Chapter 4
Valuation of Assets for Estate and Gift Purposes

General Considerations

The Federal estate and gift taxes, as discussed in chapter 3, are excise taxes that generally are levied on the fair market value (FMV) of property that is gratuitously transferred. Special use valuation for estate tax purposes is an exception to the FMV rule; the applicability of special use valuation to forest properties is discussed at length in chapter 12.

Treasury Regulation 20.2031-1(b) defines FMV as:

... the price at which property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of the relevant facts.

Valuation of estate and gift assets is thus a critical component of estate planning. In arriving at the taxable base on the date of transfer, FMV is determined on the basis of “highest and best use” rather than on the use to which the property actually is being put at the time of the transfer. Although the two uses may be the same, often they are not.

Establishment of FMV for estate and gift assets sometimes is an elusive process. The estate planner and his (her) advisors must therefore anticipate possible disagreements over valuations of some types of property. If the value of an item on the estate tax return is challenged, the law permits the executor to require the Internal Revenue Service (IRS) to furnish, within 45 days of the request, a statement indicating: (1) the basis for the IRS’s conflicting valuation; (2) any computations used in arriving at the IRS value; and (3) a copy of any expert appraisal made for the IRS. The same rule applies to gift valuations. The request must be filed by the deadline for claiming a refund of the tax that is dependent on the valuation.

Undervaluation

An accuracy-related penalty may be imposed with respect to any portion of an underpayment that is attributable, among other factors, to negligence or disregard of rules and regulations, or any substantial understatement of valuation on a Federal estate or gift tax return. The penalty is equal to 20 percent of the portion of the understatement. A substantial estate or gift tax understatement exists if the value of any property claimed on a return is 50 percent or less of the amount determined to be the correct valuation. No penalty is imposed for a substantial valuation understatement unless the portion of the underpayment attributable to substantial undervaluation exceeds $5,000.

The penalty is increased to 40 percent for gross valuation understatements. A gross valuation understatement occurs if the value of any property claimed on a return is 25 percent or less of the amount determined to be correct. An accuracy-related penalty generally will not be imposed on that portion of an understatement for which the taxpayer shows there was reasonable cause for the underpayment and that he (she) acted in good faith with respect to the valuation.

State Death Tax Considerations

In some cases, undervaluation could be detrimental from an income tax standpoint, particularly for forested properties in situations where no Federal estate tax return is required. Under current law all such estate property, including timber, receives a “stepped-up” basis for income tax purposes equal to its valuation on the State death tax return (or as of the date of death if no State return is required). If a State death tax is levied, its marginal rate virtually always will be less than the combined Federal and State marginal income tax rates that would apply if the timber is subsequently sold—either by the estate itself or by those who inherit it. Undervaluation of timber on the State death tax return, therefore, will mean a higher income tax bill upon sale of the timber than would otherwise be the case. In almost all such situations, the additional income tax will far exceed the State death tax savings resulting from the low valuation. State death taxes are discussed in chapter 18.

Special Considerations

Discounting for Minority and Undivided Interests

There is no authority for discounting fractional interests in either the Internal Revenue Code (IRC) or in the regulations, except the statement in Treasury Regulation 20.2031-1(b) that “all relevant facts and elements of value as of the applicable valuation date shall be considered in every case.” Nevertheless, an undivided fee ownership interest in forest land—particularly if it is a minority ownership interest—typically is discounted below its fractional proportion of the value of the tract as a whole. Minority interests in closely
held timber-owning corporations and partnerships are
discounted similarly. Other situations that may contribute
to discounting are lack of marketability of the ownership
interest, transfer restrictions, expenses of partition suits, and
combinations of these factors.

Expert testimony—Determining the amount of the
discount generally is more art than science. In most
disagreements with the IRS, heavy reliance is placed on
expert testimony. Among the factors typically addressed
by expert witnesses are the following: (1) the difficulties
faced by owners of fractional interests in securing
purchasers except at substantial discounts; (2) the limits
placed on owners of fractional interests with respect to
control, management, and operation of the property; (3)
the inconvenience of dealing with multiple owners; (4) the
possibility of complications caused by owners of very small
fractions; and (5) the danger of partition suits.

The applicability of discounting to corporate stock and
partnership interests is discussed in more detail in the
subsequent sections that address the valuation of these two
specific types of assets.

Life Insurance

The value of a gift of life insurance is equal to the cost of
replacing the policy on the date of the gift. This applies
whether the policy is on the donor’s life or on the life of a
person other than the donor. The value may be obtained by
the donor from the insurance company.

The value of a life insurance policy owned by a decedent
on the life of a person other than the decedent generally
is the amount the insurance company would charge for a
comparable policy on the date of the decedent’s death. In
contrast, an insurance policy on the life of the decedent that
is owned by the decedent has a value equal to the proceeds
payable by the policy. Chapter 10 discusses in more detail
when life insurance policies and proceeds are includable in
an estate and when they are not.

