

Issues Impacting Land Values

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Factors/issues impacting land values

(alphabetical order)

- Farm profitability
- Farm size
- Government programs
- Input costs (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 agriculture)
- Urban sprawl
- Weather (i.e., drought)

Land is Unique

- **Most fixed of farming assets**
 - Residual claimant
 - Capitalizes government subsidies
- **Often is taxed**
 - Favorably or unfavorably
- **Has non-ag benefits that may be pecuniary**
- **Has non-pecuniary benefits**
- **A long term investment involving long term expectations – history is a guide**

3

Annual Growth Rate

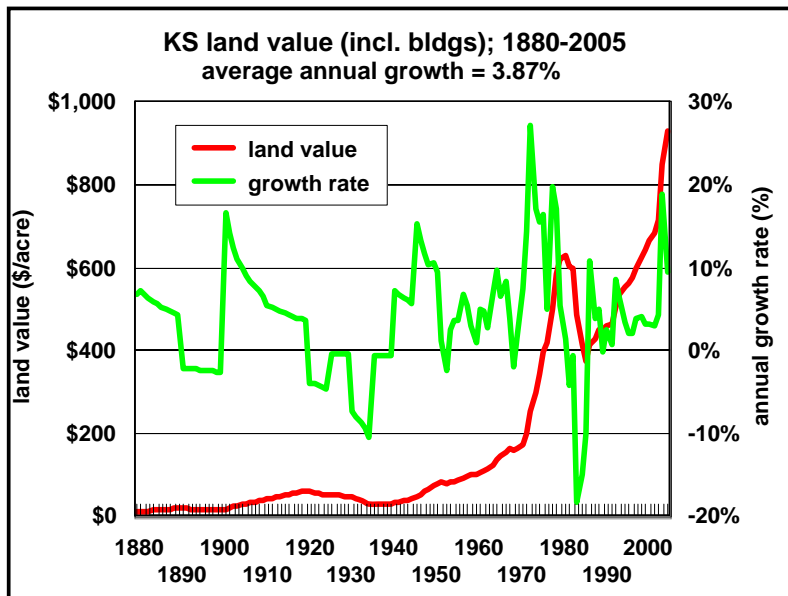
$$V_m = V_{m-1} * (1 + g_m)$$

$$\begin{aligned} V_{2006} &= V_{2005} * (1 + g_{2006}) \\ &= \$927 * (1.03) = \$954.81 \end{aligned}$$

$$g_m = \frac{V_m}{V_{m-1}} - 1$$

$$\begin{aligned} g_{2006} &= \frac{V_{2006}}{V_{2005}} - 1 \\ &= \frac{\$954.81}{\$927.00} - 1 = 0.03 = 3\% \end{aligned}$$

4



5

Historical Growth

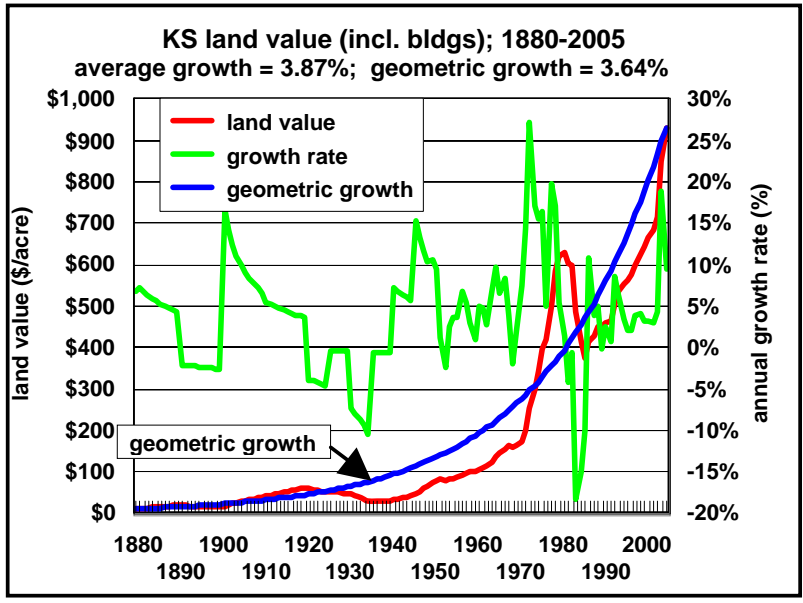
$$\text{average growth} = \frac{1}{125} * (g_{1880} + g_{1881} + \dots + g_{2005})$$

