



## Land values and leasing issues – An update

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Farm Credit of the Heartland Loan Officer Meeting  
Hampton Inn & Suites at the Country Club Plaza  
Kansas City, MO. November 12, 2009



## 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)
- Ethanol and bio-diesel / global demand for grain
- 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
- **Non-ag factors**
  - Urbanization, recreational use of land, etc. -- more related to the condition of overall economy
- 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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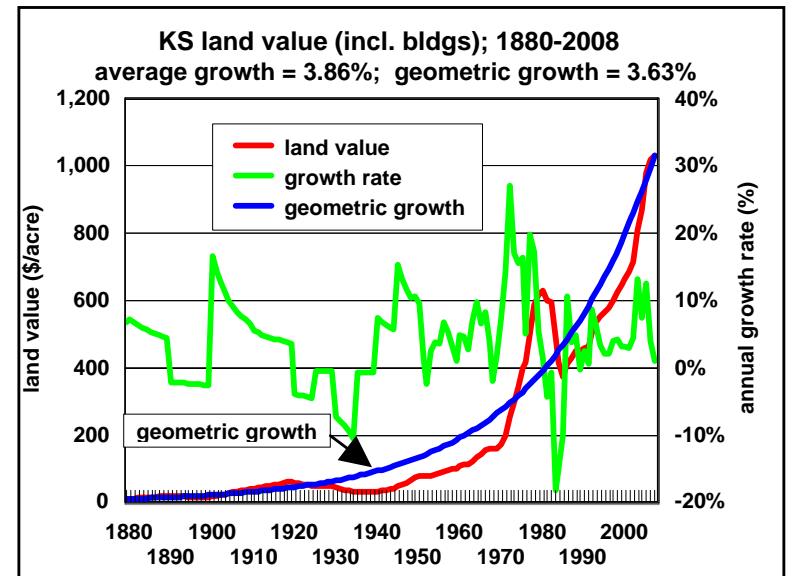
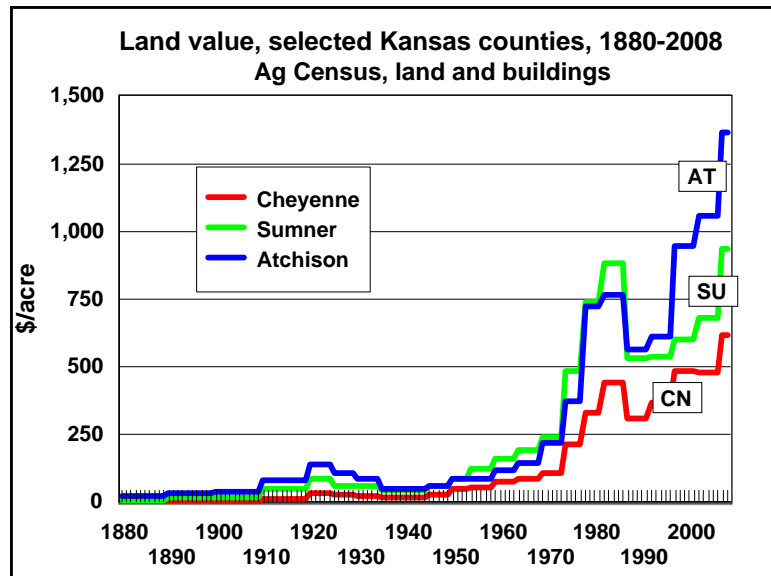
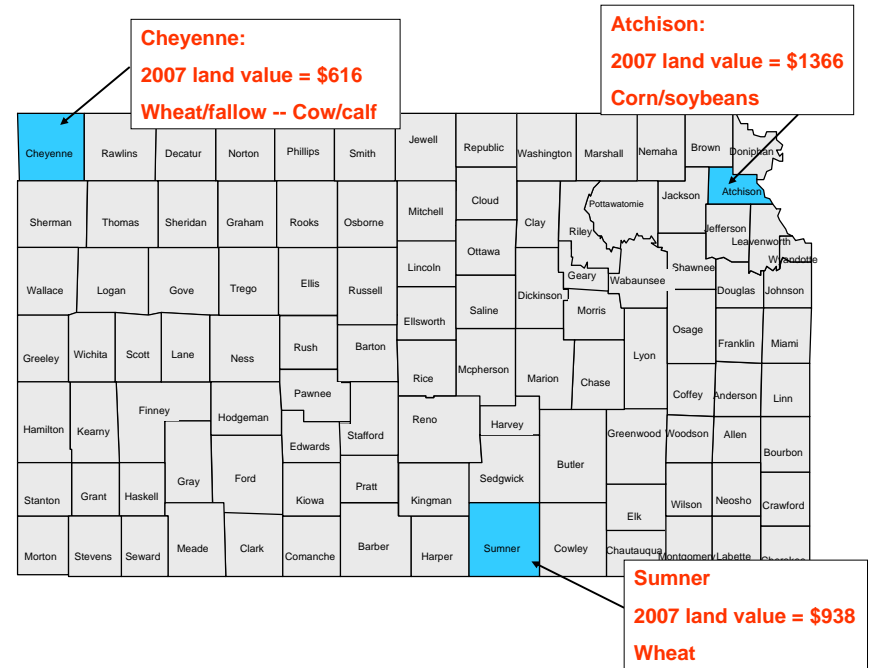


## Land is Unique

- **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

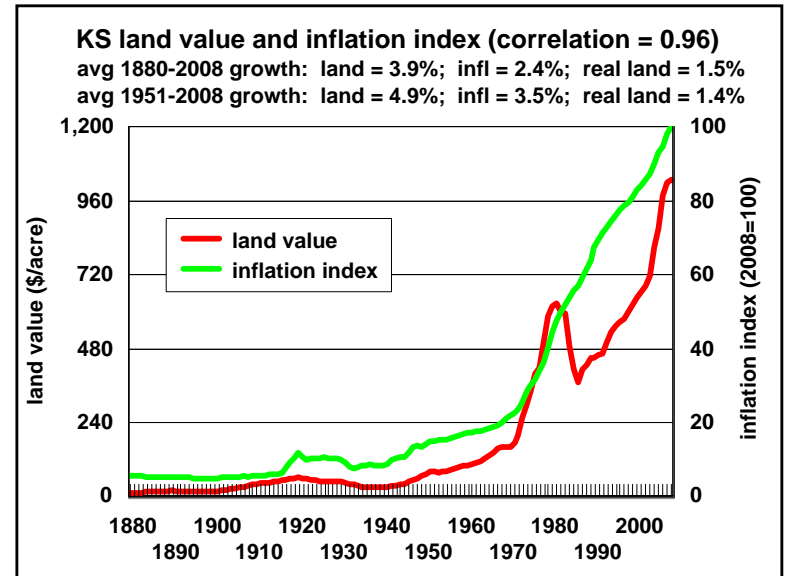
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# Historical land values and growth



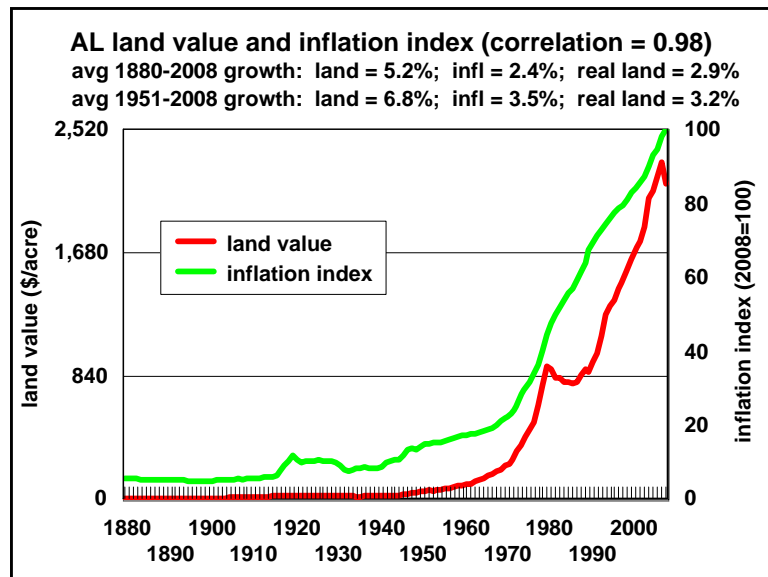
1879 starting land value for Kansas was \$10.30