Future Interests

The term “future interests” refers to certain interests
taken by a donee or legatee. These are interests, whether
vested or contingent, that are “limited to commence in
use, possession, or enjoyment at some future date or time”
(Treasury Regulation 25.2503-3). The value of property
transferred by a gift which becomes effective at the donor’s
death, or at some other future time, is determined by
reference to government valuation tables that provide the
actuarial value of the interest. The same procedure applies
to a property interest transferred at death that does not
become effective until a designated future date. The tables
apply to such things as annuities, life estates, term interests,
remainder interests, and reversions—all of which are
discussed in later chapters.

Closely Held Corporate Stock

Many nonindustrial forest ownerships are part of
closely held family corporations. The term “closely held
corporation” does not appear in the IRC or in the IRS
regulations. The regulations establish only general valuation
rules in the absence of sales or bona fide bid and asked
prices. A ruling by the IRS, however, defines closely held
corporations as “those corporations the shares of which
are owned by a relatively limited number of stockholders”
(see Revenue Ruling 59-60, 1959-1 CB 237, modified by
Revenue Ruling 65-193, 1965-2 CB 370, and amplified by
Revenue Ruling 77-287, 1977-2 CB 319 and by Revenue

With closely held corporations, little if any trading in
the shares takes place. There is, therefore, no established
market for the stock and such sales as may occur at irregular
intervals seldom reflect all the elements of a representative
transaction as defined by the term “fair market value.” In this
case, the decedent’s stock is an illiquid asset that can present
difficult valuation problems for estate and gift tax purposes.
Because there is no established market, what valuation
criteria should be used? As discussed above, a penalty may
be imposed if the value reported is too low.

Factors to Consider

Although no formula can be devised to determine the fair
market value of closely held corporate stock, all available
financial data, as well as all relevant factors affecting the
fair market value, should be considered. Factors common to
most situations include:

1. The nature and history of the business—degree of risk,
products produced, services provided, operating assets, and
capital structure
2. The economic outlook and conditions for the specific
industry in question
3. The book value of the stock and the financial condition of
the business
4. Earning capacity (usually considered the most important
factor)
5. Dividend-paying capacity
6. Good will or other intangible value
7. Prior arm’s-length (on an objective and impersonal basis)
sales of stock
8. The market price of stock of similar corporations
Depending on the circumstances, some of these factors may carry more weight than others. Generally, in a family-owned timber corporation, the greatest weight will be accorded to the underlying timber assets.

**Degree of Control**

An additional factor to be considered is the degree of control represented by the block of stock being valued. If the decedent held control over the corporation, the IRS may contend that a control premium should be added to the value of the stock in determining its value. In the Tax Court’s view, “a premium for control is generally expressed as the percentage by which the amount paid for a controlling block of shares exceeds the amount that would otherwise have been paid for the shares if sold as minority interests …” (see *Estate of Saltzbury, J.E.*, 34 TCM 1441, CCH Dec. 33,503 (M) TC Memo. 1975-333, at 1451). In Technical Advice Memorandum (TAM) 8401006 (September 28, 1983), the IRS National Office ruled that the majority voting power of shares of preferred stock in a closely held corporation owned by the decedent at death was to be considered in valuing the stock for estate tax purposes even though the voting rights expired at the owner’s death.

**Valuation Discounts**

Among the most important considerations in valuing the stock of a closely held corporation are the legal and operating rights embodied in the stock ownership. One of the most significant of these rights is the ability of certain stockholders to control a company. Conversely, an adjustment commonly is made for the lack of control, by applying a minority discount. The minority interest discount is embodied in the concept that the perceived risk is relatively less when a person has the right to control a company’s course of action. As a result of this element of control, a minority stock interest in a closely held corporation owned by a decedent not related to the majority stockholders normally will be valued at substantially less per share than stock that represents a controlling interest (Revenue Ruling 59-60).

**Relative size and ownership concentration**—In addition to control privileges, two equally important factors are the relative size of the block of stock being valued and the concentration of ownership. For example, a person holding a 20-percent minority interest might have little say with respect to operations if a single other shareholder holds the other 80 percent. If, however, the other 80 percent is equally divided between two other shareholders, with an agreement in place that at least 51-percent approval is required for certain decisions, the 20-pecent shareholder might have more influence. The first case would warrant a higher discount.

**Lack of marketability**—The minority discount concept is separate and distinct from a lack of marketability discount. In fact, a discount for lack of marketability may exist regardless of whether a controlling or minority interest is being valued; the two types of discounts can exist together or one without the other. While they vary over a wide range, the discount for a minority interest averages 30 percent, while that for lack of marketability averages 42 percent. The lack of marketability discount recognizes that, compared to the broad spectrum of potential purchasers of publicly traded securities, the value of closely held interests is reduced due to a relatively small market. This concept also can apply to majority holdings. The IRS “Valuation Guide for Income, Estate and Gift Taxes,” January 1994, recognizes that the absence of a readily available market for closely held stock interests may justify a discount for lack of marketability and states that such a discount is suitable for holdings of less than 50 percent of the voting power.

