



Farmland Markets in Illinois: Historic Context and Contemporary Issues

*Bruce Sherrick, Gary Schnitkey,
Dale Lattz, and Paul Ellinger*

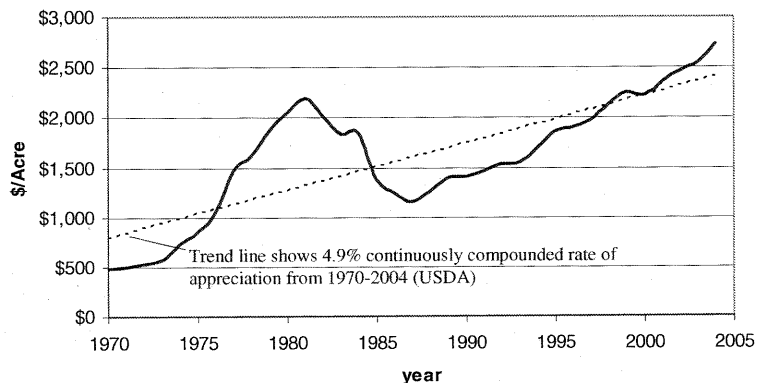


Outline:

- Land Value Updates
- Performance of farmland as an investment
- Government program impacts
 - “there is nothing more permanent than temporary government support...”
- Property Taxes:
 - revised schedule of revisions – what’s it really mean?
- Some **Tools** for understanding Farmland markets
 - What’s my land worth
 - How to compare rental options



Average Value All Farmland - Illinois



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Table 1. Illinois Farm Real Estate Values, 1970 through 2004, and Percent Change from the Previous Year.

Year	Value per acre	Percent change	Year	Value per acre	Percent change	Year	Value per acre	Percent change
1970	\$490	na	1985	\$1,381	-25.1%	2000	\$2,260	1.8%
1971	491	0.2%	1986	1,232	-10.6%	2001	2,290	1.3%
1972	527	7.3%	1987	1,149	-6.7%	2002	2,350	2.6%
1973	590	12.0%	1988	1,262	9.8%	2003	2,430	3.4%
1974	788	33.6%	1989	1,391	10.2%	2004	2,610	7.4%
1975	846	7.4%	1990	1,405	1.0%			
1976	1,062	25.5%	1991	1,459	3.8%			
1977	1,458	37.3%	1992	1,536	5.3%			
1978	1,625	11.5%	1993	1,548	0.8%			
1979	1,858	14.3%	1994	1,670	7.9%			
1980	2,041	9.8%	1995	1,820	9.0%			
1981	2,188	7.2%	1996	1,900	4.4%			
1982	2,023	-7.5%	1997	1,980	4.2%			
1983	1,837	-9.2%	1998	2,130	7.6%			
1984	1,845	0.4%	1999	2,220	4.2%			

Source: USDA Agricultural Land Values and Cash Rents Statistical Bulletin

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ISPFMRA Fall 2003 -- *Survey says...*

Annual Change in Value of farmland by type/region:

Area	Prime Farmland	Good Farmland	Average Farmland	Recreational Land
Northern Region	15%	13%	17%	N/A
Central Region	10%	9%	10%	N/A
Southern Region	N/A	5%	7%	11%

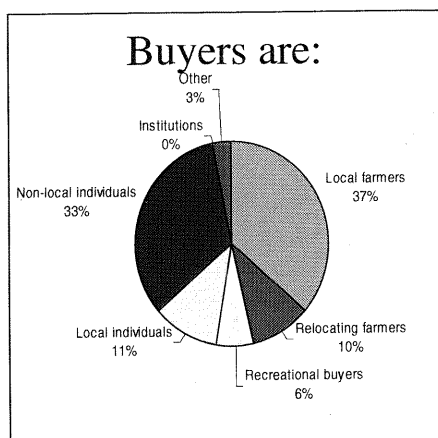
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ISPFMRA Fall 2003 -- *Survey says...*

From January 2004 to July 2004:

- Average increase in land values of 10%
- Expect increase in volume of land sold
- 49% of sales involve 1031 exchange



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Farmland (unique) Features as an investment class:

