

Not Another Farmland Bubble!!! Not Another Farmland Bubble??? Not Another Farmland Bubble...

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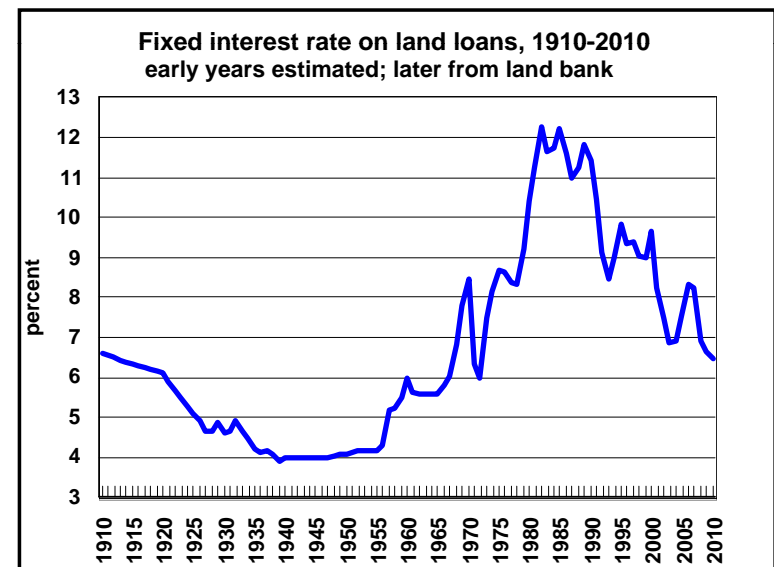
Ag economists and ag land

- Ag economists:
 - Try to numerically understand causal forces
 - Tell stories about how factors relate to results
 - So the focus often is on auxiliary things, e.g., interest rates, farm income, inflation, crop prices, etc.
 - Over-simplify to make the stories more believable
 - Pretend like they're not predicting but it is the purpose
 - Sure don't want to miss the next land crash
- We are marginally different, in that we
 - Spend less time thinking of auxiliary things
 - Think more of land as an outside investment
 - Rather than a residual claimant on farmers' profits
 - Are closer to the decision-maker
 - We are in fact regularly in the land market
 - Are much more "how-to," using spreadsheets

A typical over-simplification of today

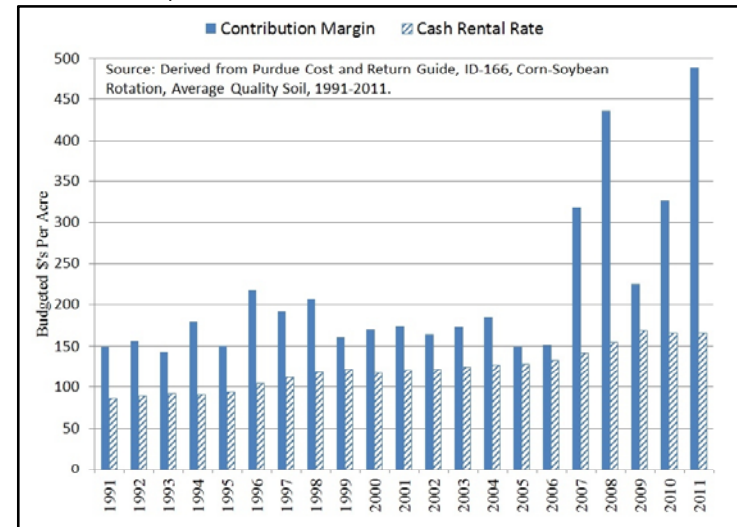
$$Value = \frac{Annual\ land\ income}{Capitalization\ rate}$$

- Idea is that when the difference between the land market and this calculated value goes beyond the "norm" it's time to quit buying
- What measure of income do you use?
 - Residual farm profit (farmers buy land)
 - Rent (investors buy land)
- What interest rate do you use?
 - Bank CD's (farmers buy land)
 - Land loan interest rate (investors?)

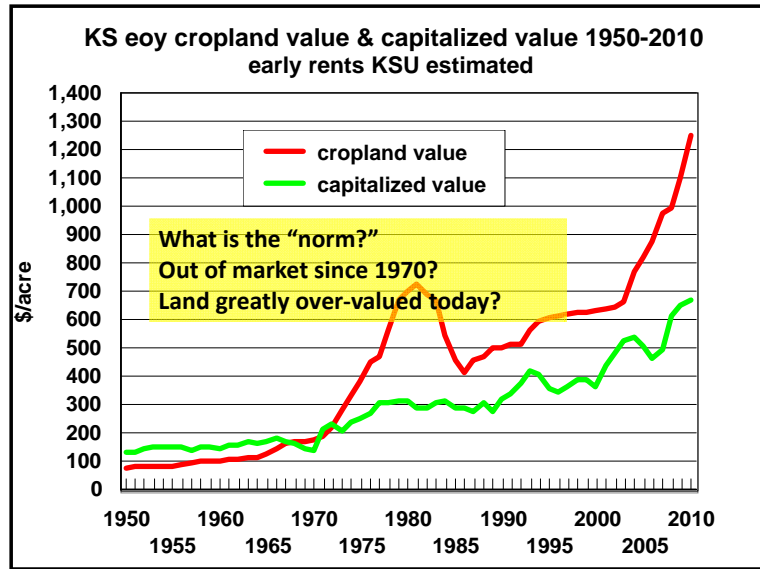


But, farmers could be paying much greater rents today

Figure 1. Budgeted Contribution Margin and Cash Rental Rate for Average Quality Indiana Farmland, 1991-2011



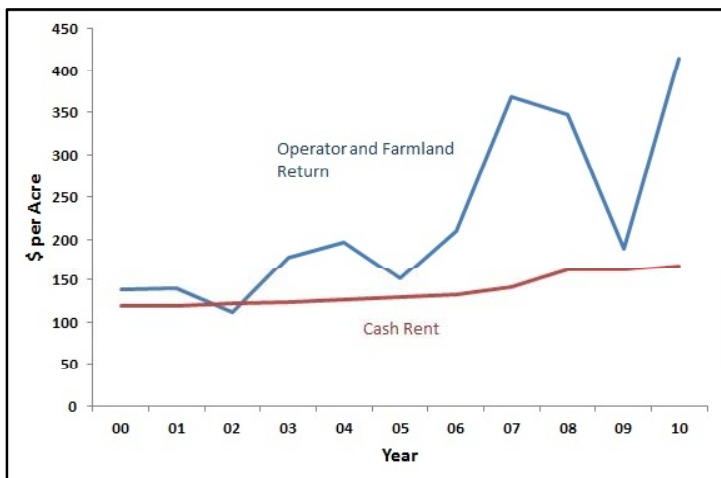
Choices, 2nd Qtr. 2011 (Gloy, Boehlje, Dobbins, Hurt, Baker)



