

# Land Ownership: Should We Keep Buying

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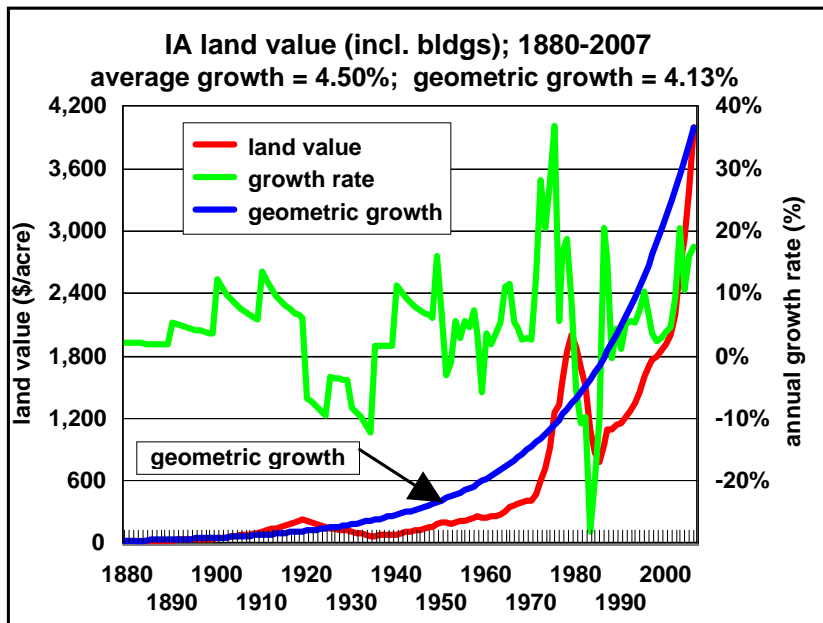
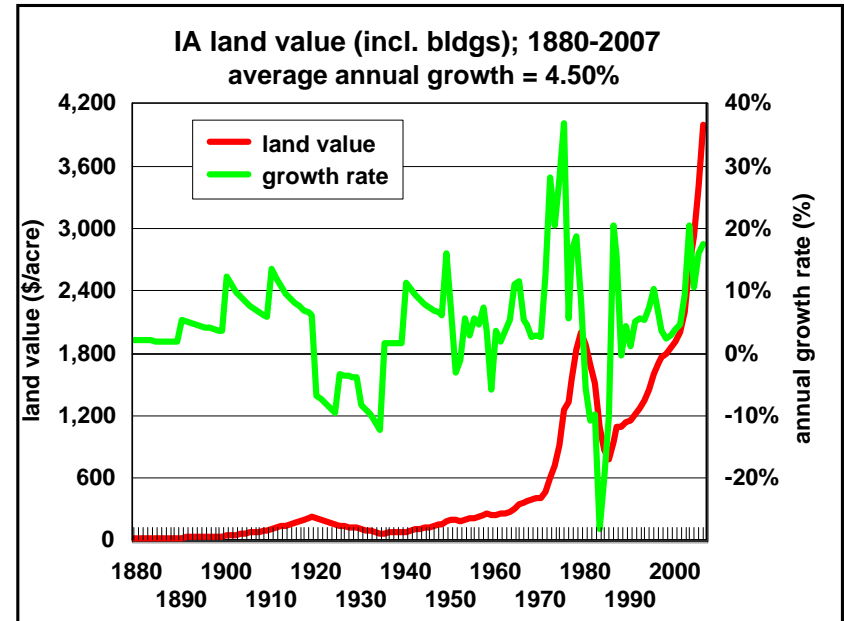
Department of Agricultural Economics  
 Kansas State University



Presented at:  
 Iowa Land Investment Expo  
 February 12, 2009, Altoona, Iowa



## Historical perspective

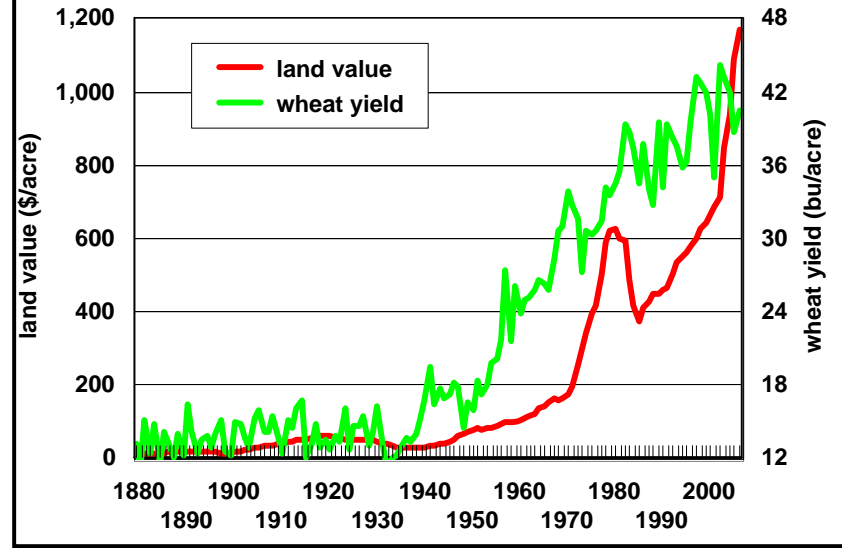


1879 starting land value for Iowa was \$22.52

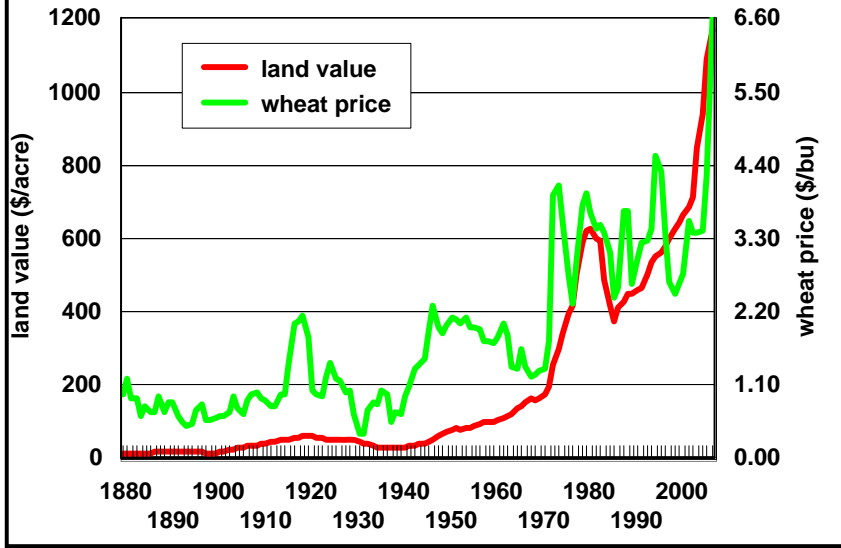
## What drives land prices in the long run?

