

Higher Land Values? (Part 1 of 2)

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Kansas City, MO. January 14-16, 2008



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)

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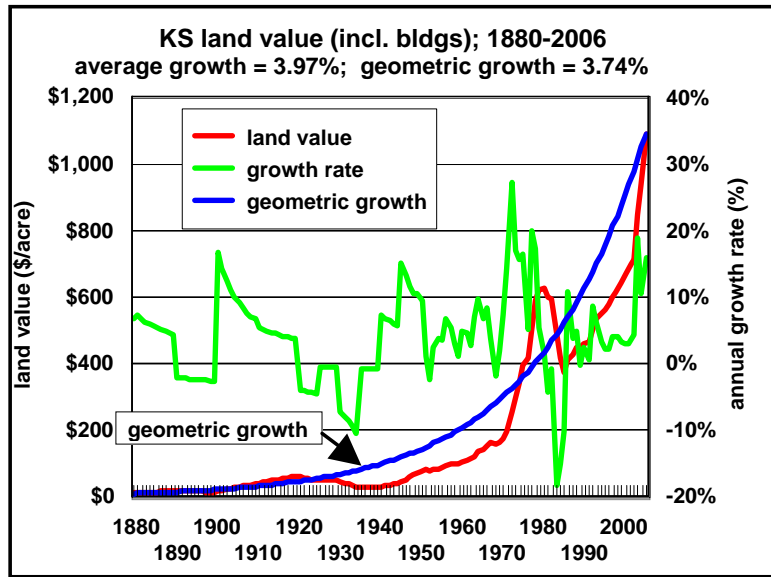
Factors impacting agricultural land values...

- Ag factors
 - Ag portion of agricultural land has been diminishing
 - Reduced ability to cash flow traditional land loans with value of agricultural production
 - Is this about to change due to ethanol?
- Non-ag factors
 - Urbanization, recreational use of land, etc.
- While agricultural land may continue to be a good investment, producers need to decide if they want to tie up equity in land versus other assets
- Increasingly difficult to analyze/evaluate land purchases/prices

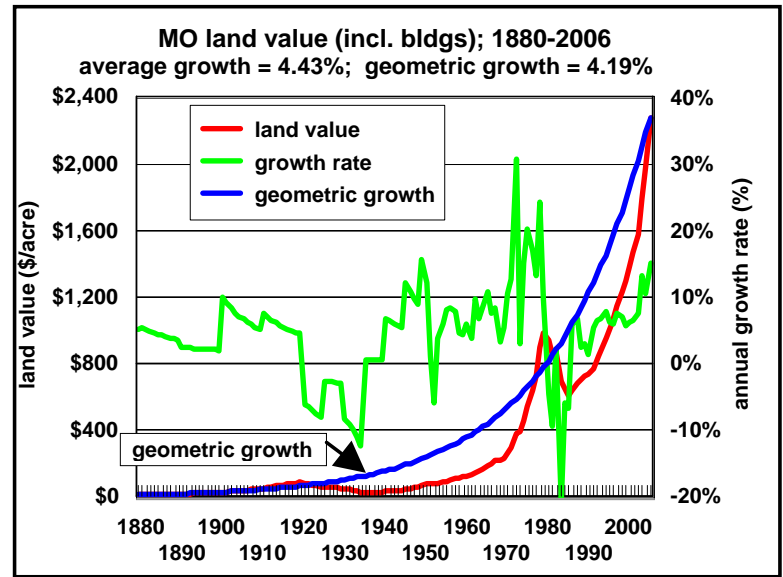
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Historical land values and growth

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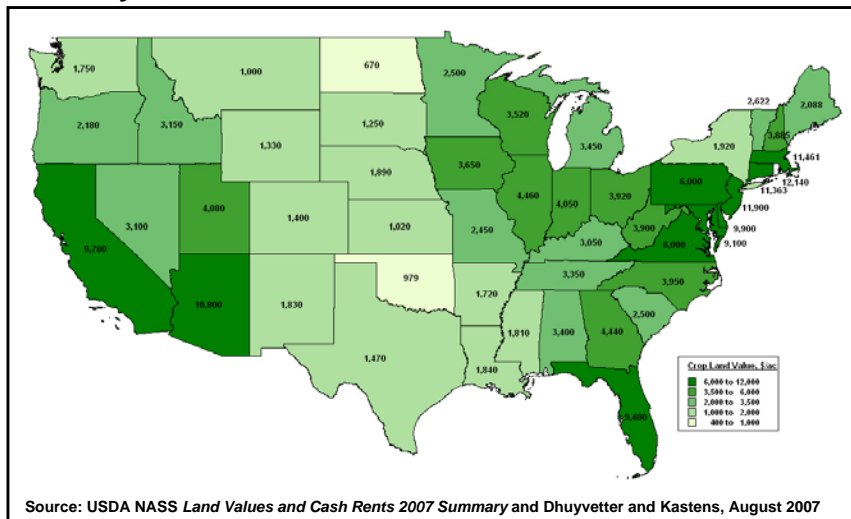


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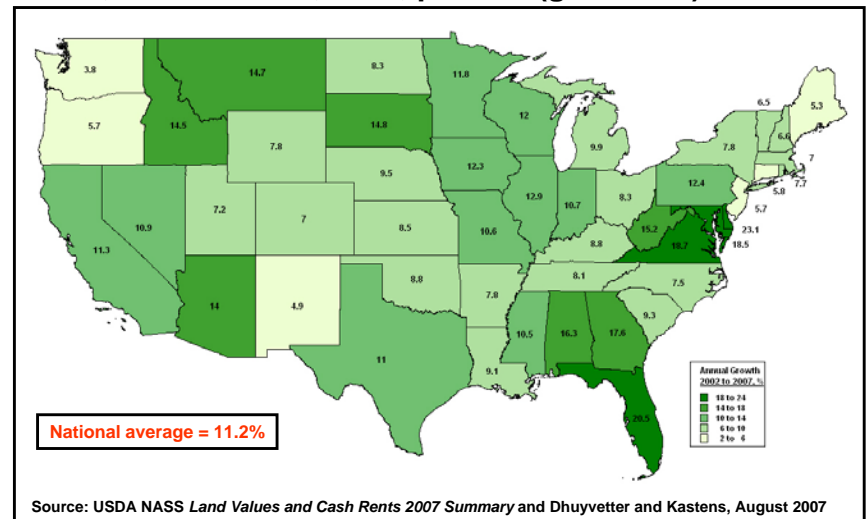
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Crop Land Average Value per Acre January 1, 2007

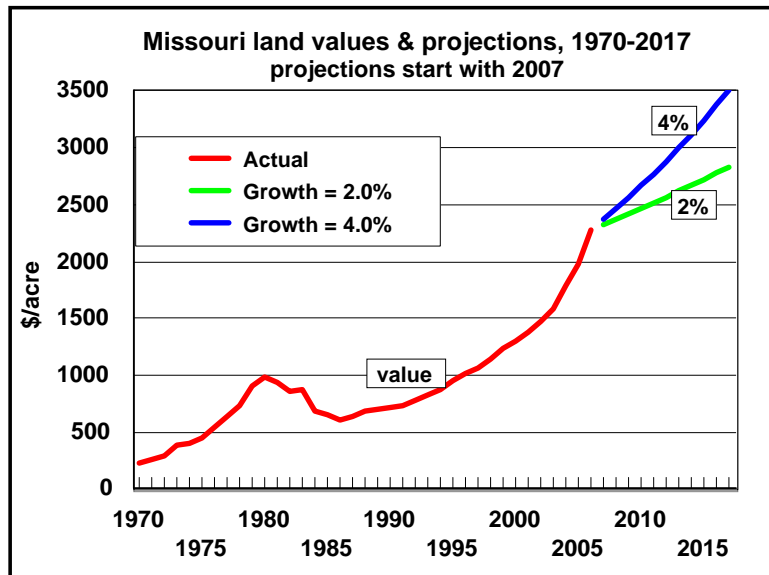


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Crop Land Average Annual Growth Rate Jan 1, 2002 to Jan 1, 2007, percent (geo mean)

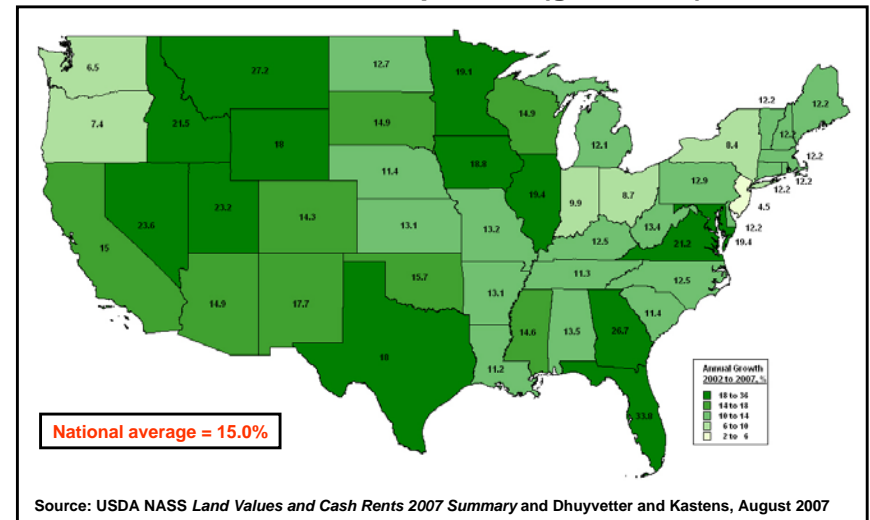


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10

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

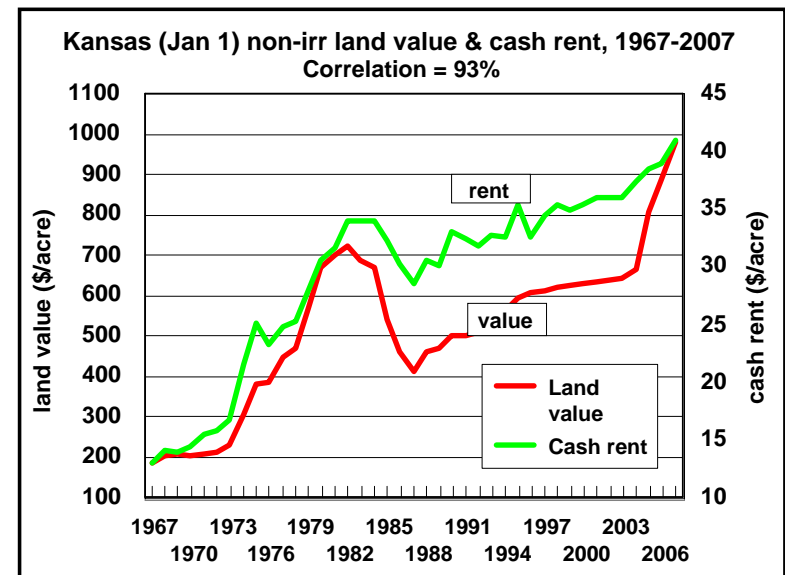


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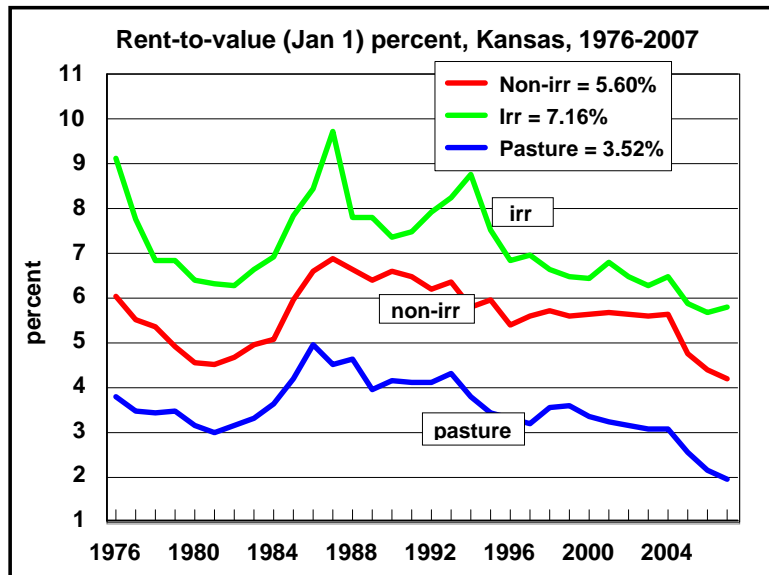
Returns to land

- 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)