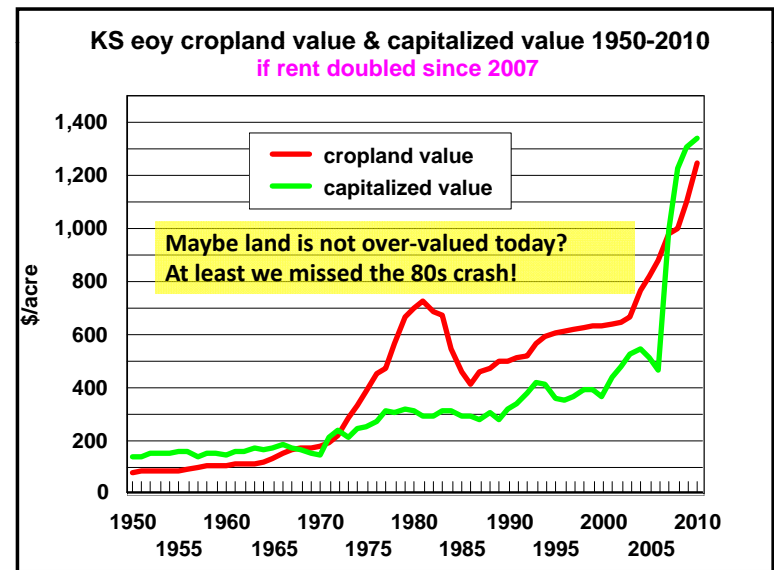
eoy = end of year

But, farmers could be paying much greater rents today

Figure 2. Operator and Farmland Returns and Cash Rents, Illinois, 2000-2010



Choices, 2nd Qtr. 2011 (Schnitkey and Sherrick)

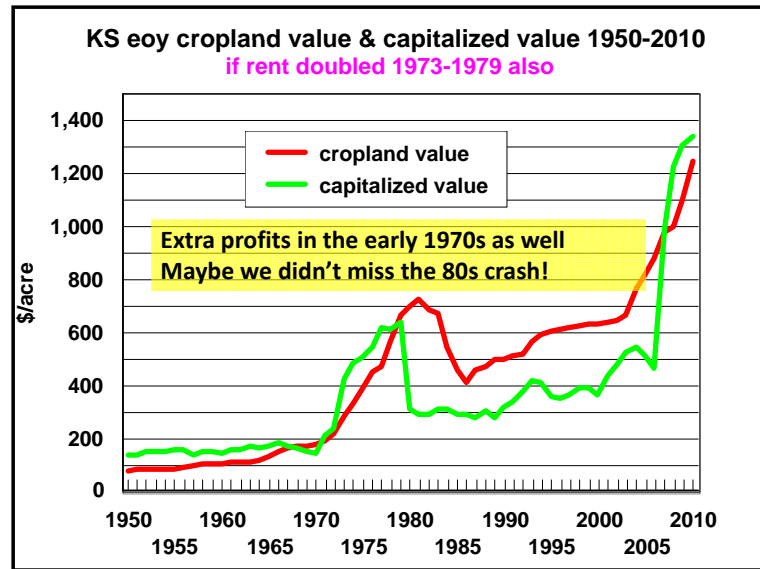


eoy = end of year

A typical over-simplification of today

$$Value = \frac{Annual\ land\ income}{Capitalization\ rate}$$

- Story from this simplification: Sure, if interest rates stayed low and farm profits high these land values are rational
 - High interest rates
 - Make other investments appear more attractive
 - Make loans hard to service, thus default
 - Not if interest rate locked in
 - Okay, maybe we just need farm profits to stay high to support current land values?
- Decisions falling out of this simplification:
 - Market timing – next to nothing
 - Which parcel to buy – next to nothing
 - Expected total rate of return – absolutely nothing

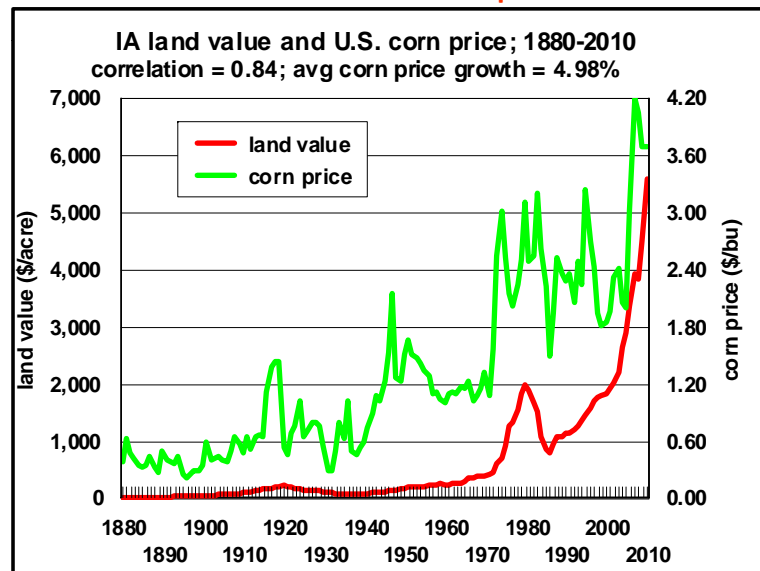


eoy = end of year

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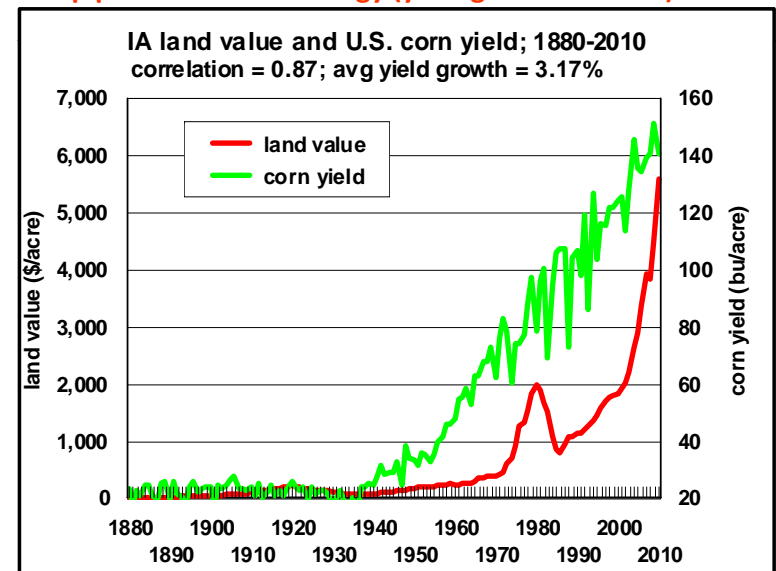
Land values are associated with corn price



avg land value growth = 4.68%

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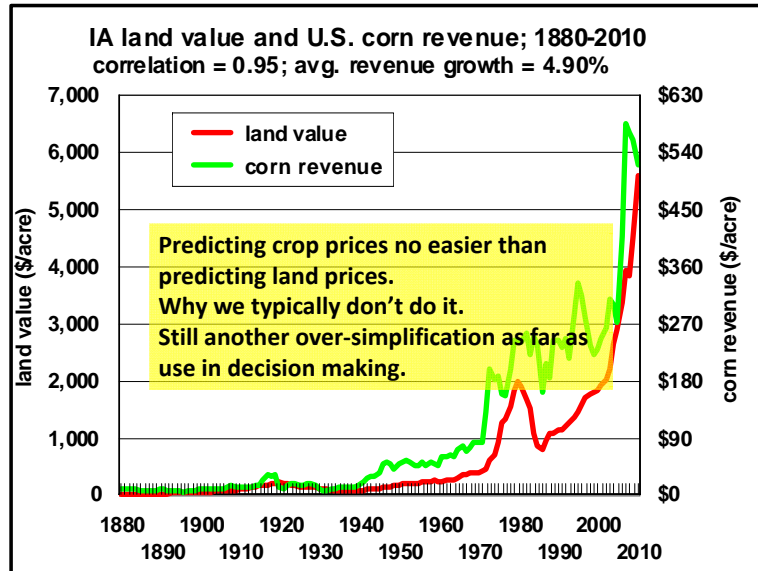
Crop production technology (yield grows at 3.17%)