**Interests controlled by members of the same family**—In the past, the ownership of fractional interests other than the interest in question has had a significant influence on whether a discount could be allowed. In many instances, the courts have chosen not to discount the interest in question when all other interests were owned by members of the same family—for example, see *Fawcett, H.K.*, 64 TC 889 (1975). One major exception to this judicial trend was the Fifth Circuit Court of Appeal’s decision in *Estate of Bright v. United States*, 658 F2d 999 (Fifth Circuit 1981). Here the decedent’s undivided community property interest in shares of stock, together with the corresponding undivided community property interests of the decedent’s surviving spouse, constituted a controlling block of 55 percent of the shares of a corporation. The court held that, because the community-held shares were subject to a right of partition, the decedent’s own interest was equivalent to 27.5 percent of the outstanding shares and, therefore, should be valued as a minority interest, even though the shares were to be held by the decedent’s surviving spouse as trustee of a testamentary trust.

Following the *Bright* decision, the IRS issued Revenue Ruling 81-253, 1981-2 CB 187, which held that, ordinarily, no minority shareholder discount was to be allowed with respect to transfers of shares of stock between family members if, based on a composite of the family members’ interests at the time of the transfer, control (either majority voting control or de facto control through family relationships) of the corporation would exist in the family unit. The ruling also stated that the IRS would not follow the *Bright* decision.

In early 1993, however, the IRS issued Revenue Ruling 93-12, 1993-1 CB 202, revoking Revenue Ruling 81-253 and stating that it would subsequently follow *Bright* and several similar decisions in not assuming that all voting power held
by family members may be aggregated for purposes of determining whether the transferred shares should be valued as part of a controlling interest. Now, therefore, stock shares transferred should be able to be valued without regard to the family relationship of the decedent or donee to other shareholders.

**Built-in capital gain tax liabilities**—Discounts now are allowed for built-in potential corporate capital gain tax liabilities. Following two recent court decisions *(Estate of Davis, A.D., 110 TC 530 (1998), and Eisenberg, I., CA-2, 98-2 USTC ¶60,322; 155 F3d 50, revoking and remanding 74 TCM 1046, TC Memo. 1997-483)* which rejected the official IRS position of not recognizing built-in corporate capital gain tax liabilities for valuation purposes as enumerated in TAM 9150001 (August 20, 1991), the IRS issued an Action on Decision that agreed that there are no legal prohibitions against recognizing a discount with respect to potential built-in corporate capital gain liabilities *[Action on Decision, CCH-1999-001 (February 1, 1999)]*.

**Valuation of Assets for Estate and Gift Purposes**

**Partnership and Limited Liability Company Interests**

Many nonindustrial forest properties are held in family or nonfamily partnership form, or as part of a limited liability company or limited liability partnership. Limited liability companies nearly always are taxed as partnerships rather than corporations. A partner’s capital account in the partnership initially is equal to the value of money and property that he (she) contributes to the partnership and subsequently also reflects the partner’s share of profits, minus any losses and distributions. Under State law, unless the partnership agreement provides otherwise, the death of a partner terminates the partnership and requires a distribution of the partnership assets in proportion to the respective capital accounts. From an estate tax point of view, it might be argued that, on dissolution, only the net asset value of the decedent’s capital account should be valued. The IRS, however, also considers the value of the business as a going concern—the price a willing, informed buyer would pay and a willing, informed seller would accept for the assets, goodwill, and demonstrated earning capacity. These factors are applicable particularly if the partnership continues rather than being dissolved.

**Valuation Discounts**

The principles of Revenue Ruling 59-60, discussed above with reference to valuing corporate stock, also are applicable to valuation of minority general partnership and family limited partnership (FLP) interests (see Revenue Ruling 68-609, 1968-2 CB 327).

Limited partnership minority interests transferred under an FLP are worth significantly less for transfer tax purposes than the same proportionate interests in the underlying assets would be worth. The holder of a minority limited partnership interest cannot make decisions about how the business is run, demand distributions, or force a liquidation of the partnership. In addition, an interest in an FLP may be far less marketable than an equal interest in the underlying assets of the business. As a result, minority interest and lack of marketability discounts generally are allowed on the transfer of interests in an FLP.