$$V_n = V_m * (1 + g)^{n-m}$$

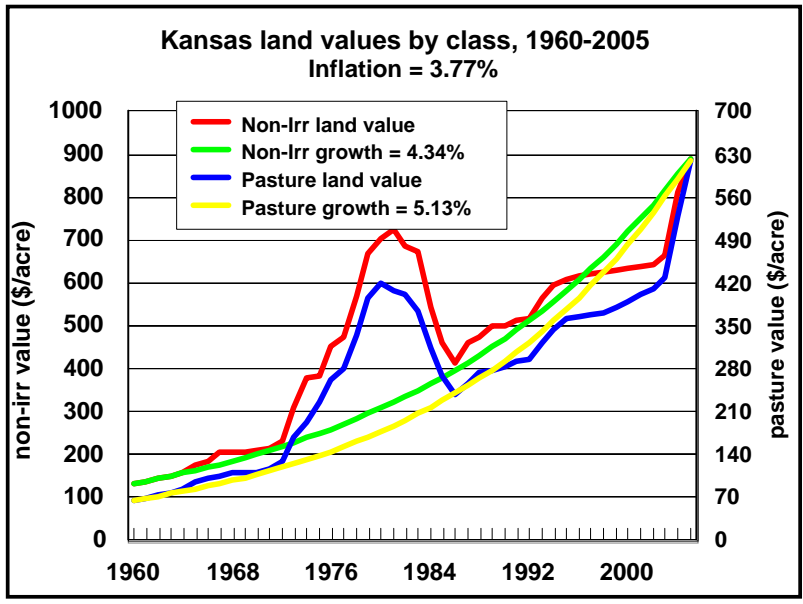
$$\text{geometric mean} = g = \left(\frac{V_n}{V_m} \right)^{\left(\frac{1}{n-m} \right)} - 1$$

$$g = \left(\frac{V_{2005}}{V_{1879}} \right)^{\left(\frac{1}{2005-1879} \right)} - 1 = \left(\frac{927}{\$10.30} \right)^{\frac{1}{126}} - 1 = 0.0364$$

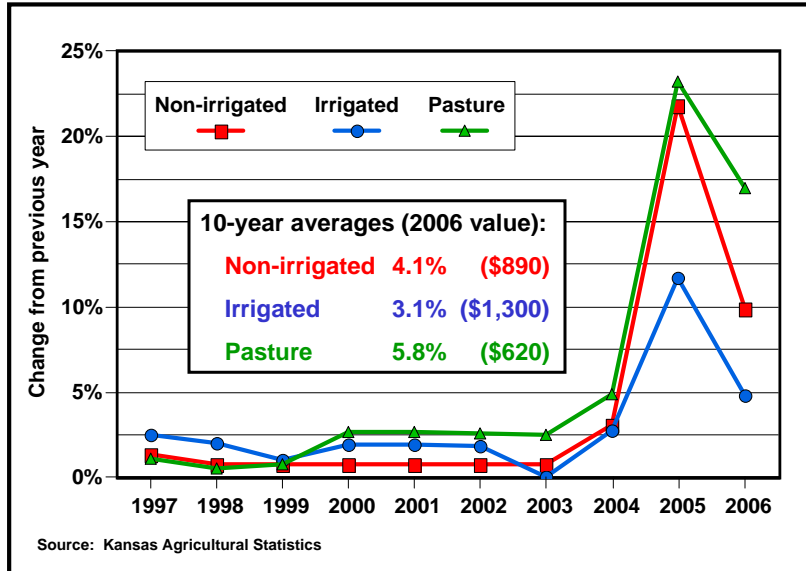
6



1879 starting land value for Kansas was \$10.30

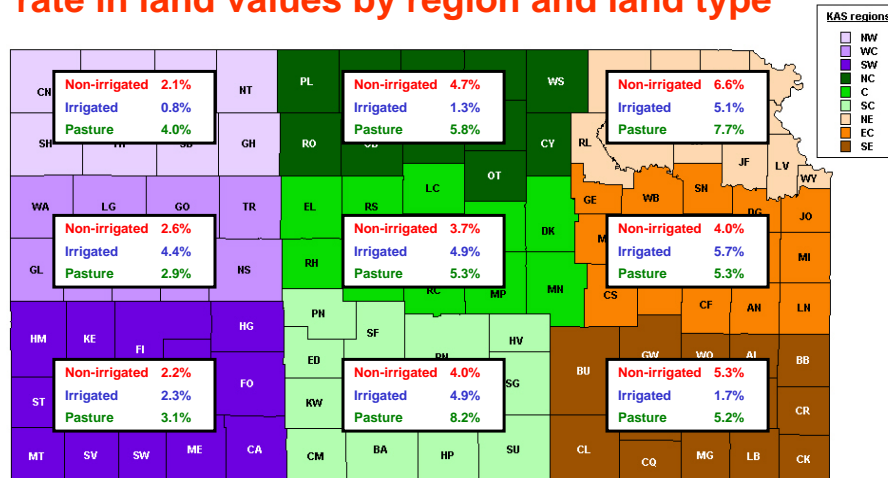


Kansas year-to-year land value changes ... (i.e., annual growth rates)



13

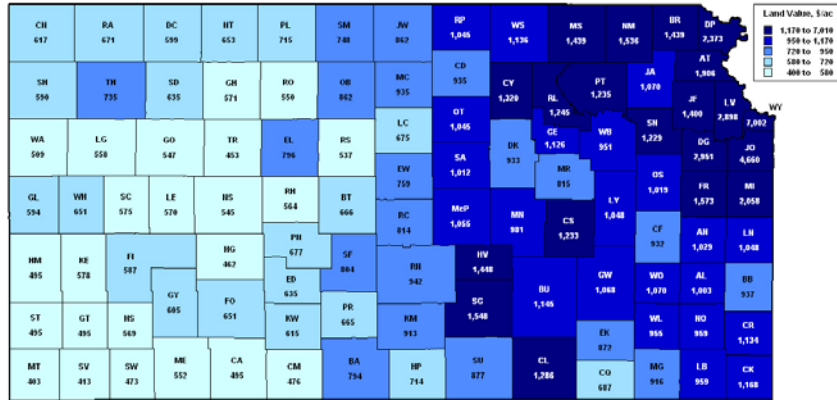
10-year (1997-2006) average annual growth rate in land values by region and land type