- Nondepreciability
- Large capital gains relative to current income
- Largely fixed supply, consolidating units
- Irreversible development potential
- Low or negative correlation of returns with competing financial assets
- High transactions costs to adjust holdings (*sorry...*)
- Impacts of government payments, declining influence of ag income
- Cash, cash/share leasing increasing relative to share
- Greater absentee ownership – reducing effects of tradition on leasing
- Taxation relative to income, not value, increasing pressure to change

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Ag Sector Balance Sheet

- Farmland represents 77% of farm assets and slightly less than 50% of farm debt (12/2003)
- Low aggregate leverage relative to other sectors (currently approx. 15% ag. D/A)
- Some shifting among debt providers, little shift between debt and equity
- Active equity market absence

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(History repeated... again)

“We have two great sources of profit in farming: first, rise in the value of the land; and second, profit on the production of farm crops. The first has been the chief source.”

- George Morrow, 1886

Contemporary Issues:

- Composition of returns changing (*farming, recreation, development.....*)
- Performance relative to other investments
- Changing lease markets, absentee ownership
 - *Low turnover influence*
 - *1031 shares*
 - (2002 survey = 22% of sales; 2004 survey 49% of sales)
- Role of government (payments, regulation, and changing program design and emphasis)



Farmland as an investment

- Academic research shows:
 - Low systematic risk – behaves much like a fixed income financial asset
 - High or adequate returns given risk
counter to premise of many debates on “low returns”
 - Role as inflation hedge (positive correlation)
 - Market friction caveats, explanations
- Portfolio models favor inclusion of farmland in investment portfolios – to greater degree than observed in reality

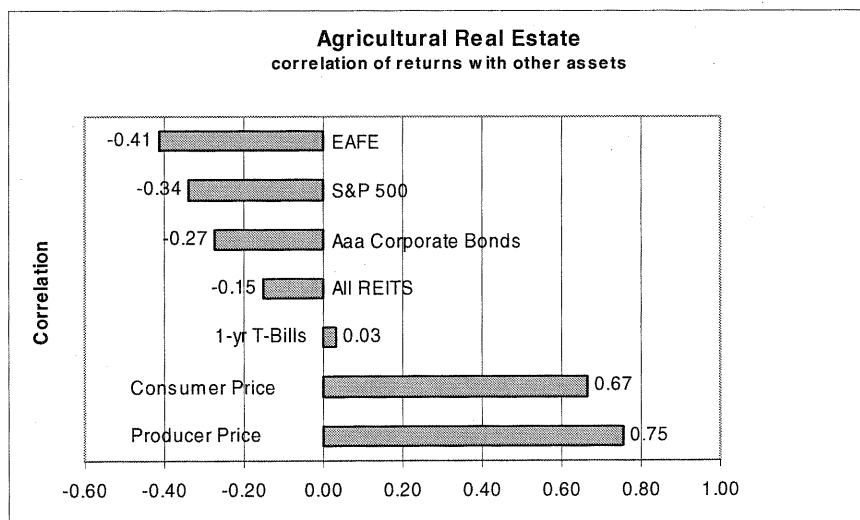
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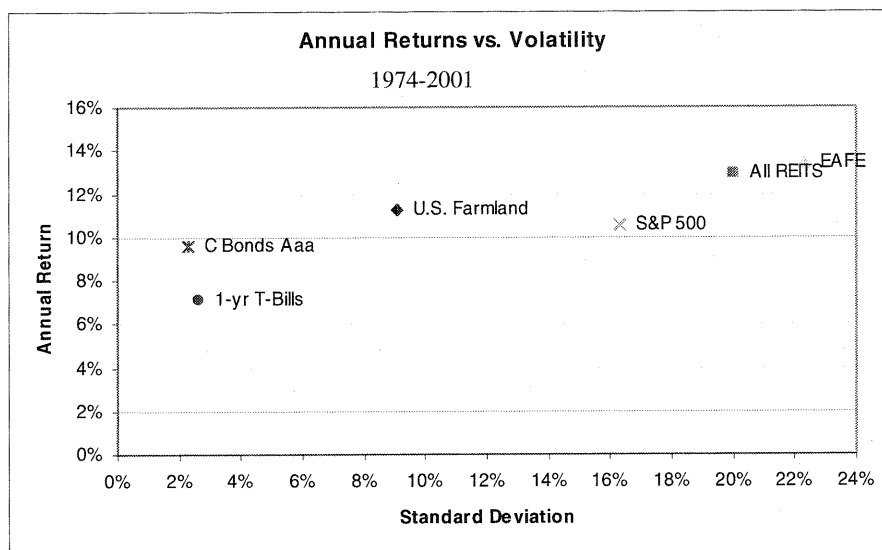
History of Farmland Returns as Investment

