Chapter 2. Timber Investment Considerations

Is forestry a good investment? Most forest landowners would like to think so. Generally, growing timber can be a profitable enterprise; however, the final answer depends on the facts and circumstances in each case. The rewards from a forestry investment often involve more than the financial returns, including the satisfaction of ownership and a sense of pride from good stewardship of the resource. Such intangible benefits, which do not show up on the balance sheet as additional revenue, may help explain why owners are willing to hold timber properties that are not competitive financially. In this chapter, it is assumed that you are interested in the economic returns associated with forest management. The purpose is to describe objective methods of evaluating forest investment opportunities on your property. These methods will be illustrated for a managed loblolly pine stand typical of the Southeastern United States.

Characteristics of a Timber Investment

Timber is a unique investment, with several characteristics that are atypical for other business situations. First, and most conspicuous, is the long growth (investment) period. Natural stands of Southern pine frequently require an investment length of 45 to 60 years from seed to harvest, a period known as the rotation. Eastern hardwoods may need 60 to 80 years to produce quality sawtimber products. Many Western species also require long rotations when managed in natural stands. On the other hand, intensive management of planted Southern pine shortens the investment horizon to approximately 25 to 35 years, depending on site productivity, cultural practices, markets (prices), and interest rates (cost of capital). Similarly, investments in intensive management shorten the rotation for hardwoods, mixed pine-hardwoods, and Western conifers; however, the investment length still is relatively long. Energy (fuelwood) plantations, which have projected harvest cycles of 5 to 15 years, and Christmas trees, which typically range from 4 to 12 years in age at harvest, are exceptions. These opportunities are regionally important, but account for a relatively small share of the country's overall forest potential.

The forest resource produces many benefits in addition to wood products. Among the multiple outputs that accrue to forest landowners are wildlife—both game and non-game species—natural beauty, outdoor recreation, and quality water. With the exception of hunting leases, owners rarely receive monetary returns from these outputs.

Harvest timing for timber products is more flexible than for annual crops. A harvest schedule can be accelerated or postponed by several years in most cases, giving the owner the opportunity to time a harvest to coincide with personal income needs or to wait for a more favorable price situation. Timber owners can offer different products—including firewood, pulpwood, chip-n-saw, sawtimber, and veneer logs—depending on market conditions and price relationships. Within limits, and with patience, forest land can be acquired in sizes to meet the needs of most investors. Purchases can range from a few acres to thousands of acres, with timber age classes ranging from seedlings to mature trees.

Risk

Forest owners face a variety of risks that do not affect more conventional investments. Timber generally is exposed to risks for a much longer time period than are more conventional investments. Wildfire, for example, poses a threat to young plantations and to naturally grown conifer stands until they reach sufficient size for crown closure. Thereafter, the risk diminishes greatly with age, except where drought conditions and/or heavy buildups of fuel threaten a catastrophically hot fire. Hardwoods generally are at less risk from fire than conifers because of different fuel and site conditions.

Adverse weather poses additional risks for forestry investments. Drought can kill seedlings established by artificial methods, such as seeding or planting. Timber mortality occurs in heavily stocked stands of all ages that are subjected to drought stress. Modification of certain cultural practices may be required for growing timber in ice, snow, and sleet belts. These conditions also may restrict the range of plantation-grown species. A moderate amount

of destruction is caused annually by windstorms and tornadoes.

Both disease and insect pests can cause problems for trees of all ages. Disease ranks as an insidious risk for forestry investments because of the difficulty of detection. If ignored, substantial problems can develop. Examples include fusiform rust, blister rust, and various forms of root disease. For timber investors, the emphasis should be on prevention and detection. Certain insects pose a hazard in all life stages of trees. Southern and Western pine beetles and the spruce budworm are insects that typically respond to growth stress in maturing stands, especially stands with high stocking density. Some insects attack regeneration, while others attack stands in intermediate stages of development. For example, the gypsy moth attacks timber in any stage of development, and the risk of attack is not considered to be a function of time. As with diseases, the key to minimizing insect outbreaks is prevention and detection.

