

AN ABSTRACT OF THE THESIS OF

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Title: Impacts of Business Organization Form on Federal  
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Private Forest Landowners

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Detrimental impacts of estate taxes on management of private nonindustrial forests can be mitigated by estate planning which considers organizational forms of forest businesses and methods for funding estate settlement costs. This study's objective was to determine effects of business form and estate funding method on income and estate tax liabilities of nonindustrial owners.

A deterministic, legal-economic forest estate management model was used to simulate estate and income tax consequences of alternative business form and funding method combinations for typical Oregon nonindustrial forest owners. Business forms analyzed were sole proprietorships, partnerships, close corporations, Subchapter S corporations and testamentary trusts. The three estate funding techniques were immediate timber capital liquidation, deferrals through Internal Revenue Code section 6166 and loans, and life insurance. Subchapter S corporations and partnerships, coupled with deferrals, were expected to have the least income and estate tax-induced reductions in present value of gross cash value.

Sensitivity of results was tested by changing seven parameters: alternate rate of return, life expectancies, real land and timber price trends, total forest acreage, initial forest age class distribution, management regime, and rotation age.

Simulation results were consistent across base and sensitivity runs. Testamentary trusts were least costly due to estate tax savings obtained by excluding part of the business from the widow's estate and income tax savings caused by post-mortem step-ups in timber cost basis. Partnerships and Subchapter S corporations were almost as cost effective because spreading business interests among family members reduced effective estate and income tax rates. Because its costs are postponed farthest, immediate liquidation was the preferred funding option. Deferrals frequently created negative after-tax cash flows during loan repayment periods.

Forest owners should select business forms which allow reductions in the business interest includable in the widow's estate, preserve timber income's treatment as long-term capital gains, and provide income tax savings by spreading income among family members and utilizing post-mortem step-ups in cost basis. Trusts, partnerships, and Subchapter S corporations have these attributes.

Despite changes enacted in the Economic Recovery Tax Act of 1981, land owners, dependent on forest income, may still encounter estate tax-induced cash flow problems.

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Private Forest Landowners

by

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Impacts of Business Organization Form on Federal Estate  
and Income Tax Liabilities of Nonindustrial  
Private Forest Landowners

CHAPTER 1

PROBLEM STATEMENT

1.1 Introduction

Public policy makers, professional foresters, and forest industry see nonindustrial private forestlands as the major wood fiber supply sector in the United States in the decades marking the transition to the next century. Government, industry, and consultants have devoted much energy toward increasing timber flows from this ownership group. Their efforts have met with mixed success, due in large part to great diversity in landowner objectives and low economic returns to forest investments on those lands.

Taxes of all kinds are key factors in determining the profitability of forest investments. Forestry's professional concern has been focused mainly on income and property taxes. Modifications have been made extending preferential tax treatment to income from timber crops and to land required to grow that crop. These tax concessions were generally defended by citing the long time periods necessary to bring trees to economically usable sizes. The U.S. Internal Revenue Code (hereafter referred to as the "Code") allows timber income to be taxed as long-term capital gains if the timber has been held for one year. It also provides a tax credit for and amortization of certain reforestation expenses. Several states have adopted special provisions for taxing timber, including valuation in use, and yield or productivity taxes. Long neglected aspects of forest taxation are those taxes imposed at the death of a forest owner. These death taxes include federal and state

estate taxes and state inheritance taxes.

Death taxes have largely been ignored in forestry literature because there has never been a consensus as to their importance to forestry enterprises. Greeley (1951) suggested death taxes were most critical to forestry. In his economics text, Gregory (1972) dismissed estate taxes as unimportant. Siegel (1975) argued that other taxes are more important. In the late 70's, Sutherland (1978) and others asserted that death taxes were becoming more important due to rapidly inflating land and timber values coupled with a relatively static tax structure. Increasing numbers of nonindustrial private forest landowners have been brought within the purview of estate proceedings. Executors for approximately 65% of today's nonindustrial forest owners will file estate returns by the year 2000 (Condrell, 1978).

Several characteristics of forest land and private forest owners make death levies more important to forest owners than to other owners of capital. In general, this ownership class has low income and education levels, and has average ages over fifty years. Their forest assets are quite illiquid and few owners have alternative sources of wealth with which to fund estate settlement liabilities.

The magnitude of estate settlement costs may force heirs to sell land and timber, leading to disaggregation of management units, liquidation of financially immature timber stocks, or sales of land and timber at less than fair market value. These are firm-level impacts. Whether, in the aggregate, death taxes have significant influence on regional or national timber supply is unknown.

Tendencies towards disaggregation are likely countered by forest industry purchases of decedents' land parcels. Those parcels which are converted to industrial ownership may receive better management, thereby improving timber supply prospects.

Viewed from a microeconomic perspective, death taxes do impose financial and managerial problems to heirs of forest property. The

detrimental impacts of death taxes can be mitigated if landowners follow estate plans developed with a team of professionals comprised of lawyers, accountants, and foresters. The more valuable the estate, the more sophisticated and costly is the planning effort. A key variable in estate planning is the business organization form in which forest property is held, i.e., how nonindustrial owners actually own their property.

The most common ownership form is joint tenancy of the entirety, a form of joint ownership reserved for husband and wife. Upon the death of one spouse, title to the forest vests in the survivor. Estate planning practitioners have found this ownership form not to be the best choice vis-à-vis taxes or personal goals (Kess and Westlin, 1979). Alternative ownership forms are available, each with its own tax and property rights transfer attributes. Corporations, partnerships, and trusts are three broad categories, and each of these has variations which are useful in different circumstances.

Coupled with the ownership form issue is that of choosing a funding method to meet estate settlement costs. The typical forest landowner has most of his wealth in the relatively illiquid form of land and timber. Liquidity can be provided through savings, insurance, sale of assets, and borrowing.

The research presented herein is focused specifically on the interaction of business organization, funding technique, and forest management on estate and income tax liabilities for private non-industrial forest landowners.

The balance of this chapter examines the importance of non-industrial private forest owners to U.S. timber supply and efforts made by government and industry to boost timber flows from the nonindustrial sector. I will touch briefly on acreage and production statistics, land use change issues and government and industry efforts to augment nonindustrial output through direct and indirect incentives. Taxes emerge as prime influences of landowner behavior,

therefore considerable discussion is devoted to the taxes faced by private owners. Attention is then directed to death taxes and why policy makers should be concerned about their impact on forestry. An explicit statement of the research objectives ends the chapter.

This discussion serves as background to a review of the literature which follows in Chapter 2. Chapters 3, 4 and 5 present the legal framework and research methodology, respectively. Chapter 6's subjects are the analyses of data from the case studies and sensitivity results, and conclusions drawn about business organization forms and funding techniques. In Chapter 7, I summarize the project and close with suggestions for further research.

## 1.2 Background

Statistics condensed from U.S.D.A. Forest Service reports (Forest Statistics, 1978) suggest the potential importance of private nonindustrial forest lands. The qualifier, "potential," underscores some hidden weaknesses in the data.

Nationally, nonindustrial owners hold 283 million acres, 58% of the commercial forestland base. The national numbers, however, mask uneven regional distribution.

In the South, for example, private nonindustrial landowners own 72% of commercial forest land (Table 1.1). They also represent the major group in the North (Northeast and Midwest), holding more acres than either industrial owners or public agencies. Within the Rocky Mountain region, the nonindustrial sector is second in percentage of commercial acreage, 22%. On the Pacific coast, industrial and nonindustrial holdings are about equal, but together are only a third of the total public commercial acreage.

In Oregon, the state which provides the setting for the case studies, only 3.9 of 24.4 million acres of commercial forestland is held by nonindustrial private owners. Two-thirds (2.6 million) of those nonindustrial acres are in Western Oregon, west of the

Table 1.1. Area of Commercial Timberland in the United States by Ownership, Region, 1977  
(Thousand Acres)

Region	All Ownerships	Public	%	Industry	%	NIPF	%
North	170,769.4	31,318.2	18.3	17,776.9	10.4	121,674.3	71.3
South	188,433.4	17,742.1	9.4	35,754.0	18.9	134,937.3	71.6
Pacific Coast	70,758.1	44,374.3	62.7	12,349.2	17.5	14,034.6	19.8
Rocky Mountains	57,765.0	43,167.1	74.7	2,095.5	3.6	12,502.4	21.6
All Regions	487,725.8	136,601.7	28.0	67,975.6	13.9	283,148.6	58.1

May not add to 100% due to rounding.

Adapted from Table 2 of: Forest Statistics of the U.S., 1977.  
U.S.D.A. Forest Service  
Washington, D.C.  
Review Draft, 1978.

crest of the Cascade mountains. Even there, this sector accounts for only 19.1% of the commercial forest land (Forest Statistics, 1978).

The impressive magnitude of total acreage within the private nonindustrial sector hides more than regional variations. The current Forest Service definition of commercial forest land is based in biology, not economics; i.e., commercial forest land is: "... forest land which is producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation" (Forest Statistics, 1978). "... currently inaccessible and inoperable areas are included ..." (U.S.D.A. Forest Service, Outlook, 1972).

Their standard requires annual growth to equal or exceed 20 cubic feet per acre. Whether a timber stand is economically or socially harvestable is a separate, unanswered issue. Prices of inputs and outputs will determine the true commercial nature of a stand. Price changes will shift the margin for profitable timber production. Institutional constraints and ownership objectives will also influence timber supply.

The commercial forestland base is subject to immense development pressure. All classes of private forest land are experiencing the press of expanding agriculture. Southern bottomlands are particularly susceptible to conversion. And, because much non-industrial land is near urban areas, it is under tremendous pressure to be converted to non-forest, non-farm use. For example, the Forest Service estimates seven percent of southern nonindustrial private forest land will be urbanized by 2020 (Outlook, 1972). Within Oregon, continued rapid population growth in the Willamette Valley will lead to decreases in the forest land base. The state has adopted land use controls to prevent or slow conversion of forest land.

Forecasts of timber supply famines in the United States have been made periodically since the early 1800's. The famous

Copeland Report of 1933 blamed private forest ownership for all major problems of American forestry ("A National Plan for American Forestry," 1933). By 1958, the culprit had been more clearly identified as the nonindustrial owner (Sizemore, 1973). Here was an ownership class which was depleting its forest capital and failing to invest in stand improvements. The "Timber Resources" report of 1958 directed foresters to increase the productivity of nonindustrial private holdings because these lands were expected to provide most of the future wood supply ("Timber Resources for America's Future," 1958). More recent reports echo these earlier conclusions (Outlook, 1973) and argue that timber shortages can only be averted if timber flows from nonindustrial private lands, and can be increased dramatically.

The regional variation in timber volume removals from non-industrial lands is shown in Table 1.2. Almost half of U.S. timber removals come from this ownership class. Nationally, they account for 77% of hardwood and 36% of softwood harvest volumes.

Government and industry have provided a cornucopia of direct assistance programs and other inducements to the private non-industrial sector to boost timber supply from those lands. Direct assistance has been provided by federal and state governments. Perhaps the largest and best known program is the Cooperative Forest Management Program, a joint state and federal venture begun in 1950. Its objective is to provide landowners with technical advice and assistance for multiple use management of their lands. Since its inception, CFM has proven to be a very popular program (Sizemore, 1973). Today, however, with budgets being pared of unnecessary programs, at least one state has questioned the cost-effectiveness of CFM. Maine has cut the CFM program from its budget proposal for fiscal year 1982.<sup>1</sup>

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<sup>1</sup>Personal communication: David T. Flanagan, Esq., Legal Counsel to the Governor.

Table 1.2. Annual Removals of Growing Stock on Commercial Timberland Held by Nonindustrial Private Owners in the U.S. for 1976 (Thousand Cubic Feet)

Region	Hardwood	% of All Ownerships	Softwood	% of All Ownerships	Total	% of All Ownerships
North	1,600,170	79	384,432	55	1,984,602	73
South	1,638,654	78	2,669,886	60	4,308,540	66
Pacific Coast	56,398	45	475,733	11	532,131	12
Rocky Mountains	834	22	109,513	13	110,347	13
All Regions	3,296,056	77	3,639,564	36	6,935,626	48

Adapted from: Forest Statistics, 1977.  
U.S.D.A. Forest Service  
Washington, D.C.  
Review Draft, 1978.



In addition to CFM, there have been other federal programs which benefit small private landowners. These programs include the Rural Environmental Assistance Program and its forerunner, the Agricultural Conservation Program and the Naval Stores Program. Today, besides CFM, government offers technical advice and education through the Soil Conservation Service and the Extension Service, respectively (Sizemore, 1973). And, in 1974, the Forestry Incentives Program (FIP) was established to provide cost-sharing money for reforestation and timber stand improvement.

At the state level, in addition to their participation in CFM, several states have provided other forms of aid. North Carolina provides, for a fee, reforestation equipment and crews. Texas helped create aggregates of forest landowners to take advantage of management economies of scale and improve marketing. Virginia established a fund to help small landowners pay for site preparation and planting their nonproductive pine lands (Sizemore, 1973). Oregon provides a tax credit for reforesting nonproductive lands. Other states have established their own forest incentives program, similar to the federal approach (Interagency Report, 1978).

The private sector is also working to achieve greater timber flows and more intensive management on nonindustrial private forests. The American Tree Farm System, an industry initiative to get woodland owners of all kinds interested in forest management involves about 74 million acres (Sizemore, 1973), a large part of which is private nonindustrial forest land. Another industry effort is the tree farm family system where local forest products firms assist landowners within their timber supply region, usually in exchange for first refusal rights on the timber when it is to be harvested.

A popular industry measure in the South is the direct leasing of private nonindustrial forests. Some 6.7 million acres are currently under long-term leases of 25 years or more (Interagency

Report, 1978). The concept has been less successful in other regions where landowner surveys have shown disdain for the practice.

A rare and complex undertaking is the forest cooperative, in which landowners band together to obtain economies of scale in management and improved marketing of their timber crop. About 200 have been attempted in the U.S., but only a few have succeeded. To be successful requires sophisticated business management and a willingness on the part of individuals to forego independent action. Neither the management nor the cooperative spirit is sufficiently abundant to make cooperatives work (Sizemore, 1973, Interagency Report, 1978).

Indirect economic approaches are popular tools of government for inducing forestry practices. The chief instrument has been preferential tax treatment for timber and timberland. The tax preferences, generally extended in recognition of the long time period required to bring a timber crop to maturity, encourage forestry by removing penalties that standard tax measures impose on forestry or by creating special incentives which make investment more attractive.

#### 1.2.1 Federal Tax Incentives

Prior to 1944, landowners who cut timber were entitled to treat the income as long-term capital gains only if the sales were outright disposals. Revenue from internally consumed timber or timber sold with retained economic interests was taxed at substantially higher ordinary rates. Operating on a sustained yield basis from company lands resulted in a less favorable tax position.

The Congressional solution to forest abuses fostered by different tax treatments was to extend long-term capital gains benefits to timber used internally or sold with retained economic interest. The capital gains provisions were enacted over the strongly worded veto of Franklin Roosevelt who argued that timber

was like any other crop and should be taxed at ordinary rates. The historical "cut and run" incentive fostered by ad valorem taxation of timber was compounded by these differences in timber income tax treatment.

Many people see long-term capital gains treatment of timber income as the only true incentive in forestry, a cure for the lack of planting cutover land. An industry executive, J. J. Stephens (1978), viewed capital gains as compensation for inflation and the natural risks which occur during the time frame required to grow timber. Although Duerr (1960) himself does not take a firm position on the subject in his classic text on forest economics, he points out that many people credit these Internal Revenue Code provisions as being the "greatest single factor in the rise of private forest management in the U.S. since World War II." The reader suspects that Duerr recognizes what Stephens only parenthetically acknowledges: that general economic conditions, post-war price increases, and demand expansion in forest products contributed to improved forestry practices (Stephens, 1978). With ceteris paribus conditions violated, one may reasonably doubt forest industry claims that the vast increases in planting acreage since World War II are the success story of capital gains (FICTVT, 1973).

The tax incentive of long-term capital gains is diminished to some extent by the imposition of a surtax. Long-term capital gains is a tax preference item and subject to a minimum tax, with special provisions for corporate timber income (I.R.C. § 57 et seq).

Once capital gains treatment was available for timber income, new debates arose as to which timber production costs were expensable (subtracted from ordinary income in the current year) and which were to be capitalized (carried in the capital account and subtracted from timber revenue at the time of sale). It is more advantageous to expense a cost because the full dollar cost is used to decrease taxable income and because the taxpayer does not lose

the time value of money by carrying the cost to harvest time.

Reforestation costs are costs to be capitalized, hence they are carried on the landowner's books until harvest. Repeated efforts have been made to allow current year expensing of reforestation costs as an incentive for more planting. In 1980, a compromise emerged as the Packwood Reforestation Bill (Public Law 96-451). Now, reforestation costs up to a maximum of \$10,000 are eligible for a tax credit equal to 10% of reforestation costs and for amortization of those eligible costs over eight tax years.

Federal gift and estate taxation has only recently provided special consideration for forestry. The Tax Reform Act allowed current use rather than highest and best use valuation of farm and closely held businesses for estate tax purposes. Forestry is included as a kind of farming activity. The Economic Recovery Tax Act of 1981 clarified the treatment of woodlands under these current use provisions.

#### 1.2.2 State Tax Incentives

Unlike federal efforts which are largely confined to income tax issues, state governments have focused on alternatives to ad valorem property taxation of timber and timberland. It has been argued persuasively that unmodified ad valorem taxes create an excess burden on forest landowners relative to owners of other real property (Klemperer, 1977). This is a direct result of the long production period.

Almost every state offers some alternative to unmodified "at value" taxes (Sizemore, 1973). Maine, Oregon and Minnesota have annual taxes on certain forest lands, classified by their productivity potential. In other states, an excise, or yield tax, is levied on the stumpage value of harvested timber. Tax liability coincides with timber receipts, thereby avoiding cash flow problems before timber is harvested and sharing risk between landowners and

state treasuries. The yield tax system usually includes an annual ad valorem tax on the bare land.

A third approach is special classifications of preferred land uses such as farming, open space, and forestry. Typically, these tax systems specify percentage reductions in assessed values to which ad valorem rates are applied, or they allow assessment at "current" rather than "highest and best" use. Rollback provisions recapture foregone taxes if land is converted to non-preferred uses.

### 1.3 The Issue of Death Taxes

The interagency task force assigned by President Carter to investigate federal activities related to nonindustrial owners identified five tax problems which may hinder the practice of forestry on those lands:

- (1) inadequate knowledge of the more favorable options available under present tax laws
- (2) unfavorable Federal income tax treatment of planting and site preparation expenses,
- (3) inconsistent and unfavorable property tax assessment,
- (4) a Federal estate tax system that discourages, to some extent, continuation of forest management of lands changing ownership,
- (5) inadequate knowledge by the non-landowning public of the benefits which accrue from forests and the need for public support of taxation favorable to proper forest management.

(Interagency Report, 1978)

The normative tone of items 2, 3, and 5 suggests that society's best interest is served by removing these perceived tax impediments, fostering joint production of more timber and other forest outputs. The trade-offs involved in such actions are not discussed. That landowners do not have adequate knowledge of existing favorable provisions in the income tax laws can be verified by

talking with consultants and C.F.M. foresters. Federal estate and state death levies were cited as having a "direct bearing on the owner's decision to invest in his property" (Interagency Report, 1978).

If future U.S. timber supply is as highly dependent on private nonindustrial owners as indicated, then death taxes may have an impact. The common fear is that death taxes will adversely disrupt forest management and lead to sale of property to meet tax obligations. From a timber supply perspective, if these sales were made to large forestry organizations, especially corporations, supply prospects may be improved. In that event, however, we will lose some diversity in management objectives, and a hedge against unforeseen circumstances.

The Interagency Report did advocate a federal role in bringing knowledge of estate taxation to forest landowners:

Of great importance, however, is the need to bring knowledge related to estate taxation to the private forest landowner. The complexities of the tax laws and the difficulties in getting information to these owners in an easily understood way has probably discouraged the initiation and continuation of at least some forest management programs. A concerted effort is needed to educate professional foresters and then, through technical assistance and education, educate the forest landowners and the non-landowning public (Interagency Report, 1978).

In their "Subjective Appraisal of Possible Federally Supported Approaches" the task force rated the described education program as highly important, low cost, and likely to lead to increased investment over the long term (Interagency Report, 1978).

#### 1.4 Objectives for This Study

The complexities and interrelationships imply that research to provide the tools for the education program requires an

integrated approach. The cobwebbed tax structure in which each tax event is linked to many others makes a total system analysis beyond the ken of any practical researchers. But, any piece that is broken out for specific examination must bring with it the most critical associated elements. In this research project, this means the study of business organization form and funding techniques as estate planning tools must also consider income tax consequences and how property rights will be transferred.

Therefore, the specific objectives of this research are:

1. To examine the impacts of alternative business organization form on estate and income tax liabilities of nonindustrial forest owners.
2. To examine the effects of different methods for providing liquidity to meet estate settlement costs under each possible business form.
3. To examine the interaction of estate and income taxes when estate liabilities are being met under alternative combinations of business form and funding technique.

## CHAPTER 2

### THE LITERATURE OF DEATH TAXES

#### 2.1 Introduction

Nonindustrial forest land will be a major timber source in the coming decades although long-term investments and management may be discouraged by death taxes. Why we have death taxes in the first place and how they affect capital owners, particularly timberland owners, is the subject of this chapter.

I begin by examining the political economy of death taxation, looking first at its long, if discontinuous, history. The historical perspective aids understanding of both the macroeconomic theory of estate duties and the microeconomic impacts on owners of capital. The theory provides a framework for reviewing the applied literature, especially in agricultural economics which has directed considerable attention toward death taxes.

The forestry literature on estate and inheritance taxes is not well developed. I will comment on the importance of death taxes as seen by earlier analysts, review special features of nonindustrial owners which make death taxes particularly onerous, and summarize the applied work.

The final section sketches the unique contributions of the present research.

#### 2.2 The Political Economy of Death Taxes

##### 2.2.1 History

An estate tax is levied on the right of a decedent to transfer property after death; an inheritance tax is charged for the right to receive property from a decedent's estate. But when and where the first estate or inheritance tax was assessed is unknown.



Among western civilizations, the tax is thought to have been used by the Egyptians. The Romans undoubtedly borrowed the idea from them, developing it into a sophisticated tax. West (1908) provides a comprehensive review of the early history of death taxes in Europe and the United States.

The Roman inheritance tax is generally attributed to Caesar Augustus, around 6 A.D., although some writers believe the tax was implemented for a short time two centuries earlier. Augustus planned to use the revenue for military pensions, aerarium militare. The tax, vicesima hereditatium, applied only to Roman citizens, and, as is true in today's U.S. Internal Revenue Code, there were exemptions and deductions. Succeeding emperors made changes in rates and expanded the definition of citizen, but the tax disappeared with the adoption of the Justinian Code in the sixth century, A.D. (West, 1908).

During the Middle Ages, two kinds of death tax payments were made. The "relief" was paid to the lord by the heir of a deceased tenant for the privilege of inheriting the property since, at death, the property reverted to the lord. William the Conqueror is credited with first having fixed the amount of the relief. A clause in the Magna Carta of 1215 established rates depending on the size of the fiefdom: an earldom was 100 pounds; a barony, 100 pounds, and a knight's fee was 100 shillings or less. The second type of payment was the "heriot," a charge on personal property (West, 1908).

The death tax system in the United States began as a war revenue measure. It first appeared in the Stamp Act of July 6, 1797 and was repealed in 1802. Although there were no death taxes during the War of 1812, several were proposed and likely would have been enacted had the war lasted longer (West, 1908).

The War Revenue Act of July 1, 1862 imposed a legacy tax. The rates were increased in 1864 and supplemented by a succession tax

on real property. More changes were made in 1867. Before repeal in 1870, these taxes accounted for 1.5% of annual federal revenue (West, 1908; Dorgan, 1976).

The National Revenue Act of 1894, which was struck down by a Supreme Court ruling on an income tax issue, contained inheritance tax provisions. The War Revenue Act of 1898 included an inheritance tax with progressive rates, but it was repealed in 1902 (West, 1908).

The existing U.S. estate tax system was instituted in 1916, again, as a war revenue measure (Steensen and Yoho, 1967). Gift tax provisions designed to reach wealth transfers made prior to death to avoid subsequent estate taxes were added to the Code in 1924. They were repealed shortly thereafter, but reinstated permanently in 1932. The gift tax rates were 75% of the estate tax rates, making inter vivos gifts an attractive estate tax avoidance mechanism. The very important estate tax marital deduction was enacted in 1949 to remedy the unequal treatment of property held by a married couple in states which did not have common property laws relative to those states which did. Except for that change, the federal estate tax went almost unaltered from 1942 until the passage of the Tax Reform Act of 1976 (hereafter, TRA) (Dorgan, 1976).

The TRA of 1976 introduced major revisions to a heretofore stagnant estate and gift tax system. Among the many changes were a new, single rate structure applicable to both gifts and estates, a new formula for the marital deduction, elimination of the old \$60,000 estate exemption, and creation of a new unified estate and gift tax credit, a tax on generation skipping trusts, current use valuation for qualifying farms and closely held businesses, and provisions for carrying over the cost basis of inherited property.

The proposed carryover basis was the most controversial reform. Prior to 1976, an heir acquiring property from a decedent had as his cost basis in the inherited property the value of that property at the time of the decedent's death (or at the statutorily prescribed

alternative valuation date). The value increase of the property from the date the decedent acquired it to the date of death went untaxed when the heir subsequently sold the property. The TRA proposed the heir "carry over" the decedent's original cost basis so that the heir would be taxed on the entire gain upon disposal. To lessen the burden, all inherited property was to have been allowed a fresh start, the value as of January 1, 1977. Previous gains would be ignored. Imposition of the provisions was delayed by Congress, who completely repealed them in 1980.

The Revenue Act of 1978 refined some of the new law contained in the TRA and in other sections of the Internal Revenue Code. The Economic Recovery Tax Act of 1981 made sweeping changes in the tax system, including increases in the amount of gifts that can be given tax free each year, simplified requirements to qualify for current use valuation, no taxes on bequests or gifts to spouses, and lower tax rates.

This recent activity suggests the federal estate and gift tax system will be modified and updated on a regular basis in years to come. This is a marked contrast to the inattention during the previous 38 years. The current interest is a direct result of the system affecting classes of property owners who, prior to the inflation of the 1960's and 1970's, were never intended to be adversely affected by that system (Curtis, 1970).

The federal estate and gift tax system, originally designed to raise money for war purposes, has never generated a significant amount of revenue (West, 1908; Steensen and Yoho, 1967; Due and Friedlaender, 1977). It exists more for macroeconomic social goals than for public finance.

### 2.2.2 Economic Theory

The United States maintains its death tax structure primarily for purposes of redistributing wealth rather than for revenue generating (Dorgan, 1976; Due and Freidlaender, 1977). In 1935, Franklin

Roosevelt highlighted the taxes' role in redistribution:

The desire to provide security for one's self and one's family ... is adequately served by reasonable inheritance. Great accumulation of wealth cannot be justified on the basis of personal and family security. In the last analysis such accumulations amount to a perpetuation of great and undesirable concentration of control in a relatively few individuals over the employment and welfare of many, many others. Such inherited economic power is as inconsistent with the ideals of this generation as inherited political power was inconsistent with the ideals of the generation which established our government.

The redistribution theory traces its roots to John Stuart Mill who not only advocated progressive inheritance tax rates, but also limitations on the amount to be inherited by direct heirs, and the abolition of collateral (outside immediate family) inheritance. In his "Principles of Political Economy" Mill wrote: "It is not the fortunes which are earned, but those which are unearned, that it is for the public good to put under limitation."

Edward Bellamy, writing in the New Nation in 1892 and 1893, suggested that "drastic application of the inheritance tax is eventually to be one of the most efficacious instruments in preparing the way for economic equality" (West, 1908).

The redistribution theme, as West (1908) stated, "shows the nearest approach to socialistic tendencies." In fact, the Italian socialist, Eugenio Rignano (1924) saw death levies as the peaceful path to socialism, to the public ownership of the means of production without the destruction of those means in an apocalyptic revolution as envisioned by Marx. Rignano proposed a system which assessed the usual inheritance tax on what an individual accumulated through his own "thrift and industry," a 50% tax on any legacy from the decedent's father, and a 100% tax on legacies from his grandfather. Individual effort would be spurred and "idle fortunes" would be broken up. Rignano felt it was preferable for the

capitalistic caste and the bourgeoisie to anticipate the social transformation and work in concert with the proletariat, thereby assuring a gradual transition. Resistance would eventually be crushed by civil war and "violent revolutionary expropriation" (Rignano, 1924).

Dorgan (1976), too, idealistically viewed the American estate tax as an anti-revolution tax, "a pressure relief valve," redistributing wealth peacefully, rather than, as had been the case in other countries, through violent revolution.

The desirability of redistribution via the estate tax was not universally accepted. Andrew Mellon, when Secretary of the Treasury in 1921, tried to dismantle the transfer tax system because he feared that if allowed to operate it would eliminate private property in two or three generations (Verbit, 1978).

Mellon felt the tax should be used only for war revenue purposes and that as a tax on capital was contrary to U.S. economic goals: "no tax is more illogical than that which is destructive of the very values upon which the tax is based" (Mellon, 1924). He did not see the social necessity for breaking up large fortunes because he felt the American practice of dividing estates equally among heirs would split those fortunes into moderate sizes in a few generations.

Other, less widely accepted justifications for death taxes exist. The "ability to pay" theory argues that the tax occurs at the moment of the taxpayer's greatest ability to pay (Steensen and Yoho, 1967). One of Adam Smith's (*Wealth of Nations*, 1776) canons of taxation suggests every tax ought to be levied at the time in which it is most likely to be convenient for the contributor to pay it (Blum, 1976). Smith and Ricardo objected to inheritance taxes because they were taxes on capital and, therefore, tended to diminish a nation's wealth (West, 1908). The tax certainly cannot be considered a burden on the heir when applied to property not yet belonging to him (Steensen and Yoho, 1967).