- Long progression of capital gains, one period of losses – data period important
- Capital Gains Rates (annual geometric):
 - 1950-2000: 5.6%
 - 1970-2000: 5.7%
 - 1980-2000: 2.0%
 - 1970-**2004 Q2**: 4.92% (est.)
 - 2004 Illinois **average** increase 7.4% (USDA)
- Plus: current income in 3-5% range from rent/operations
- Historic “problem” that Farmland “doesn’t cash flow” is becoming less valid – *and a problem I’d like to have...*

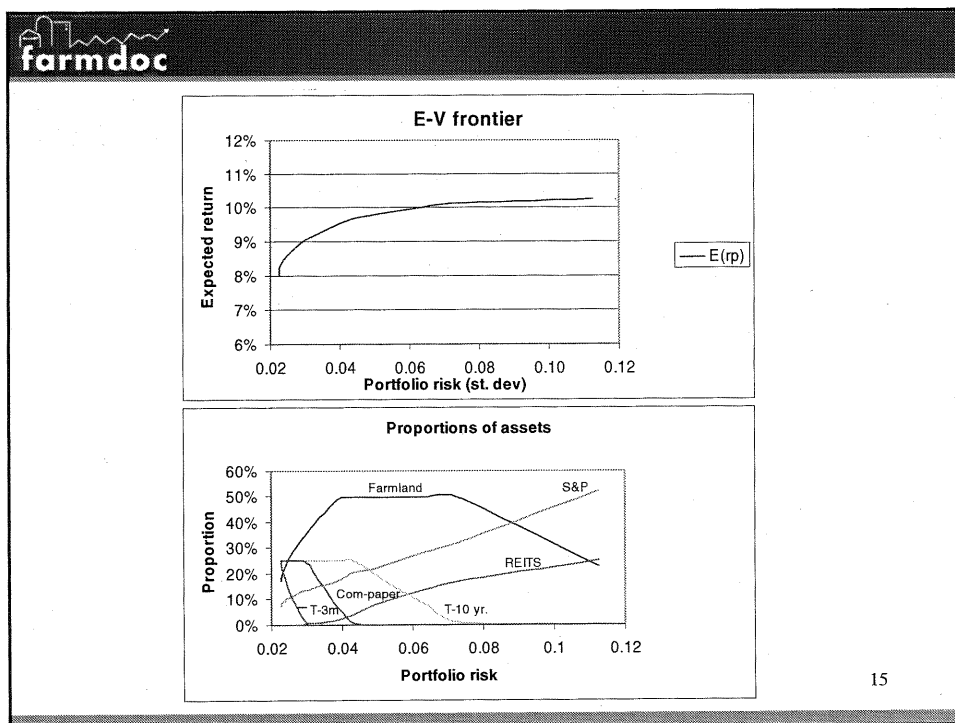
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Farmland as an investment

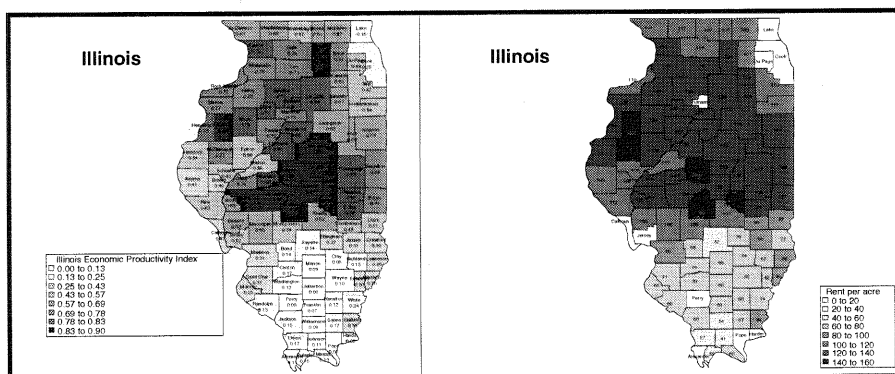
...across different risk classes

- Within Illinois, considerable risk differences, esp. North to South
- Risk-adjustment within class?
 - cash rent series by county
 - cash gross returns by county
 - test fraction of expected return paid in form of cash rent
- Strong evidence of within-class response

