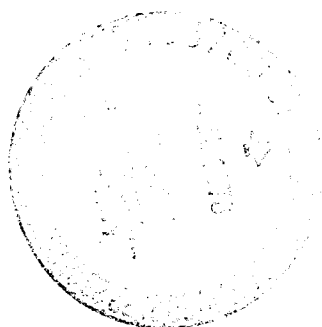


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Studies in Management and Accounting for the

# FOREST PRODUCTS INDUSTRIES

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CAPITAL GAINS TAX TREATMENT  
IN THE FOREST PRODUCTS INDUSTRIES

A Partial Analysis of  
Section 631(a) of the Internal Revenue Code

Two Papers by  
James O. Estes and Thomas R. Johnson  
and

Robert M. Wynhausen



# **CAPITAL GAINS TAX TREATMENT IN THE FOREST PRODUCTS INDUSTRIES**

**A Partial Analysis of  
Section 631(a) of the Internal Revenue Code**

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**Two Papers**

## **EFFECT OF 631 CAPITAL GAINS ON DEFERRED TAX COMPUTATIONS**

**By James O. Estes and Thomas R. Johnson  
Arthur Andersen & Co.**

## **SUSTAINING FAIR MARKET VALUES UNDER SECTION 631**

**By Robert M. Wynhausen  
Arthur Young & Company**

## PREFACE

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Prior to 1944, timber owners who harvested timber and subsequently sold logs or used them in their own sawmills, plywood plants, pulpmills, or other trades or businesses, reported their gains as ordinary income. Those who sold standing timber reported their income as capital gains. With the enactment of Section 631 of the Internal Revenue Code, it became possible to recognize some taxable income from the harvesting of timber at capital gain tax rates as well. This section was incorporated into the Code to provide timber owners with a strong incentive to carry on sustained yield forestry and thereby assure the nation of a permanent and sufficient supply of timber.

There are two basic requirements that must be met by companies in the forest products industries in order to qualify for capital gain tax treatment under Section 631(a). First, the companies must *elect* to use Section 631(a). Once that election has been made, Section 631(a) must be used for all timber owned or to which the taxpayer has a contractual right to harvest, and it must be used in computing taxes for all future years, unless, upon the showing of undue hardship by the taxpayer, the IRS allows revocation of that election.

The second requirement is that the timber, or the contractual right to harvest the timber, must be held for more than six months prior to the year in which the timber is harvested. (This rule varies somewhat from the normal holding-period requirement for long-term capital gain treatment.) Under Section 631(a), the capital gain is calculated by determining the difference between the fair market value of the timber, as of the first day of the year in which it is harvested, and its adjusted basis for depletion. Since the transaction is a hypothetical sale taking place on the first day of the taxable year, with fair market value representing the selling price, the holding period must commence more than six months prior to the first day of the year in which the timber is harvested.

Since its enactment under the Internal Revenue Code, Section 631(a) has served to correct some of the inequities that had existed under prior tax treatment of companies in the forest products industries. Yet it is a complicated section—one that needs careful study and evaluation if one is to take advantage of the benefits it has to offer. In the two papers that make up this fourth monograph in our series we will (1) address specifically the effect

of Section 631 gains on deferred tax computations and (2) examine the problems associated with determining fair market values to be used in the determination of 631 capital gain.

Before beginning the text of our two papers, however, we present below some examples of the kind of impact Section 631(a) can have on the corporate tax liability of forest products companies. Whether the taxpayer chooses to compute his tax using normal rates or using the alternative capital gains computation will depend on the relationship

of his capital gains and ordinary income as shown in *these examples*. In the first two situations, the companies benefit significantly from the use of the 631(a) computation. Example 3 illustrates what is sometimes referred to as the capital gain "gap position," a situation in which a company can earn a certain amount of additional income without incurring additional tax. Example 4 illustrates a situation in which the corporation has so much 631(a) gain in relation to taxable income that it cannot benefit from using the 631(a) computation.