## What drives land prices in the long run?

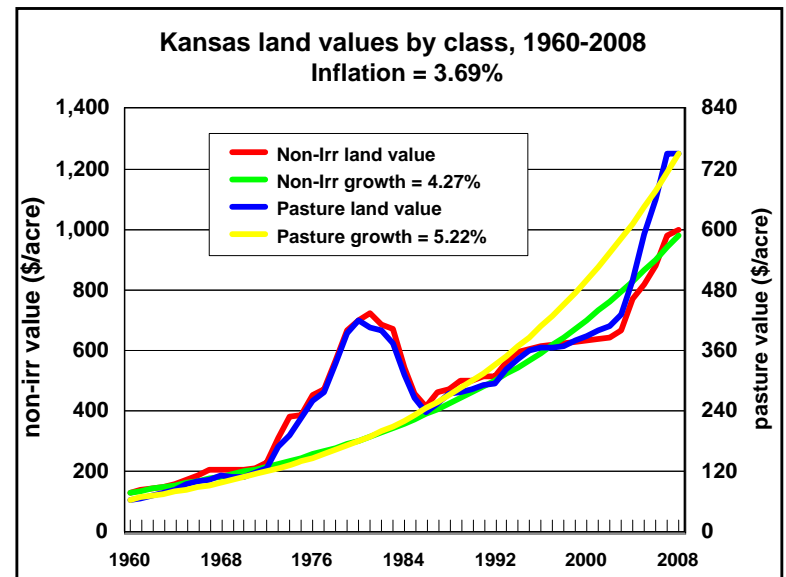


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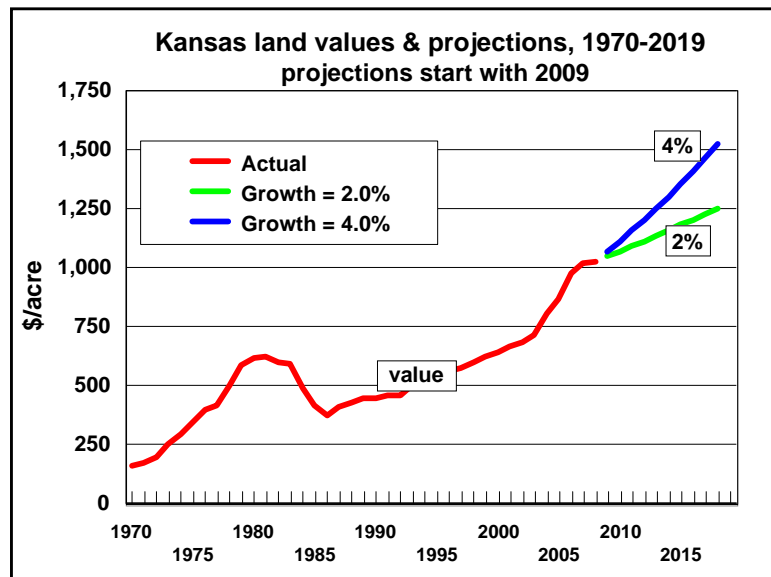
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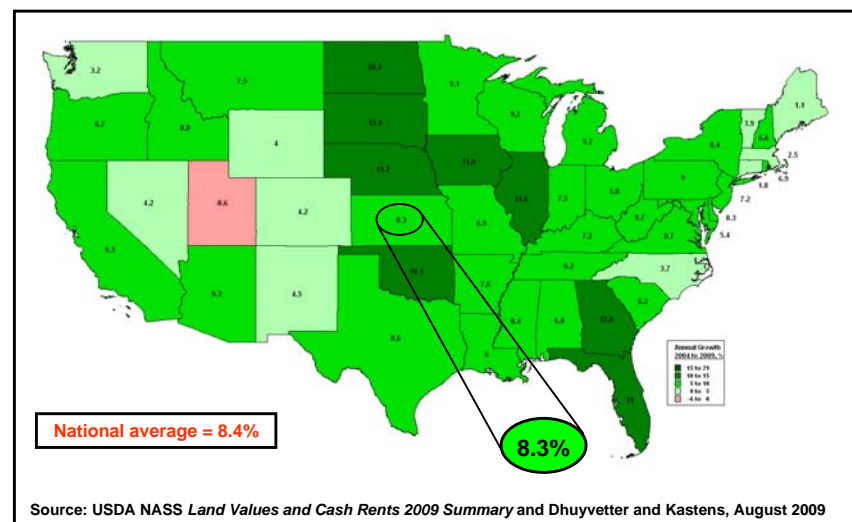


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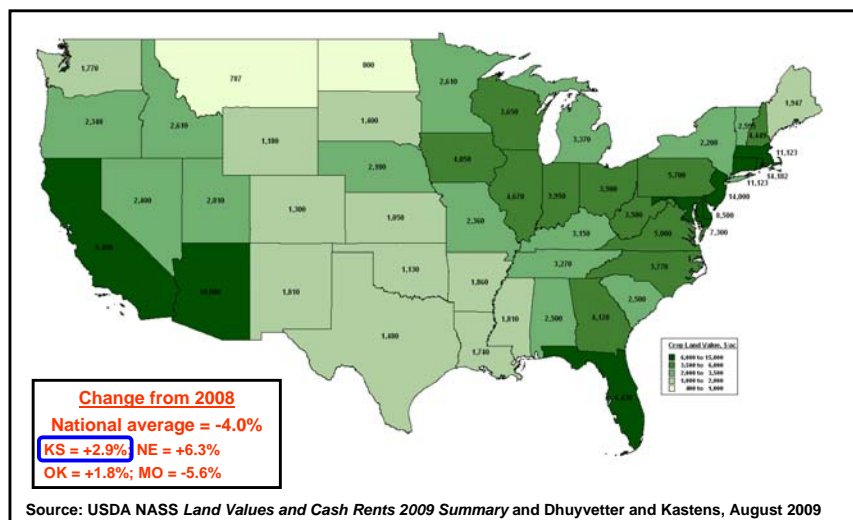
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### Crop Land Average Annual Growth Rate Jan 1, 2004 to Jan 1, 2009, percent (geo mean)



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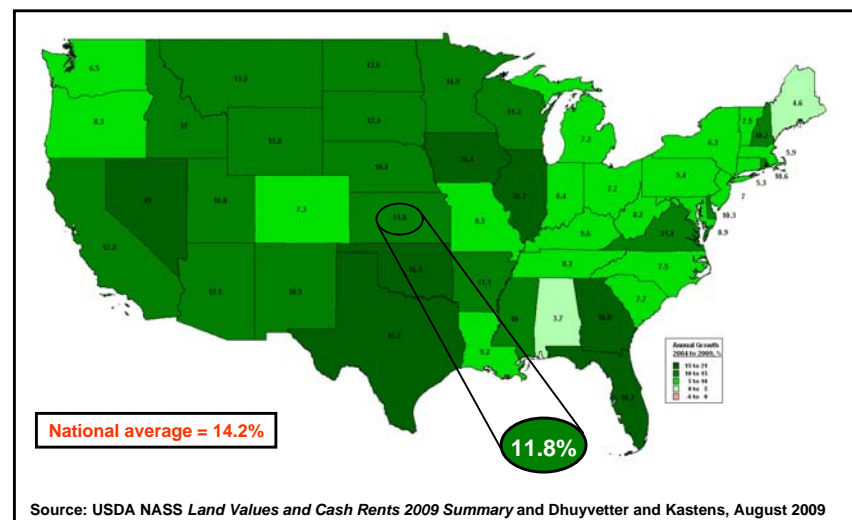
### Crop Land Average Value per Acre January 1, 2009



\* Corresponding changes in pasture land values were US=0.0%; KS=0.0%; NE=-6.3%; OK=1.0%; and MO=-5.6%.

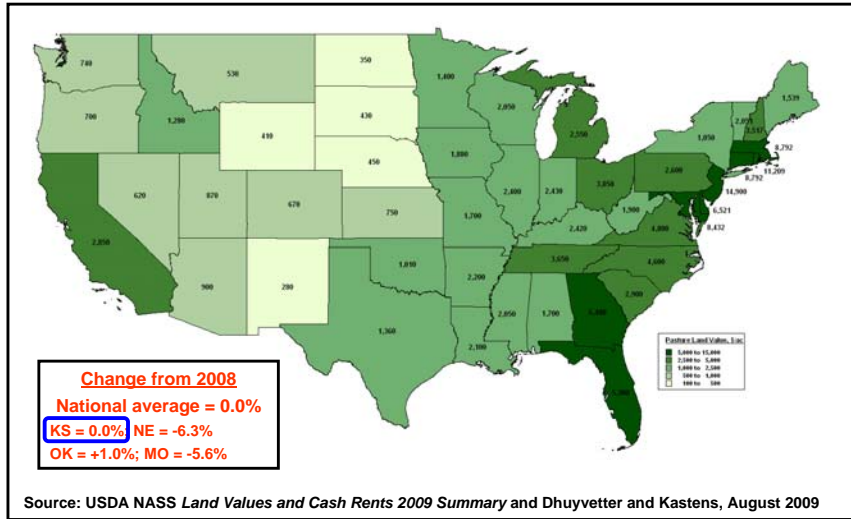
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### Pasture Land Average Value Annual Growth Rate Jan 1, 2004 to Jan 1, 2009, percent (geo mean)



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## Pasture Land Average Value per Acre January 1, 2009



\* Corresponding changes in crop land values were US=-4.0%; KS=2.9%; NE=6.3%; OK=1.8%; and MO=-5.6%.



## What's currently happening to land values?

### 2008 Average Land Values (KFMRA database)

KAS region	Percent acres cropland			Average	Obs
	< 33.3	33.3-66.7	>66.7		
NW	\$546	\$685	\$1,058	\$856	116
WC	\$853	\$566	\$849	\$814	39
SW	\$410	\$438	\$1,024	\$888	45
NC	\$924	\$1,141	\$1,349	\$1,205	170
C	\$1,012	\$1,063	\$1,470	\$1,284	230
SC	\$1,075	\$1,253	\$1,345	\$1,291	209
NE	\$1,452	\$2,244	\$2,552	\$2,091	50
EC	\$1,395	\$1,677	\$1,586	\$1,486	72
SE	\$1,278	\$1,434	\$1,344	\$1,313	124
State avg	\$1,110	\$1,142	\$1,364	\$1,247	1,055
Obs	314	197	544	1,055	

(based on data from 1,316 sales during Jan-Dec)



## What's currently happening to land values?

### 2009 Average Land Values (KFMRA database)

KAS region	Percent acres cropland			Average	Obs
	< 33.3	33.3-66.7	>66.7		
NW	\$537	\$820	\$1,327	\$1,118	31
WC	\$440	\$463	\$862	\$773	14
SW	\$402	\$596	\$1,207	\$848	18
NC	\$788	\$1,286	\$1,478	\$1,299	105
C	\$1,174	\$1,143	\$1,925	\$1,570	54
SC	\$854	\$807	\$1,448	\$1,091	41
NE	\$1,661	n/a	\$2,041	\$1,712	15
EC	\$1,050	\$969	\$1,118	\$1,043	32
SE	\$1,151	\$1,588	\$1,098	\$1,196	17
State avg	\$1,009	\$1,087	\$1,472	\$1,242	327
Obs	109	64	154	327	

(based on data from 439 sales during Jan-Oct)



## What's currently happening to land values?

### Percent Change in Average Land Values (2009 to 2008)

KAS region	Percent acres cropland			Average
	< 33.3	33.3-66.7	>66.7	
NW	n/a	n/a	25.5%	30.6%
WC	n/a	n/a	1.6%	-5.0%
SW	n/a	n/a	n/a	-4.5%
NC	-14.7%	12.7%	9.6%	7.9%
C	16.0%	7.5%	30.9%	22.3%
SC	-20.5%	n/a	7.7%	-15.5%
NE	14.4%	n/a	n/a	-18.1%
EC	-24.7%	n/a	n/a	-29.8%
SE	-10.0%	n/a	n/a	-8.9%
State avg	-9.1%	-4.9%	7.9%	-0.4%

Only reported if a minimum of 10 observations per year exist.

**Date are not without problems, but they suggest**  
 -- crop land values have remained strong in 2009 (west > east)  
 -- grass values have softened (some regions actually up)

## Returns to land

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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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## Land rent...