Although timber is subject to the same market risks as other investments, the risks are exacerbated by the long investment horizon. The relative values of various species change over time in unexpected ways. Costs and prices are affected by unpredictable shifts in supply and demand, whims in consumer preferences, technological change, and public policy. Regional impacts that must be considered include the availability of timber markets and environmental constraints.

Investment Expenditures

The way that investment expenditures are handled in a financial analysis depends on whether they are classified as capital expenditures or as operating costs. A more detailed explanation of the tax treatment of both capital expenditures and operating costs is found in Chapter 5.

Land. The costs of forest land and permanent improvements on the land are capital expenditures. They must be considered when forest investments are compared with alternative uses of investment funds (for example, forestry versus common stock). In the example shown in Figure 2-1, the purchase price for cutover land is reported at the beginning of the investment period at $500 per acre (year 0). Note that the terminal value of the land and permanent improvements is shown as a revenue at the end of the investment period (year 34), reflecting the interest cost on the use of the land resource.

In analyses of land-use alternatives, it is appropriate to exclude the cost of land if it is owned and common to both alternatives under consideration. Examples include comparisons of forestry versus agricultural uses, intensive forestry (planting) versus extensive forestry (natural regeneration), and forests managed primarily for timber versus management primarily for wildlife.

The investment evaluation should consider the total acreage, not just the net productive acreage, in order to accurately assess the expected returns. Typical tree farms may have 25 percent or more of their surface area in roads, rights-of-way, water, and other nonproductive acres.

Important considerations when purchasing forest land include productivity (site index), operability (slope, soil condition, and so forth), accessibility (nearness to roads), location, and current timber stocking (growing stock).

Merchantable Timber. Timber acquisition and establishment costs also are capital expenditures. An adequate number of trees of desirable species (growing stock) must be present to realize the productive potential of the land. If trees exist at the time of acquisition—as merchantable timber, young growth, or a combination of the two—a portion of the acquisition basis must be assigned to each category according to its relative fair market value (see Chapter 5, page 22). The capital costs of establishing a timber stand, either following a harvest or in the conversion of open land, include the costs of site preparation, planting or seeding, and release of the seedlings from competing vegetation as necessary for seedling survival.

Future timber products and volumes should be projected when analyzing the investment. Data for making projections for most major species are available from timber yield tables published by land-grant universities and State forestry organizations. Regional yield tables are published by the USDA Forest Service. In addition, microcomputer software is available from major land-grant universities for most commercially important timber

species. These programs make it possible for you to simulate a wide range of expected outcomes based on proposed or alternative operational management decisions.

Operating and Management Expenses. "Ordinary and necessary" forest management expenses are operating costs rather than capital expenditures. Their income tax treatment will depend on the classification of the owner's activity, as discussed in greater detail in Chapter 5. Generally, the impact of operating costs on investment returns depends on when deductions are allowed to be taken. In Figure 2-1, annually recurring property taxes ($2) and management costs ($5) are shown as being currently deductible for this particular investment example. Similarly, the timber stand maintenance cost ($60) in year 10 and the chemical release cost ($60) in year 3 are single expenses that are assumed to be currently deductible.

Investment Revenues

All revenues that accrue to the land as a result of the landowner's investment and management activities should be included in the accounting.

Timber Sales. Timber sales normally are the primary source of revenue for a forest investment. Even-aged timber management cycles often include one or more intermediate harvests and a final regeneration harvest. For example, the intermediate thinning at age 20 (Figure 2-1) produces revenue of $313 per acre (10.8 cords x $29 per cord). For an investment analysis, future revenues are based on volume projections coupled with price information that may be obtained from a variety of sources. In the South, prices are reported quarterly in *Timber Mart-South* as well as by several State services, such as the Louisiana Forest Products "Quarterly Market Report." In the Midwest, the Wisconsin "Forest Product Price Review" gives price information for Wisconsin. In other regions, price information may be available from the State forestry office or the local Cooperative Extension office. Note, however, that care must be exercised in applying reported prices to your particular timber investment. The influences of topography, timber quality, competition among prospective markets, and several other factors have a bearing on price.