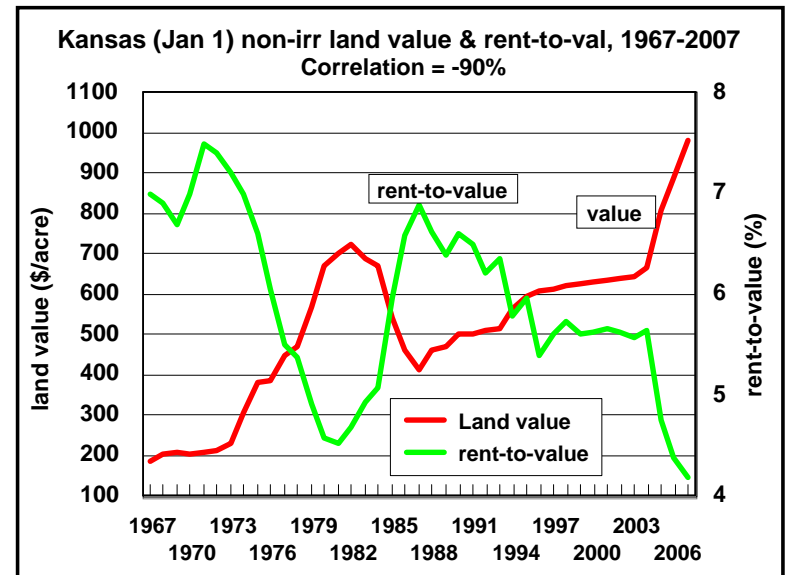
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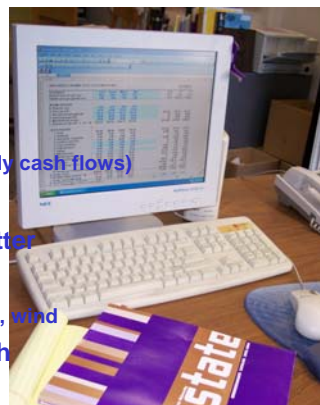
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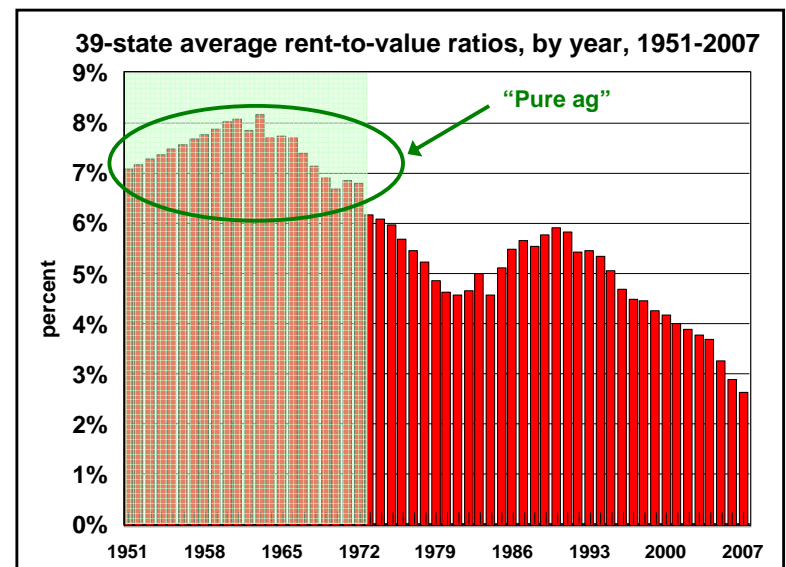
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Buying and owning land – considerations

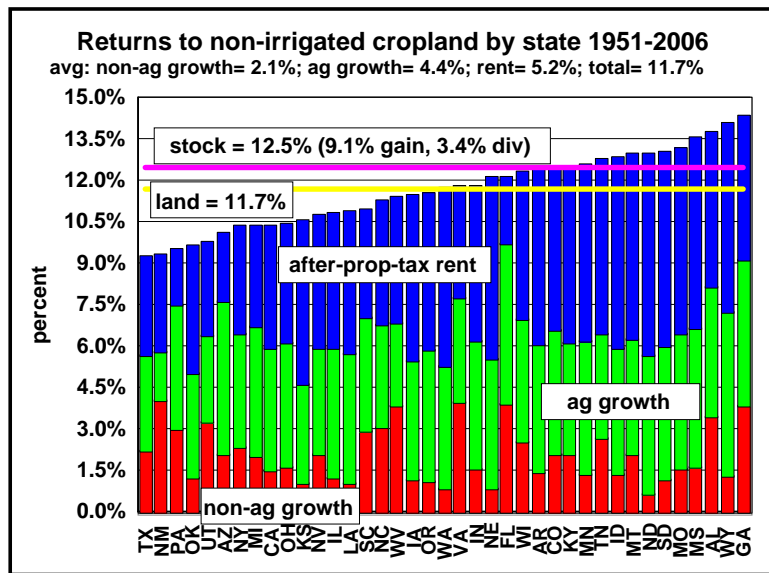
- Total return = rent + capital gain
- Land doesn't cash flow when purchased
 - i.e., rents don't cover a 100% loan
 - Cash flow is not the same as profitability
 - Rents grow, loan payments don't (land eventually cash flows)
- Government payments impact rents
- Income tax and capital gains tax rates matter
- There could be non-ag rents
 - e.g., leasing your land to hunters, mineral rights, wind
- There could be a non-ag land value growth
 - e.g., expectations of future development



- ***KSU-Landbuy.xls*** allows for these various considerations (available at www.agmanager.info)

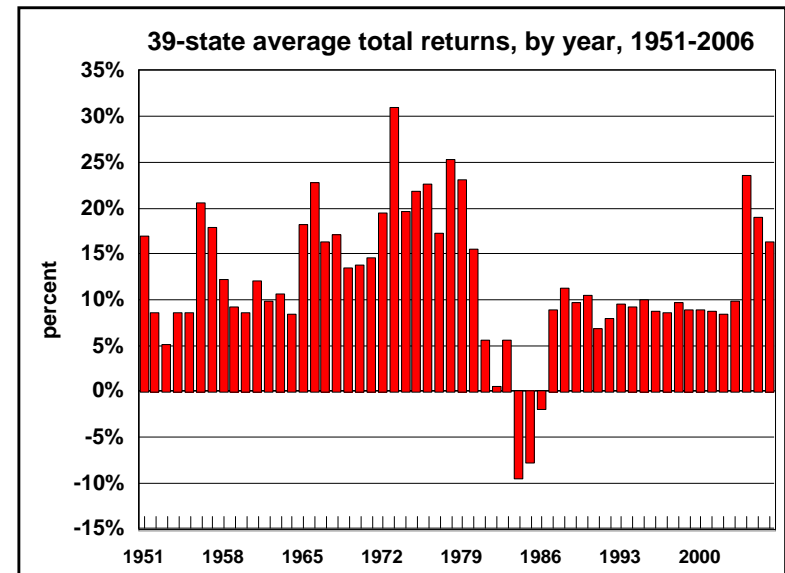


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39 states ranked by total returns to land

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Is the "bubble" ready to burst? Not, based on all past run-ups.

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Agricultural Market Value of Agricultural Land

- Based on the idea of an ag cap rate
- Used average after-property-tax RTV 1951-72
 - Early on while ag still is dominant
 - Before wild inflation of the 1970's
- Kansas ag cap rate = 6.64%
- Missouri ag cap rate = 7.20%
- Alabama ag cap rate = 8.03%
- 39-state average cap rate = 6.57%

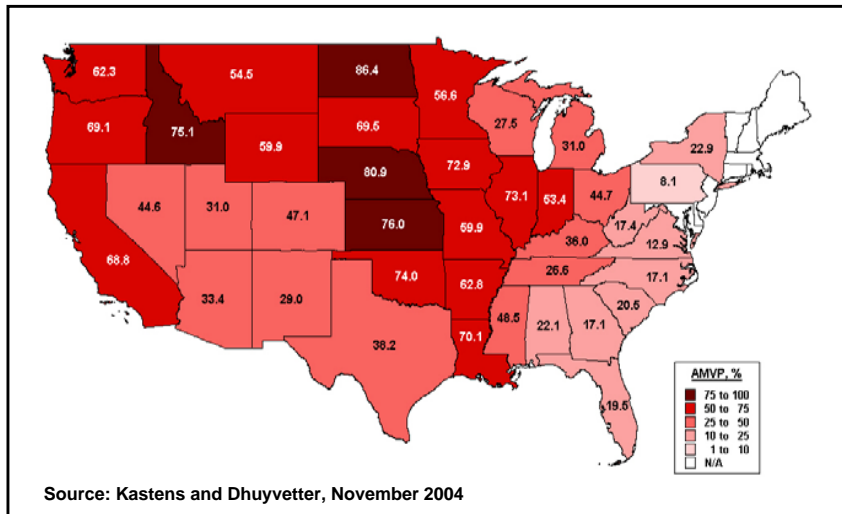
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Agricultural Market Value of Agricultural Land using KS non-irrigated cropland as an example

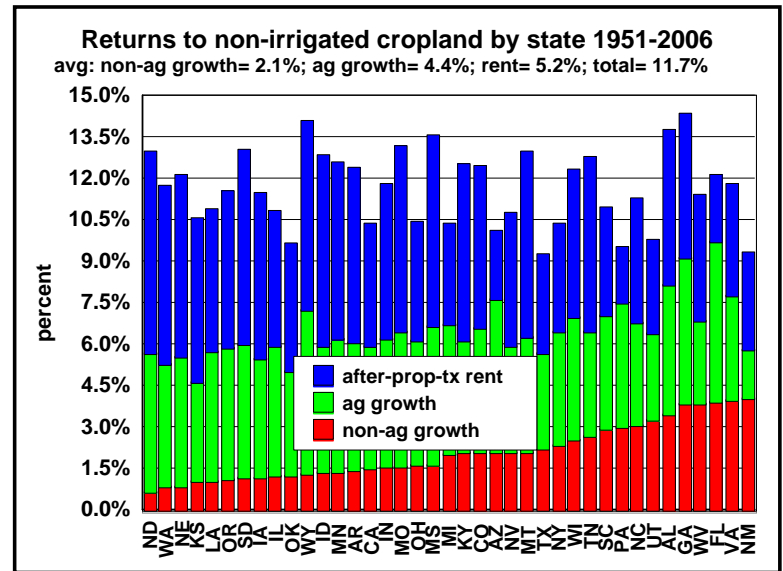
- Jan. 1, 2007 land value = \$980 /acre
- Cash rent for 2007 = \$41.00 /acre
- 2007 property tax = \$3.27 /acre
- 2007 after-property-tax rent = \$37.73 /acre
- $\$37.73 / 0.0664 = \$568.22 /acre$
- AMVP (non-irr) = $\$568.22 / \$980 = 58.0\%$

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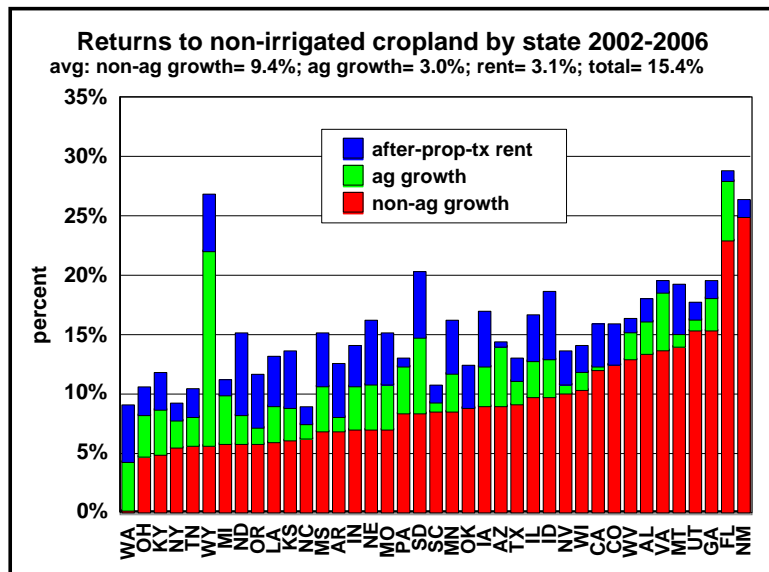
Portion of Jan 1, 2004 Crop Land Value Attributed to Agricultural (production and government payments)



