

Higher Land Values? (Part 1 of 2)

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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)

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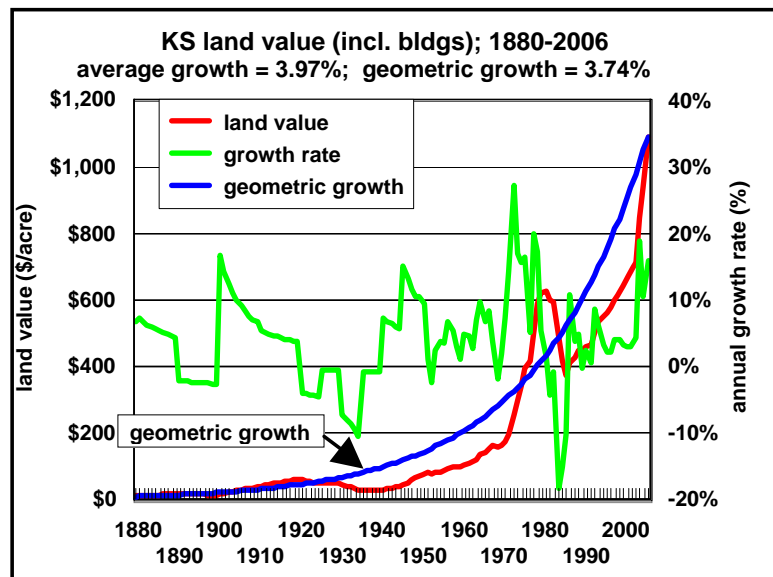
Factors impacting agricultural land values...

- 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

3

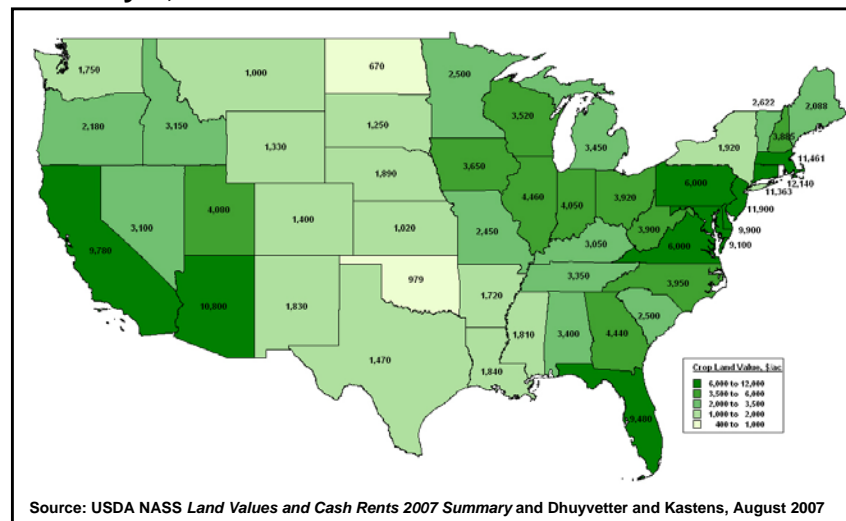
Historical land values and growth

4



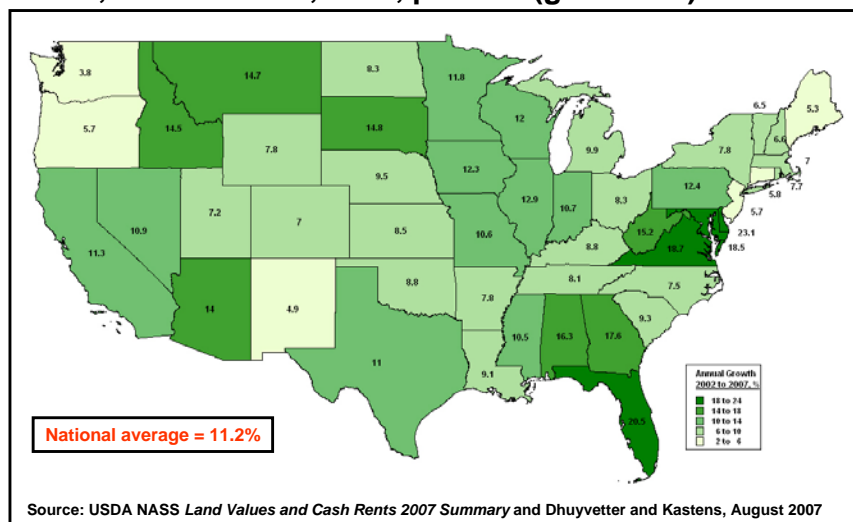
5

Crop Land Average Value per Acre January 1, 2007



6

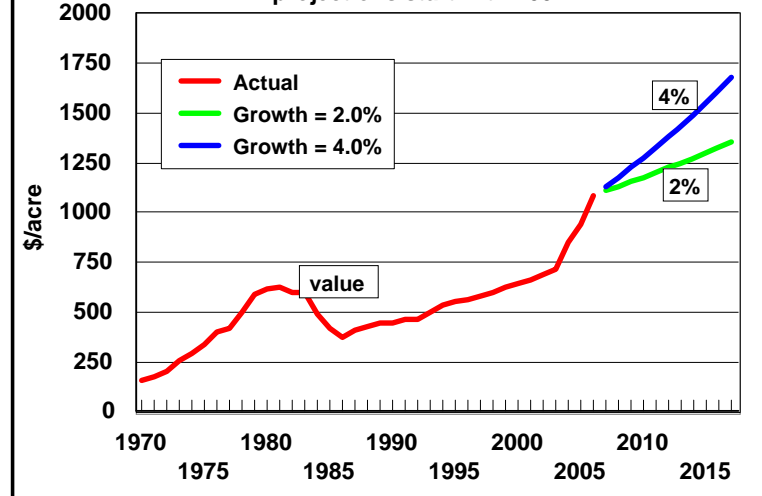
Crop Land Average Annual Growth Rate Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



7

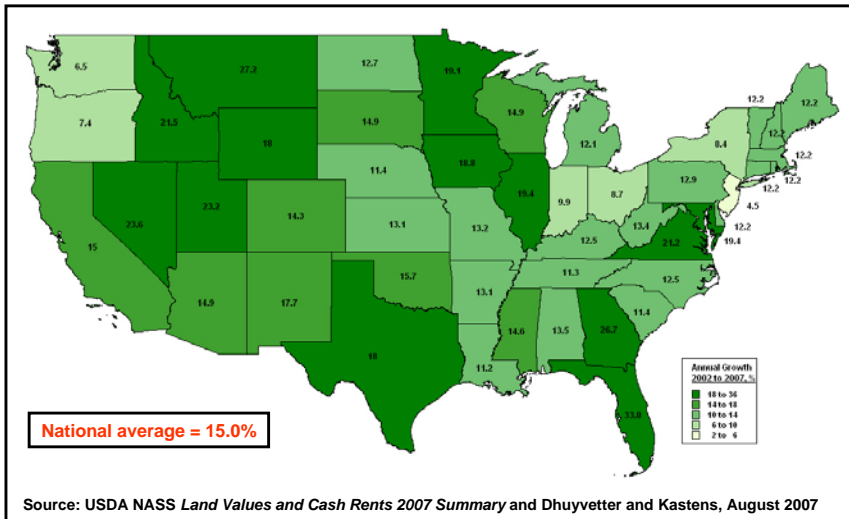
Kansas land values & projections, 1970-2017

projections start with 2007



8

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

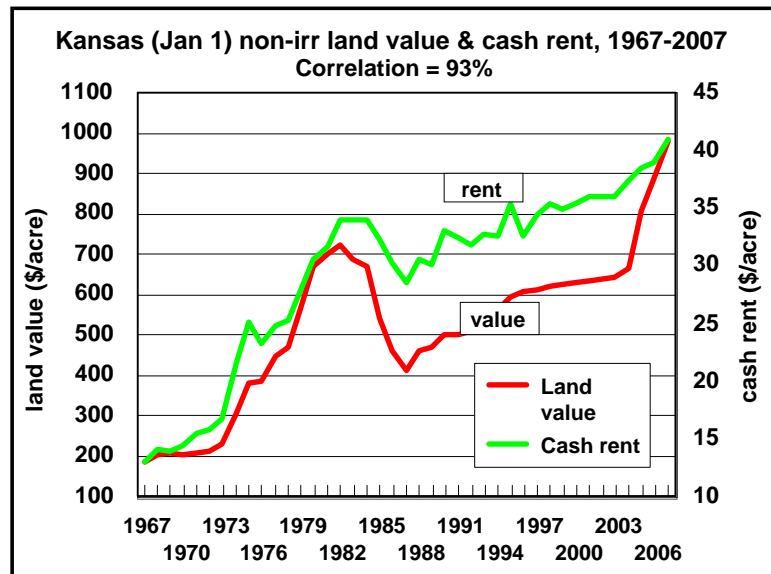


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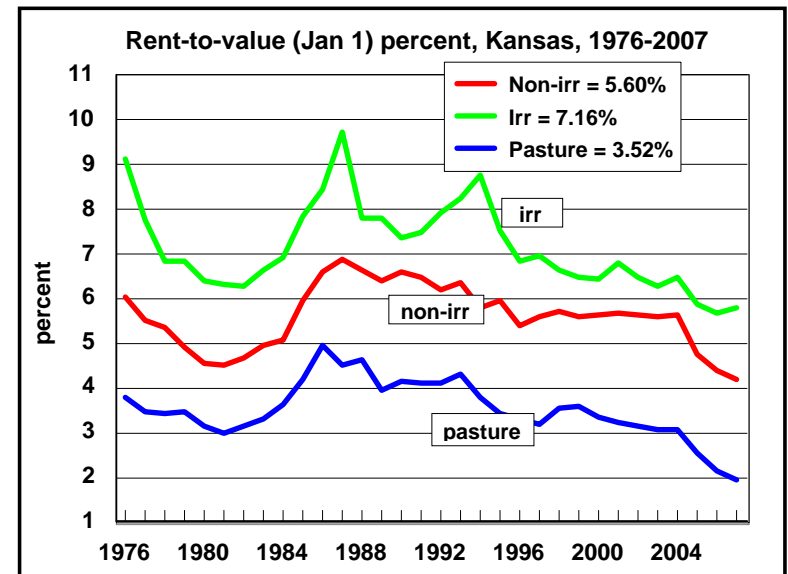
Returns to land

- 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)

