Agricultural Land Values in a Rapidly Changing Market

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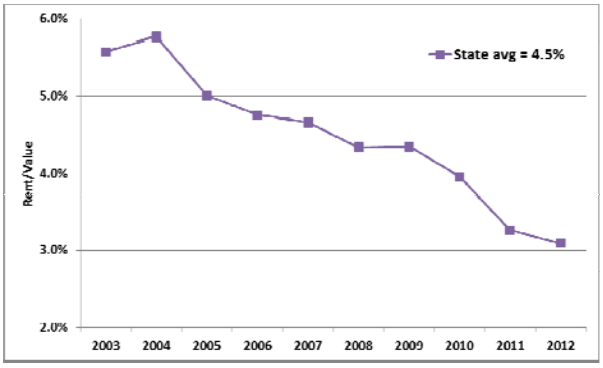
LAND MARKETS

Land Markets

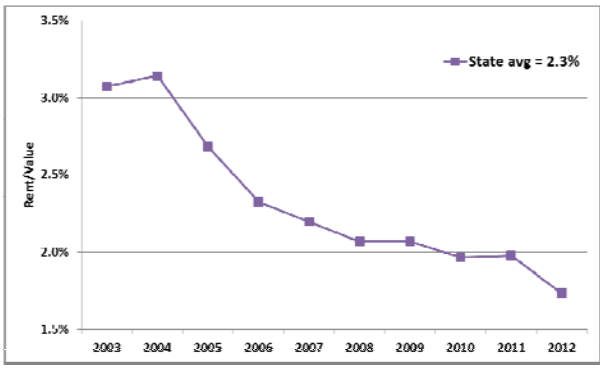
- Why land?
  - Interest rates are LOW and are expected to stay that way for the near-term
  - If you are holding cash…
    - Savings rates
  - If you want to borrow…
    - Lock in a fixed rate at 4-5%
- Land as an investment
  - 3 - 4% return on non-irrigated cropland
  - 1 - 2% return on pasture

Returns to Non-Irrigated Cropland



Source: Kansas Agricultural Statistics (KAS), K-State

Returns to Pasture



Source: Kansas Agricultural Statistics (KAS), K-State

Returns to Land

- But land appreciates…
  - Even if annual return is near 0%, you still have an asset that appreciates over time

Source	Price Change (2011-2012)	
	Non-Irrigated Cropland	Pasture
KC Fed	29.2%	26.0%
KS Ag Stats	25.9%	17.3%
K-State	23.5%	15.6%
Average:	**26.2%**	**19.6%**

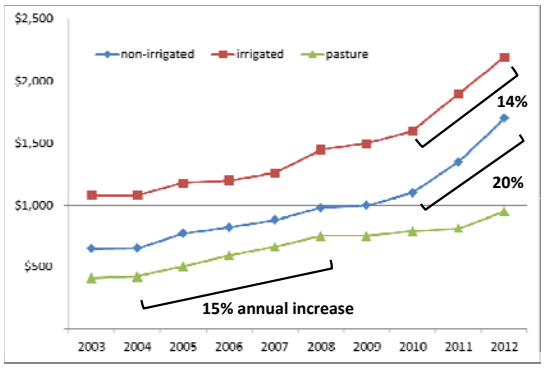
KANSAS AG LAND VALUES

Kansas Land Values

- Where do we get information on land values?
- KS Ag Stats Service
  - Historical series


Kansas Land Prices and Cash Rental Rates

Kansas Land Values



Source: Kansas Agricultural Statistics (KAS), Kansas Board of Agriculture, United States Department of Agriculture

Kansas Land Values

- Potential problems with these data
  - Surveys ask for an opinion (read: guess)
  - NOT a market-based estimate
  - Don't know the spread, only the average
  - Funding for KAS is declining
- Can we add to the available information and improve our estimates of land value trends?

Kansas Land Values

- Need market transaction data
  - Property Valuation Department, Topeka
- 2010-12 sales data
  - County location
  - Size of parcel
  - Mixture of irrigated, non-irrigated and pasture
  - Enrollment in government set-asides
  - Valuation of improvements

PVD Sales Data

- Data were 'cleaned' to remove outliers
  - Removed parcels under 40 acres
  - Bare land sales only (no houses)
  - Arm's length sales only
- Other aspects of data
  - Wyandotte and Johnson counties not in dataset
  - Soil type data used to create a productivity measure (AUM capacity)

PVD Sale Data 2010-12

	Total
Ag Land Transactions:	5,782
2012	39.8%
2011	30.9%
2010	29.3%
	Average
Parcel Size	229
CRP Acres	1.8%
Sales Per County	56