avg land value growth = 4.68%

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Land values strongly related to corn revenue



avg land value growth = 4.68%

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Back to the cap rate idea

$$Value = \frac{Annual\ land\ income}{Capitalization\ rate}$$

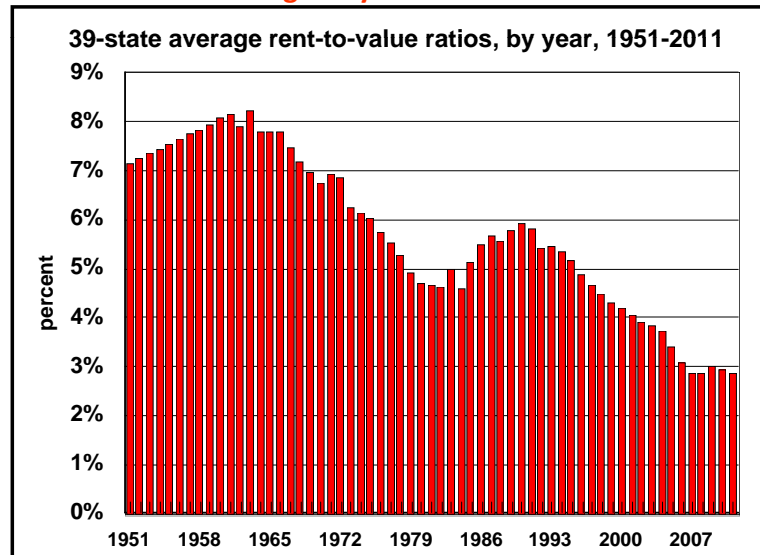
- Many years ago we started using a more direct cap rate (historical rent-to-value):

$$Cap\ rate\ (rtv) = \frac{Annual\ land\ income}{Value}$$

- For years in the 1990s we would say land is overvalued if RTV falls below around 6%
- Over time it became increasingly obvious that RTV was an insufficient decision tool

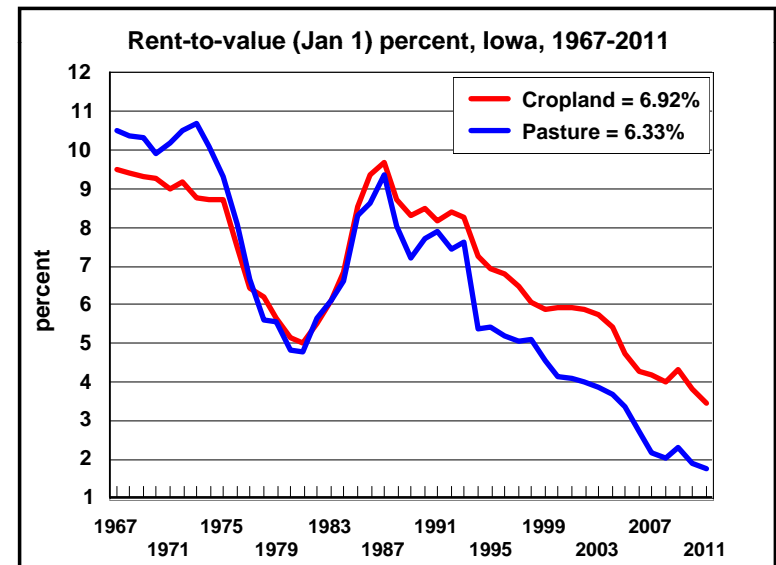
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Have investors been grossly unwise for decades?



Is RTV really a reliable indicator of land price bubbles?

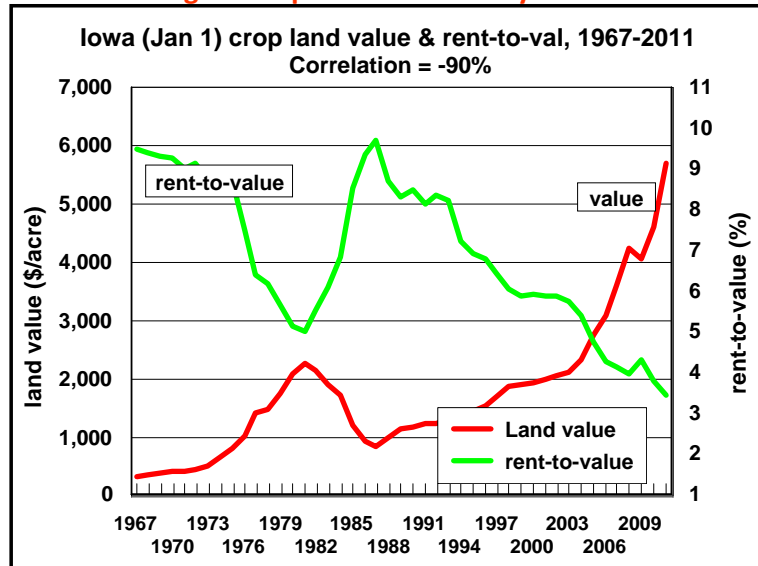
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Downtrend hints at something else going on besides ag profits . . . avg means little

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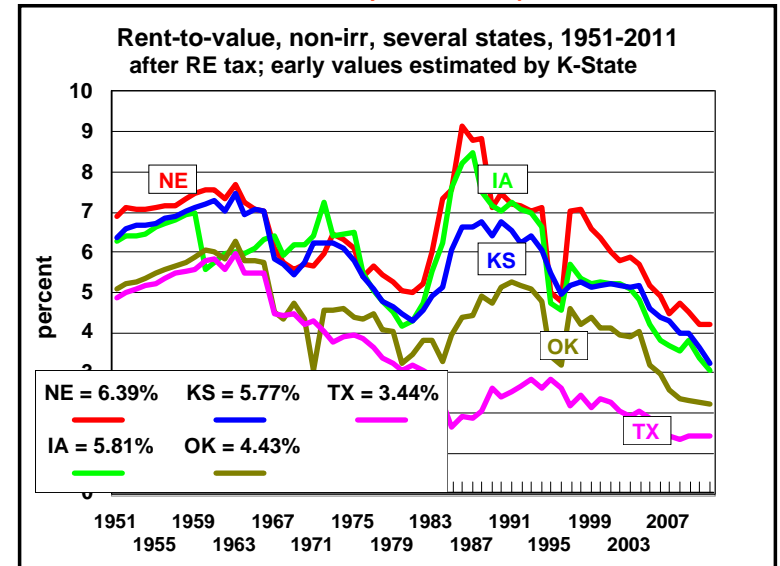
Are we seeing a land price bubble today?



Just how important is rent-to-value as an indicator of smart investing?

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Still another reason that RTV may be an incomplete indicator



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- At the same time farmers were seeking better decision tools, so were outside investors
- We started looking more at state-specific data, where we especially observed RTV to be an insufficient explainer
- We began to incorporate non-agricultural aspects into agricultural land values, separating ag land's ag value from its non-ag value
- Along the way we found historical land value and returns data to be a better predictor of future values than using auxiliary variables such as inflation, interest rates, etc.