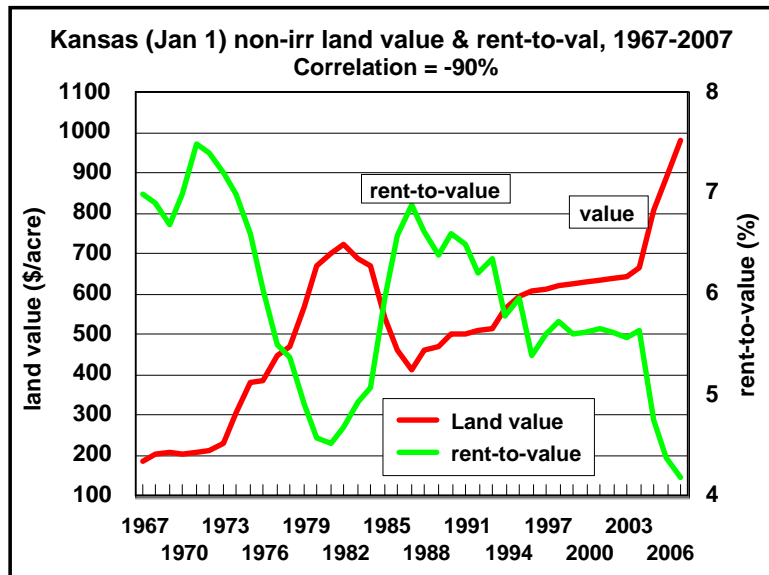
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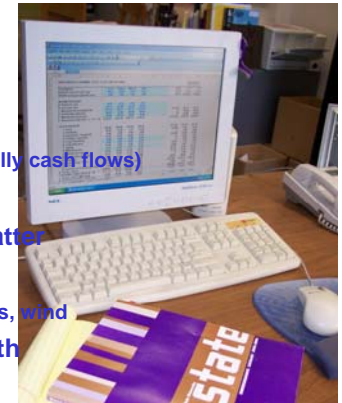
14



16

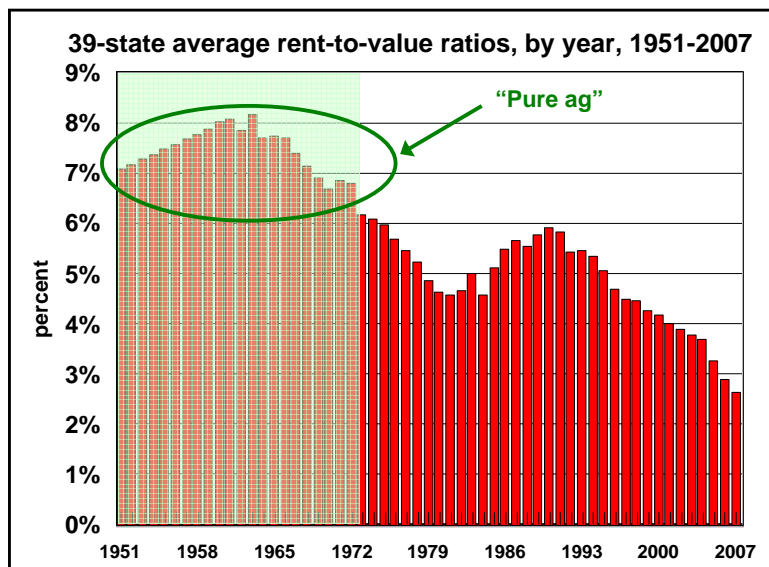
Buying and owning land – considerations

- 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

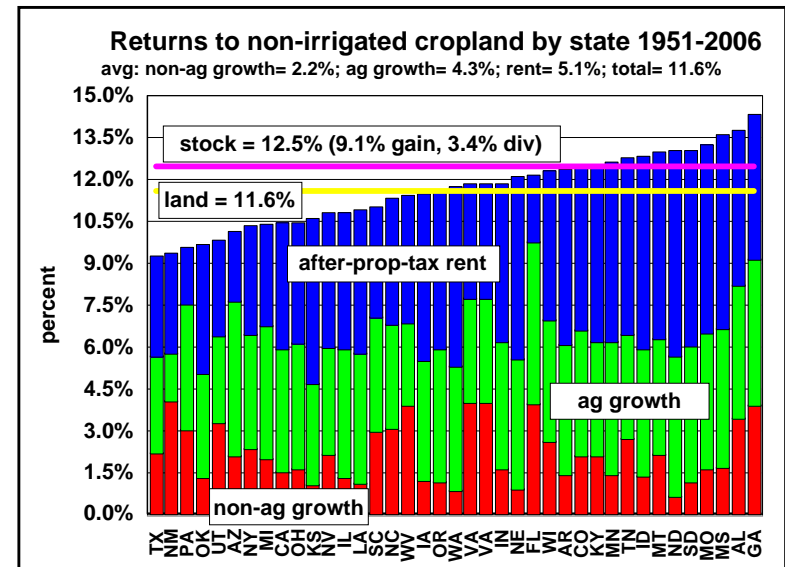


- **KSU-Landbuy.xls** allows for these various considerations (available at www.agmanager.info)

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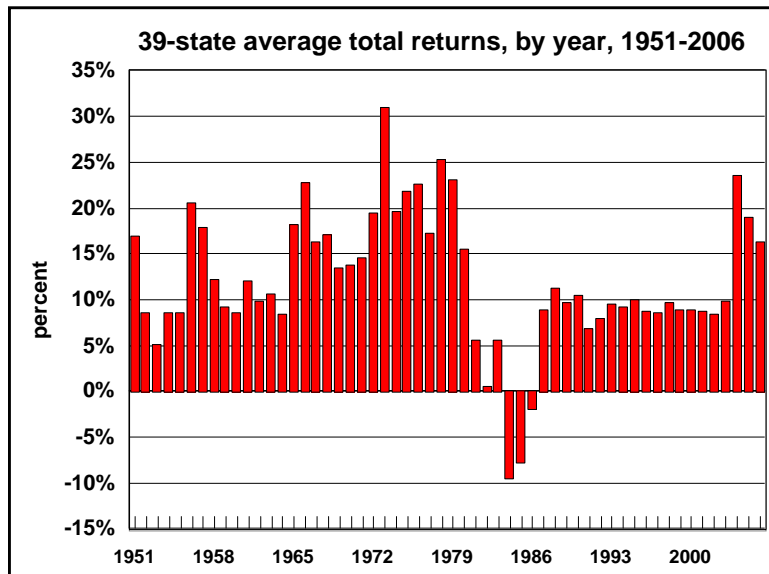


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39 states ranked by total returns to land

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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
- Alabama ag cap rate = 8.03%
- Kansas ag cap rate = 6.64%
- 39-state average cap rate = 6.57%

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Agricultural Market Value of Agricultural Land using Alabama crop land as an example

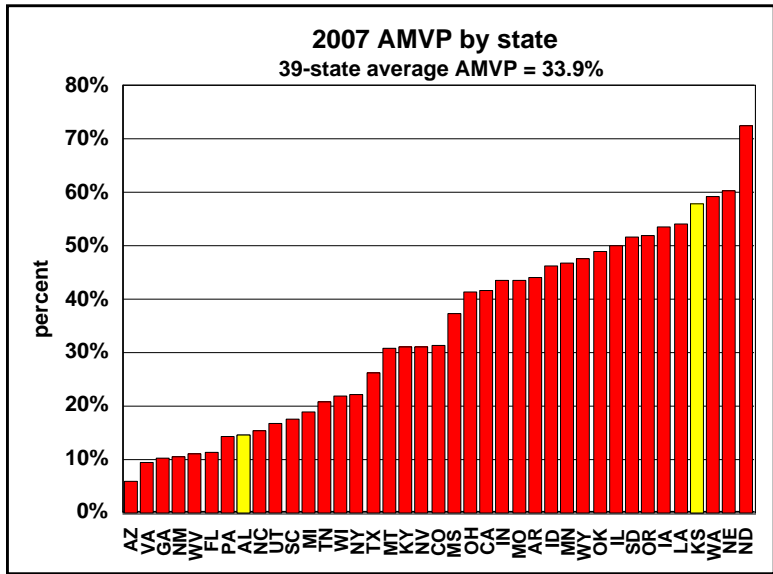
- Jan. 1, 2007 crop land value = \$3400 /acre
- Cash rent for 2006 = \$41 /acre
- 2007 property tax = \$1.38 /acre
- 2007 after-property-tax rent = \$39.62 /acre
- $\$39.62 / 0.0803 = \$493.40/\text{acre}$
- $\text{AMVP} = \$493.40 / \$3400 = 0.145 = 14.5\%$

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

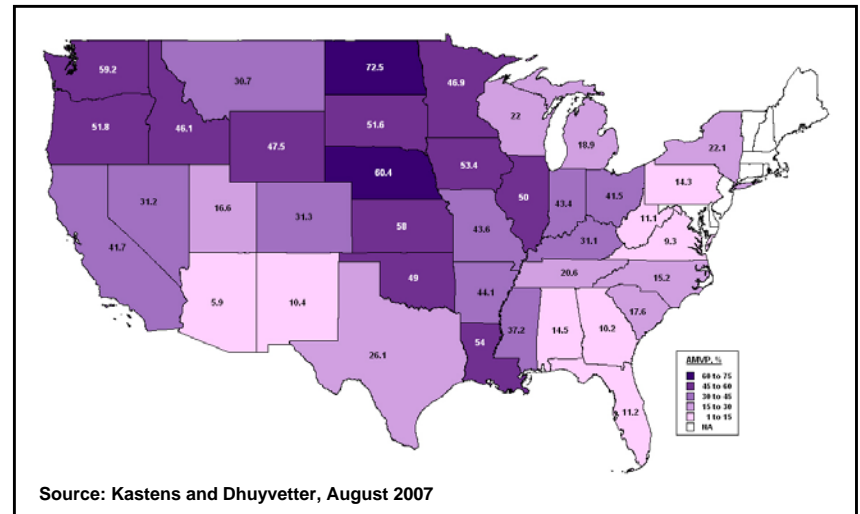
- Jan. 1, 2007 land value = \$980 /acre
- Cash rent for 2007 = \$41.00 /acre
- 2007 property tax = \$3.27 /acre
- 2007 after-property-tax rent = \$37.73 /acre
- $\$37.73 / 0.0664 = \$568.22 / \text{acre}$
- $\text{AMVP (non-irr)} = \$568.22 / \$980 = 0.580 = 58.0\%$

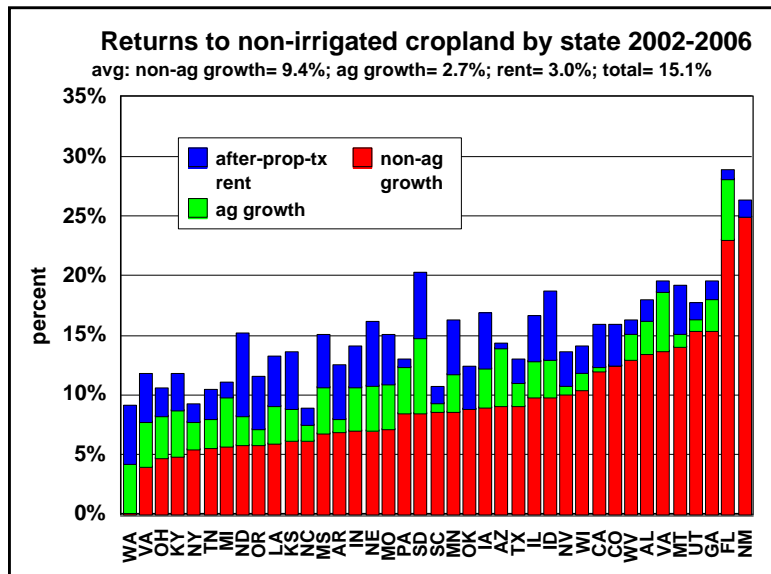
23



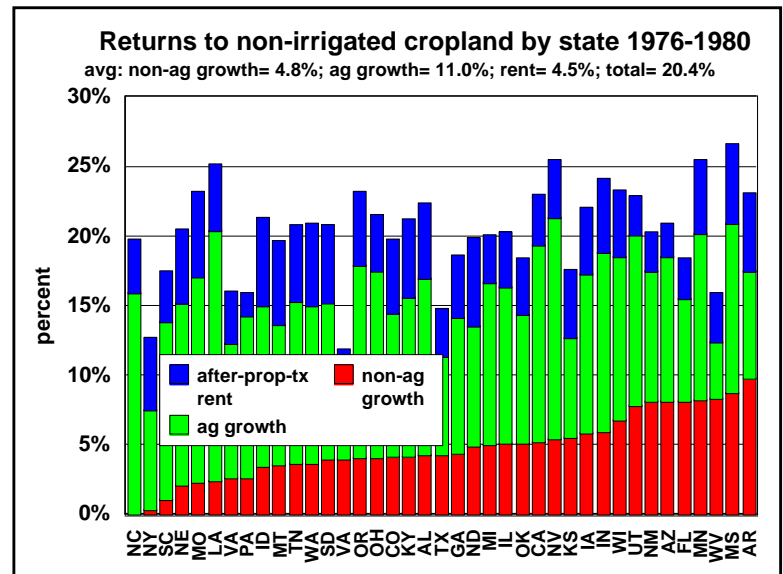
percent of land value that is due to agriculture