Hunting Leases. Hunting leases are one of the most important nontraditional sources of revenue from the forest. Annual revenues may range from $1 to $10 or more per acre, depending on location, tract size, and quality of hunting. Additional capital outlays and management expenditures may be necessary to obtain the highest lease rates. When multiple uses such as hunting leases are added to the forest investment, the benefits should be carefully weighed against the added cost outlays and any timber income foregone. Hunting lease revenue is illustrated in Figure 2-1, with hunting income shown from years 0 through 34 at $4 per acre per year. This amount is based on the assumption that the timber stands involved provide the diversity of age classes necessary for quality wildlife habitat and hunting. Lease income is treated as ordinary income for Federal income tax purposes.

Miscellaneous Revenues. Other income from the forest may include recreational fees for camping, livestock grazing fees, and mineral revenues. Intensive recreational uses often involve modifications of forest management practices and correspondingly increased costs. Similarly, mineral revenues may be substantial; however, such activities can involve sharply increased costs and/or impair timber site productivity. These high-risk opportunities should be analyzed separately from normal forest investments on a case-by-case basis. In certain areas, tipping (cutting boughs for garlands and wreaths), pine straw, nuts, and maple syrup generate additional income. Most miscellaneous revenue is treated as ordinary income for Federal income tax purposes.

Economic Considerations

It is assumed here that your objective as a forest landowner is to analyze the financial return from a timber investment. There is no intent to evaluate personal nonfinancial objectives.

An individual's marginal income tax rate affects after-tax cash flows. The marginal tax rate (that is, the rate applicable to the last dollar earned) is the appropriate one to use in the investment analysis. The noncorporate marginal tax rate for long-term capital gain revenue currently is capped at 20 percent.

When Federal or State cost-share payments are available for forest practices, tax treatment alternatives should be considered. See Chapter 6 for a detailed discussion of these provisions. The net effect of the cost-share payment on after-tax income should be incorporated in the analysis. The benefits of the reforestation amortization deductions and tax credit (discussed in Chapter 5) also should be incorporated into the cash flows under consideration where appropriate.

General Economic Trends

Inflation, through changes in the price level, affects all future cash flows. For example, land, timber, equipment acquisition costs, and reforestation costs are capitalized into the basis of the respective accounts in today's (1999) dollars. Basis is the capitalized value (book value is another name) of the assets as purchased, inherited, or received by gift. Recovery of basis in timber for income tax purposes generally is done by a process termed cost depletion. The basis (in today's dollars) is subtracted from timber revenue in future (inflated) dollars at the time of timber disposal. The result is a diminished tax benefit from capital recovery over time. Therefore, after-tax analyses should be made in current terms (that is, with inflation included) to avoid an inflation-induced overstatement of capital recovery benefits. Since all cash flows will reflect inflationary projections, it is imperative that the discount (interest) rate used for the analysis include a similar expectation factor for inflation. In summary, both elements of the analysis—cash flow and discount rate—must be kept in comparable terms (with or without inflation and before or after-tax) for reliable results.

Most forestry costs change at the rate of inflation in the economy; however, stumpage prices may increase (or decrease) at rates exceeding (or less than) inflation when supply/demand relationships change. These differential price trends can cause miscalculations in an investment analysis. Real (exceeding inflation) price appreciation—or price depreciation as the case may be—for some products, such as Southern pine and Douglas-fir sawtimber stumpage, has received much attention. But other product prices, such as those for pine and hardwood pulpwood, and equipment costs, also have been affected. Predicting the future always is uncertain and hazardous, so the best information available for projecting real changes in cash flows should be used.

Economic Decision Criteria

The analysis of long-term forestry investments requires taking the time value of money into account. Discounted cash flow techniques using compound interest satisfy that requirement. One of the most important considerations affecting investment results is the choice of a discount or interest rate (these terms often are used interchangeably). The investor is comparing the returns from timber with the best alternative opportunity available. The interest rate this alternative yields is referred to as the investor's alternative rate of return. The investor's marginal tax rate is used to adjust the alternative rate of return to an after-tax basis for analyzing after-tax cash flows.

