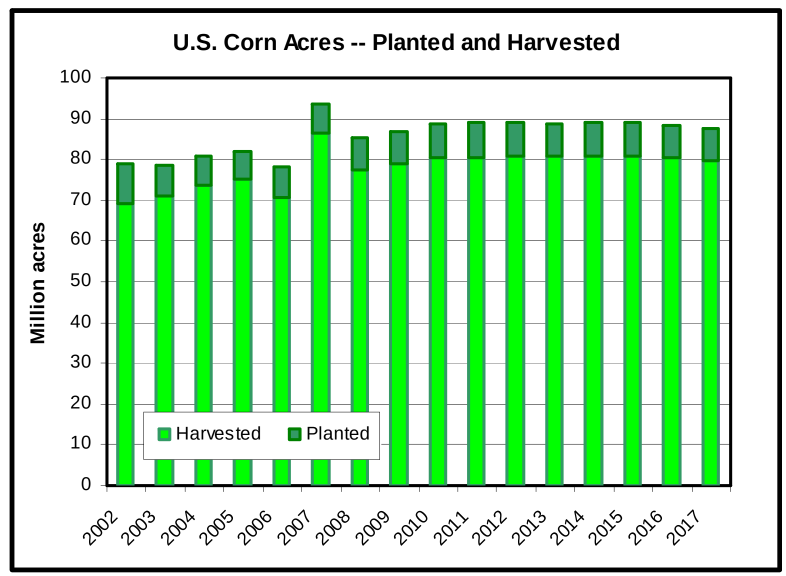
Future ethanol production . . .

- Not sure whose crystal ball to believe
  - Today's 7 bgy easy to sustain; next 7 bgy reasonable over time; beyond ???
  - Hard to predict politics
- Impact of cellulosic ethanol
  - Maintaining SOM will allow only 6.5 bgy from corn stover; alternatives will be slowwww
- Most predictions in the 11-15 bgy over the next 3-5 years
  - Reflects current actual + planned capacity
  - Approximates E10 nationwide
  - Consistent with current Energy Bill mandate



Projections based on levels in Energy Bill (December 2007)

Yield growth does not quite cover corn needs in short term…



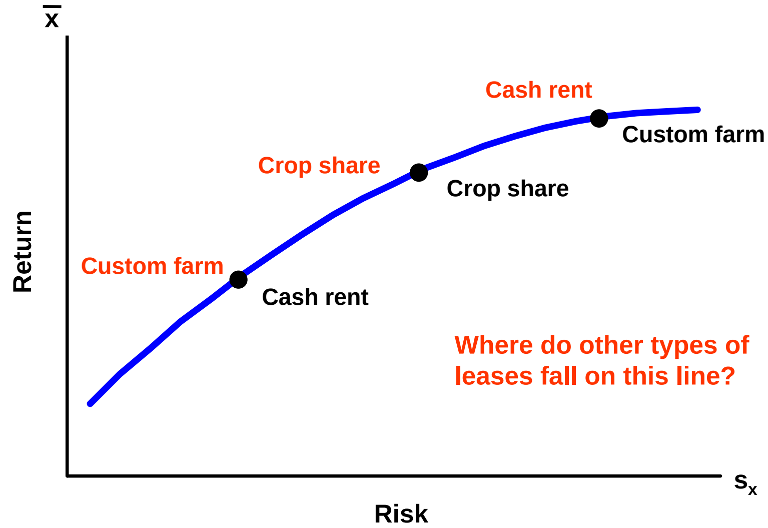
Source: 2002-07 USDA, 2008-2017 KSU projections

KSU study of impact of high commodity prices on rental rates

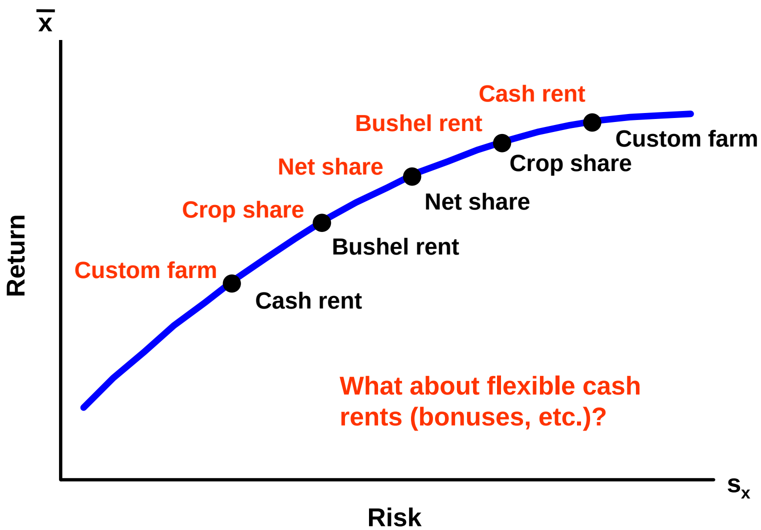
Two approaches:

- Crop budgets & KSU-Lease
- Historical relationships

Landowner/producer risk-return tradeoff



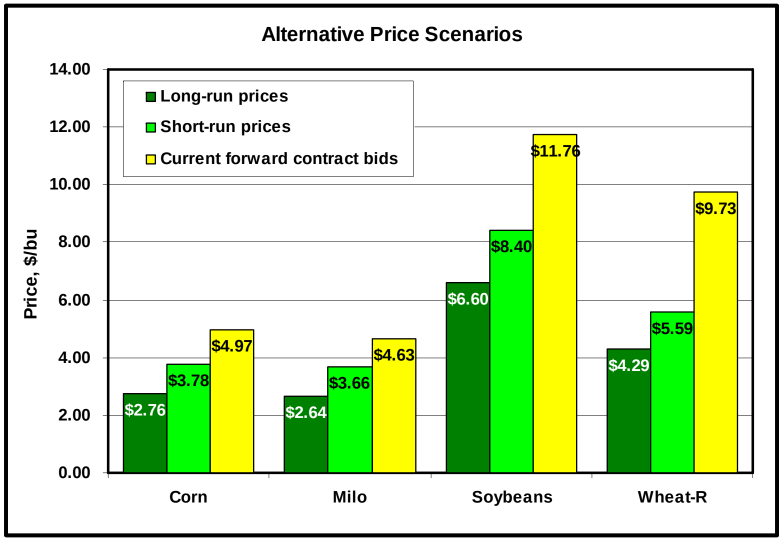
Landowner/producer risk-return tradeoff



Methods of establishing cash rent values …

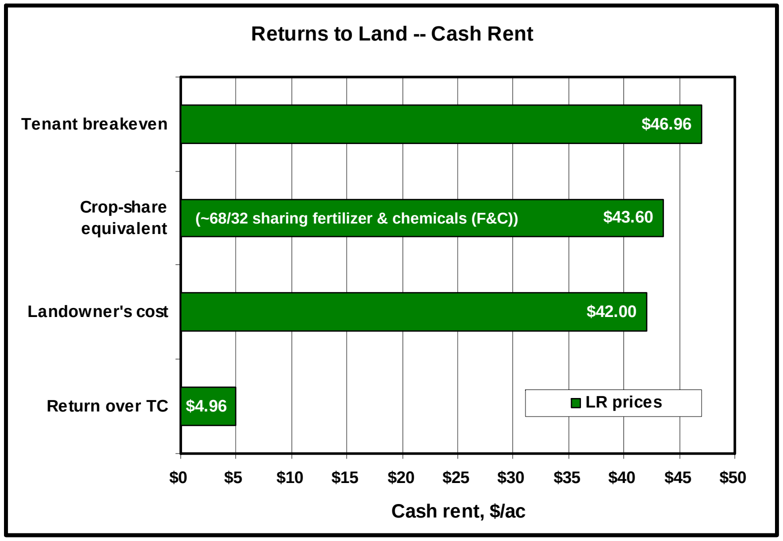
- **Crop share equivalent (adjusted for risk)**
  - Converts equitable crop share rent to an expected dollar amount per acre
- **Landowner's cost**
  - Based on the premise of landowner's continuing to receive comparable returns to what has been received in the past
- **Amount tenant can afford to pay**
  - Residual approach – after tenant pays all expenses, whatever income is left represents cash rent