Portion of Land Value Attributed to Agricultural (production and government payments)





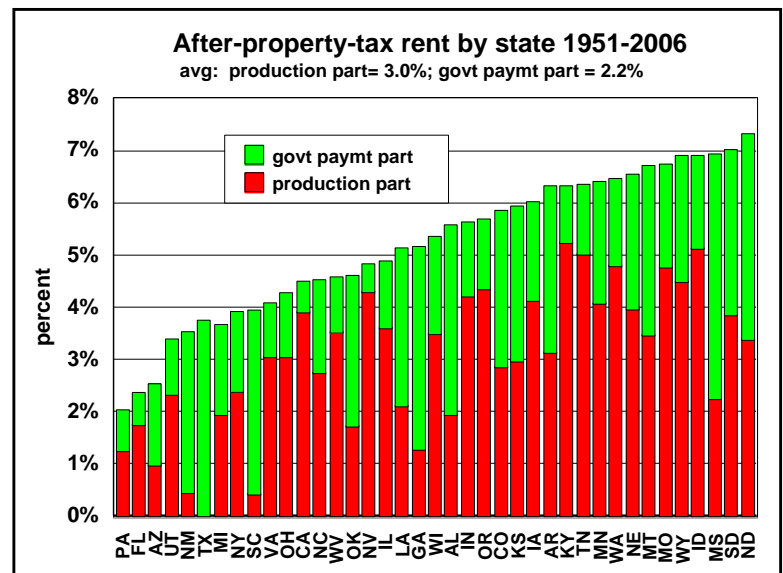
Non-ag growth much more important lately; total returns not especially high



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

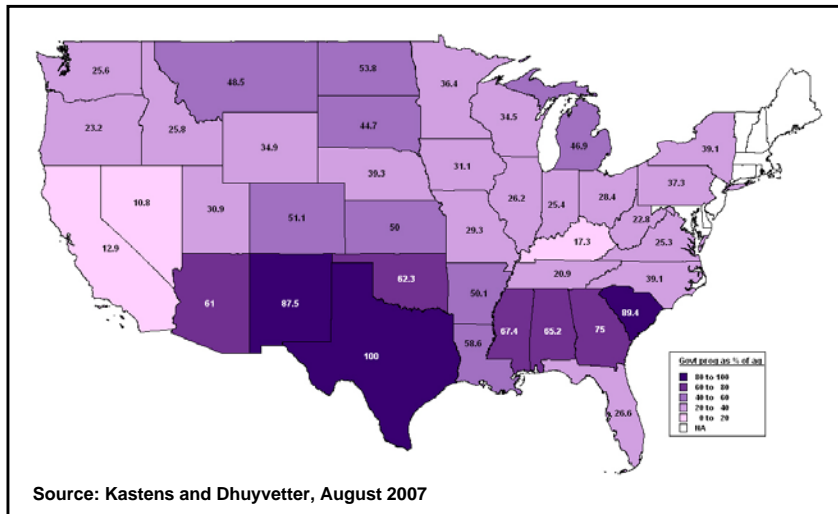
Government Program Payments

- 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

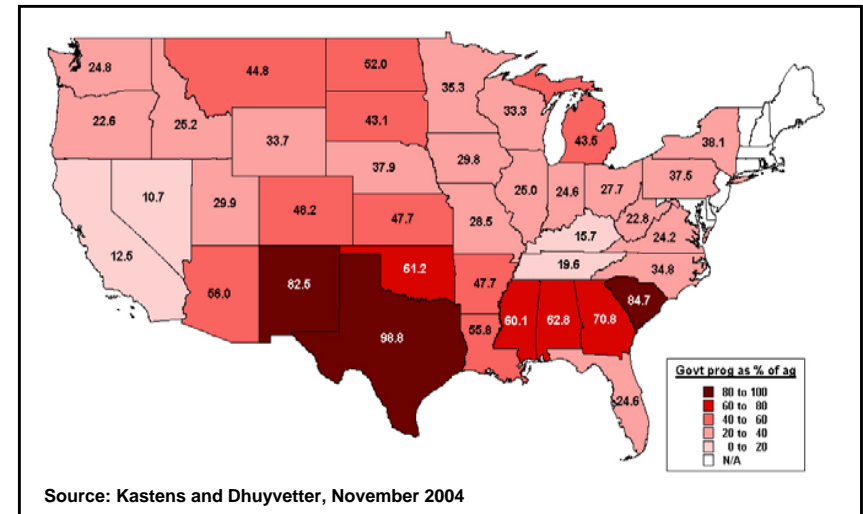
Percentage of Agricultural Value Attributed to Government Program Payments



government payments as a percent of agricultural rent

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



previous year's map for comparison

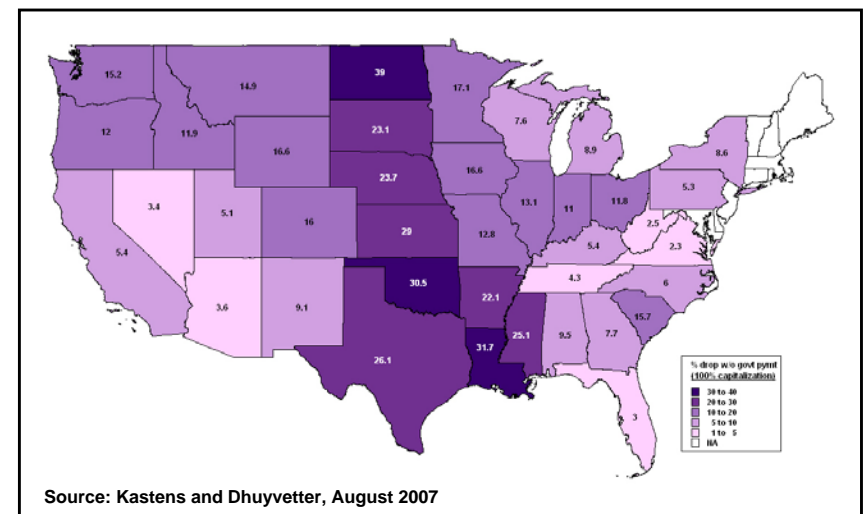
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Government Program Payments

- 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

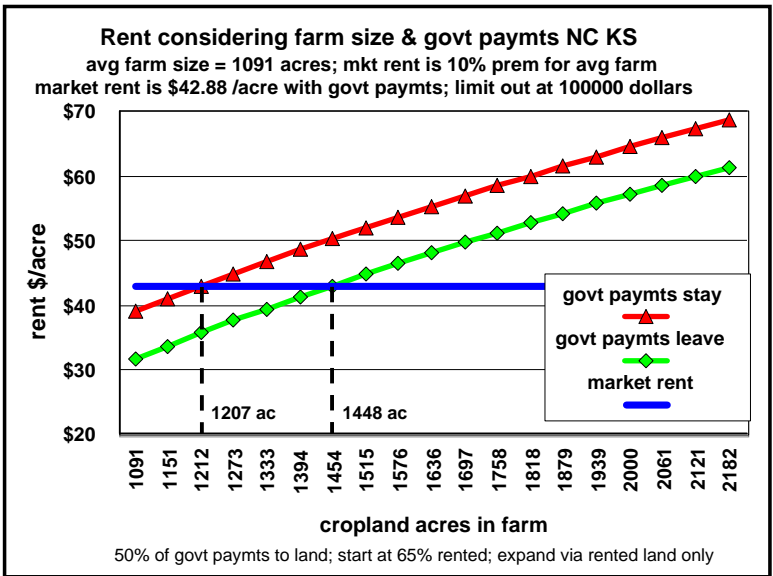
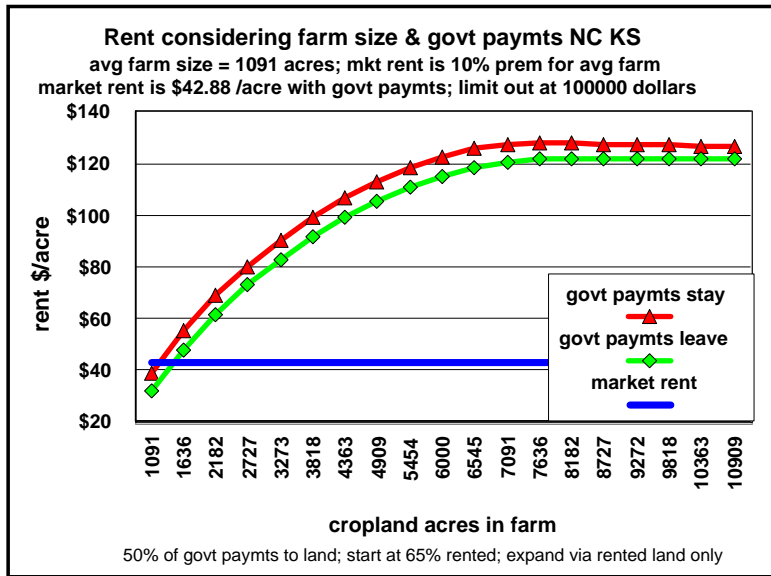
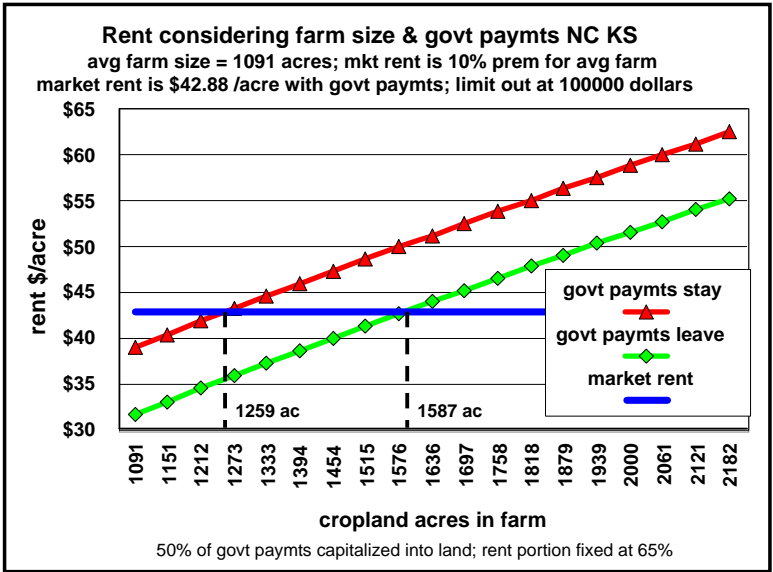
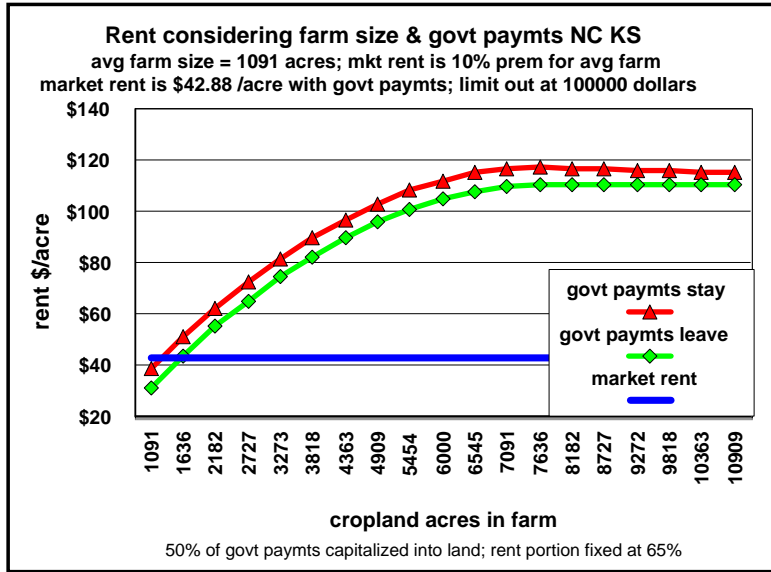
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Estimated Reduction in Land Value with the Elimination of Government Programs (100% cap)