Four decision criteria are commonly used by investors to determine if independent investment projects should be undertaken. The following paragraphs present only a brief overview of these criteria. A comprehensive treatment of the subject is found in *Essentials of Forestry Investment Analysis* by Gunter and Haney, discussed in Chapter 14.

Net Present Value (NPV). All costs and revenues are discounted to the present at the investor's alternative rate of return. If the net result is positive, the investment should be undertaken. Among mutually exclusive alternatives (those in which the selection of one precludes selection of others) of similar risk, the investment with the highest NPV should be accepted. At the investor's alternative rate of return, NPV is the contribution to his or her net wealth from undertaking the project.

Benefit/Cost Ratio (B/C). All costs and revenues are discounted to the present at the investor's alternative rate of return, and the ratio of discounted revenues divided by discounted costs is calculated. Projects with B/C ratios equal to or greater than 1:1 are profitable; mutually exclusive projects are selected on the basis of the highest B/C ratio. B/C ratio is an expression of the return per dollar invested in a project for the investor's alternative rate of return.

Internal Rate of Return (IRR). IRR is the average compound interest rate that will be earned over the investment period. It is found by calculating the discount rate that makes the sum of discounted revenues and discounted costs equal to zero (that is, NPV will be zero). If the IRR exceeds the alternative rate of return, sometimes called the hurdle rate, the project should be undertaken. Mutually exclusive projects should be selected on the basis of the highest IRR, other things being equal. IRR is an expression of the rate of return for capital invested in a project.

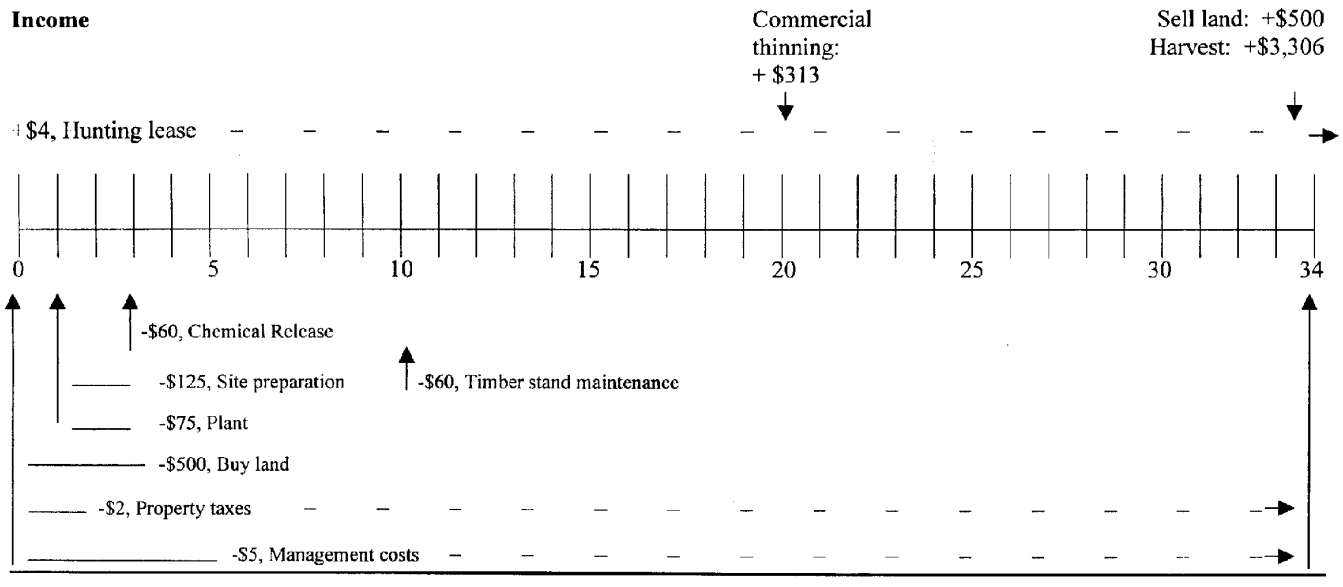
Equal Annual Equivalent (EAE). EAE spreads the benefits and costs of an investment over its useful life in the same way that installment payments spread the cost of a loan over the payback period. Projects with unequal lengths can be compared using EAE because infinity is the assumed investment horizon. This permits comparisons among projects of differing lengths—for example multi-year projects such as sawtimber versus pulpwood rotations, or multi-year projects versus annual crops. Independent projects with positive EAE's should be undertaken. For mutually exclusive projects, the one with the highest EAE should be selected, other things being equal. Generally, the four criteria will rank investment projects similarly. However, they may rank projects differently under conditions where: (1) projects have different lives, (2) the scale of one project is larger than that of others, or (3) cash flows of one project increase over time while the others decline. In such instances you should select the criterion that best meets your needs, or possibly use other factors in weighing the project's benefits.

