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Environmental and Cost Effectiveness of Conservation Programs in Illinois

MADHU KHANNA
khanna1@uiuc.edu

WANHONG YANG
wyang@uoguelph.ca

RICHARD FARNSWORTH
rlf@fnr.purdue.edu

HAYRI ÖNAL
h-onal@uiuc.edu

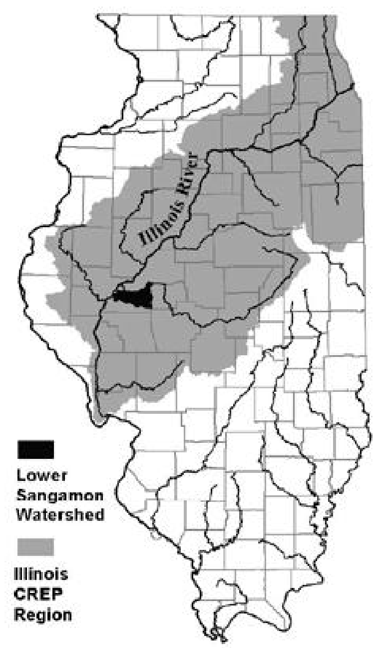
Land retirement through enrollment in programs such as the Conservation Reserve Program (CRP) has been an important policy tool to achieve multiple objectives ranging from farm income support to soil conservation, and more recently, protection of water quality and wildlife habitat. Since 1996 there has been growing emphasis on improving the targeting of the program to enroll land that maximizes conservation and environmental benefits relative to the government cost of enrollment.

The Conservation Reserve Enhancement Program (CREP) is a supplementary program to the CRP that was developed to achieve specific environmental goals for water quality improvement and wild life habitat. It seeks to improve the targeting of CRP by limiting the eligible region to environmentally sensitive areas. CREP is a joint Federal State land retirement program that allows states to supplement CRP incentives to address more State-specific environmental goals. Between 1997 and 2002, 24 states including Illinois have established CREP programs. The Memorandum of Agreement for Illinois CREP requires the State to provide 20 percent of the total program costs. The size of the program is therefore determined to a large extent by the willingness of the state to provide the cost share. To date, Illinois has far more acres enrolled in CREP than any other state.

The goals of CREP for Illinois include a 20 percent reduction in off-site sediment loadings, a 10 percent reduction in nutrient loadings, increasing populations of waterfowl as well as State and Federally listed species by 15 percent, and increasing native fish and mussel stocks in the lower reaches of the Illinois River by 10 percent. To achieve these goals the program seeks to enroll land within a buffer zone along the main stem of the Illinois River and its tributaries. Of the 100,000 acres originally approved for the program, 85 percent were to be sought from riparian areas (defined as the 100-year floodplains of the Illinois River and its tributaries and streams and wetlands). The remaining 15 percent could be selected from highly erodible cropland (erodibility index greater than or equal to 12) adjacent to enrolled riparian areas. These criteria make over five million acres of cropland eligible for enrollment in the program (Figure 1). However, CREP does not specify any mechanism for selectively enrolling the eligible land parcels; land parcels in the eligible area are enrolled as they apply until the program cap for total acreage is achieved.

The program specifies practices, such as establishment of permanent native grasses, tree planting, shallow water areas for wildlife, filter strips and wetland restoration, to be implemented on land that is retired from crop production and enrolled in CREP. The Federal government determines the eligibility to participate in the CRP portion of the Enhancement Program and pays 50 percent of the costs of CRP conservation practices. Landowners of enrolled land receive rental payments for the 15-year CRP contract at normal CRP rates plus several incentive payments. Landowners, for example, receive an additional 30 percent increase in the annual per acre rental rate for enrolling cropland situated in riparian areas or for restoring wetlands. The