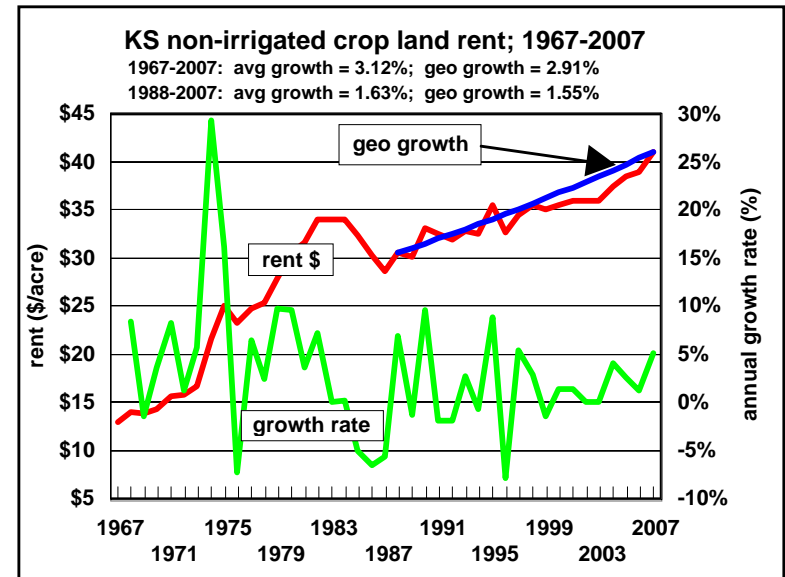
reduction is proportional to capitalization rate (e.g., KS=14.5% with 50% cap)

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

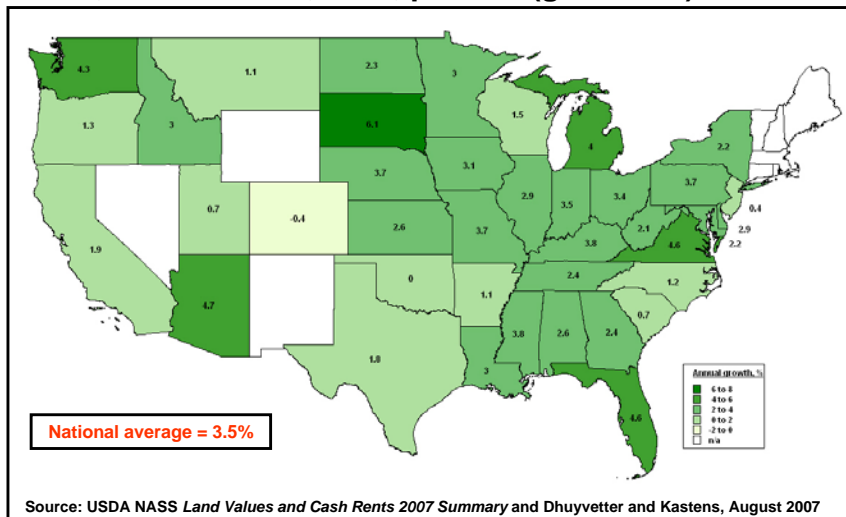
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Suggested expected ag growth rate = 2.75% (but if ethanol continues . . . ?)

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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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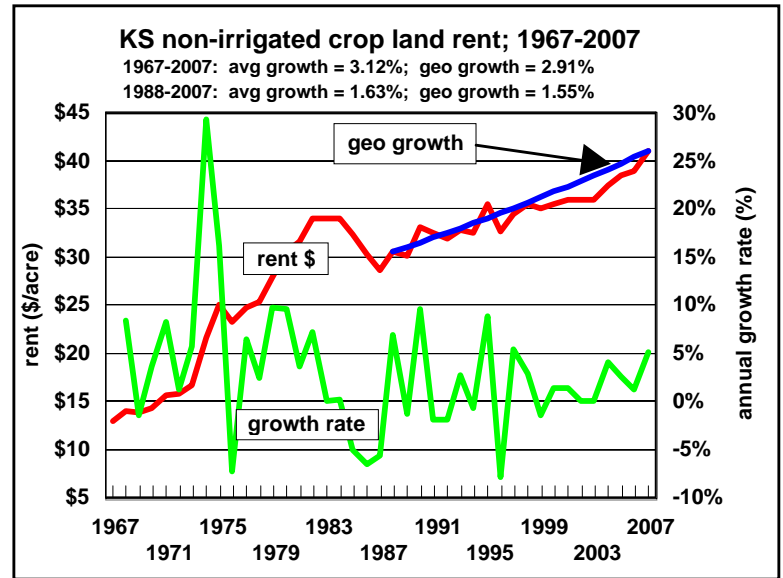
Higher Land Rents? (Part 2 of 2)

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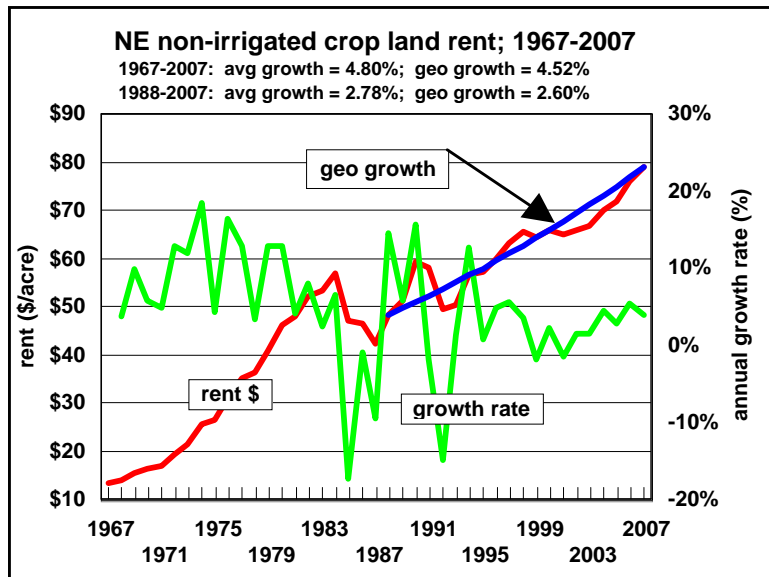
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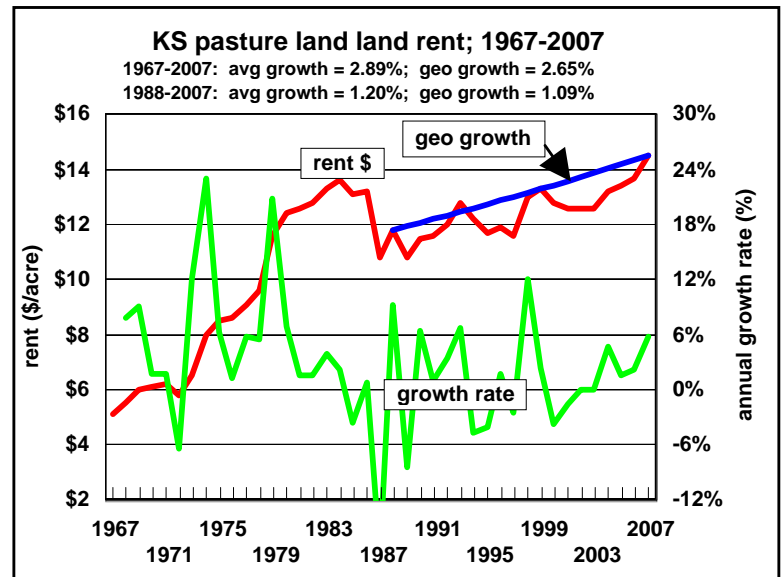
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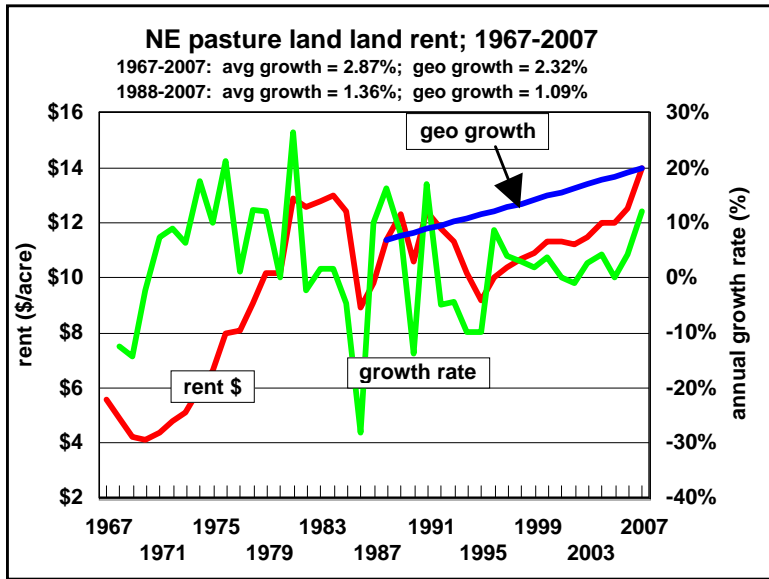
Suggested expected ag growth rate = 2.75% (but if ethanol continues . . . ?)