#### EXAMPLES OF THE IMPACT OF SECTION 631 ON CORPORATE TAX LIABILITY

		Example #1	Example #2	Example #3	Example #4
Fair market value established as of the beginning of the year		\$250.00 MBF	\$250.00 MBF	\$250.00 MBF	\$250.00 MBF
Cost of stumpage harvested		100.00 MBF	100.00 MBF	100.00 MBF	100.00 MBF
631 capital gain	A	\$150.00 MBF	\$150.00 MBF	\$150.00 MBF	\$150.00 MBF
Volume harvested subject to 631	B	240,000 MBF	240,000 MBF	240,000 MBF	240,000 MBF
Therefore the 631 gain is A x B		\$36,000,000	\$36,000,000	\$36,000,000	\$36,000,000
<b>Computation of Federal Tax</b>					
Total income before taxes	C	\$50,000,000	\$40,000,000	\$30,000,000	\$20,000,000
Less 631 gain taxable @ 30%	D	36,000,000	36,000,000	36,000,000	36,000,000
Balance taxable at normal rate of 48%	E	\$14,000,000	\$4,000,000	\$(6,000,000)	\$(16,000,000)
<b>Federal tax computation</b>					
Regular tax:					
Normal and surtax (C x 48%)	F	\$24,000,000	\$19,200,000	\$14,400,000	\$9,600,000
Alternative tax:					
631 capital gain (D x 30%)		\$10,800,000	\$10,800,000	\$10,800,000	\$10,800,000
Normal and surtax (E x 48%)		6,720,000	1,920,000	—	—
Total alternative tax	G	\$17,520,000	\$12,720,000	\$10,800,000	\$10,800,000
<b>Federal Tax Payable (lesser of F or G)</b>	H	\$17,520,000	\$12,720,000	\$10,800,000	\$9,600,000
<b>Percent of Federal Tax to Income (H ÷ C)</b>		35.0%	31.8%	36.0%	48.0%

## EFFECT OF 631 CAPITAL GAINS ON DEFERRED TAX COMPUTATIONS

by James O. Estes and  
Thomas R. Johnson  
Arthur Andersen & Co.

### CALCULATING THE CAPITAL GAIN

Under Section 631(a), gains and losses from the harvesting of timber are treated for tax purposes as gains from the sale of an asset used in a trade or a business.\* As stated in the Preface, a Section 631(a) gain is determined by calculating the difference between fair market value at the beginning of the tax year of timber harvested and the cost depletion of such timber. It is as though the standing timber harvested during the year had been sold at fair market value at the beginning of the year and repurchased at the same price for use in operations.

When a forest products company computes its tax according to Section 631(a), for every dollar reported as capital gain income, there is an offsetting deduction for depletion, so that, in effect, taxable income does not change. Let's take *The Hypothetical Company* as an example. Let's assume it has sales of \$2,000,000, cost depletion of \$500,000, other costs and expenses of \$1,200,000, and taxable income of \$300,000. Let's assume further that the fair market value (as of the beginning of the tax year) of timber harvested during the year is \$700,000. Under Section 631(a) *The*

*Hypothetical Company* would compute its tax liability as follows:

#### Tax at ordinary rates

Taxable income	\$300,000	
Tax at 48%		<u>\$144,000</u>

#### Tax under Sec. 631(a)

Taxable income	\$300,000	
Capital gains (fair market value less cost depletion)	\$700,000 <u>-\$500,000</u>	
	\$200,000	
Tax at 30%		\$ 60,000
Ordinary income	\$100,000	
Tax at 48%		<u>\$ 48,000</u>
Total tax under Sec. 631(a)		<u><u>\$108,000</u></u>

In this case, *The Hypothetical Company* would elect to compute its taxes according to Section 631(a) and pay a tax of \$108,000 for a savings of \$36,000. But there are cases in which the use of Section 631(a) would not be so beneficial.

\*Section 1231(b)(2)

For example, using the same basic figures let's assume that *The Hypothetical Company* has other costs totalling \$1,400,000 rather than \$1,200,000, resulting in a taxable income of \$100,000. The tax computations would be as follows:

#### Tax at ordinary rates

Taxable income	100,000	\$100,000
Tax at 48%		<u>\$48,000</u>

#### Tax under Sec. 631(a)

Taxable income		\$100,000
Capital gains	200,000	\$200,000
Tax at 30%		\$60,000
Ordinary income		<u>—</u>
Total tax under Sec. 631(a)		<u>\$60,000</u>

Since there is no provision under Section 631(a) for reducing the capital gains by the excess of ordinary deductions over ordinary income and applying the alternative tax rate, *The Hypothetical Company* would, in this case, elect to pay the \$48,000 tax computed at ordinary rates. The intended benefits of Section 631(a) would be of no use here.