- KFMA farms with > 100 crop acres (2006-2008 avg)
  - 89% of KFMA farms use rented crop land (range across six regions, 81%-94%)
  - 61% of crop acres farmed by KFMA members are rented (range across six regions, 51%-72%)
- For owner-operators rent is the “profit” assigned to land after all other opportunity costs are considered

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### Sidebar

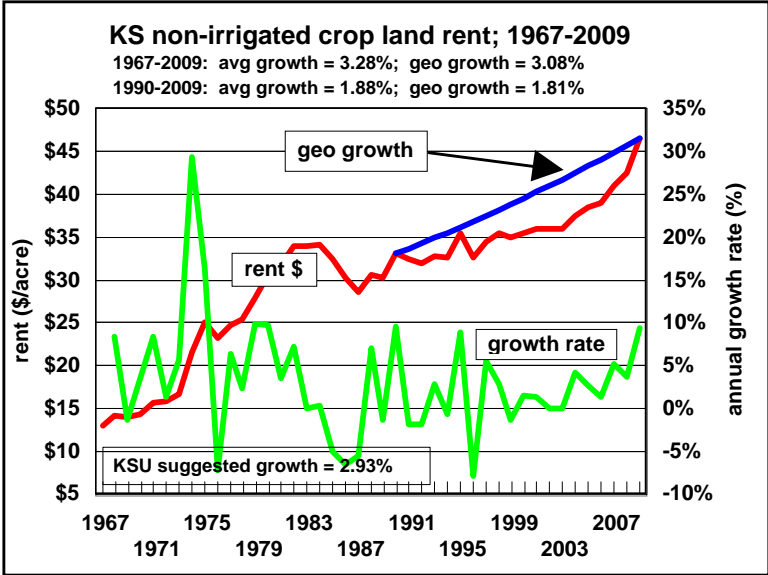
## Land returns vs. farm returns

- Kansas Farm Management Associations
  - 2,000+ farms per year 1973 – 1999
    - Less farms if require multi-year presence
  - Calculated an after-tax ROE, ATROE
  - Converted ATROE to pre-tax according to:  
 $PTROE = ATROE / (1 - 0.35)$
- Kansas farm returns are compared to Kansas land returns and to the S&P

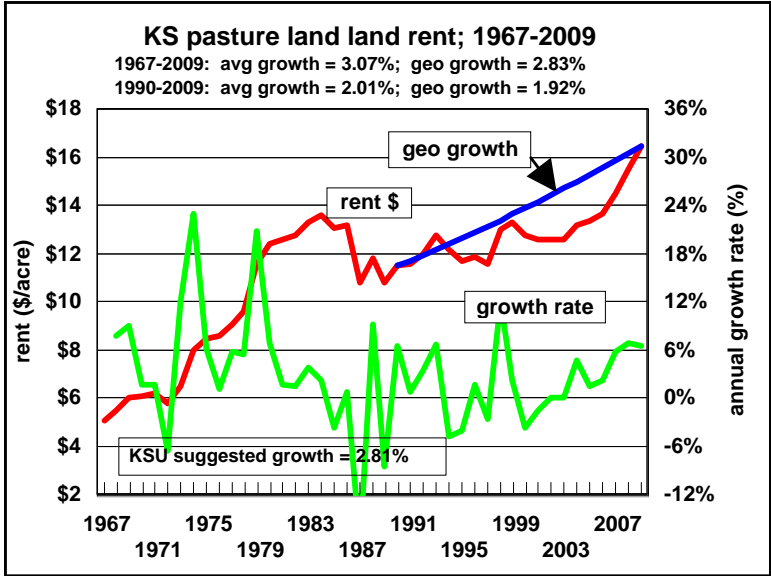
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**1973-1999 annual returns**

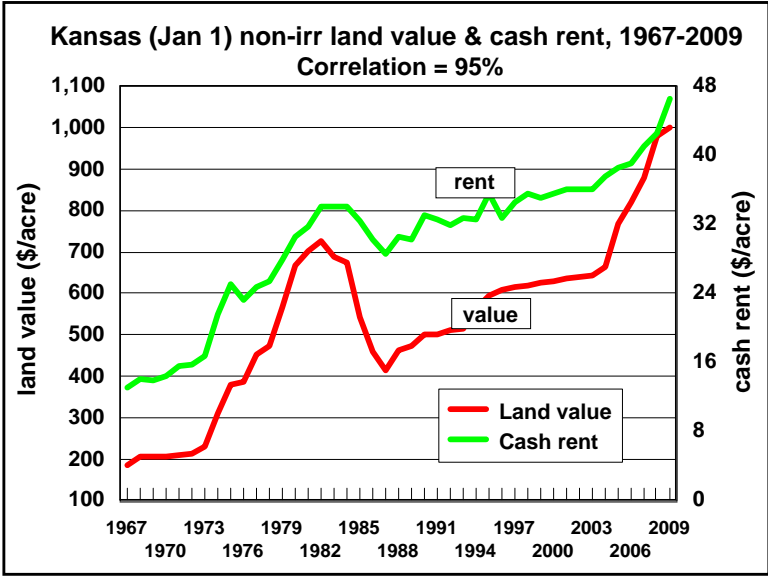
- **S&P fund**  
15.2% avg and 16.7% std
- **Land portfolio**  
10.1% avg and 10.7% std
- **Portfolio of average farms (138 farms)**  
8.3% avg and 10.5% std
- **Portfolio of "top-third" farms (46 farms)**  
13.9% avg and 14.8% std
  
- **Portfolios of farms, or land, or stock have lower risk than individual farms, parcels, or stocks**

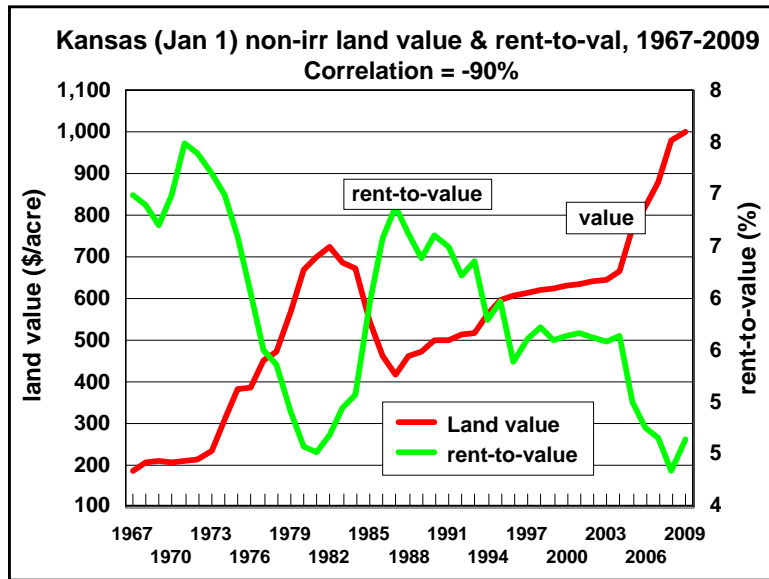


If grain demand continues, expectation for growth might need to be raised



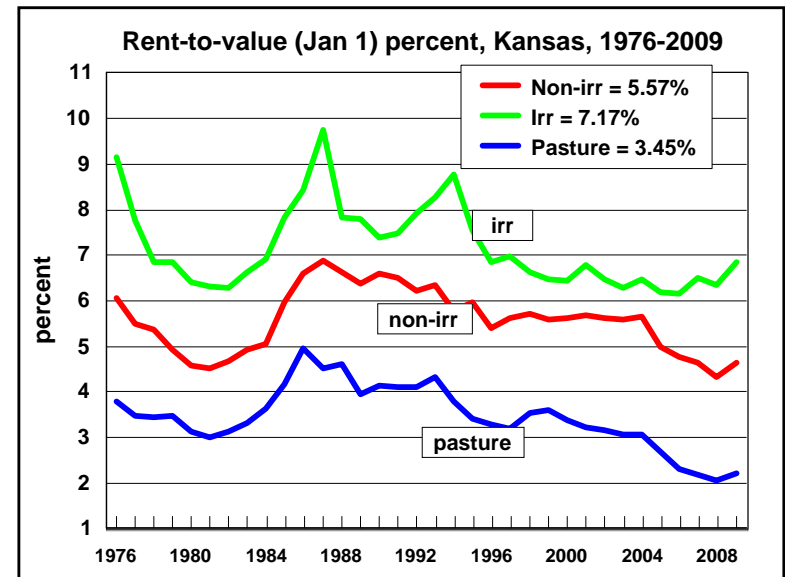
If grain demand continues, expectation for growth might need to be raised





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Rent-to-value varies by land type...



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## Land as an Investment



## Buying and owning land – ideas

- 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
- Income tax and capital gains tax rates matter
- Long-term investment means time value of money matters

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## Buying Land – How much can I afford?