Suggested expected ag growth rate = 4.30% (but if ethanol continues . . . ?)



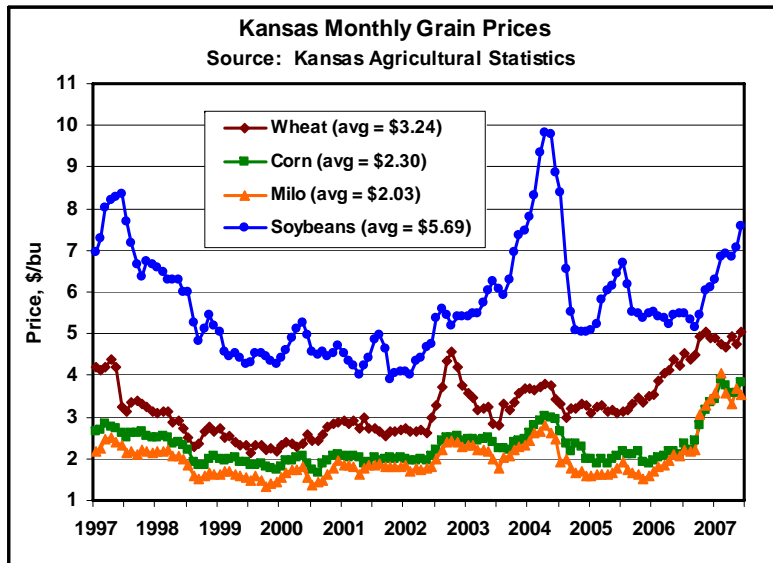
Suggested expected ag growth rate = 2.50% (but if ethanol continues . . . ?)



Suggested expected ag growth rate = 2.50% (but if ethanol continues . . . ?)

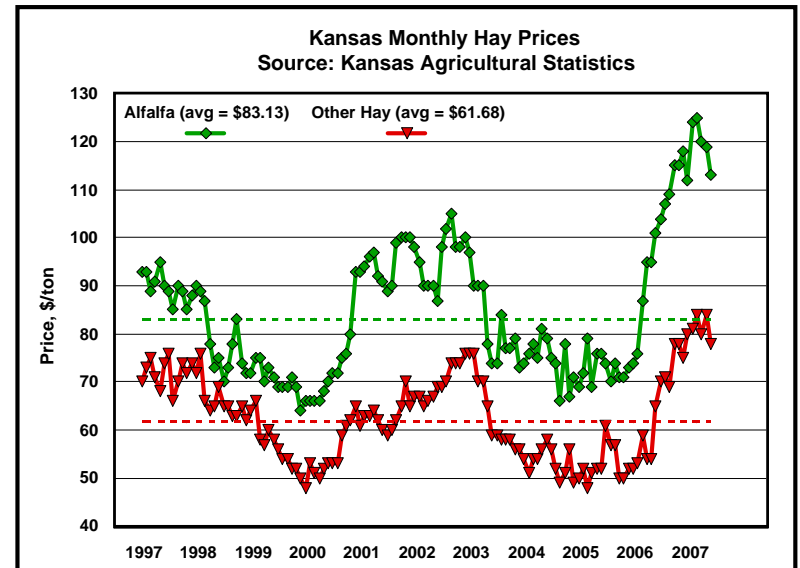
Impact of high commodity prices on rental rates

Crop prices are strong by historical standards...



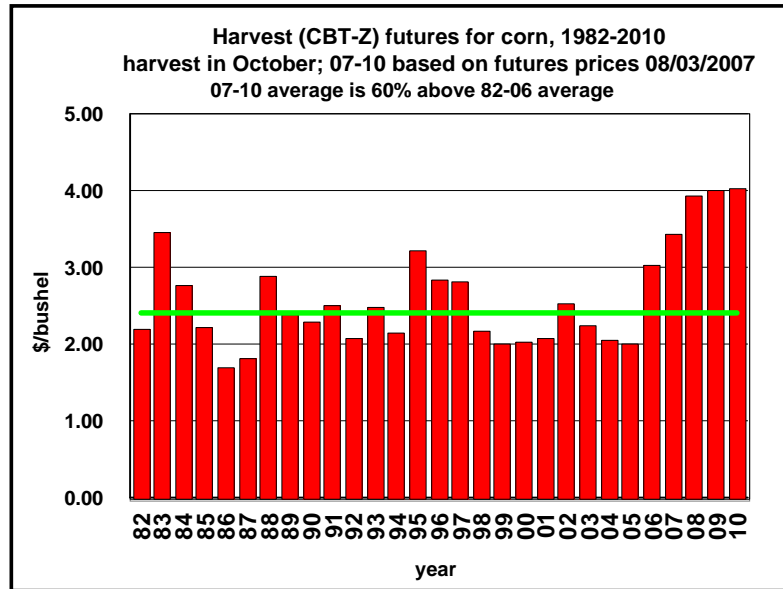
It's not just corn!

Strength in crop markets impacts hay prices...



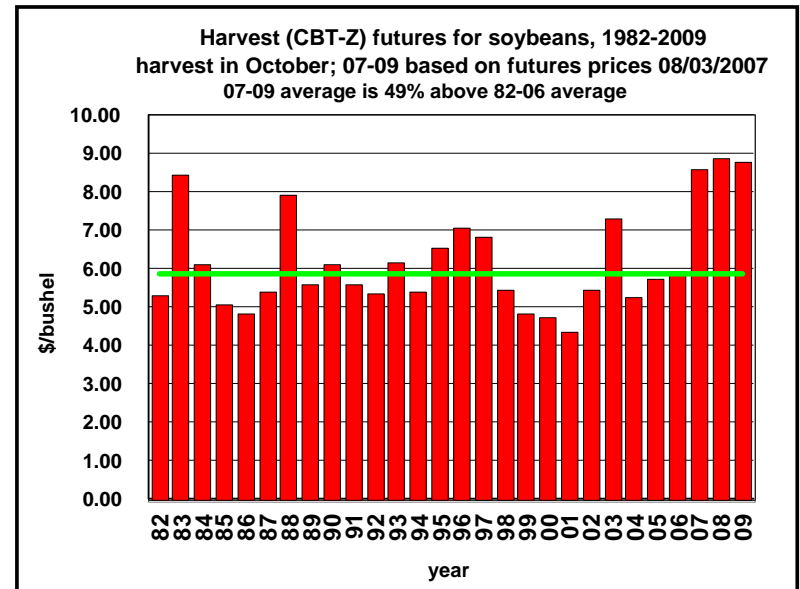
It's not just grains!

How long will strong prices stick around?



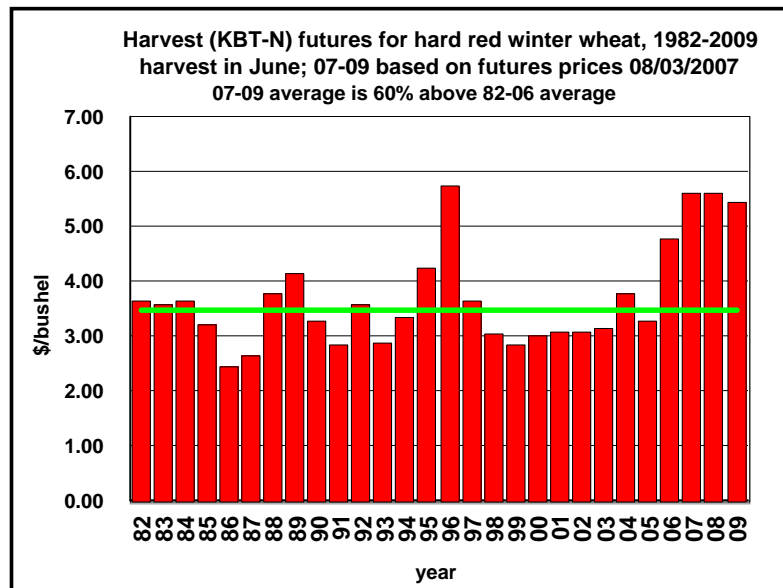
59

How long will strong prices stick around?



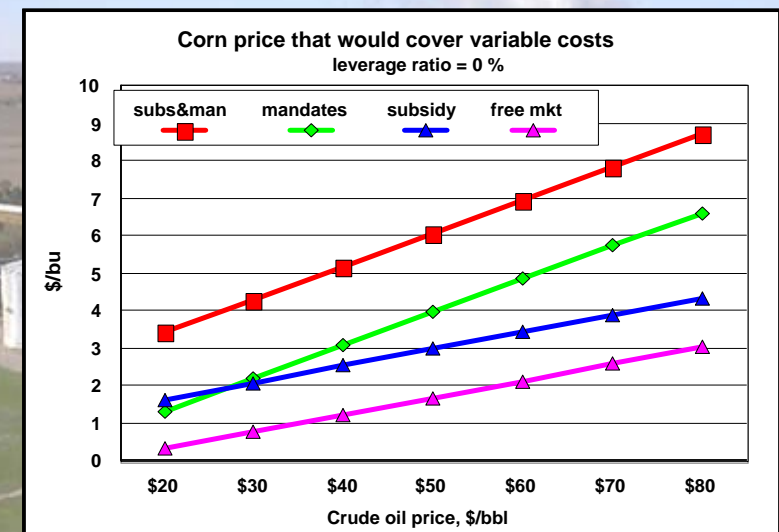
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How long will strong prices stick around?



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Ethanol Profitability...



If mothballing costs are high, effective breakeven prices are higher

Impact of high costs and prices on leases ...

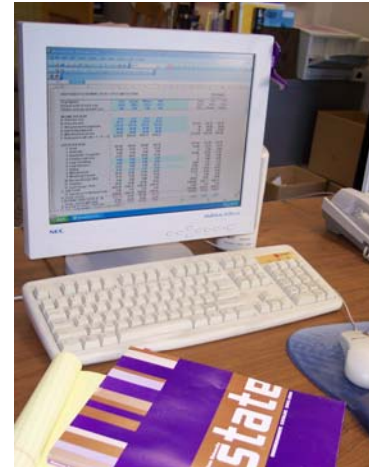
KSU-Lease.xls is a tool that can be used to analyze the impact current costs and prices have on equitable crop share leases as well as their cash-rent equivalents