When a taxpayer's capital gains exceed ordinary income and the tax computed under Section 631(a) is less than the tax computed at ordinary rates (for example, taxable income of \$180,000 and capital gains of \$200,000), the taxpayer is often referred to as being in a "capital gains position" or in a "gap position." In such a case, the taxpayer could increase his ordinary income up to the amount of capital gains without increasing his tax liability.

#### EFFECT OF SECTION 631(a) ON DEFERRED TAX COMPUTATIONS

The most advantageous tax position for a forest products company to be in is one in which 631(a) gains are exactly equal to taxable income. As a result, most companies adopt tax planning strategies which allow for deferred taxation on the basis of "timing differences" such as accelerated depreciation, capitalization of interest during construction periods, etc.

The Accounting Principles Board (APB) of the American Institute of Certified Public Accountants issued Opinion No. 11 in 1968 which defines timing differences in this way:

Difference between the periods in which transactions affect taxable income and the periods in which they enter into the determination of pretax accounting income. Timing differences originate in one period and reverse or turn around in one or more subsequent periods.

The method used to determine deferred taxes according to timing differences is called the "with and without" computation method. It too is described in APB Opinion No. 11:

The tax effect of a timing difference should be measured by the differential between income taxes computed with and without inclusion of the transaction creating the difference between taxable income and pretax accounting income. The resulting income tax expense for the period includes the tax effects of transactions entering into the determination of results of operations for the period. The resulting deferred tax amounts reflect the tax effects which will reverse in future periods.

The effect of utilizing the Section 631(a) capital gains calculation bears directly on the amount of deferred taxes provided. Using the facts listed below, we demonstrate this in the three situations depicted in Exhibit 1.

#### Facts for Exhibit 1

Cost depletion	\$500,000
Fair market value of timber harvested	\$700,000
Excess of tax depreciation over book depreciation	\$ 30,000
Capital gains tax rate	30%
Ordinary income rate	48%

Exhibit 1 shows that the relationship between Section 631(a) capital gains and the amount of taxable income can produce deferred taxes in amounts ranging from 0 percent to 48 percent of timing-difference items. Therefore, provisions for future income tax payments, depending upon the relationship of ordinary income and Section 631(a) gains, may have to include amounts that will compensate for the reversal of the deferred tax on the timing differences which were provided at less than the 48 percent rate.

**EFFECT OF SECTION 631(a)  
ON DEFERRED TAXES**

	SITUATION A	SITUATION B	SITUATION C
<b>Pretax Income</b>	<u>\$300,000</u>	<u>\$220,000</u>	<u>\$190,000</u>
<b>Book Tax Computation</b>			
Pretax income	<u>\$300,000</u>	<u>\$220,000</u>	<u>\$190,000</u>
Tax (using alternative computation)			
Capital gains	\$200,000	\$200,000	\$200,000
Tax at 30%	\$ 60,000	\$ 60,000	\$ 60,000
Ordinary income	100,000	20,000	-----
Tax at 48%	48,000	9,600	-----
Book Tax Provision	<u>\$108,000</u>	<u>\$ 69,600</u>	<u>\$ 60,000</u>
<b>Tax Return Tax Computation</b>			
Pretax income per books	\$300,000	\$220,000	\$190,000
Less additional depreciation	30,000	30,000	30,000
Taxable income	<u>\$270,000</u>	<u>\$190,000</u>	<u>\$160,000</u>
Tax (using alternative computation)*			
Capital gains	\$200,000	\$200,000	\$200,000
Tax at 30%	\$ 60,000	\$ 60,000	\$ 60,000
Ordinary income	70,000	-----	-----
Tax at 48%	33,600	-----	-----
Tax Return Tax	<u>\$ 93,600</u>	<u>\$ 60,000</u>	<u>\$ 60,000</u>
<b>Deferred Taxes Provided (book tax provision less tax return tax)</b>	<u>\$ 14,400</u>	<u>\$ 9,600</u>	<u>\$ NONE</u>
<b>Effective Tax Rate for Deferred Taxes</b>	<u>48%</u>	<u>32%</u>	<u>0%</u>

\* Taxable income would have to be below \$125,000 before the 631(a) tax would result in a higher tax than the tax at ordinary rates.

### SECTION 631(a) AND INVENTORIES

Cost depletion is generally used in computing log costs and pricing inventories of logs, lumber, plywood, etc., recorded in the books and financial statements. However, when a taxpayer elects to treat the harvesting of timber under Section 631(a) rules, the fair market value used in computing capital gains is for tax purposes substituted for cost depletion in computing costs and pricing inventories. This results in prepayment of income taxes for taxpayers who are not in the "capital gains" position.