A number of microcomputer programs are available to forest landowners for analyzing timber investments. Examples include the Quicksilver Investment Analysis Program and TWIGS, both available from the USDA Forest Service, and the Tennessee Valley Authority's WinYield software. These programs usually compute the decision criteria noted above as well as others. Some packages also include growth and yield simulators for a variety of species. Again, good judgment should be exercised in fully understanding the assumptions inherent in the results of any model's output.

Timeline

A timeline is a diagram that helps you to visualize both the nature and the distribution of cash flows from a forestry project over the investment period (see Figure 2-1). Cost cash flows are shown with a minus sign below the timeline. Revenue cash flows are shown with a plus sign above the timeline. The cash flows may be single amounts that occur only once in the investment period. An example is the

Figure 2-1. Timeline for a timber investment, shown on a per-acre basis in 1998 dollars.



timber stand maintenance cost in year 10 of $60 per acre. Cash flows also may be periodic amounts that occur annually or at longer intervals. The property tax of $2 per acre is an example of an annual cost that recurs throughout the investment period. A review of the timeline should ensure that all cash flows that have a bearing on the analysis are properly recorded.

A Forest Investment Example

The procedure for evaluating an investment opportunity will be illustrated with an example intended to be typical of a management alternative that could be practiced in the Southeastern United States. Assume that a property for sale consists of marginal agricultural land that has been idle for several years. It would be similar to land retired under the Conservation Reserve Program (CRP). The forestry potential of this acreage is shown with all costs and returns on a per-acre basis.

The initial investment in 1999 dollars per acre includes a beginning investment in land at $500 (year 0), plus site preparation at $125 and planting at $75, both completed in the first year. These are all capital expenditures that must be recorded in the taxpayer's books as basis for later recovery, as explained in Chapters 5 and 11. A herbicide application at $60 to control competing vegetation and thus improve plantation growth is incorporated in year 3. In addition, annual property taxes of $2 and annual management costs of $5 are included. A treatment for timber stand improvement costing $60 is applied at year 10. These are assumed to be currently deductible expenses for income tax purposes, as discussed in Chapter 5.

The revenue for this example in 1999 dollars includes hunting lease income of $4 per acre (ordinary income) in years 1 through 34, and a land sale of $500 in year 34. Timber revenue includes thinning income of $313 at age 20 and harvest income of $3,306 at age 34 (see Table 2-1). All cash flows are adjusted for a 3-percent general inflation rate. Because timber prices are near historic peaks relative to other costs and revenues in the economy, there is no adjustment for real price changes over inflation. Prices are assumed to be $29 per cord for standing pulpwood (5 to 9 inches DBH), $79 per cord for chip-n-saw (10 to 12 inches DBH), and $112 per cord equivalent for sawtimber (13 inches DBH and above), based on *Timber Mart-South* regional averages for the most recent four quarters available (fourth quarter 1997

Table 2-1. Transactions for a forest management example in the South, per acre.

No.	Activity	Years	Current Value $/Unit	Quantity
1.	Buy land	0	-500	1.00 acres
2.	Site preparation	1	-125	1.00 acres
3.	Planting	1	-75	1.00 acres
4.	Property tax	1 - 34	-2	1.00 acres
5.	Management fee	1 - 34	-5	1.00 acres
6.	Herbicide	3	-60	1.00 acres
7.	Timber stand maintenance	10	-60	1.00 acres
8.	Hunting lease	1 - 34	4	1.00 acres
9.	Commercial thinning	20	29	10.8 cords
10.	Final harvest (pulpwood)	34	29	6.8 cords
11.	Final harvest (chip-n-saw)	34	79	29.0 cords
12.	Final harvest (sawtimber)	34	112	7.3 cords
13.	Land sale	34	500	1.00 acres

through third quarter 1998). Timber and land sale revenues are assumed to qualify for long-term capital gain treatment.