Both a regional and land type effect on growth rates

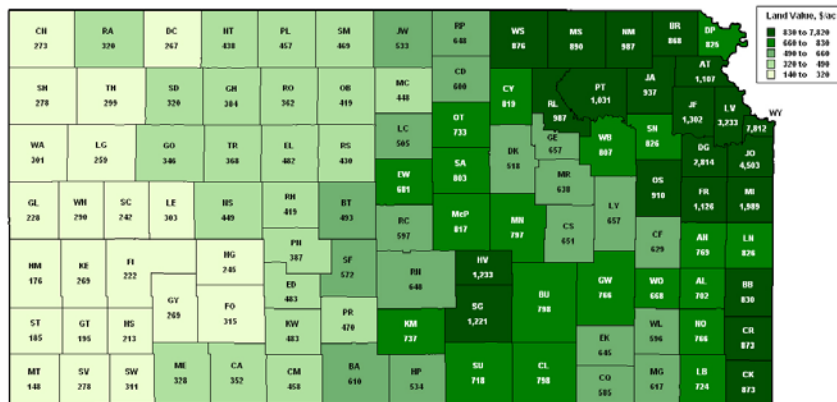
15

Kansas county-level non-irrigated crop land values ...



Based on KAS reported values for January 1, 2006

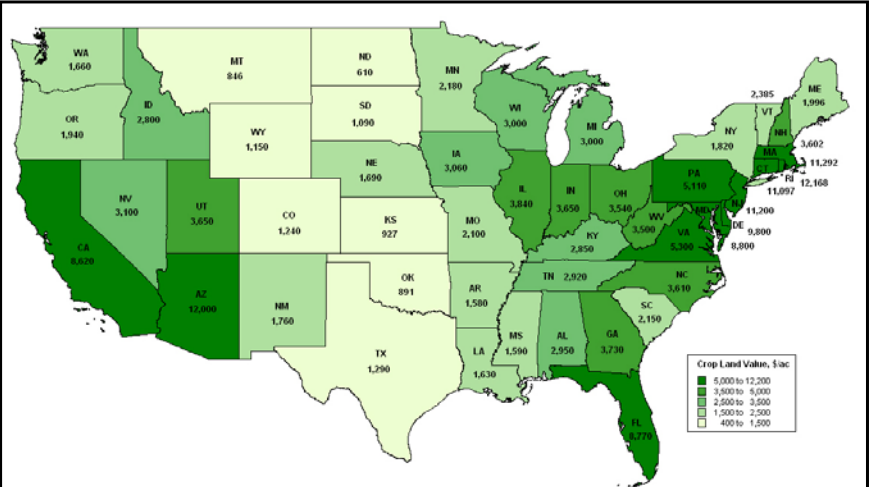
Kansas county-level pasture values ...



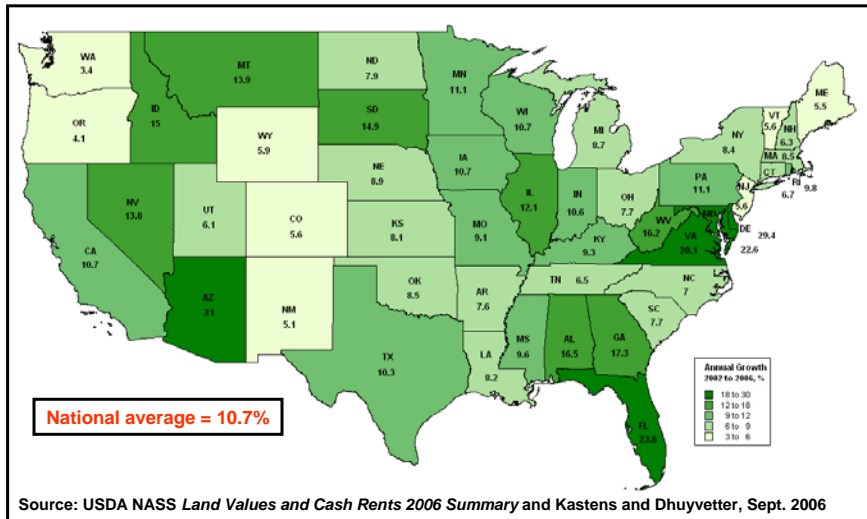
Based on KAS reported values for January 1, 2006

How do trends in Kansas land values compare with the rest of the country?