Crop production technology (yield grows at 1.6%)

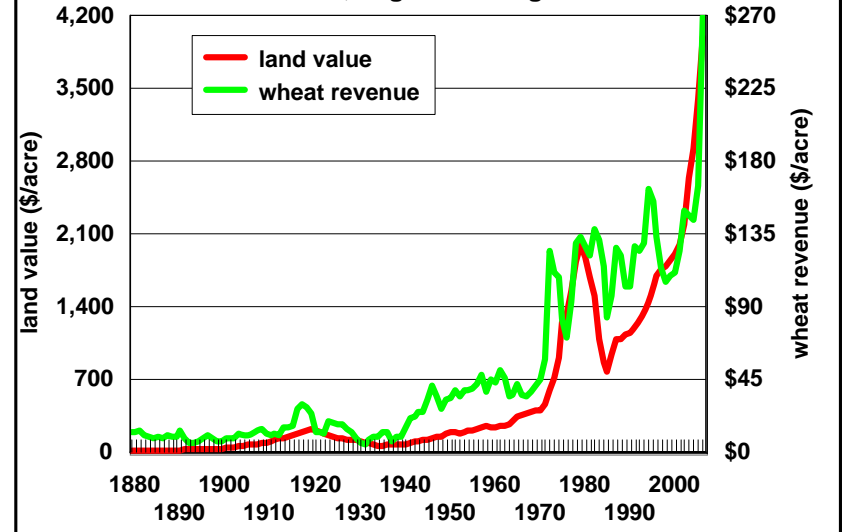
KS land value and U.S. wheat yield; 1880-2007  
correlation = 0.90; avg yield growth = 1.60%



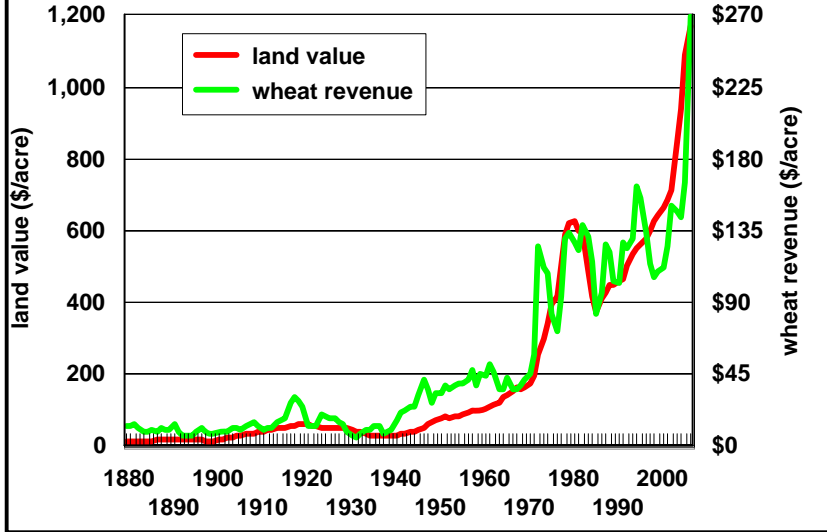
KS land value and U.S. wheat price; 1880-2007  
correlation = 0.87; avg wht price growth = 3.76%

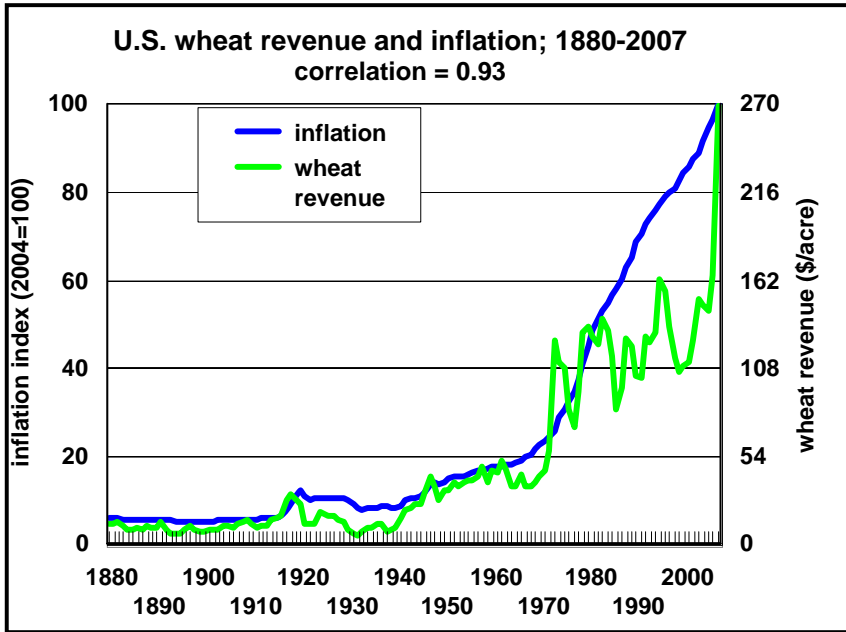


IA land value and U.S. wheat revenue; 1880-2007  
correlation = 0.93; avg. revenue growth = 4.62%



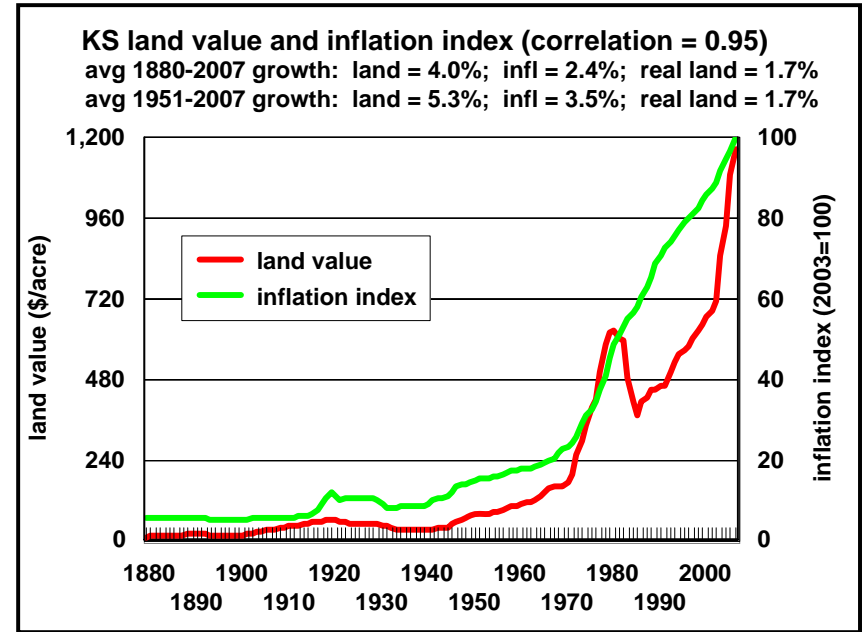
KS land value and U.S. wheat revenue; 1880-2007  
correlation = 0.95; avg. revenue growth = 4.62%