Figure 1: Eligible Region for CREP

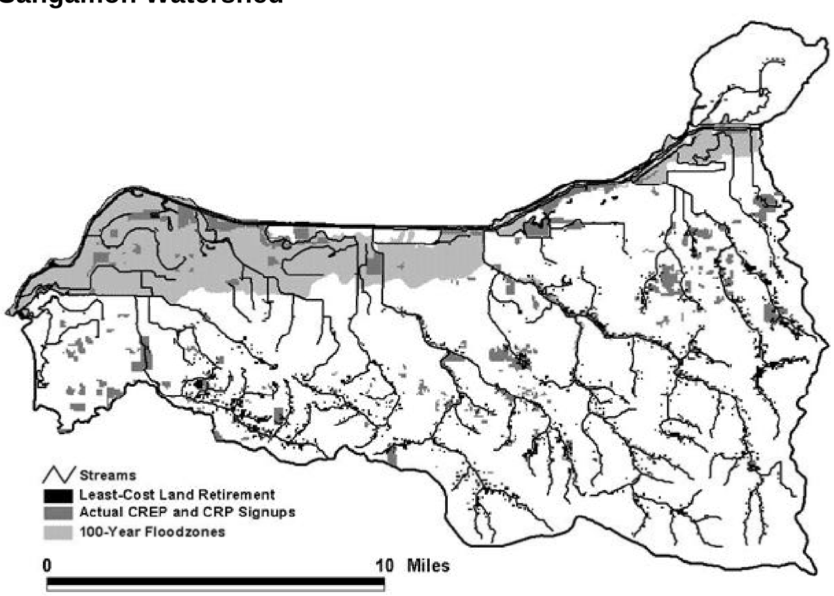


corresponding incentive payment for enrolling erodible land is 20 percent. Farmers also receive a one-time Signing Incentive Payment of $10 per acre for establishing filter strips and riparian buffers and a Practice Incentive Payment equal to 40 percent of installation costs for establishing filter strips, riparian buffers and shallow water areas for wildlife on enrolled land. The State provides additional incentives in the form of lump-sum bonus payments to enroll land for an additional 15 or 35 years or permanently and shares an additional 40-50 percent of the costs of implementing approved conservation practices. CREP acreage limit was expanded to 132,000 acres in 2001. Since its inception in May 1998, 118,002 acres of land have been formally enrolled in CREP (while the remaining acres are in the process of being enrolled); of these about 67,000 acres have been enrolled for an additional 15 to 35 years or permanently in the CREP State options. Total discounted federal and state expenditures on the program since inception have been $220 million.

The Lower Sangamon Watershed

To evaluate the extent to which CRP and CREP enrollments have reduced sediment loadings in the Illinois River and its tributaries and streams and the cost-effectiveness of the program, we examined land enrollments that have taken place in CRP and CREP in the Lower Sangamon Watershed in Cass County of Illinois[1]. This is a relatively flat primarily agricultural watershed which is typical of Illinois conditions. It has 129,768 acres, of which 58 percent is under crop production. Over half the land area (55 percent) has a slope between 0-2 percent. Only 13 percent of the land area has a slope greater than 10 percent. By July 2001, 6,626 acres, representing 9 percent of the land within the watershed, were enrolled in CRP or CREP.

Figure 2: Actual and Simulated Land Enrollment in the Lower Sangamon Watershed



We partitioned the watershed into 300-by-300 foot parcels (2 acres per parcel) and examined the slope, soil characteristics, and distance from a water body of each parcel. We also examined if it was currently under crop production or grassland/forests. We then used a hydrological model to simulate the sediment run-off that would be generated on each parcel if there were a five-year storm event (leading to 4 inches of rainfall for 12 hours), the flow path it would follow to the nearest water body and the amount of sediment loaded in a water body. We also used an economic model to find the costs of retiring land parcels, measured by the forgone profits from crop production. These represent the minimum payment the landowners would be willing to accept to retire their land from crop production. For details of the economic model see working paper #28 at *www.ace.uiuc.edu/pERE/papers.html*.

Effectiveness of Land Retirement in the Lower Sangamon Watershed

In the base scenario with no retirement of land, sediment loadings to the river in the Lower Sangamon Watershed are estimated to be 38,642 tons for the five-year storm event. Enrollment of the 6,626 acres of cropland that had occurred by July 2001 would reduce sediment loadings to 29,231 tons, that is, by 24 percent. Given the goal of 20 percent sediment abatement, this indicates that land retirement due to the CRP and CREP has been successful in meeting that goal for this watershed. The annual losses in profits due to this land retirement amount to $1,005,747 which implies that the cost of reducing a ton of sediment loading in water bodies amounts to $109.