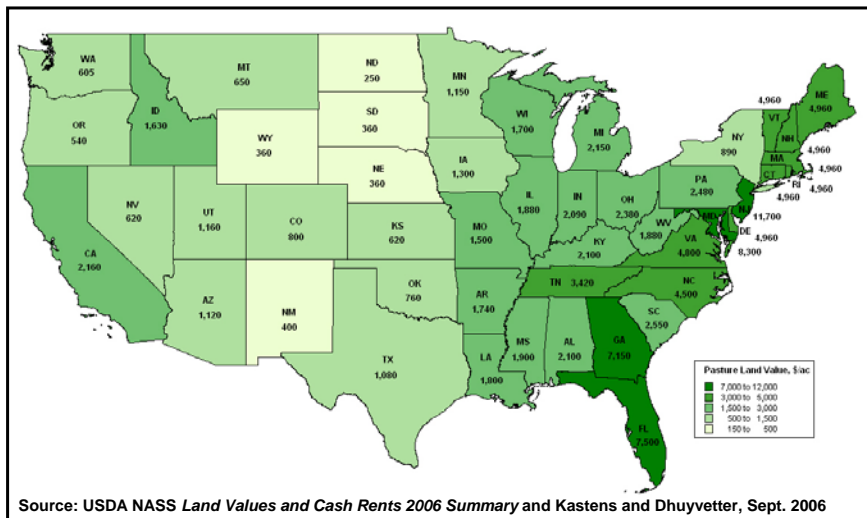
**Crop Land Average Value per Acre by State
January 1, 2006**



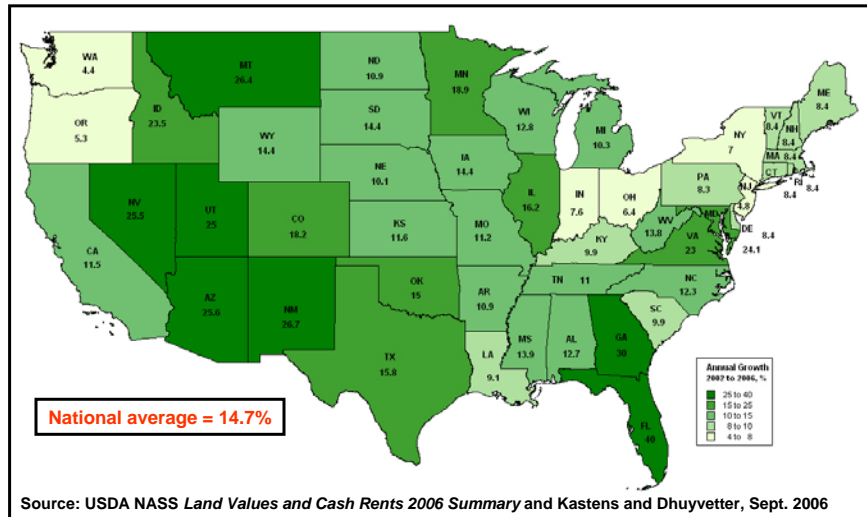
Crop Land Average Annual Growth Rate by State 2002 to 2006, percent