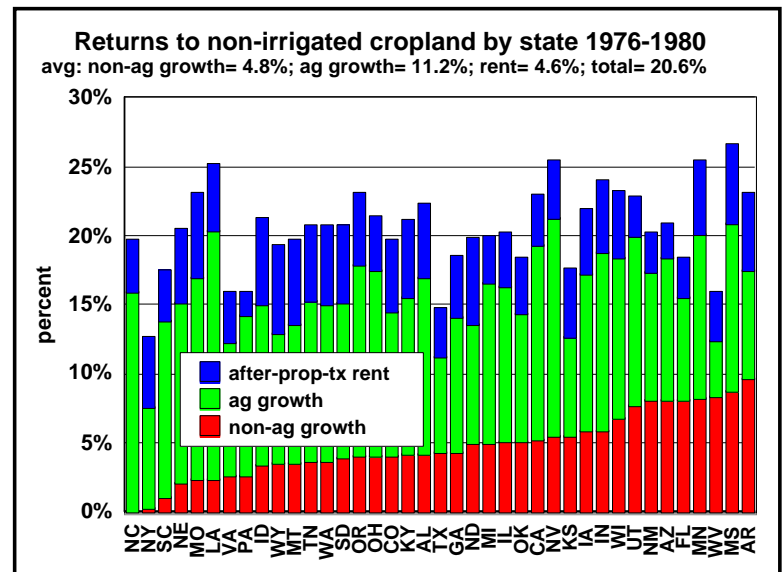
Map from 3 years ago for comparison



39 states ranked by non-ag growth



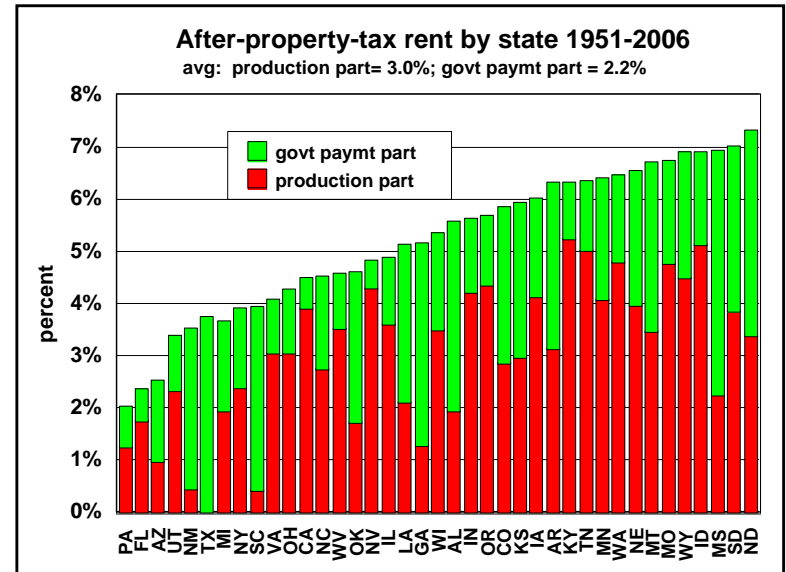
Non-ag growth much more important lately; total returns not especially high



Dominated by growth in ag rents (inflation); total returns very high

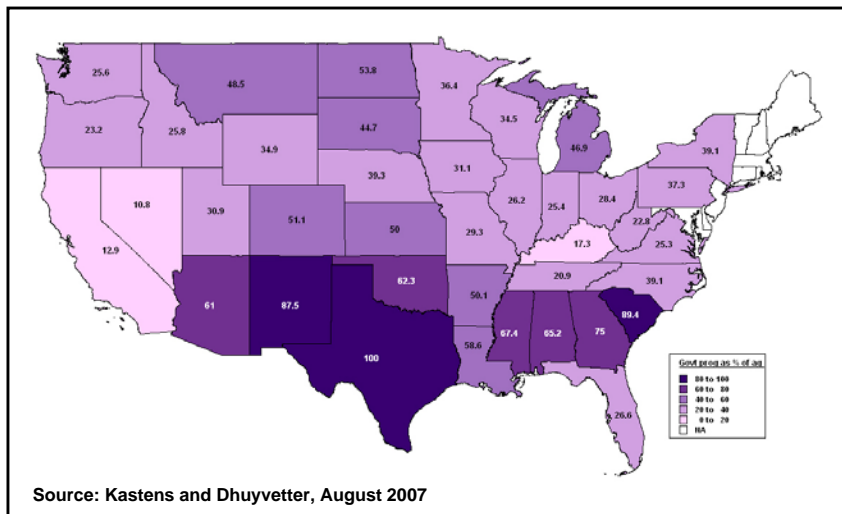
Government Program Payments

- Generally, are thought to be capitalized into land values and cash rents
- Many Great Plains states and many Southern states are highly dependent on government program payments



ranked by total rent

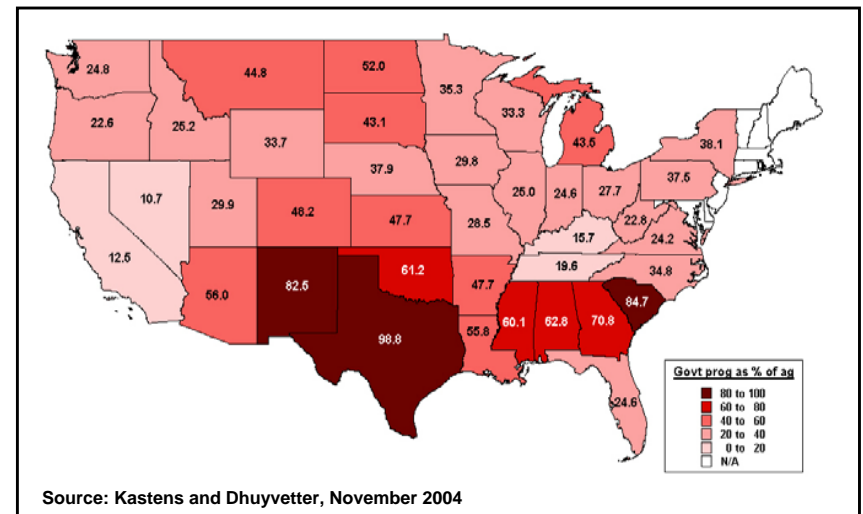
Percentage of Agricultural Value Attributed to Government Program Payments



Source: Kastens and Dhuyvetter, August 2007

government payments as a percent of agricultural rent

Percentage of Jan 1, 2004 Agricultural Crop Land Value Attributed to Government Program Payments



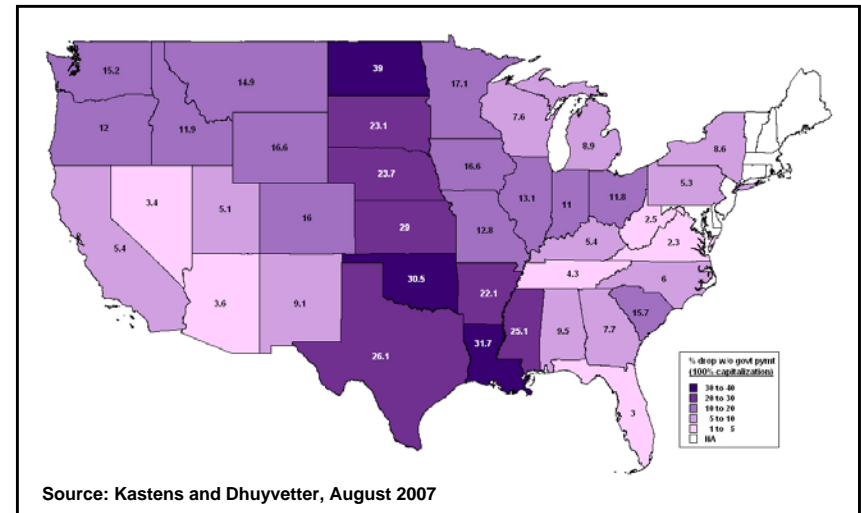
Source: Kastens and Dhuyvetter, November 2004

Map from 3 years ago for comparison

Government Program Payments

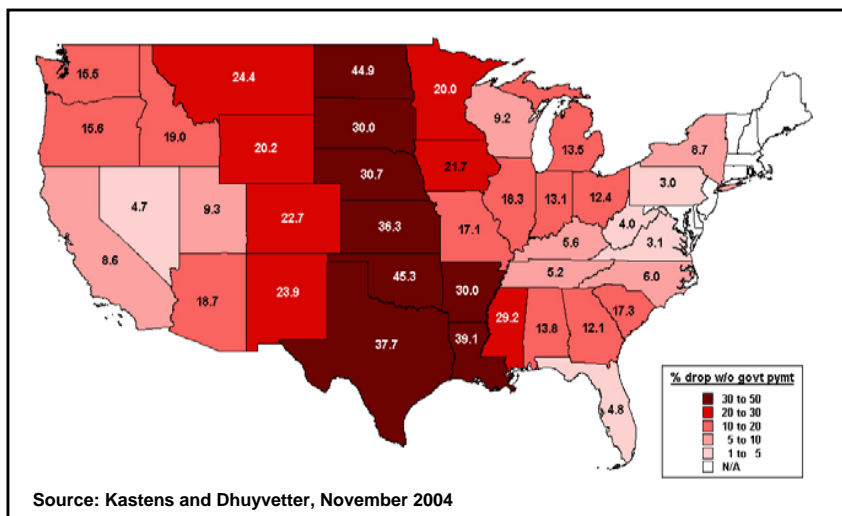
- States whose land values have substantial non-ag components would not suffer as much in the absence of payments
 - Alabama and Georgia are notable Southern states
 - Great Plains states don't have that advantage

Estimated Reduction in Land Value with the Elimination of Government Programs (100% cap)



reduction is proportional to capitalization rate (e.g., KS=14.5% with 50% cap)

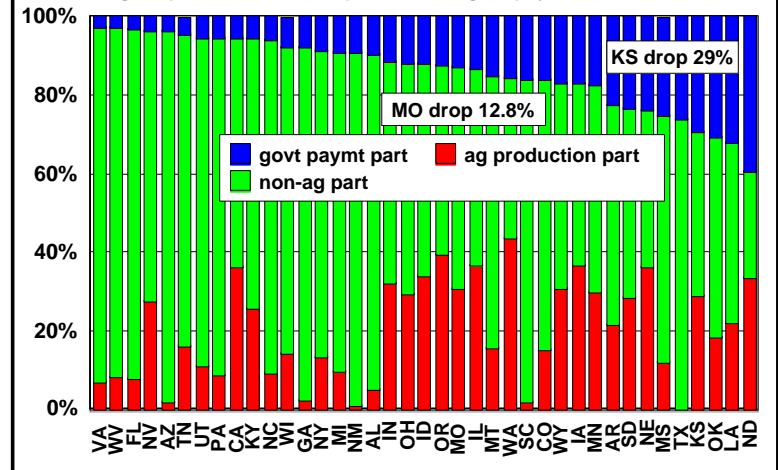
Estimated Reduction in Jan 1, 2004 Crop Land Value with the Elimination of Government Programs



Source: Kastens and Dhuyvetter, November 2004

Map from 3 years ago for comparison

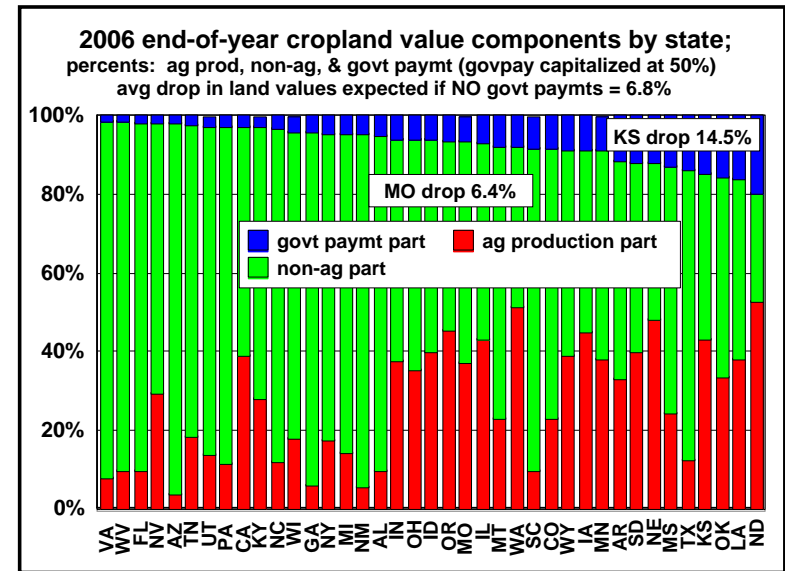
2006 end-of-year cropland value components by state; percents: ag prod, non-ag, & govt pymt (govpay capitalized at 100%)



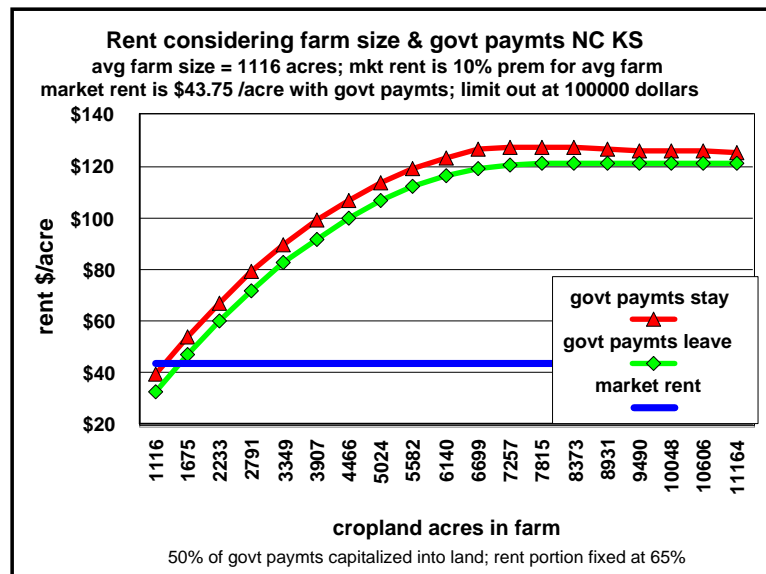
ranked by percent of land value that is due to government program payments

Would land values really fall that far?

