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Effect of Current-Use Valuation on Forestry Investment Returns in Selected Virginia Counties

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SUMMARY

Results from three Virginia counties indicate that if forest properties are taxed on the basis of their value for continued timber growing as opposed to their fair market value, forestry investment returns will be increased. Where development pressures were insignificant, real returns rose by less than $40 per acre when measured in terms of Net Present Value (NPV) and by 1 percentage point when measured by the Internal Rate of Return (IRR). However, where development pressures posed a serious threat to continued timber production, NPV's rose by more than $850 per acre and IRR's by over 6.0 percentage points. These findings suggest that in areas experiencing significant development activity, use valuation may be an important policy tool for slowing the conversion of forest land to other uses. This method of assessment can maintain forestry as an attractive investment when it would not be otherwise.

Additional Keywords: forest taxation, timberland assessment.

INTRODUCTION

In areas subject to pressures from urbanization, industrialization, or recreational development, rural lands often have market values that exceed their values as determined by income-producing potential in current use. If these higher market values are reflected in increased assessments and taxes, as they should be under a normal ad valorem property tax, the affected rural lands are likely to be converted to more intensive uses. To prevent such development, many states, including all of the southern states except Georgia, have enacted so-called "use value assessment" laws. Although specifics vary, these statutes generally stipulate that farm lands are to be taxed according to their value for raising crops or livestock, forest lands according to their value for growing timber, and open-space lands according to their value as undeveloped rural acreage. The effect is to tie the taxable value of such properties to their income producing potentials so that owners can, at their discretion, keep them in farm or forest use.[1]

At present, Virginia has two laws providing for the assessment and taxation of forest and other rural lands on the basis of current use. The first law, passed in 1971, extends use valuation to qualifying lands in local taxing jurisdictions that have: (1) enacted an ordinance authorizing use assessment, and (2) adopted a comprehensive land use plan (Marshall 1981a). The second law, passed in 1977, extends use valuation to qualifying lands in locally approved "Agricultural and Forestal Districts" (Marshall 1981b). The latter are aggregations of privately owned farm and/or forest properties that have been voluntarily committed by their owners to continued crop and/or timber production.

[1]From society's standpoint, the rationale for offering a tax incentive to keep farm and forest lands in their current uses rests on the premise that such lands provide important public benefits. These include: (1) protection and maintenance of viable agricultural and wood-based industries, (2) protection and maintenance of important environmental and aesthetic values, and (3) minimization of the public service and other cost increases that can result from scattered and unplanned urban expansion (Gardner 1977).

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The purpose of this paper is to show how use assessment affects forestry investment returns in selected Virginia counties. The results should be of interest to both private forest landowners and state and local tax officials. The former will be able to better judge the possible financial gains to be realized by applying for use assessment. The latter will be able to better judge whether or not use valuation is likely to impede the conversion of forest lands to more intensive uses by owners who prefer to continue with forestry.

METHODS

Selection of Study Areas

Three counties—Augusta, Isle of Wight, and Prince William—were studied. Augusta County was selected because it represents a typical hardwood management area; Isle of Wight County was chosen because it represents a typical pine management area; and Prince William County was picked because it represents an area that has been experiencing substantial development pressure.

Biological and Economic Assumptions

To evaluate the effect of use valuation on forestry investment returns in the three study areas, assumptions had to be made concerning: (1) the productivity of the forest sites that would be encountered, (2) the types of timber management that would be practiced, (3) the intermediate and final harvest yields that would be received, (4) the stumpage prices and non-tax management costs that would prevail, and (5) the tax costs that would be incurred under both market and use assessment. In general, the specific assumptions that were made are the same as those employed by the Virginia Division of Forestry (VDF) and the State Land Evaluation Advisory Committee (SLEAC) to estimate forest use values in 1982. These assumptions are briefly reviewed below.

Site Productivity.—Three site productivity classes—low, medium, and high—were recognized in each study county. The specific site indices assigned to each class are shown in column 2 of table 1.

Timber Management Alternatives.—Three management options were recognized in the analysis. All were predicated on the assumption that timber would be grown in even-aged stands. In Augusta County, where hardwood production predominates, it was presumed that an 80-year rotation would be employed on all sites and that commercial thinnings would be conducted at ages 40 and 60. In Isle of Wight and Prince William Counties, where pine production is most important, a 45-year rotation was adopted for low quality sites and a 40-year rotation for medium and high quality sites.[2] Commercial thinnings, under either option, were scheduled for ages 25 and 35.