Alternative Prices to Consider for Central Kansas



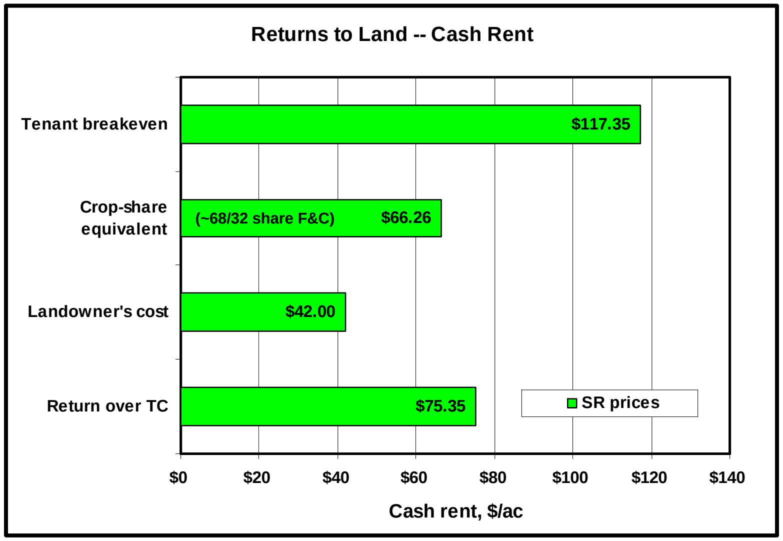
Long-run (08-12) and short-run (08) from MF-1013, current bids from Hutchinson (2/12/08)

Estimated cash rents for Central Kansas
[long run (2008-2012) projected prices]



Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls
(available at www.agmanager.info)

Estimated cash rents for Central Kansas
[short-run (2008) projected prices]



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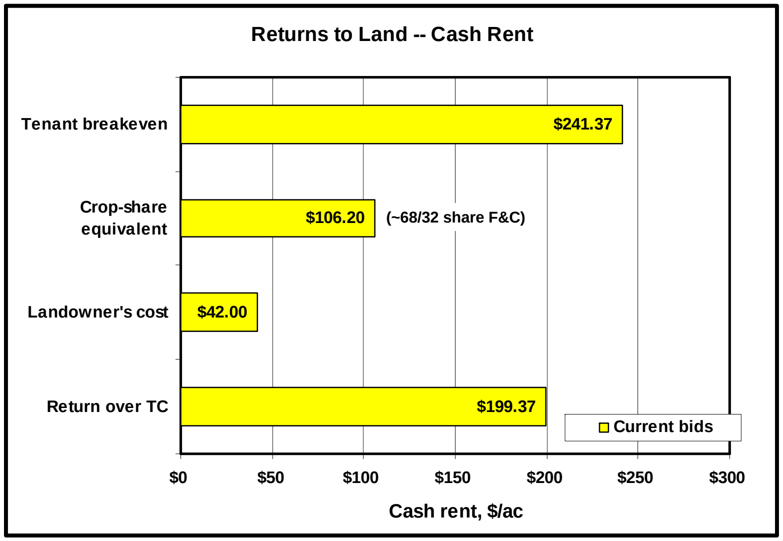
Estimated cash rents for Central Kansas
[forward contract bids (2/12/08) for 2008 harvest delivery]



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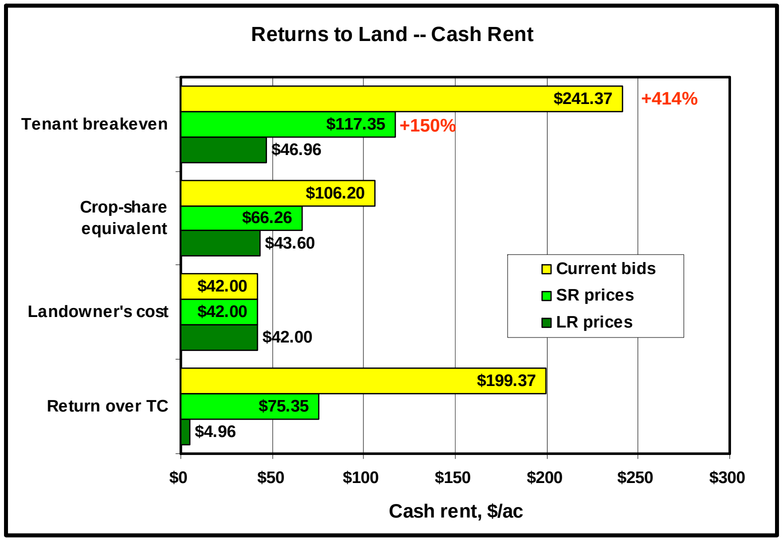
Estimated cash rents for Central Kansas
(alternative price scenarios)