Pasture Land Average Value per Acre by State January 1, 2006



Pasture Land Average Annual Growth Rate by State 2002 to 2006, percent

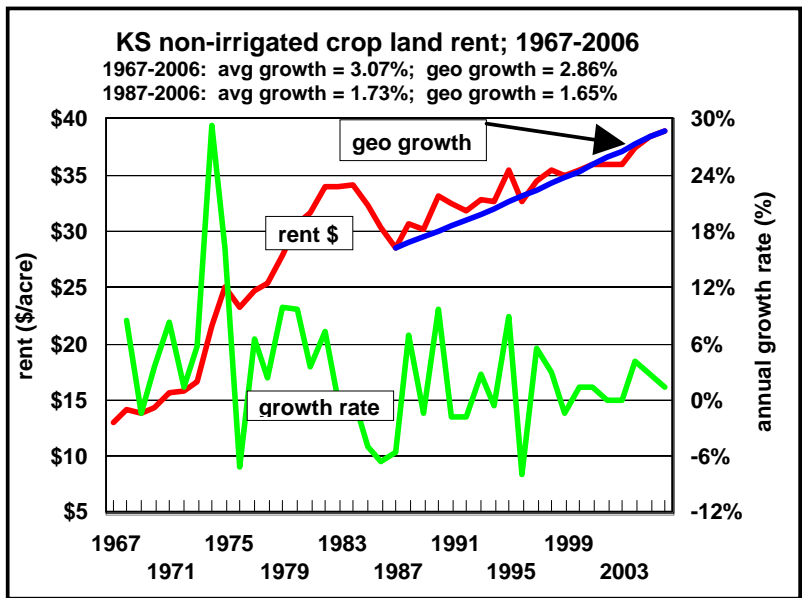


24

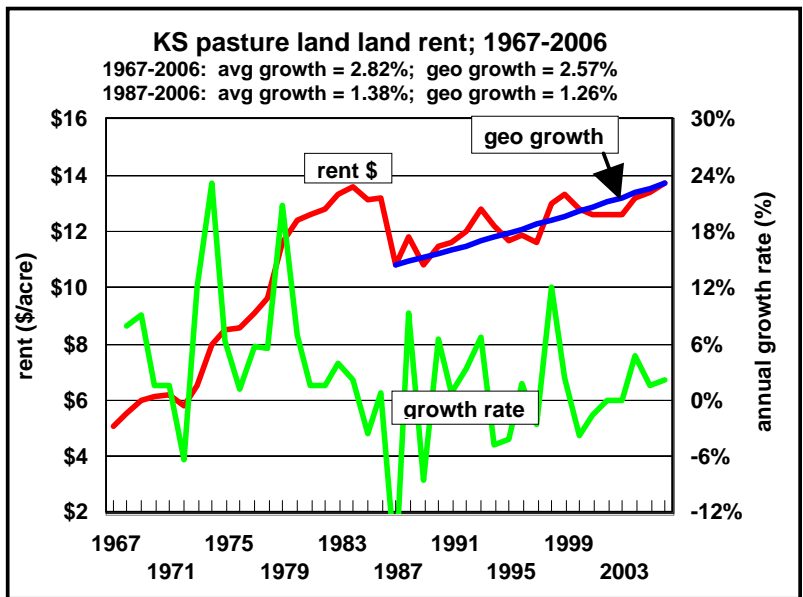
Returns to land

- 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)

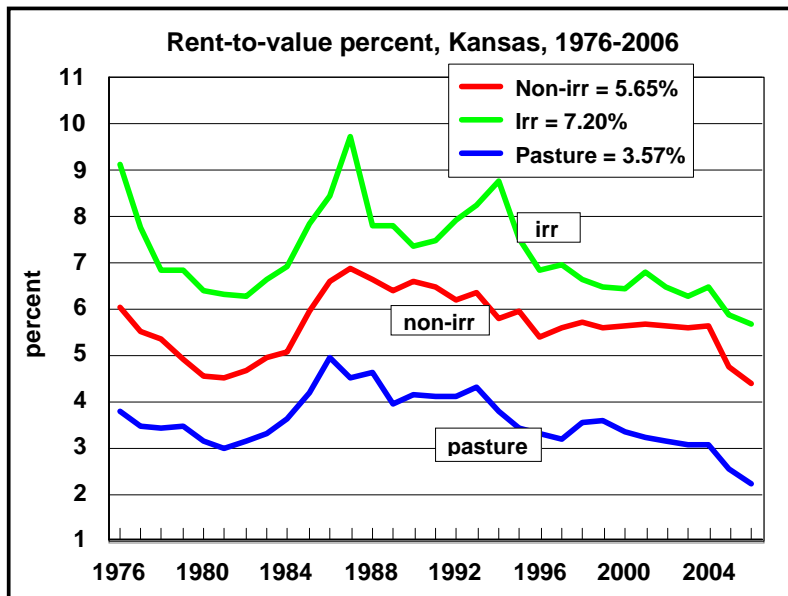
25



Suggested expected ag growth rate = 2.40%



Suggested expected ag growth rate = 2.10%



30

Returns to Land

- **Land**
 - Cash returns: rents or rent-equivalents on owned land
 - Non-cash returns: capital gains (growth)

- **Stock market**
 - Cash returns: dividends
 - Non-cash returns: capital gains (growth)

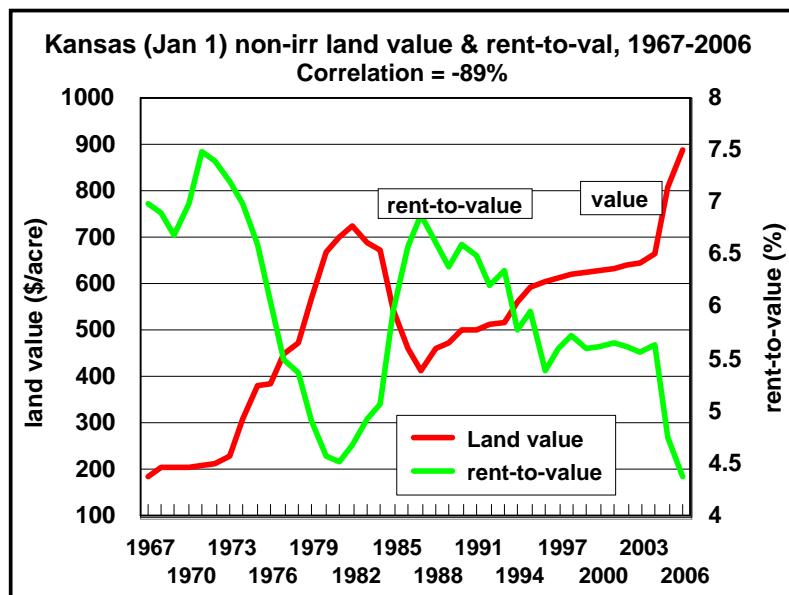
- **Typically, neither land nor stock investments “cash flow”**