Valuation adjustments for a particular FLP interest will vary according to—and must be supported by—the specific facts and circumstances. The primary factors to be considered are:

1. The level of control of the limited partners
2. Limitations on transfer of partnership interests
3. Partnership earnings and revenues
4. The number of partners
5. The nature of the partnership’s underlying assets
6. The relevant economic environment for the partnership’s business interests
7. The size of the partnership interest being valued

The combined discount for a minority interest and lack of marketability typically is in the 20 to 40 percent range, but can be even higher.

**Deathbed FLP Agreements**

In a recent case, a United States District Court in Texas concluded that a decedent entering into an FLP agreement two days prior to her death was pursuant to a bona fide business arrangement, rather than an attempt to transfer property to members of her family for less than full and adequate consideration *(see Church, E., DC Texas, 2000-1 USTC ¶60,369, affirmed CA-5, in an unpublished opinion, 2001-2 USTC ¶60,415)*. The Court concluded that the transaction was a bona fide business transaction because: (1) the primary purpose in forming the FLP was a desire to centralize management and preserve the family ranching operation, (2) the partnership was formed with the possibility of actively engaging in raising cattle in the future,(3) the partnership was not formed solely to reduce the decedent’s estate tax, and (4) the decedent had no reason to believe she would die in the near future.

In another case involving Texas law, the Tax Court—in a decision reviewed by the entire Tax Court—rejected the IRS attack against an FLP created by a donor 2 months before his death. The FLP was recognized as having sufficient
Methods of Valuation

There are three principal methods used to determine the fair market value of real estate, including forest land (see chapter 12 for a discussion of special use valuation): the market transactions (comparable sales) approach, income approach, and cost approach. One of these usually is selected as the primary approach, but a second or even a third approach may be used as a check on accuracy if it is applicable and appropriate data are available. In practice, all three methods are ultimately related to the market and should be reconciled when possible.

**Market transactions approach**—Fair market value, based on a comparison of the “subject property” to similar properties (i.e., comparable sales), generally is regarded as the most reliable method of valuation. Value is based on the price for which similar assets were sold under comparable conditions at or near the same time. Other things being equal, this is the method preferred by the IRS.

The price paid for property is a market clearing transaction that provides an expression of the property’s fair market value at the time of the exchange. This expression of value must be verified with respect to the relationship of the parties, the terms of sale, date of sale, and the effects of inflation. For price to equal value, the buyer and seller must deal on an objective and impersonal basis. Transactions among family members or business associates always are suspect. When terms other than cash are involved (i.e., mortgages, long-term contracts, etc.), they also must reflect current market conditions for the value-to-price relationship to hold. Favorable terms of trade may reflect hidden benefits. For example, a below-market interest rate will cause the price in question to distort the property’s true value. Similarly, undisclosed terms that are unfavorable also could cause the price to mask the true value.

The timing of a transaction is an important factor in estimating an asset’s value. In this context the important date is the actual “meeting of the minds” of the buyer and seller rather than the date the deed or other paperwork is recorded. The sale price is then adjusted to reflect the interval that has elapsed between the sale date and the present. The adjustment, of course, is to the extent possible, a determination of fact and not necessarily easy information to obtain.

Finally, the effect of inflation on the purchasing power of the dollar is a critically important factor with respect to transactions that occur at different times. Contracts that fail to adjust for inflation may distort estimates of value, if improperly accounted for in the appraisal process. Transfers in which the assets are encumbered by a mortgage or by contract terms that prevent the price from reflecting the true value should be avoided for comparison purposes.

**Income approach**—The income method of valuation is based on the discounted net present value of future income expected from the property, plus the present value of the property remaining at the end of the income period (i.e., the terminal value). Future values are discounted to the present, using a chosen interest rate that reflects the investor’s cost of capital or alternative rate of return. Reasonable estimates would be based on a consistent rate, but the rate should be indexed for changes in interest rates over time. The income approach is used much more frequently than the market approach, but it is not always the preferred method. It is particularly useful for determining investments with long-term contracts or leases.
of future revenues and costs may be obtained for many business situations based on past experience. Future values cannot be known with certainty; however, the discounting process weighs the near-term cash flows more heavily than those that will occur in the more distant future. The interest rate used in an income approach valuation is critical. The rate must reflect the opportunity cost of the resources committed to the project as opposed to an alternative use. One problem with the income approach is that prior experience fails to account for future technological change.

It is essential that the components (i.e., cash flows and interest rate) in an income approach calculation of net value be expressed in the same terms with respect to inflation, taxes, and depreciation.

**Cost approach**—The cost approach to valuation is based on the estimated cost of replacing an asset with another of similar quality and utility. The cost and the value of an asset, however, are not necessarily the same. Cost equals value only if the asset is new or yet to be purchased. Caution must be exercised in estimating depreciation when adjusting for obsolescence.