A third basis for death taxes is the theory of state partnership. The state, it is argued, is a silent partner in the business of each citizen, without whose aid and protection citizens would be unable to transact business or accumulate wealth. When the partnership is dissolved by death, the silent partner is entitled to a share of the capital it helped to create (West, 1908; Steensen and Yoho, 1967). Andrew Carnegie pointed out that the "community creates the millionaire's wealth."

Another justification for death taxes is based on the idea that such taxes are a charge for services rendered by the State in distributing the estate according to the decedent's wishes (Steensen and Yoho, 1967). West (1908) asserted transfer of property after death is not a natural right, or even a necessary consequence of the right to private property. Therefore, those who benefit owe something to the State in return for the legal right to transfer and receive property of a decedent.

Although U.S. estate and inheritance taxes are intended to redistribute wealth from rich to poor and to prevent intergenerational transfer of great fortunes, there is little evidence they are having the desired effect.

Data cited by Verbit (1978) indicate the concentration of wealth held by the wealthiest 0.5% of the population has remained between 22% and 24% for the last 30 years. He concluded "a fortiori, transfer taxes have had no discernible impact on personal wealth distribution or concentration since 1949." Nor does the data indicate the old rich were replaced by new rich; the greater the wealth held by an individual, the larger the portion of that wealth was inherited. Arguments that concentrations would be higher in the absence of a transfer tax, or that the tax's impact is offset by other factors are not very compelling, given the limited data base (Verbit, 1978).

Cooper (1977) viewed the federal estate tax system, even with the revisions of the TRA, to be essentially ineffective as a redistribution method:

The fact that any substantial amount of tax is now being paid can be attributed only to taxpayer indifference to avoidance opportunities or a lack of aggressiveness on the part of estate planners in exploiting the loopholes which exist.

He went on to outline sophisticated techniques of minimizing estate taxes, to examine two cases where vast wealth (\$13 million and \$300 million) was barely taxed (5% and 6%, respectively) and to suggest reforms to prevent similar abuses in the future. He concludes the present system is really a voluntary tax since available techniques can reduce the effective rates to almost insignificant levels (Cooper, 1977).

Although the evidence is not conclusive, the U.S. estate tax has had little effect in breaking up large concentrations of wealth. (In Britain, it appears to have reduced inequality of wealth to some degree (Herber, 1977)). Due and Friedlaender (1977) suggested the U.S. system is drifting haphazardly toward equality. Whether or not the redistribution goals are attained, the death tax system does influence individual behavior resulting in macro- and microeconomic impacts.

The estate tax is a tax on capital (Mellon, 1924; Kaldor, 1942; Harriss, 1971; Cockle, 1972; Due and Friedlaender, 1977). A long-time student of estate and gift taxes, beginning with his doctoral dissertation on gift taxes in 1941, C. L. Harriss (1971) expressed concern for the impact of death taxes on capital formation, "the driving force" of the U.S. economy, observing that "death taxes do more (per dollar of revenue) than do other taxes to curtail the growth of capital rather than to reduce consumption."

Kaldor (1942) noted that death taxes differed from other capital taxes because they are levied at uncertain future periods and are anticipated long before they are due. He estimated the annual income burden equivalence for death taxes in Great Britain, i.e., the annual income tax which would give estate owners the same loss

of satisfaction as the future liability for death duties.

Due and Friedlaender (1977) indicated that wealth transfer taxes (estate, gift and inheritance taxes) influence capital formation rates through their impact on the savings-income ratio, which they claim is greater for transfer taxes than for income taxes. Other analysts suggest the macro impact on savings is ambiguous (Herber, 1977; Shoup, 1966).

Shoup (1966), for example, noted several offsetting influences of death taxes on savings. First, they induce increases in ordinary consumption at the expense of savings, perhaps even resulting in dissaving. The extreme case of death tax avoidance is the complete consumption of the estate prior to death. On the other hand, an individual may consume less and save more to maintain the estate's magnitude net of taxes. Heirs, too, may lower consumption to recoup part of the tax loss. Death taxes do come mostly from savings but the above cited behavior gives no definitive direction to the net macroeconomic effect.

In Keynesian macro models, savings are a source of investment funds, therefore estate taxes affect investment as well as savings. Shoup (1966) was unable to estimate the impact of death taxes on the level of investment but he and Herber (1967) did believe the tax could cause problems for closely held businesses. Shoup felt their growth might be stopped by death levies. Herber cited uncertainty about the amount of tax relative to the value of the business, and fear of illiquidity as problems but thought the problems could be eliminated by mergers with other firms.

The estate tax has been charged with diverting investment from risky ventures into safe, rentier-like securities or to be managed with unusual caution (Shoup, 1966). The tax also propels property into trusts, a unique Anglo-American institution in which the trustee is required to conserve the corpus of the trust (Denhardt and Denhardt, 1976). Due and Friedlaender (1977) also marked the



shifting of investment into more conservative ventures. Shoup (1966) doubted, however, that Gross National Product is enhanced by making risky investments.

Estate taxes affect the composition of assets held by individuals. Liquid assets, to meet estate taxes and settlement costs, would be preferred (Due and Friendlaender, 1977; Herber, 1967; Shoup, 1966). The shape and location of the demand for cash balances may be changed by alterations in liquidity preferences. Hoarding of cash increases interest rates and depresses national income (shifting the LM curve left in the standard Keynesian IS-LM macro-model). However, because death taxes are a small component of the demand for cash balances, the impact may be unnoticed. Certainly, the monetary authorities can counteract these tendencies.

The impact of transfer taxes on work-leisure choices is dependent upon utility functions of individuals. They may spur more or less work (Herber, 1967). Shoup (1966) claimed that in practice the tax results in little increase in income through extra work, particularly on the part of those who received the inheritance.

The U.S. death tax system leads to reductions in savings but there is no evidence it has impeded economic growth (Shoup, 1966). An annual tax on wealth, which is unconstitutional in the U.S., would inhibit economic growth to a greater degree than estate taxes (Shoup, 1966).

The discussion so far has focused on impacts of the aggregate of individuals' behavior: savings-consumption, investment, work-leisure choices. To close this section on theory I will touch briefly on individual economic behavior.

Verbit (1978), a professor of law, in discussing why existing tax avoidance measures were not employed by people planning their estates' disposition, claimed that economists

argue that the clients are economically rational in their reluctance to focus on what they will leave

their heirs since the value of wealth is in the economic power it confers on the wealth holder while alive. ... [S]ince the power is of no use when one is deceased, the economically rational individual ought to die with an estate of \$0.

Actually, economists have more complex views. The uncertainty as to the time of death makes it unlikely for wealth exhaustion to coincide precisely with death, except by pure chance. Spending too slowly, *ex post*, will result in a positive estate value. Spending too rapidly will leave the individuals destitute prior to death. Therefore, uncertainty is expected to slow the rate of dissavings.

Utility maximizing individuals are concerned with the welfare of others, especially spouse and children, and wish their needs to be met after the individual's demise. Economists have postulated utility functions which are dependent on the well-being of potential heirs.

In his work on the influence of estate taxation on charitable bequests, Boskin (1976) posed that an individual's utility was a function of lifetime consumption, lifetime gifts to friends, relatives and charity, and post-mortem bequests to friends, relatives, and charity. That function would be maximized subject to a budget constraint equating initial assets and work income to the total cost of the above listed "commodities." He also suggested two alternative models: the utility of the discounted stream of instantaneous utilities over a lifetime plus utility of bequests using the same functional arguments as above, and a two-period utility function, pre- and post-mortem (Boskin, 1976).

Adams (1978), in demonstrating that individuals equate true bequest and gift tax rates at the margin, proposed a utility function which included the utilities of the decedent and heirs. This function was maximized subject to transfers received, transfer taxes, and the composition of wealth for donor and recipients.

## 2.3 The Applied Literature

The preponderance of applied literature in estate and inheritance taxation is published in journals written for and by accountants, lawyers, and life insurance underwriters. These works are typically static in nature, ignore the time value of money, and explore a very limited point of estate planning. One rarely sees a complex system analyzed.

The scholarly economics work in death taxation is not well developed. There have been few dissertations and not that many refereed journal articles, at least relative to other kinds of taxation. An exception to this observation is found in the agricultural economics literature. This discipline recognized potential problems in the early 60's and 70's. Because forest owners are frequently farmers, too, and because of the similarities between the two enterprises, agriculture can offer insights into estate tax concerns which may be applicable to forest owners.

This section on applied work will first examine forestry literature. Because the forestry death tax literature is not very extensive, this review encompasses perhaps 95% of the published literature. Next, our attention will be devoted to agricultural economics. The practitioners' journals will be integrated into Chapters III and IV's discussions of the legal context within which the model operates.

### 2.3.1 Death Taxes and Forestry

Historically, there has been no uniform opinion as to the importance of death taxes to forestry. Opinions have ranged from "most critical" to "unimportant."

Fairchild (1935), in his landmark study of forest taxation, indicated the effects of death taxes were functions of forest age and type as well as management intensity. Old growth and sustained yield forests would be only moderately affected, but immature and

second growth forests would be greatly affected. He recognized that illiquidity was a problem for private forest owners.

Greeley (1951), a former chief of the U.S. Forest Service, declared death taxes to be the most crucial issue facing American forestry. Steesen and Yoho (1967) pointed out that Greeley's view reflected his many years of experience in a region where large, closely held family ownership dominated forestry. In contrast, Lucas (1963) felt that death taxes were of little or no consequence to small nonindustrial owners. He saw the American practice of dividing the estate equally among heirs as having the greater impact.

The late Ciracy-Wantrup (1952) deemed death taxes to be neutral because they occurred only at the beginning of a specific tenure and therefore exerted no pressure to harvest early.

Siegel (1975) did not think death taxes were a very important facet of the forest tax problem. In his forest economics text, Gregory (1972) stated that death taxes were not important, but did note that liquidity problems existed.

More recent analysts have identified death taxes as a serious issue facing nonindustrial forestland owners. Sutherland (1978) enumerated the specific factors which make death taxes especially important to forest owners. Condrell (1978) indicated that 65% of today's nonindustrial owners will be involved in estate settlement by the year 2000. Olson and Haney (1980) focused on the ramifications of state death taxes within the total transfer tax picture. In 1978, the Forest Industries Committee on Timber Valuation and Taxation, a major lobbying group, instituted a newsletter, "Timber Estate Taxes," to keep its members informed on death tax issues and legislation.

The discrepancy between historical and contemporary opinions has two prime causes. First, until recently, land and timber values were at levels which kept forest estates from being affected by the death tax system. As these values escalated rapidly in the 1970's,

increasing numbers of forest estates were adversely impacted. Second, the debate over the relative importance of death taxes was clouded by the failure to define the perspective from which one viewed the issue. Those who shrugged off death taxes were dealing with market supply and prices and overall forest investment. Death taxes are not strong influences in these matters; other taxes and economic variables are more critical. But, from a microeconomic viewpoint, with the individual forest owner as decision maker in the firm and utility maximizer with concerns for family, the potential magnitude of death levies is a proper consideration in investment and production decisions.

Nonindustrial private forest owners have special concerns related to death taxes. According to Sutherland (1978), attention should be centered on what makes forest owners uniquely susceptible relative to other business owners. Among the features which he cites are:

(1) The annual incomes of forest owners are low, but the value of the forest property is increasing rapidly due to inflation and real price increases in land and stumpage values. Therefore, many forest owners live poor and die rich, owing substantial death taxes.

(2) Forest landowners lack knowledge about the value of their property and techniques available to fund estate settlements. Owners of other kinds of capital are usually more aware of their real property's value because it is turned over more rapidly and subject to ad valorem taxation rather than the special treatment afforded timber property in most jurisdictions. Moreover, other capital owners are more likely to carry business insurance and, therefore, be in contact with advisors who are aware of estate tax problems and who offer estate planning services.

(3) Lack of education makes it more difficult for these owners to receive helpful information. Although more professional people

are becoming forest owners, surveys of landowner characteristics show that nearly half of nonindustrial owners are not likely to have completed high school (Martin, 1978; Marlin, 1978; Nichols, 1976).

(4) Timber is not readily convertible to cash and long-term loans are not widely available. Hence, next to rapidly inflating values, illiquidity is probably the major problem facing such owners. Other capital owners are more likely to have liquid assets or a regular cash flow.

(5) Lacking liquidity, forest heirs may be forced to sell land and/or timber to meet cash requirements of death taxes and expenses. Forced sales may not bring heirs fair market value when they operate under duress.

(6) Older people own timberland; therefore, the surviving spouses and heirs will be involved with death taxes in the near future.

The death tax literature in forestry is not highly developed, reflecting the conflicting views of researchers as to the importance of death taxes to forestry. Recent efforts have looked at micro-economic impacts. No one has examined the empirical evidence to see if the aggregate impact on individual owners has influenced timber supply and market prices.

Perhaps the earliest of contemporary scholarly works is a Master's thesis prepared by Lucas (1963). His purpose was to determine if death taxes and costs of estate settlement caused dismemberments or reductions in efficiency of forest enterprises through forced liquidation of land, timber, or other resources needed for efficient management and to determine the extent to which forest landowners planned the transfer of their property and the payment of associated costs. By analyzing 50 questionnaires, he determined that forced sales were a function of the amount of planning and estate size. Among the planning tools he found in use were wills,

trusts, marital deductions, gifts and outright sales. Liquidating timber was not a funding alternative because most respondents had other sources of funding such as current income or loans. In one case, a loan was repaid with timber revenue. Lucas concluded the practice of treating heirs equally was more responsible for dismemberment than were the death levies themselves. He suggested forest owners might solve the equal treatment-dismemberment problem by borrowing a common farm estate planning technique, incorporation. Except for this brief mention of corporate ownership, Lucas did not analyze alternative business structures.

Yoho (1965) felt that federal estate taxes did not have significant impacts on the aggregate magnitude and direction of forest investment. He did suggest they may cause dismemberment of efficiently managed forests, promote co-ownership, and cause liquidation of timber capital, impairing future productivity. As a result of treating heirs equally, co-ownerships created by inheritance brought together people with conflicting objectives. His research showed such co-ownerships were fairly common, even in medium and large-sized properties, and persisted over long time periods. He also noted that long family tenure was negatively correlated with management effort. Yoho asserted that good estate planning would be sufficient to avoid death tax problems, and that the "nature and level of death taxes themselves appear insignificant" (Yoho, 1965). A final problem he identified was the reallocation of current operating revenue from investment to estate settlement purposes. A follow-up article by Steensen and Yoho (1967) covered much of the same material.

Skilling (1966) identified marital deductions, revocable trust, gifts to minors, and funding options as estate planning tools useful to forest landowners.

Sizemore, Herrick and Hargreaves (1967) used a case study approach to analyze impacts of forest management and federal taxes on

forest owners. For several different rotation ages and lengths of conversion periods, they calculated harvest volume and pre-tax present net worth. Then they applied federal income tax laws to determine post-tax present values under two ownership alternatives; fee simple-sole proprietorship and corporation. Finally, they examined gift tax impacts of transferring property to the owners' children. Their work is the first forestry attempt to integrate forest management with income and gifts taxes under alternative business structures. They did not address estate taxes themselves, funding methods, or other forms of ownership (except for a brief listing).

Wellman (1976) agreed that meeting forest estate liquidity needs was important, but that the issue was more complex than others had suggested. As did Yoho (1965), Wellman indicated that conflicting objectives of co-owners is a real issue, especially if the co-owner is an industrial forestry concern, as is often the case in Wellman's native state, Maine. Even if all parties agree to a sale, market and forest conditions may be such as to make the sale imprudent. Moreover, banks are generally reluctant to loan to a forest estate and an ownership must be fairly large to borrow from an insurance company. These conditions will lead, over many years, to greater corporate ownership of forests (Wellman, 1976).

Nichols (1976) analyzed impacts of federal and state transfer taxes on western Oregon forest owners by calculating present worths of forests, net of death taxes, for a range of interest rates, forest management intensities, and ownership size. Death taxes reduced present values, but rarely did they cause negative present worths. Using simple estate models he found that estate planning tools such as wills, gifts, trusts, flower bonds, life insurance, marital deductions and step up in cost basis to be useful in saving taxes. The models were static in nature, examined only the savings on the death of one spouse and did not include other taxes or



alternative ownership forms except trusts.

Nichols also conducted two surveys. The first found that very few owners had used any sophisticated tools in planning their estates, but that they were very interested in obtaining information. The second survey attempted to determine if death taxes were forcing sales of land and timber, but he was unable to obtain sufficient data to test the hypothesis.

In addition to identifying landowner characteristics which make death levies especially burdensome to forestry businesses, Sutherland (1978) also analyzed estate tax ramifications on the present value of timber revenue from a regulated forest. Liquidating timber capital to meet estate settlement costs lowered the present values of cash flow below that of an estate in which those costs were met with other assets. Three methods of providing the requisite cash were suggested: savings, loans, and life insurance. Tax savings using gifts and marital deduction trusts were demonstrated.

Carter (1978) reviewed the legislative history of Internal Revenue Code Section 2032A pertaining to current use rather than highest and best use valuation of certain real property, including timberland. The value reduction is limited to \$500,000 but this also lowers the top marginal tax rate. The provisions were designed to give relief to traditional family farms, hence application to timberland was fraught with problems, such as whether timber is real property for estate tax purposes, the recapture and material participation provisions, and the interaction with other sections of the Code. He concluded that Section 2032A will have limited applicability for forest estates (see section 3.2.2).

Gabarra (1978) explored death tax consequences for a nonindustrial timberland owner, discussing applicable income and estate tax laws and providing sample calculations. He mentioned several estate planning tools such as gifting, ownership structure, and funding techniques, but did not integrate these tools with the income and

estate tax system.

Tedder and Sutherland (1979) illustrated that even with changes implemented by the Tax Reform Act of 1976, escalating values of land and timber made estate planning necessary if one were to avoid problems in funding the accompanying increasing estate tax liability. They showed that inflation greatly increased the estate tax due and the number of acres to be cut, if timber was liquidated to meet cash needs. They briefly sketched some considerations in selecting methods of funding other than liquidation and indicated the relationship of planning for funding and income taxes.

Saving as a funding technique has three disadvantages: (1) the principal set aside has been taxed and the interest earned is taxed, (2) the accumulated savings are included in the estate and taxed again, and (3) the owner may not live long enough to amass sufficient savings to meet tax and administration costs (Tedder and Sutherland, 1979).

Private sector and government loans were discussed. Government loans are generally available at more favorable interest rates. And, although the loan is repaid with after-tax income, the interest charges are deductible for income tax purposes (Tedder and Sutherland, 1979).

Finally, they discuss several advantages associated with life insurance. Proceeds from life insurance are not subject to income taxation. The premiums are paid with post-tax income (Tedder and Sutherland, 1979).

Sutherland and Siegel (1979) examined estate tax savings potential of gifting rights of joint ownership in real property from one spouse to another. Spouses often prefer joint ownership of timberland because the property passes directly to the survivor without going through probate. In most cases, however, all the property is considered part of the decedent spouse's estate. By using spousal gift techniques, substantial tax savings are possible

but the reduction in total taxes is limited to taxable estates between \$425,625 and \$1,000,000 (Sutherland and Siegel, 1979).

They did not address the possibility that this estate planning tool might be useful for larger estates if one employed a present value analysis. Since the technique shifts tax liability forward in time, present value of total liability may be reduced for larger estates, especially if the gifted property is an appreciating asset such as timberland. Of course, the present value of the early gift tax payments would need to be compared with the present value of later estate tax costs.

Sutherland and Tedder (1979) cited high property values and illiquidity as forces which lead heirs to meet estate taxes and settlement costs with timber capital liquidation. Timber liquidation as a funding technique incurs other costs: state and federal income taxes, yield taxes, and, most importantly, reduction in cash flow and present net worth of the forest. Employing case studies, they compared present values of forest estates with and without using immediate timber liquidation to meet estate tax cash requirements. Timber funding resulted in lower present values than other, unspecified methods and reductions were greater the closer the forests were to regulation. However, as interest rates increased, the influence on present value declined. In closing, they mentioned life insurance and loans as two alternative funding methods which could be analyzed in a present value framework (Sutherland and Tedder, 1979).

An even more neglected aspect of forest death taxes, state death taxes, was the subject of a paper by Olson and Haney (1980). They described the death tax structure for 12 southern states and compared total death taxes for several case studies. The case studies simulated medium and large forest estates for three family situations: (1) husband and wife with two children, (2) one parent with two children, and (3) husband and wife with no children, but

with several collateral (not closely related) heirs. They found that state estate and inheritance taxes comprise a significant percentage of the total tax, ranging from 12 to 66 percent depending on the family structure. The authors conclude that state levies must be included in development of estate plans. Finally, they discuss current use valuation provisions in the Code, illustrating possible tax savings and interaction with state death taxes.

Writing in American Forests, Dennis (1981) demonstrated the estate tax liability of a typical forest owner with and without estate planning. The planning technique employed was gifting within the annual exclusion, thereby avoiding gift taxes. Gifts of forest land remove an appreciating asset from an owner's estate. He also mentioned other tools such as the marital gift deduction, trusts, deferrals, and current use valuation as well as the importance of funding and remaining liability. The goals he ascribed to owners were maintaining the property intact and avoiding interruptions in management. Echoing Sutherland (1978), Dennis listed those attributes of forest landowners which make estate taxes especially burdensome and cited specific survey findings from the Northeast.

In a "Comment and Reply," Prindle (1981) and Sutherland and Tedder (1981) sketched alternatives to timber liquidation in meeting estate liabilities. Prindle explored the use of the 15-year installment technique (see section 3.2.2). Because forests in his examples had rates of return between 5.3 and 6.6 percent, and the statutory interest rate was only 4 percent, the deferral alternative was attractive, based on a present value criterion. Sutherland and Tedder pointed out that to be complete, the analysis should account for the physical and value growth of timber and the additional income taxes due if one used timber revenue to pay the loan. Additional income taxes would not be owed in the case where timber was liquidated at the owner's death because the heirs' timber cost basis is stepped up to the value at death. Timber harvested beyond this

time would have appreciated and sales would result in taxable gains. Sutherland and Tedder also suggested the possibility of combining deferrals with life insurance.

### 2.3.2 Death Taxes and Agriculture

Agricultural researchers have long been aware of the potential impacts of death taxes on family farms. Land grant institutions like Iowa State, Louisiana State, Oklahoma State, Oregon State, Purdue, Virginia Polytechnic Institute and South Dakota State have prepared and disseminated materials on estate taxes and planning through their respective extension services. Examples of such work are Blanch (1977) and Burkhart and Looney (1978). Few extension services have active forest estate planning efforts (Oregon State, Purdue, VPI). Nor has the legal and financial professions devoted even a fraction of the time on forestry as they have on farming. Their professional journals have carried many articles discussing the law and planning techniques as applied to farms. Examples include Kelley (1975), Strum (1978), Bravenec and Olsen (1977), and Lindenberg (1977).

The content of the above literature is mostly informational rather than scientific. The balance of this section is a review of agriculture's scientific literature, especially the development of models to aid farm owners in choosing among estate planning alternatives.

2.3.2.1 Agricultural overview. Krause (1967) reviewed the importance of estate planning for farm families and the many tools available to aid in achieving family goals. Among the issues he outlined were alternative business organization forms such as corporations, partnerships, trusts, and sole proprietorships (where the farm was held by joint tenancy or tenancy in common).

A similar piece by Corty (1977) presented state (Louisiana)

and federal death taxes and property rights transfer law, as well as several estate planning tools such as trusts, life insurance, gifts, and estate tax deferrals. He also developed sample calculations to show the combined cost of state and federal death levies. As is the case with most of the death tax literature, his analysis is static, and concerned only with death tax liabilities.

Thomson (1971) studied death duties for farms in South Australia. He concluded that the tax was not having the desired redistributive effects because wealthy families were transferring assets to younger heirs before death. An impact which he identified was that payment of death taxes diminished investment in production, a consequence Yoho (1965) had predicted for forestry in the U.S.

Writing in Trusts and Estates, Boehlje and Boehlje (1973) emphasized that estate planners and researchers must be concerned with estate management planning, "a broader concept than the approach used by traditional estate planners who are concerned only with the transfer of property between generations." In their view, estate management planning was concerned with the creation, transfer and management of estates. They identified three general problems facing estate planners: (1) multiple and conflicting goals within the plan, (2) conflicts of interest between heirs and owners, and (3) lack of knowledge about death tax impacts and available estate planning tools. Special concerns in agricultural situations were limited amounts of liquid assets which may force liquidation of specialized capital under unfavorable market conditions and the splitting of assets which may diminish productive efficiency. Two farm attributes were cited as important: (1) the desire of farm families to transfer farm assets rather than cash equivalents, and (2) the form of ownership, typically a sole proprietorship. The balance of their article reviewed various modeling efforts, which I will address shortly.

Woods and others (1975) reviewed the policy issues affecting

farm property transfers, noting that as farm land values increased, more and more farms which had previously escaped transfer taxes were now subject to those taxes.

Boehlje and others (1979) identified three goals of estate management planning: (1) transfer the largest amount possible to heirs, (2) provide income and capital security during the lifetimes of present owners, and (3) direct the distribution of assets after death. Ownership type and business organization form were cited as estate planning tools. They conducted a survey of estates probated in Iowa in 1972 to identify the characteristics of decedents and their estates, and the extent of estate planning efforts. The survey results indicated the incidence of joint tenancy as an ownership form diminished as the estates grew larger and that life insurance was generally used more to reduce inheritance taxes and probate costs than to provide liquidity for estates.

2.3.2.2 Legal-Economic Models. Legal-economic decision models in estate planning are models which analyze the economic consequences of alternative actions specified within the framework prescribed by common law, statute, regulation, code, or judicial decision. Their use in optimizing intergenerational transfers of farm assets was pioneered in Harl's (1965) dissertation in which he studied legal and economic impacts of the corporate business form for closely held businesses. Harrison (1966) and Allwood (1969) applied mathematical programming techniques to develop least cost intergenerational transfers. Allwood specifically examined a range of strategies including revocable and irrevocable trusts, tenancy of the entirety, sole ownership, and incorporation. He cited irreversibility of certain strategies as a key consideration in selecting a plan.

Levi and Allwood (1969) reviewed the types of legal-economic models which were useful in estate planning contexts. Use of marginal analysis and linear programming allowed for study of multiple

periods, impacts of inflation, and appreciation of assets. Their preferred choice was simulation models which afforded opportunities to make many runs under various alternatives and parameters. Such models could have general use and the information generated could be analyzed to help choose a preferred plan.

A problem with estate planning models is their deterministic nature, assuming certainty which does not exist in the real world. Levi and Allwood (1969) argued that estate planners implicitly work with deterministic models. A formal model requires those assumptions to be made explicit. As long as the model is not expected to yield optimum results in all cases, determinism is acceptable. Some of the certainty could be eliminated in a simulation model using a probability density function for life expectancies. The analysis would then yield a distribution of costs for a given planning technique (Levi and Allwood, 1969). Because people have an idea about their own longevity, the density function could be subjective.

In his Ph.D. dissertation, Buss (1971) analyzed tax impacts of alternative business organization forms for Oklahoma commercial farms. Using a case study approach, he created two model farms, one with gross annual sales of \$84,000 and an investment value of \$572,000, the other with values of \$178,000 and \$1,160,000, respectively. In his analysis, Buss applied federal income, Oklahoma income, self-employment and social security taxes to several business structures: sole proprietorship, partnership, business trust, regular corporation and Subchapter S corporation. He also computed federal and Oklahoma estate taxes, administration and probate expenses, and the net estate passing to the children.

In terms of minimizing income tax liability, those business forms which allowed income to be split among family members, thereby putting income in lower tax brackets, were the most effective. These structures were business trusts, partnerships, and Subchapter S corporations. As farm size increased, the regular corporation



incurred lower total taxes than the sole proprietorship, even though the corporation is taxed at both the corporate and individual level. Due to the progressive nature of the estate tax, the percentage of the estate passing to the next generation decreased with increasing farm size. Estate taxes could be reduced by using a two-part marital deduction trust or by using a gift program (Buss, 1971).

Buss emphasized that to properly evaluate tax impacts, all tax components must be considered. The typical partial analysis will likely yield incorrect recommendations. He, however, did not fully integrate income and death taxes in his analysis. And, although lack of liquidity was as much a problem for farms as forests, his model did not include techniques for funding the substantial financial burden of death settlements. Such costs were netted out of the estate, even though the goal of many farm families is to maintain the integrity of the farm.

Boehlje and Eisgruber (1972) pointed out that problems created in planning for transfer of the farm estate are compounded by simultaneous considerations of strategies for capital accumulation and growth. Their models introduced the uncertain timing of the owners' death and the integration of creation and transfer of farm wealth. They characterized their theoretical model as an adaptive sequential decision model where the strategy for transfer and creation depends on the previous period's condition. The theoretical model was transformed into a simulation model for empirical tests. Using Monte Carlo methods, they sought preferred alternatives for creating and transferring estates based on a present net worth criterion. Wealth creation was done through various farm management production decisions; transfer alternatives were limited to gifts, wills, and joint tenancies. Sensitivity analyses were performed for family size, life expectancy, and estate size.

Boehlje and Eisgruber concluded that estate management requires a dynamic analysis of the interaction of creation and transfer of wealth and that death should be treated as an uncertain

event. They recognized the severe liquidity problem faced by farm estates and noted that their optimal plans called for outside investments which could provide liquidity needs and help avoid selling farm assets or creating troublesome co-ownerships. The estate planners' rule of thumb to limit gifts within the annual \$3000 tax free amount was not supported by their study (Boehlje and Eisgruber, 1972).