32

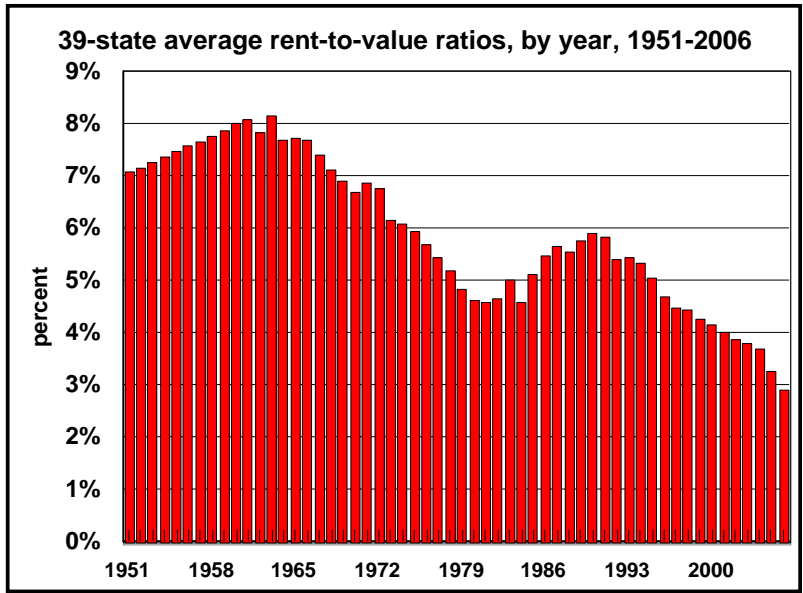
Non-ag Considerations

- There could be a non-ag rent:
 - e.g., leasing your land to hunters
- There could be a non-ag land value growth:
 - e.g., expectations of future development
- *KSU-Landbuy.xls* allows for both
- Some more historical information

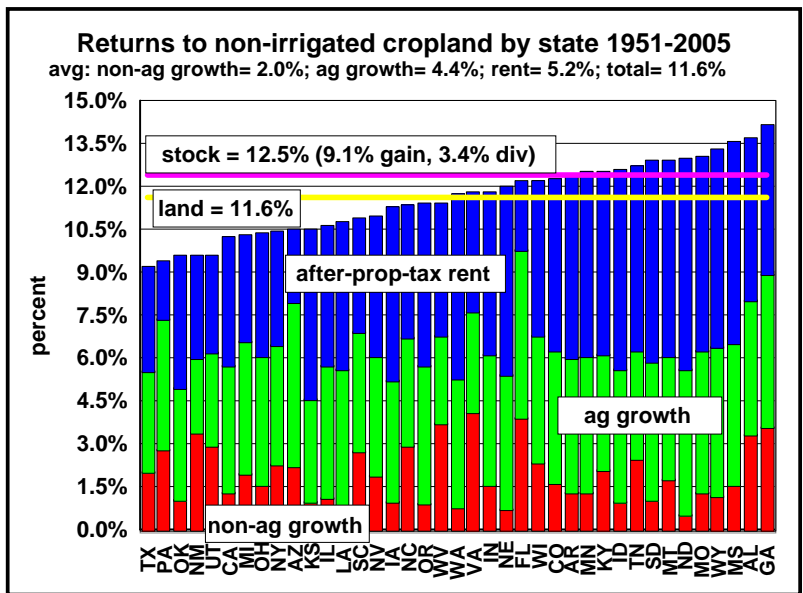
37



38



39



39 states ranked by total returns to land

44

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

45

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

- Jan. 1, 2006 land value = \$890 /acre
- Cash rent for 2006 = \$39.00 /acre
- 2006 property tax = \$3.11 /acre
- 2006 after-property-tax rent = \$35.89 /acre
- $\$35.89 / 0.0664 = \$540.51 / \text{acre}$

- AMVP (non-irr) = $\$540.51 / \890
= 0.6073 = 60.73%

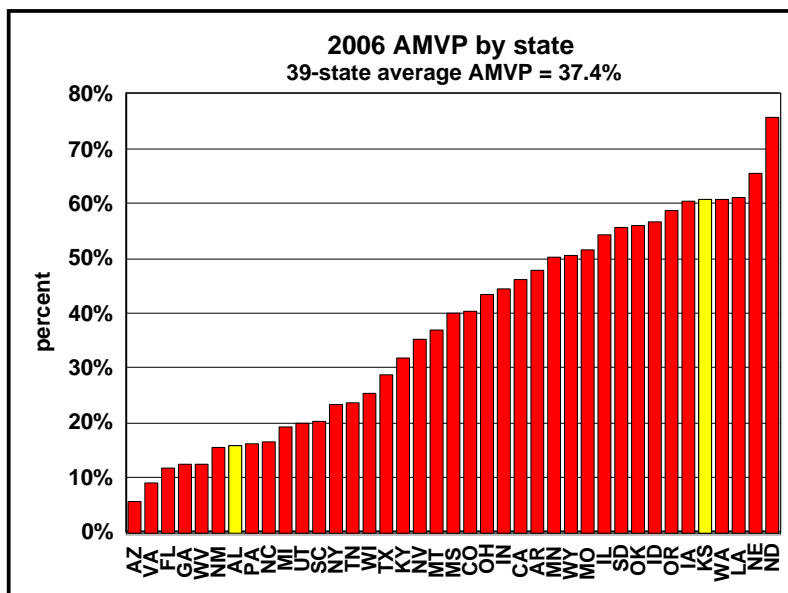
46

Agricultural Market Value of Agricultural Land using Alabama as an example

- Jan. 1, 2006 crop land value = \$2950 /acre
- Cash rent for 2006 = \$39 /acre
- 2006 property tax = \$1.31 /acre
- 2006 after-property-tax rent = \$37.69 /acre
- $\$37.69 / 0.0803 = \$469.36/\text{acre}$