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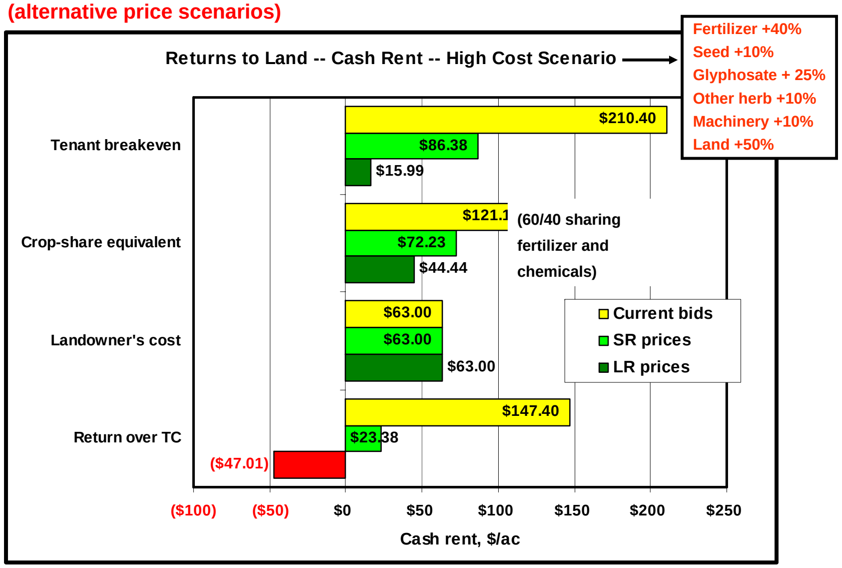
Really high rent potential . . .

- Previous example suggested that price increases of 35% to 96% could mean a rent increase of 150% to 414% (elasticity of 4.3)
- Will this happen?
- No!
  - Farmers bid up production inputs as they try to increase acres or yield/a to get the high profits:
    - Fertilizer, chemicals, machinery, labor

Estimated cash rents for Central Kansas
(alternative price scenarios)



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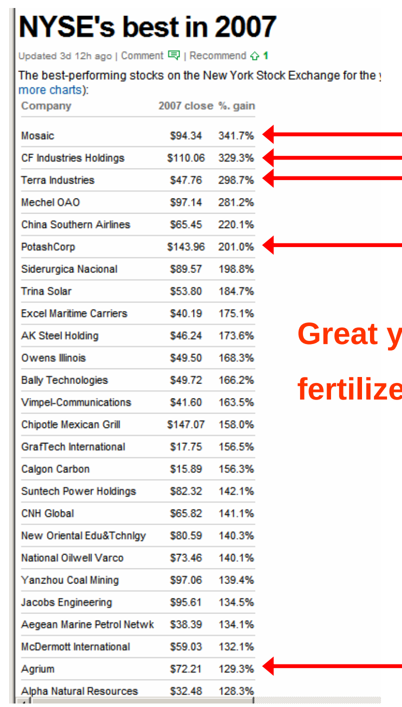


NYSE's best in 2007

Updated 3d 12h ago | Comment | Recommend 1

The best-performing stocks on the New York Stock Exchange for the y
more charts):

Company	2007 close	%. gain
Mosaic	$94.34	341.7%
CF Industries Holdings	$110.06	329.3%
Terra Industries	$47.76	298.7%
Mechel OAO	$97.14	281.2%
China Southern Airlines	$65.45	220.1%
PotashCorp	$143.96	201.0%
Siderurgica Nacional	$89.57	198.8%
Trina Solar	$53.80	184.7%
Excel Maritime Carriers	$40.19	175.1%
AK Steel Holding	$46.24	173.6%
Owens Illinois	$49.50	168.3%
Bally Technologies	$49.72	166.2%
Vimpel-Communications	$41.60	163.5%
Chipotle Mexican Grill	$147.07	158.0%
GrafTech International	$17.75	156.5%
Calgon Carbon	$15.89	156.3%
Suntech Power Holdings	$82.32	142.1%
CNH Global	$65.82	141.1%
New Oriental Edu&Tchnlgy	$80.59	140.3%
National Oilwell Varco	$73.46	140.1%
Yanzhou Coal Mining	$97.06	139.4%
Jacobs Engineering	$95.61	134.5%
Aegean Marine Petrol Netwk	$38.39	134.1%
McDermott International	$59.03	132.1%
Agrium	$72.21	129.3%
Alpha Natural Resources	$32.48	128.3%