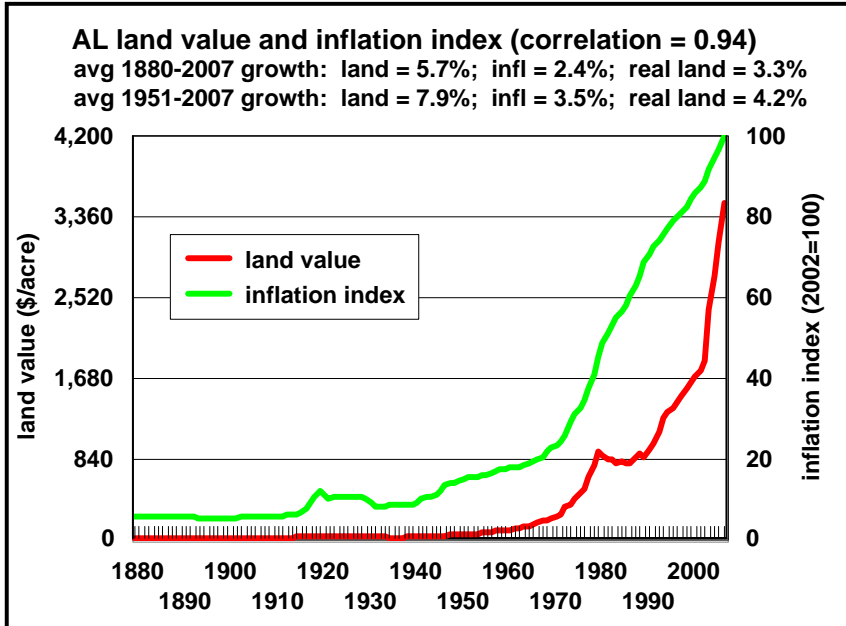
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**Just add real growth (technology) to inflation?**



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**Was technology growth that much higher in AL than KS?**



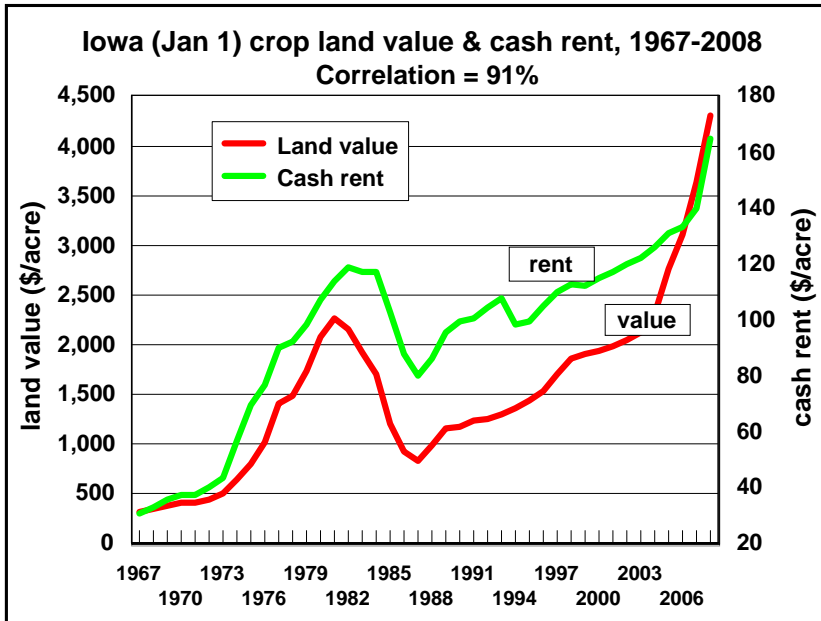
Obviously, something else is going on here . . . we'll come back to this later

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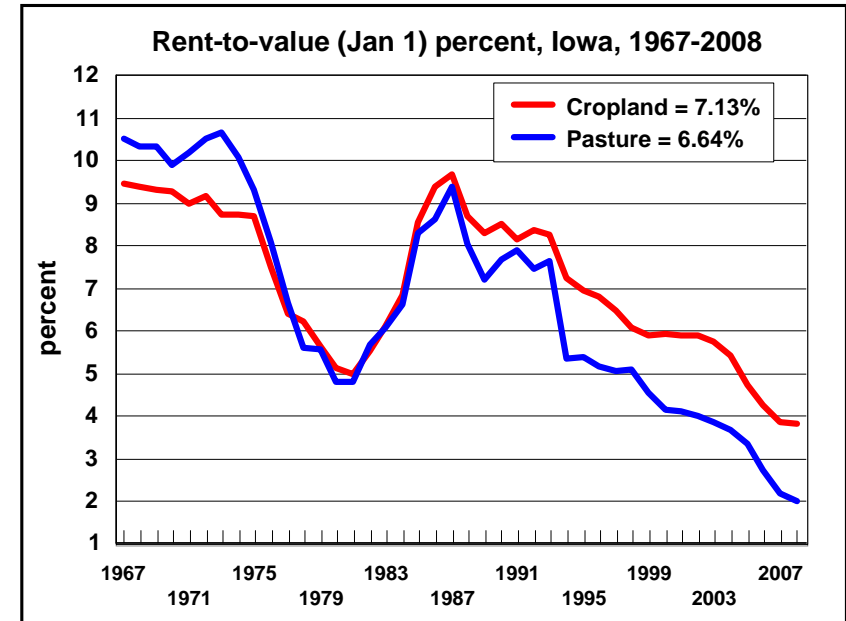
**Returns to land**

- Capital gains (growth)
- Cash returns (rent)
  - For owner-operators rent is the “profit” assigned to land after all other opportunity costs are considered
- The two returns to land are similar to other investments such as the stock market (capital gains and dividends)

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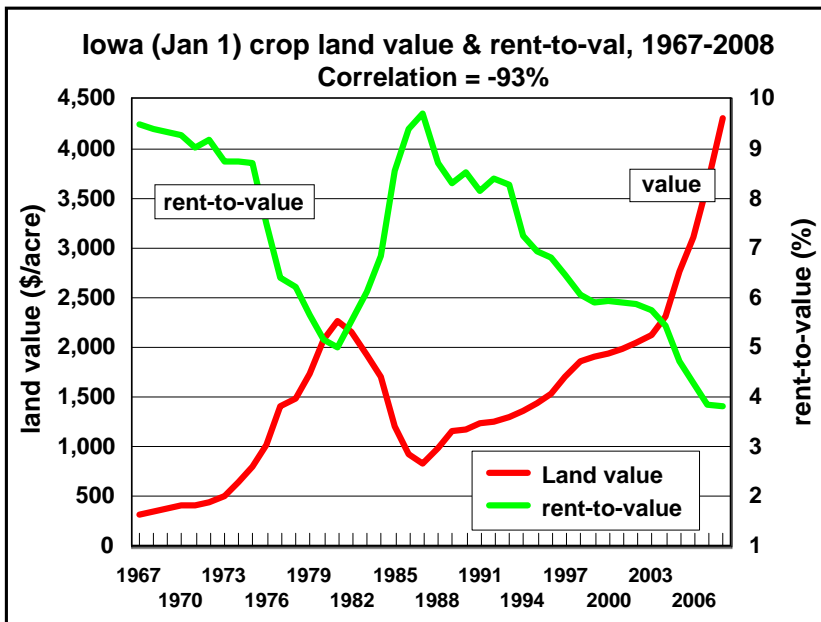
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Downtrend hints at something else going on . . .