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Farmland as an investment

- Considerable difference in rent and productivity lead to.....



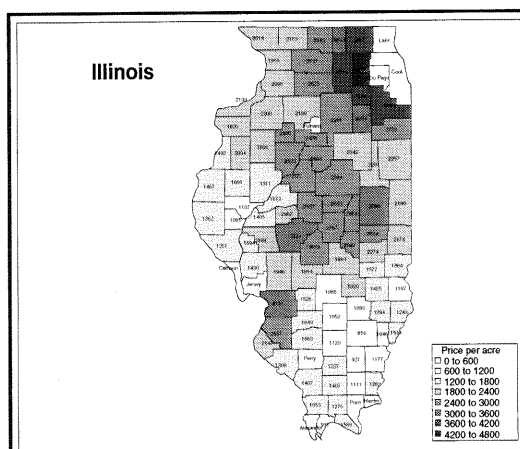
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Farmland as an investment

- Nothing much in aggregate....

So, U of I Study of factors influencing farmland values finds following significant items (Huang, Sherrick, Miller, Gomez, 2003)

- Size of tract (-)
- SPR (+++)
- Distance to Chicago (++)
- Distance to metro location (++)
- Ruralness indicators (--)
- CPI (++)
- Population (+)
- Income (+)
- Livestock activities (+/-)



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Ownership and Control

(History repeated...)

“Already it is difficult or impossible, over much of the country for young (farmers) to become landowners. The area of desirable farmland attainable ... is comparatively small.

The number and percentage of tenant farmers must certainly increase.”

-George Morrow, 1886

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Farmland Turnover

- Historically viewed as “low”, “thin”
- Aggregate ranges cited from 1-3%
- U of I farmland transfer database
 - all sales 5+ acres in Illinois, 1979-1999 (-2002 new form of green sheet).
 - 68,000+ parcels
 - 4.2 million acres (of 27 million in state)
 - Arm’s length – available competitively
 - All transfer form variables (tax, financing..)

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Farmland Turnover -- Illinois

- Thin – average of under 1% annual sales, arm's length, available competitively, actual farmland intended usage
 - limited option to expand with contiguous/proximate land through purchase
 - increases importance of lease markets in value determination
 - “lumpy” land sales relative to leasing

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Farmland Lease Market

	Owned	Leased	----- % of Leased Acreage -----			
			Cash	Share	Cash/Share	Other
			----- % -----			
U.S.	54.7	45.3	59.4	24.0	10.8	5.9
Northeast	69.2	30.8	80.0	2.6	3.4	14.0
Lake	60.5	39.5	79.4	8.0	7.4	5.2
Corn Belt	49.5	50.5	45.4	34.0	18.7	1.9
Northern Plains	47.4	52.6	54.7	28.5	13.9	2.9
Appalachian	63.7	36.3	56.4	16.5	12.0	15.1
Southeast	72.8	27.2	82.2	3.7	3.5	10.6
Delta	47.7	52.3	51.0	34.6	9.8	4.5
Southern Plains	51.2	48.8	65.8	18.6	6.6	9.0
Mountain	61.7	38.3	61.3	25.9	8.1	4.7
Pacific	52.2	47.8	65.6	19.9	6.2	8.2

Source: Agricultural Economics and Land Ownership Survey, USDA/NASS, 2001.

Illinois: approx. 64% absentee owners -- and increasing

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Other Specialized Institutional Features of Farmland

- Limited (no) equity markets
- Dedicated debt providers (single mission)
- Seller financing
- “Use-value” taxation
- Environmental issues/externalities
 - unique in that there are often public good, public access vs private property rights issues
- Role of Government ...