Great year to be in the fertilizer business

A KSU study of three scenarios

- **Scenario 1 – baseline (no ethanol)**
  - **Historical average growth rates of corn yield and price drive rents, which drive land values**
- **Scenario 2 – ethanol comes and stays**
  - **Corn price grows rapidly to new plateau by 2010, then follows normal growth thereafter**
- **Scenario 3 – ethanol comes and leaves**
  - **Corn price grows rapidly to new plateau by 2010, then falls back to growth path that would have occurred without ethanol**

Assumptions in KSU study

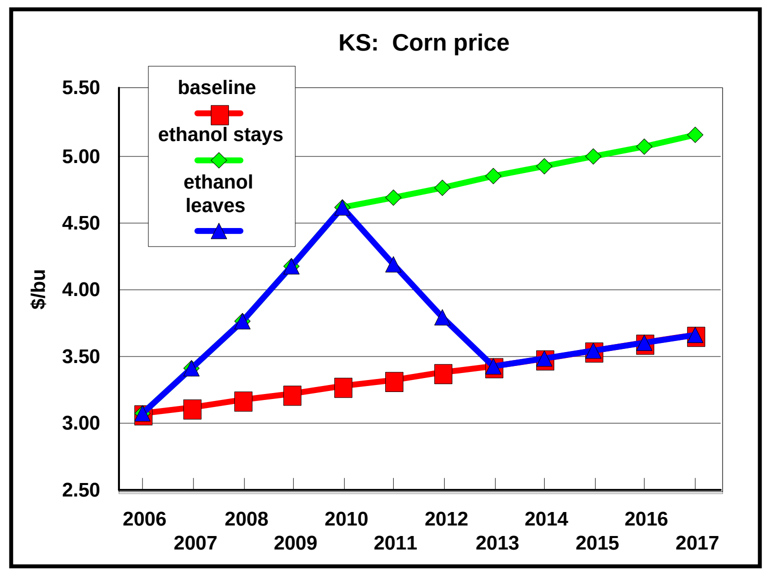
- **Growth in corn yield and price determines rent growth**
  - **Yield grows at historical (1950-2007) rate in all**
  - **Price grows at historical rate in baseline but different rates in other two scenarios**
- **Rent growth assigned to ag portion of land**
- **Non-ag portion of land value grows at 3%**
- **Miscellaneous assumptions:**
  - **start 1/1/06; 30-year land ownership analysis (show 12 years)**
  - **interest = 7%; income tax rate = 25%; cap gain = 15%**
  - **property tax = 0.4% of land value**
  - **2010-to-2006 price ratio with ethanol is 1.50**
  - **starting rents, values, crop prices from USDA-NASS**

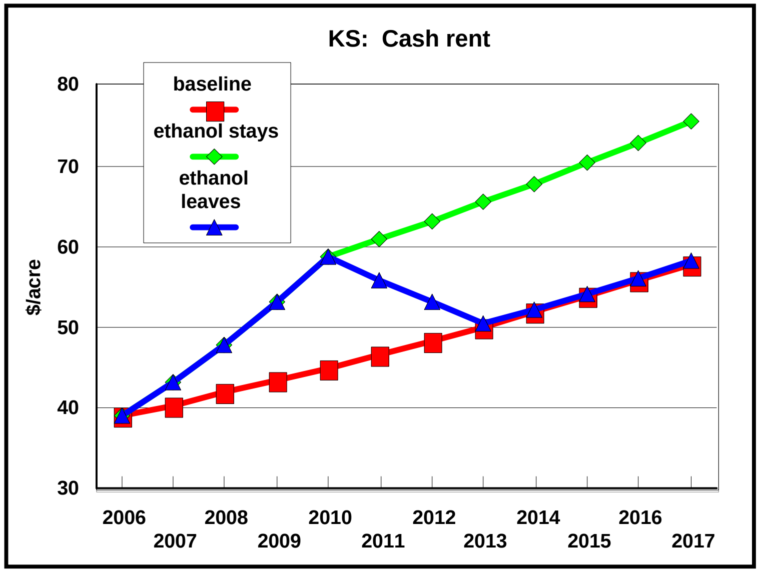
A KSU study in January 2008 (Kastens & Dhuyvetter)