Furthermore, cost equals value only when the property in question is being utilized in its “highest and best use.” Properties often are over- or under-improved. For example, excessive costs for bridge standards higher than necessary for efficient management will not be reflected in estimates of value. Costs must be economically warranted; they reflect the commitment of material and labor resources, which have an opportunity cost for other uses, but whose value represents the right to the present value of the future income stream. Replacement cost is limited by the market to the cost of an item of comparable quality to the one being replaced. Replacement costs frequently differ from reproduction costs due to improvements in both materials and management methods, whether for forest land or other properties.

**Valuation of Bare Land**

In valuing forest land, the market transactions approach generally is considered the most reliable. If the appropriate data are available, however, the income approach may be used as a check for accuracy.

The cost approach is inappropriate for valuing bare land because no additional supply of land can be created. Obsolescence, a key component of the cost approach, is a valid consideration with respect to improvements to property such as bridges, fences, and buildings. It is not valid, however, with respect to land or to timber because they are appreciating assets.

**Market transactions approach**—The most reliable method of estimating land value compares the property to similar properties in comparable locations sold within the same time period. As noted above, this is the method preferred by the IRS. If the market is active, and there are a sufficient number of valid comparable sales, the market approach will give a satisfactory estimate of the land’s value.

A critical requirement for using the market approach is access to current land sale data. Land sale information can be found in title insurance company records, the local tax assessor’s and county clerk’s records, appraisers’ and consulting foresters’ files, and real estate brokers’ files. Several sources may be used to obtain a sufficient number of transactions to evaluate the level of economic activity, price trends, and any shifts in forest industry operational patterns.

The price and terms of a sale used for valuation purposes should be verified with either the buyer or seller or both. Sales of forest land typically are private, and the public may receive a distorted picture of the circumstances attending a particular transaction. The price paid may differ from a price paid in the open market due to financing terms, the relationship of the parties, or other collateral factors. The time of the comparable transfer also should be accurately determined in order to make economic adjustments for the time value of money, inflation, and other price influences. If these cannot be determined with confidence for a particular transaction, it should be excluded from the sample for comparative purposes.

With respect to forest land, there are many variables that should be taken into account when comparing sales transfers. These include site productivity, accessibility and operability of the property, the proportion of the tract that is productive, parcel size, location with regard to markets, and regulatory constraints. Because land is characterized by its unitary quality, immobility, indestructibility, and non-homogeneity, the forest land market tends to be highly local in nature. Sometimes even the assumption of indestructibility must be altered to account for factors such as flooding, erosion, soil compaction, or chemical pollution that may affect productivity and ultimately value. Most comparable sales include both land and timber, and many reflect alternative uses of the land.

**Income approach**—With this method, the value of land is based on its income-producing capability (productivity) in its “highest and best use.” The income approach is used when market transactions for comparison with the property of interest are limited or nonexistent. All income from the land—e.g., forest products multiplied by price—during an investment cycle and all costs of production—e.g., labor, management, property taxes, maintenance, and other costs—are discounted to the present and netted. Discounting
is accomplished using an interest rate that reflects the individual investor’s highest “alternative rate of return” for his (her) funds if they were to be invested elsewhere. The result is an estimate of the net present value (NPV) of the property for one investment period, typically a rotation. NPV calculated for an infinite investment horizon of timber rotations is known as land expectation value or LEV. This estimate is the maximum bid price for acquiring similar land for growing timber under the same assumptions as to management plan, costs, returns, and interest rate. Alternatively, a terminal value can be inserted at the completion of the rotation period.

Determining the “highest and best use” is a critical assumption for the income approach to valuation of bare land. The unitary nature of land must be considered. For example, a forested property with good road access, lake frontage, or proximity to town may have a higher value for residential or recreational development than for growing timber. The negative impact of such development on the balance of the property must be considered if forest management operations might be restricted in or near the higher valued areas. Combinations of such enhancements and negative impacts should be netted in developing the estimates of the “highest and best use” for such properties.

**Valuation of Merchantable Timber**

Forest land in an estate often is valued as a unit; that is, separate valuations are not determined for land and timber. This is a mistake to be avoided. Serious income tax consequences may result due to the lack of an identifiable timber basis when the timber is sold.

**Market transactions approach**—The market value of merchantable timber indicates what the trees would sell for under the prevailing utilization standards in the property’s particular timber market area. This value is influenced by factors such as species, tree size, product class, quality, total volume available, and accessibility. Timber markets, like land markets, are highly localized. Because logs are bulky and transportation is expensive, the market area for most timber products is constrained. Generally, the higher the per-unit value of a timber product, the larger its market area. For timber used for undifferentiated fiber products—e.g., firewood, pulpwood, or reconstituted wood products such as oriented strand board—the truck haul radius usually is 100 miles or less; on the other hand, quality sawtimber, poles and piling, and veneer logs may be transported much longer distances.

When timber must be cut to realize current income, it is the timber’s current liquidation value that matters rather than its potential future value. Although many comparable sales include the value of the land, timber value alone can readily be established by a timber cruise.