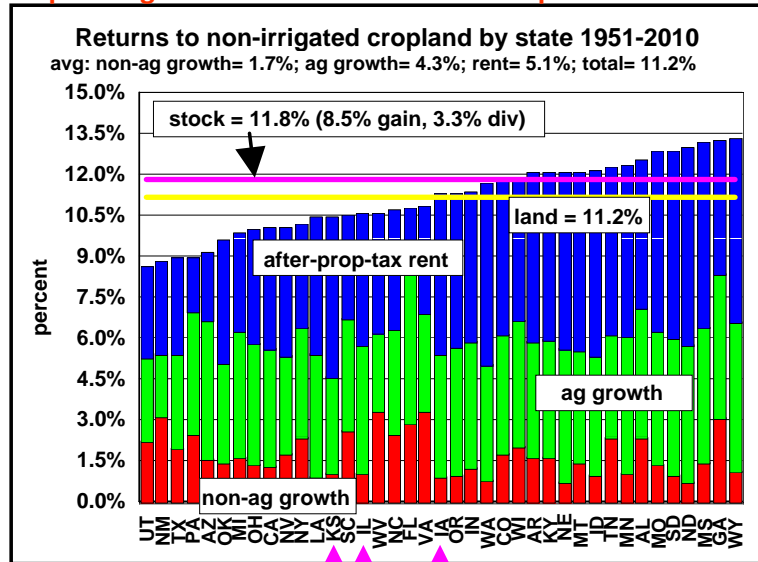
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Non-ag growth is:

- True non-ag growth
 - Recreation, hunting, homesites, 1031 exchanges
 - Subject to the broader economic forces
 - Unemployment rate, taxation issues, competing investments
- Speculation
 - A portion of true non-ag growth is speculation on future trends about such non-ag things
 - Speculation among ag buyers (farmers and investors) about future ag trends
- Not easy to sort out the two!
 - Especially when looking forward

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Separating land returns into various components



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Buying Land – How Much Should I Pay?

- 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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Inputs to our decision tool, *KSU-Landbuy.xls*

- History provides the guide:
 - Expected growth rate on land value
 - Expected growth rate on rent
- Known by user:
 - Purchase price
 - Current rent
 - Property tax rate
 - Income tax rate
 - Interest rate
- Somewhat known by user:
 - Market price

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KSU-Landbuy.xls spreadsheet for land investment decisions

Inputs				Print report			
IA	IA	IA	IA	IA	IA	IA	IA
Crop	Pasture	Waste	Average				
160	0	0	160				
\$5,700	\$2,650	\$0	\$5,700				
\$6,500	\$770	\$0	\$6,500				
\$196.00	\$46.00	\$0.00	\$196.00				
\$28.50	\$13.25	\$0.00	\$28.50				
\$0.00	\$0.00	\$0.00	\$0.00				
30	30	30	30				
35%	35%	35%	35%				
10%	10%	10%	10%				
6.26%	6.26%	6.26%	6.26%				
50.0%	50.0%	50.0%	50%				
4.30%	3.06%	0.00%	4.30%				
0.00%	0.00%	0.00%	n/a				
4.68%	4.68%	0.00%	4.68%				
0.36%	1.57%	0.00%	0.36%				

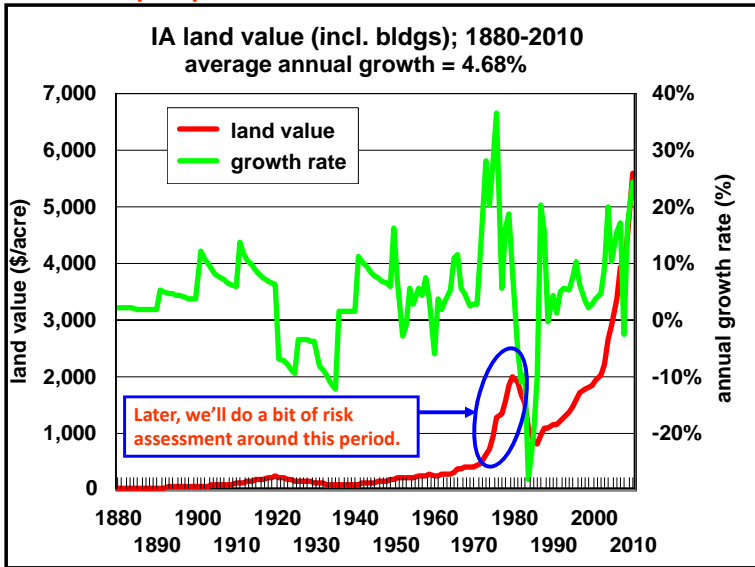
Calculated Outputs			
IA	IA	IA	IA
4.06%	4.06%	4.06%	4.06%
\$108.88	\$21.29	\$0.00	\$108.88
\$3,384.39	\$551.58	\$0.00	\$3,384.39
\$0.00	\$0.00	\$0.00	\$0.00
\$22,479	\$10,451	\$0	\$22,479
\$20,156	\$6,546	\$0	\$20,156
\$6,323	\$2,872	\$0	\$6,323
\$5,690	\$1,807	\$0	\$5,690
\$9,708	\$3,423	\$0	\$9,708
93%	69%	n/a	93%
46%	19%	n/a	46%
\$4,007.55	\$773.10	\$0.00	\$4,007.55
\$3,207.55	\$2,653.10	\$0.00	\$3,207.55
8.91%	15.79%	n/a	8.91%
11.57%	25.33%	n/a	11.57%

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

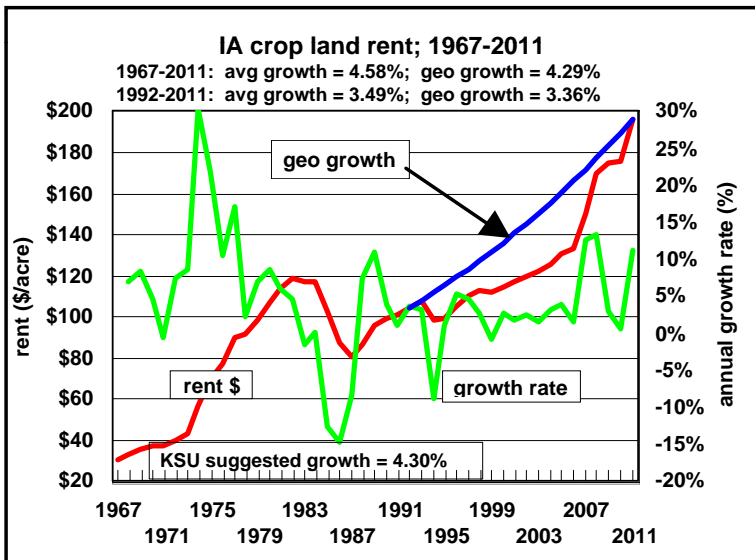
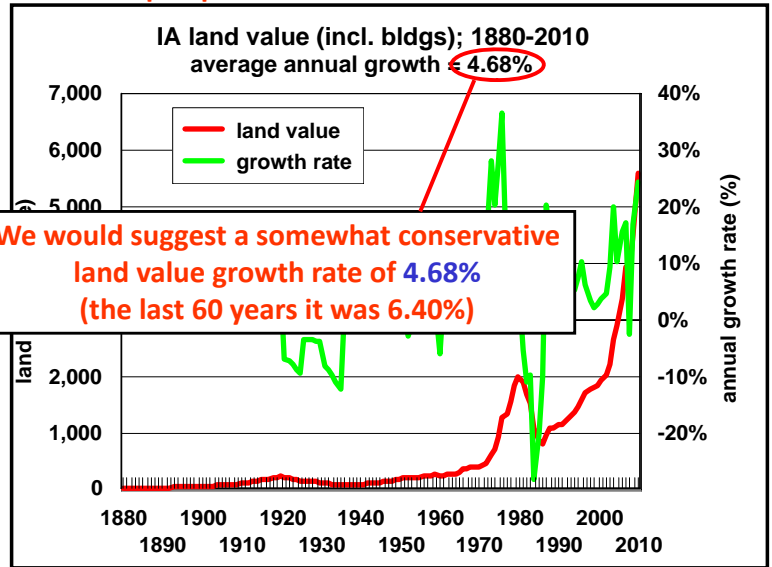
More and more we tend to focus on ROA and ROE (as opposed to the maximum bid price), especially for making good micro land purchases