An example showing the calculation of inventory values, including the effect of Section 631(a) rules is presented in Exhibit 2. In this case, the taxpayer's inventory has declined, and the taxable income is \$14,000 less than book income. If the inventory had increased, the taxable income would have been more than the book income.

Taxpayers who price their inventories at the lower of cost or market might find that in some years they will price inventories at cost for book purposes and at market for tax purposes, because market value is between book cost and tax-basis-substituted cost, as follows:

#### Log inventory

Priced at average cost	\$110,000
Priced at tax cost using fair market value on January 1 for depletion	\$135,000
Market value of logs on December 31	\$125,000

In this instance, for book purposes the inventory would be priced at average cost (\$110,000) which



Exhibit 2

**CALCULATION OF INVENTORY VALUES**

	<i>MBF</i>	<i>Amount</i>	<i>Per M</i>	
Logging costs for year	25,000	\$1,100,000	\$ 44	40
Cost depletion	25,000	500,000	20	20
Total annual cost	25,000	\$1,600,000	\$ 64	60
Inventory of logs, at average cost (per books):				
January 1	3,000	\$ 180,000	\$ 60	
December 31	2,500	160,000	64	
Fair market value of timber cut (assume all timber is eligible for Section 631(a))	25,000	\$1,500,000	\$ 60	50
Cost depletion	25,000	500,000	20	20
Gain on cutting	25,000	\$1,000,000	\$ 40	40
Logging costs for year	25,000	\$1,100,000	\$ 44	40
Fair market value of timber cut (tax depletion)	25,000	1,500,000	60	50
Total tax-basis cost of logs	25,000	\$2,600,000	\$104	100
Inventory of logs at average tax-basis cost:				
January 1*	3,000	\$ 294,000	\$ 98	
December 31	2,500	260,000	104	

The tax return will include the following adjustment to record the effect of Section 631(a) on pricing log inventories:

	<i>Cost Basis</i>	<i>Tax Basis</i>	<i>Adjustment</i>
January 1	\$180,000	\$294,000	\$114,000
December 31	160,000	260,000	100,000
	<u>\$ 20,000</u>	<u>\$ 34,000</u>	<u>\$ 14,000</u>

\* Assume cost depletion of \$20 per M, logging cost of \$40 per M, and excess of Section 631(a) fair market value over cost depletion of \$38 per M.

Exhibit 3

**TAX CALCULATION INCLUDING SECTION 631(a) GAINS IN INVENTORY**

	<i>SITUATION A</i>	<i>SITUATION B</i>	<i>SITUATION C</i>
<b>Tax Return Computation</b>			
Taxable income without change in Section 631(a) gains in inventory	\$270,000	\$190,000	\$160,000
Increase in inventories due to inclusion of Section 631(a) gains	20,000	20,000	20,000
Taxable income	<u>\$290,000</u>	<u>\$210,000</u>	<u>\$180,000</u>
<b>Tax (using Section 631(a) computation)</b>			
Capital gains	\$200,000	\$200,000	\$200,000
Tax at 30%	\$60,000	\$60,000	\$60,000
Ordinary income	90,000	10,000	.....
Tax at 48%	43,200	4,800	.....
Tax return tax	<u>\$103,200</u>	<u>\$64,800</u>	<u>\$60,000</u>
Tax per Exhibit 1	<u>93,600</u>	<u>60,000</u>	<u>60,000</u>
<b>Additional Tax</b>	<u>\$ 9,600</u>	<u>\$ 4,800</u>	<u>\$ 0</u>

is less than market value; for tax purposes the inventory would be priced at market value (\$125,000) which is less than tax-basis-substituted cost.

In other cases, fair market value of logs or manufactured products will be lower than book cost. If the inventory is then priced at market, which is lower than cost, there will be no adjustment between inventories calculated on the tax-basis-substituted cost and inventories calculated on book cost.

The use of the LIFO cost method for inventory valuation does not change the Section 631(a) gains-in-inventory concept but does introduce other significant considerations—for example, recording inventories on the same basis for both book and tax purposes. Such topics, however, are not the subject of this paper.