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Are we seeing a land price bubble today?



We'll come back to rent-to-value issues later . . .

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## Returns to Land

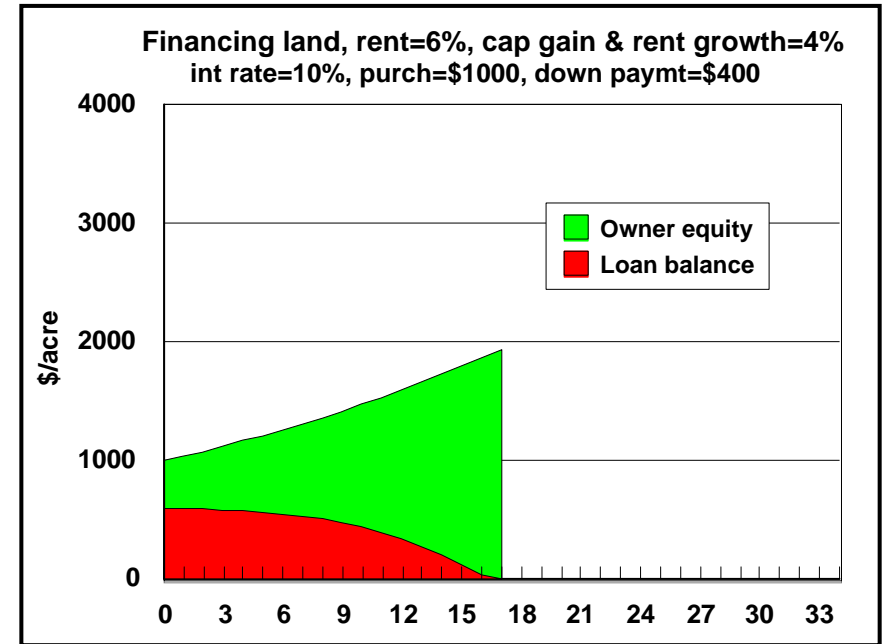
- Land
  - Cash returns: rents or rent-equivalents on owned land
  - Non-cash returns: capital gains (growth)
- Stock market
  - Cash returns: dividends
  - Non-cash returns: capital gains (growth)
- Typically, neither land nor stock investments “cash flow”

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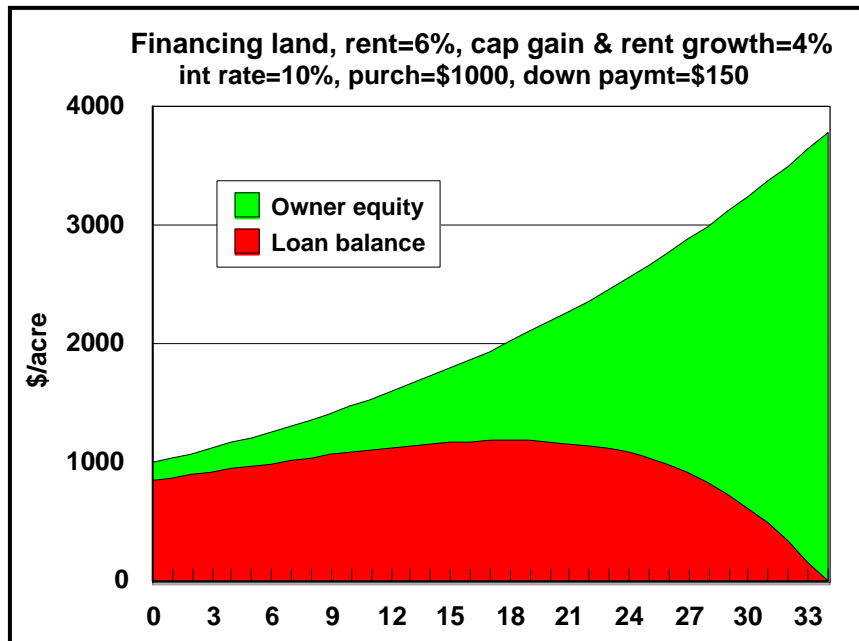
## Cash-flowing land

- Total return (profit) = rent + capital gain
- Cash flow is not the same as profitability
- Cash flowing a land purchase
  - Does rent cover a 100% loan? Almost never!
  - Does rent cover a 25% loan? Almost always!
- Land doesn't cash flow when purchased
  - i.e, rents don't cover loan payments
  - rents grow, loan payments don't
  - land eventually cash flows
- A simplistic view follows . . .

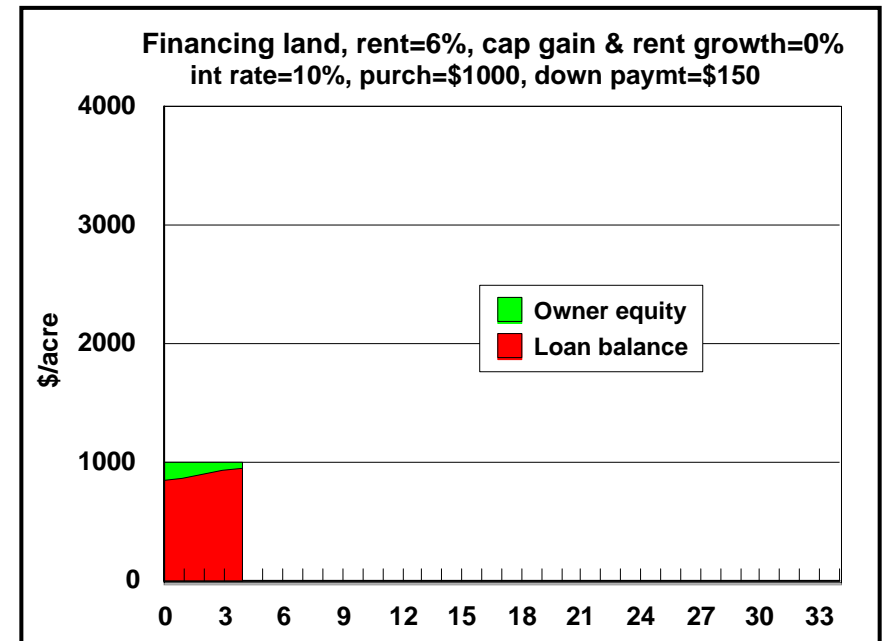
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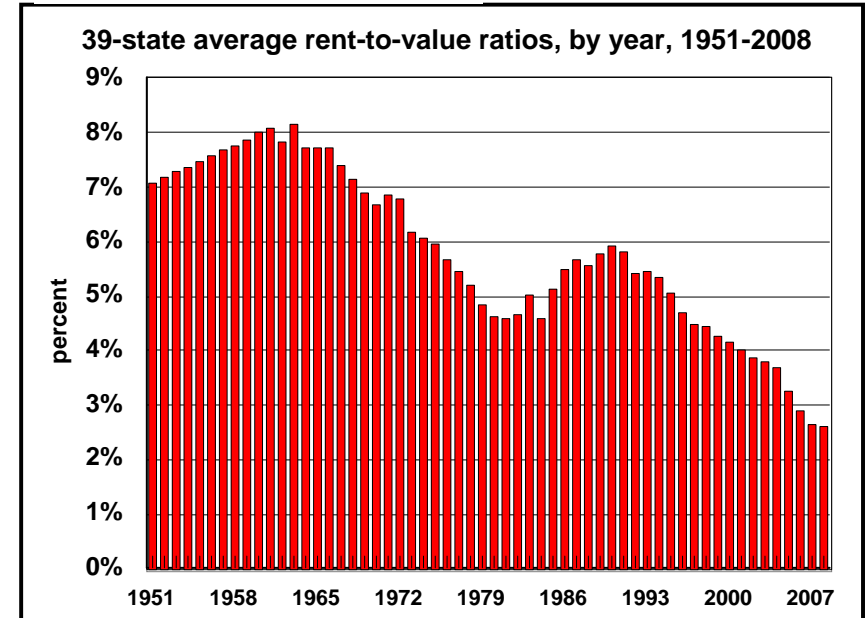
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## Preceding slides showed:

- **Borrowing too much money AND being too optimistic on expected profit can be disastrous**
  - Everybody knows this
  
- **Seasoned farmer landowners often say:**
  - “I never bought a piece I didn’t think was too high at the time, yet it always seemed to work out”
  - This one is a hard one for folks to understand
    - Reaction is “I just need to be optimistic enough”
    - Reaction should be “makes sense when I understand”

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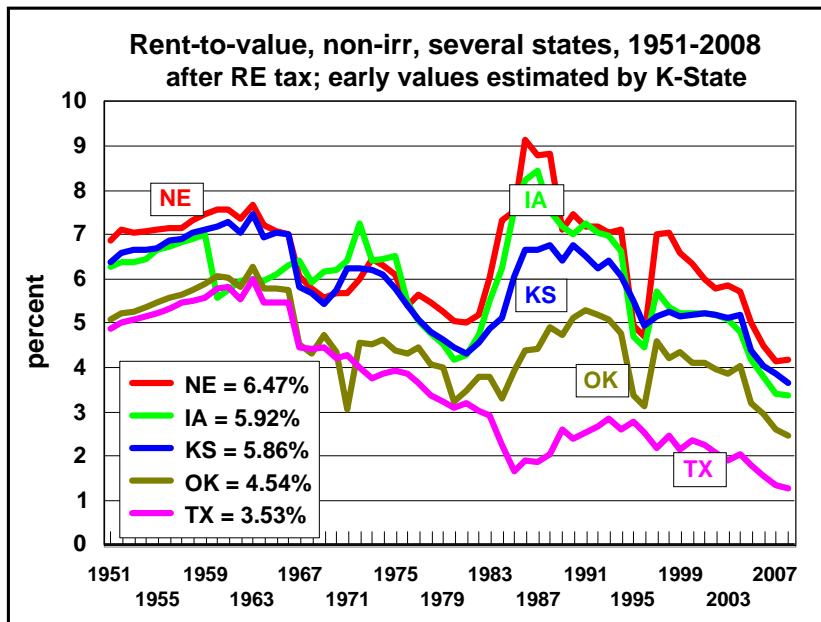
## Coming back to rent-to-value (RTV)



Is RTV really a reliable indicator of land price bubbles?

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## Still another reason that RTV may be a poor indicator



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**A number of years back we began to incorporate non-agricultural aspects into agricultural land values**

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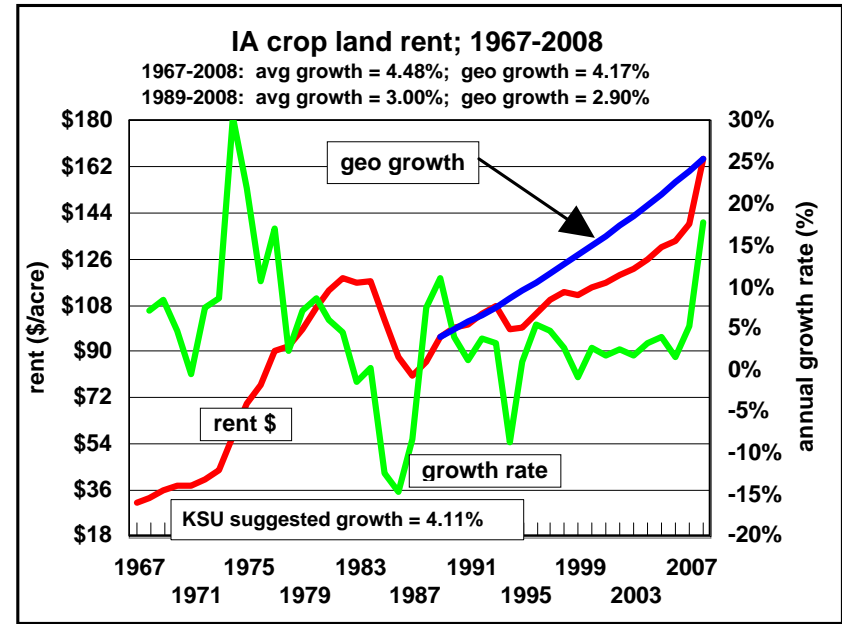




## Buying Land – How much can I afford?

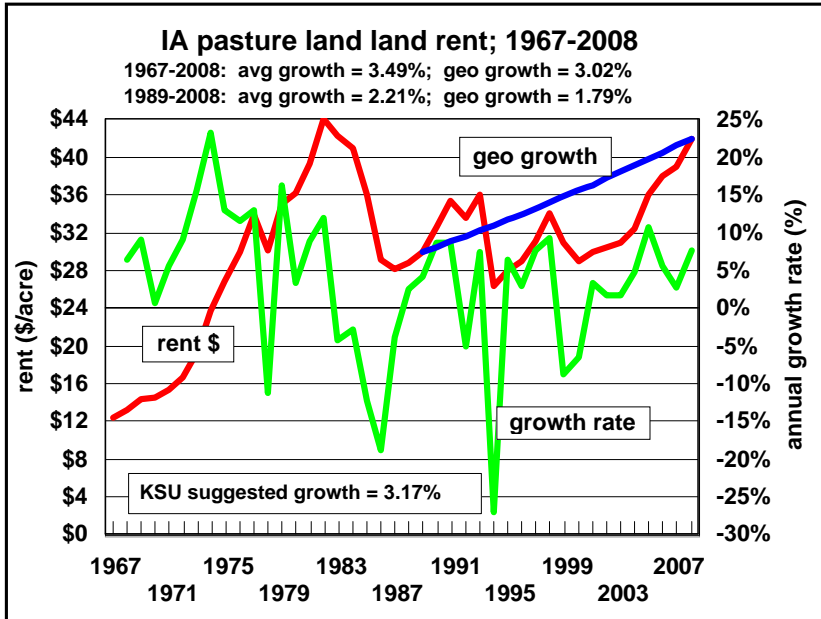
- Valuing the capital gains portion
  - Pick a “selling point,” say 30 years from now
  - What will the land be worth then?
    - Assume some annual capital gain % -- ag and non-ag
  - What is left after “sell” & pay cap gains tax?
  - What is that amount worth today?
- Valuing the rent portion
  - What 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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If grain demand comes back, expectation for growth might need to be raised