Although not explored empirically, they cited the benefits of the close corporation as an alternative ownership form. Through stock transfers, ownership can be reallocated without affecting economies of scale and the usefulness of capital intensive technologies. Moreover, it provides a simple means to transfer management and financial responsibility, thereby creating incentives for younger family members to stay in farming (Boehlje and Eisgruber, 1972).

Two Ph.D. dissertations were done at Oklahoma State University on intergenerational transfer of farm assets. Dobbins (1978) used a modified simulation model linked with a goal programming model to evaluate strategies for passing farm wealth between father and son while simultaneously considering income availability, capital borrowing, and asset value. The simulation model provided data for an annual updating of the goal programming model.

Roush (1978) evaluated asset transfer strategies within the context of multi-owner family farm business arrangements. His simulation model accounted for growth and transfer of the farm business under sole proprietorship, partnership, and corporate legal structures. The model generated net worths of heirs at the end of the planning horizon as well as after-tax financial positions of each family member during each year. The model was applied to a farm situation typical of southwestern Oklahoma. Net present values of transfers could be increased by incorporating the business, making taxable gifts to the children and making marital gifts

to the extent of the \$100,000 marital gift deduction. Adequate provision must be made to avoid liquidity problems when the parents die (Roush, 1978).

Walker and others (1979) created a two-part model to simulate farm growth and estate transfer. Their purpose was to evaluate growth and transfer plans under conditions of risk and uncertainty and to determine differences in costs, net value of property transferred, and liquidity positions of father and son under alternative strategies. The growth-investment part of the model simulated operation of the farm over a planning horizon under trended prices and stochastic yields. The estate planning component considered business structure alternatives, financial position, transfers by gift or sale and timing of deaths. The estate model was deterministic rather than stochastic. The two components were used together to study the effects of price and yield variability, growth strategies, and estate transfer plans for a case study farm in Oklahoma.

Harl and Boehlje (1978) described estate management issues and the legal-economic analytic model they had constructed to aid individuals and their professional advisors prepare effective estate plans. Echoing Boehlje and Eisgruber (1972) they emphasized that the estate plan must simultaneously deal with the creation and transfer of wealth and incorporate the time value of money. A key factor in estate plans is determining the optimal estate tax marital deduction, that portion of the estate which is passed to the widow(er) tax free. Harl and Boehlje developed three broad estate transfer models to analyze the importance of that deduction.

Model I, as they designated it, provides for one spouse to own all the property and to die first. The estate is split into a marital deduction share which is transferred to the widow(er) tax-free and a non-marital deduction share which is taxed in the estate of the original owner. The non-marital share is

placed in a life estate with income going to the surviving spouse for his or her lifetime and the corpus passing to other heirs at the second death. If and only if death occurs in the specified order, the desired results are obtained. Their Model II divided property ownership into approximately equal parts. Upon the first spouse's death, the decedent's estate went into a life estate with the widow(er) as income beneficiary. The order of death is no longer important but available deductions are not used completely.

Their third model, deemed "Modified Model II," provided for balanced ownerships, use of the estate tax marital deduction and a life estate for the non-marital deduction share. The marital deduction is a primary factor in establishing estate tax costs. The optimal marital deduction depends on life expectancies of both spouses, expected price changes, rates of return on tax dollars saved, and expected changes in the death tax structure.

Using the modified Model II, they created a computer simulation model to assist individuals and estate planners. Results of different estate plans are compared by varying life expectancies and the order of death (Harl and Boehlje, 1978).

Building on Harl's and Boehlje's (1978) concern that the maximum marital deduction in a modified Model II estate plan may not be best, Reinders, Boehlje and Harl (1980) developed an analytical framework for optimizing that deduction. Their linear optimization model determined the marital deduction which minimized the present value of estate tax liabilities incurred at the deaths of husband and wife, subject to

- (1) expected growth in value of assets between deaths,
- (2) expected discount rate appropriate to the estate of the first to die for the period between deaths,
- (3) expected time of death of the surviving spouse,
- (4) initial distribution of wealth between spouses and total wealth of the couple.

They applied their model to ranges of estate size, initial inter-spousal distribution, asset appreciation rates, discount rates, and life expectancies. Then, they compared costs, in terms of change in present value of total tax liability when using the maximum rather than optimum marital deduction.

They concluded that if expected asset appreciation rate was less than the rate of return, then the optimal marital deduction was either the maximum allowable by law or, in the case of small estates, that deduction which would just extinguish estate tax liability for the first estate. If, however, assets appreciated faster than the discount rate, the optimal marital deduction was zero. This was also the case when the rates were equal and the first spouse to die owned a disproportionately large share of the property. If this were not the case, no general rule applied, and the model would need to be run to find the optimal deduction.

#### 2.4 Legal-Economic Model for Forestry Estate Planning

The remaining chapters of this paper cover the development of a legal-economic model for planning estates of nonindustrial timberland owners. Like its agricultural predecessors, the forestry model uses the estate management approach (Boehlje and Boehlje, 1973; Boehlje and Eisgruber, 1972) in that it is concerned with creation and transfer of wealth. Appreciation of assets and price changes are included, income and estate taxes under different business structures are considered, life expectancies vary, and present net worth is the standard by which alternative combinations of planning tools are measured.

There are, however, unique features to this model. First, although simplified in some instances, it is a comprehensive system that considers interaction among annual or periodic management of assets, income tax consequences of that management under different

business structures, transfer taxes, and methods of funding death tax liabilities. Choices made in one component will affect other components, either magnifying or dampening changes in present value. Second, the model is concerned solely with forest property and the flow of timber revenue from that property.

## CHAPTER 3

### TAX ISSUES

#### 3.1 Introduction

The purpose of this chapter is to present some of the legal framework which guides operation of the simulation model. Topics to be discussed are federal estate and gift taxation and federal income taxation of timber revenue. Many of the terms used in this chapter have precise legal meanings, defined in common law or by statute. Where appropriate, the U.S. Internal Revenue Code, amended by the Economic Recovery Tax Act of 1981, is cited by section; e.g., 6166(a) refers to subsection (a) of section 6166.

The discussion of the law in this chapter and the next is intended only to explain those laws which directly affect the simulation model and highlight those which are peripherally important. An exhaustive explanation of tax and business law is not the subject of this research. Interested readers are referred to the many excellent texts on income and estate taxation cited in this chapter and the Internal Revenue Code itself for more detailed analysis. This chapter is not intended as legal advice. Legal counsel should be consulted for definitive advice with regard to the laws discussed herein.

#### 3.2 Federal Estate and Gift Taxation

Almost from the beginning, U.S. estate and gift taxes have been intertwined. In 1976, the Tax Reform Act united the estate and gift tax rate schedules and established a single tax credit to offset levies under either subsystem. The Economic Recovery Tax Act of 1981 (hereafter, ERTA) continued this unified approach to wealth transfer taxation. In this section, I will examine federal estate and gift taxation. Although Olson and Haney (1980) have pointed out

the potential importance of state death levies, they are not treated explicitly here, or in the simulation model itself. The model assumes the federal estate tax credit for state death taxes is exactly offset by state taxes actually levied.

Because life precedes death, it is logical to turn first to the taxation of inter vivos gifts and then to the taxation of estates.

### 3.2.1 Federal gift tax law

The U.S. Internal Revenue Code provides for taxation of lifetime gifts (2501 et seq.), principally to capture wealth transfers made to avoid eventual taxation at death.

A gift is made whenever an interest is gratuitously transferred by one individual to another or transferred for less than full consideration. In the latter case, the difference between actual and full consideration constitutes the value of the gift (2512(b)). Gifts can be cash, personal or real property, interests in businesses, forgiveness of debt, or payment of premiums on an insurance policy owned by another.

Generally, the amount of gift is the value of the gift on the date given (2512(a)). A key problem in gift taxation is assigning dollar values to gifts, especially when they are interests in family or closely held businesses where market forces may not establish true value. Many of these valuation problems occur in estate taxation as well. Therefore, the Internal Revenue Service (IRS) has developed sophisticated valuation methodologies involving appraisals, comparisons with similar businesses, and capitalization of income.

To avoid inclusion in the donor's gross estate, the donor must have irrevocably transferred the interest and not retained any beneficial interest. A gift with these characteristics is a completed gift. Three kinds of incomplete gifts exist:

- (1) transfers with a retained life interest;
- (2) transfer with a reversionary interest retained by donor;
- (3) revocable transfers.



Each of these would generally be included in the donor's estate at the time-of-death value under provisions of sections 2036(a), 2037(a), and 2038, respectively (Crumbly, 1976).

The federal gift tax has a progressive rate structure (2502(a)(2)); effective in 1985 the marginal rates range from 18 to 50 percent. Since 1976 the same schedule has applied to gifts and estates. The Tax Reform Act of 1976 also established a unified estate and gift tax credit (2010(a)) which is available to offset taxes on lifetime gifts and post-mortem transfers. Prior to 1982, the unified credit peaked at \$47,000 per individual, which allowed for tax-free transfers of \$175,625. ERTA boosted the credit to \$192,800, using a timetable to phase-in the new amount (Table 3.1).

Effective January 1, 1982 individuals may give gifts valued up to a total of \$10,000 annually to any number of people without incurring any tax liability or without having to file a gift tax return with the IRS (2503(b)). The \$10,000 annual exclusion is applicable for gifts to an unlimited number of people but it is available only for gifts of so-called present interests. Gifts of future interests, except certain gifts to minor children, do not enjoy the benefits of the annual exclusion. A future interest is one in which use, possession or enjoyment of the interest is restricted to some future date (Buss, 1971). Prior to 1982, the annual gift tax exclusion was \$3,000.

If the annual exclusion per donee is exceeded, the excess is taxed at the aforementioned rates. The resulting tax liability can be offset in whole or in part by the donor's unified credit. Thus, substantial gifts can be made without incurring any out-of-pocket tax expenses.

Using a technique called gift splitting (2513(a)), an individual may make gifts up to \$20,000 in value to anyone, each year, tax free, if the donor's spouse agrees to "split" the gift. The option is available even though the donor's spouse did not share ownership of

Table 3.1 Phase-in Schedule for Unified Estate and Gift Tax Credit

<u>Year</u>	<u>Unified Credit</u>	<u>Equivalent Property Value</u>
1981	\$ 47,000	\$ 175,625
1982	62,800	225,000
1983	79,300	275,000
1984	96,300	325,000
1985	121,800	400,000
1986	155,800	500,000
1987	192,800	600,000

the transferred property. Gift splitting can be employed for amounts greater than \$20,000, too. The excess becomes a taxable gift and is treated as if each spouse gave half.

Taxation of gifts to spouses before enactment of ERTA was very complex, involving special calculations to determine what portion, if any, was taxable, and whether or not the magnitude of the estate tax marital deduction would be affected. Beginning in 1982, gifts "by a donor to a donee who at the time of the gift is the donor's spouse" receive a deduction equal to the value of the gift (2523(a)). Thus, there is no tax on interspousal gifts.

When taxable gifts have been made during a donor's lifetime, the value of those gifts is added to the taxable estate to obtain the complete value subject to tax. The full unified credit is available to the decedent's estate and the estate is credited with gift taxes actually paid. These credits are used to offset estate tax charges.

On the surface, it may appear that there is no benefit in making taxable lifetime gifts. What makes such gifts attractive is that it is the value at the time of gifting which is included in the estate tax calculations, not the value at the time of death. If an individual transferred rapidly appreciating real property, the appreciation would not be taxed in the donor's estate.

Another interaction between estate and gift taxation occurs when gifts are made within three years of death. The value of such gifts is not included in the decedent's gross estate for estate tax purposes as it was prior to ERTA (2035(d)(1)). However, for purposes of eligibility tests under sections 303 (stock redemption), 2032A (special use valuation) and 6166 (estate tax deferrals), the value of those gifts at the time of death plus any gift taxes paid are included in the gross estate (2035(d)(3)).

A simple example will illustrate the workings of the gift tax system. Suppose a husband gives \$100,000 to his wife and \$50,000 to each of two children. These gifts are made in 1982 and are the only

gifts made during the husband's lifetime. The tax consequences are as follows:

1. Without gift splitting

<u>Donee</u>	<u>Total Gift</u>	<u>Taxable Gift</u>	<u>Gift Tax</u>
wife	100,000	0	0
children	100,000	80,000	18,200

The tax liability does not exceed the 1982 unified credit (\$62,800), so no out-of-pocket tax costs are incurred. When the donor dies the \$80,000 is added onto the taxable estate.

2. With gift splitting

<u>Donee</u>	<u>Total Gift</u>	<u>Taxable Gift</u>	<u>Gift Tax</u>
wife	100,000	0	0
children	100,000	60,000	12,000

Under the split gift arrangement, the taxable gift is reduced by \$20,000, yielding a gift tax savings of \$6,200 because the total taxable gift is smaller and because it is treated as if each spouse had given half and, therefore, it is subject to lower marginal rates.

Gift taxation is much more complex than shown in the outline above, but the essential elements incorporated in the model have been explained. Two additional issues are potentially important to forestland owners: installment gifts and gifts of life insurance and the use of life insurance trusts.

Landowners occasionally wish to give property valued substantially higher than the annual exclusion. Such gifts can still be accomplished tax-free by employing an installment gift technique. The donor-taxpayer sells the property to the intended recipient in exchange for promissory notes equal in value to the property. Instead of collecting on the notes, the original owner forgives each note as

it becomes due. The payments are structured to fall within the annual exclusion. Title vests immediately in the recipient. If the donor dies before all the notes are forgiven, only the value of remaining notes is included in the estate. Appreciation of assets like forestland does not affect the estate. The method is not sanctioned by statute, has been challenged by the Internal Revenue Service, and is subject to different Tax Court interpretations, but, if properly structured, may still prove useful to landowners (Mintz and Braddock, 1978). The donor must pay income tax on the interest earned from the notes.

Proceeds of life insurance policies payable to the estate or from policies in which the decedent retained any incidents of ownership are included in the gross estate (2042(1), (2)). A mechanism to avoid inclusion is to establish a life insurance trust. The trust acts as owner and beneficiary of the policies and, because trusts are eligible to receive gifts, the insured may pay the premiums indirectly by making gifts equal to the premium to the trust. If the premiums are less than \$10,000 (\$20,000 with a split gift), the insured pays no gift tax. The model uses this method implicitly to shield life insurance-provided liquidity from estate taxation when the business is unable to purchase the insurance without creating taxable income to the insured.

### 3.2.2 Federal Estate Tax Law

When a U.S. citizen or resident dies, an estate consisting of the individual's property comes into being. It is from this estate that bequests are made to family and charity and from which estate taxes are paid for the right to transfer that property after death. The executor, whether designated by the decedent prior to death or appointed by a court after death, has the responsibility of following the instructions of the will, settling debts, distributing property, and paying estate taxes. The Internal Revenue Code (2001 et

seq.) prescribes the methods for determining the magnitude of those taxes.

The first step in computing estate taxes due is to find the value of the gross estate. The gross estate's value includes the value, at the time of death, of all property held by the decedent (2031(a)). This definition encompasses:

- (1) property in which the decedent had an interest (2033);
- (2) transfers of incomplete gifts, as discussed above (2036(a), 2037(a), 2038);
- (3) value of annuities payable to a beneficiary by reason of surviving the decedent (2039(a));
- (4) one-half of any interest on property held by the decedent and decedent's spouse as tenants of the entirety or joint tenants with right of survivorship but only if they are the only joint tenants (2040);
- (5) powers of appointment (2041);
- (6) proceeds of life insurance payable to the estate or to other beneficiaries if the insured had retained any incidents of ownership (2042);
- (6) the difference between actual and full consideration of any lifetime transfers described in sections 2035 and 2038, and 2041 (2043).

The model is concerned only with (1) and (4) above. Item (6) was discussed in section on federal gift taxes.

Prior to ERTA, the 50-50 division of a tenancy by the entirety was not automatic. The entire value of the interest was included in the decedent's gross estate except for that portion which the surviving spouse (1) could prove having provided the consideration for purchase, (2) originally owned the property, or (3) received the interest by gift or inheritance (2515). Now, with no limit on the gift tax marital deduction or the estate tax marital deduction, includability is no longer an issue.

ERTA repealed 2515 and provides that all tenancies with right of survivorship where husband and wife are the only tenants are split equally between spouses for estate tax purposes (2040).

Valuation of interests included in the gross estate is a major problem in transfer taxation. Usually property is assigned its fair market value at the time of death. For unlisted stocks and securities, the valuation procedure includes comparison with values of exchange listed stocks and securities of corporations engaged in similar businesses (2031(b)).

The executor has the option of valuing the property at the "alternative valuation date" which is either six months after the decedent's death for property still in the estate or the date of disposal if within the six-month period (2032(a)(2), (1)). This could be a valuable option if property such as a closely held business is likely to decline in value significantly due to the owner's death or, in the case of a forestry business, if stumpage prices are declining.

In 1976, in response to severe estate tax problems encountered by farm families, Congress enacted, as part of the Tax Reform Act, special use valuation provisions (O'Sullivan, 1977). Section 2032A allows farm and other closely held business real property to be valued in use rather than at highest and best use. Although woodlands (2032A(e)(4)) are included as a qualified farm activity, eligibility rules and questions as to whether timber is real property for estate tax purposes had severely limited the section's usefulness for forest estates (Carter, 1978). ERTA made sweeping changes in 2032A and clarified the treatment of woodlands.

If the property is used for a qualified use such as tree farming, special use valuation may be used to value the property to be included in the gross estate. Six prerequisites must be met to employ the special valuation:

- (1) The decedent must have been a citizen or resident of the United States at the time of death (2032A(A)(1)(A));

- (2) The value of the qualified real property in the decedent's estate must be at least 50% of the gross estate as determined by highest and best use valuation (2032A(b) (1) (A));
- (3) At least 25% of the adjusted gross estate, valued at highest and best use, must be qualifying real property (2032A(b) (1) (B));
- (4) Real property must pass to a qualified heir, generally a family member, narrowly defined (2032A(3) (7));
- (5) Decedent or member of owner's family must have used the real property for the qualified use for five of eight years prior to the decedent's death (2032A(b) (1) (c));
- (6) There must have been material participation in the operation of the business by the decedent or a member of the decedent's family for five of eight years prior to the earliest of decedent's death, disablement or retirement (2032A(b)).

The reduction in value from highest and best use to current use is limited to \$500,000 (2032A(a) (2)) in 1981, \$700,000 in 1982, and \$750,000 thereafter. The estate taxes saved are subject to recapture if the qualified use is discontinued within 10 years of election (2032A(c) (1)).

The methods for determining the value in use are prescribed by the Code. For farms, one method is the capitalization of the gross cash rental less land taxes for comparable land by the Federal Land Bank loan rate (2032A(e) (7)). Other methods for farms, and for closely held businesses include capitalization of income, assessed land values in states which have a differential or use value assessment law for farmlands or closely held businesses, and comparable sales (2032A(e) (8)).

ERTA amended 2032A with special rules for woodlands. First, the value of the trees growing on the qualified timber real property



are included with the value of forest land to set the value of the qualified real property and are treated as an interest in such qualified real property (2032A(e)(13)). Qualified timber real property is real property used for planting, cultivating, caring for, cutting, or preparing trees for market on an identifiable area for which records are normally kept in conducting these activities (2032A(3)(13)(B)).

ERTA also provides special recapture rules if the qualified heir disposes of any standing timber within ten years. The disposition or severance is treated as a disposition of a portion of the interest in such property and is subject to additional tax (recapture) (2032A(c)(2)(E)). It appears that normal harvesting will trigger recapture of some or all the estate taxes saved by valuing timber in use. Recapture also occurs if the land itself is sold.

The model assumes that value in use is also highest and best use value and that the executor does not elect the alternate valuation date.

Adjustments are made to the gross estate to determine the adjusted gross estate. Administration expenses are deductible (2053(a)(2)). These expenses are for appraisal costs, lawyers' fees, court costs, and other estate settlement purposes. They typically are about 2% to 7% of the gross estate depending on the size and complexity of the estate. Funeral expenses, unpaid mortgages and other claims against the estate are also deductible (2053(a)).

The law now allows an "unlimited" marital deduction from the adjusted gross estate (2056). The actual deduction is limited to the amount of bequest made to the surviving spouse. Prior to January 1, 1982, only the maximum of \$250,000 or 50% of the adjusted gross estate was allowed as the marital deduction.

It is not necessarily advantageous to use the maximum deduction now allowed. The property passed to spouse, assuming it is not dissipated during the survivor's lifetime, will be taxed upon the death

of the survivor. No marital deduction will be available to diminish the estate. However, by utilizing the unified estate and gift tax credit available to the first decedent, direct bequests up to \$600,000 (in 1987) may be made to the children, thereby avoiding repeated taxation in the widow(er)'s estate.

Charitable bequests are also deducted from the adjusted gross estate (2055(a)).

The net result of the computations discussed so far is the taxable estate value. As described in the gift tax section, the value of adjusted taxable gifts is added to the tentative taxable estate to determine the total estate value subject to taxation.

Federal estate tax, before credits are deducted, is found by applying the estate and gift tax rate schedule (2001(c)) to the value of the taxable estate. From that gross amount are subtracted the following credits:

- (1) unified estate and gift tax credit (2010(a)),
- (2) credit for state death taxes (2011),
- (3) taxes paid on lifetime taxable gifts (2001(b)(2)),
- (4) credit for taxes paid on prior transfers (2013),
- (5) credit for foreign death taxes (2014),
- (6) credit for death taxes on remainders (2015).

Only credits (1) to (3) are important for the current model.

The Economic Recovery Tax Act of 1981 raised the unified estate and gift tax credit to \$192,800, effective in 1987. Lower amounts of credit are in force for individuals dying before 1987 (see Table 3.1 for schedule). During life, the unified credit offsets levies on taxable gifts. At death, the full credit is available, but the value of taxable gifts is included in the taxable estate.

Section 2011(a) provides a credit for state death taxes paid up to a limit prescribed by 2011(b). The credit is computed by applying mildly progressive rates (1% to 16%, marginal) to the taxable estate.

Cumulative gift taxes in excess of the unified credit were paid to the Internal Revenue Service. A credit is allowed for all taxes

actually paid for lifetime gifts.

The Code recognizes the extra burden on a decedent's estate which includes property from another decedent who only recently passed away and provides a declining credit for taxes paid on these prior transfers. The credit is equal to the value of the transferred property times the prior tax on that transfer divided by the total value of the current taxable estate (2013(b)). For decedents dying two years before or after the original transferor, the full credit is available. For decedents dying more than two years after the transferor, the credit diminished by 20% every two years (2013(a)).

A sample computation of the federal estate tax due with applicable Code sections in parentheses is given in Table 3.2. Assume an individual who is married at the time of death in 1986 has made no taxable gifts during life, and shares ownership of a forest property held as tenants by the entirety. No mortgage or outside claims exist.

If the decedent were not married, the marital deduction would have been \$0.0. The taxable estate would rise to \$715,934. Gross federal estate tax would then be \$235,696. Subtracting the unified credit of \$192,800 and the 2011 credit of \$21,645 yields a net federal estate tax due of \$21,251.

The total settlement costs in the first example are \$38,944. When the marital deduction is not available, taxes and administration costs rise to \$59,195. In typical forest estates, wealth is timber and timber land; there is very little cash for estate settlement purposes. The executor must make several decisions about the timing of payment and the methods used to provide liquidity.

An estate's executor who can show reasonable cause, may request extensions for paying any tax due. Normally, payment is due nine months after the decedent's death, but a general extension up to one year may be requested. For reasonable cause, extensions up to ten years, renewable annually, are possible (6161(a)(2)). Illiquidity of estate assets is recognized by the IRS as reasonable cause for

Table 3.2 Sample Federal Estate Tax Computation

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Value of forest property	1,317,755
Included in estate (2040)	658,877
Other estate assets	<u>100,000</u>
Total gross estate (2031)	758,878
Less 5% administration expenses (2053(a)(2))	37,944
Less funeral expenses (2053(a)(3))	<u>5,000</u>
Adjusted gross estate	715,935
Less marital deduction (2056)	715,934
Less charitable deduction (2055)	<u>0</u>
Taxable estate (2051)	0
Plus adjusted taxable gifts	<u>0</u>
Total taxable estate	0
Gross federal estate tax (2001(c))	0
Less unified credit (2010(a))	-192,800
Less gift tax paid (2001(b)(2))	- 0
Less state death tax credit (2011)	- 0
Less prior transfer credit (2013)	<u>- 0</u>
Net estate tax due	0

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postponement (Estate Planning Committee, 1978). The current interest rate is 12%, established pursuant to 6621(b). These interest charges are themselves deductible administration expenses (2503(a)(2)). Estate tax liability actually decreases when interest charges are accounted for (Blum and Bienemann, 1980).

If the estate consisting largely of an interest in a closely held business meets certain eligibility rules, only interest on estate taxes need be paid for four years. Then taxes and interest are paid in two to ten installments (6166(a)(3)).

For 6166 purposes, a closely held business may be a sole proprietorship or a partnership or corporation with no more than fifteen partners or shareholders. If the partnership or corporation has more than fifteen owners it may still qualify if 20% or more of the partnership's value or of the corporation's voting stock is includable in the estate. To satisfy these requirements, the Code has liberal provisions for attributing partnership interests or corporate stock held by spouse, siblings, ancestors and lineal descendants to the decedent (6166(b)(2)(D), 267(c)(4)). These other family members need not be counted as separate partners or stockholders. However, if the executor chooses to employ the family attribution rules to meet the tests of 6166 for closely held businesses, the beneficial 4% interest rate (6601(j)) and postponement of initial principal payments for four years (6166(a)(3)) are not available (Zaritsky and Zaritsky, 1979; Kelley, 1975).

If the business interest included in the estate qualifies as a closely held business, its value must exceed 35% of the gross estate (6166(a)(1)(A)) or 50% of the taxable estate (6166(a)(1)(B)). Eligibility may be jeopardized if the estate's gross value has been reduced by applying special use valuation (2032A) (Perkins, 1979; Rosen, 1977).

An advantage of 6166 over the standard postponement (6161) is that the interest charge on the estate tax attributable to the first

\$1,000,000 of qualifying property is statutorily set at 4% (6601(j)). Interest on the balance of deferred tax is computed at the 6621(b) annual rate on outstanding principal.

As was the case with 6161 postponement, resultant interest charges on the 6166 installment payments are deductible administration expenses (2053(a)(2)), thereby lowering the estate tax actually levied. Blum and Bienemann (1980) showed that under pre-ERTA tax law, estate tax savings on a \$5 million gross estate could be more than \$700,000 when interest charges were deducted from the gross estate.

Only that portion of the total federal estate tax attributable to the closely held business is deferred under 6166. The undeferred estate tax, administration expenses and state death taxes must be paid from other sources. Moreover, the estate remains open during the deferral period unless the executor is discharged from his duties by creating a lien on the property and getting all estate beneficiaries to sign a written agreement (6324A) consenting to the lien. Once the estate is closed, property may be distributed to the heirs. The existence of the lien, however, may impair the availability of credit for the survivors. In addition, the estate tax is only deferred. The loan must be repaid with after-tax income. Further problems may arise if the widow(er) dies within the deferral period. Cash flow may be insufficient to cover two 6166 deferrals (Monroe, 1979).

The model developed for this research has the 6166 installment method as an option and treats interest as an administration expense. The undeferred estate tax and other costs are funded by private sector loans.

A second method for obtaining cash for estate settlement purposes is by purchasing life insurance during the lifetime of the insured. The proceeds of life insurance are included in the gross estate if they are payable to the estate or if the decedent possessed any incidents of ownership at the time of death (2042(1),(2)). Incidents of ownership refer to the insured's rights to economic

benefits in the policy. They include rights to change beneficiaries, surrender or cancel the policy, power to pledge the policy for a loan, and a more than five percent reversionary interest in the policy or proceeds. Mere payment of premiums is not an incident of ownership (Cuneo, 1978). A forest owner's life insurance program can be structured so that the proceeds are excluded from the gross estate. If the insured has none of the incidents of ownership and the proceeds are payable to beneficiaries other than the insured's estate and the beneficiaries are not obligated to use the proceeds for settling the estate, then the proceeds are not includable (Cuneo, 1978). Irrevocable insurance trusts are potential owners. The insured may gift money to the trust which it uses to pay premiums.

Immediate timber capital liquidation is a third means of providing liquidity. Selling timber, however, is a taxable event. Regardless of business structure, yield taxes must be paid on the value of the harvested timber, raising total liquidity needs. In certain business structures, federal and state income taxes will also be due.

For sole proprietorships, the immediate liquidation of timber at the time of death will not result in income tax liability. This is because the cost basis of the timber is stepped up to fair market value at the time of death or at the alternative valuation date (2032)(1014(a)). The gross revenue is offset completely by depletion, leaving no taxable gain. In the case of partnerships, corporations, and Subchapter S corporations, the cost basis step up is in the value of the business interest held by the partner or stockowner. The timber cost basis is unchanged, hence, there will be a taxable gain when timber is liquidated. A more complete discussion of these tax consequences is found in Chapter 4.

Two other methods are available to raise money for estate settlement purposes. Each of these has serious drawbacks and are not incorporated in the model. Savings is one method. Its disadvantages

were outlined in Chapter 2 (Sutherland and Tedder, 1979). The second method is the use of so-called flower bonds. Flower bonds are certain qualified U.S. Treasury bonds which are redeemed at face value but only their discounted market value is included in the estate. The difference is not taxed and is used to pay estate tax liabilities. Among the disadvantages of flower bonds are the severe restrictions imposed by the U.S. Treasury Department and that their "profitability" diminishes rapidly. Only individuals with short life expectancies and high marginal tax rates gain any advantage (Trapp and McKay, 1975).