state	a 1% change in **corn revenue** i.e., yield or price, leads to a change of this % in **rent**	1950-1972 avg rent-to-value ratio (ag cap rate, %)	2007 % of land value due to agriculture	1950-2007 avg ann. growth rate in %, for non-ag land value	1950-2007 avg ann. growth rate in %, for corn yield	1950-2007 avg ann. growth rate in %, for corn price
AR	0.87	8.15	44.12	12.69	3.92	1.45
IA	1.24	7.61	53.43	9.77	2.01	1.46
IL	1.31	6.63	50.03	12.01	1.84	1.54
KS	0.76	7.78	57.98	11.17	3.15	1.58
MO	1.33	8.05	43.56	10.55	2.22	1.47
NE	1.07	8.06	60.37	7.12	2.88	1.51
AL	0.99	8.37	14.51	15.85	2.98	1.67
ND	1.10	9.02	72.51	9.29	3.01	1.57

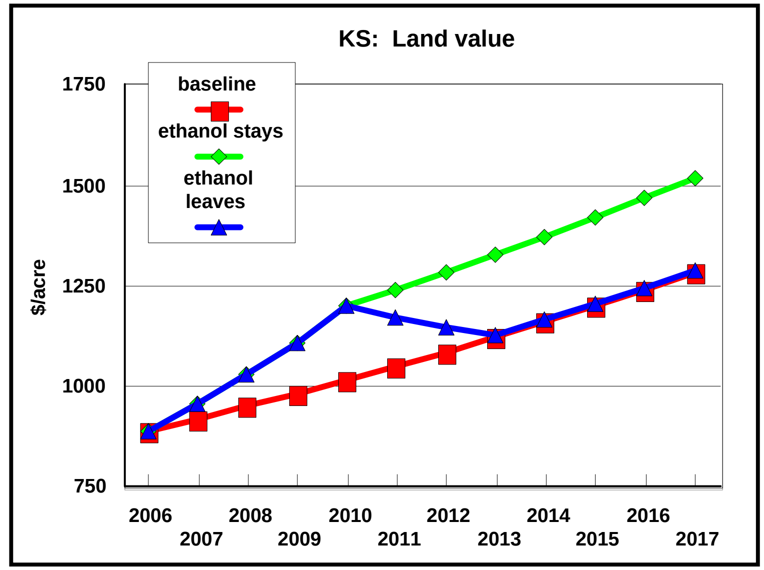
Notes:
Results don't materially change if use wheat or soybeans in analysis.
Most mathematical models explained 85 to 95% of variation in dependent variable.
Rent/(ag cap rate) equals agricultural portion of land market value.

AL and ND included as examples of high and low non-ag influence

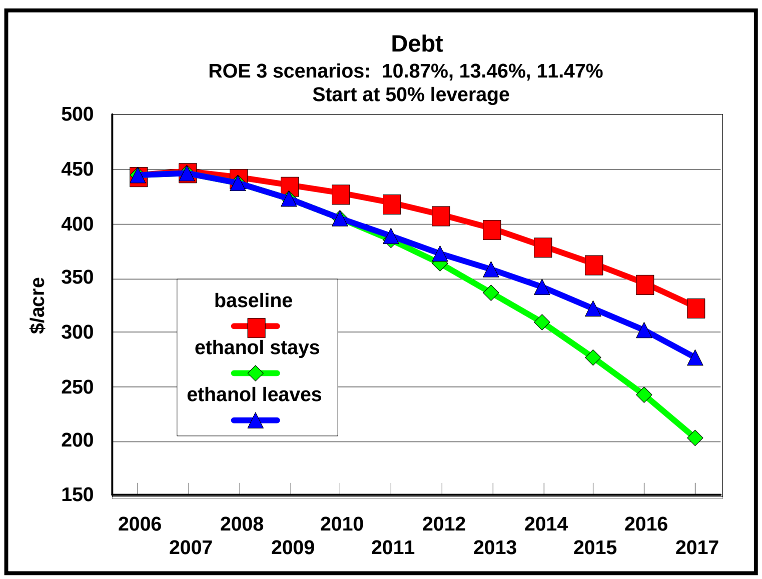



KS: Cash rent
baseline
ethanol stays
ethanol leaves
$/acre
80
70
60
50
40
30
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