However, we found that the 4,340 acres enrolled in CRP or CREP within a 900-foot buffer along all water bodies in this watershed abated 22 percent of sediment relative to the base case. Thus 90 percent of the sediment abatement achieved by land retirement in this watershed was due to retirement of 66 percent of the land parcels within the 900-foot buffer along streams and rivers. This indicates that the actual land retirement contracts located beyond 900-foot buffer are not very important in contributing to sediment abatement and that the distance from the river plays an important role in determining the off-site sediment abatement benefits of retired land parcels. The total cost of the program would also have been much lower if eligibility were to be restricted to the 900-foot buffer. Program costs would amount to $678,444 and the per ton cost of reducing sediment loadings would be $80.

A large percentage of the land actually enrolled is in the 100-year flood plain of the Illinois River Basin and lies along the main tributaries of the river (Figure 2). This land is typically flatter and more productive and its opportunity costs are high. This land is also less erodible and does not receive as much sediment runoff from upland areas of the watershed as parcels that are highly sloping and not in the floodplain. Hence these enrolled parcels do not trap as much sediment runoff and their contribution to sediment abatement in the watershed is lower than that of parcels not in the floodplain but highly sloping and adjacent to a water body.

To find “ideal” enrollments, we used a simulation model to identify the land that should be selected for enrollment in CRP or CREP to achieve a 22 percent sediment abatement level at least cost[2]. It was found that the 22 percent target could have been reached at a cost of $446,467 by enrolling 3,093 acres, or at 66 percent of the estimated cost at which actual enrollments achieved this abatement level. The locations of the simulated enrollments are shown in Figure 2.

As can be seen from Figure 2 and Table 1, while much of the actual enrollments have been in the flatter floodplains of the Illinois River Basin, the simulated enrollments lie on more sloping land in the upper tributaries and streams. The average distance from the water body of an enrolled parcel was 368 feet in contrast to the 265 feet distance of an average land parcel selected by the simulation model. The enrolled land was also less erosive on average and received less sediment run-off from upland regions of the watershed. Hence its efficacy in reducing sediment generation and in trapping sediment was not as high as that possible by targeting land that was more sloping, closer to the water and in the flow path of sediment run-off. The enrolled land parcels were also more expensive than those targeted by the simulation model.

As expected, the contrast between the characteristics of actually enrolled and non-enrolled parcels is not as striking as that between the enrolled and non-enrolled parcels in the simulation, as shown in Table 2. The average distance of an actually enrolled land parcel was 367 feet from a water body while that of a non-selected land parcel was 403 feet from a water body. In contrast, the corresponding numbers from the simulation results are 265 feet and 411 feet, respectively. Additionally, while parcels selected for enrollment by the simulation model received almost three times as much sediment from upland areas and generated four times as much on-site erosion as the non-enrolled parcels, the actually enrolled parcels received only twice as much sediment from upland areas and generated only three times as much on-site erosion as non-enrolled parcels. Hence the effectiveness with which actually enrolled parcels contributed to sediment abatement per acre of land retired was limited, while profits foregone per acre were higher than those of the simulated enrollments.

Policy Implications

These results have several policy implications for CREP. Our findings demonstrate that instead of the entire floodplain being eligible for enrollment in CREP (as is the case for the CREP currently); the eligible area can be restricted to a narrower zone adjacent to the water body, if sediment abatement is the primary concern. Additionally, the results of the simulation show that most of the land that should be targeted for enrollment in CREP is from the highly sloping and highly erodible areas adjacent to a water body rather than the flat floodplains that are not highly erodible[3]. This implies that the current approach of CREP, which seeks 85 percent of the enrollments from a floodplain and only 15 percent from the highly erodible land, is unduly restrictive and contrary to the enrollment pattern required for cost-effective abatement when reducing sediment is the goal.

Even if the eligible region is modified as above, it would still incorporate land parcels that vary greatly in their opportunity costs and in their contribution to sediment abatement if retired from crop production. Our results indicate the importance of both slope and location of the land parcel in determining the abatement benefits it can provide and in influenc-

Table 1. Average Characteristics of Land Parcels Enrolled

	Actual Enrollment within 900-foot buffer	Simulated Least-Cost Enrollment
Distance from river (Feet)	367.5	265.1
Slope (%)	4.5	7.2
Erodibility Index	0.3	0.4
Upland Sediment Inflow (Tons/Acre)	3.8	5.2
On-Site Erosion (Tons/Acre)	14.2	19.7
Profits Foregone ($/acre)	156.3	144.4

Table 2. Comparison of Average Characteristics of Actual and Simulated Enrollments vs. Non-Enrollments