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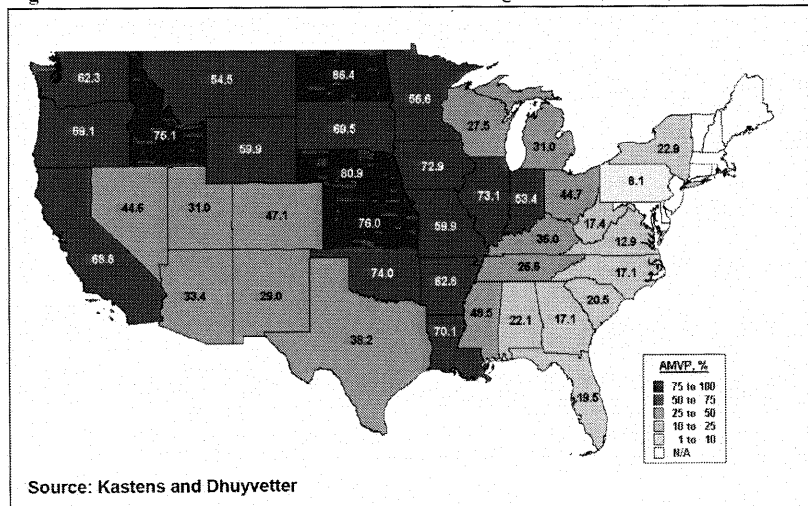
Government Programs:

- Government commodity programs affect level and variability of farmer income, and thus farmland values
 - 24% of final net income, 1970-2003 (*or 31% pre-gov't payment income*)
 - Positive correlation ($\rho = .16$) between aggregate government direct payments and pre-payment farm income (more likely counter-cyclical at individual level).
 - Fall 2002 survey participants anticipated that the new Farm Bill would add about \$8 per acre annual income (ave. Ill.)
 - *Average discount rate of 4.7% implies = +\$170/acre value*

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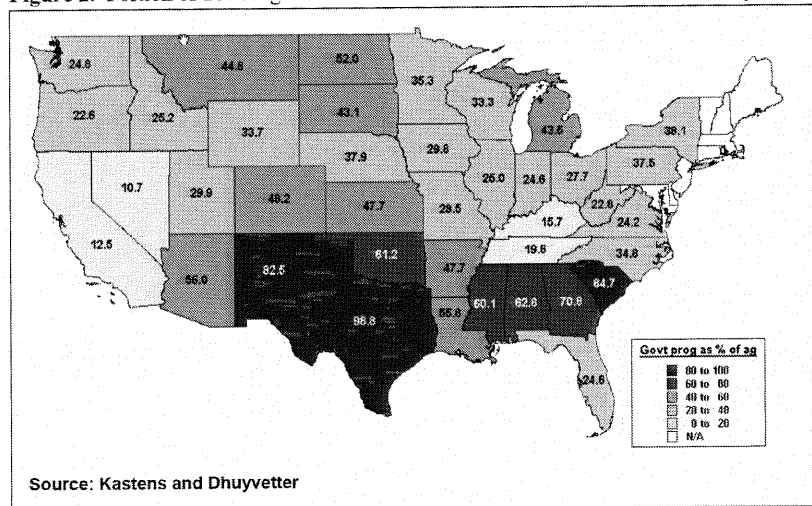
Figure 1. Portion of 2004 Land Value Attributed to Agriculture (AMVP)