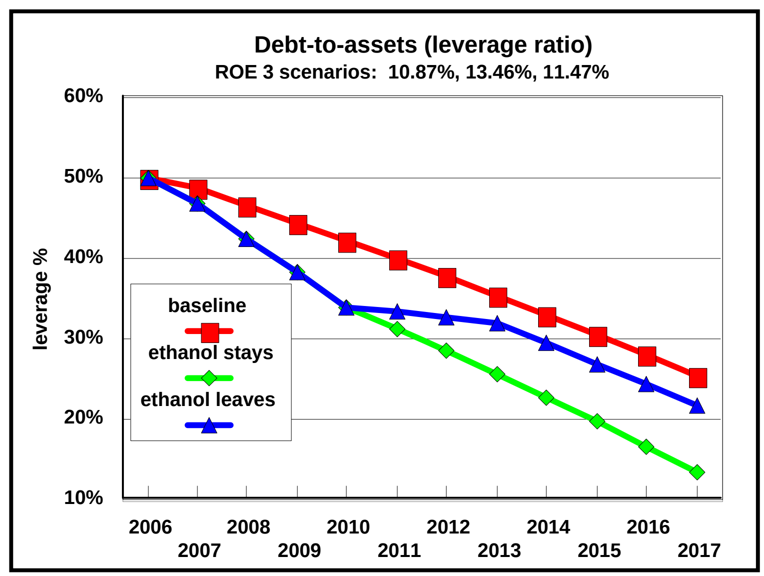
58


KS: Land value
baseline
ethanol stays
ethanol leaves
$/acre
1750
1500
1250
1000
750
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

59

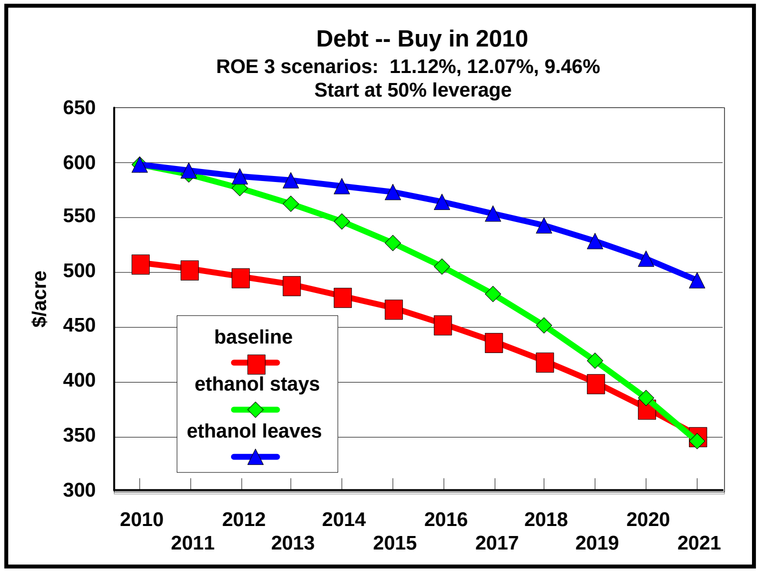

Debt
ROE 3 scenarios: 10.87%, 13.46%, 11.47%
Start at 50% leverage
baseline
ethanol stays
ethanol leaves
$/acre
500
450
400
350
300
250
200
150
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

60


Debt-to-assets (leverage ratio)
ROE 3 scenarios: 10.87%, 13.46%, 11.47%
baseline
ethanol stays
ethanol leaves
leverage %
60%
50%
40%
30%
20%
10%
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