- Tract-specific sales and rent prices indicate that gov't payments are not fully capitalized
- Rental contracts are "sticky"
- Increasing importance of non-ag factors
- Excess profits in big & growing farms
 - Very large KS farms still have ROA of 8% paying existing rent yet taking 36% hit on their land values (Dumler, Risk & Profit Conference 2005)
 - Easier to exploit economies of size in level playing field regarding gov't payments
 - Increased competition would bolster rents

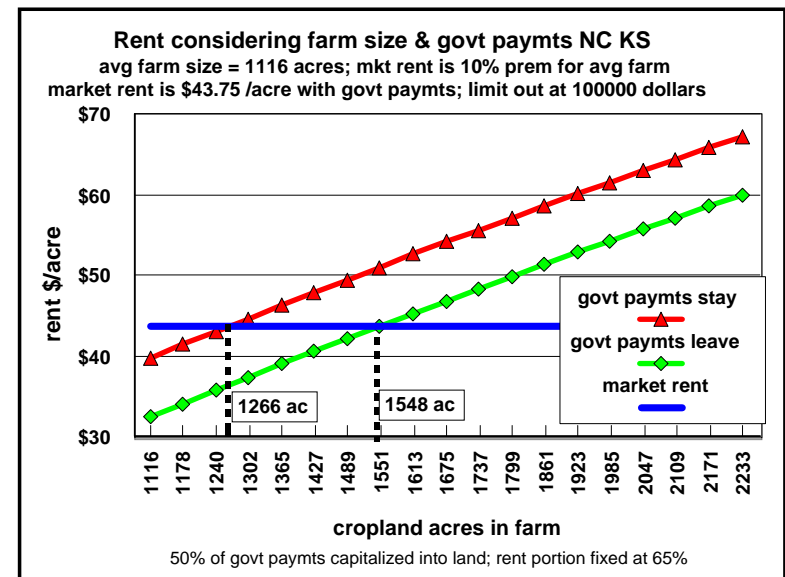


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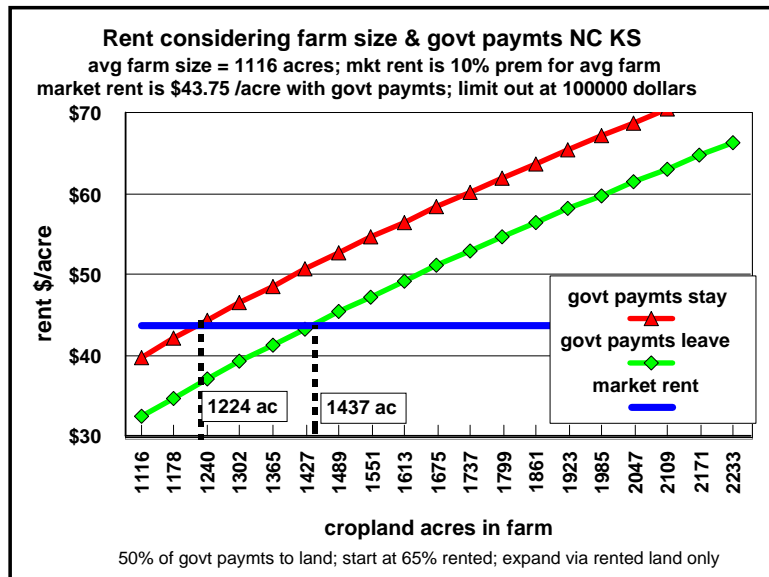


Farm growth might be able to offset government payments

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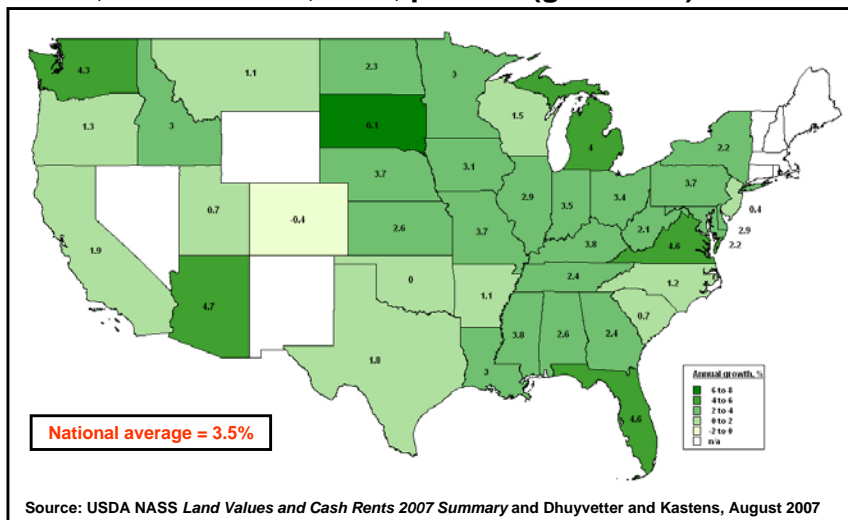


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An estimate of rent growth is needed to reliably use KSU-LandBuy

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



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Part 1 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

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Higher Land Rents? (Part 2 of 2)

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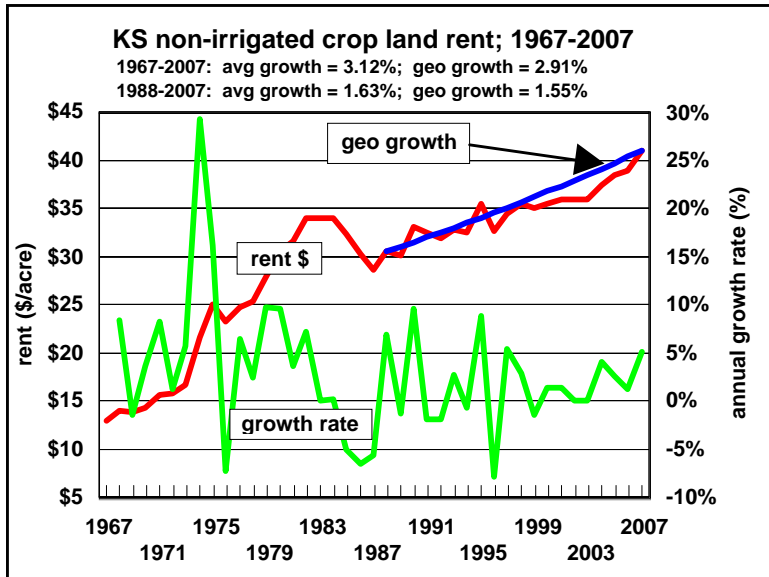
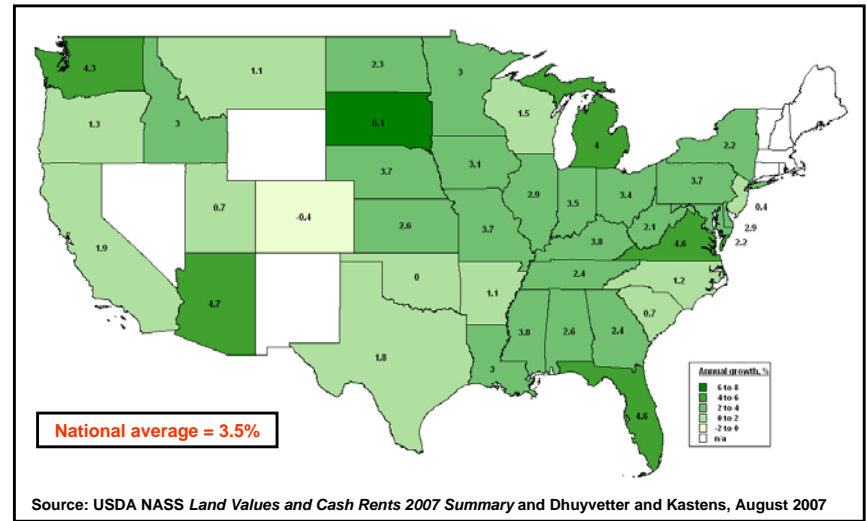
Department of Agricultural Economics
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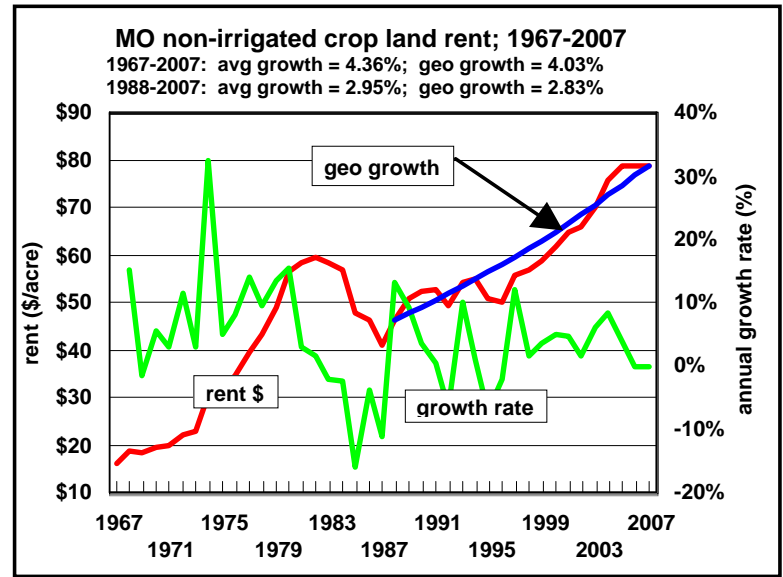
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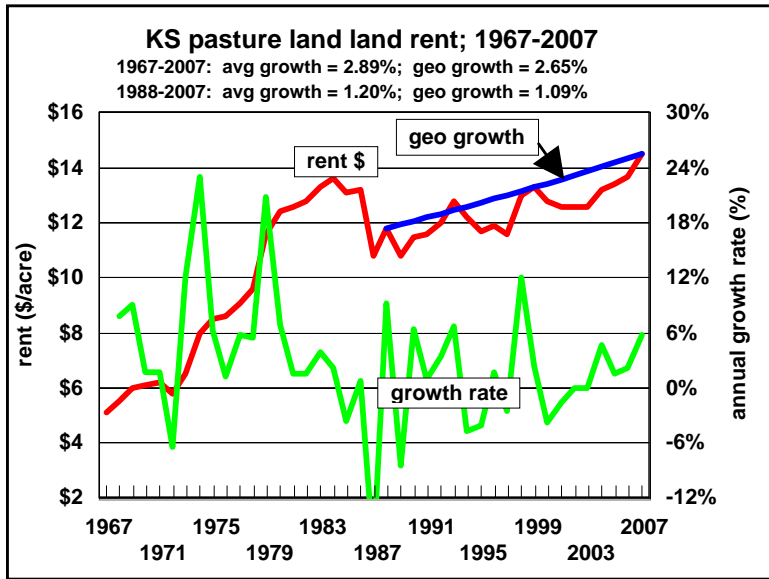
Cropland Rent Average Annual Growth Rate Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



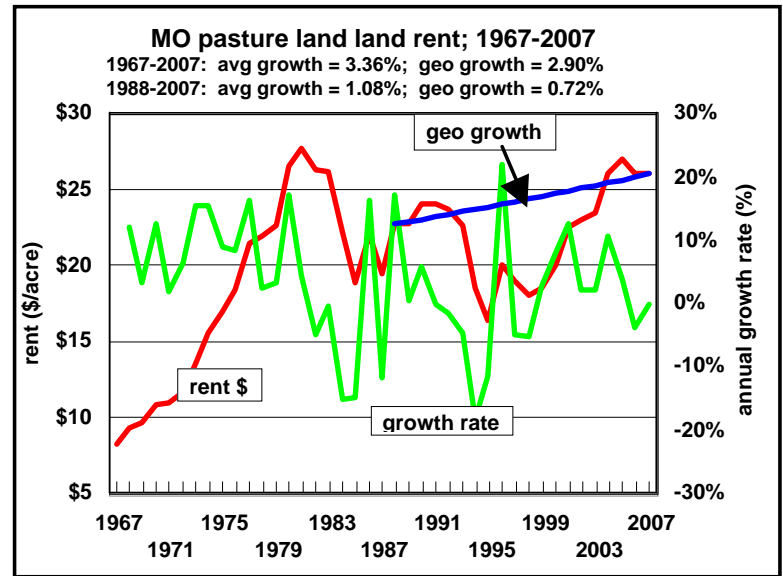
Suggested expected ag growth rate = 2.75% (but if ethanol continues . . . ?)



Suggested expected ag growth rate = 4.00% (but if ethanol continues . . . ?)