### 3.3 Timber Taxation

Timber taxation issues relevant to the current modeling effort can be divided into two parts, the taxation of income from timber sales and the taxation of timber property, i.e., yield and severance taxes. Only an overview is provided; more detailed information is available from sources listed in the bibliography.

#### 3.3.1 Timber income taxation

Timber income is, if certain requirements are met, qualified for tax treatment as long-term capital gains. Section 1221 permits gains on sales of property held for investment purposes to be taxed under the highly favorable capital gains provisions. Also, capital gains treatment is available for sales of property used in a trade or business which is not held primarily for sales to customers in the ordinary course of business (1231). For example, a landowner in the turpentine production may claim capital gains treatment for income received from sales of trees no longer useful for such production (Whittle, 1969). Timber disposed of under 1221 or 1231 has always been eligible for capital gains. It was these sections which created the incentives to "cut and run" and which lead to adoption of special provisions to encourage forest management as discussed in



Chapter 1. Since 1944, taxpayers who make regular timber sales and derive most of their income from timber can qualify for long-term capital gains through application of either sections 631(a) or (631(b)).

Section 631(a) permits capital gains treatment of income for timberland owners who cut their own timber for sale or for use in their businesses. The difference between fair market value on the first day of the tax year in which the timber is cut and the adjusted cost basis for depletion (see below) of the harvested timber is taxed as a long-term capital gain. The timber must be held for twelve months to qualify.

Determining fair market value is complex and subject to much litigation. Generally, four principal factors are considered:

- (1) Character and quality of timber as determined by species, age, size, and condition.
- (2) Quantity of timber per acre, the total quantity under consideration, and the location of the timber with reference to other timber.
- (3) Accessibility of the timber as it affects the cost of exploitation.
- (4) The freight rates by common carrier to important markets (McCobb, 1980).

Timber must be valued on its own merits and not with reference to area averages, however, values must be consistent with that of other timber in the vicinity (McCobb, 1980). Frequently, sales from government lands are used to establish market values. Any amount in excess of fair market value is taxed as ordinary income. Section 631(a) is more useful to integrated forest products firms than to small nonindustrial private forest owners.

Nonindustrial owners making regular timber sales who have held the timber for more than 12 months and sell it by contract in which they retain economic interests in the timber may treat the difference between the amount realized and the adjusted cost basis for depletion as long-term capital gains (631(b)). The adjusted basis

is determined under provisions of section 611.

Taxpayers often encounter two problems in selling timber under 631(b). First, there must be a binding contract between buyer and seller which clearly identifies the timber to be cut and which may not be terminated unilaterally. Second, the taxpayer must retain economic interests in the timber. Generally, this means the taxpayer keeps title to the timber until after the logs are cut, measured and paid for on the basis of the measurements (Whittle, 1969). The current model assumes timber income qualifies for long-term capital gains treatment under 631(b).

When a taxpayer acquires timber land, the purchase price (or market value for inherited property) must be allocated among land, merchantable timber, nonmerchantable timber, and improvements. These allocations become the cost basis of each item. Merchantable timber's cost basis is recovered through sale of timber which depletes the basis. The cost basis is adjusted repeatedly to reflect previous sales, ingrowth from nonmerchantable age classes, and growth in merchantable timber. The adjusted basis of the merchantable timber is divided by merchantable volume to obtain depletion per unit of volume harvested.

Certain forest operation costs are deductible from current ordinary income. These include management fees and land taxes. Other costs, such as reforestation expenditures are entered in the capital account and recovered through depletion. Considerable debate has centered on which costs may be expensed and which must be capitalized. Public Law 96-451 provides new tax incentives for reforestation. Up to \$10,000 of reforestation costs are eligible for a ten percent investment tax credit and a seven-year amortization. The amortization is phased in, allowing 1/14th of the eligible amount in the first year, 1/7th during years two through seven, and 1/14th in year eight (FICTVT, 1981). Annual reforestation costs in excess of \$10,000 must be capitalized.

An example adapted from Hoover (1978) will clarify the above discussion and provide a foundation for actual tax calculations.

Timber Volume (MBF)		Timber Value(\$)	
Preceding year's volume	1080	Preceding year's basis	\$90,000
Growth	+ 325		
Transfer from non- merchantable account	+ 315	Transfer from non- merchantable account	\$ 4,000
Adjusted volume	1720	Adjusted basis	\$94,000

$$\text{Depletion unit} = \$94,000/1720 = \$54.65/\text{MBF}$$

Sale	- 450	Depletion taken	\$24,593
End of year	1270	End of year	\$69,407

If timber sold for \$110 per thousand board feet then gross revenue is \$49,500. Cost of sale preparation, Oregon yield and severance taxes (O.R.S. 321.257, 321.005, respectively) are subtracted from gross revenue to obtain the amount realized. The depletion is the volume removed times the depletion unit and is subtracted from the amount realized to obtain the capital gain:

Income: \$110/MBF x 450 MBF	\$49,500
Sale preparation costs	- 1,000
Yield tax @ 6.5%	- 3,218
Severance tax @ \$.29/MBF	- 131
Amount realized	\$45,151
Depletion: 450 MBF x 54.65	-24,593
Capital gain	\$20,558

The amount of capital gain which is taxable depends on the business structure. For individuals, the taxable gain is 40% of the net long-term capital gain. Hence, the maximum tax rate on long-term

capital gains is 20% (40% x 50% top marginal rate). For corporations, there is no reduction of capital gains to obtain taxable gains. The top corporate tax rate for long-term capital gains is 28% (1201).

The untaxed portion of long-term capital gains from timber is considered a tax preference item and is subject to minimum taxes at the state and federal level (O.R.S. 316.037-2; I.R.C. 55 et seq.).

Taxpayers other than corporations may elect the alternative minimum tax (55). To determine the tax, an alternative taxable income is computed and taxed at rates specified in section 55(a). The actual tax imposed is the excess of the tax calculated under 55(a) over the regular tax computed without regard to the minimum tax. Minimum tax for corporations is calculated under provisions of sections 56 and 57 (see section 4.4.2).

A final note on timber taxation concerns the step up in cost basis at the time of an owner's death. When an individual dies, the cost basis of the assets in the estate are stepped up to the value at the time of death (1014). The gain from the original cost basis is never taxed. Heirs then have a higher basis to deplete in subsequent timber sales.

### 3.3.2 Forest Property Taxation

The model incorporates two features of Oregon forest property taxation, the yield tax (O.R.S. 321.257) and the severance tax (O.R.S. 321.005).

The yield tax is a state excise tax on stumpage income generated at the time of harvest. The current rate is 6.5%. In addition, local jurisdictions levy an annual property tax on the state-assessed value of the forest land, itself, exclusive of timber.

The true severance tax in Oregon is the forest products harvest tax. The current rate is \$0.29 per thousand board feet of harvested timber.

## CHAPTER 4

## BUSINESS ORGANIZATION FORM

4.1 Introduction

Selecting a structure for operating a forest business involves tax and non-tax considerations. Non-tax reasons include ease of operation, transferability of ownership and management responsibility, limitations on liability, and retention of control. However, in ventures owned by small numbers of individuals, tax issues are crucial (Sommerfeld, 1978). Preferred characteristics of business structures are the capabilities to make investments, retain special income characteristics and tax deductions for owners, and allow for reducing burdens of the business' owners through tax-free benefits.

Because investments are made with after-tax dollars, marginal tax rates applied to income determine investment levels. Individual marginal rates, effective after 1983, range from 11% to 50% (1(a)(3)); corporate rates vary from 20% to 46% depending on amount and character of income (11(b), 1201(a)). Choice of business structure, therefore, depends on the aggregate income of each owner.

A second desirable feature is the capability to act as a conduit of special kinds of income. For example, sole proprietorships, partnerships, certain trusts, and, to some extent, Subchapter S corporations pass long-term capital gains through to individual taxpayers without changing the tax character of the gain. A regular corporation would pass that same income as dividends, to be taxed as ordinary income. Sommerfeld (1978) argued that whenever a business earns significant amounts of tax favored income, the preferred structure is one the tax law treats as a conduit rather than as a separate tax-paying entity. Similar reasoning holds for net operating losses so that individuals may take maximum advantage of losses on their personal returns.

Business structures which allow owners to be employees are also useful. Many tax-free benefits and a regular salary can be provided by corporate structures. All business income can be exhausted in salaries, benefits, and investments so that the owners do not receive corporate dividends, thereby avoiding double taxation (Sommerfeld, 1978).

With these considerations in mind, I now turn to examination of five alternative business structures: sole proprietorship, partnership, corporation, Subchapter S corporation, and trust.

## 4.2 Sole Proprietorship

### 4.2.1 Structure

A sole proprietorship is an unincorporated business, owned and directed by one individual. It is not a legal entity, but a personal asset of the owner allocated to the operation of a business (Steinberg and Monroe, 1957). In this case, the forest is the asset committed to the business.

The forest itself may be owned completely by one individual or jointly with others. The former ownership is called fee simple and affords the owner the greatest bundle of rights, subject to societal limitations. The owner receives all income, pays all taxes and is liable for all debts.

The most important feature which distinguishes the forms of joint ownership is the right of survivorship. The right of survivorship means that at an owner's death, the surviving owner(s) takes title to the entire asset, by operation of law, to the exclusion of the decedent's heirs (Gutschewski, 1979). Three general types of joint ownership exist:

- (1) Joint tenancy with right of survivorship where two or more individuals own undivided interests and which may be ended unilaterally.

- (2) Tenancy by the entirety where husband and wife own undivided interests, with right of survivorship. The tenancy may be terminated only by the spouses' joint action. Some states limit this form to real property while other states do not recognize this type of ownership.
- (3) Tenancy in common where two or more persons own fractional interests in property, "each having the right to occupy the whole in common with his cotenants but without the right of survivorship" (Gutschewski, 1979).

#### 4.2.2 Income taxation

For proprietorships with fee simple ownership of assets, income taxation is relatively simple. Gains and losses, income and expenses are reported on the individual's tax return. Most importantly, long-term timber capital gains retains its character when "passed" from business to individual, affording the owner-operator great tax savings.

Income, real estate taxes, mortgage interest, and public assessments related to jointly held property are allocated to each tenant in proportion to their property interest. Other expenses, however, are reported by the joint tenant who paid them. The situation is very similar to a general partnership in that owners are responsible for reporting the above items on their individual tax returns (Cheifetz, 1977). As was the case with fee ownership, timber income retains its character as long-term capital gains when reported on the individual returns. The business itself is not a taxpaying entity.

#### 4.2.3 Estate taxation

At the sole proprietor's death, the proprietorship itself is essentially ended. Unless specifically authorized by court or by the decedent's will, an estate executor who continues to operate the business does so at his own risk (Steinberg and Monroe, 1957).



Whether authorized to operate or not, the executor and heirs must make decisions as to whether the business will be continued, under whose control, and in what form. Because of the sweeping changes enacted in ERTA, business interests can pass tax free to a surviving spouse. Federal estate issues, therefore, are insignificant for the first spouse's death compared to the more weighty concerns of operating or liquidating the business.

The ownership form determines how much of the business' value is included in the decedent's gross estate. If forest property is owned fee simple, its entire value is included. For tenancies by the entirety and joint tenants with rights of survivorship in which husband and wife are the only tenants, 50% of the forest's value is included in the estate (2040(a),(b)). For tenants in common, only the value of the decedent's fractional interest is included in the gross estate.

A problem with any closely held business such as a proprietorship is determining its value. Often the value is highly dependent on the active participation of the owner. At his or her death, good will, managerial skill, and credit ratings diminish. Decreased value may save estate taxes, but in the event of liquidation, heirs may also receive substantially less than the owner had planned.

Once estate taxes and administration expenses have been determined, the executor of the sole proprietor's estate must raise cash to meet these liabilities. Three funding techniques were introduced in section 3.2.2

If the executor elects to immediately liquidate timber capital, sufficient timber must be harvested to meet estate taxes and administration expenses as well as additional yield and severance taxes (O.R.S. 321.257, 321.005) occasioned by cutting timber. Because the cost basis of the timber held by the estate is stepped up to market value at the time of death or alternative valuation date, timber income will be exactly offset by depletion (611), resulting in no

federal or state income tax liability.

Should the executor elect to defer payments under 6166, estate tax liability must be adjusted downward to reflect inclusion of the 6166 interest charges as a deductible estate administration expense (Blum and Bienemann, 1980). Of course, the 6166 loan does not cover administration expenses or state death taxes. Those costs must be met with private sector funds. Interest assessments on those loans are deductible on the income tax returns of the individuals who borrowed the money.

The third technique is the use of life insurance proceeds. The premiums per thousand dollars of coverage depend on the insured's age at the time the policy is issued. The total premium is paid with after-tax dollars.

#### 4.2.4 Property rights transfer

Transfer of property rights in the sole proprietor's forest is fairly difficult. In the case of fee simple ownership by one spouse, shifting to any joint ownership or giving complete ownership to the second spouse can be accomplished free of any federal gift tax (2523(a)). Other heirs can also be included by creating joint tenancies with right of survivorship or tenancies in common through gifts, sales, or exchanges. However, each time the ownership interests change, new deeds must be drafted, signed and recorded. And, the multiplicity of owners ends the sole proprietorship.

#### 4.2.5 Advantages and disadvantages

There are distinct advantages and disadvantages in operating a forest business as a sole proprietorship and in owning a forest jointly.

The sole proprietor enjoys virtually absolute control in business decision making. Moreover, no special tax returns need to be filed, other than for business expenses and capital gains and there

is no double taxation. Income, losses, expenses all retain their original character when reported on the proprietor's individual tax return. As noted above, this is especially important for forest owners whose income consists largely of capital gains.

Sole proprietorships are, however, exposed to maximum liability for debts, torts, and civil suits. The owner's personal assets can be reached to settle business liabilities, and vice versa. In fact, creditors of the owner's spouse may attack the business assets (Steinberg and Monroe, 1957). If the business is very successful, all the income will be taxed to the owner-operator. Few mechanisms exist to spread income among family members which would lower the effective tax. Finally, as discussed above, the executor and heirs of a sole proprietor's estate must decide whether to operate or liquidate the business at the owner's death.

Many married couples own their forest property jointly, although only one spouse may actually operate the business. Joint ownership is the most popular ownership form, although estate practitioners discourage its use (Kess and Westlin, 1979; Maxfield, 1980). Their popularity stems primarily from the certainty of the passage of title upon the first spouse's death. For tenancies by the entirety or for joint tenancies with right of survivorship with only husband and wife as joint tenants, title automatically vests in the surviving spouse; no probate proceedings are required (Osborne, 1980).

In addition to avoiding probate costs and the accompanying delays and publicity, holding marital property jointly has other advantages. For example, half of the property may be excluded from the first estate for federal estate tax purposes (2040(a)). Marital joint property enjoys preferential treatment under many states' death tax laws, and from creditors. Moreover, joint ownership involves both spouses in the management of assets and reinforces family harmony (Wenig, 1977).

Although the new federal estate tax law eliminates estate tax

problems for jointly owned marital property, numerous perils still remain. Spouses with jointly held property may feel that joint ownership eliminates the need for a will. However, the survivor must plan for the property's disposition at his or her death. Since the order of death is not known, each spouse must have a will (Wenig, 1977). The valuation date for estate tax purposes of the interest held by the first decedent spouse is the date of death. The alternative valuation date is not available (Wenig, 1977). Moreover, the entire interest is then held by the survivor and will be heavily taxed at death. Joint ownership also eliminates the estate as a separate income tax paying entity, with its own exemptions and rates. Tax-saving benefits of spreading income between estate and surviving spouse are lost (Wenig, 1977).

#### 4.3 Partnerships

##### 4.3.1 Structure

"A partnership is an association of two or more competent persons to carry on as co-owners, some lawful business for their joint profit" (Steinberg and Monroe, 1957). For federal income tax purposes, partnerships include syndicates, groups, pools, joint ventures, or other unincorporated organizations by which business is conducted (761(a), 770(a)(2)). An entity classified as a partnership under state law is not necessarily a partnership for federal tax purposes. Many problems arise in making the distinction between partnerships and corporations and between partnerships and the relationship of two individuals who may be employer-employee, or mere co-owners of property. Co-ownership of property for personal use or passive investment is not a partnership. The most important factor in determining whether a partnership exists is the participants' intent to join together to operate a business. Four characteristics of the requisite intent are:

- (1) agreement that a joint venture be formed,
- (2) agreement to share profits,
- (3) intent to jointly earn and distribute profits,
- (4) existence of a joint proprietorship in which each proprietary interest is acquired by contribution of money, property or services by the participants (Kahn and Gann, 1979).

When individuals create partnerships, they contribute money, property, and services in return for partnership interests. Family partnerships formed by forest owners typically involve contribution of forest property. Such contributions in exchange for partnership interests are not taxable events (721(a)).

The partnership's cost basis in donated forest property is the transferor's adjusted basis at time of transfer (723). Because the basis is carried over, the partnership's qualifying holding period for long-term capital gains is reduced by the time the property was held by the original owner. Each partner's initial basis in the partnership is the sum of the amount of money transferred, the adjusted basis of property transferred, and any gain recognized by the partner as a result of the transfer (722). These provisions also apply to subsequent transfers to the partnership (Kahn and Gann, 1979).

Each partner is deemed to share in the partnership's liabilities. Thus, if a partner contributes property subject to some liability, the contributing partner decreases his basis to the extent liability is allocated to other partners, while their bases are increased to the extent liability is allocated to them (752(a)).

Each partner's basis in the partnership is subsequently adjusted under provisions of either 705(a) or 705(b). Under 705(a), the initial basis is increased by the partner's distributive share of taxable income and tax-exempt income of the partnership and decreased

by (1) the amount of money distributed to the partner, and the adjusted basis of the partner in property distributed to the partner by the partnership and (2) the partner's share of losses and non-deductible expenditures of the partnership not charged to capital accounts (Kahn and Gann, 1979). This is a very complex procedure when done annually. The Code provides an alternative cost basis adjustment. The partner's basis in the partnership may be the proportionate share of the partnership's adjusted basis in its assets (705(b)). The share is the percentage of assets a partner would receive if the partnership terminated.

Partnership formation expenses are not deductible by either partnership or partners (709(a)). Certain organizational expenses may be amortized over a period greater than 60 months (709(b)).

The two classes of partnerships are general and limited partnerships. Most partnerships are of the former type.

In a general partnership, each partner is active in the business, has authority to act for the firm, thereby binding other partners to actions taken, and has unlimited personal liability for partnership debts (Steinberg and Monroe, 1957; Raby, 1975). In a limited partnership at least one partner is a general partner responsible for management and decision making and at least one partner is a limited partner. A limited partner may not be involved in the firm's management and operation, therefore his liability for partnership debts is restricted to partnership assets. A limited partnership requires a written agreement and state certification (Schriebman, 1976; Steinberg and Monroe, 1957).

These distinctions are not as clear as the simple definitions imply. Actually, for tax purposes, there is little difference between the two classes. Problems may arise, however, if an individual changes status within the partnership (Banoff, 1979).

Partnerships terminate for reasons of death, insanity, retirement, or withdrawal of a partner. Profits and losses are shared

equally among partners or in some agreed manner as long as the allocation's purpose is not tax evasion (O'Byrne, 1970; Raby, 1975).

It is precisely this concern about tax evasion which causes the IRS to carefully examine family partnerships, which may be mere tax dodges rather than legitimate partnerships.

Family partnerships offer substantial income and estate tax savings if created and operated as bona fide partnerships and not merely as tax evasion vehicles. Because income is distributed among partners and taxed at lower marginal rates than if income had accrued to an individual, family partnerships may be abused and, thus, are closely scrutinized by the IRS. In fact, the Service can annually test the validity of family partnerships (O'Byrne, 1970; Perkins, 1980; Prentice-Hall, 1980).

Family partnerships in forest enterprises can be created by either gifting timber and timberland to spouse or children and having the donee contribute the capital in return for a partnership interest or by gifting a partnership interest directly. A family member who actually owns capital in a partnership in which capital is a material income-producing factor is generally considered a partner whether the interest was received by way of gift or purchase (704(3)). If personal services are the firm's primary means of producing income a family member will be recognized as a partner only to the extent he or she renders services (Perkins, 1980).

If family members are truly partners, division of earnings according to the partnership agreement will usually be accepted by the IRS. The Service may reallocate earnings if a partnership interest was created by gift or sale by one family member to another and, under the agreement (1) donee-partner's share is determined without reasonable compensation for services by the donor or (2) the amount allocated to the capital gift is disproportionately greater than that allocated to donor's capital (Prentice-Hall, 1980).

It is important the donor of forest capital not retain too much

control over the transferred property, otherwise the donor will continue to be recognized as the owner for tax purposes. Income would continue to be taxed to the donor and the transferred property would be included in the donor's estate (2036) (Schriebman, 1976; Prentice-Hall, 1980).

The IRS looks to the firm's everyday operation to determine the degree of control retained by donors. To avoid conflicts with the IRS over retention of control in a family partnership, the donee must be permitted management and control commensurate with donee's capital interest. Control refers to the individual's rights with respect to interests in the partnership. The family member donee may not be more restricted than unrelated partners and the retained control must be for legitimate business purposes to avoid inclusion in donor's estate under section 2036. For example, buy and sell agreements are legitimate business control. In addition, donor should avoid using distributions to donee-partner to meet parental obligations and avoid transferring more than minority interests (Schriebman, 1976; Stukenberg, 1979).

#### 4.3.2 Income taxation

Taxation of partnerships and partners is covered under Code sections 701-704, 706, and 707. The partnership itself is not a tax-paying entity although for purposes of calculating taxable income it is treated as such (703). Once calculations are complete, the tax laws view the partnership as a multiple proprietorship in which each partner reports his share of income, losses, deductions, and credits (704) (Raby, 1975). The partnership, then, is a conduit of income and other tax items, passing these items from firm to partners. The partnership is required to file an informational tax return (6031). Items subject to limitation or special treatment and dependent on other items in a partner's return are excluded from partnership income and allocated separately to partners.



In general, partnership "taxable income" is calculated in much the same manner as for individuals, except that items specified in 702(a) must be reported separately and no deductions are allowed for the following items determined under the cited sections:

- |                               |           |
|-------------------------------|-----------|
| (1) the standard deduction    | (141)     |
| (2) personal exemptions       | (151)     |
| (3) foreign taxes             | (164(a))  |
| (4) charitable contributions  | (170)     |
| (5) net operating losses      | (172)     |
| (6) other itemized deductions | (212-218) |
| (7) oil and gas depletion     | (611)     |

(703(a)).

Separate accounting is required for partner distributive shares of the partnership's short- and long-term capital gains and losses and other items specified in (702(a)). The character of income, gain, loss, or credit included in the partner's distributive share under 702(a) remains the same as if realized or incurred directly by the partner (702(b)) (Raby, 1975; McCarthy, 1974; Prentice-Hall, 1980).

The distribution of taxable income, losses, gains, deductions, and credits is governed by the partnership agreement. If the agreement is silent about the allocation of specific items, then the distributive shares are proportional to each partner's interest in the partnership (Prentice-Hall, 1980).

Each partner reports his share of each separable item on his individual tax return, combining partnership items with like items from other sources. For example, long-term capital gains from the forest partnership are added to similar gains from other enterprises. The individual's 60% capital gains deduction is then taken from the total net long-term capital gain. A partner may not deduct any part of his share of partnership net operating losses (172) in

excess of his basis in his partnership interest (O'Bryne, 1970; Prentice-Hall, 1980).

#### 4.3.3 Estate taxation

When a partner dies, a chain of legal events occurs if no provisions to continue the business had been made by the partners when all were alive. Basically, the partnership automatically dissolves. Surviving partners have responsibility for liquidating the business and paying all debts. The net proceeds are distributed among the partners according to their proportionate interest. Lifetime options to provide for continuing the business include purchase of the decedent's interest by surviving partners or authorization for the estate's executor to continue the interest indefinitely or for a fixed period or to become a limited partner (Steinberg and Monroe, 1957).

The value included in the decedent's gross estate is the value at the time of death (or alternate valuation date) of the decedent's interest in the partnership (2031(a)). As with any closely held business, establishing an interest's value in a partnership, especially a family partnership, is quite complex. Two special estate planning tools established prior to death make the problem easier to solve: the buy and sell agreement and the partnership capital freeze.

A buy and sell agreement is one in which a partner directs his estate to agree to sell and the surviving partners agree to buy the decedent's interest in the partnership at some fixed price. The fixed price must be full and adequate consideration at the time of agreement, something which may be difficult to prove if the partner's death occurs many years afterward. The agreement can be designed to prevent disruption of an on-going business and accomplish personal objectives without unfavorable tax consequences (Hoffman, 1965).

The second method is the use of multi-class partnerships to freeze the capital value of certain partners' interest in the firm

(Abbin, 1980a, 1980b; Clatterbuck, 1980). The partnership freeze is the creation of a new or restructuring of an existing partnership into at least two classes of partnership interests. A regular partnership interest is similar to those discussed above where each partner receives distributive shares of income, losses, and other items. A frozen partnership interest has a fixed liquidation value and a preferred income position (704(a), 707(c)). These two types may exist in general or limited partnerships. The frozen interest has a ceiling on its capital rights, by partnership agreement. This freezing of partnership capital asset value aids in establishing value for estate tax purposes. Owners of frozen interests can still retain control, but business appreciation goes to regular interest partners. In family partnerships, parents would hold frozen interest thereby maintaining income security and freezing asset value for soon-to-be settled estates. Asset appreciation accrues to younger family members holding regular interests (Abbin, 1980a; Clatterbuck, 1980).

Once the value of the decedent's partnership interest has been determined and the estate tax liability calculated, the estate executor must raise enough cash to pay federal and state death taxes and cover administration expenses. The three methods for generating liquidity analyzed in this research are intimately tied to what the law requires when a partner dies if the surviving partners wish to continue the business.

In a forest-based family partnership, the partnership owns the forest. For this research, the forest is assumed to be the sole asset capable of providing the necessary cash to settle the estate. The issue, then, is how to transfer some of this wealth from the partnership to the estate and heirs to meet those liabilities.

When a partner dies, one of four things can happen:

- (1) The partnership dissolves and the assets are distributed according to a pre-arranged plan,

- (2) The decedent partner's interest is purchased from his or her estate or designated successor,
- (3) The estate and/or successor receives an amount in liquidation of the decedent's interest,
- (4) The decedent's estate or successor continues as a partner (Abbin, 1975).

Only options (2), (3), and (4) allow for continuation of the family partnership in the forest business. With the purchase options, one must consider whether the purchase will be an entity or cross purchase.

Most often, the decedent's partnership interest is acquired on an entity basis by the partnership. Liquidation of a capital interest is a non-deductible capital payment by the partnership (736(b)). If an amount is specifically identified in the partnership agreement as payment for good will, it, too, is treated as a capital payment (736(b)(2)(B)) (Abbin, 1975). Because the partnership interest's basis is stepped up to the date of death value, payments for the capital interest will result in little or no capital gain or loss for the estate or heirs. Other distributions such as for unspecified good will are treated as distributive shares of partnership income and taxed as ordinary income to the estate or heirs. And, because there is no basis step-up for these items, the distribution is not tax free. However, such payments are deductible from partnership income and therefore reduce income that would otherwise be taxed to the surviving partners. Thus, a trade-off exists between tax-free dollars to the estate for a capital transaction and reduced tax bills for surviving partners for an ordinary income transaction (O'Bryne, 1970; Abbin, 1975).

For a cross purchase agreement, the effects are the same as for the sale of any partnership interest. The decedent's estate has a stepped-up basis, the fair market value of the interest as reported

for estate tax purposes. Therefore, if it is sold to the surviving partners, there will be little or no capital gain or loss taxed to the estate (O'Bryne, 1970).

Where there are no ethical barriers to a non-professional becoming a partner (such as exist in law and medical practices (Abbin, 1975)) the estate or successors in interest may replace the decedent in the partnership. The new partner receives a new basis in partnership interest, but no cash is generated for estate settlement purposes (O'Bryne, 1970).

Given the means of providing cash without dissolving the partnership, I now examine how entity or cross purchase arrangements mesh with the three available funding methods, insurance, immediate timber liquidation and timber secured loans.

Life insurance is one method of providing funds, but because premiums are paid with after-tax dollars, it may be financially prohibitive to obtain adequate coverage (Abbin, 1975). At death, the surviving partners or partnership collects the life insurance proceeds. They are used to acquire the decedent's capital interest and pay for specified good will. The estate receives essentially tax-free dollars because it is the decedent's interest in the partnership and not the partnership's timber assets which receives a stepped-up basis. The capital purchase is not deductible by the partnership.

In the current model, life insurance is purchased with after-tax dollars by the partnership. The proceeds are used in an entity purchase of enough of the decedent's capital interest to settle all estate costs. The balance of the interest is held by other family partners as successors-in-interest.

A second way for the partnership to fund an entity purchase is to immediately harvest timber capital. The partners will incur additional federal and state income taxes because there is no basis step up for timber and they will also be liable for yield and severance taxes. The net proceeds can be used to purchase the capital.

interest. This is a non-deductible capital transaction for the partnership. The estate will receive the cash virtually tax free due to the basis step up of the partnership interest. In the model, all estate costs including additional income and forest taxes are reflected in inventories adjusted for timber capital liquidation.

The third means for the partnership to provide cash is through regular timber harvests, distributing income, gains and other items according to the partnership agreement to surviving family partners. These partners can then personally meet the estate settlement costs on an installment basis by borrowing from the federal government under section 6166 and from private sources. The interest on 6166 loans is deductible as estate administration expenses and lowers the estate tax liability. The interest on the private loan is deductible, pro rata, by the partners on their personal tax return. The decedent's interest is continued by the heirs without purchase or liquidation.