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Historical perspective

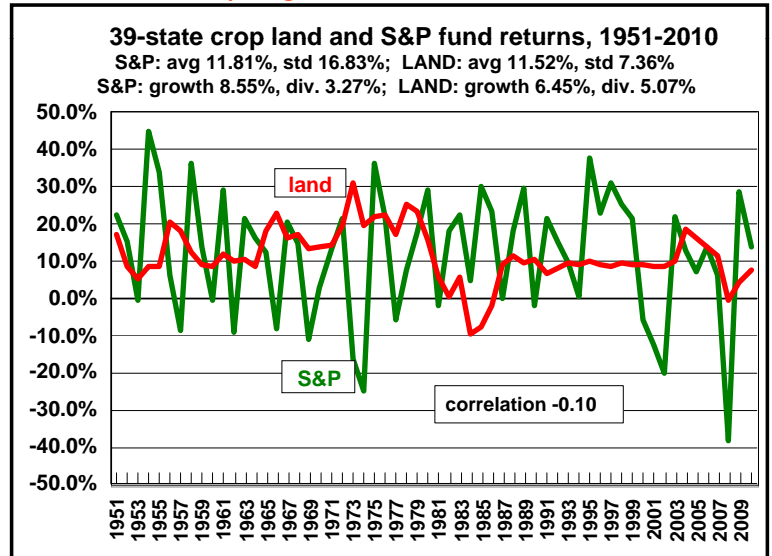


Historical perspective



We would suggest an ag growth rate (i.e., rent growth) of 4.30% for Iowa

... a sidebar: comparing stock and land returns in terms of risk



Are you a macro or micro land investor?

- **Macro:**
 - Buy or sell land when you believe the “time” is right, i.e., a trend picker or market timer
 - Buy and sell at market; not much micro analysis
- **Micro:**
 - Decision to buy or sell based on farm business
 - Farm expansion/contraction, mgmt ability, age, etc.
 - Buying or selling the right “tract,” i.e., good deals relative to the market
 - Differentiate rental rates across tracts considered
- **Most investors a micro-macro combination**
 - Good farm managers likely tend to be more micro
 - Think of gains to grain marketing vs. machinery mgmt.

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Land purchases often made with gut-feel

- **Often get caught up in:**
 - the emotion of bidding
 - local or national price bubbles
 - the fallacy of “comp” sales
 - over (or under) valuing certain attributes (e.g., distance)
 - “tired of missing opportunities of the past”
 - “tired of looking – must buy something now”
- **Consistent procedures can help**
 - every potential purchase viewed as an investment with an expected cash and growth return
 - unemotionally separates good from bad buys
- **We routinely observe individual sales ranging from 75% to 175% of “market,” especially today**
 - Were such purchases actually rational economically?
 - What the heck IS the market?

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We believe that good micro land investments will benefit from consistent methods

- **We use *KSU-Landbuy.xls* with:**
 - State-specific growth rates updated annually
 - State-specific real estate tax rates
 - Current parcel-specific cash rental rates
 - Parcel-specific market values (subjective?)
 - 35% income tax rate; 10% capital gains tax
 - 30-year time horizon
 - A target of 9.0% return on assets
 - We’ve used this target in buying land for over 6 yrs
 - Used to get over half the parcels we sought, now 10%
 - Targeting rent-to-value is not quite as rigorous, but it is better than gut-feel
 - Must be localized, both in time and in space

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The BIG Question(s):

**Are we in a bubble?
Are we on the verge of a 1980s repeat?**

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Are we approaching the 1980s?

- Most economists will say NO, pointing to:
 - Much lower interest rates today
 - Much lower leverage today
 - Much lower inflation today
 - More use of fixed interest rates on loans today
 - Growing world demand, especially China
- A few economists will say YES, pointing to:
 - China is unpredictable . . . and future growth questioned
 - Ethanol support is wavering
 - Interest rates will soon rise
 - Lenders will get caught up (e.g., housing bubble)
 - Economists never see a bubble from the inside
- We ask the more direct question, What happens if we see land value and rent growth rates like the 1970s-1980s?

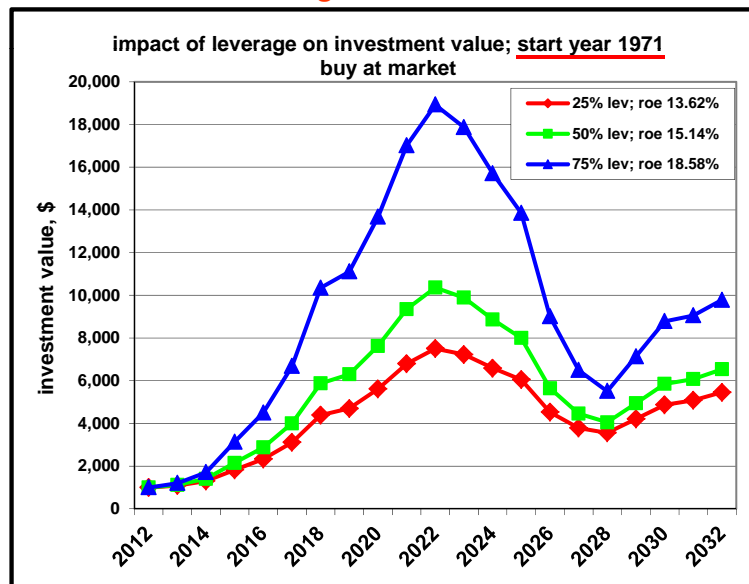
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Our analysis

- Today's expected growth rates from the vantage points of 1971, 1976, 1981, & avg
- Market value of cropland pegged to 4.0% rent
- 20-year horizon
- 0.5% of market property tax rate
- Fixed interest rate of 6.25%
- Income tax rate of 35%
- A \$1000 investment
- Report value path and pre-income-tax ROE
 - For different leverage rates
 - For different levels of above-market purchasing

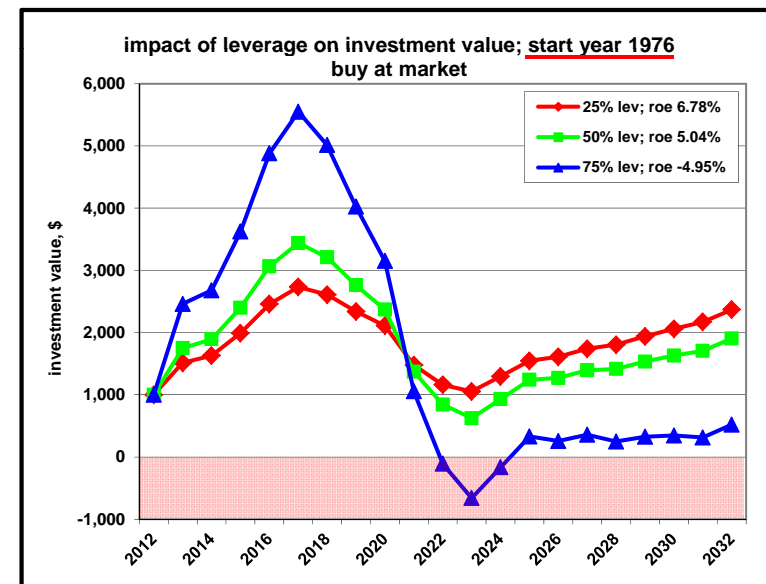
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We first consider leverage issues