An adjustment to inventory for Section 631(a) gains has the effect of increasing taxes payable and of creating a prepaid tax amount. This prepaid tax amount has been treated in various ways by companies within the forest products industries. Under APB Opinion No. 11, the amount of the prepaid tax is determined by calculating the tax provision with and without inclusion of the Section 631(a) gains in inventory. This method results in prepaid taxes if ordinary income is greater than capital gains income and in no prepaid taxes if capital gains income exceeds ordinary income. Using the same three situations presented in Exhibit 1, and assuming (a) a \$20,000 increase in Section 631(a) gains in inventory and (b) no inventory market realization problems, the tax computations are determined in Exhibit 3.

In accordance with the interpretation of APB Opinion No. 11, the tax effect of current deferred charges and current deferred credits relating to timing differences should be shown in one amount in the balance sheet. Since this prepaid tax results from inventories, which are included in current assets, the deferred tax debit should be classified as a current asset, unless there are larger current deferred credits which offset the prepaid tax. In that case, the net amount would be classified as a current liability.

In addition to the "with and without" computation, other prevalent practices to account for the difference between book and tax income as a result of Section 631(a) gains in inventory are (a) calculating the amount of prepaid taxes by multiplying the current tax rate (either the ordinary rate or the capital gains rate) by the difference in tax- and financial-inventory-basis cost and (b) providing no prepaid taxes.

Those who advocate the method described in (a) apply their concept by calculating deferred tax debits and credits for each type of timing difference in the year it originates and the year it re-

verses, regardless of the relationship of capital gains and ordinary income. They believe that, by such calculation, each timing difference is properly reflected in the appropriate year. They argue that by using this method a timing difference on which no deferred tax is provided (which is possible in a "capital gain" year under the "with and without" computation) may result in a higher tax than that based on book income during the year in which the timing difference reverses.

Proponents of the method described in (b) argue that the increase in inventory value for Section 631(a) gains is not a timing difference as defined in APB Opinion No. 11 because the increase in inventory value never enters into the determination of pretax financial income. They also believe that realization of any prepaid tax is not assured, due to market fluctuations in the sale prices of inventory and to variations in the magnitude of capital gain income between years. In years when finished-product market prices are down, which in some cases is a year in which a high percentage of fee timber is harvested, resulting in higher capital gains, the tax inventory value may have to be written down to net realizable value.

## CONCLUSION

The uniqueness of Section 631(a) capital gains and their effect on tax provisions affecting companies in the forest products industries warrants research to assess whether the method of calculation required by APB Opinion No. 11 should be modified. The arguments for providing deferred tax debits and credits for each type of timing difference in the year it originates and the year it reverses, regardless of the relationship of capital gains and ordinary income, and against recording prepaid taxes for Section 631(a) gains in inventory have some validity. Also, the argument that additional taxes paid as a result of unrealized gains in inventory are a cost of utilizing Section 631(a) regulations and are actually paid because the election of the section results in less taxes payable than would be paid using ordinary income rates has some validity. If, in the future, the increased tax basis of inventory results in lower taxes—that is, the Section 631(a) gain in inventory results in a realized prepaid tax—it could be recognized as a benefit to that period under the theory that realization was not assured before such point in time and economic events occurring in the current taxable period resulted in the realization. Additional research may eventually lead to persuasive arguments for the use of one of these approaches, but for now, the "with and without" calculation provided for in APB Opinion No. 11 is the method required for determining all timing differences.



## **SUSTAINING FAIR MARKET VALUES UNDER SECTION 631**

**by Robert M. Wynhausen  
Arthur Young & Company**

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Since its enactment in 1944, Section 631 of the Internal Revenue Code has presented certain problems to businessmen in the forest products industries. Chief among them, in today's economy, is ascertaining and substantiating fair market values for use in the determination of capital gain.

As noted in the Preface to this monograph, capital gain under Section 631(a) is determined by calculating the difference between fair market value of the timber as of the first day of the taxable year and its adjusted basis for depletion purposes. The regulations under Section 631 provide little definitive help with regard to the methodology to be used in determination of fair market value. They do, however, provide a definition that has been utilized and embellished by the courts which states that fair market value is the selling price of the timber which is determined by a willing buyer and a willing seller, both being reasonably informed of the facts.<sup>1</sup> The regulations under Section 631 also make reference to the timber depletion regulations under Section 611 which provide some guidelines relative to factors that must be considered in valuing timber. They include:

- The character and quality of the timber determined by species, age, size, condition, etc.

- The quantity of the timber per acre, the total quantity under consideration, and the location.