#### 4.3.4 Property rights transfer

Property rights to the forest are vested in the partnership. Partnership interests held by individuals, whether in general or limited partnerships, are "freely transferable and do provide a useful gift vehicle, where appropriate" (Kirby, 1976). As mentioned above, it is important the donor not retain too much control over the transferred interest, otherwise, income will be taxed to the donor and the value of the interest will be included in the donor's estate.

#### 4.3.5 Advantages and disadvantages

The chief advantage of partnerships are their extremely flexible legal and tax structure. Except when the purpose of the partnership agreement is tax evasion, whatever the partners agree to is controlling for tax purposes (Clatterbuck, 1980; Abbin, 1975).

The family partnership structure allows income from the family business to be shifted away from high tax bracket to low tax bracket family members (Perkins, 1980).

A family partner can transfer business assets to spouse and children, removing appreciation from his or her estate without giving up operational control over the firm (Perkins, 1980).

Because the partnership does not pay taxes, double taxation problems of the corporate structure are eliminated. In the case of timberland where it is important to protect the capital gains status of timber income, the conduit aspects of family partnerships are critically important (Abbin, 1980b).

The partnership structure also allows for continuing the business and for providing greater benefits to partners and heirs through payments for good will or income participation agreements (Abbin, 1975). And, as discussed above, use of multi-class partnership capital value freezing techniques offers estate tax savings.

There are disadvantages to partnerships as well. A general partnership between parent and children may result in unacceptable loss of control since any partner may act for the firm or dissolve the partnership. Section 704(3) rules concerning family partnerships and income distribution may make desirable distribution arrangements questionable from IRS's viewpoint. In addition, the estate administration of a general partner's interest involves complex and difficult tax, accounting, and asset distribution problems (Kelley, 1977).

#### 4.4 Corporations

##### 4.4.1 Structure

A corporation is an artificial person created under state law for a particular purpose (Steinberg and Monroe, 1957). Business organizations classified as corporations for business purposes may not be corporations for tax purposes. Similarly, unincorporated

businesses may be treated as corporations by the IRS. IRS regulations prescribe six characteristics for classification as a corporation: associates, objectives to carry on business, continuity of life, centralization of management, liability for corporate debts limited to corporate property, and freely transferable interests (McCarthy, 1974; Kahn and Gann, 1979). The last four characteristics distinguish corporations from partnerships (Raby, 1975).

A corporation may be public or closely held. The stock of a public corporation is traded openly. In close corporations stock is not traded openly but is owned by relatively few individuals, who are usually active in the business as officers or employees (Steinberg and Monroe, 1957). Forest owners who incorporate their forest business will, except in extraordinary circumstances, form close corporations. The discussion here is limited to close corporations and, in section 4.5, to a variation of the close corporation, a Subchapter S corporation. It is assumed the owners are establishing a new corporation, thereby avoiding the tax complications associated with transferring assets to an existing corporation.

Owners can transfer their forest assets to the corporation tax free if they receive in exchange only corporate stock and securities and if, immediately after the exchange, they are in control of corporation (351). Control means ownership of at least 80% of the total voting stock and at least 80% of all other classes of the corporation's stock (368 (c)). If the transferrer receives money or property in addition to stock or securities, he or she will have a gain equal to the amount of cash received plus the fair market value of the property (351(b)(1)). The tax-free exchange will also be lost if the corporation assumes liabilities greater than the basis of transferred assets. The excess is a taxable gain (357) (Kirby, 1976).

The corporation's basis in the property received is equal to the adjusted basis of the property when held by the stockholder



(362(a)). The transferor's basis in stock or securities received in a 351 exchange is equal to the basis of the property just transferred to the corporation increased by any income realized on the exchange and decreased by the amounts of "boot" (cash and other property) received from and liabilities assumed by the corporation (358) (Kahn and Gann, 1979).

The stockholders must elect a board of directors, who, in turn, appoint officers to run the corporation. In close corporations, stockholders, directors, officers, and employees are frequently the same people. As a legal constituted body, a corporation must follow rules for bookkeeping, for conducting meetings and for recording minutes of those meetings. At the end of the tax year, the corporation, as a tax-paying entity, files an income tax return and pays dividends to stockholders or perhaps retains some profit for business purposes such as investment.

#### 4.4.2 Income taxation

Calculating corporate taxable income in the context of a small forestry enterprise is radically different from that for an individual. Although it is a person for legal purposes, the corporation, in computing its taxable income under section 63, does not use the standard deduction (141) or personal exemption (151), nor does it receive the 60% deduction for long-term capital gains available to individuals (1202). It may deduct business expenses such as salaries and management fees (162), property taxes (164) and net operating losses (172). It may also amortize reforestation expenses as discussed in section 3.3.1. There are also several special deductions for corporations provided under sections 241 to 250, but only section 248 regarding organizational expenditures is likely to be relevant to closely held forestry corporations. Those expenses incurred in creating the corporation which are chargeable to the capital account may be amortized over a period greater than 60 months (248).

No deduction is allowed for life insurance premiums on policies covering the life of any employee or officer when the corporation is directly or indirectly the policies' beneficiary (264(a)(7)).

Corporate taxable income is subject to progressive tax rates of 17 to 46 percent (11(b)). Corporations with large amounts of long-term capital gains may elect to be taxed under the alternate corporate tax (1201). The alternate system taxes long-term capital gains at a flat rate of 28% but applies the regular rates specified in section 11 to all other income.

Long-term capital gains is a tax preference item (57(a)(9)(B)) and subject to a minimum tax, with special provisions for corporations which harvest timber. For corporations in general, the capital gains tax preference item is the product of net capital gains multiplied by a fraction equal to .3913. That fraction is determined by subtracting the rate specified in 1201(a) (28%) from the highest rate specified in 11(b), (46%), and dividing the result by the 11(b) rate (57(a)(9)(b)); i.e.,  $(.46 - .28) / .46 = .3913$ . For corporations with long-term timber capital gains, the amount of tax preference calculated above is reduced (but not below zero) by the sum of \$20,000 plus one-third of the corporation's timber preference income (57(a)(9)(c)). Corporate timber preference income is the sum of 631(a) and (b) gains, long-term capital gains on timber, and gains on timber sales included in 1231(b) (576).

The minimum tax is 15% of the excess of tax preference items over the greater of \$10,000 or the regular tax deduction (56(a)). The regular tax deduction for any corporation is equal to the federal income taxes imposed without regard to the minimum tax provisions (56(c)). For timber corporations, the regular tax deduction is reduced by the lesser of one-third of the regular tax deduction or the timber preference reduction determined in 57(a)(9)(c) ((56(d))). In addition, if the corporate tax, without regard to the minimum tax and reduced by certain tax credits, exceeds the tax preference items,

the excess is carried over to each of the following seven tax years, subject to some limitations (56(e)).

Earnings and profits (e and p) of the corporation are those amounts available to the corporation for distribution to shareholders without impairing its capital (Kahn and Gann, 1979). In a forestry example, e and p is equivalent to gross timber income reduced by federal and state income and property taxes and life insurance premiums. The corporation pays dividends to its stockholders from current e and p.

Dividends are a specially defined item in the Code (316) and what constitutes a dividend for tax purposes may not be one for corporate law purposes (Kahn and Gann, 1979). A corporate distribution not classified as a dividend is treated as a capital gain and reduces the stockholder's basis in his stock. Individual (not corporate) shareholders are allowed a \$100 exclusion of dividends paid from most domestic corporations (116(a)). Dividends are taxed as ordinary income on the individual's tax return (301(c)(1)).

#### 4.4.3 Estate taxation

When a shareholder in a closely held forestry corporation dies, the value of corporate stock held by the decedent is the only item from that business included in the gross estate. The underlying assets of the corporation (land, timber, and improvements) are excluded (Harl, 1977). As with any closely held business interest, valuing stock in family corporations is very difficult.

Actual IRS valuation standards require an appraisal at "fair market value" although a market for the stock does not exist. Value is influenced by the nature of the business, earning capacity, size of the block of stock to be valued, and market price of publicly traded stock in similar businesses. Perhaps the two most important factors in valuing close corporation stock is earning power and asset value. Earning power is most appropriate for service businesses

while asset value is more applicable for capital intensive firms such as forestry enterprises. Stock appraisals done according to IRS guidelines can be used for general estate planning, price setting in buy and sell agreements, and valuations for section 303 stock redemptions to pay federal and state death taxes (Eber, 1976).

Incorporation creates several options for reducing estate tax burdens. The gross estate can be reduced directly by lifetime gifts of stock to other family stockholders (see below for property rights transfer discussion). The gross estate can also be reduced by valuation discounts due to attributes of the close corporation. Finally, stock value can be stabilized at some previously, lower appraisal by freezing techniques such as buy and sell agreements or preferred and common stock issuances (Kelley, 1975).

Stock gifts valued within the \$10,000 annual exclusion are completely removed from the estate. Stock gifts in excess of the exclusion are added back into the estate, but at the time of gift value, so appreciation escapes taxation.

Because closely held corporate stock is not marketed like public stock, its valuation is frequently discounted to reflect that non-marketability. This is especially true if the block to be valued is a minority interest. Generally, the courts will allow a value between the low point as if the stock were sold to wary strangers and the high point as if sold to knowledgeable family members (Kelley, 1975).

Buy and sell agreements used to fix partnership interest values can also fix corporate stock value. As with partnership arrangements, the selling price must be reasonable, hence the usefulness of the appraisal discussed above. It is also possible to issue two kinds of corporate stock, preferred and common. The preferred stock has a dividend preference, a liquidation preference and is redeemed at a set price. As with multi-class partnerships, preferred stock reflects most of the firm's initial value while the common stock carries

the firm's growth in value. The preferred stock's value is thus frozen. Estate planning is made easier by removing a variable and by keeping business appreciation from being included in the gross estate.

Death taxes and administration costs can be ascertained after the stocks' value has been set. The executor must then raise cash to pay these debts immediately or on an installment plan. Because title to the forest is vested in the corporation, the estate and heirs must rely on the stock redemption provisions of section 303 to obtain money from the corporation.

Stock redeemed to cover death taxes, funeral and administration expenses are not treated as dividends if certain tests are met (303). First, the value of stock included in the decedent's gross estate must be greater than 35% of the gross estate or 50% of the taxable estate (303(b)(2)). Second, redemption is given capital gains treatment only to the extent the redeeming shareholder actually pays the liabilities. Since the stock's basis is stepped up to the date of death value, there is little or no taxable gain on the redemption. Redemption in excess of estate settlement needs are taxed as ordinary income unless qualified as capital gains under section 302 (Kelley, 1975; Sutter, 1978).

Insurance on the life of a close corporation's shareholder-officer-employee can be purchased by the corporation with after-tax dollars. The corporation is policy owner and beneficiary and uses the tax-free proceeds to pay for 303 stock redemptions from the estate or heirs.

If the estate pays death settlement costs on an installment basis, special provisions co-ordinate section 303 with section 6166. Acceleration of payment penalties will not occur as long as the sums distributed to the payee under 303 are used to reduce estate taxes (Osach, 1977).

The actual structuring of the installment-redemption program is

to redeem the stock immediately for notes payable in later installments (Kelley, 1975). A problem with 6166 is that only federal estate taxes are postponed. Other costs are not eligible, making co-ordination with 303 problematic.

An alternative method is for the successors to repay 6166 and private sector loans from regular dividend income distributed by the corporation. In either case, 6166 interest is a deductible administration expense and Federal Land Bank interest is deductible on individual income tax returns.

The third technique for funding is immediate timber liquidation. The corporation, however, will incur additional yield and income taxes. The net proceeds are used to fund 303 stock redemptions from the estate or heirs.

#### 4.4.4 Property rights transfer

Corporate business structures offer a convenient and simple property rights transfer instrument, corporate stock. This feature is a predominant reason family farms incorporate (Kelley, 1975; Harl, 1977). The gifting of stock is much easier than gifting fee or fractional interests in timberland or interests in forest partnerships. These other methods may require drafting and recording of new deeds or partnership certificates and paying attorney fees. Certain land transactions may also require elaborate surveying and compliance with state and local land use regulations governing subdivisions, whether the land is to be developed or retained in timber production. In addition, it is often difficult to treat each donee equally due to variation in land and timber quality and accessibility.

Stock gifts, on the other hand, require no public recording, no land surveying, and can be structured to treat donees equally. The underlying assets of the corporation are unaffected so business is not interrupted by stock ownership changes. Moreover, stock gifts allow the original owners to maintain control of the business for

as long as they wish, but, at the same time, bring younger family members into the business who will eventually take over (Kelley, 1975).

The actual gift mechanism is quite simple. The donor need only endorse the stock certificate over to the donee. New certificates are then issued to the donee. The entire process is completely private (Kelley, 1975).

#### 4.4.5 Advantages and disadvantages

In addition to the ease with which property interests in corporations may be transferred, the corporate business structure has other features which are attractive to forest owners. These favorable attributes can be classed as either non-tax or tax-related.

The most frequently cited non-tax aspect of incorporation is that shareholders' liabilities for corporate losses are limited to their investment. This advantage is not particularly important in closely held corporations where stockholders' investment may comprise their entire personal wealth. Most creditors require personal guarantees from shareholders for loans to close corporations (Patterson, 1979; Painter, 1975).

Continuity is another useful attribute of corporations. Stockholders' deaths do not terminate the corporation. And, because corporate dissolution is not easily done, incentives exist for parties to solve disputes rather than break up the business. Real estate partitioning is not possible, so the economic unit, the forest, remains intact. Stock sales can be controlled to retain operational control within the family (Kelley, 1975; Painter, 1975; Patterson, 1979).

The key tax advantage of incorporation is the income tax savings potential available through several mechanisms. By gifting stock to other family members, dividend income can be split among stockholders, lowering the effective marginal tax rates. Absentee and operating

stockholders can be provided with income commensurate with their participation or with other family goals. In addition, reasonable salaries may be paid to officers and employees. These salaries are deductible for corporate income tax purposes; dividends paid are not (Patterson, 1979; Kelley, 1975).

A significant advantage to the corporation is its ability to provide employees and officers a broad range of fringe benefits, which are deductible for corporate income tax purposes. Examples of such benefits are qualified pension and profit sharing plans, stock options, sick pay exclusion, and group life insurance (Patterson, 1979; Painter, 1975; Kirby, 1976).

For estate tax purposes, valuation discounts and freezes are possible. And if certain tests are met special use valuation of corporate stock is possible (2032A).

Finally, a corporation, whose directors desire to do so, and which meets rigid qualifications and operating rules, may elect Subchapter S status. The consequences of such an election are discussed in the next section.

Incorporation also has disadvantages forest owners should be aware of. Because the corporation is a separate entity, income is taxed twice; once in the hands of the corporation, and again when distributed as dividends to individual shareholders. This characteristic is over-emphasized since the problem can be minimized by paying shareholders (officers-employees) reasonable salaries which are deductible on the corporate income tax return. However, employee payroll taxes will be required (Painter, 1975). The more critical problem for forestry corporations is that income, although taxed as capital gains at the corporate level, loses its tax-favored status at the shareholder level.

It is also difficult to transfer assets in and out of a corporation without incurring adverse tax consequences. In contrast, assets may be moved from partnerships or sole proprietorships with



little or no tax impacts (Painter, 1975).

Finally, the corporation's special legal status requires formal creation and operation and a state charter. It also incurs legal, managerial and accounting expenses which are unnecessary for other business forms (Painter, 1975; Kelley, 1975; Patterson, 1979).

#### 4.5 Subchapter S Corporation

##### 4.5.1 Structure

A Subchapter S corporation is a special form of corporate entity established under provisions of the Internal Revenue Code which has certain advantages for private woodland owners. Except for the special features of Subchapter S, these corporations are subject to the same rules as closely held corporations. The following discussion is limited to the unique aspects of the Subchapter S corporation.

Prior to the 1958 enactment of the Subchapter S provisions, small business organizations chose corporate status to gain the legal protection of the corporation, but suffered the consequences of double taxation. Subchapter S was designed for businessmen "to select the form of business organization desired without the necessity of taking into account major differences in tax consequences" (Senate Report, 1958). Except for certain capital gains, a tax option or Subchapter S corporation does not pay federal income taxes itself although it is a corporation for all other purposes. Income and losses are distributed to shareholders in proportion to their ownership interest to be reported on their individual tax returns.

Also, at death of a shareholder, the estate's executor may utilize special use valuation (2032A) to reduce the value of forest property thereby lowering the value of stock included in the estate and may choose to defer estate taxes if certain tests are met (6166(a)).

The advantages are real enough, that in 1975 32% of all agricultural, fishery and forestry corporations choose to use Subchapter S (U.S. Treasury, 1977).

To elect to be taxed under Subchapter S, forest owners must first have incorporated the property under state law. Then, they must meet certain Internal Revenue Code requirements and limitations. The original 1958 restrictions were liberalized by the Tax Reform Act of 1976, the Revenue Act of 1978, and again by the Economic Recovery Tax Act of 1981.

Section 1371 et seq. of the Internal Revenue Code specifies that a Subchapter S corporation must be a domestic corporation, and may have no more than 25 shareholders at any one time during the year. With one minor exception, it may not be an affiliate of another corporation. Dividends may be paid to any number of shareholders over the course of the tax year. There are severe restrictions on who these stockholders may be. All shareholders must be individuals or estates. Partnerships, most trusts, other corporations and non-resident aliens are not eligible shareholders. One kind of trust which is eligible is that in which a custodian holds stock under the Uniform Gifts to Minors Act. The stock is deemed to be owned by the minor, not by the trust. The Revenue Act of 1978 (PL 95-600) provides that husband and wife are considered one shareholder, regardless of the form in which they hold the property.

There can be only one class of stock, i.e., the corporation cannot issue preferred and common stocks. The voting rights for all stocks may not differ. Care must also be exercised not to create a second class of stock. Corporate debt may be treated as stock for tax purposes in some circumstances and may be deemed a second class of stock. There has been quite a bit of litigation on this issue, the results of which have not clearly defined the solution (Kahn and Gann, 1979).

In addition to the above, the Code restricts the mix of income. The lion's share of the income must be derived from active

sources. Other than during its first two years of existence, the corporation may not receive passive income in any tax year greater than 20% of its gross income (1372(e)(5)(A)). During the two initial years, the 20% limitations is waived if passive income is less than \$3,000 (1372(e)(5)). Examples of passive income include royalties, rent, dividends, interest, annuities, and gains from the sale or exchange of stock or securities. A Subchapter S corporation will lose its tax option status if more than 80% of its gross receipts are from outside the U.S. (1372(3)(4)).

If a corporation has satisfied the stock, shareholder, and income restrictions, it may elect Subchapter S status by filing IRS Form 2553. Each shareholder must consent to the election and that consent must be attached to Form 2553 on the day of election.

The election must be made by the corporation within the first 75 days of its taxable year, or anytime during the preceding taxable year (1372(e)(1)). If the election is made after the 75th day, the election will be applied to the following year. Once a valid election has been made, it is effective for the particular taxable year and each taxable year thereafter until the election is revoked by shareholder action, or terminated by violation of the restrictions (1372(a)).

Like any other corporation, there is a corporate structure which must be established. The shareholders, who own the corporation, are responsible for electing a board of directors which establishes corporate policy and appoints officers. The officers are responsible for the daily functioning of the organization (Harl, 1977). The nonindustrial forest owner and family usually perform all three functions: stockholders, directors, and officers.

Once a corporation has elected Subchapter S status, due care must be exercised by those in charge to preserve that election. If the election is terminated for any of a wide variety of reasons, the corporation may not make another election for five years unless

the Commissioner of the Internal Revenue Service consents to a new election at an earlier time (1372(j)). Termination can result from mistakes by the directors or from external circumstances beyond their control. For example, the percentage of passive income could rise beyond the 20% limit due to either increase in the amount of passive income or dramatic decreases in active income.

In a case where a Subchapter S corporation's real estate business had come to a halt due to economic conditions, the election was terminated when the interest on time deposits, required by the terms of a loan, exceeded 20% of the firm's gross receipts. The IRS ruled that the corporation could make another election within the five year period since the terminating event was not within the control of the corporation or its controlling shareholders nor was it part of a plan by the shareholders to terminate the election (Kahn and Gann, 1979).

If a shareholder dies and his successors refuse to consent to the election, the election is terminated. And, if a shareholder transfers stock to his spouse pursuant to separation or divorce, or makes a lifetime transfer to an irrevocable trust, the election may be lost. Voluntary bankruptcy of a shareholder ends the election at the beginning of the taxable year in which the shareholder's bankruptcy petition was filed. The shares are then owned by an "estate" in bankruptcy which, unlike the estate of a decedent is not a qualified shareholder as defined in 1371(a)(2) (Kahn and Gann, 1979).

New nonconsenting shareholders who have acquired shares by sale, gift or bequest pose the greatest peril to the electing forestry corporation, especially if their desires differ markedly from the desires of the corporation's founders. Generally, new stockholders must affirmatively refuse to consent within 60 days of the stock acquisition. If the new shareholder is the estate of a decedent, a longer period of refusal is allowed (1372(a)(1)). Termination would not result if an insignificant amount of stock was transferred for the purpose of introducing a new, nonconsenting shareholder (Kahn

and Gann, 1979). This problem can be partially overcome by restricting the transfer of stock by individuals receiving stock by either gift or sale (Harl, 1977). It does not solve the problem of transfers by bequest.

Of course, the corporation may choose to revoke election, but to do so requires the consent of all shareholders. Such revocations will not be effective for the current tax year unless it was made before the close of the first month (1372(a)).

#### 4.5.2 Income taxation

As noted above, a disadvantage to the corporate business form is that income is doubly taxed, first at the corporate level, then profits which are distributed to shareholders are taxed at the individual level. Subchapter S of the Internal Revenue Code allows a corporation to elect tax option status and thereby avoid corporate level tax liability. Corporate profits are taxed only to the extent they are reported on individual shareholder returns. In a sense, the Subchapter S corporation is similar to a partnership, but the analogy should not be carried too far. Unlike a partnership, the tax option corporation is not a mere conduit of income; there are important exceptions (Kahn and Gann, 1979).

Except for net capital gains under some very special circumstances, the Subchapter S corporation is not a tax-paying entity (1372(b)). Even if the corporation does pay capital gains tax, the net capital income, reduced by any taxes paid, is passed directly to the stockholders. Section 1378 imposes a tax on the net capital gain if the capital gain for the taxable year exceeds \$25,000 and is greater than 50% of its taxable income. Net capital gain is the excess of net long-term capital gains over short-term capital losses (1222(11)). For Subchapter S purposes, taxable income is modified by 1373(d) which disallows deductions for net operating loss carry over and special deductions granted corporations by section 241-250. Section 248 organizational expenses are allowed, however.

The tax is imposed on the excess of the net capital gain over \$25,000 and is computed under either regular or alternate corporate income tax rates (11 and 1201, respectively). If, however, the electing corporation has been a Subchapter S corporation for the three previous taxable years or was a new corporation less than four years old and had been an electing corporation for all previous taxable years, this tax is not imposed (1378(d)).

Because timber is eligible for long-term capital gains treatment, forest landowners choosing the Subchapter S business form must be careful to avoid the additional tax imposed by section 1378. Having made an election, owners should be wary of all the events which may terminate that election, otherwise when a new election is made section 1378 will apply. This special tax will be an important issue in deciding whether a non-electing forestry corporation should make a switch to tax option status after having operated as a regular corporation. Moreover, because long-term capital gains from timber is a tax preference item (57(a)(9)(c) and 57(e)), section 56 imposes a minimum tax with modifications for corporate timber capital gains (56(a)(d)(e) and 57(a)(9)(B) and (C)).

The distribution of Subchapter S earnings and profits to shareholders is generally done in the same manner as for non-electing corporations. Earnings and profits (e and p) are also similarly determined except for modifications set forth in section 1377. These modifications include reductions from accumulated e and p for the amount of undistributed taxable income that was treated as income by shareholders; no allowance in determining current or accumulated e and p for any item used to figure corporate net operating loss; and in the case of current e and p, no reduction by any amount that is not deductible in determining corporate taxable income (Kahn and Gann, 1979).

Distributions received as dividends by stockowners are taxed as ordinary income. A major difference between an electing and non-electing corporation is that net capital gains, when distributed to

Subchapter S shareholders, retain their character as net capital gains in a special set of circumstances. In any taxable year in which the electing corporation had net capital gains, as will be likely in forestry situations, all shareholders who receive dividends out of current earnings and profits will treat a pro-rated part of the dividends as long-term capital gains rather than as ordinary dividend income (1375(a)). To calculate the amount of long-term capital gain to be passed through, the electing corporation's net capital gain must be reduced by any taxes levied by sections 1378 and 56. The net amount may not exceed the corporation's taxable income for the year (1375(a)(1)). That limitation will be a problem for the nonindustrial forestry corporation whose only income source is timber receipts. Corporate taxable income will be less than net capital gain once land taxes, reforestation amortization, and other deductions are subtracted from total income. Capital gains pass through will be limited to that lower amount. The balance of the net capital gain, will be, if distributed, ordinary dividends.

Another special tax feature of Subchapter S is the treatment of net operating losses. A net operating loss is the excess of deductions over gross income (172(c)) with modification as listed in 172(a). A non-electing corporation which had net operating losses prior to its election of tax option status may not carry these losses forward to an election year nor can it carry losses back to a prior election year. It may, however, carry losses forward to subsequent non-electing years (1373(d)(1)).

If a corporation has a net operating loss in an election year, it does not carry the loss forward or back. Instead, the loss is passed through to shareholders who may be able to deduct loss as a trade or business expense (1374). Their deduction is limited to their basis, either loan or equity, in the corporation. It may be desirable, therefore, for a shareholder to increase his basis to take advantage of the loss. The basis can be increased by making a loan

or a capital contribution to the corporation (Dunkel, 1978).

Because the losses are passed through, they do not reduce the corporation's earnings and profits. Only net operating losses are passed through to shareholders; corporate capital losses are not passed through but are deducted from corporate capital gains (Kahn and Gann, 1979).

The net capital loss of an electing corporation can be carried forward for five years and deducted from corporate capital gains. But it may not carry back such losses to previous tax years. A non-electing corporation may carry losses back for three years but not to an election year (1212(a)(3)).

When a shareholder receives a passed through net operating loss, the deduction on his income tax return is limited to the adjusted basis of the corporation stock he owned during the taxable year, plus his basis in any debt which the firm owes him (1374(c)(2)). The basis of his stock is thus reduced by his share of the net operating loss, even if there is no tax benefit from the loss (1376(b)(1), 1016(a)(18)). If his pro rata share of the loss exceeds his stock basis, the loss is applied to the debt (1376(b)(2), 1016(a)(18)). Neither basis can be reduced below zero, so, if he has no basis in either stock or debt, his share of the loss is lost forever (Kahn and Gann, 1979). Losses are allocated to all shareholders of the corporation during a taxable year, not merely the stockholders of record on the final day. The apportionment is done by calculating the daily net operating loss and distributing the loss to individuals owning stock on each day.

An income tax problem faced by forest owners who incorporate and elect Subchapter S status is the allocation of corporate distributions among family members who are all shareholders in the corporation. The IRS can redistribute dividends to reflect the value of services rendered to the corporation by shareholders. This is similar to the authority the Service has to redistribute income among members of a



family partnership in section 704(e) (Kahn and Gann, 1979). If forest owners wish to spread income among family members to lower overall tax liability, it is imperative the allocation approximate the efforts of each shareholder in the corporation. Establishing a corporation to merely spread income to family members in lower tax brackets without extracting some forest management contribution from them will likely result in an IRS redistribution.

The Internal Revenue Code also requires each shareholder of record on the last day of the taxable year to include in his gross income the amount he would have received as a dividend or capital gains had the corporation, on that last day, distributed its undistributed taxable income (UTI) 1373(b). The UTI is corporate taxable income less cash dividends distributed out of current earnings and profits and less taxes imposed on certain net capital gains as discussed above (1373(c)).

As a result, shareholders in an electing forest corporation will have reported income they have yet to receive and their stock basis will have increased. The effect is that the shareholder received a distribution and then returned it to the corporation as a contribution to capital. Kahn and Gann (1979) point out that

[u]nder the normal rules of corporate taxation, if a shareholder should later wish to withdraw from the corporation income which was previously taxed to him without being taxed again, he could do so only after the corporation's earnings and profits (both current and accumulated) were distributed and any distributions made before earnings and profit were exhausted would be treated as a taxable dividend.

But, in the case of a Subchapter S corporation, Section 1375(d) of the Code allows a shareholder to withdraw cash, tax free, to the extent of the shareholder's net share of previously taxed income (PTI), if the cash distribution would have otherwise been considered a dividend from accumulated earnings and profits. The rules do not apply to distributions from current earnings and profits,

distributions in kind or constructive distributions (UTI). The tax-free distribution can be made only after current earnings and profits are exhausted to ensure that the distribution is truly from accumulated e and p. The right to withdraw PTI is personal to the shareholders. Therefore, the right expires at the shareholder's death, or if he transfers the stock (unless he becomes a shareholder again). Also, if the Subchapter S election is terminated by events like those outlined above, the right to withdraw PTI is lost and regular rules for making corporate distributions apply (Kahn and Gann, 1979).

An acute concern for closely held corporations is the so-called unreasonable accumulation of earnings. Directors-stockholders of Subchapter S corporations may be tempted to avoid income tax by accumulating earnings and profits within the corporation instead of distributing profits or paying dividends. The dual roles of the stockholders in close corporations make this a more likely scenario than in public corporations. The Internal Revenue Code levies substantial penalties on accumulated earnings beyond the reasonable business needs of the organization (531). Legitimate requirements of the business are not penalized.

#### 4.5.3 Estate taxation

As with closely held corporations, the value of Subchapter S stock held by the decedent at the time of death is the only business-related item included in the estate. The valuation problems encountered in closely held businesses exist for Subchapter S stock as well.