- Valuing the capital gains portion
  - Pick a “selling point,” say 30 years from now
  - What will the land be worth then?
    - Assume some annual capital gain % -- ag and non-ag
  - What is left after “sell” & pay cap gains tax?
  - What is that amount worth today?
- Valuing the rent portion
  - What is cash rent today, ag and non-ag?
  - How will rents evolve (grow) over time?
  - What is the future stream of rents worth today?
- Maximum bid = today’s value of the capital gain + today’s value of the rent stream

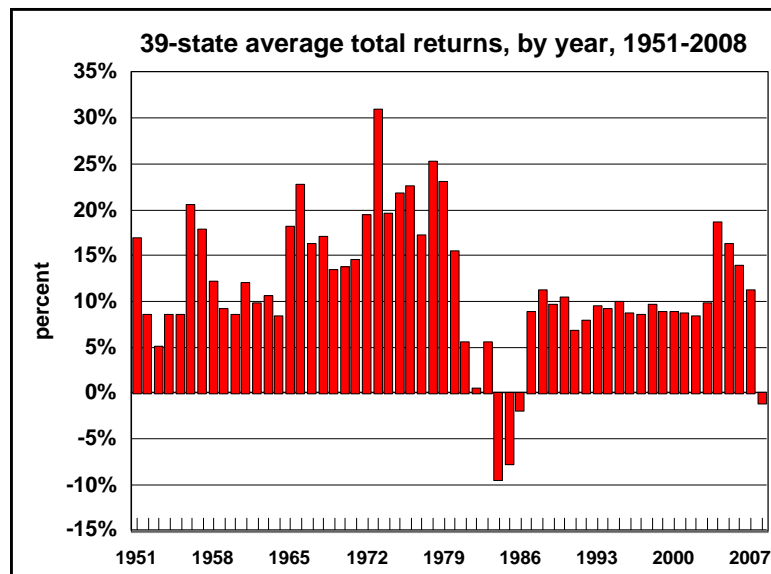
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## Non-ag Considerations

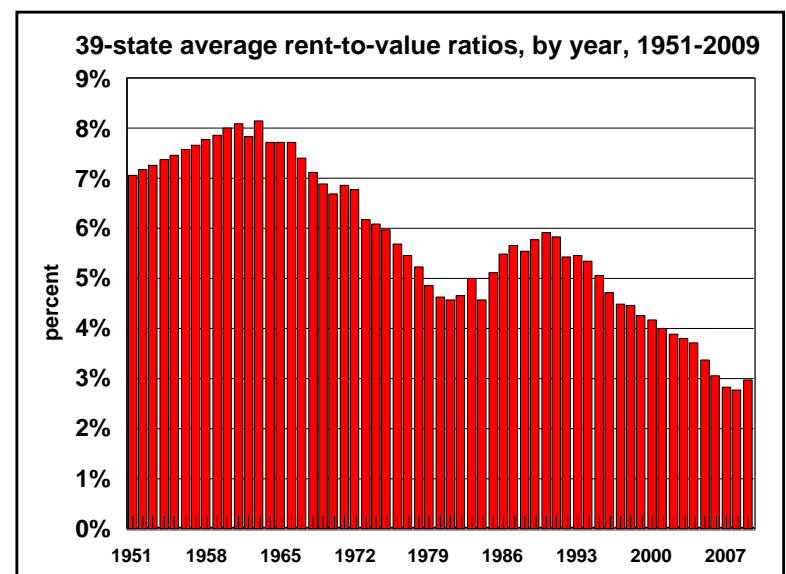
- There could be a non-ag rent:
  - e.g., leasing your land to hunters
- There could be a non-ag land value growth:
  - e.g., expectations of future development
- *KSU-Landbuy.xls* allows for both
- But first some historical information

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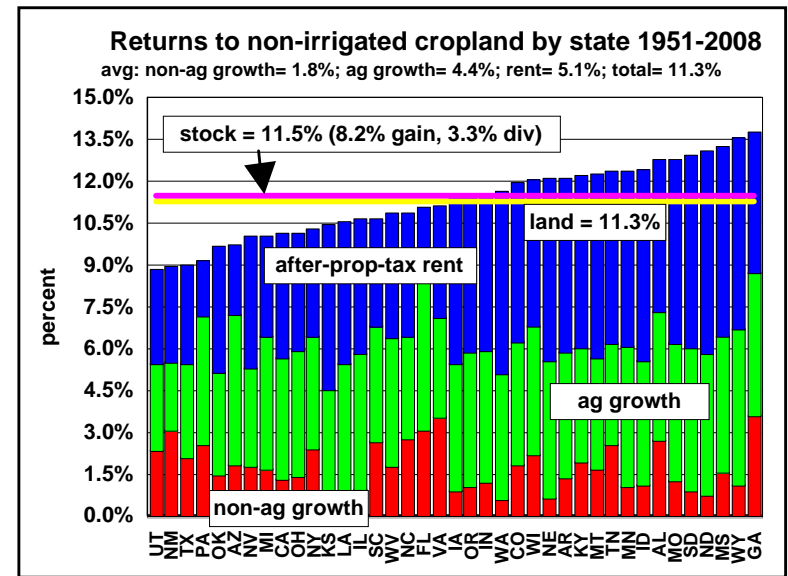
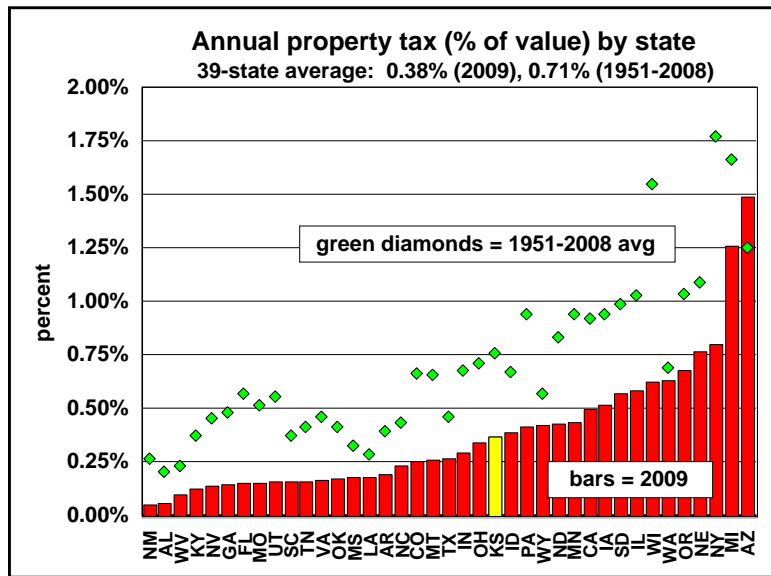


High farming profit in 2008 didn't make it to rents or end-of-year land values

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39 states ranked by total returns to land

## Analyzing a Land Purchase

Microsoft Excel - KSU-Landbuy--Homework.xls

### KSU-Landbuy.xls spreadsheet for land investment decisions

KSU-Landbuy.xls -- A spreadsheet program to analyze land purchase prices and land values in general.

Version -- 08.26.09

**INPUTS vs CALCULATED VALUES**

In the *KSU-Landbuy* sheet all blue numbers are inputs and all other numbers are calculated from these inputs. The spreadsheet automatically recalculates every time an additional input is entered. Thus, it is important to wait until all data have been entered and reviewed before interpreting any of the calculated results (i.e., black numbers).

**DESCRIPTION OF INPUTS**

The paper titled *Valuing and Buying Farmland* (paper at [www.agmanager.info/farmmgmt/land/land\\_buy](http://www.agmanager.info/farmmgmt/land/land_buy)) serves as a user's guide and provides a more detailed documentation of the concepts and formulas used in this spreadsheet. Also, several of the input cells (i.e., blue numbers) have a red diamond in the upper right hand corner of the cell (if the comments do not appear go to View / Comments on the Excel menu). By moving your mouse cursor over this diamond, a brief description of the input will be displayed on the screen.

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Ready

Microsoft Excel - KSU-Landbuy.xls

**Blue values are user inputs – all other values are calculated**

Inputs					Label (refers to notation in Valuing and Buying Farmland publication)				
KS	KS	KS	KS	Average	State	Land classification	Ac	MV_0	PP
Crop	Pasture	Waste							
120	35	5		160	-----	-----	-----	-----	-----
\$1,050	\$760	\$0		\$952	Ac	Enter the acres of each class of land (used to calculate weighted average)			
\$1,050	\$760	\$0		\$952	MV_0	Market price of land, \$/acre			
\$46.50	\$16.50	\$0.00		\$38.48	PP	Purchase price (PP -- amount you pay), \$/acre			
\$3.89	\$2.76	\$0.00		\$3.52	ar	Ag rent--cash or cash equivalent in \$/acre today			
\$0.00	\$0.00	\$0.00		\$0.00	Ptx	Real estate (property) tax in \$/acre today			
30	30	30		30	nR	Non-ag rent in \$/acre today			
43%	43%	43%		43%	T	Time horizon in years land is held (less than or equal to 100 years)			
15%	15%	15%		15%	Itx	Income tax rate (on last dollar of taxable income -- include SE tax if relevant)			
6.50%	6.50%	6.50%		6.50%	Ctx	Capital gains tax rate			
40.0%	40.0%	40.0%		40%	I	Interest rate on land loans (discount rate)			
2.93%	2.81%	0.00%		2.92%	gA	Percent of purchase price that is financed (only needed for return on equity calculation)			
0.00%	0.00%	0.00%		n/a	gAr	Growth rate on ag rent and ag portion of land value (see column G in Guidelines)			
3.86%	3.86%	0.00%		3.86%	g	Growth rate on non-ag rent (normally >> inflation rate)			
0.90%	1.02%	0.00%		0.91%	gNv	Growth rate on total (ag and non-ag) land value (see column I in Guidelines)			
						Calculated non-ag growth rate on land value			

Calculated Outputs					Label				
3.71%	3.71%	3.71%		3.71%	l(1-Itx)	After-tax interest rate on land loans (discount rate)			
\$24.29	\$7.82	\$0.00		\$19.93	-----	After-tax rent, \$/acre (now property taxes are removed as well)			
\$660.10	\$206.77	\$0.00		\$632.59	PVRA	Discounted value of all future after-tax ag rents			
\$0.00	\$0.00	\$0.00		\$0.00	PVRN	Discounted value of all future after-tax non-ag rents			
\$3,270.89	\$2,336.20	\$0.00		\$2,964.06	-----	Projected land value in 30 years, based on market price and ag & non-ag growth			
\$2,497.17	\$1,722.35	\$0.00		\$2,256.38	-----	Projected land value in 30 years, based on market price and only ag growth			
\$986.28	\$704.48	\$0.00		\$593.81	PVS	Discounted value of land sale in 30 years (after capital gains tax)			
\$765.53	\$529.30	\$0.00		\$591.85	PVSA	Discounted value of land sale in 30 years (after capital gains tax) -- if only ag growth			
\$1,636.38	\$910.25	\$0.00		\$1,426.40	PVL	Present value of land purchase			
87%	81%	n/a		86%	AMVP	Ag market value percent implied by non-ag rent and growth inputs			
61%	28%	n/a		-----	AMVP	Ag market value percent implied by Ag Rent-to-Value (column J of Guidelines) and after			
\$586.38	\$160.25	\$0.00		\$474.84	-----	Present value less market price			
\$586.38	\$160.25	\$0.00		\$474.84	-----	Present value less purchase price			
10.02%	7.84%	n/a		9.64%	-----	Approximate pre-tax rate of return on assets			
12.37%	8.74%	n/a		11.74%	-----	Approximate pre-tax rate of return on equity			