- $\text{AMVP} = \$469.36 / \$2950 = 0.159 = 15.9\%$

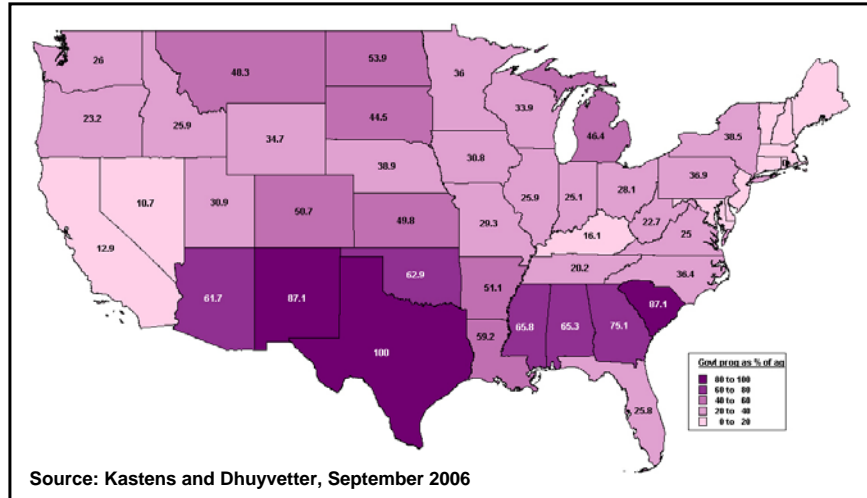
47



percent of land value that is due to agriculture

48

Percentage of Agricultural Value Attributed to Government Program Payments



government payments as a percent of agricultural rent

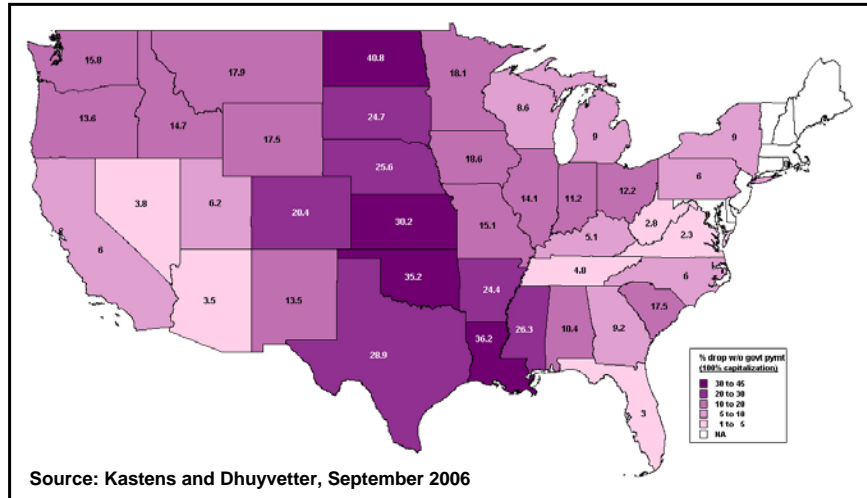
54

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

57

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



Source: Kastens and Dhuyvetter, September 2006

reduction is proportional to capitalization rate (e.g., KS=15.1% with 50% cap)

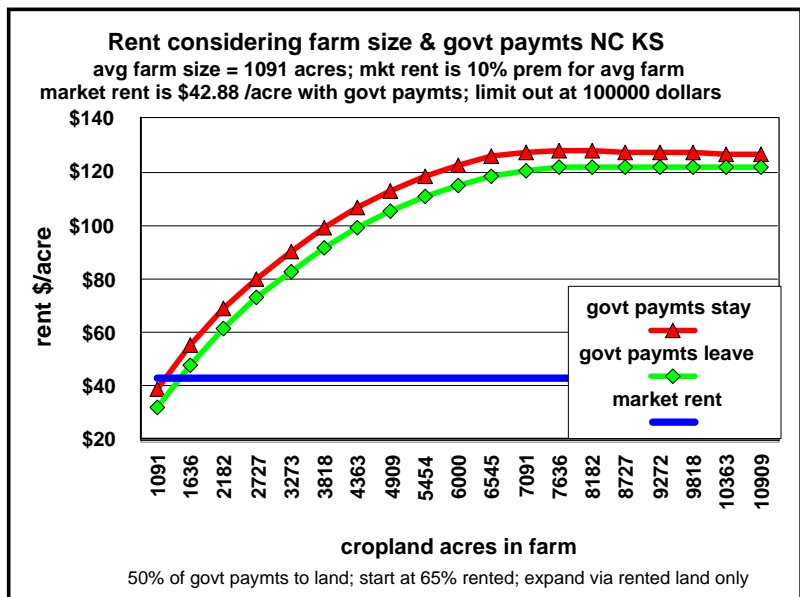
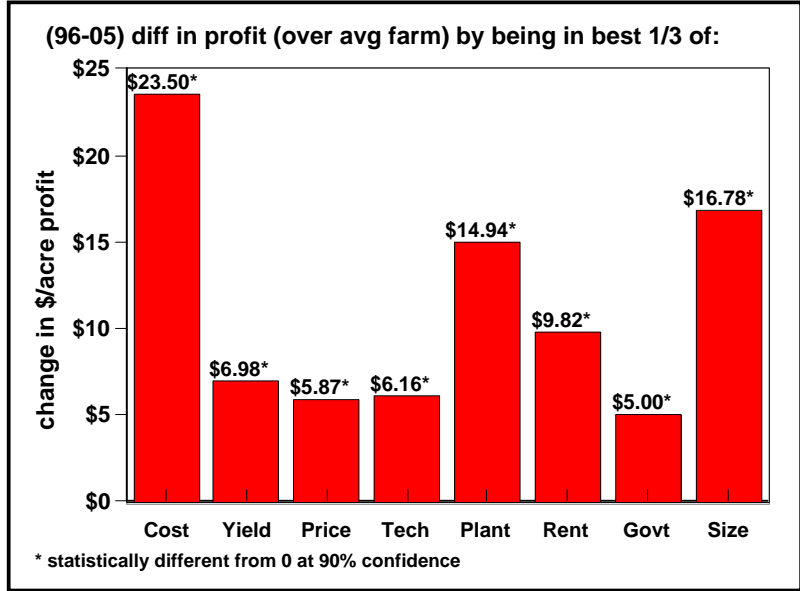
58