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

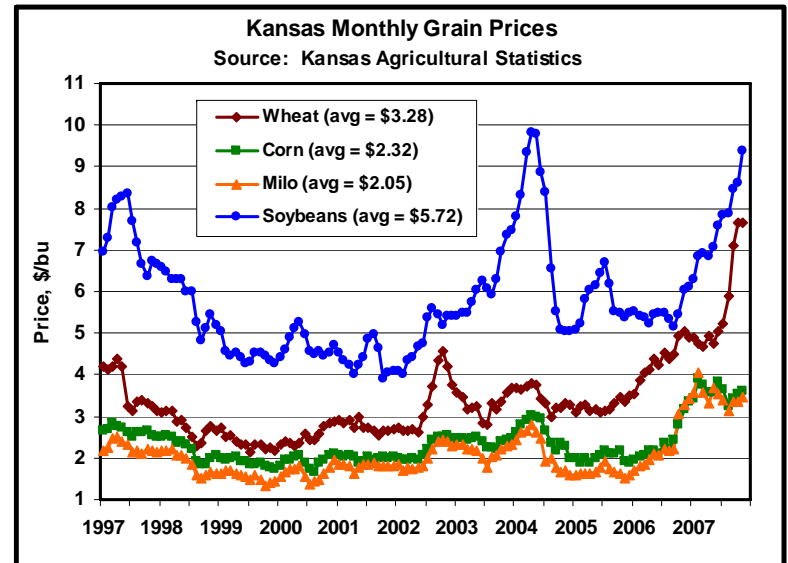


Suggested expected ag growth rate = 2.79% (but if ethanol continues . . . ?)

Result of ethanol push is higher commodity prices

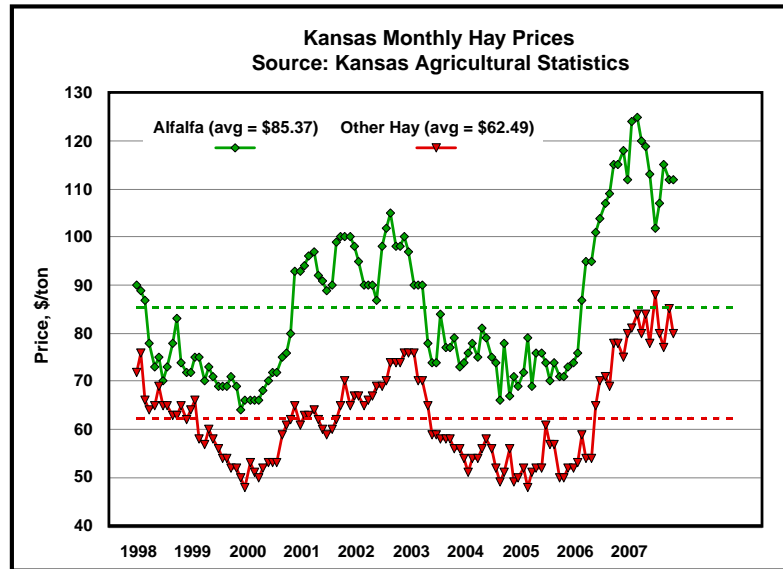
Higher crop prices lead to higher land rents

Crop prices are strong by historical standards...



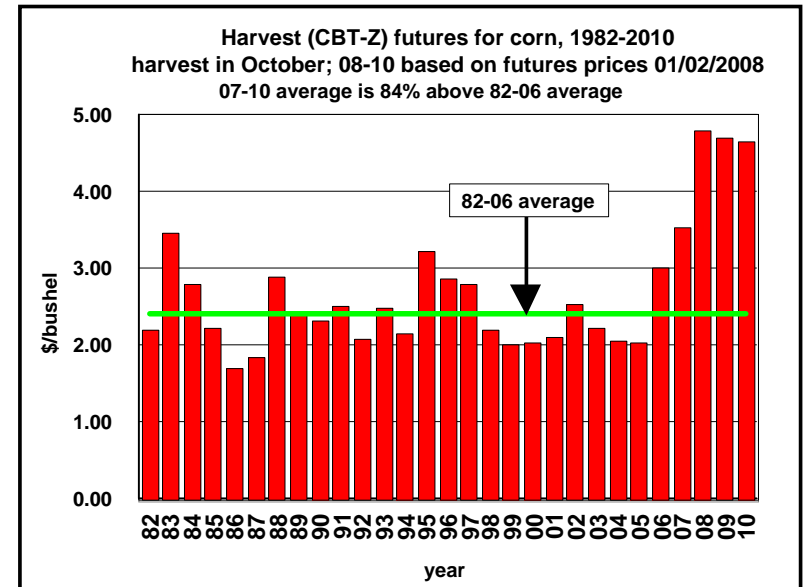
It's not just corn!

Strength in crop markets impacts hay prices...

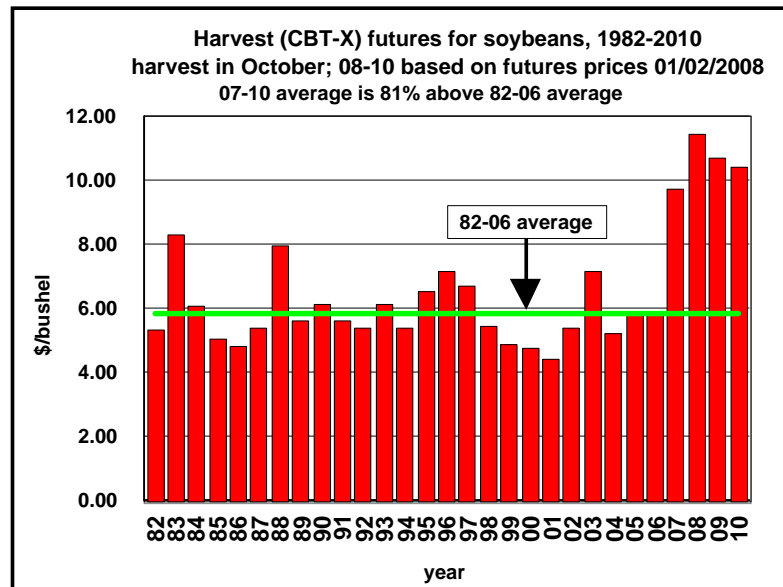


It's not just grains!

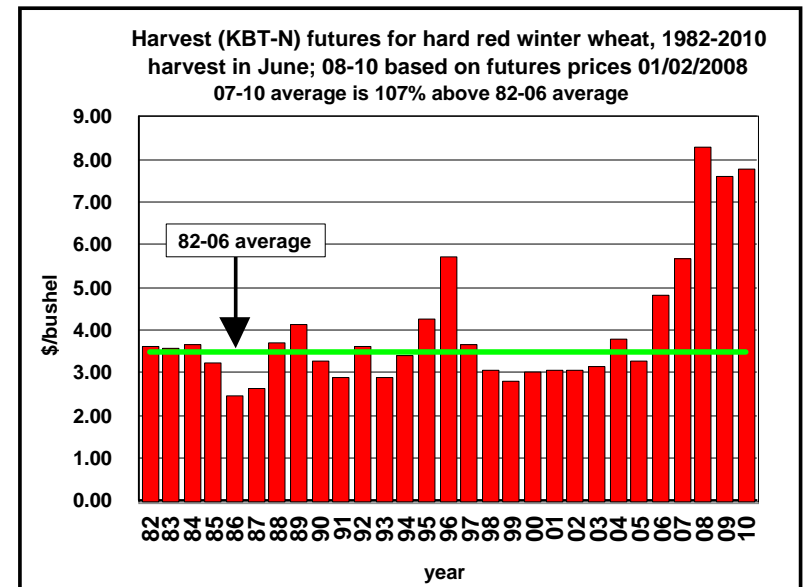
How long will strong prices stick around?



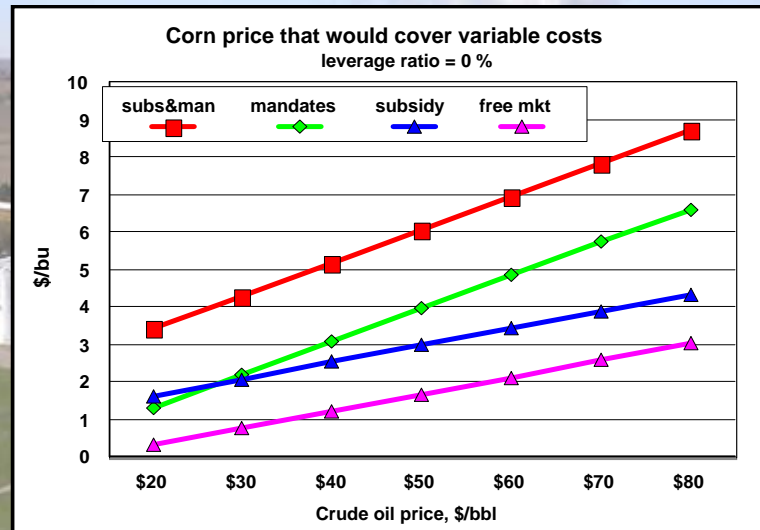
How long will strong prices stick around?



How long will strong prices stick around?



Ethanol Profitability...



If morthalling costs are high, effective breakeven prices are higher

Biofuels are catching the eye of oil companies

“Every option, from developing unconventional fossil fuel resources to pursuing renewable and other alternatives, will need to be pursued if the world expects to meet its growing energy demand through 2030, the **National Petroleum Council** concluded in a recent study.”

... Oil & Gas Journal, Aug. 6, 2007

... much of this journal issue was devoted to agrifuels

... a far cry from the “mood” of the oil industry regarding renewable energy early in 2007

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Some negatives are creeping in . . .

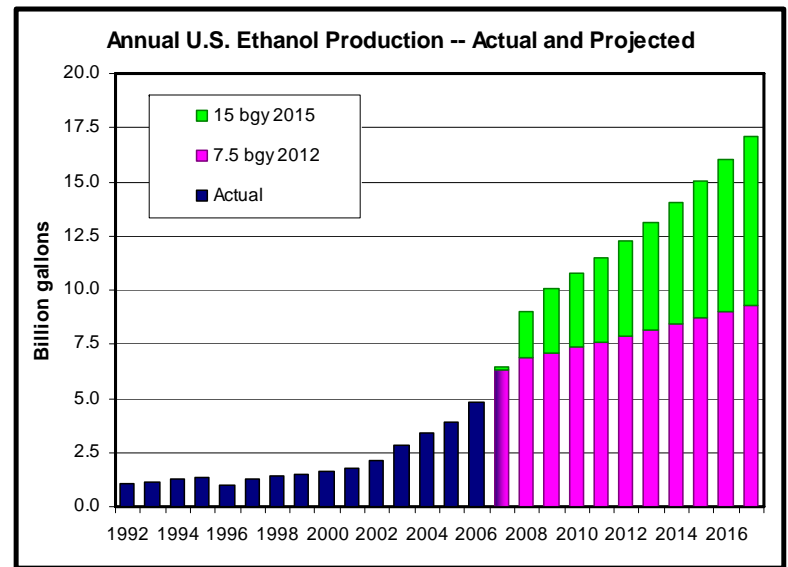
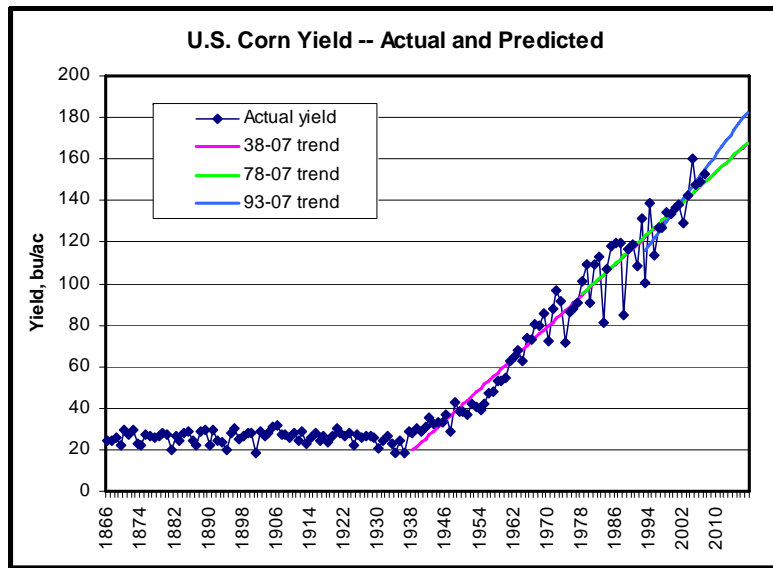
- **Corn for ethanol increases food prices**
 - Probably okay on this one (at least in the U.S.)
 - CARD: 30% higher corn price: 1.1% higher food prices
- **Ethanol is dirty environmentally**
 - Probably okay on this one (i.e., it is fairly clean)
- **Livestock industries are getting louder**
- **Infrastructure & 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)

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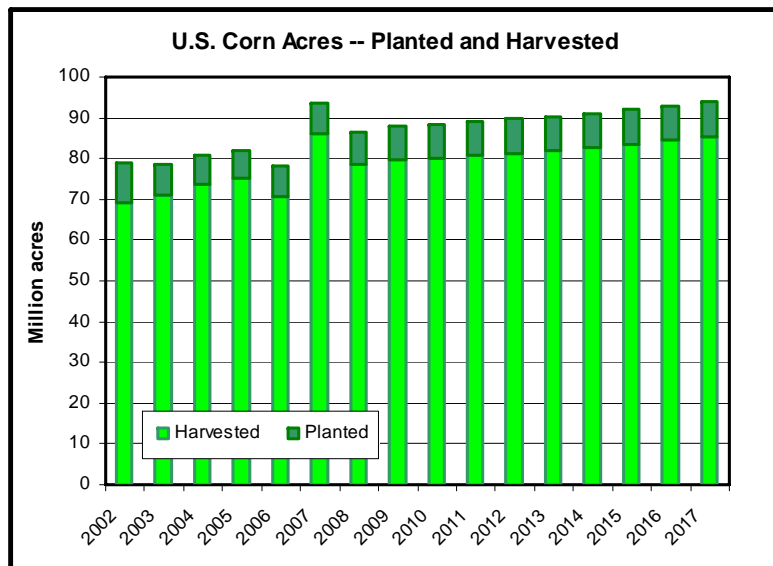
Future ethanol production . . .