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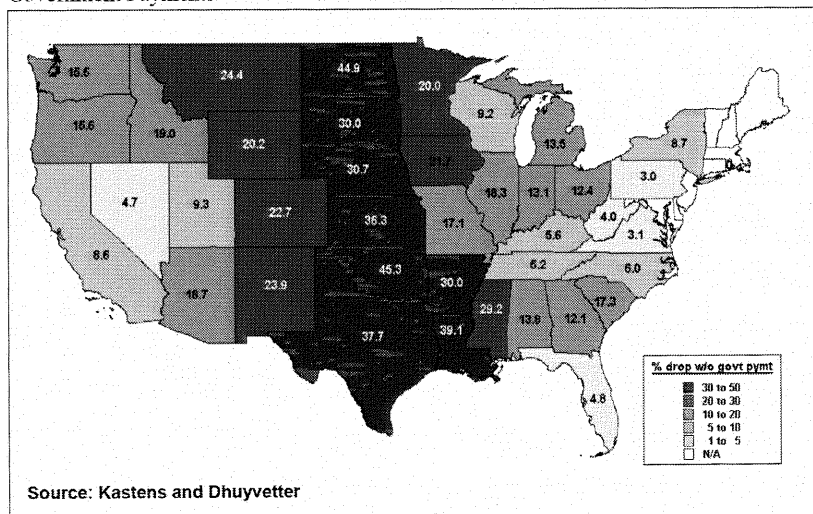
Figure 2. Portion of 2004 Agricultural Land Value Attributed to Government Payments



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Figure 3. Estimated Reduction in 2004 Land Values with the Elimination of Government Payments



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Impact of Gov't payments on risk/return

Table 2. Revenue distribution characteristics

	State total	Counties					County Average
		Warren	Sangamon	Platt	White	Jackson	
Corn							
Ave. Net Rev. (\$/acre)	128.9	151.6	172.9	171.3	99.6	67.2	132.5
sd	41.3	65.8	54.6	50.4	40.6	35.7	49.4
cv	32.0%	43.4%	31.6%	29.4%	40.8%	53.2%	39.7%
Net plus Gov't** (\$/acre)	152.1	177.9	195.1	196.1	116.2	84.0	153.9
sd	30.2	52.8	43.6	42.5	38.5	34.5	43.4
cv	19.9%	29.7%	22.3%	21.7%	33.1%	41.1%	29.6%
Soybeans							
Ave. Net Rev. (\$/acre)	135.7	175.8	168.1	167.5	100.8	91.4	140.7
sd	26.2	36.3	32.4	30.5	26.5	23.8	35.1
cv	19.3%	20.6%	19.3%	18.2%	26.3%	26.1%	22.1%
Net plus Gov't (\$/acre)	142.7	184.0	173.7	174.0	106.2	97.0	147.0
sd	21.5	30.1	25.7	27.6	22.3	22.9	25.7
cv	15.1%	16.4%	14.8%	15.8%	21.0%	23.6%	18.3%
C&S							
Ave. Net Rev. (\$/acre)	132.0	159.9	170.6	169.5	100.2	83.7	136.8
sd	31.1	51.2	39.1	35.2	29.3	22.6	35.5
cv	23.6%	32.0%	22.9%	20.8%	29.3%	27.0%	26.4%
Net plus Gov't (\$/acre)	147.8	180.0	184.7	185.8	110.9	92.9	150.9
sd	22.1	40.9	29.4	29.5	25.8	21.6	29.4
cv	15.0%	22.7%	15.9%	15.9%	23.2%	23.2%	20.2%
C/S shares (%)	54/46	65/35	52/48	53/47	46/53	31/69	

Source: Hauser, Sherrick, Schnitkey, 2004

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“New” Farm Bill Impacts by price level

Table 3. Simulated results of 2002 Farm Bill provisions (corn acres)

Mean Price	Average payment per acre	sd reduction*	cv reduction*	Net revenue 10% VAR**	Net rev plus gov't 10% VAR	Increase in 10% VAR
\$1.50	\$118.8	\$29.9	138	\$ -37.1	\$111.6	\$149.7
\$1.75	\$83.3	\$27.8	63	\$ -2.34	\$109.7	\$112.1
\$2.00	\$51.8	\$23.6	33	\$31.1	\$110.6	\$79.5
\$2.25	\$26.8	\$16.8	17	\$65.1	\$115.7	\$50.7
\$2.50	\$10.9	\$9.3	7	\$99.0	\$128.2	\$29.1
\$2.75	\$3.5	\$3.8	2	\$131.9	\$145.0	\$13.1
--- Comparison to 1974-2001 data ---						
\$2.22	\$23.2	\$11.1	12.1	\$71.0	\$104.2	\$33.2
--- Implied equivalent corn price for comparable current program effect ---						
	(\$2.31)	(\$2.44)	(\$2.37)			(\$2.45)

* Calculation of “sd reduction,” “cv reduction,” and “increase in VAR” is level found for net revenue with government payments minus level for net revenue without government payments.