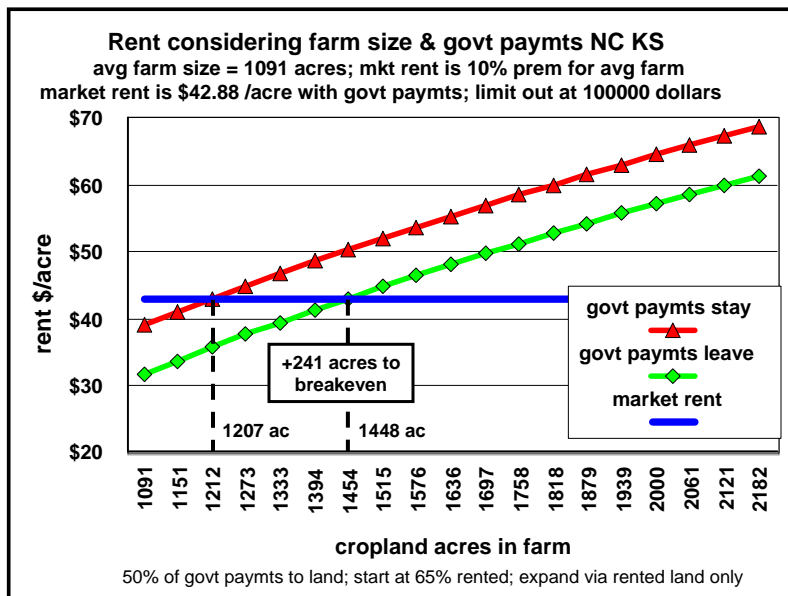
Would land values really fall that far?

- 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

62

Management factors impacting farm profitability...





With a 100% of govt paymts to land, farm size needs to increase 510 acres to breakeven.

Factors impacting agricultural land values...

- Many, many factors impacting land values – some are ag related while others are not
- Ag portion of agricultural land is diminishing
- Reduced ability to cash flow traditional land loans with value of agricultural production
- Increasingly difficult to analyze/evaluate land purchases/prices
- 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

AgManager: Info on Crops, Livestock, Farm Management and Policy - Microsoft Internet Explorer

Address: http://www.agmanager.info/

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Kansas State University

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www.agmanager.info

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Site Updates

In The Cattle Markets
October 11, 2006 by Jim Winters/REC

2007 Farm Bill Drivers and Implications for Producers
October 10, 2006 by Sam Fulk and Trey Dumler

Livestock Outlook Radio Program
October 10, 2006 by Jim Winters/REC

Livestock and Hay Charts
October 10, 2006 by Jim Winters

Current Grain Outlook
October 10, 2006 by Mike Winters/REC

Machinery Decision Tools - Excel spreadsheets to evaluate costs of owning and operating balers, combines, tractors and sprayers.
October 12, 2006 by Terry Kastens and Kevin Dhuyvetter

Seasonal Prices - Crops and Cattle (Excel spreadsheets)
October 5, 2006 by Kevin Dhuyvetter

Factors Impacting Dairy Profitability in 2007
October 5, 2006 by Kevin Dhuyvetter and Terry Kastens

Monthly NEB and Diesel Price Forecasts
September 29, 2006 by Kevin Dhuyvetter

Factors Shaping Change in the U.S. Beef Sector
2006 KSU Stocker Conference
September 28, 2006 by Jim Winters

Ethics of Renting Agricultural Land
September 14, 2006 by Terry Kastens and Kevin Dhuyvetter

Valuing and Paying Farmland
September 7, 2006 by Terry Kastens and Kevin Dhuyvetter

Govt Payments and Non-Ag Returns Impact on Land Values
September 7, 2006 by Terry Kastens and Kevin Dhuyvetter

GRP Decision Tool - Excel spreadsheet to evaluate expiring GRP contracts and action control systems.
September 6, 2006 by Rodney Jones and Kevin Herbst

KSU-GRSguidance.xls - Excel spreadsheet to evaluate machine guidance
August 29, 2006 by Terry Kastens et al

County-level Land Values and Cash Rents

Questions?

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