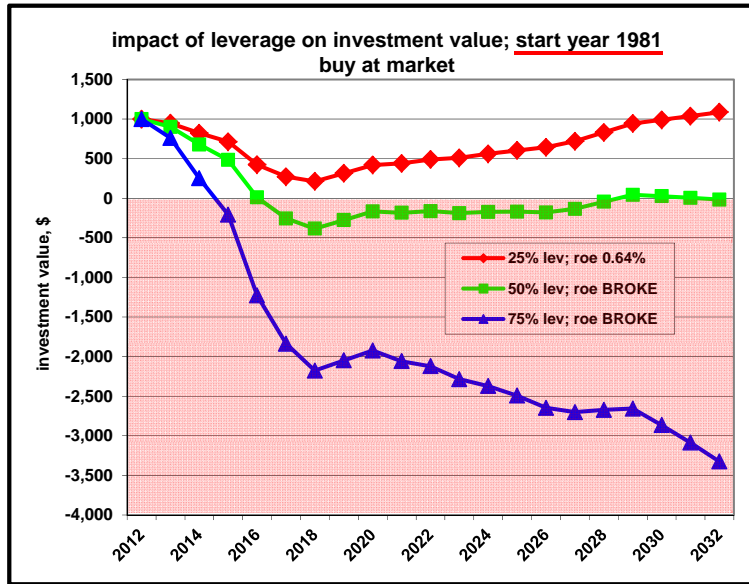
No problems here . . . If 2012 is akin to 1971!

35

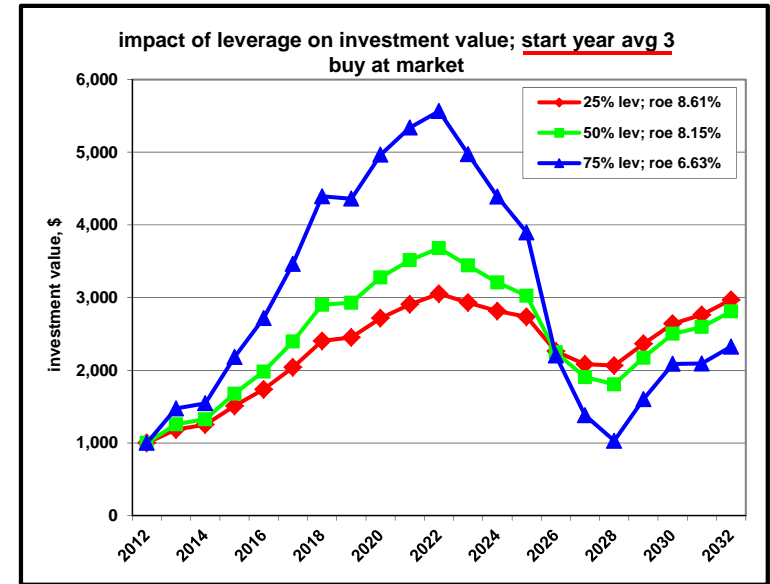


Don't borrow excessively if 2012 is like 1976

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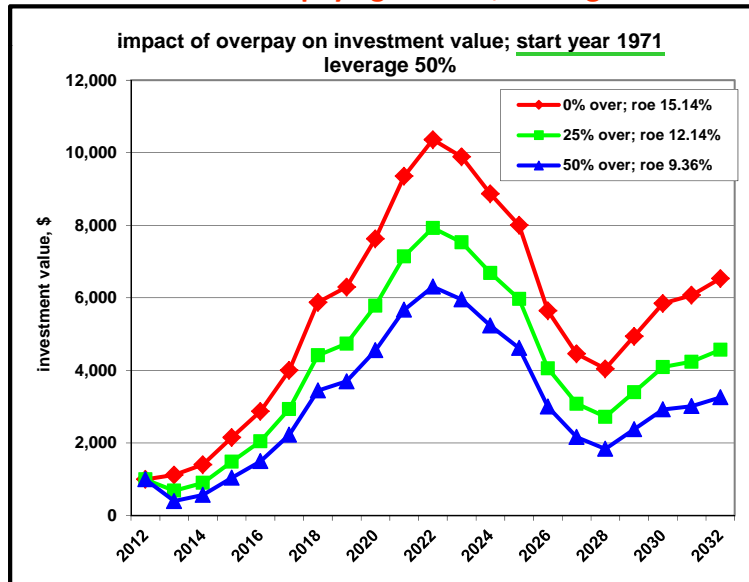


High leverage and buying at the market top could be painful

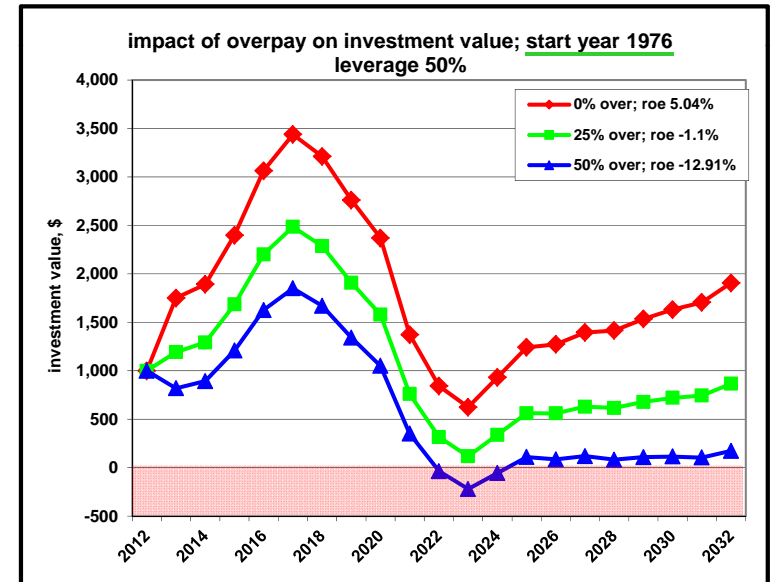


2012 like 1971 & 1976 & 1981 – more like we might expect??

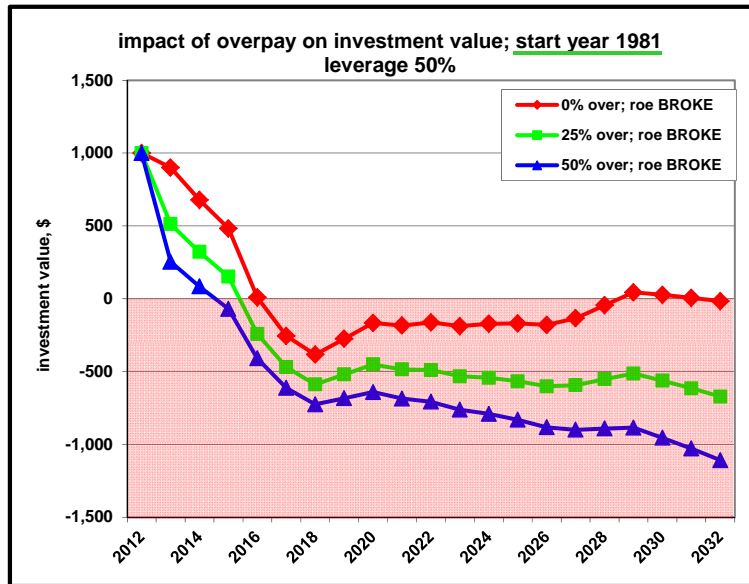
We next consider overpaying for land; leverage fixed 50%