## Crop Land Leases

## FARM CREDIT OF THE HEARTLAND Basic Lease Types

- **Crop-share**
  - Landowner shares in annual revenues and typically in certain annual costs
- **Cash rent**
  - Landowner gets a fixed annual cash amount for use of land
- **Numerous variants around these two**

## FARM CREDIT OF THE HEARTLAND Length of cropland leases ...

Region	Years rented	KAS Crop Reporting Districts
Northwest (10)	17.6	10, 40, 70
West Central (20)	21.0	20, 50, 80
Southwest (30)	20.0	30, 60, 90
North Central (40)	16.9	
Central (50)	17.2	
South Central (60)	15.5	
Northeast (70)	17.2	
East Central (80)	18.8	
Southeast (90)	15.6	
<b>State</b>	<b>17.8</b>	

Source: Schegel and Tsoodle -- 2006 KAS/KSU survey



## Distribution of leases by type of lease ...

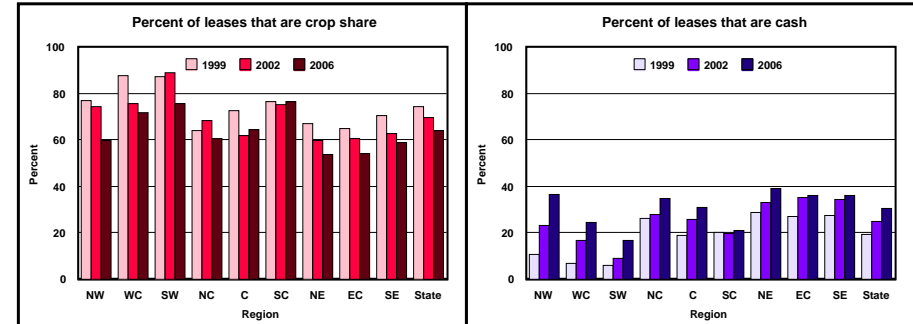
Region	Cash	Share	Other
Northwest	36.3%	59.8%	3.9%
West Central	24.3	71.7	4.0
Southwest	16.5	75.5	8.0
North Central	34.9	60.5	4.6
Central	30.9	64.6	4.5
South Central	21.0	76.4	2.6
Northeast	38.8	53.5	7.7
East Central	36.0	54.3	9.6
Southeast	36.2	58.9	4.9
State	30.5	63.9	5.6

Source: Schlegel and Tsoodle -- 2006 KAS/KSU survey

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## Basic Lease Types in Kansas



Source: KSU and KS Ag Stat -- Non-Irrigated Farm Lease Arrangement Surveys

Crop share continues to be the most prevalent, but the trend has been a shift from crop share arrangements towards more cash rent leases.

### Questions to ask:

- 1) What factors have been behind this trend?
- 2) Do we expect this to continue or to reverse in current environment?

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Over the years, the majority of land leasing questions we receive pertain to:

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

... regardless of the topic pertaining to lease terms, method of addressing questions does not change.

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## Determining the terms of a crop lease ...

- How are cash lease rates or the terms of crop share leases established?
  - Short answer is “the market”
- While landowners and tenants (i.e., the market) ultimately determine terms of crop share and cash leases, we use the equitable concept to arrive at a starting point for negotiations – and to better understand the market.

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## Market established rates...

- Land Use Value Project of the KSU Ag Econ Dept annually conducts one of four surveys (irrigated, non-irrigated, pasture, input costs)
- Kansas Agricultural Statistics (KAS) annually surveys landowners and producers regarding land values and cash rents
- Local and regional surveys of leasing practices
- With surveys there is often a trade-off between statistical validity and level of aggregation

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## Distribution of crop share percentages ...

Percent of Leases by Crop Share Percentage

Landlord Share	Crop Reporting District								
	NW-10	WC-20	SW-30	NC-40	C-50	SC-60	NE-70	EC-80	SE-90
10.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
16.5%	1.7%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.6%
20.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.7%	0.0%
25.0%	2.9%	0.0%	4.1%	0.4%	0.3%	0.9%	3.8%	1.3%	1.1%
33.3%	90.1%	96.1%	89.5%	69.4%	85.2%	94.3%	20.5%	79.5%	92.6%
40.0%	0.0%	1.7%	0.9%	25.9%	9.4%	3.5%	25.7%	10.6%	4.0%
45.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50.0%	4.1%	2.2%	3.2%	3.5%	2.8%	1.3%	50.0%	7.9%	1.7%
60.0%	0.0%	0.0%	0.5%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
66.7%	0.0%	0.0%	1.8%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%
100.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Schlegel and Tsoodle -- 2006 KAS/KSU survey

Wheat belt  
Corn belt

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## Cash leasing (and variations of cash leases)



## Cash rents ...

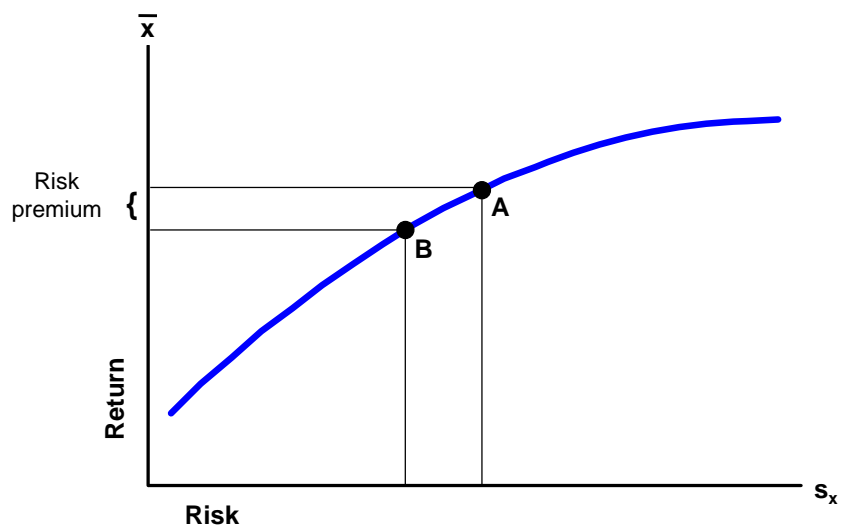
Numerous good reasons to go to cash rent, but landowners and producers need to recognize several things when doing so ...

- Land tends to change hands more often
- Relative risks change

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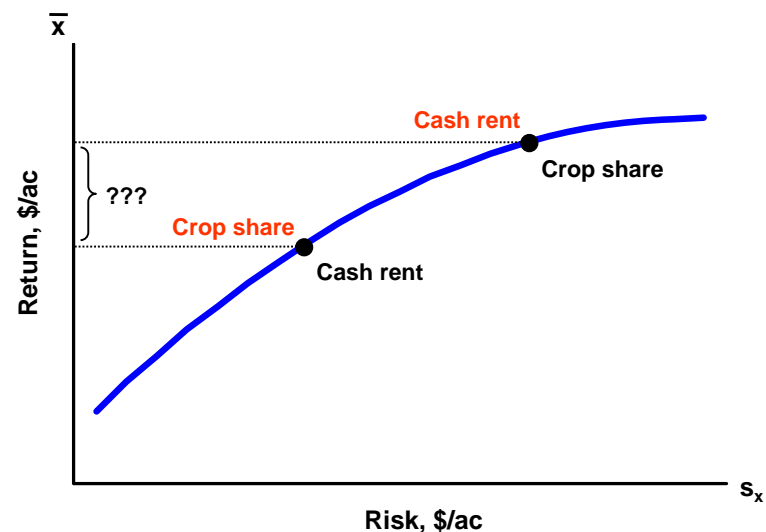
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## Risk-return tradeoff



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## Landowner/producer risk-return tradeoff



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## Risk

- **Risk: variation about expected outcome**
  - Suggests that the cash-equivalent of a share lease will be greater than cash rent
- **Hasn't helped much in understanding rents**
  - Tenant's risk lower recently (1990s thru 2006)
  - Cash rent is not riskless
  - Costs may be higher with share rents
    - So cash rents may be higher than share rents i.e., tenants bid up cash rents to avoid costs
- **Crop share rent shares are sticky**
  - Only way to bid up rents is through cash rent

Just when we got used to ignoring risk, it seems to come back into play . . .

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## The "new world"

(think fall 2006 through spring 2008)

- **Landlords detected massive profits**
  - Using 3-year expectations, tenants "could" pay as much as 2x-3x of going market rental rates
- **Land prices rise**
- **Cash rents not keeping up**
  - Risk? Poor information? Taking advantage?
  - Some landowners wish to go back to crop-share
- **Some tenants jumping cash rents**
- **Some tenants paying bonus rents**
  - What are the FSA issues
  - Will bonuses be expected in future?

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## The "newer" new world (think summer 2008 through summer 2009)

- Fertilizer, herbicide, machinery costs, and fuel, all have taken massive jumps in the last 12 months
  - Availability sometimes bigger worry than price
- Tenant's risk has greatly increased
  - Less of a problem in crop share leases
- Expected crop prices still swamp input prices but a very large risk premium remains between crop-share and cash rent terms
  - Makes it difficult to determine whether the terms we observe are appropriate or inappropriate

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## The "current" world

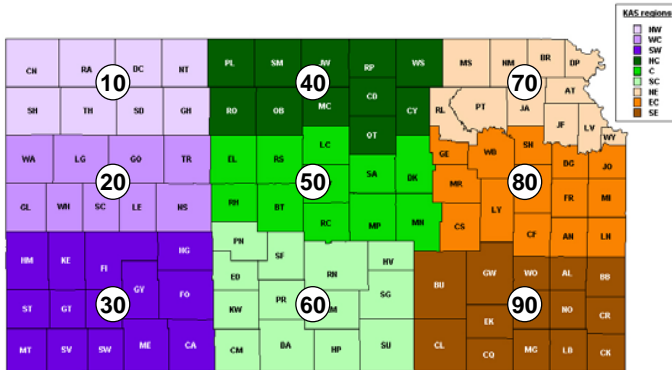
- Most input prices have softened
- Crop prices have stabilized
- Volatility appears to have subsided somewhat
- Or, is this just the calm before the next storm?
- Fixed cash rents are still very risky
  - As always, crop share rents have much appeal
  - Flexible cash rents have much appeal

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## Market going rate ...