	Actual		Simulated Least-Cost	
	Enrolled	Non-Enrolled	Enrolled	Non-Enrolled
Distance from river (Feet)	367.4	403.1	264.7	411.4
Slope (%)	4.5	1.8	7.1	1.6
Erodibility Index	0.34	0.32	0.36	0.31
Sediment Inflow from Upland Areas (Tons/Acre)	3.8	1.9	5.2	1.9
On-Site Erosion (Tons/Acre)	14.2	5	19.7	4.8
Profits Foregone ($/acre)	156.3	175.8	144.4	176.2

ing the criteria of whether to retire that land parcel or not. There is also a need to target land parcels based on other factors such as the volume of sediment flow from upslope parcels, the erosiveness of the soil and the opportunity costs of retiring a parcel. Since CRP and CREP are voluntary programs in which farmers chose to enroll if the incentive payments are large enough to offset the returns from crop production, one approach to improve the targeting of these programs would be to offer differential rental payments to landowners. Rental payments need to be designed to create incentives for those landowners to enroll whose land would contribute the maximum sediment abatement benefits at the lowest cost. This can be achieved by having rental payments per acre vary with some of the observable characteristics of land parcels, such as its slope, distance from a water body and its soil productivity or potential returns from farming. Our simulation model suggests that these rental payments per acre should increase as the distance of the land parcel from the water body decreases, as the slope of the land parcel increases and as the cost of enrolling the land parcel decreases. This would enable close replication of the cost-effective land enrollment pattern in a setting where farmers make voluntary decisions to enroll in response to incentive payments.

In Summary

Land retirement programs, such as CREP, are increasingly being used to achieve well-defined environmental benefits by restricting the definition of the eligible region for the program. However, CREP lacks any mechanism for creating differential incentives for enrollment among land parcels within the eligible regions and enrolls parcels based on a queue system with the first applicants being enrolled first into the program. As a result, the program has no systematic way to ensure that the highest abatement to opportunity cost ratio parcels are enrolled first as required for cost-effectiveness. Our simulation model shows that actual enrollments in CRP and CREP in the Lower Sangamon Watershed have been more than successful in achieving the 20 percent goal of sediment abatement given a typical five-year storm event. However, it has done so at a cost that is much higher than necessary. This is because a large proportion of the land enrolled was in the floodplains. This land is less erosive and traps less sediment from inland regions of the watershed while being more productive and costly to retire. Our simulation model shows that it is the land parcels that are highly sloping, closer to a water body, receiving higher upland sediment inflow, generating more on-site erosion and having a lower quasi-rent per acre that should be targeted to achieve the sediment abatement goals of the program at least cost.

Our results have several policy implications. The finding that actual land retirement within the 900-foot buffer is sufficient for achieving the sediment abatement goal of the program implies that targeting of the program could be improved considerably by simply defining the eligible region more narrowly along all streams and tributaries of the river than done currently by CREP. Additionally, modifications in certain program criteria are also desirable. For example, the program currently seeks to select 85 percent of the land from the 100-year floodplains and only 15 percent from the erodible lands next to a riparian buffer. Since sloping lands are found to contribute more to sediment abatement and since this land is also less productive and thus cheaper to retire, it would be preferable to modify the eligibility criteria to include all cropland in the riparian buffer as eligible land. Furthermore, more precise targeting could be achieved by supplementing the eligibility criteria modified as above with a rental payment policy that varies rents based on site-specific characteristics, such as slope and distance from the water body.

Notes

[1] This research was funded by the Illinois Council for Food and Agricultural Research.

[2] Ongoing research by the same authors is examining the environmental and cost effectiveness of land enrolled in CREP only.

[3] Similar results were obtained by the authors for the characteristics of land that should be targeted for enrollment using simulations for other watersheds in the Illinois CREP region (working paper #23 at *www.ace.uiuc.edu/pERE/papers.html*).❖

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Illinois Agricultural Policy Center
Department of Agricultural and Consumer Economics
University of Illinois at Urbana-Champaign
326 Mumford Hall, MC-710
1301 W. Gregory Drive
Urbana, IL 61801-3605

Previous issues of the *Illinois Rural Policy Digest* can be found in the policy section of the *farmdoc* website at *www.farmdoc.uiuc.edu*.

For publication and mailing list information, contact Sue Esposito at (217) 333-5506 or sesposit@uiuc.edu.