Yields.—The yield figures employed in the analysis are shown in columns 3, 4, and 5 of table 1. For Augusta County, they reflect the premise that management is directed towards the production of upland oaks (*Quercus spp.*). For Isle of Wight and Prince William Counties, the figures are based on the assumption that management is directed towards the production of loblolly pine (*P. taeda* L.).

Stumpage Prices and Non-Tax Management Costs.—The stumpage price and non-tax management cost figures utilized in the study are shown in columns 6, 7, 8, and 9 of table 1. In analyzing the prospective investment returns, pine pulpwood and sawtimber stumpage prices were allowed to increase at a real rate of 2 percent per year, but other prices and non-tax management costs were held constant in real dollar terms.

Tax Costs.—Average per acre market and use value taxes for forest lands in the three study areas were estimated from county tax records. These estimates, which are shown in columns 10 and 11 of table 1, reflect the assessments and millage rates that prevailed in 1982.[3] In the analysis of prospective investment returns it was presumed that these tax costs would remain unchanged in real dollar terms.

Calculation of Investment Returns

The analysis entailed: (1) determining the investment returns when given taxation based on market value, (2) determining the investment returns when given taxation based on use value, and (3) comparing the returns calculated in the preceding steps. The returns were evaluated using a program developed by Vasievich, Frebis, and Wiethe (1984) and reflect those obtainable from a single rotation. The program was capable of computing several investment criteria, but only net present value (NPV) and internal rate of return (IRR) were considered.

RESULTS AND DISCUSSION

Results of the investment analyses are shown in columns 3 through 8 of table 2. In interpreting these

[2]Most industrial timberland is managed on a shorter rotation.

[3]Tax information collected in conjunction with a study by Gayer (1984).

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Table 1.—*Yield, price, and cost assumptions used to evaluate the effect of use valuation on forestry investment returns in selected Virginia counties, 1982*[1]

(1) County	(2) Site index[2]	(3) Volume yields[3] Commercial thinnings	(4) Volume yields[3] Final harvest	(5) Volume yields[3] Final harvest	(6) Stumpage prices[4] Pulpwood	(7) Stumpage prices[4] Sawtimber	(8) Non-tax mgmt. costs Stand est.	(9) Non-tax mgmt. costs Annual adm.	(10) Property tax costs Market value	(11) Property tax costs Use value
	Ft	*Cords/ac*		*MBF/ac*	*$/cd*	*$/MBF*	---- *$/ac* -----		---- *$/ac* ----	
	55	3.6	6.6	9.0						
Augusta	65	4.8	8.1	13.4	2.50	100.00	85.00	1.00	2.59	1.07
	75	8.2	9.8	18.8						
	70	8.5	6.5	9.9						
Isle of Wight	80	10.7	7.6	11.7	7.00	110.00	105.00	1.00	1.77	1.34
	90	11.5	8.7	16.0						
	70	8.5	6.5	9.9						
Prince William	80	10.7	7.6	11.7	5.50	65.00	90.00	1.00	46.09	2.63
	90	11.5	8.7	16.0						

[1]Data from the Virginia Division of Forestry and county tax records.
[2]Base age 50 years.
[3]Thinnings and final harvest at ages 40, 60, and 80 for Augusta County; 25, 35, and 45 for low sites in Isle of Wight and Prince William Counties; and 25, 35, and 40 for medium and high sites in Isle of Wight and Prince William Counties.
[4]Pine pulpwood and sawtimber stumpage prices assumed to increase at a real rate of 2 percent per year.