**Income approach**—The value of merchantable timber below rotation age in even-aged stands can be estimated by the income method. This approach presumes an optimum rotation length, or at least an assumed management regime where the expected value of the future harvest and the annual management costs can be estimated. The management costs and terminal value are discounted to the present point in time and subtracted from the expected harvest revenue, also discounted to the present point in time. Such values are potential or imaginary since they require completion of the rotation to be realized and are subject to both uncertainty and risk.

**Cost approach**—Use of the cost approach to obtain estimates of timber value requires using the same assumptions as under the income approach. In this case, the procedure is to compound the establishment cost and the intermediate cash flows forward to the present point in time using an appropriate rate of interest.

Generally, the cost and income approaches will provide estimates of value which differ, based on the interest rate chosen, with one exception. That exception is the special case where the interest rate used is equal to the internal rate of return (IRR)—the compound interest rate that brings the present value of all costs for the assumed management regime equal to the present value of all returns. Use of IRR in income or cost approach calculations illustrates a method for determining standing timber values that has been called the hybrid approach. First, compute the IRR for all costs and revenues in the investment cycle. Second, use the IRR as the interest rate to calculate the cost or income value for the timber investment period. An example of the hybrid approach is found in the following section.

In many cases, it may be more practical to use the income approach to determine the value of merchantable timber than the cost approach. This is because the length of the projection period usually is shorter for an income approach calculation than for a cost approach calculation. Other things being equal, the shorter the projection period involved, the less uncertainty there is in the result.

**Valuation of Premerchantable Timber: A Case Study**

**Market transactions approach**—Satisfactory market transactions for valuing premerchantable timber rarely exist, so valuations usually must be based on either the income approach or cost approach. The problem of choosing an appropriate interest rate can be avoided by solving for the IRR of the assumed management regime and using the hybrid approach. As noted above, IRR is the interest rate that brings the present value of all costs and the present value (PV) of all returns equal to each other, or stated differently, brings the NPV of the management regime equal to zero.
This case study is based on an incident where a fire caused by a passing train destroyed a 9-year old pine plantation. The plantation owner had expected to receive net revenue of $2,075 per acre from the plantation in year 30. Per-acre costs included $150 for site preparation and planting in year zero, and annual management costs of $3 per acre. The cost of the land is omitted because it is common to both the cost and income approaches. The IRR can be calculated using an iterative procedure (see tabulation below).

As shown, the IRR that brings NPV equal to zero is approximately 8.44 percent.

**Income approach**—With the income approach, expected future costs and returns are discounted back to the present. Historical costs are not considered because they are “sunk” and have no bearing on future income. With the IRR known, the income value of the 9-year old plantation can be calculated. The general formula for the income approach is:

\[
\text{Income value} = \text{Future revenues discounted back to the present} - \text{Future costs discounted back to the present}
\]

**Future revenues**: The only revenue is from the harvest at age 30. The formula to calculate the present value (\(V_o\)) of a single sum (\(V_n\)) discounted at a given rate of interest (\(i\)) for the remaining \(30 - 9 = 21\) years of the rotation (\(n\)) is:

\[
V_o = V_n / (1 + i)^n
\]

Substituting:

\[
= 2,075 / (1.0844)^{21} = 378.48
\]

**Future costs**: The only future costs are the annual management expenses. The formula for the value (\(V_o\)) of an historical series of \(n\) annual payments (\(a\)) at a given rate of interest (\(i\)) is:

\[
V_o = a x [(1 + i)^n - 1] / i
\]

Substituting:

\[
= 3.00 x (1.0844^9 - 1) / 0.0844
\]

\[
= 38.16
\]

**Income value**: $378.48 – $29.06 = $349.42

**Cost approach**—The cost approach looks in the opposite direction from the income approach, compounding historical costs and returns forward to the age of the stand. Expected future costs and returns are not considered. As above, with the IRR known, the cost value of the 9-year old plantation can be calculated. The general formula for the cost approach is:

\[
\text{Cost value} = \text{Historical costs compounded forward to the present} - \text{Historical revenues compounded forward to the present}
\]

**Historical costs**: There are two types of costs in the example. The first is for stand establishment. The formula to calculate the value (\(V_o\)) of a single historical sum (\(V_n\)) compounded forward for \(n\) years at a given rate or interest (\(i\)) is:

\[
V_n = V_o x (1 + i)^n
\]

Substituting:

\[
= 150 x (1.0844)^9 = 311.02
\]

The second type of cost is the annual management expense. The formula for the value (\(V_n\)) of an historical series of \(n\) annual payments (\(a\)) at a given rate of interest (\(i\)) is:

\[
V_n = a x [(1 + i)^n - 1] / i
\]

Substituting:

\[
= 3.00 x (1.0844^9 - 1) / 0.0844
\]

\[
= 38.16
\]