- Accessibility of the timber, particularly with respect to the logging cost of the stand, distance to important markets, and type of terrain over which it must be transported.<sup>2</sup>

Further, the regulations under Section 631 provide for a variety of considerations "bearing on market value, such as cost, actual sales and transfers of similar properties, the margin between cost and production, the price realized for timber products . . .", etc.<sup>3</sup>

Rulings and case law add little specific information of practical value with respect to valuation approaches.

### **METHODS OF DETERMINING FAIR MARKET VALUE**

There are a variety of methods of determining fair market value of standing timber. The following are those most frequently used, either individually or in conjunction with one another:

- Sales of comparable tracts
- Conversion return

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<sup>1</sup> Regulation section 1.631-1(d)(2)

<sup>2</sup> Regulation section 1.611-3(f)(1)

<sup>3</sup> Regulation section 1.611-3(f)(2)

- Cost of properties to the purchaser
- Use of expert opinion

An important fact to keep in mind is that the determination of fair market value of timber does not differ in principle from valuation of other types of property and is primarily a matter of individual judgment. The businessman must attempt to make a determination—which can be no more than an approximation—by use of whatever methods are germane to the particular situation and by bringing to bear well-informed judgments with regard to all the relevant facts. It is also important to remember that the valuation being made is applicable only to the timber actually harvested during the taxable year. For this reason, the particular species and quality of the timber eligible for 631(a) treatment must be taken into consideration in any valuation approach utilized. General averages, although helpful in an overview of value, should not be used directly as a basis for the evaluation.

### **Comparable Sale Approach**

The comparable sale or market data approach is the most commonly used and reliable method available for determining fair market value. Under this approach, the businessman studies selected actual sales occurring within a reasonable time of the valuation date—sales of timber which reflect characteristics similar to the timber which is being valued. Normally, weighted averages based on an adequate number of sales occurring within the selected time frame are used as the starting point of the valuation process.

The usual sources of market data are appraisal summaries and bid data issued by public agencies indicating the results of auction sales. This stumpage sales information is available from the United States Forest Service, the Bureau of Land Management, the Bureau of Indian Affairs, and from various state and local agencies managing public timberlands.

Since only a limited number of sales occurs on any given day, it is difficult to sustain a fair market value position on the basis of isolated sales occurring on or about the valuation date. Therefore, it is common for a valuation to be based on sales occurring within a period both before and after the valuation date, the most commonly used time frame being the six-month period before and after the appropriate date. However, the three-month period before and after the valuation date is an alternative which is acceptable to the Internal Revenue Service. Which period is selected depends on the economic conditions at the time and the nature of the market activity. Some businessmen prefer to select and consistently use one specific time frame without regard to economic or

market conditions. However, in the light of unusual circumstances, this can produce an erroneous result. For example, if a six-month period on either side of the valuation date is selected, and during the second three months of the period following the valuation date a significant economic event occurs which causes a drastic fluctuation in the market, it would be difficult to support a position that holds that the market value on a date prior to that event should be subjected to the influence of that event.

Selection of the comparable sales available to the taxpayer is the most important part of this method of determining fair market value. Care must be exercised to include sales which are reasonably comparable in terms of species, quality mix, and logging technique. Normally, one would expect to find similarities with regard to species and quality mix within a reasonable geographic proximity of the timber which is being valued.

With respect to logging comparability, a tract that must be yarded by balloon or helicopter is not comparable to a tract in which a much less expensive skidding method is used. In addition, a thinning sale—one in which only selected trees are removed from the tract—cannot be used as a comparable sale for purposes of valuing a clear cutting sale. However, thinning sales can and should be used to value other thinning sales.

Once the suitable comparable sales have been selected, the data are used to determine averages, weighted by the appropriate volumes, of the bid prices and logging costs applicable to those sales. For certain species appearing on the appraisal summaries, the governing agency indicates the estimated grades for the sale. The data are normally presented in percentage form; for example, an appraisal might show the sale to contain 5 percent No. 1 peeler grade within the Douglas Fir species, 8 percent No. 2 peeler, etc. This quality information should be quantified using an appropriate log price list applicable at the valuation date which is representative of the prices being paid for that species and grade in the market area for which the valuation is being made. This quantified quality value will ultimately be compared with the quality value placed on the qualifying timber (the timber eligible for Section 631(a) treatment) which is to be valued and an adjustment made to reflect the difference in the grade mix.