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

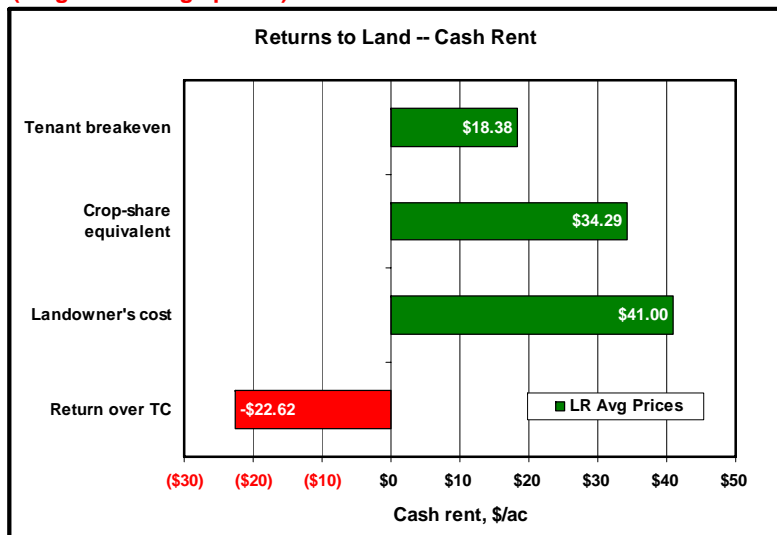
65

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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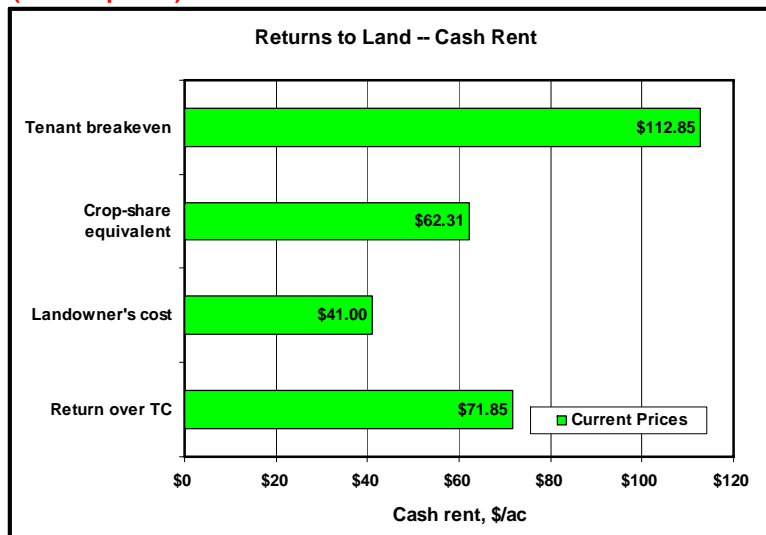
Estimated cash rents for Central Kansas (long run average prices)



Based on KSU Farm Management Guides (October 2006) and KSU-Lease.xls (available at www.agmanager.info)

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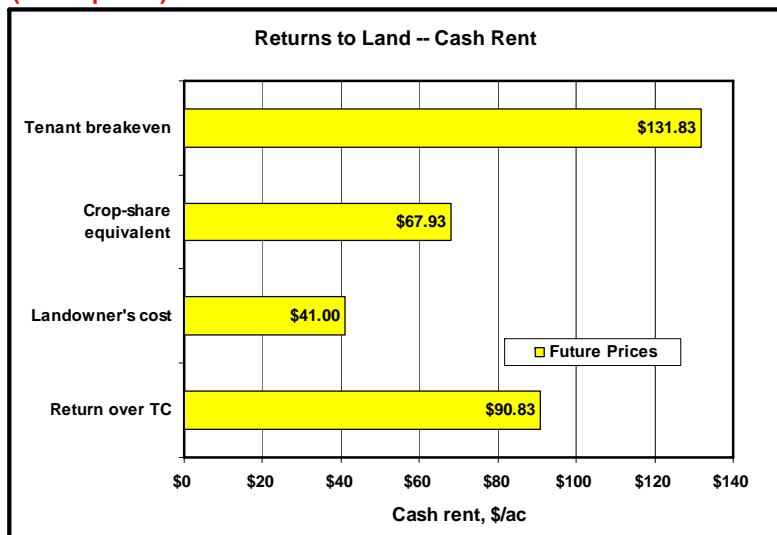
Estimated cash rents for Central Kansas (current prices)



Based on KSU Farm Management Guides (October 2006) and KSU-Lease.xls (available at www.agmanager.info)

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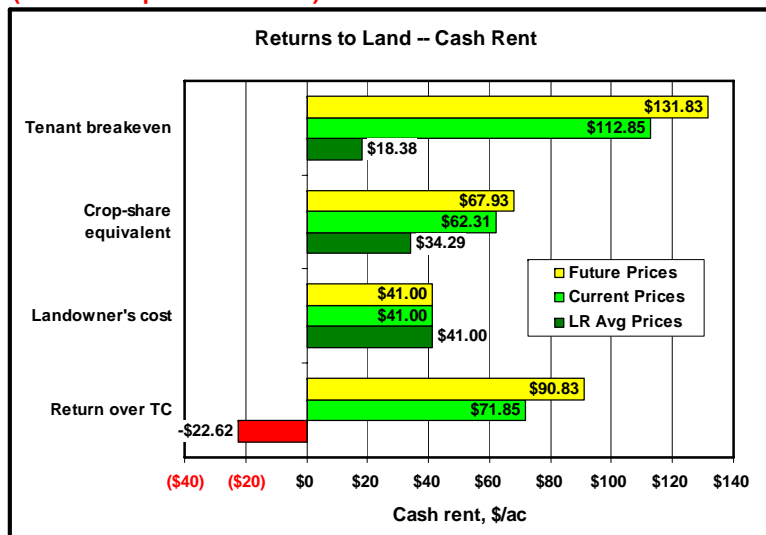
Estimated cash rents for Central Kansas (future prices)



Based on KSU Farm Management Guides (October 2006) and KSU-Lease.xls (available at www.agmanager.info)

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Estimated cash rents for Central Kansas (alternative price scenarios)



Based on KSU Farm Management Guides (October 2006) and KSU-Lease.xls (available at www.agmanager.info)

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KAS surveyed market rates (released this week) ...

AGRICULTURAL LAND VALUES

KANSAS AGRICULTURAL STATISTICS SERVICE
 Part of the Kansas Department of Agriculture
 U.S. Department of Agriculture
 P.O. Box 1034
 Topeka, Kansas 66607-0354
 (785) 232-2220

Released August 17, 2005

Kansas Farmland Values and Rents, 2005

Kansas' average value of all farmland and buildings for 2005 is estimated to be \$200 per acre. This compares with \$171 in 2004 and \$185 in 2003. Kansas' average value of all farmland and buildings increased by 11.9 percent from 2004 to 2005. The increase of \$29 per acre is the largest since a 17.2 percent increase from 1979 to 1980, when the average value increased by \$48 per acre. Irrigated cropland values rose 8 percent, non-irrigated was up 14 percent, and pasture land values increased 16 percent.

Rental rates for both types of cropland increased \$1.00 per acre, while pasture rents rose 5.50 per acre.

| Year | Cropland Value Per Acre | | | Rent Per Acre | | Pasture and Range Land Value Per Acre | | All Farmland and Buildings ^{1/} Total Value | |
|------|-------------------------|---------------|--------------|---------------|---------------|---------------------------------------|-------|--|-------------|
| | Irrigated | Non-irrigated | All Cropland | Irrigated | Non-irrigated | Value | Rent | Value | Total Value |
| 1984 | 873 | 546 | 597 | 60.20 | 32.60 | 541 | 12.00 | 600 | 21,543 |
| 1985 | 920 | 595 | 623 | 21 | 35.00 | 343 | 11.70 | 635 | 25,466 |
| 1986 | 948 | 607 | 638 | 46.30 | 32.70 | 381 | 11.00 | 653 | 26,268 |
| 1987 | 990 | 615 | 643 | 65.00 | 34.50 | 365 | 11.60 | 665 | 28,838 |
| 1988 | 1,010 | 620 | 655 | 67.00 | 35.00 | 387 | 13.00 | 677 | 27,408 |
| 1989 | 1,020 | 625 | 660 | 66.00 | 35.00 | 370 | 13.30 | 690 | 28,900 |
| 2000 | 1,040 | 630 | 666 | 67.00 | 35.00 | 380 | 12.80 | 625 | 29,888 |
| 2001 | 1,060 | 635 | 673 | 72.00 | 36.00 | 390 | 12.60 | 645 | 30,900 |
| 2002 | 1,080 | 640 | 679 | 70.00 | 36.00 | 400 | 12.80 | 665 | 31,455 |
| 2003 | 1,080 | 640 | 684 | 68.00 | 36.00 | 410 | 12.80 | 685 | 32,352 |
| 2004 | 1,110 | 665 | 705 | 72.00 | 37.00 | 430 | 13.00 | 715 | 33,748 |
| 2005 | 1,200 | 760 | 800 | 73.00 | 38.00 | 500 | 13.40 | 800 | 37,760 |

^{1/} Values per acre are for land and buildings. Rental rates are for land only. ^{2/} Insufficient data to publish.

The Land Values Survey—Background

The Agricultural Land Values Survey was conducted during May/June 2005. Survey respondents were asked to provide information on the value of the land they operate and the rental rates for any land they need. Additional land value and rent data were collected in the June Agricultural Survey.

The average values in this report encompass a wide range of soil types and pastures. These data are more appropriate for studying overall trends and should not be used to establish rental rates or market values.

| | 2006 | 2007 | % chg |
|---------------|-------|-------|-------|
| Non-irrigated | 39.00 | 41.00 | 5.1 |
| Irrigated | 74.00 | 82.00 | 10.8 |
| Pasture | 13.70 | 14.50 | 5.8 |

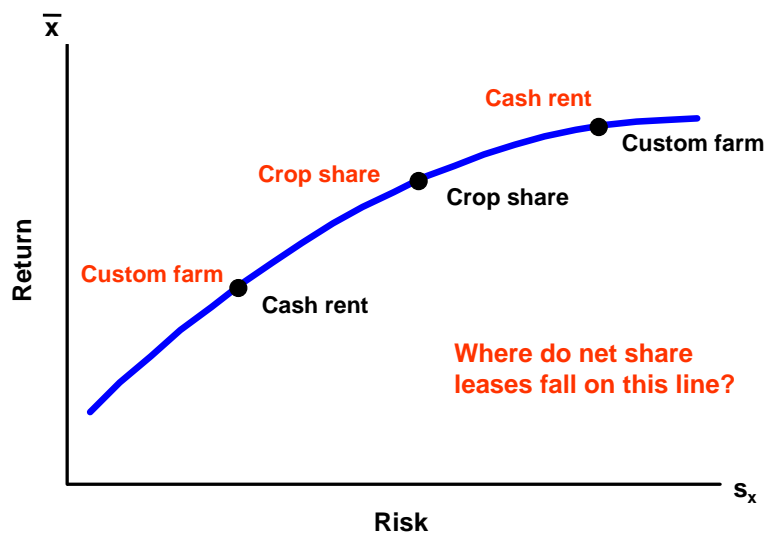
In recent years, the majority of leasing questions received pertain to:

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

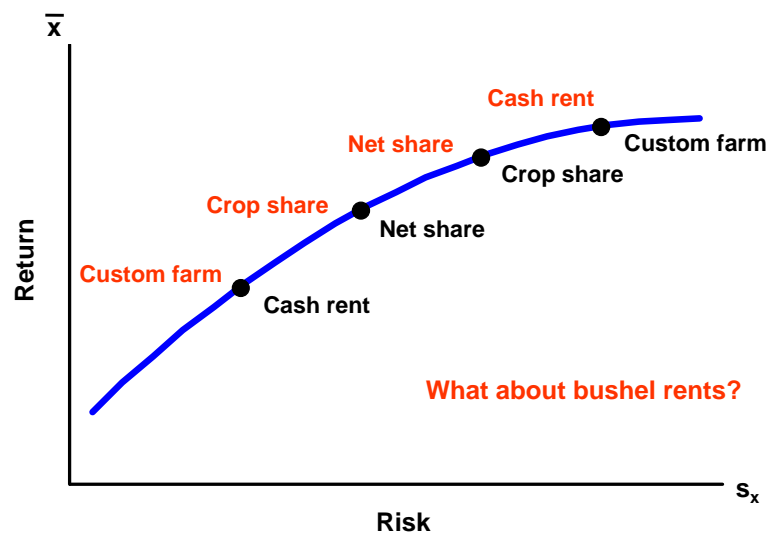
... while current “hot topic” is slightly different, method of addressing questions has not changed.