- **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
 - What does this mean for corn acres?

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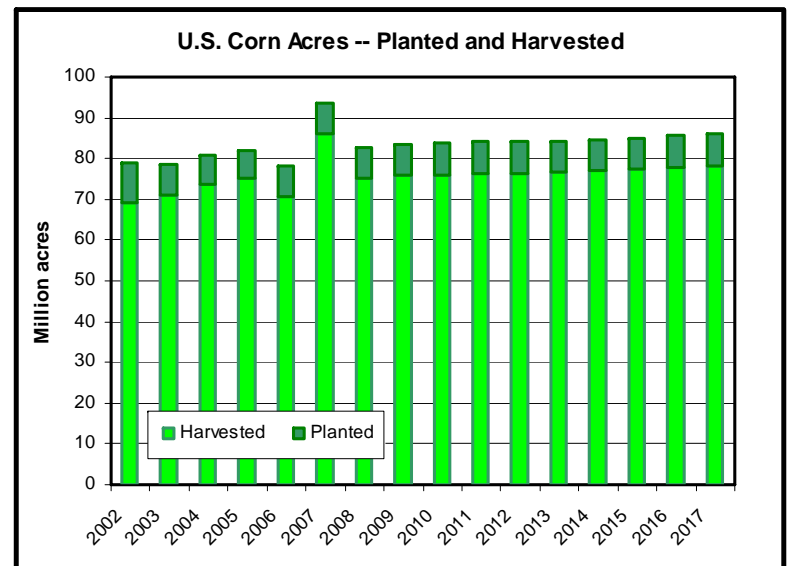


30-year trend yield – Acres need to increase...



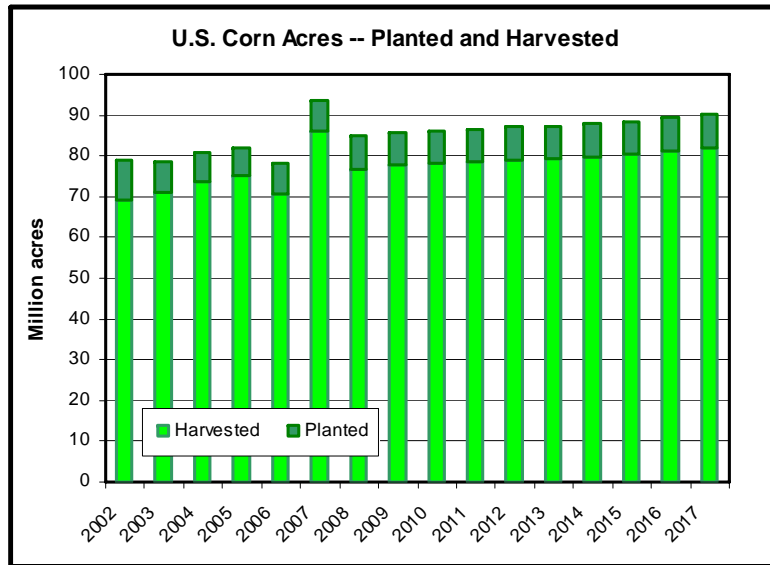
Source: 2002-07 USDA, 2008-2017 KSU projections

15-year yield trend – Yield improvements meet ethanol needs...



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

Yield growth almost covers increased ethanol needs...



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

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KSU study of impact of high commodity prices on rental rates

Two approaches:
Crop budgets & KSU-Lease
Historical relationships

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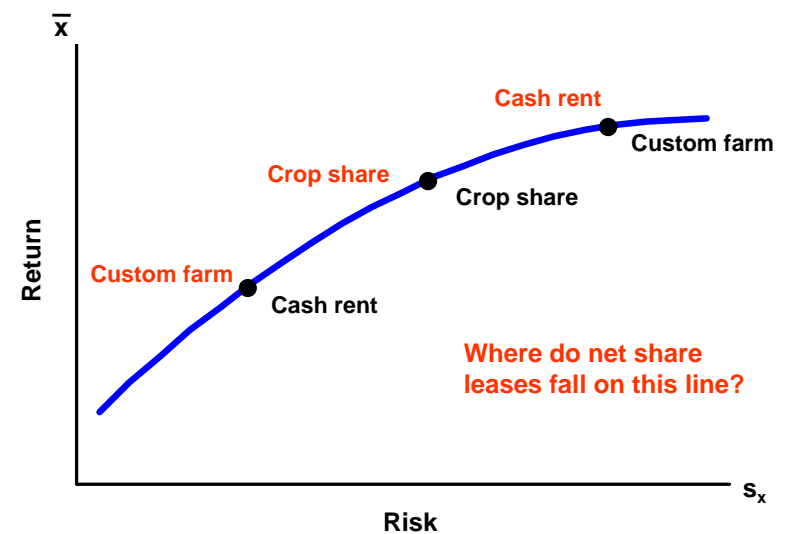
In recent years, the majority of leasing questions received pertain to:

- Impact of adopting new technologies
- Cash renting
- “Non-traditional” leases
 - Net share rent
 - Flexible cash rent
 - Bushel rent
 - Combination cash/cropshare

... while current “hot topic” is slightly different, method of addressing questions has not changed.

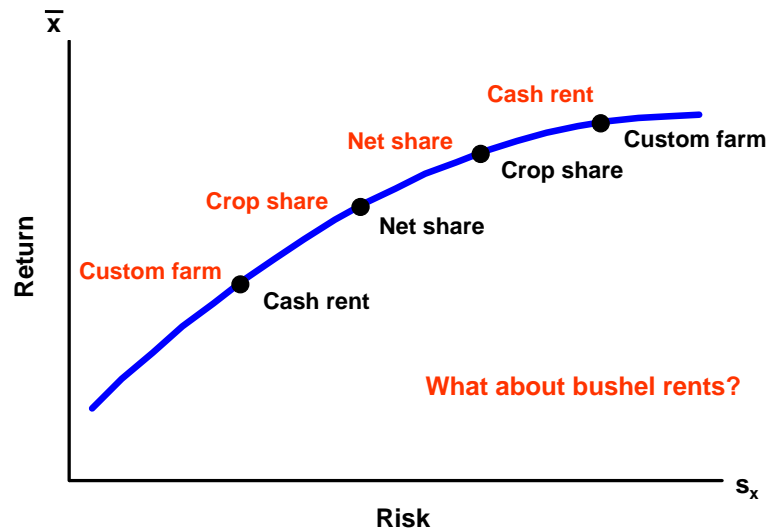
80

Landowner/producer risk-return tradeoff



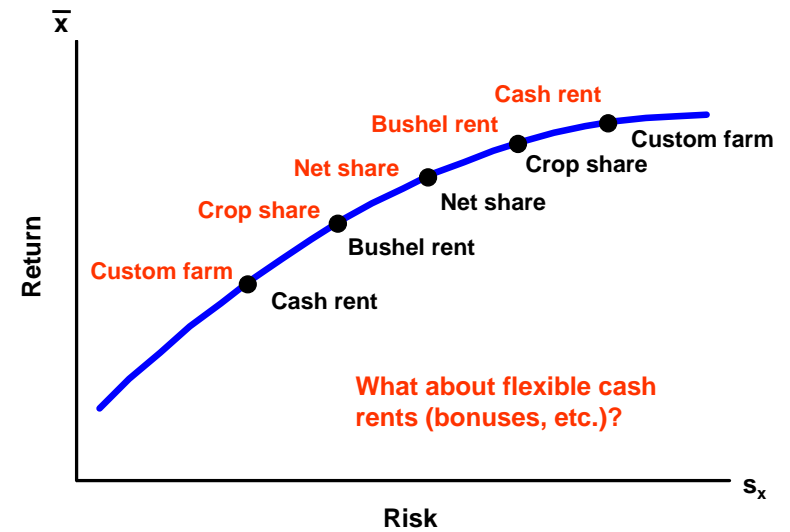
81

Landowner/producer risk-return tradeoff



82

Landowner/producer risk-return tradeoff



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Impact of high costs and prices on leases ...

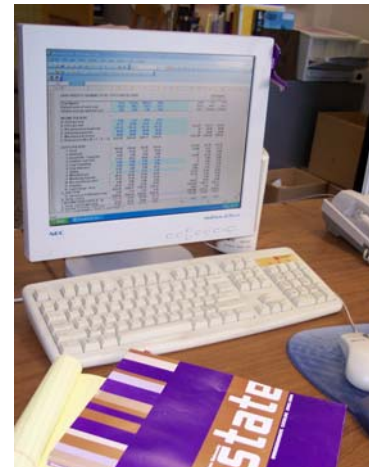
KSU-Lease.xls is a tool that can be used to analyze the impact current costs and prices have on equitable crop share leases as well as their cash-rent equivalents

How leases are impacted by current conditions depends on how producers change (or not change) production practices in response to these high prices and costs

➔ producers should “run their own numbers”

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Using “KSU-Lease.xls” to determine equitable crop share and cash leases ...



Information/data required:

1. Crop rotation/mix
2. Income information
3. Production inputs
4. Machinery costs
5. Land value
6. Irrigation equipment
-
7. Contributor of input
8. Risk adjustment

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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

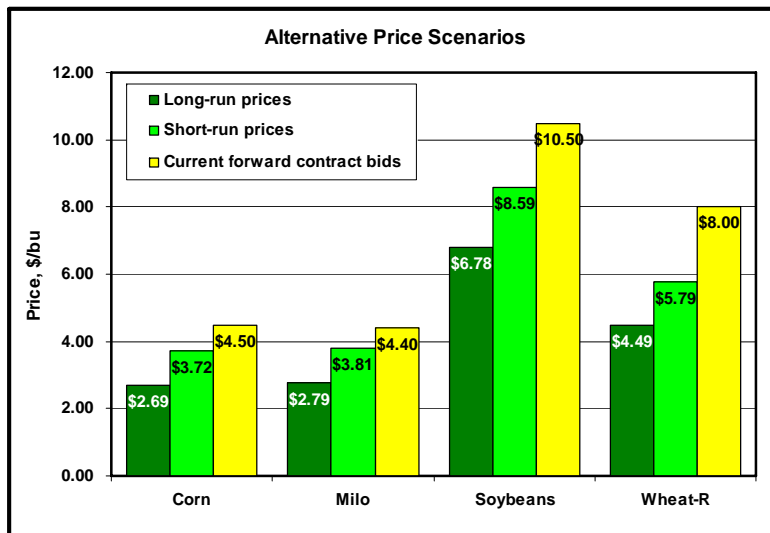
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Level of complexity ...