It is very often the case that bidding at a public auction takes place in only one of the several species which are represented in the sale. This is generally a matter of convenience since the sale is awarded on the basis of the highest total amount bid in the aggregate. In the Pacific Northwest, for example, it is most common for the active bidding to occur in the Douglas Fir species. The result of this technique is distortion of the values reflected

by the unit prices shown on the appraisal summaries. It may therefore be more meaningful to allocate the total aggregate purchase price to the various species in the sale on the basis of the original appraised values established by the selling agency, or by some other reasonable method, such as "comparable log values." Without such an allocation, it is possible to distort the fair market values as they apply to the qualifying sales because of differences in the species mix between the comparable and qualifying sales.

The effect of such an allocation, based on the original appraisal, can be seen as follows:

	Species			Total Value
	Douglas Fir	Cedar	Hemlock	
Volume—MBF	500	400	200	
Appraisal value—				
MBF	\$200	\$150	\$100	\$180,000
Bid prices	\$380	\$150	\$100	\$270,000
Allocated bid prices	\$300	\$225	\$150	\$270,000

This illustrates that, although the bidding took place in only one species—the Douglas Fir—the additional \$90,000 bid on the sale over and above the original appraised values can reasonably be allocated to all timber acquired in the sale.

Another factor to be considered in the valuation process is logging costs. Since a buyer of timber has in mind the amount of profit he might ultimately generate with the logs taken from a sale, he must consider not only the cost of the timber he is buying, but the cost to log that timber and convert it into salable products. Because manufacturing costs are relatively fixed over the short run, the businessman recognizes that in order to generate the profit he requires, he can only spend a limited amount for stumpage, logging, and transportation to the mill. As logging costs increase, the amount that he can pay for the stumpage must decrease. If he anticipates that he will have a difficult job logging a given sale, he will naturally bid less for that sale. Therefore, in comparing one sale with another, the difference in logging costs between a comparable sale and the sale to be valued must be considered. If the comparable sale reflects a high degree of logging difficulty, vis-a-vis the sale to be valued, an adjustment must be made to increase the bid prices of the comparable sale to take into account the fact that the sale is more expensive to log than the sale which is being valued.

One technique which is used to determine this logging cost adjustment is a comparison of the

weighted average logging costs for the group of comparable sales with the weighted average logging costs as reflected on the appraisal summaries for the contract timber that is actually being logged. All things being equal, the difference between the average logging costs for the qualifying sales and that of the comparable sales will reflect the difference in logging difficulty and will be used to either increase or decrease the bid prices of the comparable sales to ultimately arrive at a fair market value.

Because of the inflationary spiral experienced during the past few years, this technique for determining a logging cost adjustment has become suspect by both the businessman and the Internal Revenue Service. It is often the case that a qualifying sale made by a public agency is held by the buyer for a year or more before logging begins. As a result, the estimated logging costs, reflected on the appraisal summary, are a year or more old and do not reflect costs that are in effect on the valuation date. By comparing an out-of-date estimate of logging costs with an estimate determined closer to the valuation date, theoretically, a portion of the difference will be attributable solely to inflation, with the balance reflecting the difference in real logging costs. It is this second difference which should be used as an adjustment to bid prices of comparable sales.

In order to determine the true logging cost adjustment, it is necessary to eliminate the effect of inflation. Since logging is a labor-intensive activity, it seems appropriate that labor cost increases experienced by the taxpayer might be used as an inflation index to identify the element of the logging cost differences attributable to inflation.

Another, more accurate approach to determination of logging and quality adjustment is a comparison of actual logging costs and the grade of timber to be valued with the average quality factor and logging costs of the comparable sales. This method is available only to those who maintain the records which document the actual results.

One further adjustment is sometimes necessary in those situations in which the volumes provided in a public agency's appraisal summary are based on a different log-scaling rule than that being used to measure the volume cut. An example of this occurs in western Oregon where the Bureau of Land Management measures the volume in its sales using a scaling length of 16 feet. This is sometimes referred to as the short-log scale. On the other hand, the scaling bureau or contract purchaser measures the volume on a 32-foot or 40-foot length (long-log scale). The effect of this difference on the volume measurement can result in differences in a range of from 10 to 20 percent, because the short-log scale produces a higher volume of measure than does the long-log scale.

Therefore, it is necessary to adjust the bid prices to reflect the price that is applicable to the volumes which are being scaled by the taxpayer.