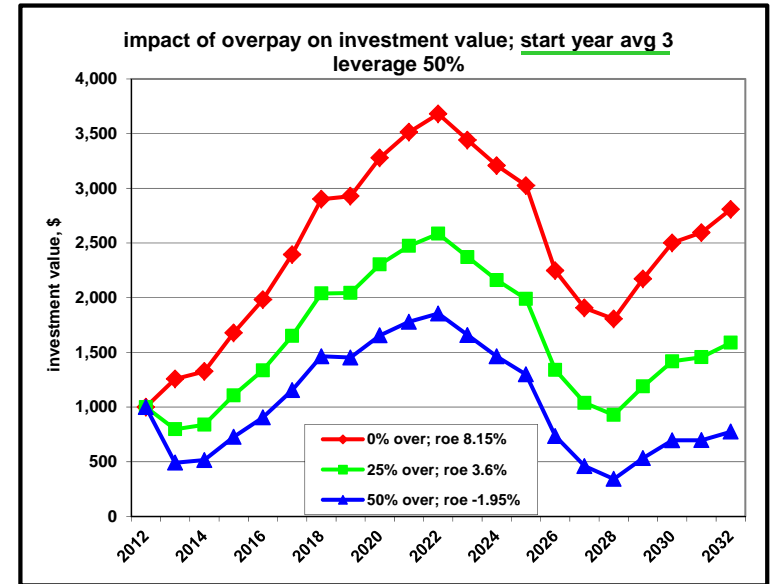
If the glory days are ahead of you it is not that painful to overbid on land



Don't overbid on land if 2012 is like 1976



Buying at the top AND even modest overbidding on land can kill you



2012 like 1971 & 1976 & 1981 – more like we might expect??

Results of analysis...

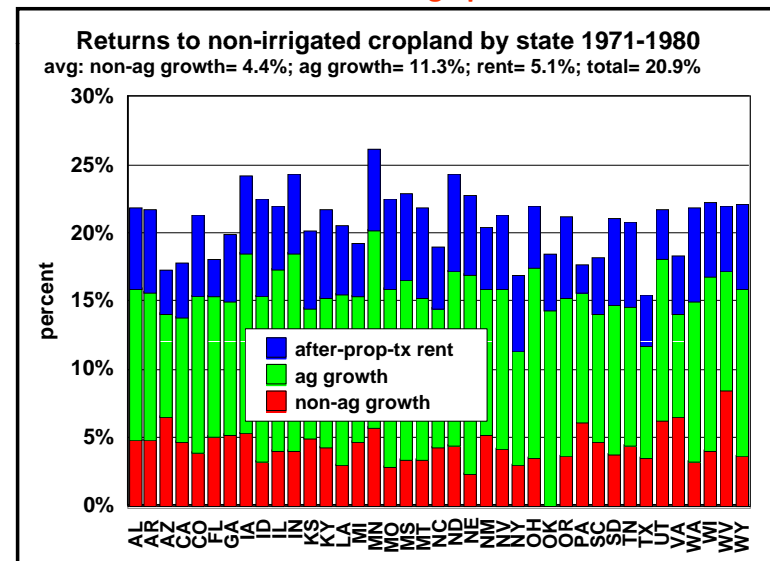
Summary of Results -- Impact on 20-year pre-income tax ROE

Impact of leverage rate on investment value -- buy at market				
Leverage	Start year "looks like"...			
	1971	1976	1981	Avg of 3
25%	13.62%	6.78%	0.64%	8.61%
50%	15.14%	5.04%	BROKE	8.15%
75%	18.58%	-4.95%	BROKE	6.63%

Impact of overpay on investment value -- leverage 50%				
Overpay	Start year "looks like"...			
	1971	1976	1981	Avg of 3
0%	15.14%	5.04%	BROKE	8.15%
25%	12.14%	-1.10%	BROKE	3.60%
50%	9.36%	-12.91%	BROKE	-1.95%

Behaving as a micro investor was more important than we'd expected

Conditions in the decade leading up to the 1980s crash



Observations

- Farm profitability is still very high
 - Implies rents have room to climb
- Focus should be on corn demand; if it softens:
 - Rents will not keep rising
 - Land values will quit rising but won't collapse
 - No catastrophe will befall landowners
- If crop prices stay high
 - Our recommendations may be a bit conservative

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Observations

- If new price plateau a la Irwin/Good:
 - Rents can easily rise 50% from NASS numbers
 - A few are there but most are not
 - Normal lag in long-term contracts
 - Risk of returns staying high
 - Profitable farms inclined to buy land rather than raise rents (if raise rents have to do it for all landlords)
 - Landowners & tenants should consider short-term or flexible rents!
 - Land prices can easily rise 50%-100% from NASS
 - Many are already there due to farmers buying land
- On net, rents can rise more than land prices

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How important is land to farms' wealth?

- Percent of farm wealth in farmland:
 - USDA: 80%-85% (but, many hobby farms)
 - KFMA (KS commercial farms) 50%
 - Very large farms (KD TK estimate) 25%-40%
- Leverage:
 - USDA: big farms greater leverage
 - KFMA: no difference between small & big
 - KD TK: very large farms likely greater leverage
- A large drop in land values would hurt:
 - USDA: big farms most
 - KFMA: big farms less than small farms
 - KD TK: very large farms less than smaller farms

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Biofuels (a la Babcock, ISU)

- Impact of subsidies 2005-2009
 - Biggest: corn would have been \$0.30/bu lower in 2007
 - Little (<1%) impact on food prices
- Impact of market-driven ethanol expansion
 - Corn price would have been 21% lower in 2009 (soy 5%)
- If no biofuels at all:
 - Corn still would have been 40% higher in 2009 than 2004
 - Wheat 45% higher, soybeans 57% higher
- But, mandates and subsidies matter a lot when market is tight (e.g., 2011)
- Recommends:
 - Get rid of subsidy and import tariff
 - Allow banking/borrowing of blender credits to smooth over time

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Aug 2011 Corn&Soybean Digest Land/Rent Survey

- **Average (400+ observations) expectations:**
 - 5-year grain prices: Corn, \$5.56; soybeans, \$11.41
 - (Note: Dec12 corn futures \$6.50; Nov12 soybean futures \$13.50)
 - Annual growth in land values over next 10 years: +3.4%
 - Change in rent from 2011 to 2012: +9.75%
- **Statistically explaining differences in reported rents**
 - Mostly explained by differences in expected corn yield
 - Each bu/a higher corn yield implies \$1.80/acre higher rent
 - Differences in expected grain prices did not help explain
 - Corn price effect negative; soybean price effect positive
- **Farmers appear rational**
 - Expect good grain prices but not crazy prices
 - Expect conservative land value growth rates
 - Expected rents driven mostly by production potential

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Partial Summary

- **Everyone wants to predict the next crash**
 - That's a good thing . . . constant reminder
- **Landowners well capitalized**
- **Ag lenders well capitalized**
 - Still claim to be cash flow lenders
- **There are still opportunities to buy land**
 - Use a consistent mechanistic method
- **Market timing does not trump good buys**
- **Probably near the market top**
 - No crash on the horizon
 - Only a flattening or slight pullback