- **KSU-Lease is extremely flexible and can be used to generate leases with terms that are quite simple to extremely complex**
- **For example equitable percentages for ...**
 - net share lease (i.e., no inputs shared)
 - fertilizer shared equitably (i.e., same % as income)
 - fertilizer shared equitably, herbicides shared in some other proportion
 - different inputs shared differently for each crop
 - combination of crop share and cash rent

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Alternative Prices to Consider for Northeast Kansas

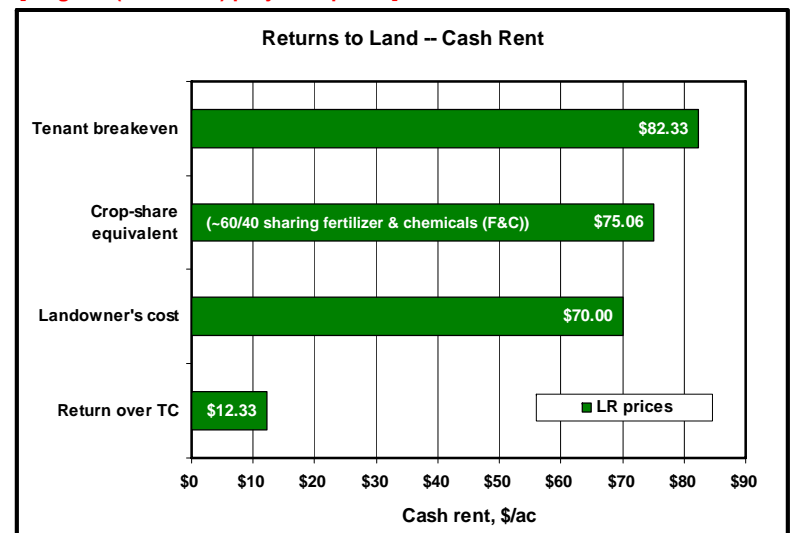


Long-run (08-12) and short-run (08) from MF-1013, current bids from several co-ops (1/5/08)

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Estimated cash rents for Northeast Kansas

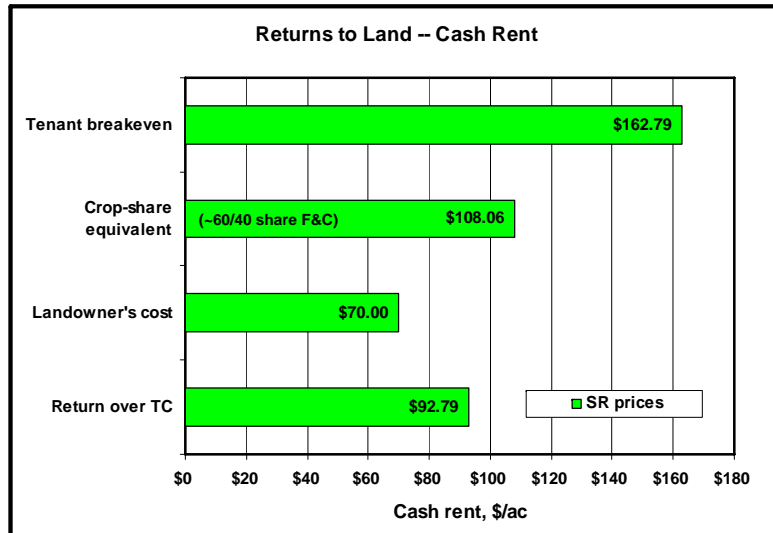
[long run (2008-2012) projected prices]



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

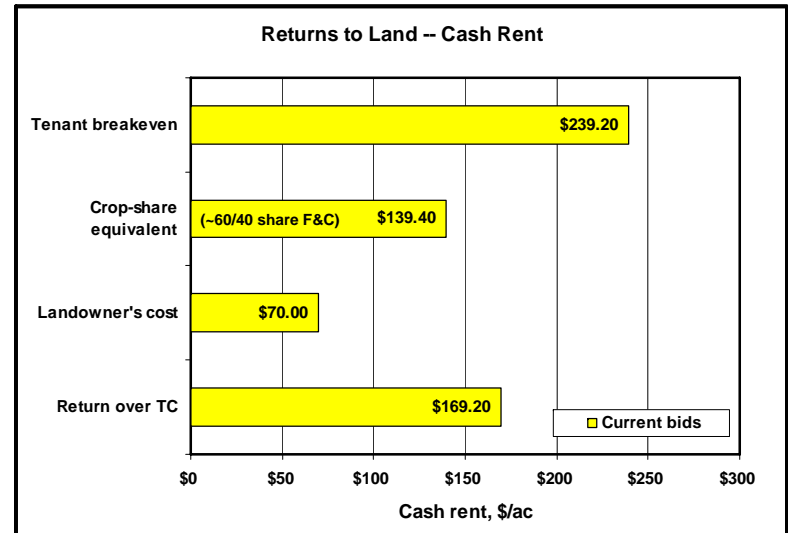
89

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



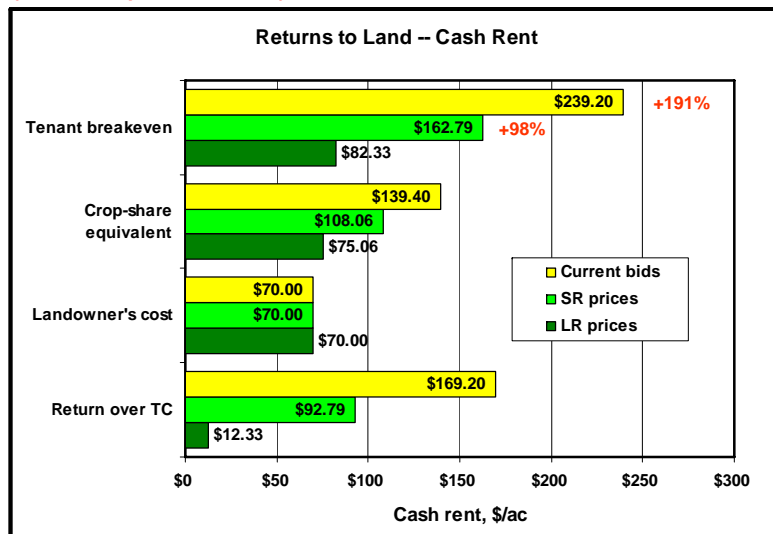
Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls (available at www.agmanager.info)

Estimated cash rents for Northeast Kansas
[forward contract bids (1/5/08) for 2008 harvest delivery]



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

Estimated cash rents for Northeast Kansas
(alternative price scenarios)

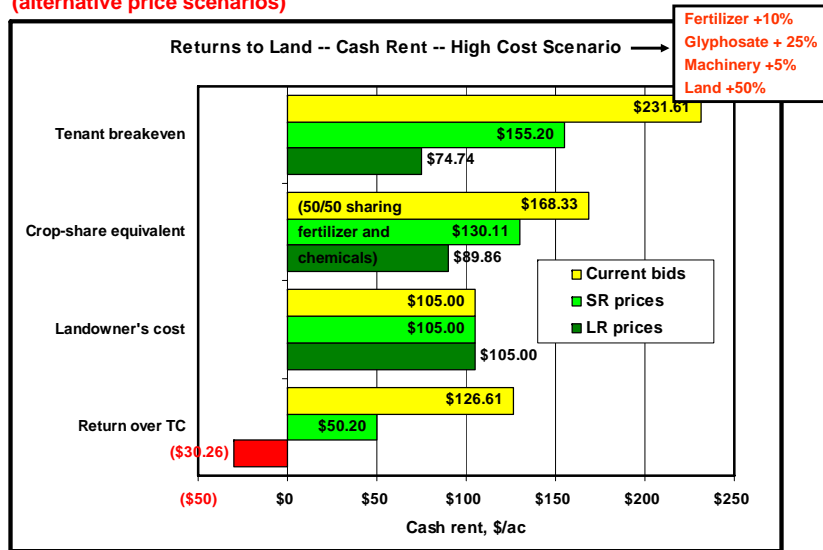


Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls (available at www.agmanager.info)

Really high rent potential . . .

- Previous example suggested that price increases of 32% to 63% could mean a rent increase of 98% to 191% (elasticity of 3.0)
- 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 Northeast Kansas (alternative price scenarios)



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

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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

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A KSU study in January 2008 (Kastens & Dhuyvetter)

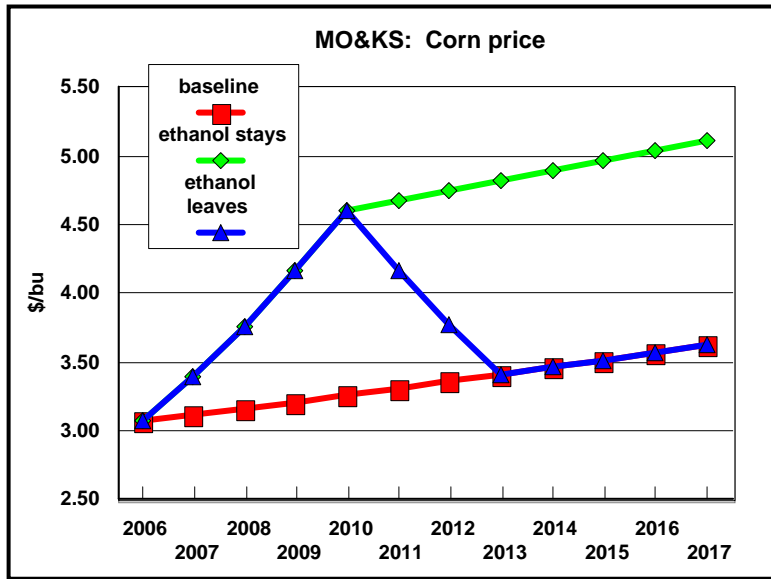
state	rent	1950-1972 avg rent-to-value ratio (ag cap rate, %)	2007 % of land value due to agriculture	1950-2007 avg ann. growth rate in %, for non-ag land value	1950-2007 avg ann. growth rate in %, for corn yield	1950-2007 avg ann. growth rate in %, for corn price
AR	0.87	8.15	44.12	12.69	3.92	1.45
IA	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:

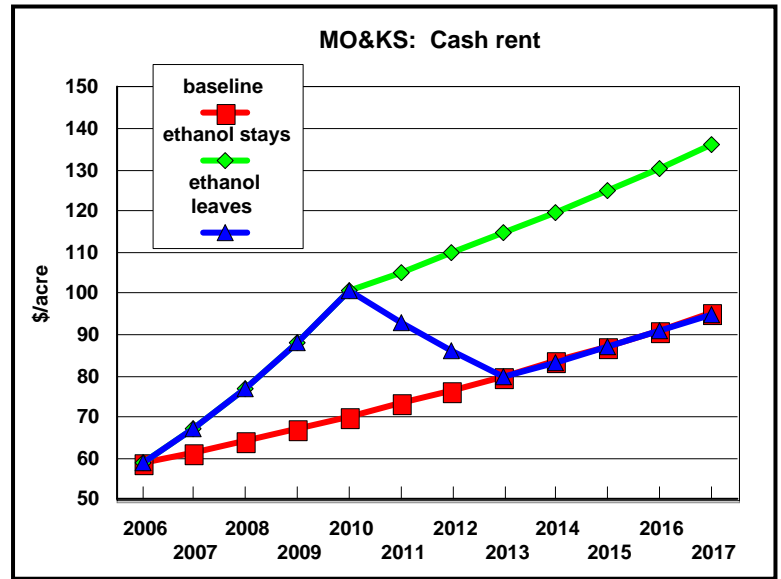
Results don't materially change if use w wheat or soybeans in analysis.
Most mathematical models explained 85 to 95% of variation in dependent variable.
Rent/(ag cap rate) equals agricultural portion of land market value.

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

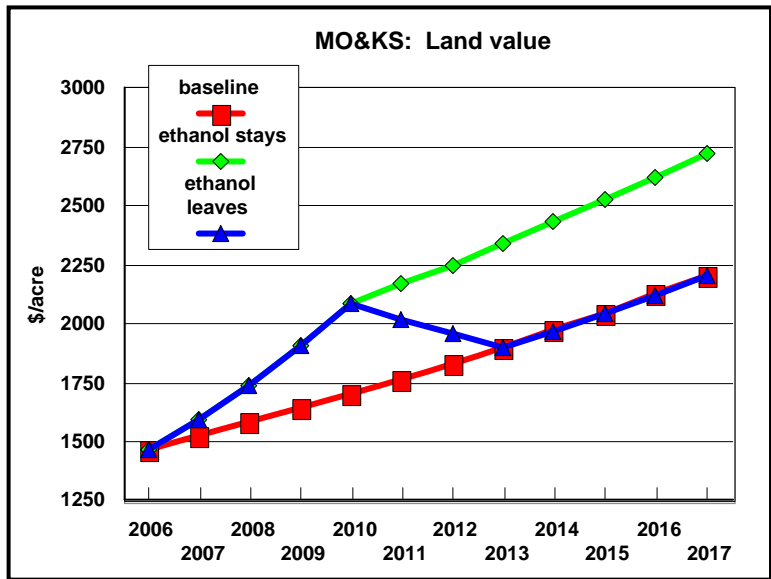
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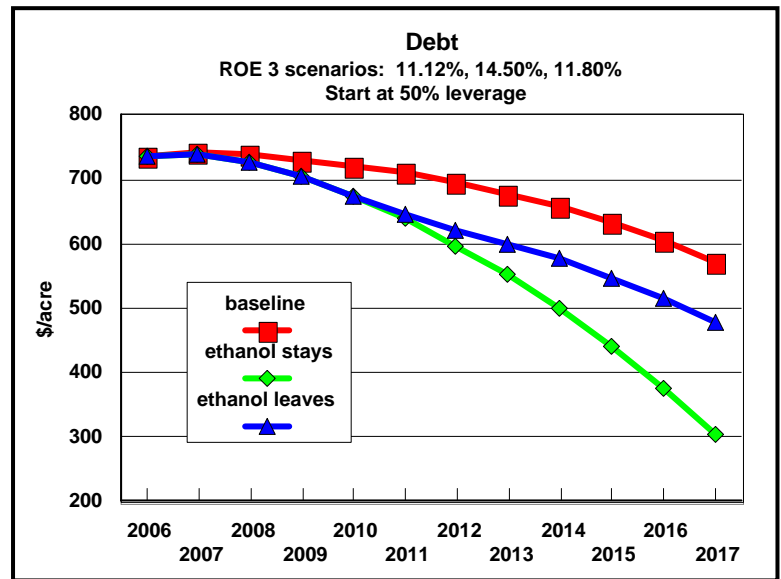