For forestry Subchapter S corporations, the capital value of the forest will greatly influence the stocks' value. The appraisal will, of course, be tempered by such considerations as the size of the block of stock being valued and the economic outlook for the specific industry (Eber, 1976).

Value freezing techniques for Subchapter S corporations are limited. Issuing preferred and common stock to fix stock values for

older stockholders and shift appreciation to younger shareowners cannot be used because tax-option corporations may issue only one class of stock. Buy and sell agreements must be modified if they are to be used for post-mortem redemption and protection of the tax option election. Valuation procedures should account for the corporation's non-tax status and the fact that any disposition of stock other than at the end of the corporation's fiscal year will cause the recipient to be taxed on all of the undistributed income for the entire tax year. Care must also be exercised to assure the agreement does not vest some stockholders with rights which differ from those of other stockholders, otherwise a second class of stock may be created, terminating the election (Hipple, 1980).

Since the corporation holds title to the forest, the estate and heirs must rely on the stock redemption provisions of section 303 to obtain cash to settle estate liabilities. Stock redemptions for Subchapter S corporations work in the same manner as for closely held corporation. As long as proceeds are used by the redeemer for federal and state death taxes, funeral and administration expenditures, the redemption is a capital transaction which, due to basis step up, is virtually tax-free.

A problem does arise in the case of a decedent stockholder who had not withdrawn previously taxed income (PTI) prior to death. Each shareholder's PTI account is personal to the stockholder and terminates at death. Distribution to the decedent's estate of Subchapter S income taxed to the decedent prior to death will not necessarily be tax-free.

The distribution will first be treated as distribution of current earnings and profits and taxed as dividends. Then, to the extent the distribution exceeds current e and p, it will be treated as a distribution of accumulated earnings and profits. The same rule applies if the stockholder had been taxed on undistributed corporate income and had died within the first two and one-half months of the next

fiscal year, the time period within which the corporation is permitted to distribute PTI of the previous year to stockholders. Only undistributed taxable income of the Subchapter S corporation for the corporate tax year ending after the estate became a shareholder will be PTI of the estate.

Distribution of cash in a 303 redemption of Subchapter S stock held by an estate would first be treated as a distribution of current e and p, taxable as dividends, second, as a distribution of PTI to the extent of the estate's PTI and, third, as a distribution in redemption of stock under 303 (Hipple, 1980).

Funding estate liabilities with insurance, immediate timber liquidation or loans works in the same manner for a tax-option corporation as it does for the close corporation. Life insurance, purchased by the corporation with post-tax dollars, provides the cash to fund the firm's 303 stock redemption. Capital liquidation mandates increased harvesting to generate additional revenue for stockholders to pay yield and income taxes required by the harvesting event. The net proceeds are used to fund the stock redemption. Loans are treated as personal liabilities of the heirs which are met with after-tax income from regular harvests rather than through a 303 redemption.

#### 4.5.4 Property rights transfer

As with close corporations, property rights transfer in Subchapter S corporations is simplified by the mechanism of corporate stock. The advantages of stock transfers over other kinds of transfers were discussed in section 4.4.4.

A major concern in transfer of Subchapter S stock is protection of the tax option election. Sufficient safeguards should be constructed to block transfers to otherwise eligible stockholders who are likely to refuse consent to the election. Also, if election retention is desired, stock cannot be transferred to non-resident aliens, corporations, partnerships and most trusts.

Only five types of trusts may hold Subchapter S stock without causing termination: a trust established under the Uniform Gifts to Minors Act where the minor is deemed the stocks' owner, a voting trust, a grantor trust where the grantor is treated as the owner of the stock held in trust, a grantor trust which continues in existence after grantor's death, and a trust which received stock according to the terms of a will (1371(e)). However, if the trust received stock under provisions of a will or is merely the post-mortem continuation of a grantor trust it becomes an ineligible shareholder after 60 days. An exception occurs when the entire body of a grantor trust is included in the grantor's estate. The trust in this case will continue to be an eligible shareholder for two years after the grantor's death (1371(e)(1)(B)). The reason these limitations were enacted was to effectively restrict the number of shareholders in the Subchapter S corporation because most trusts may have multiple beneficiaries. If treated as a single stockholder, it would circumvent the limit on shareholder numbers. A voting trust does not run afoul of this issue because all beneficiaries are already shareholders (Kahn and Gann, 1979). This restriction eliminates testamentary trusts for minors and non-marital deduction trusts, important estate tax reducing tools. The inability to use a marital trust can be countered to some degree by establishing a legal life estate for the spouse (Harl, 1977).

#### 4.5.5 Advantages and disadvantages

As a corporation recognized under Subchapter C of the Internal Revenue Code for income tax purposes and chartered under state law for legal purposes, the Subchapter S corporation enjoys all advantages of incorporation: continuity, limited liability, ease of property rights transfer and income and estate tax savings through income splitting, fringe benefits, and value freezing. Unlike non-electing corporations, the tax option corporation offers its owners

the additional income tax benefits of pass through of long-term capital gains and net operating losses.

As previously noted, there is a ceiling on how much long-term capital gain can be passed through without changing its character, a limitation not found in partnerships, which can be troublesome for forestry firms.

Another potential drawback to the Subchapter S corporation is the so-called widow's plight (Harl, 1977). Although the surviving spouse may own a considerable portion of the corporate stock, it may not be a controlling interest. If the spouse's need for income from distributions is ignored by the directors, who may be accumulating earnings within the corporation for business purposes, there may be little recourse but to sell the stock. The problem can be alleviated by insuring that gifts and bequests of stock leave the surviving spouse with a controlling interest in the business.

There is also the problem of minority stockholders who may be locked into the corporation. These stockholders have little or no voice in the management of the property, and no interest in forestry and desire to put their capital to work in areas with higher return rates. Restrictions on sale or transfer of stock may effectively prevent withdrawal from the corporation. It would seem prudent to have some purchase agreement that would allow these shareholders to withdraw without endangering the Subchapter S election.

Important estate planning tools like preferred and common stock capitalizations and non-marital trusts are not available. And, because of limitations on the number of stockholders, some heirs may have to be excluded from the estate if Subchapter S status is to be retained. This problem may be acute for later generations as the number of heirs expands geometrically.

Finally, limitations on income mix, shareholders and stock type require astute management on the part of the forest owners and their advisors. Unintentional mistakes and hidden traps in the Code may

terminate tax option status with devastating tax results. It should be pointed out that although a Subchapter S corporation is generally not a federal tax-paying entity, it will often be liable for state corporate income or excise taxes (Kirby, 1976).

#### 4.6 Trusts

##### 4.6.1 Structure

A trust "is a fiduciary relationship in which one person holds legal title to certain property and another has the equitable or beneficial ownership of the property" (Denhardt and Denhardt, 1977). The holder of the legal title is the trustee who has the obligation to keep or use the property for the benefit of the beneficiary.

A trust is created when a person who owns property transfers it to another (trustee) with instructions as to how the property is to be used and for whose benefit, the length of time the arrangement is effective (cannot be perpetual), and the ultimate disposition of the property. The property must exist at the time of trust's creation; transfers of future interests will not create a trust. Except for rights specifically reserved by the grantor, title to the property vests in the trustee, subject to the equitable ownership of beneficiaries. The trustee can be any person, including the grantor or a corporation, capable of receiving title to property. Beneficiaries, which must be named, if only in a general sense, are income beneficiaries receiving income as it is generated and/or remaindermen, receiving the body of the trust (corpus) upon its termination. Beneficiaries can transfer their equitable interests unless prevented by terms of the trust (Denhardt and Denhardt, 1977).

The trust itself is a legal entity. Through the trustee it can, among other things, own and manage property, make investments, sue and be sued, be a partner in a partnership and hold stock in a corporation (Denhardt and Denhardt, 1977; McCarthy, 1974).

Trusts created when the grantor is alive are inter vivos trusts;

those created at death are testamentary trusts. Inter vivos trusts are usually created by gifts, therefore the grantor may be liable for gift taxes. The grantor may not create a trust to defraud creditors, prevent marriage, or engage in illegal activities (McCarthy, 1974; Denhardt and Denhardt, 1977).

A trust may be revocable or irrevocable. There are advantages to revocable trusts. First, unless revoked, they take the place of wills in directing the disposition of property, thereby providing more privacy. Second, the trusts can be amended to reflect changes in beneficiaries, trustee powers, and corpus composition. Finally, grantors can observe their operation, then, if desired, revoke the trusts or make them irrevocable (Federal Tax Guide, 1976; Lawrence, 1975). For federal income tax purposes revocable trusts are treated as grantor trusts in which the income is taxed to the grantor. Irrevocable trusts, while sacrificing control over transferred assets, do not result in adverse income or estate tax consequences to the grantor (Denhardt, 1976; Kirby, 1976).

In addition to grantor trusts and life insurance trusts discussed in section 3.2.2, a wide variety of other trusts exist. Examples include charitable, Clifford, marital deduction, non-marital deduction, sprinkling, generation skipping, pour over, spend thrift, support, discretionary, blended, totten, alimony and business trusts. I will examine the problem area of inter vivos grantor trusts and the usefulness of testamentary non-marital deduction and marital deduction trusts.

If grantor has retained powers over the trust such that the Code deems the grantor to be the owner, trust income will be taxed to the grantor. Examples of these powers are administrative control which can be exercised for the grantor's benefit rather than for the beneficiaries, the power to revoke the trust, the power to dispose of trust property without the consent of parties whose interests are adverse to those of the grantor, and retention of a reversionary interest if reversion may take place within ten years after the



property was transferred to the trust.

The grantor is taxed on any income that is, at grantor's discretion, distributed to him, held for him, or applied to premiums of his life insurance. For trust income from property placed in trust after October 9, 1969, these provisions include income distributed to, held for, or in payment of life insurance premiums for the grantor's spouse (Denhardt and Denhardt, 1977). The grantor is also taxed for income used to satisfy grantor's or spouse's legal obligation to support someone. As with family partnerships and corporations, the IRS looks to the actual operations to determine incidents of economic benefit and tax liability, disregarding artificial arrangements designed to evade taxes.

Grantor trusts are treated similarly to incomplete gifts for estate tax purposes. At death, the value of the property held by the trust is included in the decedent's estate.

The marital deduction trust is a testamentary trust created by transferring to it, by will, property qualified for the estate tax marital deduction. The surviving spouse must be entitled to all income from the trust for life which must be paid at least annually, and must have the power to appoint the entire property to self or to his or her estate. The trust's corpus is included in the survivor's estate if owned at death. The main purpose of this trust is to protect the widow(er) who may not be capable of managing the transferred property (Denhardt and Denhardt, 1977).

Property not used for the estate tax marital deduction may be directed by the decedent's will to a non-marital deduction trust with the widow(er) as income beneficiary for life. This is the trust arrangement employed in the current model.

For this research, the non-marital deduction trust is created at the death of the first spouse from that spouse's fee simple interest or 50% share of a tenancy in common. By operation of law, property held in a form with rights of survivorship vests in the

survivor and cannot be placed in trust by terms of a will. The value of property transferred to the trust is that which, due to the unified estate and gift tax credit, incurs no federal estate tax; i.e., for 1987, \$600,000. The balance of the property, eligible for the estate tax marital deduction is bequeathed directly to the surviving spouse. At the death of the second spouse, the trust corpus is distributed to the other heirs. For a time, the widow(er) receives income directly from his or her interest in the forest and indirectly from the trust.

#### 4.6.2 Income taxation

Trust income is taxed only once, either to the grantor under circumstances described above, to the trust or to the beneficiaries. The trustee must file Form 1041 if the trust has any taxable income or if gross income is greater than \$600 whether or not there is any taxable income (Denhardt and Denhardt, 1977). Taxable income is computed in the same manner as for individuals except for some special rules and deductions (641(b)).

A trust which is required to distribute all current income (a simple trust) is allowed a personal exemption of \$300; other trusts (complex trusts) are allowed an exemption of \$100 (642(b)). A trust is also allowed deductions for section 172 net operating losses (642(d)), section 611 depletion (642(e)), and certain amortizations (642(f)). Trusts are not allowed amortization deductions or tax credits for reforestation expenses under Public Law 96-451 (FICTVT, 1981).

The trust may deduct amounts which are currently taxable to beneficiaries (651, 661) which includes all income that, under the trust terms, must be currently distributed plus other amounts paid, credited, or required to be distributed. The total deduction is limited to the amount of distributable net income of the trust for the tax year (McCarthy, 1974). The trust is subject to minimum tax

and has most of the tax credits available to individuals (Denhardt and Denhardt, 1977).

Distributable net income is a modified version of trust taxable income which excludes deductions for personal exemptions, distributions to beneficiaries, capital gains allocated to corpus, and other adjustments (McCarthy, 1974). Income which is actually distributed to beneficiaries retains its tax characteristics. This is important for trusts with timber income eligible for long-term capital gains treatment on individual tax returns.

To minimize complexity, the model assumes a simple trust which distributes all income currently, makes no charitable contributions and makes no distributions other than current income (651). By using available tax deductions the trust itself pays no income tax but acts as a conduit for capital gains income. All simple trusts become complex trusts in the year of termination when the principal is distributed to the remaindermen (Denhardt and Denhardt, 1977).

The beneficiaries of the trust report the distribution on their individual income tax returns and are liable for the taxes. In this model, there is no income tax advantage to using the trust structure; all income is taxed to the surviving spouse.

#### 4.6.3 Estate taxation

In general, the value of the decedent's gross estate includes the value of all property in which the decedent held an interest at the time of death (2033). For grantor trusts and marital deduction trusts, this means the value of the property held in trust is included. The includable value of other trusts depends on the terms of the trust. In the case of the above described non-marital deduction trust established upon the death of the first spouse, the property's value held in trust is not part of the widow(er)'s estate even though the surviving spouse was the income beneficiary for his or her life.

The effect of the non-marital deduction trust is to exclude property from estate taxation at the surviving spouse's death, thereby greatly reducing estate settlement costs. The only property included is that which is owned outright by the decedent. Funding techniques under these circumstances are identical to those described for funding sole proprietorships, partnerships, or corporations, depending on how the property is held. The current model assumes non-trust property owned by the widow(er) is common and undivided with the trust forest. Provisions for liquidity are the same as those of the sole proprietorship.

Step up in the cost basis of timber and timberland is a bit more complex when using testamentary trusts. Those interests held by the first spouse to die receive a step up in cost basis to the time of death value. Timber property held by the surviving spouse does not. The basis for the widow(er) is then a combination of the basis in his or her property and that received by way of the marital deduction. The trust's cost basis is also stepped up. At the death of the second spouse, the basis of timber and timberland included in the estate is stepped up, but that which is held in the non-marital deduction trust is not. The heirs' basis is then a mix of the widow(er)'s stepped up basis and the basis of the trust.

#### 4.6.4 Property rights transfer

Property rights transfer in trust arrangements depends on how the grantor originally held the property, events during the life of the trust, and the terms of the trust. In creating the forest trust, the grantor transfers, usually by gift, fee or certain joint interests, a partnership interest or corporate stock. The gift may or may not be tax free. The trustee may hold the forest property in the same manner, or, if circumstances allow or command, change the status. For example, a partnership may decide to incorporate, so the interest held by the trust is changed to corporate shares. Or,

the trustee may be directed to sell the forest and place the proceeds in another form of investment.

The chief difference between ordinary property rights transfer and transfer to trusts is that economic benefits accrue to named beneficiaries rather than to the holder of legal title.

#### 4.6.5 Advantages and disadvantages

Perhaps the most beneficial feature of trusts is the extreme flexibility they have for accomplishing family objectives. A trust can be established to undertake almost any legal purpose. They are a mechanism by which individuals may dispose of property but still retain some control over it either by expressed terms of the trust or through the power to amend those terms (Denhardt and Denhardt, 1977).

Certain tax savings features make irrevocable trusts attractive to forest owners. Through the irrevocable trust income can be spread among family members which may result in substantial income tax savings. Clever trust instruments and accounting which make use of the trust's personal exemption may save additional taxes. Estate tax burdens will be lower to the extent that trust property is excludable from the decedent's gross estate.

Disadvantages of trusts include the inflexibility associated with irrevocable trusts and their general inability to be shareholders in Subchapter S corporations. Moreover, tax deductible fringe benefits available in corporations are not possible in trust structures. And finally, a specific drawback to forestry trusts is their ineligibility for reforestation amortization and tax credits (FICTVT, 1981).

## CHAPTER 5

## RESEARCH METHODOLOGY

5.1 Introduction

The legal-economic model prepared for this project builds on the foundation laid by agricultural economists. It utilizes some features of agricultural estate management models, but it also incorporates components which recognize differences between forestry and farming. This chapter on research methodology presents the structure and operation of the simulation model, and the case studies to which it is applied.

First, we explore the basic approach of the model, simulation, and the decision criterion employed. The second section lays out possible behavioral and nonbehavioral assumptions and defends the choices made for inclusion in the model. A third section provides an overview of the Forest Estate Planning Simulator, hereafter FEPS, and examines key subroutines, referencing applicable sections of federal and state law and tax code. Again, choices and simplifications for the model are justified. The fourth and final part of this chapter develops the case studies used to generate data for analysis in Chapter 6.

5.2 Approach

## 5.2.1 Simulation

Most legal-economic models developed for agricultural estate tax studies have been simulators (Harrison, 1966; Buss, 1971; Boehlje and Eisgruber, 1972; Boehlje and Harl, 1978; Roush, 1978). A few have been strictly analytical or optimization models (Reinders, Boehlje and Harl, 1980; Allwood, 1969). Others have been mixtures of optimization and simulation (Dobbins, 1978; Walker and others, 1979). In these cases, however, production

decisions were optimized while estate tax decisions and impacts were simulated.

Optimization has not been a widely used method for studying estate problems because they involve multiple objectives and a wide variety and large number of decision variables. Goal programming techniques are available to treat the multiple objective problem, but require the decision maker to weight his objectives. The myriad of decision variables and the complexity of the system to be analyzed further impedes use of optimization techniques. For example, a forestry estate planning model seeking to maximize present net value of cash flow would need to determine timing and magnitude of timber harvests and gifts of real property, size of certain estate tax deductions and the timing and mix of estate tax funding methods. While not an impossible task, it is extremely difficult.

Simulation is an appropriate procedure to use when the situation to be analyzed is extraordinarily complex and the number of alternatives is relatively limited (Christiansen, 1975). These conditions exist in the present case in which harvest flows are related to estate, gift, and income taxes for alternative business structures as well as methods of funding estate taxes.

Simulation models can be deterministic or stochastic (Christiansen, 1975). The forest estate planning simulation model

in its present form is a deterministic, legal-economic simulation model. Stochastic elements dealing with price, timber yield, and life expectancies are not utilized, thereby permitting one to understand the interrelationships in the system without the extra complexity randomness introduces. Moreover, most estate planners work deterministically, selecting most likely events and protecting against worst case occurrences. Extensions of the existing model can incorporate probabilistic components.

### 5.2.2 Decision criterion

The decision criterion employed is present value, net of taxes and other required payments. It is the criterion employed by other death tax modelers (Reinders, Boehlje, and Harl, 1980; Boehlje and Eisgruber, 1972) and is particularly appropriate where costs and revenues occur over time. The preferred combination of business structure and funding method will be that which results in the greatest present net worth of the cash flow over the planning horizon.

Two issues arise in selecting present value as decision criterion. First is the eternal debate about the magnitude of the discount rate. FEPS allows specification of any rate, but the rate is then constant throughout the analysis. Second, one may question whether selecting the alternative with greatest present value is an appropriate method in a multiple goal context, especially when some goals such as security or control over assets are not quantifiable. I assume that maximum present value is consistent with attainment of other goals.

An alternative criterion, minimum tax liability, is rejected because non-tax costs such as insurance premiums and interest charges must be accounted for.

## 5.3 Assumptions

In this section, behavioral and nonbehavioral assumptions included in the model are made explicit. Alternative assumptions are discussed and the choices made for inclusion are defended.

### 5.3.1 Behavioral assumptions

The behavioral assumptions incorporated into the FEPS model



are of three general types:

- (1) those related to management of the forest property,
- (2) those related to succession of the property,
- (3) those related to the planning horizon of the current owners.

Management assumptions focus primarily on regulation issues. It is assumed that no management intensification takes place during the analysis and that the management regime is one of clearcutting and replanting with standard (not genetically improved) seedlings.

Achievement of a regulated timber flow is a particularly important assumption. Because we are examining nonindustrial private forestland owners, regulation of the forest is practical for only medium to large ownerships. Moreover, sustained yield management requires management sophistication which may not exist in many cases.

Several kinds of regulatory schemes are possible including area control, volume control, area-volume check, and even-flow. Area control, in which equal areas are harvested each period and regulation is attained within one rotation length, is perhaps easiest to implement. Accordingly, it has been adopted as the regulation method in FEPS.

For many landowners, regulation is unnecessary, and perhaps undesirable. From a short-term investment perspective, regulation has little connection with economic efficiency. To model the behavior of these owners, I have created a harvest scheduling algorithm which harvests all timber stands which reach an exogenously specified rotation age. The distribution of age classes never evens out, but generally remains lumpy throughout the analysis. I have labelled this management scenario "stand maturity."

Area control and stand maturity, then, are the management choices. Other non-regulatory models are possible such as price-responsiveness or stochastic harvesting. Price response models

for nonindustrial owners are still in their infancy (Knapp, 1981). Random harvests seem too disorderly to reflect behavior of owners who have made decisions to prepare estate plans.

Successional assumptions are concerned with intergenerational transfer of property rights to forest land. I assume the original owners are a married couple whose objective is to pass the forest to their two adult children while still retaining sufficient control during their lifetimes to guarantee adequate income. Upon the death of the first spouse, the survivor inherits the decedent's interest in the property (or rights to income from that share). At the widow(er)'s death, interests in the forest property are divided equally among the children. Lifetime gifts of property rights to spouse and children are possible, but generation skipping trusts are not.

A second transfer assumption is that the current owners desire to maintain the forest property as a unit. Sale of land, therefore, is not an option for funding estate tax liabilities. This approximates actual goals I have heard expressed by nonindustrial woodland owners at estate tax workshops and is consistent with researchers' findings that owners want to transfer the farms or forest to their heirs, not merely a cash equivalent (Boehlje and Boehlje, 1973; Lucas, 1963).

Planning horizon assumptions touch on length of tenancy issues. Looking sixty or more years into the future is not as heroic as it seems on the surface. The model contemplates a minimum of two generations of ownership within a family. An American Forest Institute (1972) survey found that tenancy among registered tree farmers ranged from 20 to 30 years, considerably longer than average tenancies of forest landowners in general. A relatively long analysis period is justified if we recognize we are focusing on those owners who have realized the potential impact of estate taxes on forestry. These are likely to be those owners who are

practicing forestry and recognize the long time periods needed to bring timber to maturity. Perhaps those with a more short-term view are less important to the timber supply picture.

### 5.3.2 Nonbehavioral assumptions

Nonbehavioral assumptions embedded in the estate planning simulation model are also in three broad classes:

- (1) forest assumptions
- (2) harvest scheduling assumptions
- (3) price assumptions

For purpose of this research, I assume the forest consists of a single site class of even-aged stands of Douglas-fir (Pseudo-tsuga menziesii). Board foot volumes for site index 160 are taken from McArdle and others (1949), a widely used set of yield tables in the Pacific Northwest. The volumes are adjusted downward by 15% to represent less than full stocking, the typical situation on nonindustrial private land. I assume stands approach full stocking in a simple linear fashion, so yields are adjusted upwards as stands become older.

An assumption applicable to the harvest scheduling algorithms, whether area control or stand maturity, is a rotation length of 60 years.

The FEPS model is capable of generating harvest schedules for any rotation length, but 60 years is generally the upper limit for private sector rotation ages in Western Oregon. Moreover, based on prices and yields used in FEPS, the rotation which equates marginal value growth percent to the base alternate rate of return, is approximately 60 years.

The planning horizon assumed for the harvest schedules is 90 years. Sixty years would have been a more reasonable length because it would encompass only two generations of management. But,

because immediate timber liquidation as an estate funding technique delays complete regulation until the ninetieth year, the 90-year horizon was necessary to account for all costs associated with that alternative. After 90 years, harvest levels and gross cash flow are the same for all funding methods.

Price assumptions are critical in FEPS because of the progressive rate structure of income, gift, and estate taxes. The model allows specification of different price trends for land and stumpage. The initial assumption for this analysis is that land and timber prices appreciate at a real compound rate of 2% annually. This rate is approximately equivalent to the long-term historical rate for timber, but is at variance with recent projections by Adams and Haynes (1980) and with rates suggested by Berck (1979) and Hyde (1980). Adams and Haynes (1980) have predicted a complex price trend for the future, including declining prices in some future decades.

A key price assumption is that the tax tables, in constant dollar terms, remain unchanged over the planning horizon. Because the analysis is done in real dollars, this assumption is equivalent to asserting there will be no bracket creep due to inflation. Historically, bracket creep has been the major problem in forest estate taxation. Estates were moving into higher and higher marginal tax brackets with rising land and timber values. But because much of that increased value was inflationary, there had been little increase in real wealth. Recent legislative activity in 1976, 1978, and 1981 indicates the federal estate tax will never again endure the 40 years' neglect that preceded the Tax Reform Act of 1976. The model assumes continual adjustment of nominal tax brackets so that only real increases in value are taxed at higher marginal rates. Of course, there is no way of anticipating the attitudes of future administrations toward estate taxation.

Initial per acre values of bare land and non-merchantable timber and per thousand board feet values of merchantable timber

are based on 1981 Oregon Department of Revenue estimates for typical nonindustrial forest land in Benton County, Oregon.

#### 5.4 The Forest Estate Planning Simulator

The subject of this section is the forest estate planning simulation model operating within the legal framework. The first subsection presents an overview of the model, laying out its component parts and describing the forward linkages and feedback mechanisms that capture the interrelationships in estate management. The second subsection offers a detailed look at each component, including available options and laws which may govern their operation.

It should be noted that although FEPS is a legal-economic model, it is not intended as a substitute for legal counsel. Current readers and future users are cautioned against using the model or the accompanying text as a basis for any action governed by law.

##### 5.4.1 Overview of the FEPS Model

The Forest Estate Planning Simulator consists of a main program which controls seven major subroutines. The major subroutines, in turn, call additional user-specified, service subroutines. Figure 5.1 is a schematic diagram illustrating how the system hangs together.

The input subroutine loads data and allows the user to select estate management options and to specify certain parameters. The harvest scheduling algorithm develops the cutting schedule and provides information for valuing the harvest and standing inventory. Once the dollar values have been assigned by the two valuation programs, property interests are transferred among family members by an ownership distribution subroutine. The estate tax system calculates total estate settlement costs and invokes the specified funding method for deaths of both husband and wife. The financial



management subroutines determine the non-death taxes due under alternative business structures and calculates the net cash flow. Finally, a document writing program prints the results of a given run and resets initial conditions for subsequent runs.

#### 5.4.2 Model components and the law

5.4.2.1 Input. The first major component called in the simulator is the input subroutine whose function is to assign initial values to all variables. Most variables are set equal to zero. Some, however, are read from external data banks while others are selected by the user working interactively with the computer.

The following data are read from external sources:

- (1) yield tables: board foot volume by age class and period within the planning horizon;
- (2) initial distribution of acres by age class, age class interval size, and maximum age class allowed;
- (3) insurance premium cost per thousand dollars of coverage;
- (4) estate parameters;
- (5) income and property tax parameters;
- (6) land and stumpage values.

The operator indicates choice of:

- (1) forest management regime;
- (2) applicable interest rates;
- (3) ownership distribution pattern;
- (4) estate funding method;
- (5) business organization form;
- (6) marginal tax bracket for heirs;
- (7) ages and expected ages at death for husband and wife.

5.4.2.2 Harvest schedule. Area control or stand maturity are

the two even-aged alternatives available in the harvest scheduling routine.<sup>2</sup> Rotation age and planning horizon are specified interactively. Acres are harvested on an oldest first priority. The subroutine establishes, for each period and age class, the beginning inventory, acres cut, and volume removed. For area control regimes, equal acres are harvested in each period and regulation is delayed if management is interrupted by timber liquidation for estate tax purposes. In the stand maturity option, only those acres which have reached rotation age are harvested. The algorithm is restarted if timber capital liquidation is the chosen funding method, thereby creating a new harvesting trajectory.

5.4.2.3 Valuation. There are two valuation routines. The first assigns dollar values to the harvested volumes by age class. These dollars constitute gross cash flow to the forestland owner and are subject to income, yield, and property taxes. It is assumed that each period's harvest is removed in equal portions each year of the period.

The second valuation routine values the standing inventory at the start of each period.

The user can specify the annual rates of price increases for land and timber. Initial stumpage and bare land values are loaded in the input routine.

5.4.2.4 Ownership distribution. FEPS operates on the assumption that forest land is owned initially by husband and wife and is operated as a sole proprietorship. Although transfer of ownership interests during life can be accomplished by sale, compensation for services, and gifts, gifts are the sole means of

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<sup>2</sup>The harvest schedule algorithm was adapted from an interactive scheduling model developed by Richard L. Barber, Department of Forest Management, Oregon State University.



property rights transfer treated in FEPS. Transfer of rights allows creation of alternative business structures which may have income and estate tax advantages.

The distribution program tracks the ownership interests of each individual in the forest property over the planning horizon. The model treats all gifts as completed gifts of present interests. Also, it works with the annual exclusions and gift tax marital deduction, thereby avoiding all gift taxation. Contemplation of death rules or inclusion of taxable gifts in the taxable estate are not features of the current model.