The effect of the scaling difference is illustrated in the following table.

	Short-Log Scale	Long-Log Scale
Volume	115 MBF	100 MBF
Stumpage	\$23,000	\$23,000
Value per MBF (stumpage ÷ volume)	\$200	\$230

This example shows a 15 percent volume difference resulting from the two scaling methods. The purchaser has acquired a lump sum sale from the Bureau of Land Management for \$23,000, upon which the Bureau estimates a volume of 115,000 board feet. Use of this data produces an average value per thousand board feet of \$200. However, when the purchaser measures the volume taken from the sale, using a different scaling method, he reflects a recovery of only 100,000 board feet, which increases his per unit value to \$230 per thousand board feet.

When using comparable sales based on data provided by public agencies to value privately owned timber, in addition to timber taken from public sales, it may be necessary to make certain adjustments to the comparable sale data. Because of the appraisal methods used by the public agencies, there are often discrepancies between the grade estimates and the actual grades recovered from the sale. When public sale data are used to value other public sales, no adjustment may be necessary, particularly if appraisal data for the qualifying sale are being used rather than actual results, since it is reasonable to assume that the error rate in each appraisal will tend to offset the other.

In order to determine the amount of adjustment required in the valuing of private timber, it is necessary to compare the appraisal summary volume, quality, and logging costs of the appraisal to the actual results. This, of course, cannot be done until the entire sale has been harvested. The most defensible result can be obtained by averaging the errors for all sales completed during the year on an agency-by-agency basis. Volume error is not important under a pay-as-cut contract, such as the Forest Service uses. It is important, however, in connection with lump sum sales used by the Bureau of Land Management. Thus, if Bureau of Land Management sales are being used as the basis for valuing private timber, the volume error must be used to adjust the price per unit.

## Conversion Return

The conversion return method is sometimes referred to as the "net-back-to-stump" approach. It entails the use of log or finished product selling prices reduced by the costs to convert standing timber to a salable product and further reduced by a reasonable profit allowance.

Some commentators have indicated that this method should produce a result comparable to that derived from market data. However, as indicated earlier, the timber in the sales normally used in the market data approach is generally not cut by the purchaser for an extended period of time, and therefore the economic considerations governing the bidding involve anticipated future markets of finished products rather than the current market situation.

The conversion return method serves a useful purpose as a check on the appropriateness of the market data method. In addition, it is the only method which can reasonably be used in situations where there are few or no comparable sales in the area in which the evaluation is being made. Also, it is a useful additional tool for valuing material not reflected in the values developed by public bidding.

Log conversion return requires the determination of appropriate log value at the mill. This value is then reduced by logging and hauling costs and a profit margin to arrive at stumpage values. Log prices used should reflect the various grade classifications. Logging and hauling costs should include all elements of cost incurred in bringing the logs to the mill.

The following is an example of a log conversion return analysis:

Log value at the mill		\$200/MBF
Logging and hauling		
Road cost	\$ 5/MBF	
Stump to truck	35	
Hauling and road maintenance	20	
	60	
Profit margin	20	80
	—	—
Indicated stumpage value		\$120/MBF

Lumber conversion return is identical in principle to log conversion except that the selling prices of the finished products and by-products are used as the starting point. Because of its additional complexity it is a less desirable approach and is usually limited to circumstances in which log sale data are unavailable.

### **Cost of Property to the Purchaser**

Timber which has been purchased relatively close to the valuation date, particularly during a period of market stability, can be of some use in the valuation process. At a minimum, it can be used to value itself and may be of additional use as a comparable sale for valuation of other tracts, particularly if it is a private purchase.

### **Use of Expert Opinion**

Although case law, to date, has not been definitive with regard to methods of determining fair market value, a number of cases have turned on the testimony of expert witnesses. For the most part, the experts called upon in this field are professional foresters who are also qualified appraisers. Although the experts have available to them, and

most often use, the same data and methods noted above, they also add an aura of credibility to the valuation they support. The strength of their opinions is, of course, dependent upon their experience and reputation and the strength of the facts used to arrive at their conclusions.

### **CONCLUSION**

In this second paper constituting Monograph No. 4, we have attempted to outline some specific methods and techniques that are available for the determination of the fair market value of timber. Yet such an exercise is far from a purely mechanical task. Valuation is still an area which lends itself to innovative thought and judgment and the application of common sense. The proper use of all of these available tools should produce a result which is both reasonable and defensible.



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