Illinois Farmland Property Tax

Dwight Raab
d-raab@uiuc.edu

Robert Hauser
r-hauser@uiuc.edu

Farmland property tax revenue represents a relatively small share of Illinois' total property tax revenue. Yet farmland tax issues receive a large share of media and public policy attention, given the heavy reliance of rural schools on agricultural property tax revenue. The taxable value of farmland is based on past market income derived from the land. This type of "use value" assessment, as opposed to "market value" assessment of farmland, is made in every state except Michigan.

Below we provide a general description of the assessment formula used for farmland valuation in Illinois and illustrate why this valuation can change from year to year. Average tax rates are then reviewed.

Farmland Assessment

The Illinois Department of Revenue determines a farmland tax base each year, referred to as the equalized assessed valuation (EAV). The calculated EAV in 2003 is used for the 2004 assessment, and the resulting property taxes are collected in 2005. Three general steps are used in determining the EAV:

1. An income capitalization value, called the Agricultural Economic Value (AEV), is determined by estimating income earned per acre, after accounting for non-land costs, and dividing this revenue by an interest rate. In equation form:

$$AEV = (GI - NLC)/I$$

where GI is gross revenue per acre; NLC is non-land costs; and I is the interest rate.

2. For taxing purposes, each piece of Illinois farmland has been classified according to a soil productivity index (PI). Crop yields and the resulting GI and AEV are determined annually for each of the 70 productivity levels.

3. The AEV is then divided by three to determine the EAV tax base. If the resulting EAV does not deviate by more than 10 percent from the previous year's EAV, then the local farmland tax base is applied to this EAV. Otherwise, a 10 percent maximum change is applied.

Some of the many details for calculating the EAV can be found in Sec 10-110 through Sec 10-169 of the Illinois Property Tax Code. However, instead of dwelling on those details here, we would like to provide perspective on why the EAV changes from year to year. To do so, Table 1 provides the components of the AEV (income capitalization value) for a representative soil productivity index over the past 11 years. Under each variable level, the percentage change from the previous year is listed in bold. For illustration purposes, it is assumed that Illinois farmland is 50 percent corn and 50 percent soybeans, and thus one acre's gross income (GI), non-land cost (NLC) and AEV are calculated accordingly in Table 1.

The corn and soybean prices used to calculate AEV's are five year averages. The use of five-year average crop prices helps dampen the effect of large year-to-year price changes on the assessed land value. During the past 11 years, the largest decrease in corn price (-14.29 percent) occurred during 2002, using the 1997-2001 average, while the largest increase was 10.79 percent in 1997. The largest changes in the five-year average soybean price occurred in 2002 and 2003, when the calculated price dropped by about nine percent each year.

The effects of changes in crop prices are often magnified in the percentage change in AEV. To illustrate, consider the case where gross income is $300 per acre and non-land cost is $200, resulting in a net income of $100 per acre. If prices increase by 10 percent and everything else stays the same, then the gross income increases to $330, and net income increases to $130. Thus the 10 percent increase in prices causes a 30 percent increase in net income.

Non-land cost changes have the same type of amplified effect. In the above example, if the only thing that changes is a 10 percent increase in non-land costs (that is, costs increase from $200 to $220) then the resulting net income is $80 ($300 minus $220). Thus the 10 percent increase in costs causes net income to decrease by 20 percent, from $100 to $80.

The yields used to calculate AEV's remained unchanged from 1992 through 2000. Adjustments are now being made on an annual basis, at a growth rate of about one percent.

Does "Use Value" Make Sense?

Virtually every state has developed a method to determine the "use value," as opposed to the "market value," for assessing the farmland tax base. The rationale, in part, is that farmland should be taxed on the basis of its current "use" and the attendant income generated from that use. Since farmland value can be affected by developmental and other "non-use" factors, it is argued that its "use value" provides a more equitable tax base.

However, there are obvious drawbacks to use valuation, as illustrated in Table 1. The capitalization formula – based largely on the last five years of prices and the current interest rate – can cause large and frequent changes in the AEV. The annual limit on the change of 10 percent was legislated in 1986. So, it is often the case that the AEV formula just determines the direction of change while the change itself is 10 percent, by rule.