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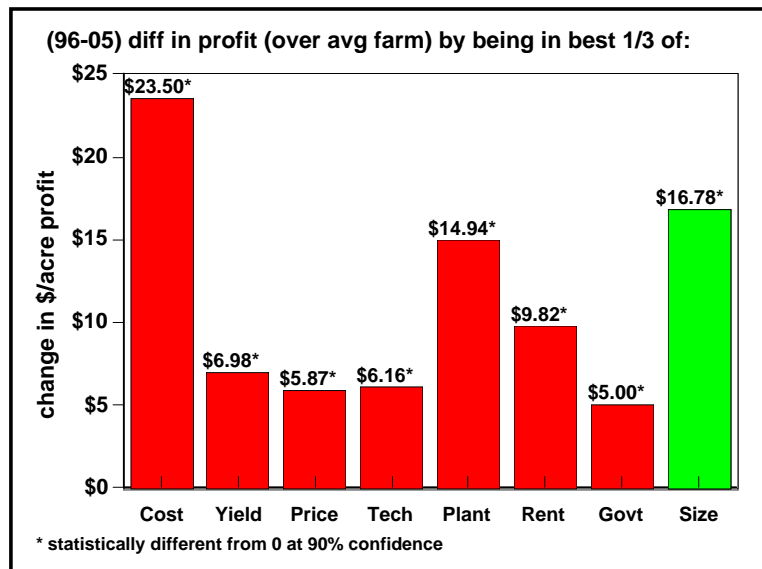
Economies of size: the driving force

- **Per-unit costs fall as a firm gets larger, typically due to:**
 - A technology or activity that has
 - great economic benefit, but which happens to have also a large investment or fixed cost
- **But, does it even exist in farming?**
 - Isn't it merely an accident of good management, with owner-managers merely plowing their profits back into their businesses, causing us to observe a correlation between profits and size?

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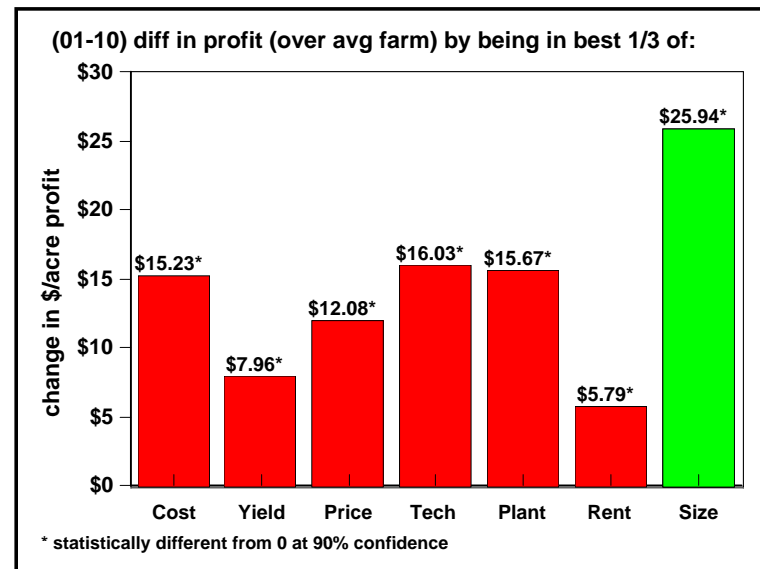
Farm consolidation: a potential bullish sleeper

55



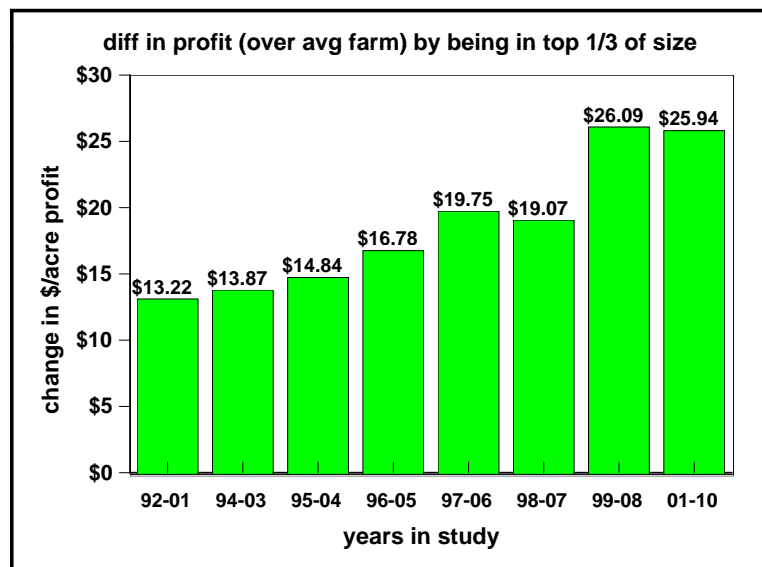
A size effect remains – evidence that EOS is for real

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EOS is becoming even harder to ignore

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...and this size effect has been increasing over time

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Consolidation in production agriculture

- Farms have been consolidating for decades
- But, rapid consolidation is more extreme
 - Poultry in the 1960s
 - Cattle feeding in the 1970s
 - Swine in the 1990s
 - Dairy in the 2000s
- Will crop production be next?

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Will consolidation in *crop production* speed up?

- Farm machinery:
 - More like a fixed investment in factory facilities
 - Sophisticated, expensive, for round-the-clock use
- People:
 - Skills required are becoming more specialized
 - often requiring different people (like other businesses)
 - Management becomes fixed cost
 - Business continuity means a management team
 - even larger fixed cost
 - Some operators have really been making large investments in managing, partnering, employing, financing
 - They're ready or nearly ready for rapid expansion!
- Remember, we never saw the rapid consolidation in poultry, swine, and dairy coming either

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What does rapid consolidation in crop production mean?

- Dramatic reductions in per-unit costs of production
- Intergenerational wealth transfer coupled with debt will not keep up with the growing demand for capital
- Driving force will be bottom-up
 - Farmers will offer high rents, indicating their demand
 - Outside investors will seek good returns from hands-off investment rather than from vertical integration
 - Land will be the first investment of choice, followed later by machinery and crop inputs
- Increase in farming profits
 - An *extra* increase in ag rents
 - An *extra* increase in land values
 - Remember that land is the residual claimant
- Could our historical analysis be too conservative?

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- Rapid consolidation: opportunity for investment
- But many outside investors will fail, by:
 - Making the same old mistakes of land investment:
 - Emphasizing market timing rather than good tract buys
 - Failing to use a mechanistic land evaluation technique
 - Having too short of a time horizon
 - Thinking that all high-rent payers must be positioned for rapid consolidation
 - Failing to build a true partnering business arrangement with a tenant, where both tenant and landowner have the same business goals
 - Not merely the age-old “personal” relationships
 - Not an impersonal “find highest bidder” relationship
 - On net, rents can rise more than land prices
 - Investors should “pay the high price” and demand higher rent (consider that long-term relationship with a large-farmer tenant)

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The screenshot shows the AgManager.info website in a browser window. The address bar displays 'www.agmanager.info'. The website header includes 'AG MANAGER.INFO' and 'Department of Agricultural Economics'. A navigation menu on the left lists categories such as 'Agribusiness', 'Crops', 'Energy', 'Farm Management', 'Livestock & Meat', 'Policy', 'Decision Tools', 'Ag Events Menu', 'Contributors', 'Programs', 'Sponsors', 'Upcoming Events', 'KFMA', 'Department Theses & Dissertations', 'SIGM-UP for Weekly Email Updates', and 'RSS'. The main content area features a '2011 Drought' section with a 'View AgManager.info Sponsors' link. A 'Recent Updates' sidebar lists various articles and reports. A red callout box with a white background and black border points to the 'Contributors' link in the navigation menu, containing the text: 'Click on Kevin Dhuyvetter and then slide presentations... or email either of us'. The page number '64' is visible in the bottom right corner.