** 10% VAR levels reflect revenue at which there is a 10% likelihood of being below.

Bottom Line: New program is more attractive than historic program at average historic price levels: +++ price effect

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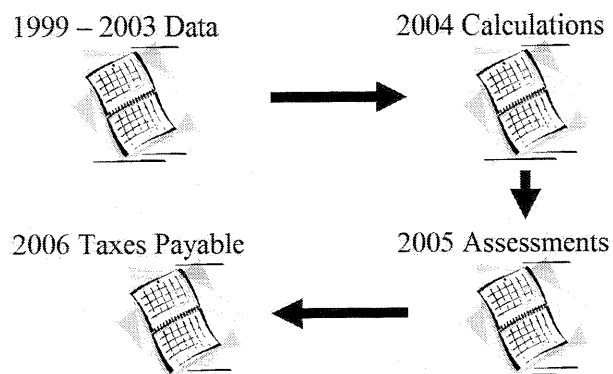
Property Tax Updates

- Two BIG issues:
 - New Productivity Indexes from Bulletin 810 (*one year rollback on implementation until 2006, for payables in 2007*)
 - Assessed Value = $(GI-EXP)/CAPRATE$
 - GI depends on new PIs, New PIs appear “different” but so are formulas to translate these to yields.
 - Debate on Value vs. income basis, and components of income to include (*currently, market value plays no role*)

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Timing of Assessments



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Productivity Index Comparisons

Soil Types	Acres	Basic 1156	Ave 1156	High 1156	Ave 810	Opt. 811
Drummer silty clay loam	1,600,000	100	125	150	127	144
Tama silt loam	1,400,000	100	125	150	123	139
Hickory loam	1,300,000	35	57	80	81	92
Fayette silt loam	925,000	75	100	125	108	122
Sable silty clay loam	925,000	100	155	126	143	143
Flanagan silt loam	840,000	100	160	127	144	144
Bluford silt loam	780,000	55	105	90	101	101
Cisne silt loam	730,000	60	115	97	109	109
Ipava silt loam	720,000	100	160	126	142	142
Muscatine silt loam	690,000	100	160	130	147	147

(note: drop list only includes soils with 810, 811 PI data)

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Property Tax Inputs

Soils	Acres	Predicted Yields by PI			
		1156 Corn	810 Corn	1156 Beans	810 Beans
Drummer	1,600,000	157.9	162.2	49.6	50.7
Tama	1,400,000	157.9	157	49.6	49.3
Hickory	1,300,000	102.4	102.4	33.7	34.2
Fayette	925,000	138.1	137.5	43.9	43.9
Sable	925,000	161.9	160.9	50.8	50.4
Flanagan	840,000	165.9	162.2	51.9	50.7
Bluford	780,000	126.2	114.1	40.5	37.5
Cisne	730,000	130.2	123.2	41.7	40.0
Ipava	720,000	165.8	160.9	51.9	50.4
Muscatine	690,000	165.8	166.1	51.9	51.8
Total	9,910,000				
Weighted Ave.		146.41	144.71	46.32	45.90

(Free *FAST* tool conversion utility available upon request)

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Modern Tools



Farm Analysis Solution Tools

- **Real Estate Purchase Analysis**
 - *What is my farmland worth?*
 - *How much can I pay for my neighbor's land?*
- **Farm Rent Evaluator**
 - *How do share and cash rent options compare?*
 - *How much can I pay to control more land?*
- **Other farmdoc resources**
 - url: www.farmdoc.uiuc.edu

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Real Estate Purchase Analysis: live demo...