These changes are illustrated by the last two columns of Table 1. The "calculated AEV" (computed with the income capitalization formula) exhibits large changes from year to year, particularly during the past five years when it fell $1,130, from $834 per acre to a negative $296 per acre. During this same five year period, the "final AEV" (the assessed value after imposing the 10 percent rule) decreased $320.

The AEV assessment does not provide a good estimate of market value for several reasons, even if "non-use" effects such as urban sprawl are ignored. First, government payments accruing to the land are not considered in the net-income calculation. Second, the market value of farmland reflects expectations of earnings over a very long, future period of time. The changes in these expectations from year to year are not as volatile as the variables used in the AEV formula. Third, the interest rate used in the formula may not be a good estimate of the discount rate used by the market to capitalize expected earnings.

The objective of AEV assessment, however, is not to reflect market value, but to create a "fair" tax base. In that sense, it does not really matter whether the implied land value of the AEV is a good estimate of the land's market value. Local tax rates can be adjusted up or down depending on the AEV base, regardless of whether that base is at the market-value level. What matters, however, is that if Farmer Jones's land is twice as productive as Farmer Smith's, then Jones's assessment should be twice that of Smith's. The current AEV process is designed to keep these types of relative assessments in line. So, from that standpoint, the use value technique may "make sense." The volatility of the assessments from year to year, however, may not.

Table 1. Determinants of AEV

Year Calculated	Corn Price ($/bu)	Soybean Price ($/bu)	Corn Yield (bu/ac)	Soybean Yield (bu/ac)	Gross Income ($/ac)	Non-Land Cost ($/ac)	Net Revenue ($/ac)	Interest Rate	Calculated AEV ($/ac)	Final AEV ($/ac)
1992	2.26	6.16	137.21	43.7	289.64	218.5	71.14	10.18	698.82	698.82
1993	2.41	6.26	137.21	43.7	302.12	219.99	82.13	10.04	818.01	768.7
	6.64%	***1.62%***	***0.00%***	***0.00%***	***4.31%***	***0.68%***	***15.45%***	***-1.38%***	***17.06%***	***10.00%***
1994	2.39	6.03	137.21	43.7	295.72	224.95	70.77	9.5	744.98	744.98
	-0.83%	***-3.67%***	***0.00%***	***0.00%***	***-2.12%***	***2.25%***	***-13.83%***	***-5.38%***	***-8.93%***	***-3.09%***
1995	2.38	5.92	137.21	43.7	292.63	231.01	61.62	8.98	686.19	686.19
	-0.42%	***-1.82%***	***0.00%***	***0.00%***	***-1.04%***	***2.70%***	***-12.93%***	***-5.47%***	***-7.89%***	***-7.89%***
1996	2.41	5.93	137.21	43.7	294.91	236.63	58.28	8.73	667.53	667.53
	1.26%	***0.17%***	***0.00%***	***0.00%***	***0.78%***	***2.43%***	***-5.43%***	***-2.78%***	***-2.72%***	***-2.72%***
1997	2.67	6.27	137.21	43.7	320.17	249.95	70.22	8.39	836.99	734.28
	10.79%	***5.73%***	***0.00%***	***0.00%***	***8.57%***	***5.63%***	***20.50%***	***-3.89%***	***25.39%***	***10.00%***
1998	2.74	6.65	137.21	43.7	333.28	264.23	69.05	8.28	833.93	807.71
	2.62%	***6.06%***	***0.00%***	***0.00%***	***4.09%***	***5.71%***	***-1.67%***	***-1.31%***	***-0.37%***	***10.00%***
1999	2.75	6.64	137.21	43.7	333.75	272.19	61.56	8.28	743.43	743.43
	0.36%	***-0.15%***	***0.00%***	***0.00%***	***0.14%***	***3.01%***	***-10.85%***	***0.00%***	***-10.85%***	***-7.96%***
2000	2.66	6.33	137.21	43.7	320.8	278.66	42.14	8.325	506.24	669.09
	-3.27%	***-4.67%***	***0.00%***	***0.00%***	***-3.88%***	***2.37%***	***-31.53%***	***0.54%***	***-31.90%***	***-10.00%***
2001	2.52	6.05	140.04	44.5	311.06	284.64	26.42	8.26	319.88	602.18
	-5.26%	***-4.42%***	***2.06%***	***1.83%***	***-3.04%***	***2.15%***	***-37.31%***	***-0.78%***	***-36.81%***	***-10.00%***
2002	2.16	5.52	141.44	44.9	276.68	285.75	-9.07	8.13	-111.6	541.96
	-14.29%	***-8.76%***	***1.00%***	***0.90%***	***-11.05%***	***0.39%***	***-134.34%***	***-1.57%***	***-134.89%***	***-10.00%***
2003	2.06	5.02	142.86	45.31	260.87	284.19	-23.32	7.88	-295.9	487.77
	-4.63%	***-9.06%***	***1.00%***	***0.91%***	***-5.71%***	***-0.55%***	***-157.00%***	***-3.08%***	***-165.16%***	***-10.00%***