**Historical revenues**: There are no historical revenues in this simplified example.

**Cost value**: $311.02 + 38.16 = $349.18

The hybrid approach applied in this case study has the distinct advantage of eliminating one of the most critical decisions in financial analysis, namely selecting an interest rate. Note also that, except for a small rounding error, both methods of estimating the value of the pre-merchantable stand—the income approach looking forward and the cost approach looking back—provide the same results. This occurs specifically because the hybrid approach uses the IRR to discount future cash flows back and historical cash

<table>
<thead>
<tr>
<th>Item</th>
<th>Year</th>
<th>Value</th>
<th>PV@ 9.0%</th>
<th>PV@ 8.5%</th>
<th>PV@ 8.4%</th>
<th>PV@ 8.45%</th>
<th>PV@ 8.44%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand establishment</td>
<td>0</td>
<td>$−150.00</td>
<td>$−150.00</td>
<td>$−150.00</td>
<td>$−150.00</td>
<td>$−150.00</td>
<td>$−150.00</td>
</tr>
<tr>
<td>Management cost</td>
<td>1−30</td>
<td>$−3.00</td>
<td>$−30.82</td>
<td>$−32.24</td>
<td>$−32.54</td>
<td>$−32.39</td>
<td>$−32.49</td>
</tr>
<tr>
<td>Harvest revenue</td>
<td>30</td>
<td>2,075.00</td>
<td>156.40</td>
<td>179.53</td>
<td>184.56</td>
<td>182.03</td>
<td>182.53</td>
</tr>
<tr>
<td>Net present value</td>
<td></td>
<td></td>
<td>$−24.42</td>
<td>$−2.71</td>
<td>$ 2.02</td>
<td>$−0.36</td>
<td>$ 0.04</td>
</tr>
</tbody>
</table>

{dollars}
flows forward to the present. The two approaches will not yield the same results if any interest rate other than IRR is used.

**Reported Timber Specific Court Decisions**

**Corporate Stock**

*Estate of Jameson, H.B., 77 TC Memo 1999-43.* The Tax Court allowed a discount for corporate stock owned by a decedent with respect to the potential built-in capital gain tax liability associated with a Texas “C” corporation that held highly appreciated forest land in Louisiana as its primary asset. Due to the fact that the corporation had a valid election under IRC section 631(a), which treats the cutting of timber as though it were a hypothetical sale or exchange of the timber, the Court was able to use a discounted cash flow approach to quantify the tax liability that would be incurred simultaneous to the cutting of the timber. The calculation took into consideration the rate at which the corporation’s timber grew, the effect of inflation, the capital gain tax rates, and the applicable interest rate. Using the appropriate inputs, the Court found that an $872,920 reduction was appropriate in valuing the stock, a discount of approximately 12 percent from the net asset value.

**Partnership Interests**

*Estate of Watts, M.B., TC Memo 1985-595, 51 TCM 60 (1985).* The Tax Court agreed with the taxpayer that a partnership operating as an active business should be valued as a going business and that a partnership interest discount was appropriate. The partnership was engaged in the management of timber, manufacture of plywood, and sale of lumber. By the terms of the decedent’s will, the partnership was to continue as a going business. The Court considered the liquidation value, asset by asset, to be inappropriate; it adopted the valuation method used by the taxpayer’s appraisers and discounted the decedent’s minority interest by 35 percent. The decision was affirmed upon appeal [*Estate of Watts v. Commissioner*, 87-2 USTC 13,726, 823 F2d 483 (Eleventh Circuit 1987)].

*Harwood, V.Z. v. Commissioner, [82 TC 239, 267 (1980)].* Here the Tax Court allowed a 50 percent discount based on liquidity and marketability factors for a minority interest in a limited partnership engaged in the timber business.

**Fee Interests**

*Estate of Sels, D.W. v. Commissioner, TC Memo 1986-501, 52 CCH TCM 731, PH TCM 86,501.* The Tax Court compared the in-fee financial interests of the decedent to minority corporate and partnership interests, citing *Estate of Campanari*, 5 TC 488, (1945) and *Estate of Andrews*, 79 TC 938 (1982). Here the value of the decedent’s undivided interests in 11 tracts of forest land was determined using the comparable sales approach. The fractional interests ranged from 2.48 percent to 25 percent. The IRS valuation was revised to reflect differences between the decedent’s properties and the comparison lands with respect to the quality of timber, accessibility, and timing of the sales. The IRS valuation was reduced by a further 60 percent to reflect lack of marketability, lack of control, and the costs of potential partitioning. The estate’s expert witness testified that the purchaser of a minority interest could expect to encounter a significant delay in obtaining the value of the purchased interest and to have little income in the interim. Testimony indicated that partition would be expensive and would take at least 6 years.