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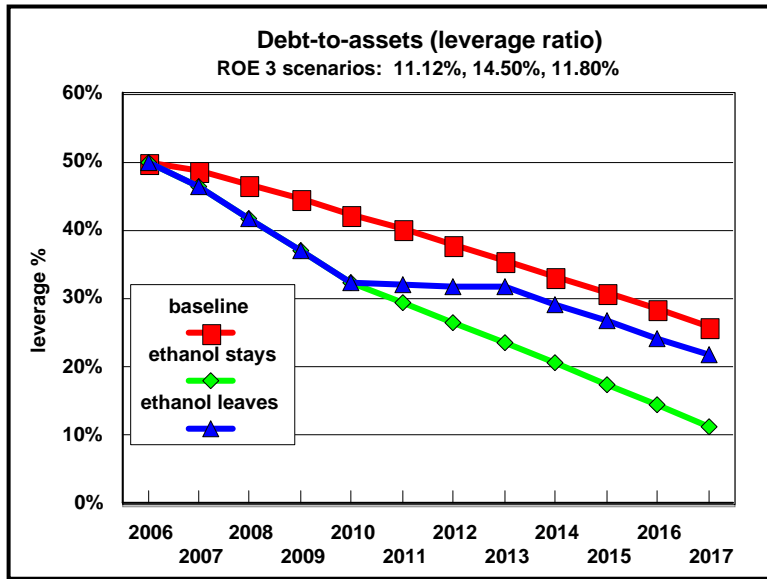


Elasticity of value wrt rent is 0.86 (would be 0.81 for MO & 0.93 for KS individually), which is much lower than that implied by crop budget/KSU-Lease approach.

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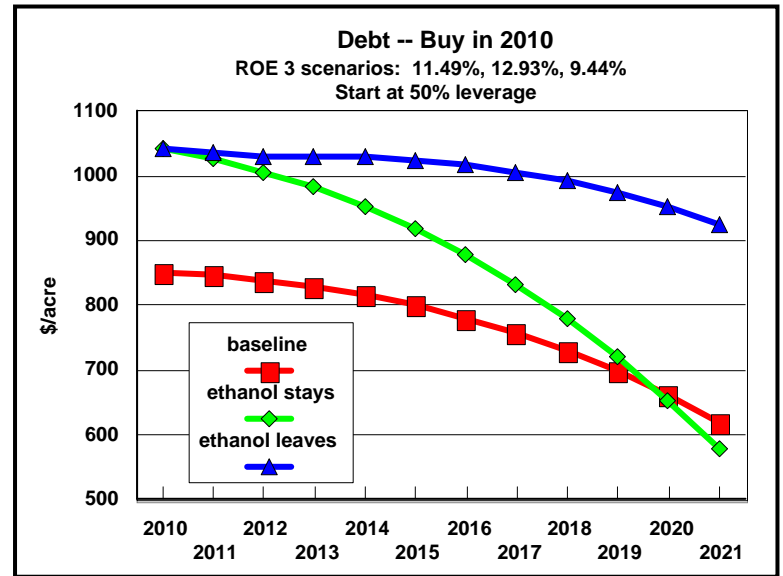


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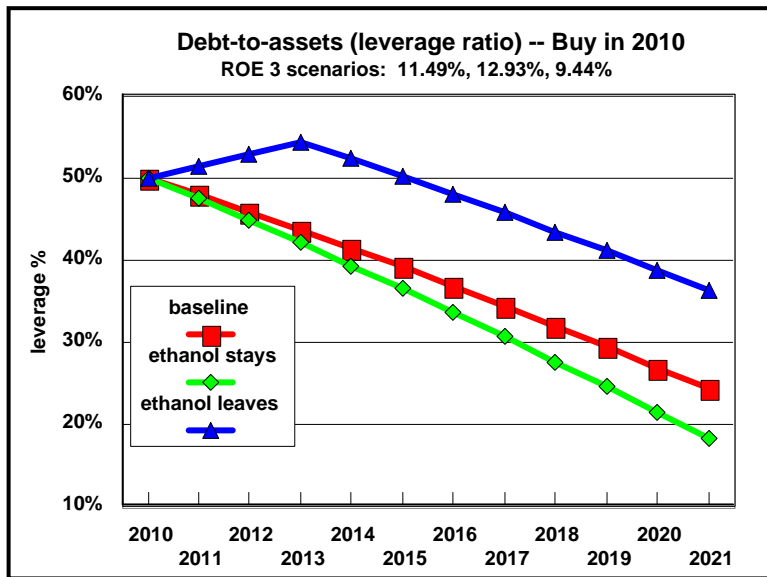
102

Late to game: don't buy until January 2010



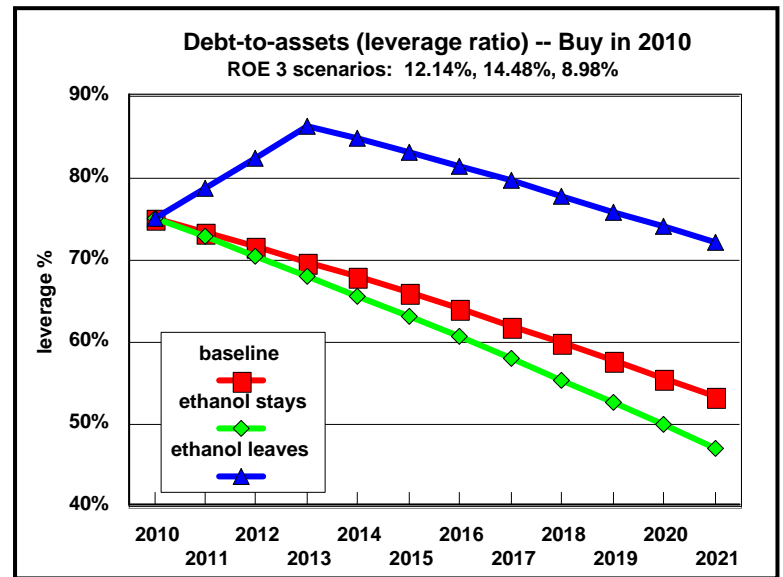
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Late to game: don't buy until January 2010



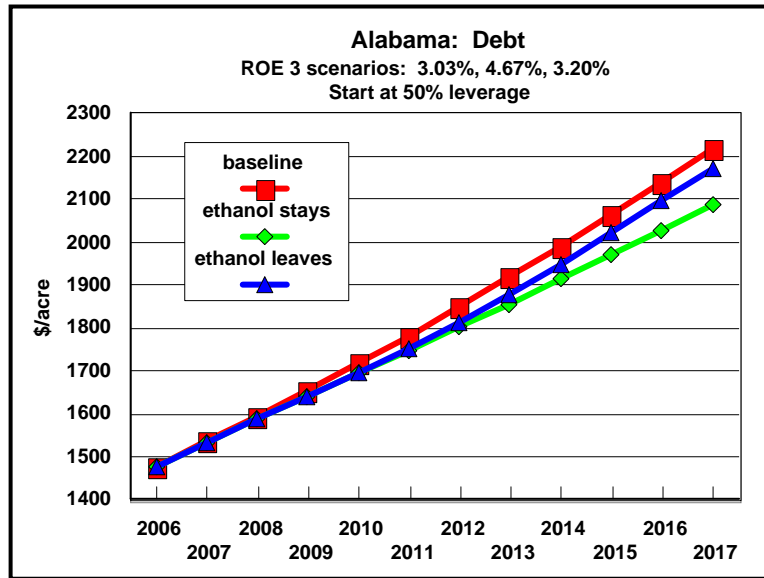
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Late to game AND LEVERAGE AT 75% rather than at 50%



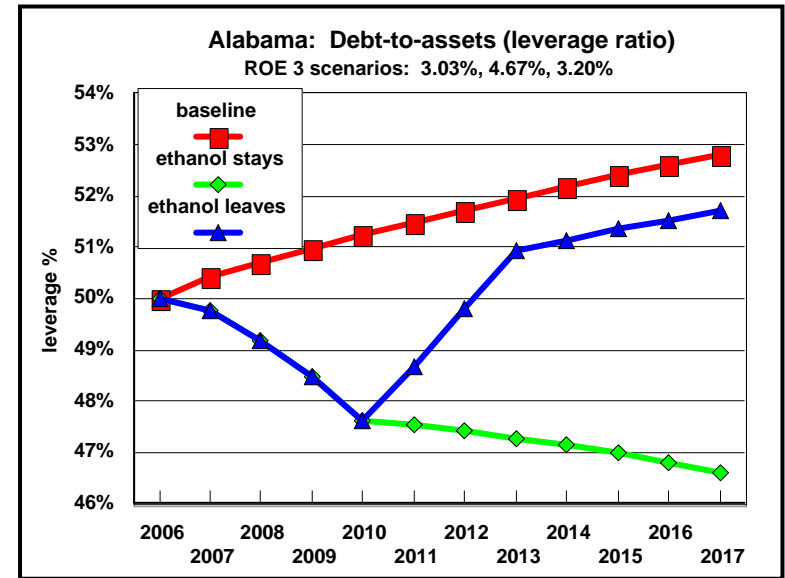
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AL needs continued high non-ag growth for it to be a good investment



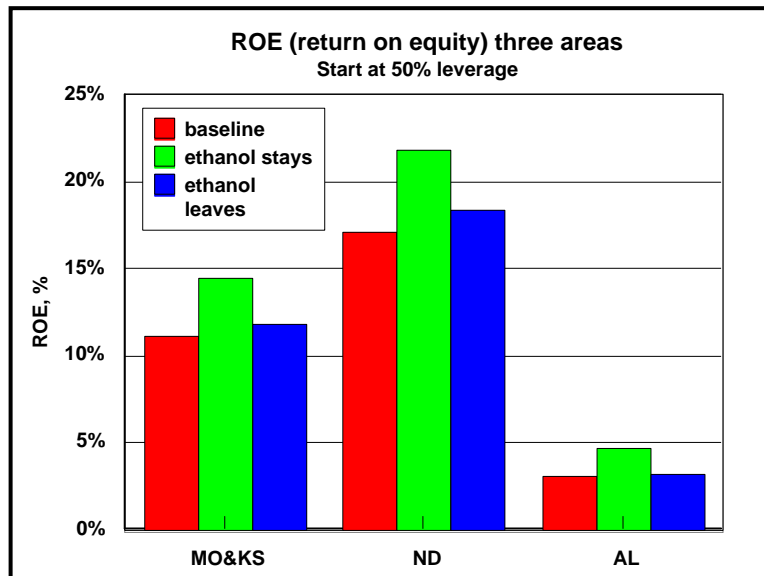
106

AL needs continued high non-ag growth for it to be a good investment



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



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Part 2 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 (50%-75%)
- 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

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Site Updates

- Future-Based Price Forecasts for Diesel Fuel**
August 7, 2007 by Kevin Dlugyvedar
- Livestock Outlook Radio Program**
August 6, 2007 by Jim Minter/LABC
- Grain Outlook Radio Program**
August 5, 2007 by Mike Dlugyvedar
- Seasonal Grain and Cattle Price Spreadsheets (Excel)**
August 3, 2007 by Kevin Dlugyvedar
- Updated Crop Basis Tool**
August 2, 2007 by Kevin Dlugyvedar
- In The Cattle Markets**
July 31, 2007 by Jim Minter/LABC
- Current Grain Outlook Newsletter**
July 27, 2007 by Mike Dlugyvedar
- Crop Basis Maps**
July 26, 2007 by Kevin Dlugyvedar
- On-Farm Storage Excel Spreadsheet (update)**
July 26, 2007 by Kevin Dlugyvedar
- Livestock and Hay Charts**
July 11, 2007 by Jim Minter
- K-State Feeder Cattle Risk Management Tool**
June 28, 2007 by Kevin Dlugyvedar and Jim Minter
- 2006 KFMA Enterprise Profit Center Summary**
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- 2007 Farm Bill: Kansas Producer Preferences for Agricultural, Food and Public Policy**
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- Adopting Animal Identification Systems and Services in Kansas Auction Markets - REVISED**
May 16, 2007 by Scott et al.
- 2006 KFMA Executive Summary**
May 9, 2007 by Langemeier and Minter

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Questions?