Tax Levels and Rates

As shown in Table 2, farm property (land and buildings) tax comprised 3.6 percent of the state's total property tax collections in 1991, increasing to 4.1 percent in 1999, the last year for which these data are available. Residential, commercial, and industrial property taxes account for about 95 percent of Illinois's property tax revenue.

The annual shares of farm property tax along with several other descriptors are presented in Table 3. From 1990 to 1999, the state's total farm property EAV (column a) grew from about $5.7 billion to $9 billion. The EAV's of other properties (residential, commercial and industrial) grew at about the same rate, keeping the farm property's EAV share between 4.3 percent and 4.9 percent (column b). Likewise, the share of the state's total property tax contributed by farm property (column d) has stayed fairly constant at around 3.6 percent to 4.1 percent.

When based on EAV, the average farm property tax during the 1990's (column e) was surprisingly stable, ranging from 6.78 percent to 6.98 percent. The interpretation of this seven percent tax, however, should be made with care. Recall that the EAV for farmland is 1/3 the estimated agricultural economic value (AEV) of the land. Therefore, if based on the AEV the tax rate would be about 1/3 of seven percent, or 2.3 percent. However, on average, AEV's for farmland underestimate the market value of the land. An alternative perspective of the tax-rate level is the basis of this market value.

To estimate tax rates based on market value, data were collected from participating farmers/owners in the Illinois Farm Business Farm Management Association (FBFM). The Illinois FBFM Association is a not-for-profit organization dedicated to assisting farmers and farmland owners in record keeping, management analysis, and financial analysis. The value of real estate reported by FBFM can include the value of farm buildings as well as the value of farmland. Similarly, real estate taxes paid can include not only real estate taxes paid on bare land, but also on buildings. To minimize the impact of farm buildings on per acre taxes, only full-time grain farms are included in the data.

The average per-acre tax paid on the entire sample of Illinois grain farms is reported in column (f) of Table 3 for 1995-2002. Figure 1 breaks out the per acre taxes for a sample of grain farms in 68 northern/central counties and 34 southern counties. In 2002, average per-acre taxes for the southern Illinois grain farms were about 57 percent of the state average while the northern/central Illinois grain farms were about 110 percent of the state average. The historical difference in the levels of per-acre property taxes for the two regions of Illinois reflects the lower productivity of soils in southern Illinois compared to other areas of the state. Lower productivity of soils (and their lower crop yields) results in lower assessed valuations for farmland under the current Illinois Farmland Assessment Act.

The effective farm property tax rate – the ratio of property taxes paid to the market value of the farmland – is calculated here by estimating land values based on an indexed fair market value provided annually by USDA (usda.mannlib.cornell.edu).

The average effective tax rate for the state is reported for 1995-2002 in the last column of Table 3. The average tax per acre grew from $19.68 per acre in 1995 to $26.61 in 2000. Since this tax growth was faster than the estimated growth in land value, the effective tax rate rose from 0.77 percent to 1.04 percent. The effective tax rate fell to 0.93 percent in 2002.

Table 2. Share of Illinois Property Tax Collection by Type of Assessed Valuation

Class	1991	1999	Change
Residential	51.50%	56.50%	5.00%
Commercial	30.10%	27.30%	-2.80%
Industrial	14.20%	11.60%	-2.60%
Farm	3.60%	4.10%	0.50%