KAS report

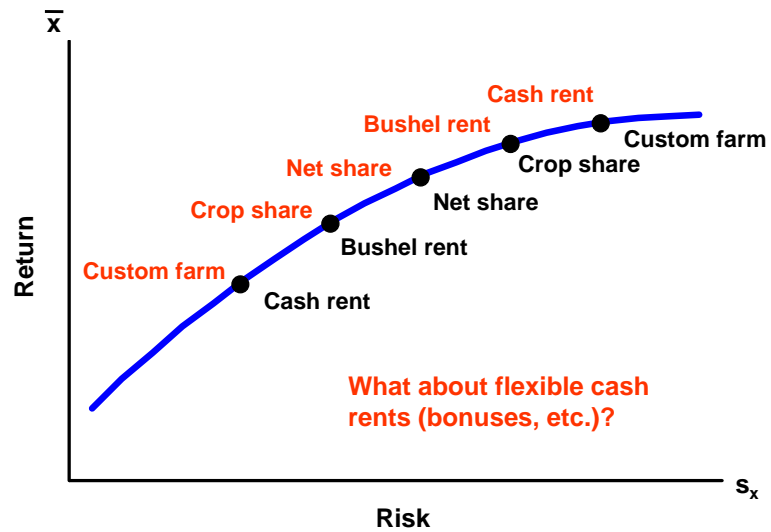
Landowner/producer risk-return tradeoff



Landowner/producer risk-return tradeoff



Landowner/producer risk-return tradeoff



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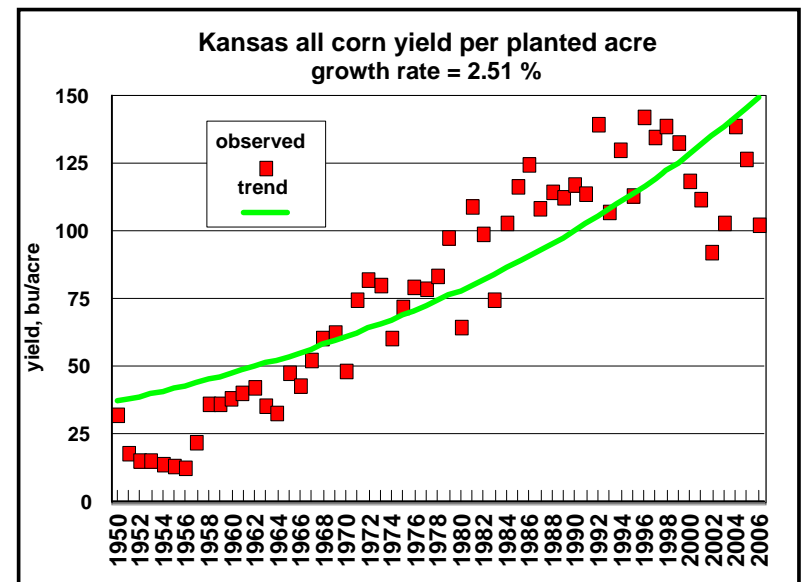
Looking at the ethanol impact on rents and land values in a slightly different fashion

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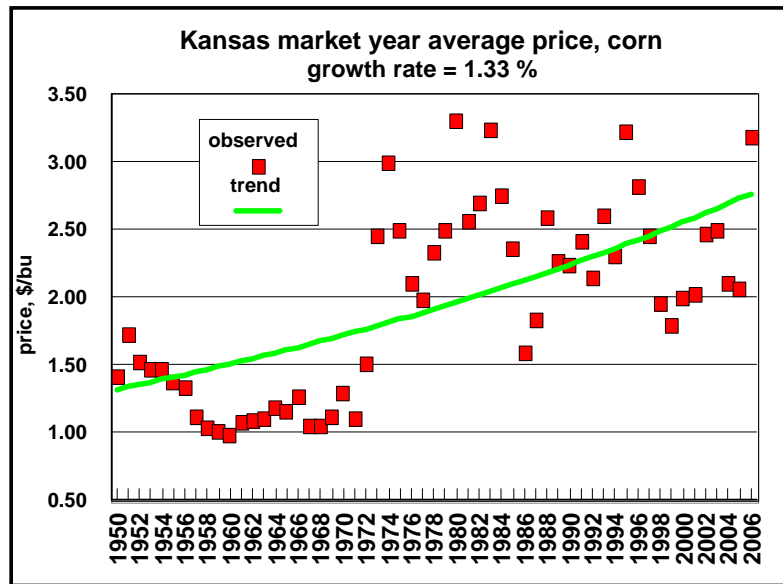
Relationship between yields and crop prices and rents and land values (1950-2006)

| | Rent (% change) | Value (% change) |
|-------------------|-----------------|------------------|
| Yield (1% change) | 0.70 | 0.77 |
| Price (1% change) | 0.71 | 0.99 |

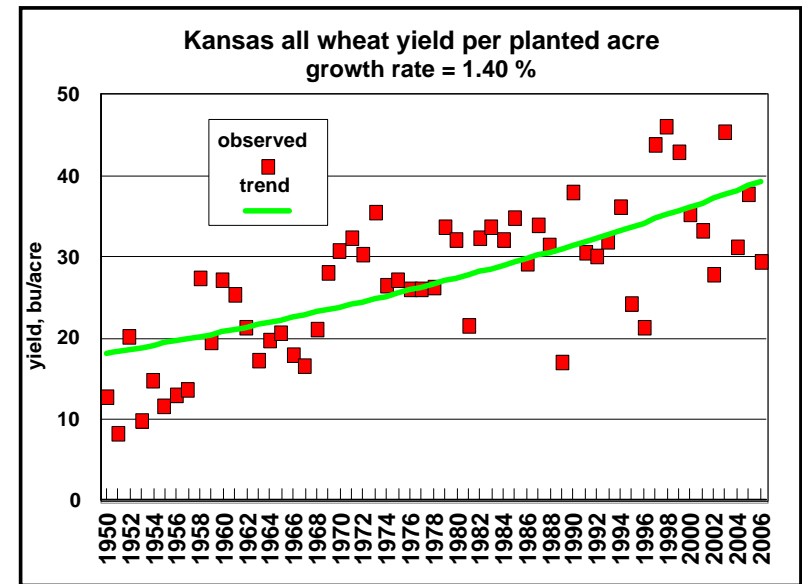
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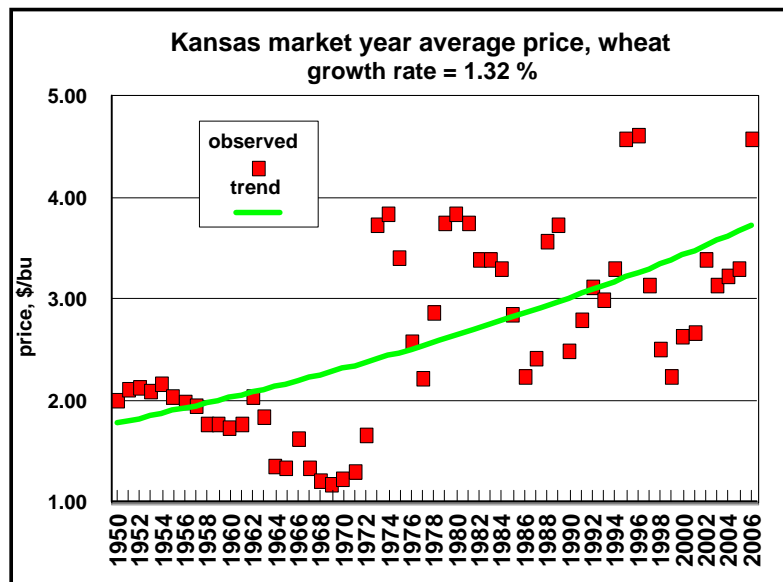
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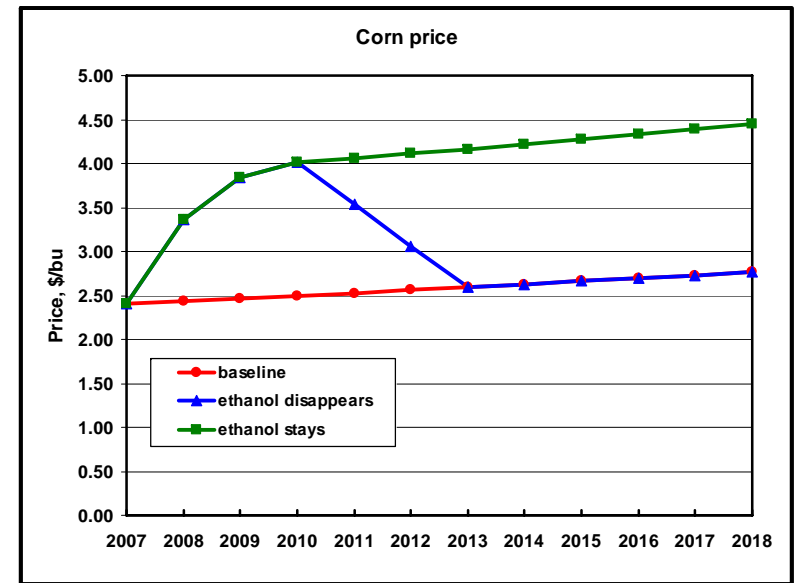
Baseline (no ethanol) assumptions...

- \$980/ac land growing at 4% per year
- \$41/ac rent growing at 2.75% per year
- Corn price (\$2.40/bu) growing at 1.3% per year
- Corn yield growing at 2.5% per year
- Real estate taxes at 0.4% of market value
- 50% leverage
- 7% interest
- 30-year land ownership horizon

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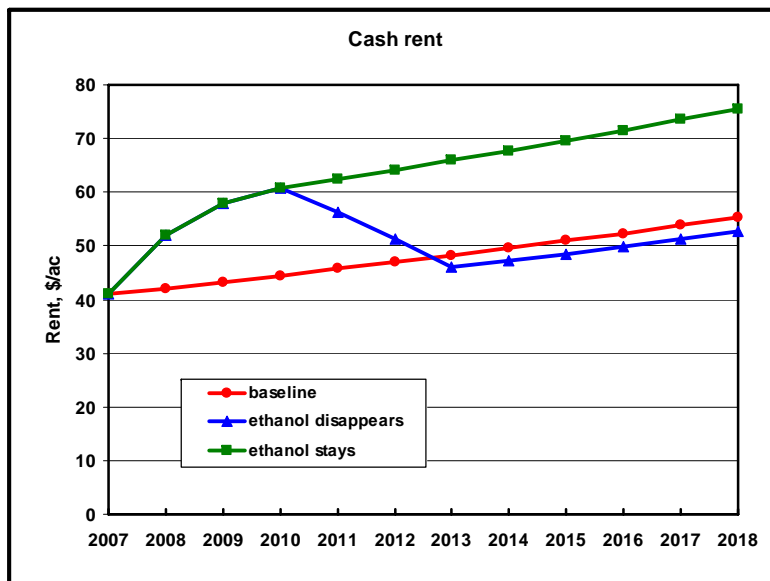
Alternative scenarios considered ...