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

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

Print report

Inputs	KS	Pasture	Waste	Average
Crop	120	35	5	160
Market pri	\$1,130	\$860	\$0	\$1,036
Purchase	\$1,130	\$860	\$0	\$1,036
Ag rent-c	\$45.00	\$15.50	\$0.00	\$37.14
Real estat	\$3.96	\$3.01	\$0.00	\$3.62
Non-ag ret	\$0.00	\$0.00	\$0.00	\$0.00
Time hori	30	30	30	30
Income tax	43%	43%	43%	43%
Capital gal	15%	15%	15%	15%
Interest rate on land loans (discount rate)	7.00%	7.00%	7.00%	7.00%
Percent of purchase price that is financed (only needed for return on equity calculations)	40.0%	40.0%	40.0%	40%
Growth rate on ag rent and ag portion of land value (see column G in Guidelines)	3.01%	2.75%	0.00%	2.99%
Growth rate on non-ag rent (normally >= inflation rate)	0.00%	0.00%	0.00%	n/a
Growth rate on total (ag and non-ag) land value (see column I in Guidelines)	4.00%	4.00%	0.00%	4.00%
Calculated non-ag growth rate on land value	0.96%	1.22%	0.00%	0.98%

Calculated Outputs	KS	Pasture	Waste	Average
After-tax interest rate on land loans (discount rate)	3.99%	3.99%	3.99%	3.99%
After-tax rent, \$/acre (now property taxes are removed as well)	\$23.40	\$7.12	\$0.00	\$19.10
Discounted value of all future after-tax ag rents	\$608.10	\$173.30	\$0.00	\$495.08
Projected	\$0.00	\$0.00	\$0.00	\$0.00
Projected	\$3,665.04	\$2,789.32	\$0.00	\$3,358.94
Discounted	\$2,750.81	\$1,940.68	\$0.00	\$2,506.06
Discounted	\$1,015.69	\$773.00	\$0.00	\$936.86
Discounted	\$775.40	\$549.95	\$0.00	\$706.70
Present value less market price	\$1,623.79	\$951.30	\$0.00	\$1,425.94
Present value less purchase price	85%	77%	n/a	84%
Approximate pre-tax rate of return on assets	55%	22%	n/a	43%
Approximate pre-tax rate of return on equity	\$493.79	\$91.30	\$0.00	\$390.31
	\$493.79	\$91.30	\$0.00	\$390.31
	9.82%	7.68%	n/a	9.43%
	11.70%	8.14%	n/a	11.05%

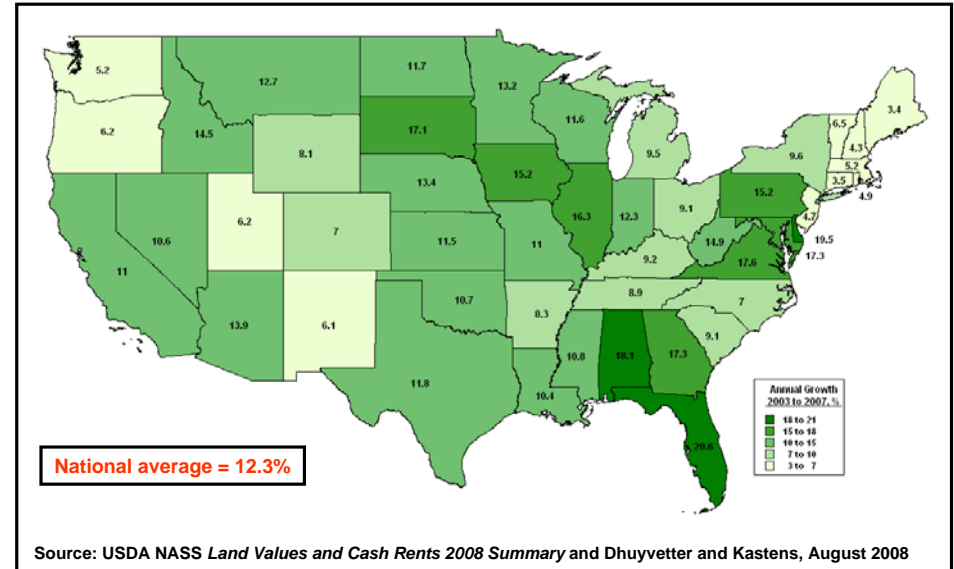
**We provide quite a bit of background on the inputs you need to inject to make an informed land ownership decision.**

**More and more we tend to focus on ROA and ROE, especially for making good micro land purchases**

## Moving to more current information

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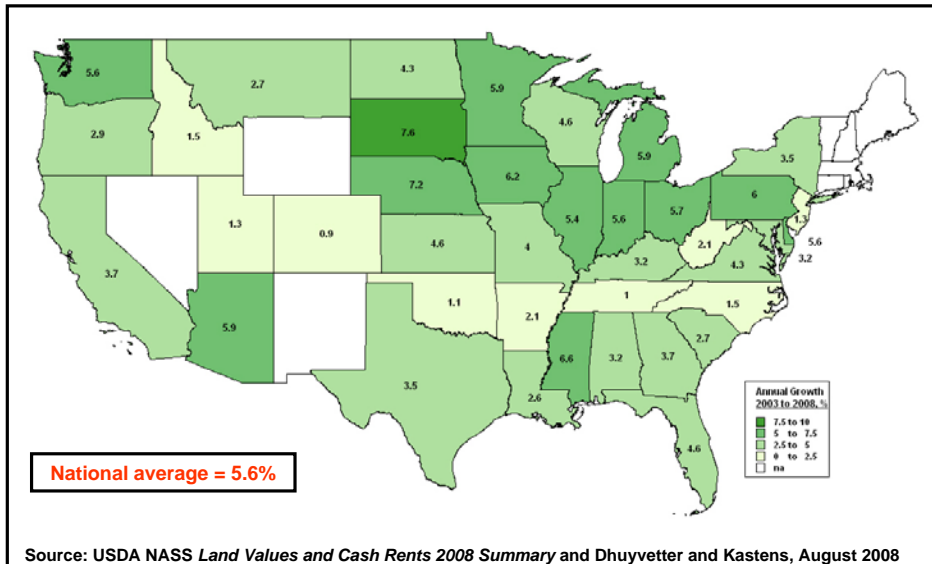
## Crop Land Average Annual Growth Rate Jan 1, 2003 to Jan 1, 2008, percent (geo mean)



\* Corresponding pasture land growth rates are US=15.2%; KS=16.0%; NE=15.8%; OK=17.3%; and MO=12.8%.

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## Crop Land Rent Average Annual Growth Rate Jan 1, 2003 to Jan 1, 2008, percent (geo mean)



\* Corresponding pasture rent growth rates are US=7.6%; KS=4.2%; NE=4.3%; OK=3.3%; and MO=4.3%.