Kansas Agricultural Statistics (KAS) reports average cash rent values for non-irrigated, irrigated, and pasture land at the crop reporting district (CRD) level



...in August 2009, only state-level values were reported.

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## KAS surveyed market rates ...

United States Department of Agriculture  
National Agricultural Statistics Service, Kansas Field Office

### AGRICULTURAL LAND VALUES & CASH RENTS

Kansas Agricultural Statistics  
Cooperating with the Kansas Department of Agriculture  
FD-505 (2004) • Revised 10/2009 • www.nass.usda.gov/kas • kas@nass.usda.gov  
Released: August 21, 2009

**Highlights**

The average value of all farmland and buildings for 2009 in Kansas is estimated to be \$11,000 per acre. This compares with \$1,020 in 2008 and \$690 in 2007. Kansas' average value of all farmland and buildings increased 1.0 percent from 2008 to 2009. Irrigated cropland values rose 3.4 percent from 2008 while non-irrigated cropland increased 2.0 percent in value from last year. The value of Kansas pasture land remains unchanged from 2008 at \$750 per acre, leveling off after a 23 year increasing trend. Rental rates for irrigated cropland were up \$14.00 per acre and non-irrigated cropland increased by \$4.00 per acre. Pasture rents for 2009 rose \$1.00 to \$16.50 per acre.

Year	Cropland			Pasture and Rangeland		All Farmland and Buildings	
	Value	Rent	Value	Rent	Value	Rent	
1990	1,020	625	660	66.00	35.00	370	13.30
2000	1,040	630	665	67.00	35.50	380	12.80
2001	1,060	635	673	72.00	36.00	380	12.60
2002	1,080	640	679	70.00	36.00	400	12.60
2003	1,080	645	684	68.00	36.00	410	12.60
2004	1,090	650	689	72.00	37.50	420	13.20
2005	1,180	770	806	73.00	38.50	500	13.40
2006	1,200	820	854	74.00	39.00	550	13.70
2007	1,260	880	914	82.00	41.00	660	14.50
2008	1,400	980	1,020	92.00	42.50	750	15.00
2009	1,500	1,000	1,050	103.00	46.50	790	16.50

Rental rates are for 1 year only. \* Not published in August 2009.

**Survey Background**

The Agricultural Land Values Survey was conducted during May and June 2009. Survey respondents were asked to provide information on the value of the land they operate. Additional land value and rent data were collected in the June Agricultural Survey to establish state-level estimates. A more extensive Cash Rents Survey is currently being conducted to establish District and County level cash rent estimates that will be published in April 2010.

The 5-year Census of Agriculture was used to make historic revisions to land value estimates in non-census years. The Agricultural Land Values Survey and June Agricultural Survey provide data to make annual estimates of market values for the different categories of farmland.

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

KAS report

Farm Management Guide MF-1100

### Kansas Land Prices and Cash Rental Rates

Department of Agricultural Economics • www.kanstate.edu

Kansas State University Agricultural Experiment Station and Cooperative Extension Service  
Terri L. Kautzman  
Agricultural Economist  
Crop Production

This Farm Management guide reports Kansas land prices and cash rents for 1990-2009. These data are useful to farmers engaged in determining cash rental rates, to landless operators in calculating indices for making lease adjustments to land prices, and to landowners and investors who have expectations on historical price and rental levels for farmland. The average price in this guide encompasses parcels of land that vary widely in productivity. Thus, these data are more appropriate for analyzing trends than for establishing market value or rental rates for specific tracts of farmland.

The land value for all land in farms reported also includes the value of any buildings that are on the land. The value of the buildings represents a small portion of the total value, on average, and thus this reporting method does not significantly affect the accuracy of land values reported.

**Kansas Agricultural Statistics**

For reporting purposes, Kansas Agricultural Statistics Service has divided the state into seven agricultural statistical districts. The districts are: Northwest (NW), West Central (WC), Southwest (SW), North Central (NC), Central (C), South Central (SC), Northeast (NE), East Central (EC), and Southeast (SE) (Figure 1). Since 1976, Kansas Agricultural Statistics has collected price information on three types of land: non-irrigated cropland, irrigated cropland, and pasture. This information is combined in two tables.

**Kansas Land Prices**

Table 1 through 6 show average prices of land (and buildings, Table 2) in each district and an average for the state for the most recent 20 years reported. Data are shown for each of the five land groupings: all land in farms, all irrigated, non-irrigated cropland, irrigated cropland, and pasture. The annual data are based on a survey conducted by Kansas Agricultural Statistics in late of each year using the estimates of both January 1 land values and the percentage change in land values from the previous year or base 1.

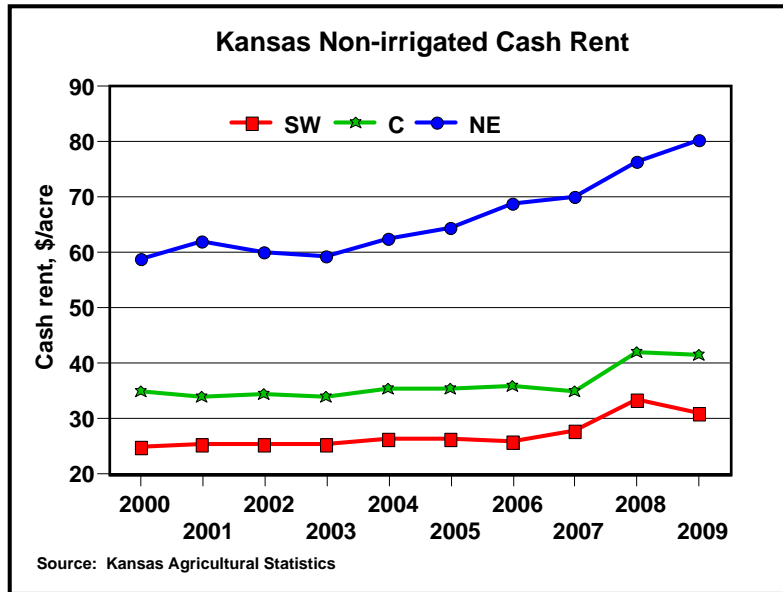
Year	NW	WC	SW	NC	C	SC	NE	EC	SE	State
1990	810	810	810	810	810	810	810	810	810	810
1991	810	810	810	810	810	810	810	810	810	810
1992	810	810	810	810	810	810	810	810	810	810
1993	810	810	810	810	810	810	810	810	810	810
1994	810	810	810	810	810	810	810	810	810	810
1995	810	810	810	810	810	810	810	810	810	810
1996	810	810	810	810	810	810	810	810	810	810
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1999	810	810	810	810	810	810	810	810	810	810
2000	810	810	810	810	810	810	810	810	810	810
2001	810	810	810	810	810	810	810	810	810	810
2002	810	810	810	810	810	810	810	810	810	810
2003	810	810	810	810	810	810	810	810	810	810
2004	810	810	810	810	810	810	810	810	810	810
2005	810	810	810	810	810	810	810	810	810	810
2006	810	810	810	810	810	810	810	810	810	810
2007	810	810	810	810	810	810	810	810	810	810
2008	810	810	810	810	810	810	810	810	810	810
2009	700	650	710	1,000	1,000	1,000	1,000	1,000	1,100	1,000

Land Economics 7 • Revised September 2009

KSU report

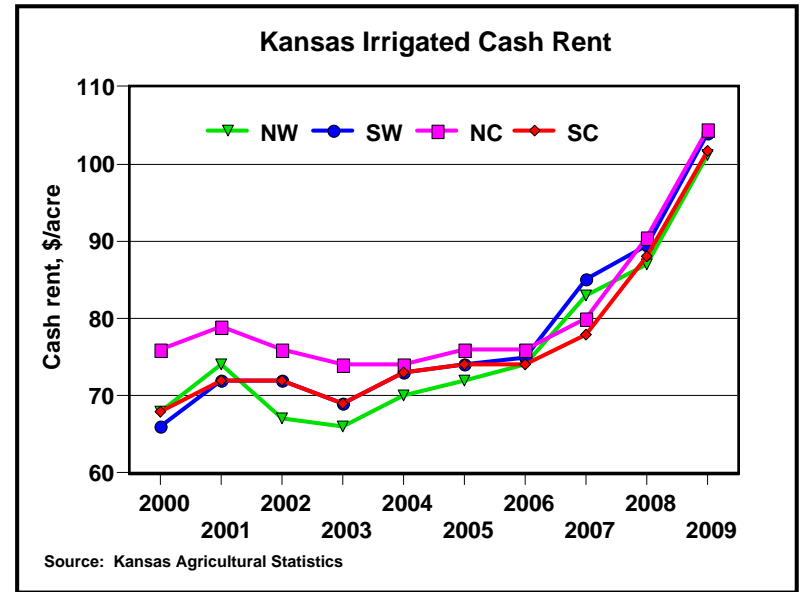
60

### Market going rate ...



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### Market going rate ...



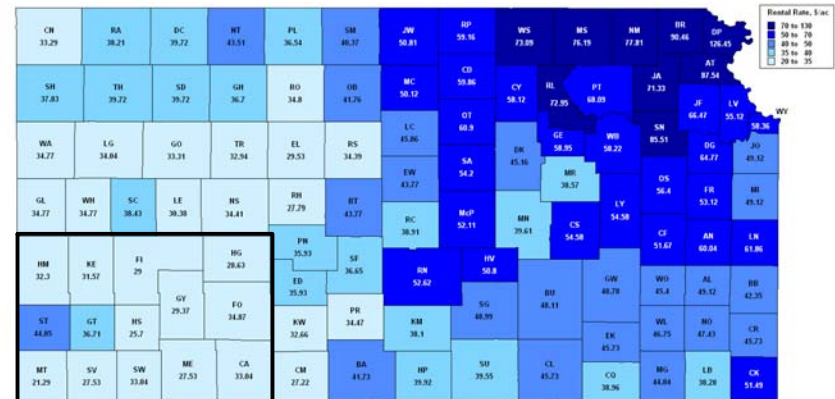
62

### County-level cash rents ...

- County-level cash rents were estimated for non-irrigated crop and pasture land based upon the KAS reported CRD values
- CRD values prorated to individual counties based on 3-year average of county-level rents from FSA and census acreage data (2002 & 07)
- Weighted average county-level cash rents are exactly equal to the KAS reported district value
- Similar procedure was done for land values

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### Kansas county-level non-irrigated crop cash rents...