One of four ownership distribution options is specified by the user:

- (1) Husband and wife initially share equal ownership in the forest property. No gifts are made between spouses or to heirs. At the husband's death, his interest is added to that of the widow. At her death, the interests are divided equally among heirs.
- (2) Husband and wife share equal ownership in the initial year. For each year remaining in the husband's life, he makes gifts of property interests worth \$10,000 to each of two adult heirs. At the husband's death, his interest is passed to the widow. At her death, her interests are divided among the heirs.
- (3) Husband and wife control 75% and 25% of the forest ownership, respectively, in the initial year. Husband follows gift program outlined in (2) above. Property succession follows pattern in (2) above, also.
- (4) Husband owns property in fee simple for his lifetime and bequeaths entire interest to his widow at his death. Widow maintains fee ownership until her death when the property is divided among heirs.

Options (1) and (4) are modified slightly when a trust is employed as a business structure. In those cases, part of the husband's estate is put into a trust with the widow as income beneficiary for her life. Upon her death, the trust is dissolved and the interests divided among heirs.

Consistent with the objective of maintaining control and guaranteeing adequate income for the original owners, the combined ownership interest held by husband and wife over their lifetimes does not drop below 50%.

Depending upon the business structure specified, certain options are not allowed. Because a partnership requires two or more persons, selecting (4) above would be erroneous.

Output from this subroutine includes a table listing the ownership interest of each individual by year and by period. If the value of the forest business is impaired by funding estate tax liabilities with immediate timber liquidation, the ownership interests are adjusted. The interest transferred to each party is equal to \$10,000 divided by the value of the forest property in any given period.

5.4.2.5 Estate tax routines. The estate tax algorithm calculates the tax due at the death of each spouse and then calls a funding subroutine to provide the liquidity needed to meet the total estate settlement cost. In the current model, a spouse's death occurs only at the beginning of the first year of a period. The widow's death is either 10, 20, or 30 years after that of her husband. The minimum ten-year interval precludes calculating a prior transfer credit (2013).

The user selects the period of death in response to a question posed by the program. The simulator then determines the net estate tax liability by calculating the decedent's gross estate, adjusted gross estate, and taxable estate and subtracting the appropriate credits and adding other charges. If inter vivos taxable gifts

have been made, they are added to the taxable estate.

Having determined the estate's liability, the program calls one of three funding subroutines to generate the cash needed to meet the tax liability, administration expenses, and other associated costs:

- (1) immediate liquidation of sufficient timber capital to meet total estate settlement costs plus the additional costs incurred by using this option;
- (2) borrow the necessary funds and repay principal and interest from the proceeds of regular, planned timber sales;
- (3) use life insurance proceeds from policies owned in ways such that they are excluded from the insured's estate.

Tax consequences of these options were discussed in Chapter 3 but are highlighted again in the following explanations.

When immediate timber liquidation is the chosen method, total liability consists of the estate tax levy and administration expenses. The subroutine "cuts" timber on an oldest-first priority until it has raised sufficient funds to meet these expenses plus additional tax costs occasioned by timber harvesting such as income and yield taxes. The inventory at the beginning of the period in which death occurs is adjusted to reflect the liquidations. The adjusted inventory is cycled back to the harvest scheduling routine as a new period beginning inventory. Current and future period harvests and dollar values are adjusted to account for changes caused by the liquidation.

The generation of timber revenue for estate tax purposes may itself be a taxable event. Additional taxes are possible depending on business structure. Income and yield taxes on the timber revenue may be required. These taxes are not reported explicitly but are, instead, implicit in the present net value.

In the case of sole proprietorships, no income taxes will be

due because no capital gain is realized when the timber is sold, assuming immediate settlement of the estate. This is because the cost basis of the timber is stepped up to market value at the time of death. State yield taxes must be paid, however. Similar arguments apply for the trust structure used in the model. Because business entities, not individuals, actually hold title to the forest in the case of partnerships, corporations and Subchapter S corporations, there is no step-up of the cost basis of timber at times of the husband's and wife's deaths. The basis step-up that does occur is in their interests in the business rather than in the underlying assets. Therefore, state and federal income taxes required by raising revenue through timber sales is calculated. The calculations are different depending upon business structure. Corporations pay a corporate income tax but partnerships and Subchapter S corporations are taxed at the individual owner level. Fairly high marginal rates are assumed: 10% for state income taxes and 37% for federal income taxes. These rates may be readily adjusted to reflect different circumstances. The timber income is treated as a long-term capital gain. Yield taxes are also due.

Total liability, then, for partnerships and both types of corporations is the sum of net estate taxes, administration expenses, state and federal income taxes, and state yield taxes. The need for additional revenue to pay these taxes requires more timber cutting which, in turn, generates more taxable income. The model iterates until total liability stabilizes and then prints the resulting acreage distribution and total cash requirement.

The second funding option is that of borrowing from the federal government and the Federal Land Bank, a private source. The loans are the liability of the estate's heirs, not of the business. Interest and principal are charged at the individual level and certain interest payments are deductible for income tax purposes by the heirs.

As discussed in Chapter 3, Section 6166 allows qualified estates to pay a portion of the federal estate tax liability in installments. The FEPS model checks to insure the estate meets the eligibility requirements in terms of percent of gross estate value or percent of taxable estate value. If the estate is eligible, the simulator calculates the portion of federal estate tax to be deferred and the interest charges to be levied. Because the interest is deductible as an administrative expense for federal estate tax purposes, the interest charge lowers the adjusted gross estate and the total tax. Thus, the amount to be borrowed is also diminished. The model iterates until the interest charges stabilize. In this model, if the estate is ineligible, all loans come from private sector sources.

The balance of the federal estate taxes not covered under the 6166 deferral and the actual administration expenses are paid by borrowing from the Federal Land Bank. The model assumes the borrower meets the Land Bank's requirements for collateral and management. A 30-year loan program is established with a user-specified interest rate. Interest charges on this loan are a deduction for individual income tax purposes. Two additional costs are incurred with a Federal Land Bank loan. First, all borrowers must purchase shares in the bank equal to 5% of the total loan. The shares are cashed in at maturation of the loans, lowering the final payment. Second, there is a 4% loan handling fee.

Output from this subroutine includes a principal-interest payment schedule for the 6166 loan, an annual payment-share cost-closing cost report for the Federal Land Bank loan, and the present value of the loan program.

Because these loans are repaid with after tax dollars by individuals, there are no tax consequences at the business level or any interruption of forest management. Loan liability and interest deductions are apportioned in the same manner as income.

The final funding option is life insurance. The model assumes ownership of the life insurance policies is such that the proceeds are not includable in the decedent's estate. Instead, they are payable to other entities but still used for settling the estate. Premiums are paid with post-tax timber receipts regardless of business structure and are not deductible for income tax purposes.

In the case of sole proprietorships, insurance trusts own the policies. Premiums are paid with money received as gifts from the insured. For partnerships, corporations, and Subchapter S corporations, the business pays the premiums and receives the proceeds at the death of the insured. The proceeds are used by the business to purchase the interest of the decedent, providing the estate with tax-free income to meet settlement costs.

Given the magnitudes of settlement costs and the initial ages of the husband and wife, the model calculates the annual premium for life insurance, sufficient to cover those costs. For simplicity, and because no mutual life insurance company guarantees dividends, the model assesses the full amount of the premium for the lifetime of the individual, beginning in the initial year of analysis. Thus, the insurance program is front-loaded in the analysis.

Once funding matters have been settled, the estate tax routine prints the results of its computations, including any adjustments necessitated by the funding options.

5.4.2.6 Financial management. The financial management subprogram organizes all tax costs of operating a forestry enterprise except the direct payment of estate taxes. Using annual gross timber revenue, it determines business and individual tax burdens, accounts for estate tax-related debts, and derives an after-tax, net annual timber revenue. The discounted sum of these annual net cash flows over the planning horizon is the present net value of timber income.

The subprogram first calculates the amount of resource taxes:

yield taxes, forest products harvest taxes, and bare land property taxes. These taxes are based on total value of the yearly harvest, total volume of that harvest, and total assessed value of land, respectively. Assessed land values are assumed to increase at the same annual real rate as stumpage prices.

Five business organization options are possible in the FEPS model. Depending on the ownership distribution option selected, there can be one, two, or four owners (if feasible). The options and ownership varieties are

- (1) sole proprietorship where the forest property is owned by husband and wife as tenants by the entirety or by the husband in fee simple.
- (2) partnership in which husband and wife participate with their adult children. One-partner partnerships are not possible. Although husband and wife could form a partnership between themselves, at the death of one spouse, the partnership is dissolved and the program vests all ownership in the survivor.
- (3) corporation where any ownership distribution pattern is feasible. Form can be used with single or multiple stockholders.
- (4) Subchapter S corporation in which ownership can be held by one or more individuals as in (3) above.
- (5) trust which is created at the death of the first spouse. As discussed in Chapter 3, there are many kinds of trusts. The current model assumes a sole proprietorship for the periods when both husband and wife are alive. At the death of the widow(er), the trust is dissolved and the ownership interests are shared equally among the heirs. The value of the business held by the trust is not included in the estate. The sole proprietorship can be held initially in a tenancy in common or in fee simple.

In FEPS, only the corporation incurs any business-level taxes. For all other business structures, the direct taxes, credits, and taxable income are passed through to the business' owners to be reported on their individual tax returns.

For the corporate business structure option, the model computes corporate taxable income by subtracting depletion, amortization and resource taxes from gross revenue. It then finds the regular corporate tax (11) and the alternate corporate tax (1201), and selects the minimum. If the alternate tax of IRC Section 1201 is chosen, a minimum tax (57 et seq) for the tax preference item, long-term timber capital gains is calculated, following the rather complex steps required for timber corporations. Total federal corporate tax is the sum of regular or alternate income tax plus minimum tax, if any. A state corporate excise tax of 7.5% of corporate taxable income is levied.

Corporate earnings and profits are gross revenue net of taxes and insurance premiums. All earnings and profits are distributed as dividends to stockholders in proportion to their ownership interest and taxed as ordinary income at the individual level.

For other business structure options, the simulator apportions taxable long-term capital gains, resource taxes, credits, amortization, and interest deductions directly to the owners in accordance with their interest in the business. All these flows retain their tax character as they are passed through the business to the individual. The one exception is for some long-term capital gains earned by a Subchapter S corporation, which are passed as ordinary dividends due to a ceiling on the amount which can be passed as long-term capital gains (1375(a)(1)).

Once the allocation process is finished, the subroutines compute federal and state income taxes payable by the original owner and heirs. For the original owners, the model assumes timber is the only income source and that, while married, the owners filed joint income tax returns.



The subroutine determines personal exemptions, dividend exclusions, and taxable income. It applies appropriate tax tables to find gross federal tax and makes adjustments for reforestation credits and alternate minimum tax for the tax preference item, long-term timber capital gains, to obtain total federal income tax. A similar process is applied to the income of heirs. However, personal exemptions are not included and marginal tax rates are used rather than tax tables.

Oregon individual income taxes are calculated for original owners and heirs. Again, tax schedules are consulted for the husband and wife's joint return while the top marginal rate of 10% is applied to the heirs' income. Like its federal counterpart, a state minimum tax is payable on long-term timber capital gains.

The final step in the financial management subprogram is to find the net cash flow for each year by subtracting corporate and individual state and federal income taxes, resources taxes, insurance premiums, loan payments, and gift taxes from gross timber revenue. All net annual values are discounted to the present to obtain the present net value of the timber revenue flows for the entire planning horizon. These are compared with the present value of the gross cash flow to determine the cost of estate management alternatives.

5.4.2.7 Document writer. The document writing features of FEPS produce harvest schedule, valuation and financial reports for the selected combination of business structure and estate tax funding method. The following tables are developed from the harvest scheduling and valuation routines:

- (1) acreage distribution by age class and period;
- (2) value of the standing inventory at the start of each period;
- (3) acres harvested by age class and period;

- (4) harvest volume by period and total harvest volume for the planning horizon;
- (5) gross annual cash flow by age class and period;
- (6) present value of gross cash flow.

There are three types of financial reports: ownership distribution tables, estate returns and funding method results, and annual reports for the business and its owners.

The ownership distribution tables show the percent interest each individual, including a trust, holds in the forest business for each year of the analysis.

Upon the deaths of each of the original owners, the simulator prints highlights of the estate tax return. It also prints results of the funding method: total liability and new acreage distribution, loan payment schedule, or insurance premiums, depending on the funding option chosen.

The annual financial reports for the business and individuals vary with the business structure chosen. Where appropriate, a business level report shows the critical elements used to calculate business taxes and the amounts which are to be distributed to the owners. A second report summarizes, for each year, all tax costs and other outlays from gross timber revenue, whether incurred at the business or personal level. The annual net amounts are discounted to the present and reported as present value of the net cash flow for a given set of business structure and funding alternatives.

A final report shows the important items of the annual federal tax return of the original owners for each of their lives during the analysis.

## 5.5 Case Studies

The approach used in this research is to use case studies in the simulation model to determine which combinations of business

structure and funding method are most suitable for typical non-industrial forest landowners. The case study information entered into the model is divisible into three categories: data which are fixed for the entire analysis, indicators of the options to be studied, and values for those parameters to be used to test the sensitivity of the results.

The fixed data are themselves divided into three classes: time, rates, and costs and values. Time parameters, with actual values in years shown in parentheses, are age class interval (10), regeneration lag (0), planning horizon (90) and initial year of analysis (1984). Parameters with fixed rates are yield tax (6.5%), property tax (2%), Federal Land Bank interest rate (6%), marginal federal and state income tax rates for heirs (37% and 10%, respectively), and estate administration expenses (5%). The cost data include regeneration costs per acre (\$200), funeral expenses (\$5,000), charitable contributions (\$0), initial per acre cost basis of merchantable timber (\$1,000), and per thousand board feet forest products harvest tax (\$0.29). The model assumes there are two adult children who will inherit the property and that the husband and wife each have \$100,000 of assets other than the forest property, which are includable in their estates.

The initial values for bare land and timber, developed from Oregon Department of Revenue data are shown in Table 5.1.

Table 5.1 Bare Land and Stumpage Values for Douglas-fir on a Typical Site in Benton County, Oregon

Age Class	Base Land Value	Timber Value	
	Per Acre	Per Acre	Per MBF
0	380	0	-
10	380	612	-
20	380	1530	-
30	380	2550	-
40	380	-	247
50	380	-	260
60	380	-	281

The case studies of the variables of interest consist of 42 basic runs which simulate feasible combinations of funding method, business structure, and ownership distribution to create those structures. Table 5.2 shows the matrix of basic runs. The designations, 50-50, 75-25, and fee indicate the allocation of forest property interests between husband and wife in the initial year. The suffix, TF, indicates that the husband gifted business interests to the children during his lifetime on a tax-free basis, utilizing the \$10,000 annual exclusion to its maximum level.

The cost of each alternative is the difference between present value of gross cash flow and present value of net cash flow. When timber liquidation is used to fund estate taxes, the estate settlement costs are embedded in the gross cash flow. True gross cash flow is determined from uninterrupted management regimes.

Items which are temporarily fixed for the base runs, but which will be varied in the sensitivity analysis are:

- (1) alternate rate of return: 5%
- (2) years of life expectancy for husband and wife: 20 and 30 years, respectively
- (3) annual real price trend in land and stumpage prices: 2%
- (4) total acreage in ownership: 200
- (5) initial age class distribution

<u>Age Class</u>	<u>Acres</u>
0	0
10	60
20	55
30	30
40	40
50	10
60	5

- (6) management regime: area control
- (7) rotation age : 60 years

The case study results will show the costs of each combination,

Table 5.2 Case Study Base Runs: 42 Feasible Combinations of Business Organization Form-Ownership Pattern and Estate Settlement Funding Method; Entries Indicate Simulation Number

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	1	15	29
Fee	2	16	30
<u>Partnership</u>			
50-50,TF	3	17	31
75-25,TF	4	18	32
<u>Corporation</u>			
50-50	5	19	33
50-50,TF	6	20	34
75-25,TF	7	21	35
Fee	8	22	36
<u>Subchapter S</u>			
50-50	9	23	37
50-50,TF	10	24	38
75-25,TF	11	25	39
Fee	12	26	40
<u>Trust-Sole</u>			
50-50	13	27	41
Fee	14	28	42

the annual gross and net cash flow, and the intergenerational transfer of property rights.

The basic case studies will be tested for sensitivity to the above listed parameters to determine the stability of the relative costs of alternative business structures and funding technique.

Based on the literature review in Chapter 2 and the discussion of tax laws and business structures in Chapters 3 and 4, I expect the simulation model to show that for the case studies 75-25 (TF) and 50-50 (TF) partnerships and Subchapter S corporations are the preferred business structures. Their top ranking is expected because such structures allow spreading of business interests among family members, thereby saving income and estate taxes. Moreover, partnerships and tax options corporations protect the tax character of long-term capital gains when reported on individual tax returns.

In addition, I anticipate that loans will be the best estate funding option. Loans postpone costs of estate settlement and are repaid with income from an appreciating asset, timber. Interest charges are deductible on the estate return (6166 loans) or on the individual's income tax return (Federal Land Bank loan).

The least cost combinations of business organization form and estate funding method should be a mix of 75-25 (TF) or 50-50 (TF) partnerships and Subchapter S corporations coupled with the use of loans to fund estate liabilities.

## CHAPTER 6

## ANALYSIS OF SIMULATION RUNS

6.1 Introduction

To determine the best combination of business organization and funding method , 504 simulations, consisting of 12 sets of 42 runs each, were done employing the model described in Chapter 5. The 42 runs in each set represent the combinations of interest shown in Table 5.2. The first set consists of the base runs and the other eleven sets are sensitivity runs, testing the stability of base results.

This chapter presents the results of those simulations. The first section will discuss the criterion for ranking the combinations and the feasibility checks required. The next section will address base set results. A third section will focus on the sensitivity analysis used to test a change in one of the following seven base run parameters:

1. alternate rate of return,
2. life expectancy,
3. real price trend in timber and land,
4. total acreage in forest,
5. initial distribution of forest age classes,
6. management regime,
7. rotation age.

The chapter closes with a summary of the simulation results and conclusions drawn from those results.

6.2 Criterion and Feasibility

The best combination of business form and funding method is that which imposes the least reduction, expressed as a percentage, in the

present value of gross (pre-tax) cash flow. The reduction accounts for direct and indirect estate settlement costs, and state and federal income taxes. If liquidation is selected as the funding method, reductions in gross cash flow are part of those costs.

Once the forest is fully regulated, gross cash flow is the same regardless of estate funding method or business structure. With area control management and a 60-year rotation, net (post-tax) cash flow for loans and life insurance funding options coincide for any given business structure-ownership pattern beginning in period six, when regulation is achieved and all estate tax-related debts are paid. Therefore, any differences in net cash flow due to estate funding by either loan or insurance are completely accounted for at that point.

Because the path to complete regulation is interrupted twice by liquidations, the entire cost of liquidation is unaccounted for until that forest reaches regulation. Depending on the life expectancy of the widow(er), regulation could be postponed until the start of period ten. Gross cash flow for the periods between the first liquidation and complete regulation will be smaller for the liquidation option than those associated with other funding techniques. When a regulated forest is finally established, gross and net cash flows are the same for all funding alternatives for a given business structure. Therefore, to correctly compare the differences between gross and net present value among the three funding methods, the analysis was extended through nine decades.

With stand maturity management regimes, regulation of an unregulated forest is never achieved. And, if the age class distribution is altered by liquidations, gross cash flows will thereafter diverge from those for loans or life insurance. The 90-year planning horizon was retained for consistency among all runs. If, as a result, total costs of liquidation are underestimated in stand maturity runs, the error in present value is very small because the differences occur far into the future.



In general, the planning horizon was extended only to capture the costs of reducing cash flow under the liquidation alternative. Ninety years is generally not a justifiable length of family tenure on non-industrial forests.

In addition to percent reduction of gross cash flow under each funding and business form combination, the results were checked to see if each combination was feasible. Feasibility is an indicator of the forest's ability to cover all costs associated with its ownership, and is defined as a positive net cash flow for each and every year in the planning period. If negative net cash flows occurred, the results were examined to determine their magnitude, duration and incidence. In some cases, the negative flows were small and occurred for one to three years. In other combinations, they were large and lasted from one to two decades. Due to the timing of required payments, the burden of negative cash flows for loans and liquidations fell exclusively on the heirs; that for insurance was borne by the original owners. Each table which follows notes the existence and character of negative net cash flow whenever it occurs.

### 6.3 Analysis of Base Runs

The base runs are the set of 42 possible combinations of business organization form-ownership pattern and funding method shown in Table 5.2. Parameters for the base runs are initially fixed as listed in section 5.5. They are repeated at the top of Table 6.1, which shows the model's results.

Total settlement costs at the death of the first spouse are relatively small regardless of business form or funding technique. The marital deduction is adjusted so that no federal or state death taxes are owed even if a testamentary non-marital deduction trust is created. Any costs incurred stem from having to raise cash for administration expenses. It is the costs of settling the widow(er)'s estate when neither of the above estate planning tools are available and the

taxation of regular income which create most of the differences among the business structure-funding method combinations.

The least cost business organization form for the liquidation funding alternative was the sole proprietorship combined with a non-marital deduction testamentary trust in which the surviving spouse was the designated income beneficiary (Table 6.1). The costs were 26.7 and 26.5 percent for trust-proprietor options beginning with a 50-50 distribution between husband and wife and a fee simple ownership by the husband, respectively. Hereafter, those trusts are referred to as 50-50 trusts or fee trusts. The preceding adjective describes the initial ownership distribution. The result is a direct consequence of large estate settlement savings attributable to the step up in cost basis of timber, eliminating capital gains taxes on income from liquidated timber. Since the amount of timber liquidated was minimized, the trust option experienced the least reduction in future cash flow among all business forms.

Partnerships and Subchapter S corporations, which began with a 75-25 distribution between husband and wife and in which the husband gifted interests to the heirs annually, were slightly higher in cost than the trust option, 27.1 and 27.5 percent, respectively. For simplicity, business forms with this ownership pattern are hereafter described as 75-25 (TF). Although the direct death tax costs were almost identical for these three business options, settlement total costs for the partnership and Subchapter S corporation were significantly higher due to income taxes owed on revenue generated by liquidation. The model does not employ value freezing techniques for partnerships and corporations (see sections 4.3.3 and 4.4.3). Those income taxes are avoided in the trust option because of the step up in cost basis. The slight advantage partnerships enjoy over Subchapter S corporations is due entirely to the pass through limitation for long-term capital gains imposed on tax option corporations (see section 4.5.2). Some of that timber income must be distributed to stockholders as dividends and is taxed at higher ordinary income rates.

Table 6.1 Percent Reduction in Present Value of Gross Cash Flow for Combinations of Funding Method and Business Form for Base Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 and 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	31.1	33.2 (1)	44.9
Fee	31.4	34.0 (1)	45.8
<u>Partnership</u>			
50-50,TF	31.1	31.8	40.4
75-25,TF	27.1	27.5	32.1
<u>Corporation</u>			
50-50	62.2	67.2 (2)	73.8
50-50,TF	59.7	63.4	67.6
75-25,TF	57.8	59.8	62.0
Fee	62.5	68.1 (2)	75.0
<u>Subchapter S</u>			
50-50	36.1	36.2 (1)	48.8
50-50,TF	31.4	31.9	40.6
75-25,TF	27.5	27.8	32.5
Fee	36.8	37.0 (1)	50.1
<u>Trust-Sole</u>			
50-50	26.7	28.7	33.3
Fee	26.5	29.1	33.8

Present Value of Gross Cash Flow: \$1,233,990

Negative Net Cash Flow Occurred in:

- (1) Several Years in Period 4
- (2) Several Years in Periods 4 and 5

The least preferred business structure under the liquidation method was the close corporation. Depending on the ownership pattern, 57.8 to 62.5 percent of the present value of gross cash flow was lost to taxes or decreased gross cash flow. Such high costs can be traced to the double taxation of timber income; first as capital gains in the hands of the corporation, then as ordinary dividends reported by stockholders.

Sole proprietorships, and tax option corporations with ownership patterns which make the widow(er) the sole owner or stockholder upon the first spouse's death, incur such high estate taxes that income tax savings features are effectively offset.

The preferred business structures for the loan funding alternative were the 75-25 (TF) partnership and Subchapter S corporation. Costs were 27.5 and 27.8 percent, respectively. Again, the slight advantage of the partnership is due to the capital gains pass through limitation on Subchapter S corporations. The trust-proprietorship options were slightly higher in cost: 28.7% for a 50-50 initial distribution and 29.1% for an initial fee ownership.

The reversal in preference under the loan technique from that of the liquidation method has two causes. First, direct estate taxes for the trust option are slightly higher because the widow(er) had retained two percent more ownership than in the partnership or the tax option structure. Second, because loans are treated as personal liabilities of the heirs, no business level income taxes are incurred as had been the case with the liquidation option. Close corporations continued as worst cases, siphoning away 59.8 to 68.1 percent of the present value. Sole proprietorships and tax option corporations with ownership patterns which left the surviving spouse with complete ownership of the forest had very high estate settlement liabilities. In fact, the costs were so great the forest was unable to generate sufficient income from regular harvests to make loan payments and meet property and income tax obligations.

When insurance was the selected funding technique, the preferred choices were the 72-25 (TF) partnership and 75-25 (TF) Subchapter S corporation. Their costs were 32.1 and 32.5 percent, respectively. Trust-proprietor options followed at 33.3 and 33.8 percent. Lower estate taxes and income taxes for the partnership and tax option corporation gave these business forms a minor advantage over the trust arrangements. The capital gain pass through limitation on the Subchapter S corporation gave a slight edge to the partnership which is not subject to that restriction.

Insurance premiums for those business forms and ownership patterns which cause the entire forest property to be included in the widow(er) gross estate were more costly than those which exclude some portion. Close corporations continue as worst choices due to double taxation.

Regardless of the business structure selected, immediate timber liquidation was the least cost funding option in the base runs set. All entries in the liquidation column in Table 6.1 are smaller than those in the corresponding loan and insurance columns. Under sole proprietorships, timber-based loans were nearly as cost effective as liquidations, but large principal payments on section 6166 loans caused negative net cash flows in the decade the surviving spouse died. Similar problems occurred in Subchapter S and close corporation business structures which did not utilize tax free gifts to spread ownership interests among family members. In fact, for the close corporation, net negative cash flows occurred for each of the ten years the principal of the 6166 loan was paid.

For those business structures in which ownership interests were distributed tax free to heirs, the liquidation alternative was only slightly better than the loan option. The difference can be traced directly to the timing of loan payments versus gross cash flow reductions. With liquidation, the impact of post-mortem reduced gross cash flow was distributed over the balance of the planning horizon. In contrast, loan payments were made within thirty years of death, so that, for the base runs, their costs were all accounted for by the end of

period six.

Life insurance was always the least preferred option for any given business structure and ownership pattern. This result was obtained for two reasons. First, premiums per thousand dollars of coverage were set according to the owners' initial ages and expected life spans. In the base runs, owners were assumed not to die prior to their expected age of death. Second, premiums were paid early in the analysis, prior to death, so their present value was not discounted as heavily as are those estate costs incurred at or after death.

Overall, the best combinations of business organization form and funding method were 50-50 and fee trust-sole proprietor arrangements funded by immediate timber liquidation (26.5% and 26.7%). These were followed by 75-25 (TF) partnerships and Subchapter S corporations which used liquidation to raise cash for estate tax purposes. Partnerships and Subchapter S corporation with that same initial ownership pattern but using timber based loans to meet estate settlement costs, placed fifth and sixth, with costs of 27.5 and 27.8 percent, respectively.

Close corporations incurred the highest costs regardless of funding method. In fact, the corporate alternatives ranked 31<sup>st</sup> and 42<sup>nd</sup> in the 42 base runs, consuming 57.8 to 75.0 percent of the present value of gross cash flow in tax-related costs.

In summary, the most preferred business organization form among the model's alternatives for the base runs were the trust-sole proprietor arrangements. Tax saving on the settlement of the surviving spouse's estate attributable to the step-up in cost basis in timber outweighed annual income tax savings available in partnerships and Subchapter S corporations.

The importance of dispersing business interests among family members to save income and estate taxes is well illustrated in Table 6.1. Partnerships and Subchapter S corporations scenarios involving gift programs incurred smaller reductions than Subchapter S corporations and sole proprietorships without such programs for a given funding option.

The base results confirmed the desirability of retaining tax-favored status of timber income as long-term capital gains. Business structures which were not tax entities but which acted as conduits of income had reductions ranging from 26.5 to 50.1 percent depending on funding option. The close corporation, which pays capital gains tax at the business level and whose shareholders pay ordinary taxes on dividends distributed by the corporation had reductions of 57.8 to 75.0 percent.

The best funding option was clearly immediate timber liquidation even in those cases where the business was required to pay federal and state income taxes on the revenue generated by liquidation. The emergence of liquidation funding was a surprising result. Earlier researchers (Sutherland, 1978; Sutherland and Tedder, 1979) hinted that other methods might be preferred. This result was due to the postponement of costs (reductions in gross cash flow) over several decades. Moreover, the model assumed that liquidation sales are made at fair market value, with no discount for potential adverse market conditions or sales under duress. If less than fair market value is received per unit, more timber would need to be liquidated, lowering future gross cash flow more.

Insurance, on the other hand, was the poorest choice because its costs occurred early in the analysis. Much of the practitioners' literature indicates that insurance is one of the best ways to provide liquidity. Two other factors contributed to its poor showing in the simulation model. First, there is no risk factor in the model. Insurance premiums are set assuming perfect foresight. If death occurred earlier than expected, insurance would be more attractive. Second, the model assumes no dividends are paid by the insurance company so that annual premiums are constant per thousand dollars of coverage over the insured's lifetime.

Loans, whose costs occur in the middle of analysis, were the in-between choice of funding method. As suggested by Monroe (1979), cash flow was a problem in several instances as loans overlapped or where

the size of a single loan exceeded the forest's capacity to pay (see notes 1 and 2 in Table 6.1).