Timber yields are based on a loblolly pine growth and yield model for planted sites that are approximately average for the South. The commercial thinning is expected to yield 10.8 cords per acre at age 20. The harvest clearcut at age 34 yields 6.8 cords of pulpwood, 29.0 cords of chip-n-saw, and 7.3 cord equivalents of sawtimber per acre.

The landowner-taxpayer is assumed to be married, filing jointly, and in the 28-percent marginal tax bracket (that is, 1999 taxable income is more than $43,050, but not more than $144,050). The tax rate for long-term capital gains is capped at 20 percent. A summary of cash flows is shown in Table 2-2. The example is analyzed with the reforestation amortization and investment tax credit options incorporated, as discussed in Chapter 5. No cost-share payments are included in this example, although it would be a straightforward procedure to incorporate them in the analysis.

It is helpful to organize the cost and return information on a timeline as shown in Figure 2-1 to be certain that the timing and amount of cash flows are properly accounted for in the analysis. The calculation of the decision criteria can be done with a hand calculator or the data can be entered into a spreadsheet program to analyze the investment, as described above.

Forestry investments are very sensitive to the discount rate used because of the long time period between planting and harvest. For after-tax analyses, the correct discount rate is the after-tax rate based on your alternative rate of return. If the next best alternative is a tax-free investment, such as a municipal bond, then the interest rate is used without adjustment, as shown in Table 2-3 for the 10-percent discount rate.
If your next best alternative is an investment, such as a corporate bond, that yields 10 percent annually with taxes subtracted before compounding, the correct discount rate is 7.2 percent, after-tax [10 percent x (1 - 0.28 assumed tax rate)]. Alternatively, if the next best alternative is an investment such as an individual retirement account (IRA), certain saving bonds, or an alternative timber investment, where taxes are deferred until the end of the period rather than being subtracted before compounding, then the correct discount rate depends on the length of the investment period and when the costs are incurred and revenues received. Assuming an initial investment, 10 percent interest, and a 28-percent tax subtracted at the end of 34 years, the appropriate discount rate would be 8.94 percent (Table 2-3).

The three discount rates discussed above are used to show the sensitivity of the analysis to the interest rate used. As the discount rate falls, it is less expensive to carry the timber investment; therefore, returns to timber projects improve with lower rates. The net present value, after-tax, in this example is $154 at a 7.2-percent discount rate. It declines to $-193 for the deferred, after-tax interest rate of 8.94 percent, and to $-327 at a 10-percent discount rate (Table 2-3). Only projects with positive NPV's are acceptable. Thus, you would not make this investment if your alternative rate exceeded 8.21 percent, after-tax, and you base your decision strictly on financial returns. The 8.21-percent rate is the IRR at which NPV becomes zero, as discussed in the following paragraph.

The internal rate of return is the calculated rate that a timber investment earns. It is therefore independent of the discount rate. In the example, the IRR for the investment is 8.21 percent, after-tax. For independent projects, an acceptable IRR should equal or exceed the investor's alternative rate of return. For mutually exclusive projects, the alternative with the highest IRR, after-tax, other things being equal, would be accepted. Thus, the investment example will be an acceptable project if the landowner-taxpayer has an alternative rate that does not exceed the 8.21-percent IRR, after-tax.
At a 7.2-percent discount rate, the benefit/cost ratio is 1.30:1; that is, the investment returns $1.30 for every $1 invested in present value terms,

Table 2-2. Cash flows with inflation and taxes for the investment example, per acre.