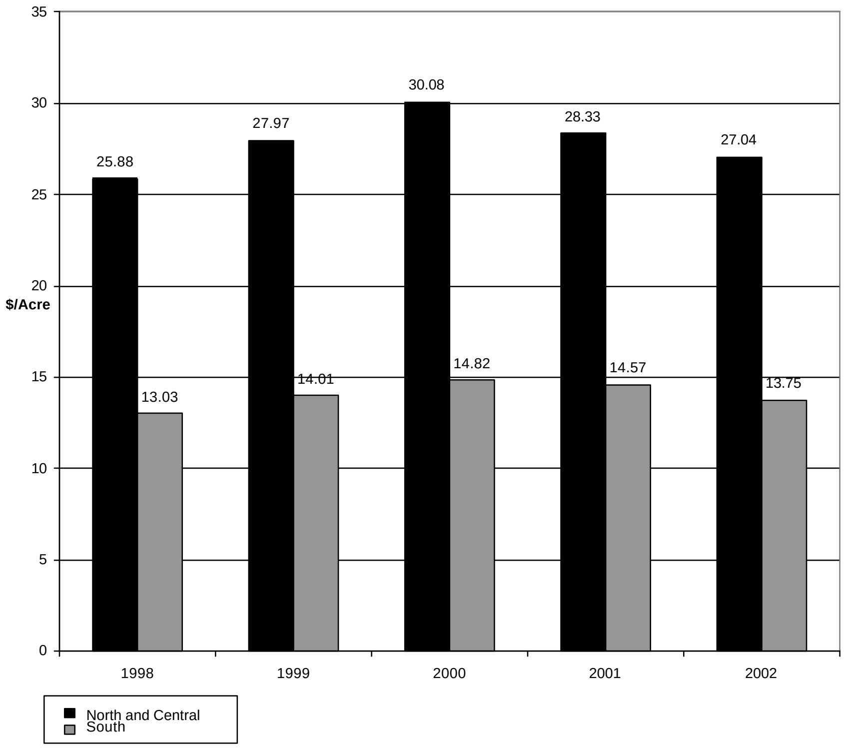
Source: Illinois Department of Revenue, Illinois Property Tax Statistics, respective years

Table 3. Farm Property Tax Revenues, Shares, and Average Rates

Assessment Year	EAV (million $) (a)	EAV Share (b)	Tax Rev. (million $) (c)	Property Tax Share (d)	EAV Tax Rate (e)=(c)/(a)	Per Acre (f)	Effective Rate (g)
1990	5,729	4.90%	388.7	4.00%	6.78%		
1991	5,487	4.30%	380.8	3.60%	6.94%		
1992	5,837	4.30%	405.2	3.70%	6.94%		
1993	6,232	4.30%	433.2	3.70%	6.95%		
1994	6,790	4.50%	471.1	3.80%	6.94%		
1995	7,370	4.70%	510.5	4.00%	6.93%	$19.68	0.77%
1996	7,594	4.60%	530.3	3.90%	6.98%	$20.08	0.80%
1997	7,834	4.50%	546.8	3.90%	6.98%	$21.65	0.85%
1998	8,485	4.60%	581.1	4.00%	6.85%	$22.92	0.88%
1999	9,072	4.70%	616	4.10%	6.79%	$24.58	0.96%
2000	NA	NA	NA	NA	NA	$26.61	1.04%
2001	NA	NA	NA	NA	NA	$25.51	1.00%
2002	NA	NA	NA	NA	NA	$24.26	0.93%

Source: Columns (a) through (e): Illinois Department of Revenue, *Illinois Property Tax Statistics*, respective years. Columns (f) and (g): Illinois FBFM Association and the University of Illinois, Department of Agricultural and Consumer Economics.
NA: Data not available

Figure 1. Illinois Grain Farm Property Tax by Region ($/acre)



Source: Illinois FBFM Association and the University of Illinois, Department of Agricultural and Consumer Economics

In Closing

The calculated value on which farmland is taxed can vary considerably from one year to the next, meaning that the 10 percent limit on its change (set by law) is often imposed. While this "use valuation" may provide a practical means for keeping the land's tax base proportional to its crop productivity, the dynamics of its changes may not be a good reflection of market changes.

The resulting average tax rate based on use valuation has been quite stable. However, the average effective tax rate, based on the estimated market value of land, increased from about 0.80 percent to 1.0 percent from 1995 to 2001, and then fell to 0.93 percent in 2002.❖

UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer and Environmental Sciences

ILLINOIS RURAL POLICY DIGEST

Illinois Agricultural Policy Center
Department of Agricultural and Consumer Economics
University of Illinois at Urbana-Champaign
326 Mumford Hall, MC-710
1301 W. Gregory Drive
Urbana, IL 61801-3605