Table 2.—*Forestry investment returns under market and use valuations in selected Virginia counties, 1982, for comparison*

(1) County	(2) Site index[1]	(3) Given market valuation NPV[2]	(4) Given market valuation IRR	(5) Given use valuation NPV[2]	(6) Given use valuation IRR	(7) Absolute change NPV[2]	(8) Absolute change IRR
	Ft	*$/ac*	*Pct*	*$/ac*	*Pct*	*$/ac*	*Pct*
	55	−128.37	1.80	−92.01	2.32	+36.36	+0.52
Augusta	65	−108.31	2.49	−71.95	2.89	+36.36	+0.40
	75	−82.70	2.97	−46.34	3.46	+36.36	+0.49
	70	351.83	7.23	360.74	7.35	+8.91	+0.12
Isle of Wight	80	505.13	8.41	513.64	8.53	+8.51	+0.12
	90	730.02	9.26	738.53	9.37	+8.51	+0.11
	70	−750.22	[3]	150.28	5.92	+900.50	>+5.92
Prince William	80	−614.87	[3]	245.32	6.99	+860.19	>+6.99
	90	−480.56	1.19	379.63	7.88	+860.19	+6.69

[1]Base age 50 years.
[2]Assumes a 4 percent, before income tax, discount rate.
[3]No positive IRR exists.

figures, note that they represent "real" returns—i.e., returns net of inflation.

The data show that, without exception, use valuation served to increase forestry investment returns; the amounts of the increases, however, were highly variable. In Augusta and Isle of Wight Counties, the gains in NPV were less than $40 and $10 per acre, respectively. Considering the IRR criterion, the increase in returns was less than 1 percentage point. In contrast, gains for Prince William County were in excess of $850 per acre when measured by NPV and 6.0 percentage points when measured by IRR. These findings suggest that in any given area, the effects of use valuation on forestry investment returns are primarily a function of the development pressures being experienced. As development pressures increase, disparities between market value and use value taxes also tend to increase, thereby making it possible for use valuation to have a greater impact on timber growing profits. Although they influence forest use values, differences in site productivity and the types of timber being managed appear to be of relatively little consequence in determining the discrepancy between

market and use values and thus the potential savings to be realized from use assessment.

The question of whether or not use assessment is likely to impede the conversion of forest lands to other uses cannot be definitively answered on the basis of this study. However, if we can assume that a 4-percent real alternative rate is appropriate for the woodland owners in the three sampled counties, the information in table 2 suggests the following:

- In Augusta County, timber production would be an unacceptable investment under either market or use valuation. The latter reduces the opportunity costs associated with holding forest land but would probably have little effect on land use decisions. Only those tracts that provide their owners with substantial nontimber benefits (i.e., recreation, watershed, wildlife, etc.) would likely be kept in forestry.
- In Isle of Wight County, timber production would be an acceptable investment under either market or use valuation. The latter increases rates of return but would probably have little effect on land use decisions. The same tracts would very likely be devoted to forestry under both assessment systems.
- In Prince William County, timber production would be an unacceptable investment under market valuation but an acceptable one under use valuation. The latter increases rates of return and could conceivably influence land use. Those owners desiring to keep their lands in forestry would be able to do so profitably.[4]

The preceding results are consistent with what one would expect to observe. In areas where development pressures are insignificant, forest land market and use values tend to be roughly equal. As a consequence, use valuation should have little effect on forestry investment returns or owner decisions regarding future land use. By contrast, in areas where development pressures are significant, forest land market values can exceed use values by substantial amounts. Under these conditions, use valuation might trigger sizable cost savings and make forestry an acceptable investment when it otherwise would not be.

[4]Even though use assessment would render forestry profitable, this should not be interpreted to mean that continued timber production would be the rational economic choice. By making this decision, forest owners would be foregoing the income they could earn by developing their properties.

CONCLUSIONS

Virginia's use value program increases forestry investment returns and may thus impede the conversion of forest lands to other uses.[5] The impact that the program has in any particular county is largely a function of the development pressures being experienced. In predominately rural counties, use assessment probably has little effect on forest land use because the market value of such lands tends to be determined by the timber yields obtained, the stumpage prices received, and the non-tax management costs incurred. By comparison, in counties threatened by development, use assessment can significantly influence timber growing decisions because tax costs tend to be a much more important determinant of forestry's overall profitability. Even in these latter situations, however, use valuation does not ensure that forest lands will be kept in timber production. Numerous economic, demographic, and sociological factors can enter into the decision to sell or develop a property; thus, woodland owners must want to continue practicing forestry.

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[5]It should be noted that the optional nature of the program at the county level adds an element of financial risk to the investment. Governing bodies can give the tax benefit, but they can also take it away, as has been done in at least one instance.

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