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## The “new world” (started in 07)

- 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

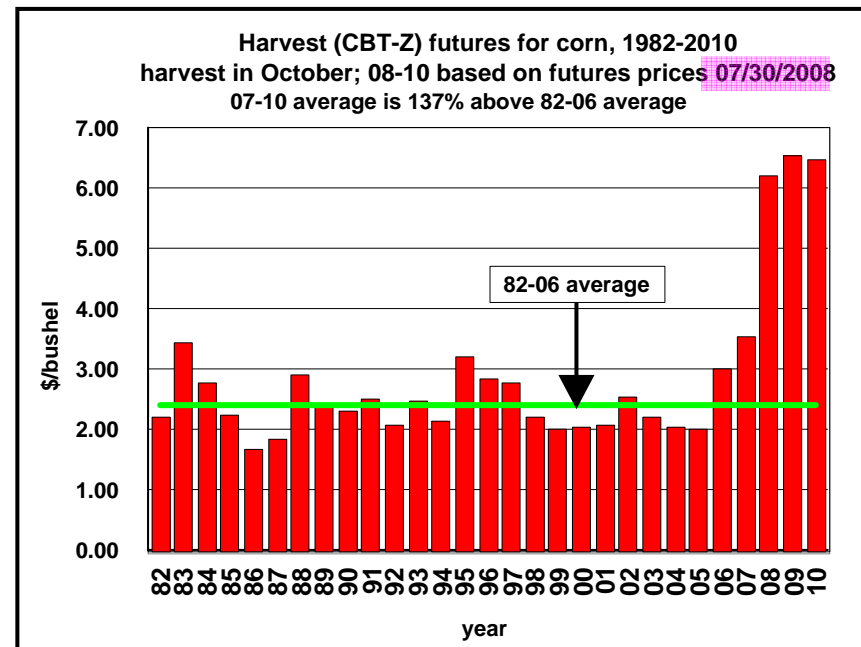
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## The “newer” new world (summer 08)

- Fertilizer, herbicide, machinery costs, and fuel, all had 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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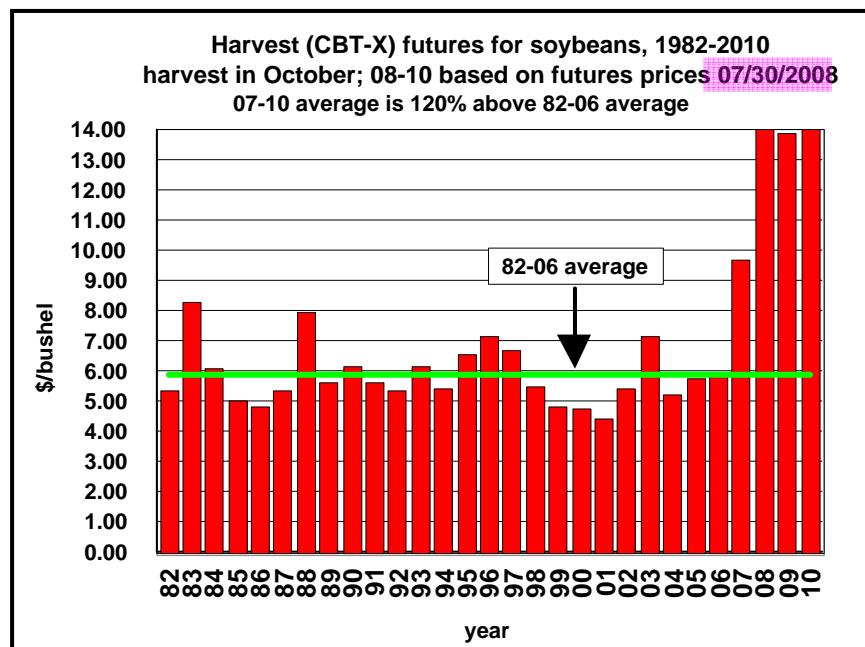
## How long will strong crop prices stick around?



... what we were saying mid-summer 2008

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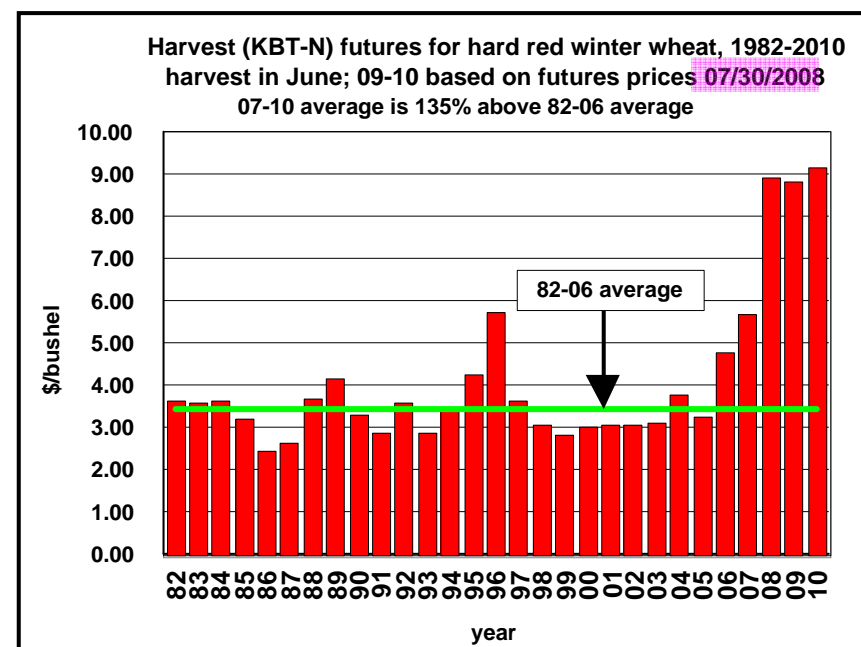
## It’s not just corn prices...



... what we were saying mid-summer 2008

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## It’s not just corn prices...



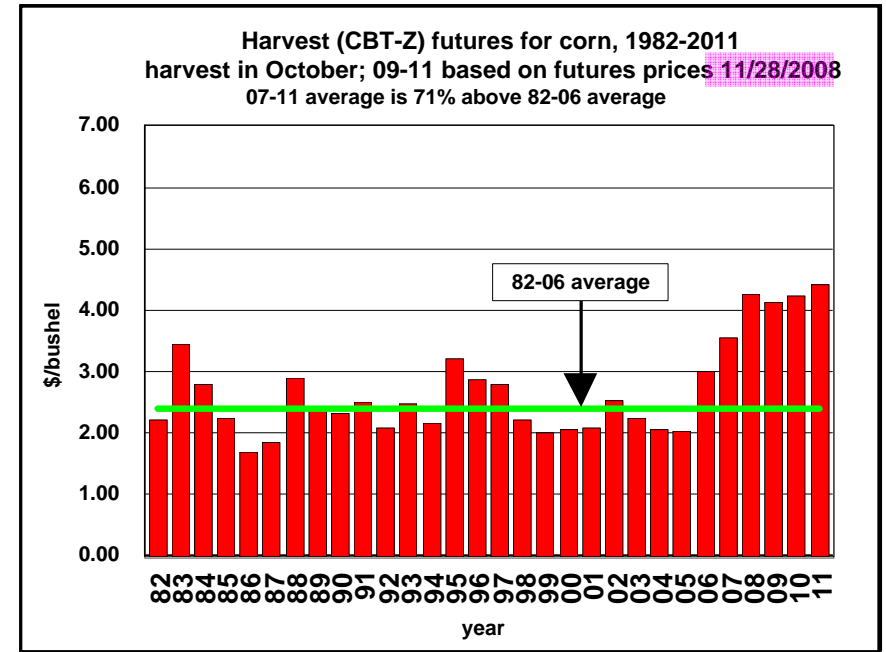
... what we were saying mid-summer 2008

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## The "newer" newer new world (late 2008)