Based on KAS state average reported value for 2009 (\$46.50) (county-level survey in August of 2009; data available in April of 2010)

Acreage-weighted average of counties equals \$31.07 (KSU estimate of SW CRD)

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## Methods of establishing cash rent values ...

- Market going rate (if available)

---

- 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



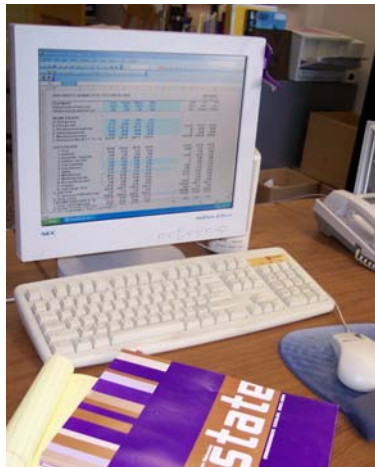
65

## KSU-Lease.xls

- A what-if spreadsheet to analyze rents
- Delineates relative contributions
- Allows considering cash vs. crop-share
  - Can deal with a risk premium
- Very flexible; can handle
  - Net share leases
  - Fixed bushel rents
  - Cash transfers
- Important purpose is to allow people to move beyond traditional leases when they need to change (and to analyze impact of cash rent)

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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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## 2010 projected budgets for SC Kansas... (generated in KSU-Lease.xls)

CROP BUDGETS SHOWING TOTAL COSTS AND RETURNS

[Link to KSU Farm Management Guides \(crop budgets\)](#)

Crop/System	Wht-C	Wht-R	Sorghum	Soybean	Corn	DC SB	Total	Per Acre
Planted acres of each crop	40.0	20.0	20.0	20.0	20.0	0.0	120.0	120.0
Tillable acres per planted acre	1.00	1.00	1.00	1.00	1.00	0.00	120.0	Tillable
<b>INCOME PER ACRE</b>								
A. Yield per acre	45.0	45.0	80.0	27.0	90.0	20.0	---	---
B. Price per unit	\$4.99	\$4.99	\$3.61	\$8.80	\$3.95	\$8.80	---	---
C. Net government payments	\$15.35	\$15.35	\$15.35	\$15.35	\$15.35	\$0.00	\$1,842	\$15.35
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00
F. Returns/acre ((A x B) + C + D + E)	\$239.90	\$239.90	\$304.15	\$252.95	\$370.85	\$176.00	\$32,953	\$274.61
<b>COSTS PER ACRE</b>								
1. Seed	\$13.00	\$7.80	\$9.87	\$41.85	\$52.29	\$49.60	\$2,756	\$22.97
2. Herbicide	3.04	6.38	18.58	8.70	29.26	9.72	1,380	11.50
3. Insecticide / Fungicide	1.00	1.00	0.00	0.00	1.00	0.00	80	0.67
4. Fertilizer and Lime	48.05	37.09	44.99	15.44	50.41	8.70	4,880	40.67
5. Crop Consulting	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
6. Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
7. Drying	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
8. Miscellaneous	5.75	5.75	5.75	5.75	5.75	5.75	690	5.75
9. Machinery Expense	91.74	91.74	90.71	53.17	94.00	47.49	10,262	85.52
10. Non-machinery Labor	10.40	10.40	10.27	5.98	10.66	5.33	1,162	9.69
11. Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
12. Land Charge / Rent	45.00	45.00	45.00	45.00	45.00	0.00	5,400	45.00
G. SUB TOTAL	\$217.98	\$205.15	\$225.16	\$175.89	\$288.37	\$126.59	\$26,611	\$221.76
13. Interest on 1/2 Nonland Costs	5.23	4.75	5.51	4.18	7.84	4.10	655	5.46
H. TOTAL COSTS	\$223.21	\$209.90	\$230.68	\$180.07	\$296.21	\$130.69	\$27,266	\$227.21
I. RETURNS OVER COSTS (F - H)	\$16.69	\$30.00	\$73.47	\$72.88	\$74.64	\$45.31	\$5,687	\$47.39
J. TOTAL COSTS/UNIT (H/A)	\$4.96	\$4.66	\$2.88	\$6.67	\$3.29	\$6.53	---	---
K. RETURN TO TOTAL COST ((I+13)/G)	10.05%	16.94%	35.08%	43.82%	28.60%	39.03%	20.86%	20.86%

Prices based on 2010 forward contract bids for Hutchinson KS (11/10/09)

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## 2010 lease analysis for SC Kansas...

(generated in KSU-Lease.xls)

ALTERNATIVE METHODS OF ESTIMATING CASH RENT								11/10/09	
Crop/System	Wht-C	Wht-R	Sorghum	Soybean	Corn	DC SB	Total	Per	
Total tillable acre	----->							120.0	Tillable
Planted acres of each crop	40.0	20.0	20.0	20.0	20.0	0.0	120.0	Acres	
<b>A. Landowner's COST</b>									
Land	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00	\$0.00	\$5,400	\$45.00	
Irrigation equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00	
<b>Total</b>	<b>\$45.00</b>	<b>\$45.00</b>	<b>\$45.00</b>	<b>\$45.00</b>	<b>\$45.00</b>	<b>\$0.00</b>	<b>\$5,400</b>	<b>\$45.00</b>	
<b>B. Landowner's EQUITABLE SHARE RENT</b> ---- risk adj factor									
				0.0%	← Takes risk adj. of ~25% to get to \$45/ac				
Total income	\$239.90	\$239.90	\$304.15	\$252.95	\$370.85	\$176.00	\$32,953	\$274.61	
Landowner's share	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	
Landowner's income	\$77.98	\$77.98	\$98.87	\$82.23	\$120.55	\$57.21	\$10,712	\$89.27	
Landowner operating expense	21.93	19.35	26.13	12.84	69.56	45.41	3,435	28.62	
Income less operating expense	\$56.06	\$58.63	\$72.74	\$69.39	\$50.99	\$11.81	\$7,277	\$60.64	
Less risk adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	
<b>Cash rent equivalent</b>	<b>\$56.06</b>	<b>\$58.63</b>	<b>\$72.74</b>	<b>\$69.39</b>	<b>\$50.99</b>	<b>\$11.81</b>	<b>\$7,277</b>	<b>\$60.64</b>	
<b>C. Amount tenant CAN AFFORD TO PAY</b>									
Total income	\$239.90	\$239.90	\$304.15	\$252.95	\$370.85	\$176.00	\$32,953	\$274.61	
Total operating expense	\$178.21	\$164.90	\$185.68	\$135.07	\$251.21	\$130.69	\$21,866	\$182.21	
<b>Return to land and irr equip</b>	<b>\$61.69</b>	<b>\$75.00</b>	<b>\$118.47</b>	<b>\$117.88</b>	<b>\$119.64</b>	<b>\$45.31</b>	<b>\$11,087</b>	<b>\$92.39</b>	
<b>Comparison of alternative cash rent methods</b>									
Low	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00	\$0.00	\$5,400	\$45.00	
Average	\$54.25	\$59.54	\$78.74	\$77.42	\$71.88	\$19.04	\$7,922	\$66.01	
High	\$61.69	\$75.00	\$118.47	\$117.88	\$119.64	\$45.31	\$11,087	\$92.39	
Returns above all costs (profit)	\$16.69	\$30.00	\$73.47	\$72.88	\$74.64	\$45.31	\$5,687	\$47.39	

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## Flexible Cash Rents – WHAT?

- Flexible cash rents simply refer to land rental arrangements where the amount of cash rent paid (received) can vary based upon some pre-determined formula (i.e., formalizes bonus rents)
- Methods of “flexing” rental rates, i.e., formulas are based on:
  - Yield (actual for producer, county average, etc.)
  - Price (harvest, season average, actual)
  - Revenue (yield x price, crop insurance, residue)
  - Costs
  - Other...

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## Flexible Cash Rents – WHY?

- Trend in Kansas has been moving away from crop share leases to more cash leases

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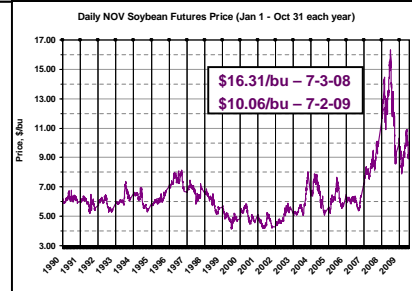
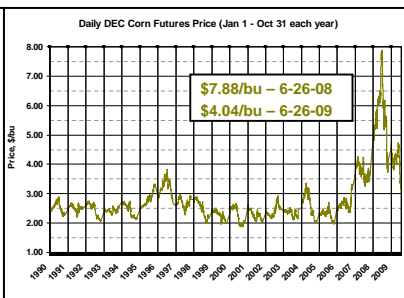
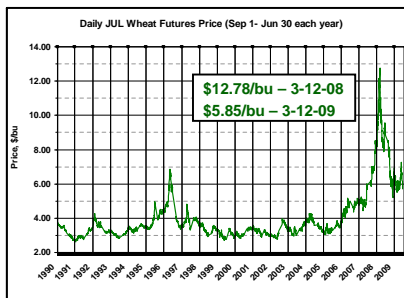
## Flexible Cash Rents – WHY?

- Trend in Kansas has been moving away from crop share leases to more cash leases
- Volatility of last few years has significantly increased the risk of *fixed* cash rents
  - Most popular question received in the summer of 2008 was “How can I terminate my lease with my current tenant?” (in 2009 several questions about tenants walking away)

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## Grain markets a bit volatile recently ...

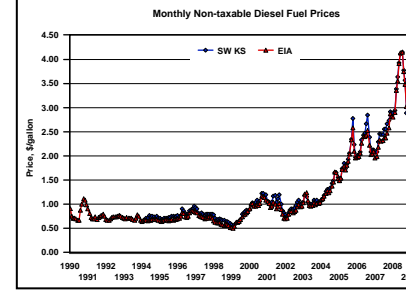
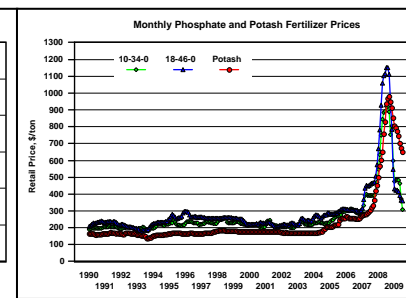
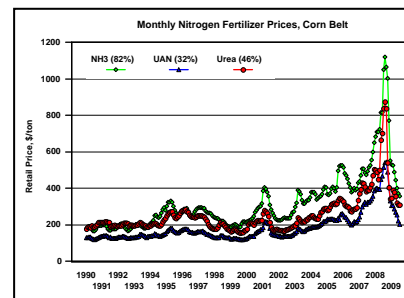


Extremely volatile crop prices make negotiating fixed cash rents very difficult and risky (good chance someone is not going to be happy). Crop share has a built in buffer to this risk.