*Saunders, G.B. v. United States, 81-2 United States Tax Cas. (CCH) ¶13, 419; 48 AFTR 2d (P-H) 6279 (1981).* Here the Court held that the value of gifted forest land subject to a long-term lease was the present value (using an interest rate that reflected the illiquidity of the property) of the anticipated annual income from the property for the remainder of the lease, plus the residual value of the property at the end of the contract period. According to several commentators, however, the specific discounting formula used by the Court was technically flawed because it discounted real (inflation factored out) cash flows using a current (including inflation) interest rate. The commentators noted this procedure was inconsistent and resulted in undervaluation of the assets.

*Hipp, J.A. et al. v. Commissioner, TC Memo 1983-746, 46 CCH Tax Ct. Memo 623 (1983).* The Tax Court determined the fair market value of forest land for gift tax purposes by relying on appraisal reports and expert witness testimony and then adjusting the sum to reflect changed market conditions at the time of the gift of the same acreage 1 year later. Evidence relating to comparable sales, measurement of soil quality, volume of timber (summation of assets), and accessibility was found to be relevant and was considered by the Court.

*Estate of Sturgis, R. v. Commissioner, TC Memo 1987-415, 54 TCM 221.* The Tax Court set the value of 11,299 acres of forest land at an amount between the value offered by the estate and that offered by the government. The Court considered the testimony of four experts, all of whom valued the property using the same methodology, by: (1) determining the volume of timber on the property and assigning a separate value to each species; (2) valuing the land as a separate component; and (3) adding the land and timber values together. After considering the testimony
of the four experts, the Court also applied a 20-percent discount factor because of the estate’s minority interests in the forest land, which comprised 91 separate tracts.

Oettmeier, W.M., Jr. v. Commissioner, 89-2 USTC ¶13,809, 708 FSupp 1307. Here the Court used a so-called “common sense” approach to value a decedent’s interest in leased forest land for Federal estate tax purposes. Although the value of the reversionary interest was undisputed, the experts for the estate and for the IRS differed greatly on the value of the future lease payments. The disagreement was based on two items: the choice of an appropriate interest rate and the appropriate discounting formula. The Court rejected the valuations offered by both sides, holding that neither would have been an acceptable price to both a willing buyer and a willing seller. The Court determined the value using its own approach which basically split the difference, but curiously, used two interest rates to arrive at its value.

Estate of Barge, B.I. v. Commissioner, TC Memo. 1997-188, 73 TCM 2615. The decedent had been the owner of a 75-percent undivided interest in 60,000 acres of Mississippi forest land. In 1976 she gave a 25-percent interest in the forest land to her three children, and in 1987 she gave a second 25-percent interest to her grandchildren’s trusts. On the date of the 1987 gift, the fair market value of the entire 60,000 acres was $40 million. On the 1987 gift tax return, the 25-percent interest gifted to the trusts was valued at $2.5 million. The IRS determined that the value was $12.8 million. The plaintiff’s expert used an income capitalization approach to value the 25-percent interest, while the IRS expert relied exclusively on a market comparison approach. The Tax Court accepted the income capitalization approach, but raised the value to $7.4 million after consideration of a number of related factors.

Estate of Williams, E.B. v. Commissioner, TC Memo. 1998-59, 75 TCM 1758. In 1980, the decedent and a relative sold a tract of Florida forest land for $700 per acre. Shortly before the sale, the decedent had transferred an undivided 50-percent interest in the tract to the relative, but failed to file a gift tax return. In 1983, the decedent conveyed an undivided 50-percent interest in another parcel to the same relative, again failing to file a gift tax return. The decedent died in 1992. After the decedent’s death, the estate executor filed gift tax returns for the two transfers, valuing them at $111.46 and $119.22 per acre, respectively. The IRS values were $321.63 and $427.50, respectively. The Tax Court held that the values of fee interests in the two parcels were $575 and $750 per acre, respectively, then applied a 44-percent discount to both gifts for lack of control and marketability and the cost of partitioning.

Taylor, B.L. v. United States, 94-1 USTC ¶60,165(DC-AL), affirmed 95-2 USTC ¶60,207, 65 F3d 182 (CA-11). Benjamin Taylor, executor of the estate of Walter Taylor, reported the fair market value of forest land owned by the decedent at $355,713 on the estate tax return. The IRS, based on an in-house appraisal, placed the value of the property at $836,704. Before trial, the IRS had an additional outside appraisal performed, and based on that appraisal, adopted a lower value of $662,704. The jury decided that the value was $377,585. Taylor then moved for an award of litigation costs. The judge denied the motion, stating that the Court could not conclude that the government’s assessments were not substantially justified. The judge found the IRS’s outside appraiser to be “fair, impartial, and competent,” and his reasoning and methodology “scientifically valid.” The differences between the two appraisals were “attributable to reasonable professional differences in the application of technique.”