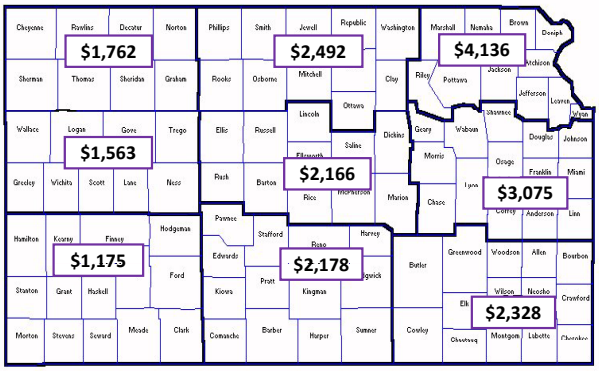
PVD Sale Data 2010-12

Price per Acre	Average	% of All Transactions
Non-Irrigated	$1,734	55.4%
Irrigated	$2,465	5.8%
Native Grass Pasture	$1,325	33.5%
Tame Grass Pasture	$1,765	5.1%
All Cropland and Pasture	$1,638	100%

Results of the Land Model

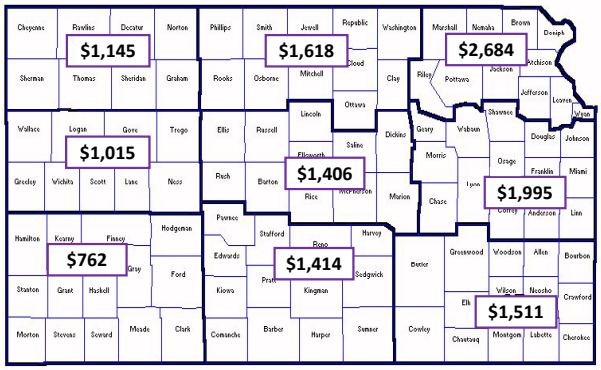
- 2012 estimate for non-irrigated cropland
  - $2,312/acre
  - 36.0% higher than 2012 KAS estimate: $1,700/acre
- 2012 estimate for pasture
  - $1,497/acre
  - 57.5% higher than 2012 KAS estimate: $950/acre
- 2012 estimate for irrigated cropland
  - $5,144/acre
  - 134% higher than 2012 KAS estimate: $2,200/acre

2012 Non-Irrigated Land Values



Available at: www.agmanager.info/farmmgt/land/lease

2012 Pasture Land Values



Available at: www.agmanager.info/farmmgt/land/lease

Land Model Results

- Use of a regression model to estimate land values
  - Alternative to summary statistics

Price per Acre	Sample Average	Estimated Value
Non-Irrigated	$1,734	$2,312
Pasture	$1,545	$1,497
Irrigated	$2,465	$5,144

- But estimate doesn't reflect the range
  - Many people focus on the highest prices they have heard about in their area

Land Model Results

- Regression allows specification of unique characteristics of land parcels
  - County (rain fall, taxes, proximity to urban development)
  - Parcel size
  - Productivity (AUM)
  - Mixed use parcels
  - When the sale occurs (year, quarter)
  - CRP enrollment

Land Model Results

- CRP enrollment decreases values
  - Approx. a 22.5% discount if acres are enrolled
  - We don't know residual years on contract
- Parcel size affects price per acre
  - Negative and nonlinear effect
  - Example of this effect in Geary county
    - 600 acre parcel
      - $1,787/acre (tot: $1,072,200)
    - 200 acre parcel
      - $2,055/acre (tot: $411,000)

Land Model Results

- Non-irrigated versus pasture value ratio
  - Estimated at: 58.8%
  - Don't need 'puritan' pieces to obtain this value
- Higher quality ground fetches higher price
  - Based on AUM productivity index (NRCS)
- Selling season effects
  - Strongest prices: Oct.-Dec. (6.9% > summer)
  - Weakest prices: Jan.-Mar. (5.1% < summer)

Land Model Results

- Fit of the model
  - 37.7% of variability is explained by this model
  - Not bad for cross-section data, but put limits on how people should use the estimates
- What isn't included in the model that matters?
  - Parcel-specific factors
  - Macroeconomic factors
  - Investor expectations
  - Supply of land

Land Model Results

- Location and productive capacity are important drivers of price
  - Measureable and parcel-specific
  - Unique aspects of land (hunting, road access)
- Model doesn't capture other factors in market
  - Expected returns to agriculture in future (crop prices, input costs)
  - Excess liquidity in the real estate market
- Supply of land
  - Assume it is fixed over the study period

Land Model

- Next steps in the research
  - Update with new PVD data as it is available (Jan-Feb)
  - Estimate irrigated land values
  - Go back to older datasets and try to merge
  - Draw in KSFMRA data for comparisons and subsample estimation
  - Investigate impact of land supply on overall model results (time, space)

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Resources

- 2012 Kansas Land Values and Rental Rates
  - By Mykel Taylor and Kevin Dhuyvetter
  - http://www.agmanager.info/farmmgt/land/county/CountyValuesRents_Mar_2013.pdf
- Land buying and leasing information and decision-making tools
  - http://www.agmanager.info/farmmgt/land