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## Input markets a bit volatile recently ...



Extremely volatile input prices make negotiating fixed cash rents very difficult and risky. Most crop share arrangements have a built in buffer to much of this risk (i.e., those that share fertilizer expense).

74



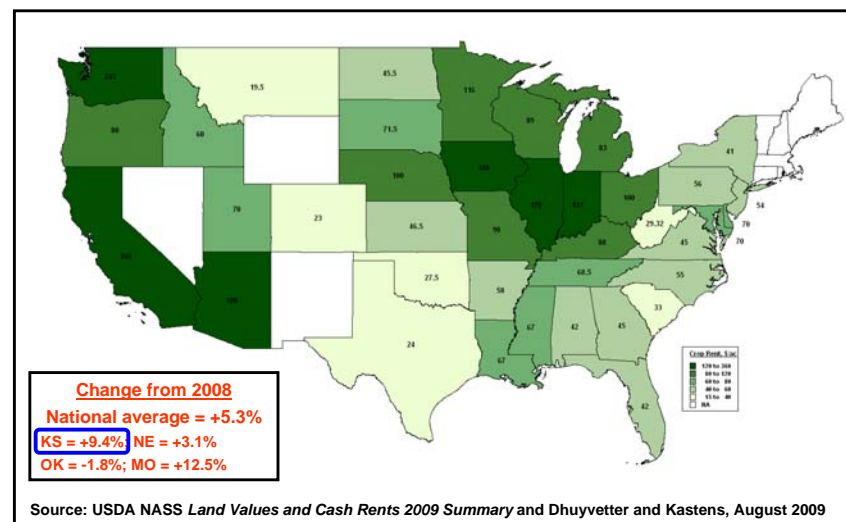
## Flexible Cash Rents – WHY?

- Trend in Kansas has been moving away from crop share leases to more cash leases
- Volatility of last few years has significantly increased the risk of *fixed* cash rents
  - Most popular question received in the summer of 2008 was “How can I terminate my lease with my current tenant?” (in 2009 several questions about tenants walking away)
  - It appears that some producers feel that once a cash rent is negotiated this rate is appropriate into eternity... (by definition, this is true for landowners as well)
  - Tenants are concerned that if they increase their cash rent, they will never be able to lower it (is that true?)

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## Crop Land Average Rent per Acre, 2009



Source: USDA NASS *Land Values and Cash Rents 2009 Summary* and Dhuyvetter and Kastens, August 2009

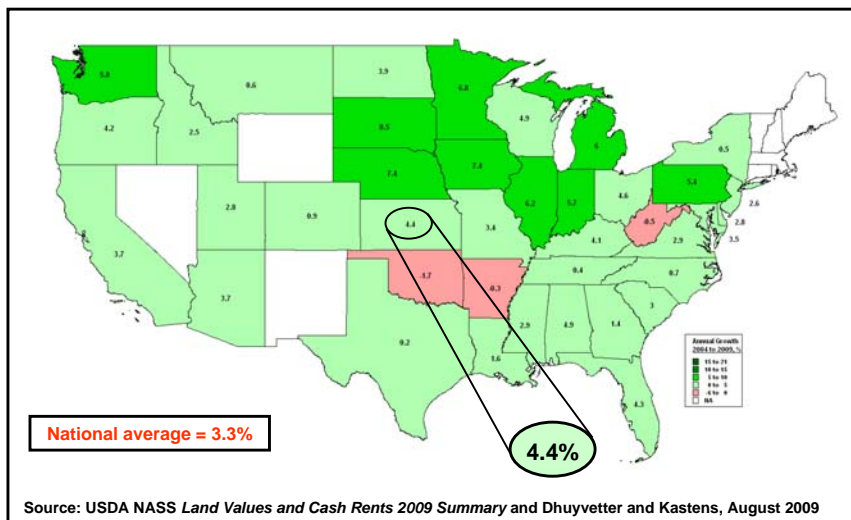
\* Corresponding changes in pasture land rents were US=0.0%; KS=+6.5%; NE=0.0%; OK=0.0%; and MO=-3.8%.

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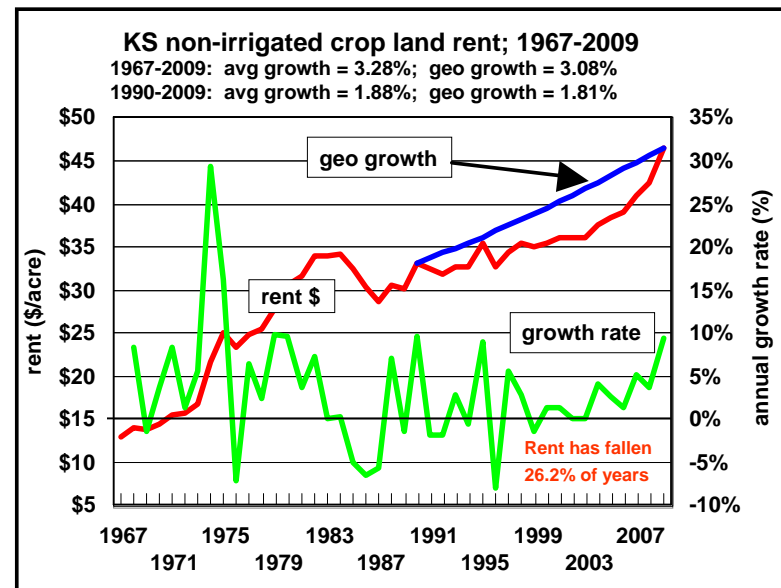
## Crop Land Rent Average Annual Growth Rate

Jan 1, 2004 to Jan 1, 2009, percent (geo mean)



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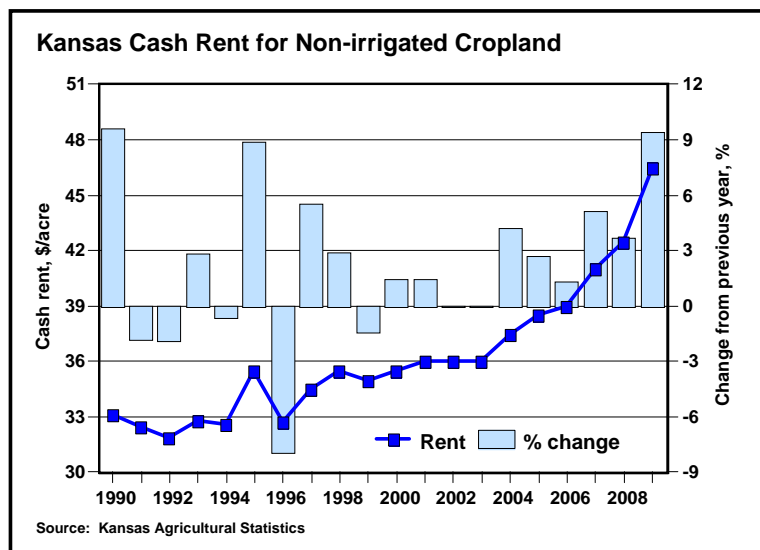
## Cash rent historical perspective



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## At the very least, vary cash rent from year to year

(not perfect, but better than never changing rent)



Fixed cash rents can be indexed to statewide average to make year-to-year changes

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## Flexible Cash Rents – WHY?

- Many good reasons to go to cash rent, but there are risks associated with multi-year fixed rents
- Method of allowing rents to vary from year-to-year without having to renegotiate rents annually (avoid mental anguish associated with rental rate negotiation)
- Way of sharing/managing risks associated with volatile markets (without hassles of crop share lease)
- FSA has changed rules allowing flexible leases
- Very appealing for certain situations, but they are not appropriate in all cases (depends on why you are considering cash rent)

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## Flexible Cash Rents – HOW?

- This is the tricky part...
- There is not a single “right” way to do this!  
(but there are lots of wrong ways)
- A couple things to keep in mind
  - Risk-return trade-off suggests that higher risk is associated with higher expected returns and vice versa
  - Absolutely critical that all parties involved understand the flexible arrangement and how it can play out under different scenarios (i.e., have a written lease and include example calculations)

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## Flexible Cash Rents – HOW?

- Steps to determining a flexible cash lease
  1. Establish a base cash rent  
(often tied to local market and/or costs of production)
  2. Determine how base rent will be “flexed” ...
    - Price deviation from base (fixed bushel rent)
    - Yield deviation from base
    - Price and yield (revenue) deviation from base
    - Cost deviation from base

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## Flexible Cash Rents – HOW?

### Questions to ask

1. Does cash rent flex up and down or only up?  
(this should impact base price as it relates to market rate)
2. Is crop insurance included / accounted for?
3. What sources of data are used to determine base rent and flex provisions?
4. What will final rent be under alternative potential outcomes? (i.e., ask yourself lots of “what if” questions)

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## Flexible Cash Rents – SUMMARY

- Flexible cash leases are simply a way of sharing risks of unpredictable markets (and yields?) without the hassles of crop ownership
- Why not simply give landowner ad hoc “bonuses” when times are good?
- There are many types of flex leases – no one method is right or best in all cases
- Important to think about risk-return tradeoff when establishing the base and trigger point where bonuses are earned (e.g., does lease flex both ways?)

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## Flexible Cash Rents – SUMMARY

- Prices used should be a market average (publicly reported) as opposed to actual price received (typically recommend using a harvest time price – identify dates and locations in advance)
- Yields can be either county or farm averages, but need to be spelled out how/source for determining
- It is important that both parties know and understand what they are agreeing to!
- Likely will become more common in the future and thus producers will need to be willing to use them or risk losing land

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kcd@ksu.edu

## Questions ???



[www.agmanager.info](http://www.agmanager.info)

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