- Scenario 1 – Baseline
- Scenario 2 – Ethanol comes and disappears
- Scenario 3 – Ethanol comes and stays

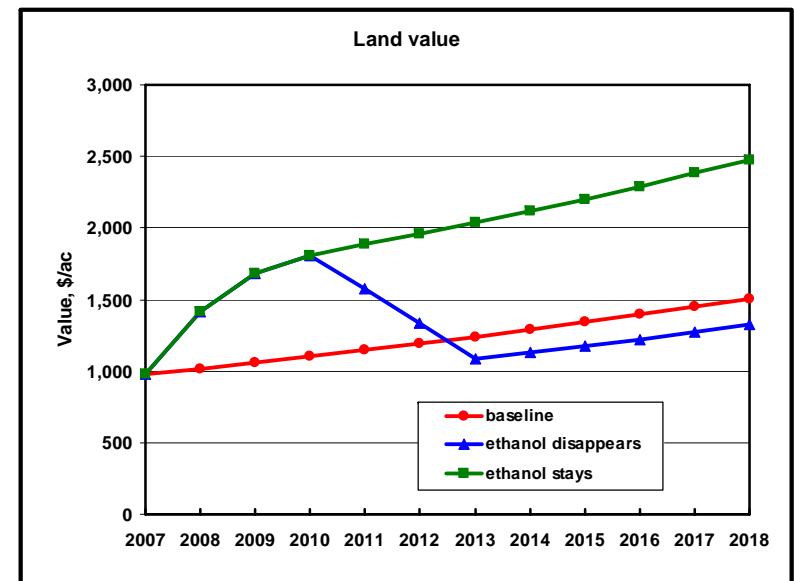


85

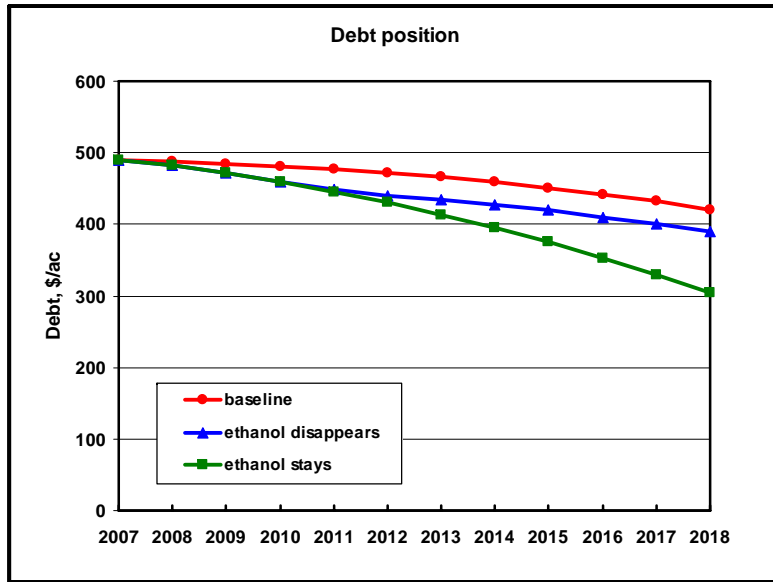
86



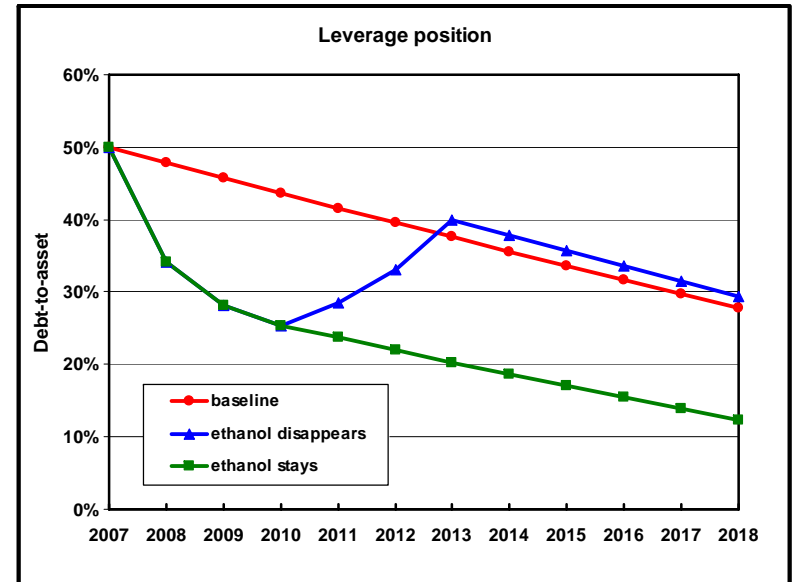
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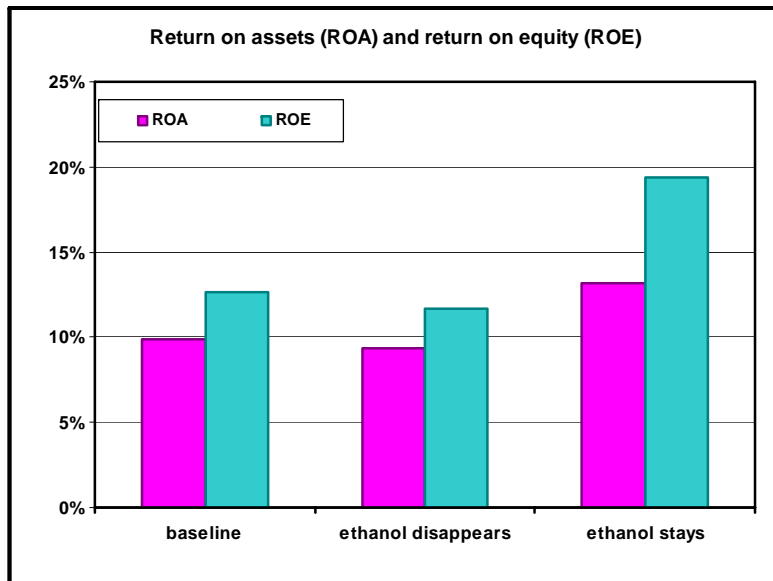
88



89

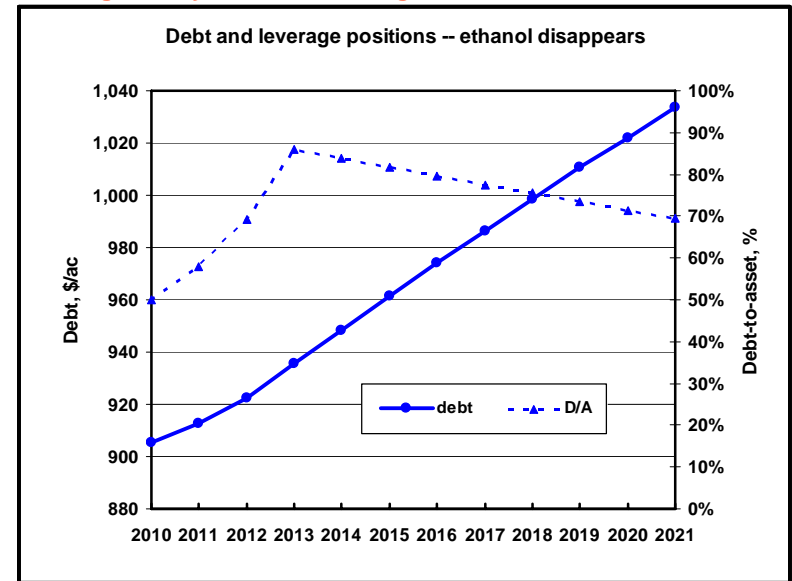


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91

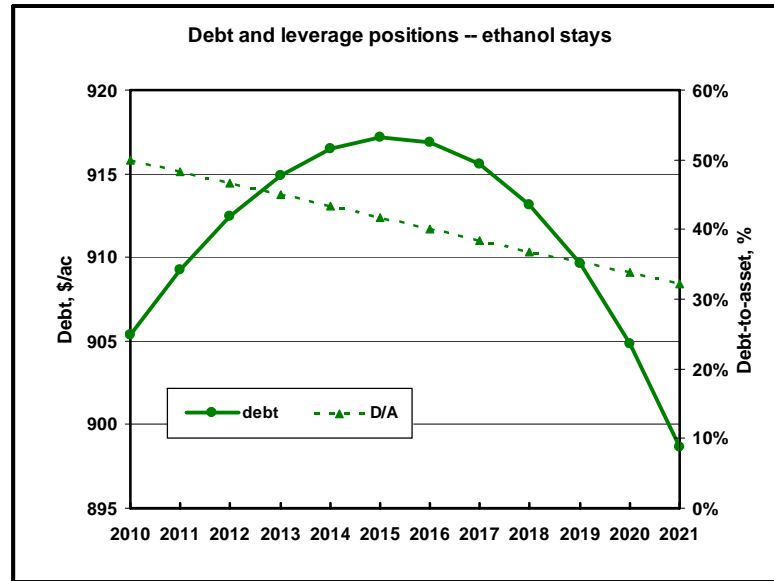
Coming three years late to the game...



ROA = 5.42% and ROE = 3.84% (compared to 9.35% and 11.70%)

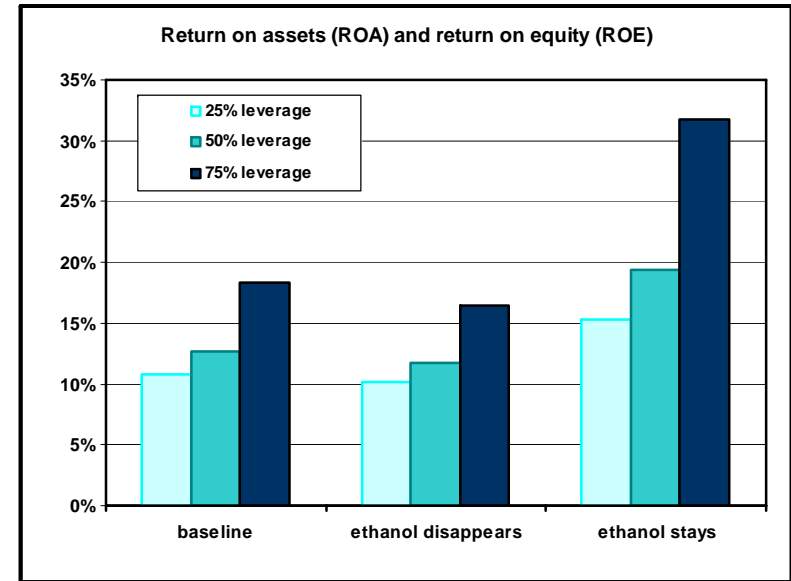
92

Coming three years late to the game...



ROA = 9.15% and ROE = 11.29% (compared to 13.19% and 19.39%)

93



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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
- 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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Questions?