Year	Cost	Cost With Inflation	Benefits	Benefits With Inflation	Tax Effect	Net Income After-Tax	Net Income Without Tax
				Dollars			
0	-500	-500	0	0	0	-500	-500
1	-207	-213	4	4	25	-184	-209
2	-7	-7	4	4	8	5	-3
3	-67	-73	4	4	27	-42	-69
4	-7	-8	4	5	9	5	-3
5	-7	-8	4	5	9	5	-3
6	-7	-8	4	5	9	5	-4
7	-7	-9	4	5	9	5	-4
8	-7	-9	4	5	5	1	-4
9	-7	-9	4	5	1	-3	-4
10	-67	-90	4	5	24	-61	-85
11	-7	-10	4	6	1	-3	-4
12	-7	-10	4	6	1	-3	-4
13	-7	-10	4	6	1	-3	-4
14	-7	-11	4	6	1	-3	-5
15	-7	-11	4	6	1	-3	-5
16	-7	-11	4	6	1	-3	-5
17	-7	-12	4	7	1	-4	-5
18	-7	-12	4	7	1	-4	-5
19	-7	-12	4	7	1	-4	-5
20	-7	-13	317	573	-111	449	560
21	-7	-13	4	7	2	-4	-6
22	-7	-13	4	8	2	-4	-6
23	-7	-14	4	8	2	-4	-6
24	-7	-14	4	8	2	-4	-6
25	-7	-15	4	8	2	-54	-6
26	-7	-15	4	9	2	-5	-6
27	-7	-16	4	9	2	-5	-7
28	-7	-16	4	9	2	-5	-7
29	-7	-16	4	9	2	-5	-7
30	-7	-17	4	10	2	-5	-7
31	-7	-18	4	10	2	-5	-8
32	-7	-18	4	10	2	-6	-8
33	-7	-19	4	11	2	-6	-8
34	-7	-19	3,810	10,408	-2,077	8,312	10,389

Table 2-3. Analysis of the forestry investment example, per acre.

Criterion	Tax Treatment of Best Alternative	Effective Interest Rate Adjusted for Tax	Value
			$ or %
Net Present Value	10% return with annual tax	7.20%	154.12
	10% return tax deferred 34 years	8.94%	-193.19
	10% return tax free	10.00%	-327.17
Benefit/Cost Ratio	10% return with annual tax	7.20%	1.30:1
	10% return tax deferred 34 years	8.94%	0.83:1
	10% return tax free	10.00%	0.63:1
Equal Annual Equivalent	10% return with annual tax	7.20%	$ 12.25
	10% return tax deferred 34 years	8.94%	-18.27
	10% return tax free	10.00%	-34.05
Internal Rate of Return	After-tax		8.21%

after-tax. The B/C ratio also declines as the interest rate increases. At the deferred rate of 8.94 percent, the present value of benefits is only $0.83 per dollar invested, and at the 10-percent tax-free discount rate, the present value of benefits is $0.63 per dollar invested. Only projects with a B/C ratio equal to or greater than 1:1 are acceptable, so the timber investment would be accepted only if your decision was based on rates of 8.21 percent or less, after-tax.

The equal annual equivalent shows how much the investment would return each year. This value is useful for comparing periodic timber returns with annual returns from farm crops or other annual land uses. In the example, at a 7.2-percent discount rate, the EAE is equivalent to receiving a net after-tax return of $12.25 per year over the investment period, but only $-18.27 at the 8.94-percent deferred discount rate and $-34.05 at the 10-percent rate. Only investments that yield positive EAE's are acceptable.

SUMMARY

A forestry investment must be analyzed within the context of your personal goals. Because these are long-term investments, an objective decision framework that takes into account the time value of money is required. The investment criteria give appropriate decision rules for comparing alternatives, but the results are only as useful as the accuracy of the estimates of the costs, revenues, and discount rates used. Therefore, expected values of economic variables should be chosen carefully.

Forestry investment decisions are always made on the basis of limited and incomplete information because no one can see into the future. The examples given to illustrate the method of analysis are valid only for the specific assumptions and information used. The method, however, is generally applicable to a wide variety of investment situations. This framework should allow you to compare forestry investments with other investment alternatives on an objective basis if all information affecting the outcomes is considered. Good judgement fostered by experience is essential for tempering the choice of inputs and for evaluating the results while including intangibles and personal considerations.