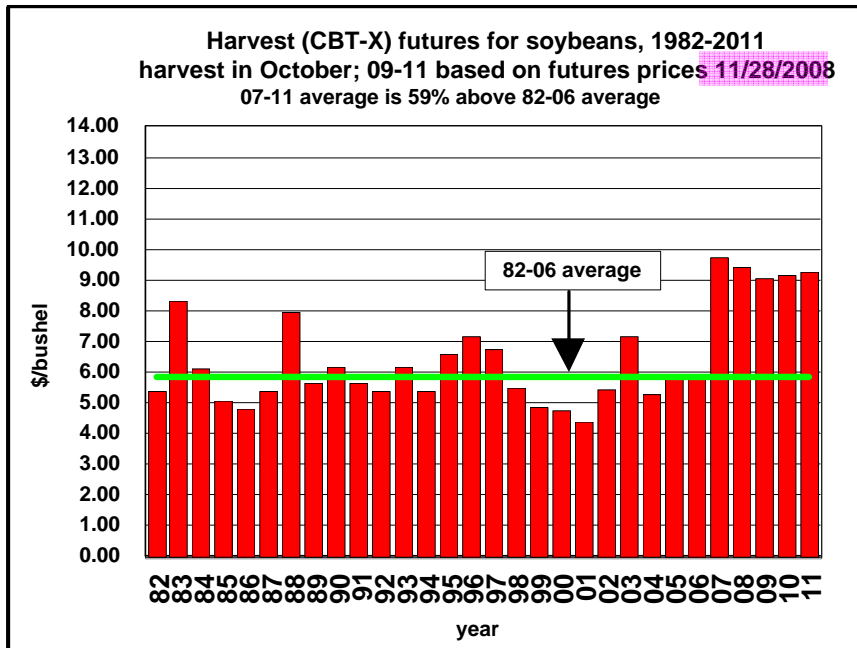
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## What a difference 4 months makes!



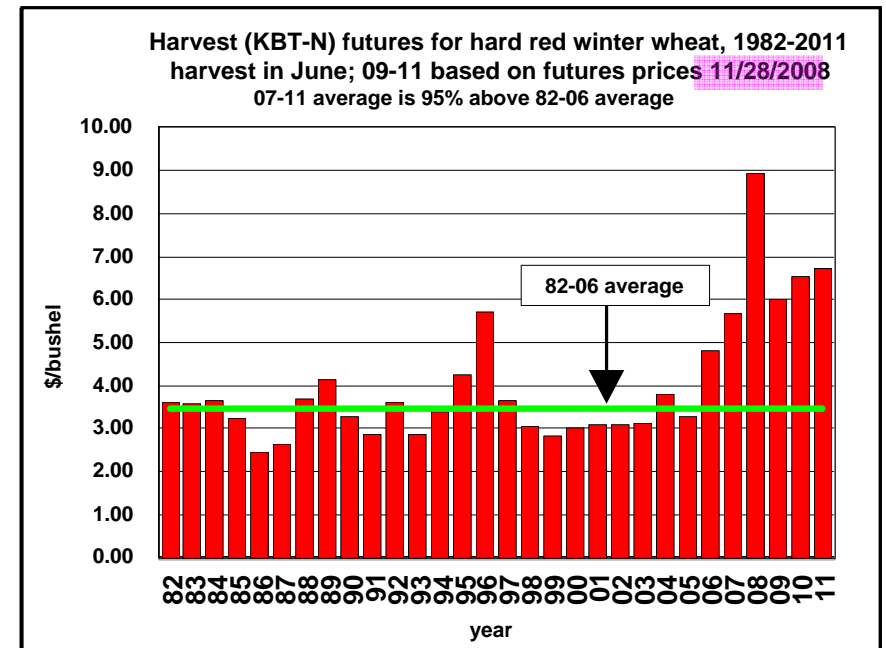
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## What a difference 4 months makes!



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## What a difference 4 months makes!



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## The “newer” newer new world

- Expected crop prices down
- Fuel costs have fallen way back
  - Machinery operations likely will cost less in 2009?
- Fertilizer and herbicide prices have fallen
- Will crop prices cover “still high” fertilizer prices?
- Tenants’ risk is still huge

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- Change in expected farming profit, thus rents that **COULD** be paid, varied dramatically the last 12 months, and may continue to do so.
- But, rents don’t adjust that fast and neither do land values
  - Faster adjustment in Corn Belt (low risk)
  - Slower adjustment in High Plains (high risk)

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## Are land prices overheated?

- Investors began asking early in 2008

### Analysis if 2012 corn price is 175% of 2006 (\$3.00 to \$5.25)

Kastens & Dhuyvetter research, 2008 -- expectation of agricultural land returns

	IA	MN	MO	IL	NE
if buy land 1/1/09 this % above the 1/1/08 market >	15.9%	13.1%	12.5%	16.5%	16.6%
we expect this return on equity (50% leveraged) >	<b>14.0%</b>	<b>15.0%</b>	<b>16.3%</b>	<b>12.1%</b>	<b>15.8%</b>

### Analysis if 2012 corn price is 133% of 2006 (\$3.00 to \$4.00)

Kastens & Dhuyvetter research, 2008 -- expectation of agricultural land returns

	IA	MN	MO	IL	NE
if buy land 1/1/09 this % above the 1/1/08 market >	15.9%	13.1%	12.5%	16.5%	16.6%
we expect this return on equity (50% leveraged) >	<b>10.6%</b>	<b>11.6%</b>	<b>12.6%</b>	<b>8.8%</b>	<b>12.7%</b>

- The end of the world is NOT nigh!

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## Summary

- Land values:
  - Appear to be falling a little in low-risk areas
  - Appear to still be rising in high-risk areas
- It’s not the end of the world unless you believe the worst of the economic pessimists
- There are still opportunities to buy land
  - Especially if you do a good micro analysis
    - Land quality & soil fertility, perhaps no-till considerations
    - Economies of size impacts on your farm
    - Machinery efficiency (field size & shape)
    - Distance from headquarters
      - Use this stuff to adjust rents
        - Internally, or in fact so as to appeal to outside investors
  - Do your homework (use KSU-Landbuy.xls!)

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