61

Late to game: don't buy until January 2010



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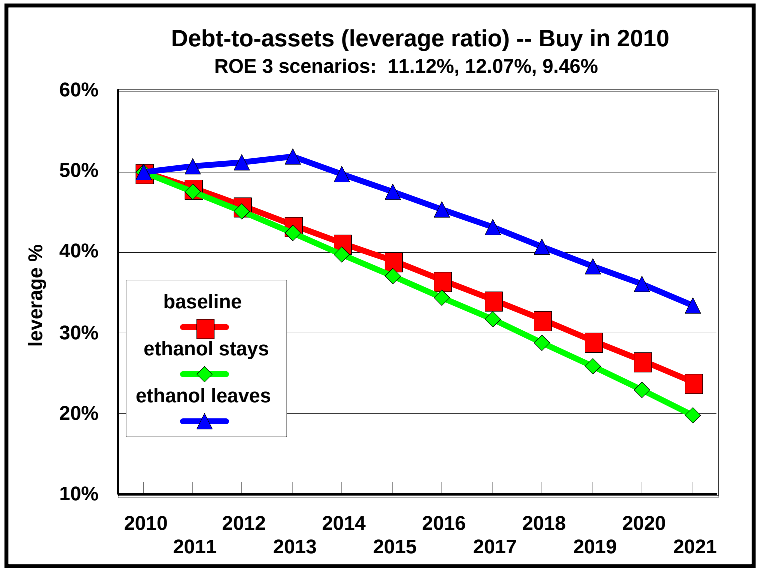
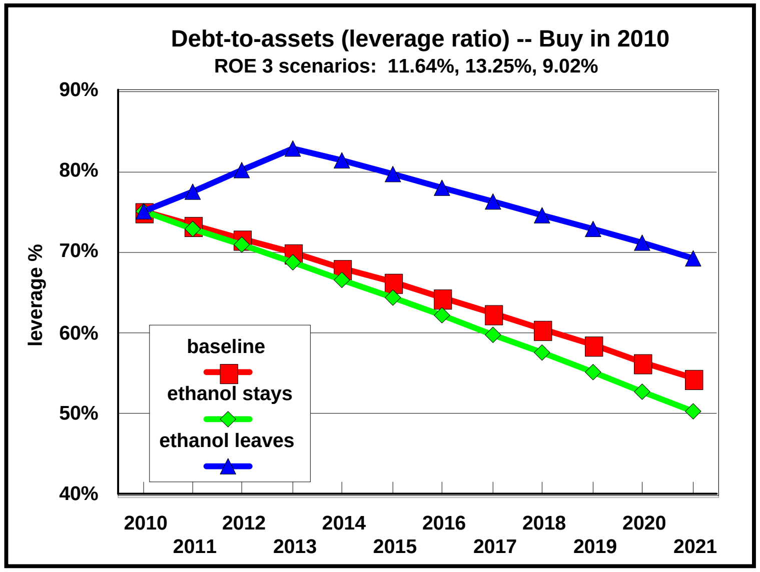
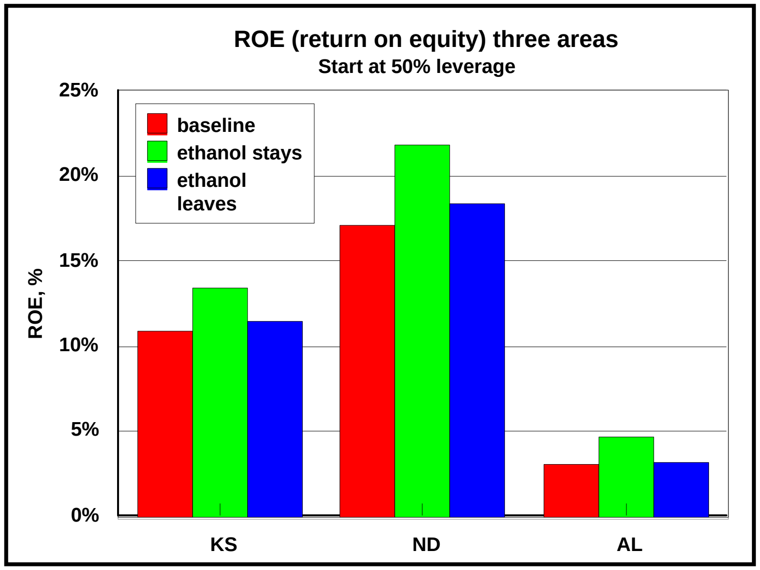


Late to game AND LEVERAGE AT 75% rather than at 50%



Ethanol will be good to states like ND, which is dominated by ag



Closing Thoughts…

- Historically, ag land has been a good investment
  - RUN THE NUMBERS!
- Non-ag features have been an important driver of ag land values in recent years
- Ethanol may stop or reverse that trend to ever greater importance of non-ag factors behind ag land values
- Government payments have diminished as a driver of land values in recent years

Closing Thoughts…

- Ethanol is inducing higher crop prices and it looks like they'll be around for awhile
- Higher crop prices have the potential to substantially increase rental rates
- There is considerable interest in non-traditional rental arrangements
  - RUN THE NUMBERS!
- If ethanol goes away in a few years it's not the end of the world

  . . . unless you're late to the game

  . . . AND you're highly leveraged