Real Estate and Investment Information:		Financing Information:	
Analysis price	\$ 3,200	Down payment (%)	30%
Additional cash flows: year 1	\$ 165	Annual interest rate on loan (%)	6.000%
Optional: Enter specific cash flows		Length of loan (years)	20
Property taxes: year 1	\$ 25.00	Investor Information:	
Annual cash flow growth rate (%)	1.50%	Marginal tax rate (%)	30%
Annual appreciation rate of land values (%)	2.00%	Capital gains tax rate (%)	20%
Closing fees (% initial purchase)	1.00%	After-tax discount rate (%)	5.00%
Selling fees (% end of horizon)	1.00%	Solver Information:	
Amount qualifying for depreciation	\$ -	Investment return sensitivity range (%)	2%
Length to depreciate (years)	3	Cash flow sensitivity range (%)	10%
Depreciation method *	Straight Line (full year)		
Additional depreciation 1st year (179 election)	\$ -		
Results			
Profitability @ Analysis Price (NPV)		Maximum Bid Price	
5 year investment horizon	(\$20)	5 year investment horizon	\$3,061
10 year investment horizon	(\$10)	10 year investment horizon	\$3,162
30 year investment horizon	(\$74)	30 year investment horizon	\$3,072
Investment Return @ Analysis Price		Initial Cash Flow Needed to Achieve Desired Return	
5 year investment horizon	4.61%	5 year investment horizon	\$171.4
10 year investment horizon	4.92%	10 year investment horizon	\$166.7
30 year investment horizon	4.81%	30 year investment horizon	\$170.8
Cash Flow Growth Rate Needed to Achieve Desired Return		Appreciation Rate Needed to Achieve Desired Return	
5 year investment horizon	3.84%	5 year investment horizon	2.18%
10 year investment horizon	1.79%	10 year investment horizon	2.05%
30 year investment horizon	1.84%	30 year investment horizon	2.23%

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Farm Rent Evaluator: live demo...

County choice: Champaign			<table border="1"> <tr> <th></th> <th>Share Rent 50-50</th> <th>Fixed Cash Rent</th> <th>Share with Suppl. Rent</th> <th>Custom Farming</th> </tr> </table>						Share Rent 50-50	Fixed Cash Rent	Share with Suppl. Rent	Custom Farming																																								
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Revenue input:			TENANT'S REVENUE LESS TOTAL COSTS (per acre)																																																	
	Com	Soybeans	<table border="1"> <tr> <td>Budgeted average¹</td> <td>\$32</td> <td>-\$1</td> <td>\$17</td> <td>\$2</td> </tr> <tr> <td>Variability analysis²</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Average³</td> <td>\$33</td> <td>\$0</td> <td>\$18</td> <td>\$2</td> </tr> <tr> <td>Low (1 in 31 years)⁴</td> <td>-\$20</td> <td>-\$105</td> <td>-\$35</td> <td>\$2</td> </tr> <tr> <td>High (1 in 31 years)⁴</td> <td>\$102</td> <td>\$139</td> <td>\$87</td> <td>\$2</td> </tr> <tr> <td>Chance of revenue below:⁴</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>-\$30</td> <td>0%</td> <td>29%</td> <td>3%</td> <td>0%</td> </tr> <tr> <td>\$0</td> <td>13%</td> <td>48%</td> <td>19%</td> <td>0%</td> </tr> <tr> <td>\$30</td> <td>48%</td> <td>77%</td> <td>71%</td> <td>100%</td> </tr> </table>					Budgeted average ¹	\$32	-\$1	\$17	\$2	Variability analysis ²					Average ³	\$33	\$0	\$18	\$2	Low (1 in 31 years) ⁴	-\$20	-\$105	-\$35	\$2	High (1 in 31 years) ⁴	\$102	\$139	\$87	\$2	Chance of revenue below: ⁴					-\$30	0%	29%	3%	0%	\$0	13%	48%	19%	0%	\$30	48%	77%	71%	100%
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Percent of acres	50%	50%																																																		
Average Yield (per acre)	163	48																																																		
Futures price (per bu.)	\$2.40	\$5.00																																																		
Basis (per bu.)	-\$0.20	-\$0.20																																																		
Cash price (pe bu.)	\$2.20	\$4.80																																																		
Government program input:			LANDLORD'S RETURN (per acre)																																																	
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\$160	97%	100%	97%	77%																																																
Percent base acres	50%	50%																																																		
DP yield (per bu.)	130	37																																																		
CC yield (per bu.)	152	45																																																		
DP rate (per bu.)	\$0.28	\$0.44																																																		
CC rate (per bu.)	\$0.34	\$0.36																																																		
Loan rate (per bu.)	\$2.05	\$5.25																																																		

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