In general, the preferred combinations were those which spread income tax liability among family members, reduced the portion of the forest business includable in the estate, retained the long-term capital gains character of timber income and postponed costs of estate settlement far into the future.

#### 6.4 Sensitivity Analysis

The stability of the base runs was tested by altering the values of given parameters and rerunning the simulation model for the 42 combinations of interest. The following sections address results of the sensitivity runs.

##### 6.4.1 Alternate rate of return

To test stability of the base results to the specified five percent real alternate rate of return, two sets of sensitivity runs were made using seven and ten percent as the alternate rate. Rates lower than five percent were not tested because I felt such rates were unacceptable for private investment. The percent reduction in present value of gross cash flow for seven and ten percent rates are shown in Tables 6.2 and 6.3, respectively.

For the liquidation funding alternative, the order of preference in business organization form did not change when the alternate rate rose from five to seven percent (Table 6.2). Trust-proprietorships were still the least cost options (22.7 and 22.8 percent), followed by 75-25 (TF) partnerships and Subchapter S corporations (22.9 and 23.2 percent, respectively). Except for close corporations, no business structure consumed more than 30% of present value in tax-related costs.

But as the alternate rate increased to ten percent, some re-ordering of business form preference did occur. The 75-25 (TF) partnerships and tax option corporation replaced the two trust



Table 6.2 Percent Reduction in Present Value of Gross Cash Flow for Combinations of Funding Method and Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 and 30 Years; Alternate Rate = .07, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	25.6	29.2 (1)	52.7
Fee	25.8	29.9 (1)	54.2
<u>Partnership</u>			
50-50,TF	25.7	27.6	44.3
75-25,TF	22.9	24.0	33.0
<u>Corporation</u>			
50-50	54.7	60.2 (2)	76.3
50-50,TF	53.2	57.0	67.7
75-25,TF	52.1	54.2	60.0
Fee	55.0	61.0 (2)	78.1
<u>Subchapter S</u>			
50-50	29.2	31.4 (1)	55.7
50-50,TF	25.8	27.6	44.4
75-25,TF	23.2	24.3	33.3
Fee	29.8	32.5 (1)	57.6
<u>Trust-Sole</u>			
50-50	22.8	25.3	34.8
Fee	22.7	25.7	36.0

Present Value of Gross Cash Flow: \$737,471

Negative Net Cash Flow Occurred In

(1) Several Years in Period 4

(2) Several Years in Periods 4 and 5

Table 6.3 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 and 30 Years; Alternate Rate = .01, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	20.6	23.6 (1)	61.7
Fee	20.7	24.1 (1)	63.9
<u>Partnership</u>			
50-50,TF	20.6	22.3	48.7
75-25,TF	19.0	20.0	34.3
<u>Corporation</u>			
50-50	47.3	51.1 (2)	79.4
50-50,TF	46.7	49.3	68.0
75-25,TF	46.4	47.9	57.7
Fee	47.5	51.8 (2)	81.9
<u>Subchapter S</u>			
50-50	22.4	24.7 (1)	63.2
50-50,TF	20.5	22.2	48.7
75-25,TF	19.2	20.2	34.5
Fee	22.8	25.5 (1)	65.8
<u>Trust-Sole</u>			
50-50	19.3	21.2	37.0
Fee	19.2	21.6	39.1

Present Value of Gross Cash Flow: \$447,994

Negative Net Cash Flow Occurred In

(1) Several Years in Period 4

(2) Several Years in Periods 4 and 5

possibilities as least cost business forms (Table 6.3). In addition, 50-50 (TF) Subchapter S and partnership options were more attractive than sole proprietorships when the alternate rate was ten percent. Except for close corporation no business claimed more than 23 percent of present value in tax-related costs.

The ranking of business organization forms under the loan funding option remained unchanged as the alternate rate of return increased from five to seven to ten percent, with one very minor exception. Partnerships and tax-option corporations with 75-25 initial splits continue to rank highest, followed by trusts. Close corporations remained as the most costly choice. The exception which did occur illustrates the complexities captured by the simulation model.

When the real alternate rate was ten percent, the 50-50 (TF) Subchapter S corporation became slightly more attractive than a partnership with the same ownership pattern (Table 6.3). That change in ranking is due to very subtle income tax differences.

During the periods prior to the widow's death, total federal income taxes for the tax option corporation were slightly less than those incurred under the partnership structure. A portion of the tax option corporation's timber income was taxed as ordinary dividends which are not subject to a minimum tax. All of the partnership income was liable for minimum tax. The magnitudes of the income were such that it was advantageous to have some income taxed at ordinary rates. But during the periods when the loans were being paid, the partnership gained a slight edge. Then, once the loans were paid, the Subchapter S corporation reclaimed the advantage.

The relative ranking of these two combinations depends on the alternate rate which is used to discount the net flows. As the rate increases, the early advantage of the tax option corporation became relatively more important.

Under the insurance option, business structure preference did not change when the rate increased to seven percent. However, when the

rate climbed to ten percent, some changes in ranking did occur in the middle of the range.

The 50-50 (TF) Subchapter S corporation moved ahead of the similarly owned partnership option for reasons discussed above. And, a close corporation alternative moved up from the bottom four positions. By spreading ownership among family members from the initial 75-25 split, estate taxes were lower than proprietorships or Subchapter S corporations which did not involve gift programs. The savings were reflected in lower insurance premiums. And, because insurance premiums were paid in the early periods, the savings outweighed future double taxation costs.

Regardless of the alternate rate of return used in case study simulations, the best funding method for a given business structure-ownership pattern was always immediate timber liquidation. Loans continued as second choice, and insurance was third.

Occasionally, loans were almost equally attractive as liquidation. However, negative net cash flow was a problem for every loan program connected with a business form which vested the widow with complete ownership of the forest business. This problem is independent of discount rate. The forest was simply not capable of generating sufficient gross cash flow from regular, planned harvests to meet loan payments.

For liquidation and loan options, the percent reduction in present value of gross cash flow decreased as the alternate rate increased. The reverse was true for the life insurance option because the premiums reduced early period net cash flows. That reduction becomes more critical as the interest rate rises.

One reason liquidation remained the preferred method as the discount rate increased was that liquidation caused more harvesting to be done in the 50-year age class. Based on a marginal value growth percent criterion, the best rotation age when interest rates were seven and ten percent was 50 years, rather than the 60 years which was best when the alternate rate was five percent.

The preferred combinations of business structures and funding methods did not change significantly as the alternate rate increased.

At seven percent (Table 6.2) only some mild shuffling took place in the middle of the preference ordering. Trust-proprietorships and 75-25 (TF) partnerships and tax option corporations funded by immediate timber liquidation, in that order, were most preferred. Close corporations ranked 27<sup>th</sup> and 32<sup>nd</sup> to 42<sup>nd</sup>, remaining worst choices regardless of funding method.

At a ten percent discount rate, the 75-25 partnership and tax option corporation with liquidation ranked first and second, respectively, moving the two trust-liquidation combinations to third and fourth (Table 6.3). The 75-25 (TF) partnerships and Subchapter S corporations employing loans to fund estate tax liabilities ranked fifth and sixth, as had been the case with lower discount rates. But, with the ten percent rate 50-50 (TF) partnerships and tax option corporations using liquidation as funding technique moved to seventh and eighth. Close corporations continued to do almost as poorly. Some non-corporate forms coupled with life insurance were more costly than corporations linked to liquidations or loans.

In summary, as the alternate rate increased, future estate tax savings became less important and earlier income tax savings became more important. Therefore, partnerships and Subchapter S corporations were generally the preferred business organization form. Such business structures can spread income and ownership among family members, and protect tax-favored characteristics of timber income. Their position was enhanced by employing funding techniques which postponed costs of estate settlement.

#### 6.4.2 Life Expectancy

In the base runs, the husband's life expectancy was 20 years, the wife's, 30 years. To test the stability of the results, two sets of simulations were done using different life expectancies. First, life

expectancy for each spouse was shortened ten years so that the husband's death would occur ten years into the analysis, while the wife's would occur 20 years from the initial year. For the second sensitivity set, the husband was expected to live ten years and the wife, 30 years. In all specifications of life expectancies, the deaths were spaced ten years apart to avoid calculating an estate tax credit on prior transfers provided in I.R.C. section 2013. The initial ages of husband and wife were 55 and 50 years, respectively. The results of 10-20 runs are given in Table 6.4; those for the 10-30 runs, in Table 6.5.

The preference ordering of business organization form changed only slightly when the life expectancy parameters were altered under the liquidation funding alternative.

When life expectancy shortened for both husband and wife, trust-proprietorships remained as least cost option (Table 6.4). Partnerships with 75-25 initial ownership patterns placed third. Minor rearranging occurred in the next five positions, but there were no ordinal changes after that.

When only the husband's life expectancy was shortened (Table 6.5), the preference ordering remained virtually unchanged. The one alteration which did occur was that the 50-50 sole proprietorship became less costly than a 75-25 (TF) Subchapter S corporation.

For liquidation funding, when the husband's life expectancy shortened, percent reduction in present value increased for all but the trust alternatives, regardless of what had happened to the wife's life span. The increases were in the range of one-tenth of one percent to three percent. Because liquidations were absorbed into lower gross cash flow spread over the entire planning horizon, the impact on present value was minimal.

The most dramatic increases were in those business forms where the initial ownership interests were divided 75-25 between husband and wife and the wife's death came twenty years after the husband's. Because

Table 6.4 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 10 and 20 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	31.2	32.3	31.1
Fee	31.6	33.3	31.1
<u>Partnership</u>			
50-50,TF	30.9	30.7	30.4
75-25,TF	30.4	30.5	30.0
<u>Corporation</u>			
50-50	64.1	67.9 (1)	64.5
50-50,TF	61.3	63.9	61.9
75-25,TF	61.0	63.6	61.6
Fee	64.5	69.0 (1)	65.0
<u>Subchapter S</u>			
50-50	36.1	35.6	35.2
50-50,TF	31.4	31.3	31.3
75-25,TF	31.0	31.1	30.6
Fee	36.9	36.8	35.8
<u>Trust-Sole</u>			
50-50	26.0	27.5	26.0
Fee	25.0	27.3	24.2

Present Value Of Gross Cash Flow: \$1,233,990

(1) Negative Net Cash Flow Occurred In Several Years in Period 4

Table 6.5 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 10 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	31.2	33.3 (1)	43.8
Fee	31.5	34.0 (1)	43.7
<u>Partnership</u>			
50-50,TF	31.4	32.0	39.8
75-25,TF	31.0	31.7	38.4
<u>Corporation</u>			
50-50	63.3	68.3 (2)	73.4
50-50,TF	60.2	63.8 (2)	67.2
75-25,TF	60.0	63.5 (2)	66.4
Fee	63.8	69.4 (3)	73.9
<u>Subchapter S</u>			
50-50	36.6	36.7 (1)	48.1
50-50,TF	31.6	32.1	40.0
75-25,TF	31.2	31.8	38.6
Fee	37.5	38.1 (1)	48.7
<u>Trust-Sole</u>			
50-50	26.6	28.6	31.0
Fee	24.8	27.4	26.7

Present Value of Gross Cash Flow: \$1,233,990

Negative Net Cash Flow Occurred In:

- (1) Several Years In Period 4
- (2) Several Years In Periods 4 And 5
- (3) All Years In Period 4 And Several In Period 5



the husband's inter vivos gift program was shortened by his early death, a larger percentage of the forest business remained in his estate. Consequently, administration expenses were greater. Since the husband's interest was bequeathed to his spouse, the business interest includable in the widow's estate was augmented, too. As a result, actual administration expenses and death taxes increased approximately 90 percent.

Costs for the two trust arrangements declined for the same reason the 75-25 forms increased. Shortened gift programs resulted in a larger fraction of the forest business being put in trust and thereby excluded from the widow's gross estate. When the death events were separated by ten years, the husband's shortened life span lead to a 70 percent reduction in the widow's estate settlement costs for ownership patterns which began as jointly held property. When ownership began as fee simple, the estate settlement savings on the widow's estate was 89 percent. When the deaths were separated by 20 years, the savings were 10 and 60 percent, respectively.

The ordinal ranking of least cost business structures when loans were used to meet estate liquidity needs showed that trusts became more preferred than 75-25 (TF) partnerships or Subchapter S corporations whenever the husband's life span is shortened (Tables 6.4 and 6.5). Except for one minor switch, rankings of the other ten business structure-ownership pattern choices within the loan alternative were identical to those of the base runs, regardless of the longevity of husband or wife.

Trusts were more preferred because the shorter life span of the husband put a substantial interest into trust, thereby excluding it from estate taxation when the widow died. Other business structures added the decedent husband's interest to that of the surviving wife, leading to a greater percentage being included in her estate than in the base runs.

In the base results, 50-50 trusts were preferable to fee trusts.

But, the relative ranking of the trusts reversed when the husband's life shortened in the sensitivity runs. This was traceable to the greater fraction of the forest business which was vested in the trust when beginning with fee simple ownership. The widow's estate settlement costs were thereby lower.

As with the loan funding option, 50-50 and fee trust structures became the preferred business form when life insurance was selected to provide cash for estate settlement purposes under either sensitivity run. Again, the preference was traceable to the trust's ability to exclude a substantial portion of the forest business from the widow's gross estate. The resultant lower estate tax liabilities translated to substantially smaller life insurance premiums.

The only significant change in preference ordering occurred when both husband and wife had shorter life spans. In that case, 50-50 (TF) partnerships out-performed 75-25 tax option corporation. This was a consequence of slightly higher net income for the partner-heirs after the original owners had died, caused by avoiding Subchapter S limitations on the amount of capital gains passed through.

When only the husband's life span was shortened from the base runs' level, percent reductions for all business form-ownership patterns using insurance declined except for those split 75-25 between husband and wife. The general decline was due to estate tax savings on the first estate, related to lower timber and land values. Ownership interest included in the widow's estate did not change significantly.

But, for 75-25 (TF) business forms, the includable interest in the widow's estate increased by 20 percent. Estate tax liability and associated life insurance premiums increased, driving the cost of these alternatives upwards from their base levels.

When both husband and wife had shorter life spans life insurance option costs fell for all mixes of business form and ownership pattern. This outcome was not unexpected because the magnitude of life

insurance premiums depended on initial age of the insureds and insurance company estimates of life span. If death occurred before the estimate, premiums actually paid would be lower than expected. The "savings" means that insurance became a better option when the owners died prior to the age specified in company life tables.

When the life expectancies of husband and wife were ten and thirty years, respectively, immediate timber liquidation was the least cost funding method for all business structures (Table 6.5). This was the same outcome obtained in the base runs. Its origin had the same cause: postponement of cost impacts far into the future. As with the base runs, the first estate settlement had little impact. Death taxes on the widow's estate and income taxes in general were most important and were of similar magnitudes.

The situation changes dramatically when the life spans of both spouses were trimmed to ten and twenty years, each ten years less than specified for the base runs (Table 6.4).

In general, for business structures other than the close corporation, life insurance was the least cost funding alternative. Its advantages over liquidation amounted to a few tenths of a percent. In the 50-50 trust form liquidation was insignificantly less expensive than insurance. The emergence of life insurance as a preferred funding method was due solely to the relatively short life spans of the original owners. In the case of the close corporation, liquidation remained the preferred option by a few tenths of one percent.

The most preferred combinations of business organization form and funding method when life span parameters were changed were trusts with any kind of funding technique. The key to their performance was the great reduction in death taxes owed by the widow's estate. In the base runs, trusts and liquidations were the least cost choices.

When both life spans were shortened, partnerships with any funding techniques usually did better than any other non-trust business structure-funding mix. When the wife's life span did not change (Table 6.5), the post-trust ranking roughly followed that of the base

runs. Close corporations remained the most costly technique regardless of longevity.

Two conclusions can be drawn from the sensitivity analysis of life expectancy. First, if both lives are shorter than expected, insurance provides the least cost funding method. Second, substantial death tax savings can be realized by using a non-marital deduction trust. The savings can be large enough to outweigh the income tax disadvantage of having the wife as income beneficiary. And, the larger the interest transferred to the trust, the more attractive is that option.

#### 6.4.3 Real price trends in timber and land

The sensitivity of base results to the real rates of land and timber price increases was examined by decreasing and increasing the base parameter value of two percent by one-half of one percent. Results of simulations with a 1.5 percent annual real price increase are shown in Table 6.6; those for a 2.5 percent increase are given in Table 6.7.

The ordinal ranking of business structure preference remained essentially unaltered for all three estate funding methods, regardless of the direction of change of the price parameter. In the liquidation alternative, 50-50 (TF) partnerships and tax option corporations improved relative to sole proprietorships because of tax savings attributable to the spreading of income among family members. In the loan option, only one preference change occurred in the sensitivity runs. When the rate of price increase was 2.5 percent a 50-50 (TF) tax option corporation realized small annual tax savings by avoiding minimum tax on dividends over a similarly structured partnership whose participants paid minimum taxes on their entire timber income. The same kind of ranking switch occurred when life insurance was the selected option and prices increased at 2.5 percent. In the insurance technique when price changes were 1.5 percent annually, the 50-50 trust option replaced the 75-25 (TF) tax option

Table 6.6 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternative Rate = .05, Real Price Increase = .015

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	28.1	30.9 (1)	42.0
Fee	28.4	31.8 (1)	43.0
<u>Partnership</u>			
50-50,TF	28.0	29.2	37.2
75-25,TF	24.2	24.9	28.8
<u>Corporation</u>			
50-50	58.9	64.4 (2)	70.5
50-50,TF	56.4	60.3 (2)	64.3
75-25,TF	54.9	57.0	58.7
Fee	59.2	65.3 (2)	71.7
<u>Subchapter S</u>			
50-50	32.8	33.8 (1)	45.8
50-50,TF	28.5	29.4	37.5
75-25,TF	24.7	25.4	29.2
Fee	33.4	35.0 (1)	47.2
<u>Trust-Sole</u>			
50-50	23.8	25.9	29.1
Fee	23.5	26.3	29.7

Present Value Of Gross Cash Flow: \$1,060,067

Negative Net Cash Flow Occurred In:

- (1) Several Years In Period 4
- (2) Several Years In Periods 4 and 5

Table 6.7 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .025

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	34.6	35.4 (1)	47.8
Fee	34.8	36.1 (1)	48.5
<u>Partnership</u>			
50-50,TF	34.4	34.2	43.1
75-25,TF	30.1	30.1	35.2
<u>Corporation</u>			
50-50	65.7	69.8 (2)	77.1 (3)
50-50,TF	62.6	65.7 (2)	70.2
75-25,TF	60.3	62.2 (4)	64.6
Fee	66.0	70.6 (2)	78.3 (3)
<u>Subchapter 2</u>			
50-50	39.9	38.5 (1)	51.7
50-50,TF	34.4	34.0	43.0
75-25,TF	30.3	30.1	35.3
Fee	40.5	39.4 (1)	52.9
<u>Trust-Sole</u>			
50-50	30.0	31.8	37.3
Fee	29.8	32.1	37.8

Present Value Of Gross Cash Flow: \$1,455,718

Negative Net Cash Flow Occurred In:

- (1) Several Years In Period 4
- (2) Several Years In Period 4 And 5
- (3) All Years Of Period 1
- (4) One Year Of Period 4

corporation as the second most preferred business structure. The low rate of price increase allowed the decedent husband to bequeath a larger fraction of the business to the trust on a tax-free basis. Estate taxes subsequently saved on the widow's estates were sufficient to improve the trust's relative rank. It should be emphasized that whenever an ordinal switch occurred from the base results, the difference in percent reduction in present value between the structures which changed places was extremely small, on the order of one-tenth of one percent.

The least cost funding method for all business organization forms when the real price trend declined to 1.5 percent remained immediate timber liquidation. Cash flow problems associated with certain business forms in the base runs' loan option continued even at the lower price trend (Table 6.6).

However, when the rate of price change increased to 2.5 percent, timber-based loans replaced liquidation as the preferred funding techniques for partnerships and Subchapter S corporations. The combined rates of growth in volume and growth in value were greater than post-tax effective interest rates charged by the public and private lenders. When this advantage is added to other advantages of partnerships and Subchapter S corporations, loans become more attractive than liquidation. This outcome was consistent with arguments made by Sutherland and Tedder (1981) and Prindle (1981) (see section 2.3.1). A second reason loans performed better for these business structures was that they avoided additional income taxes levied on revenue from liquidated timber. The greater rate of price increase led to higher taxable estates. The resultant higher tax bill necessitated liquidation of more timber than in the base runs.

Regardless of price trend, trust and liquidation mixes remained the best option among all combinations. Overall preference ordering changed very little when price trends declined. But, as price trends increased from the base level, partnerships and Subchapter S

corporations employing loans replaced those using liquidations. As was true in the base runs, close corporations combined with any funding method remained the most expensive business structures for both alterations in price trend. In fact, with the 2.5 percent price increase, close corporations had cash flow problems with the insurance option as well as the loan option.

The magnitudes of percent reductions in present value moved in the same direction as price trend. This was not unexpected since both the gross estate and gross revenue also followed the price trend. The direction of change in percent reduction was reinforced by progressive estate and income tax rates.

In summary, increases in real price trends made timber-based loans more attractive for partnerships and tax option corporations. Even larger increases may have displaced liquidation as the preferred funding method for more kinds of business structures. But for the range of price changes tested in this research, the ranking of least cost business form-funding mixes changed very little.

#### 6.4.4 Total acreage in ownership

The timberland holding in each base case study was 200 acres. Larger or smaller acreages would raise or lower estate liabilities and gross cash flow. Therefore, two sets of sensitivity runs were made to determine impacts of total acreage on business structure and funding preferences. The first set had 100 acres, the second had 300 acres. The acreage in each age class for each new set was proportional to those of the base runs. Results of the 100 and 300-acre ownerships are given in Tables 6.8 and 6.9, respectively.

For the 100-acre cases, business form preference did not change from that of the base runs for the liquidation funding alternative (Table 6.8). However, when the funding method was either loans or life insurance, trust-proprietorships beginning from fee or joint ownerships became most preferred, exchanging places with 75-25 (TF)



Table 6.8 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 100 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	24.4	25.7	33.4
Fee	25.0	26.8	34.6
<u>Partnership</u>			
50-50,TF	24.7	24.8	29.7
75-23,TF	22.0	22.6	23.9
<u>Corporation</u>			
50-50	55.0	58.6 (1)	64.4
50-50,TF	53.4	55.6	59.1
75-25,TF	53.1	54.5	55.0
Fee	55.5	59.5 (1)	65.5
<u>Subchapter S</u>			
50-50	28.8	28.7	37.2
50-50,TF	25.3	25.4	30.2
75-25,TF	22.9	23.4	24.8
Fee	29.4	29.8	38.5
<u>Trust-Sole</u>			
50-50	20.6	22.2	22.5
Fee	19.9	21.7	21.4

Present Value Of Gross Cash Flow: \$616,995

(1) Negative Net Cash Flow Occurred In Several Years In Periods 4 and 5

Table 6.9 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 300 Acres, Initially Unregulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	35.3	37.3 (1)	51.0
Fee	35.4	38.0 (1)	51.7
<u>Partnership</u>			
50-50,TF	34.7	35.7 (1)	45.5
75-25,TF	33.4	34.6	43.0
<u>Corporation</u>			
50-50	66.7	72.2 (2)	78.7
50-50,TF	63.1	67.2 (2)	71.2
75-25,TF	62.3	66.2 (2)	69.5
Fee	66.9	73.1 (2)	79.9 (3)
<u>Subchapter S</u>			
50-50	40.7	40.8 (2)	55.3
50-50,TF	34.4	35.2 (1)	45.2
75-25,TF	33.2	34.1	42.7
Fee	41.2	41.9 (2)	56.7
<u>Trust-Sole</u>			
50-50	32.2	35.4	43.8
Fee	32.0	35.7	44.2

Present Value Of Cash Flow: \$1,850,985

Negative Net Cash Flow Occurred In:

- (1) Several Years In Period 4
- (2) Several Years In Periods 4 and 5
- (3) Several Years In Period 1

partnerships and tax option corporations. Two factors were responsible for this outcome.

First, during the early periods, total income tax liability of partners or stockholders exceeded that of the pre-trust proprietorship. In these situations, income was spread to heirs with higher marginal tax brackets than would have been applicable on the husband's and wife's joint return had they retained all income. Second, although loan payments and insurance premiums associated with the husband's estate were lower for partnerships and tax option corporations due to his inter vivos gift program, those same payments associated with the wife's estate were much lower for the trust option due to exclusion of trust property from the widow's estate. In fact, the trust created from the husband's 100-acre fee simple ownership was the most preferred business form for all funding options precisely because such a large percentage of the forest business was placed in the testamentary trust. The unified estate and gift tax credit allowed the husband to bequeath to the trust \$600,000 worth of forest tax free, representing 92 percent of the business' value. Therefore, the widow's estate settlement costs were comprised solely of administration expenses; there were no death taxes.

When timberland holdings increased to 300 acres 50-50 and fee trusts remained the preferred structure for the immediate liquidation funding technique (Table 6.9). The third and fourth ranked structures were the 72-25 (TF) Subchapter S corporation and partnership, respectively. Their relative ranking was the reverse of that found in the base results. This "flip" phenomenon was observed for each pairing of tax option corporation and partnership for all three funding methods in this sensitivity set. Its cause was the tax savings realized by avoiding the alternative minimum tax on timber income paid as dividends within the Subchapter S framework. The minimum tax that would have been levied on the dividends had they passed through to stockholders as capital gains exceeded the actual ordinary income tax on the dividends.

For the 300-acre forest and liquidation alternative, trusts and 75-25 (TF) tax option corporations and 75-25 (TF) partnerships were the top four business forms. In addition, 50-50 (TF) partnerships and tax option corporations were less costly than jointly owned proprietorships. In the base results, the 50-50 proprietorship had ranked just ahead of these two forms. The reordering was due to income tax swings from spreading income among family members and to estate settlement savings from spreading ownership interests among family members.

The 75-25 (TF) Subchapter S corporations and partnerships were the least cost structures for loans and insurance options. Moreover, for the loan option, 50-50 (TF) tax option corporations and partnerships performed as well as trust options. The 50-50 (TF) tax option corporation, 50-50 trust, 50-50 (TF) partnership, and fee trust ranked third to sixth, respectively. The rankings depended on whether income tax savings from spreading income among family members exceeded estate tax savings from excluding a portion of the business from the widow's estate.

With one exception, timber liquidation remained the preferred funding method for all business structure-ownership pattern scenarios in the 100-acre forest runs (Table 6.8). And the difference in present value between the loan and liquidation options for the single exception was an inconsequential \$370. As in the base results, liquidation was the exclusive funding preference for the 300-acre ownership (Table 6.9).

The best combinations of business form and funding method for the 100-acre forest were trust-liquidation mixes. In fact, trusts combined with any funding method displayed a clear advantage over any other pairing (Table 6.8). The 75-25 (TF) partnerships combined with any funding option followed the trusts and were, in turn, followed by Subchapter S corporations with the identical initial ownership. Corporations remained the worst choices regardless of funding method.

When the forest had 300 acres, only those trusts which utilized

immediate liquidation claimed least cost honors. Either 50-50 (TF) or 75-25 (TF) Subchapter S corporations combined with liquidation or loans out performed other trust combinations. Partnerships with the same ownership patterns and funding techniques also had lower costs than the other trust mixes, but did not do as well as the Subchapter S corporations.

In summary, changes in total forest acreage may have a profound impact on the choice of business organization form. The costs of any particular combination of business form and funding method were positively correlated with the size of the ownership. Trusts continued to be the least cost option, especially when the acreage decreased. But when the acreage increased, thereby increasing gross cash flow, Subchapter S corporations and partnerships began to emerge as highly attractive alternatives. Both forms allowed income and estate tax savings by spreading ownership interests among family members. Timber liquidation remained the preferred funding method, regardless of forest size.

#### 6.4.5 Initial age class distribution

In the base runs, the forest was initially unregulated. Acreage distribution was skewed towards younger age classes, the typical situation on nonindustrial forests. With area control management, the forest became fully regulated (equal acreages in each age class) after 60 or 90 years depending on funding method. To see if base results were predicated on the original distribution, a set of sensitivity runs was made with a second distribution in which the forest was initially completely regulated.

As in the base runs, 50-50 and fee trusts remained preferred business structures under the liquidation funding option. Fifty-fifty (TF) and 75-25 (TF) partnerships and Subchapter S corporations all had percent reductions in present value of 30.9 percent (Table 6.10). Their uniform performance was due to nearly equal allocation of

Table 6.10 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Regulated, Area Control Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	31.2	33.7 (1)	45.1
Fee	30.9	34.1 (1)	45.6
<u>Partnership</u>			
50-50,TF	30.9	32.4	40.4
75-25,TF	30.9	32.5	40.3
<u>Corporation</u>			
50-50	63.7	69.5 (2)	73.5
50-50,TF	60.5	64.7 (2)	67.4
75-25,TF	60.5	64.9 (2)	67.4
Fee	63.9	70.4 (2)	74.6
<u>Subchapter S</u>			
50-50	36.6	37.6 (1)	49.9
50-50,TF	30.9	31.9	40.1
75-25,TF	30.9	32.1	40.1
Fee	37.1	38.7 (3)	51.3
<u>Trust-Sole</u>			
50-50	29.3	32.4	39.5
Fee	28.6	32.6	39.7

Present Value Of Gross Cash Flow: \$1,798,212

Negative Net Cash Flow Occurred In:

- (1) Several Years In Period 4
- (2) Several Years In Periods 4 And 5
- (3) Several Yeras In Period 4 And One Year In Period 5

ownership interests between original owners and heirs which made total income taxes almost identical. Because administration expenses were the only settlement cost incurred at the husband's death, the large difference in his gross estate between 50-50 (TF) and 75-25 (TF) ownership patterns had no significant impact on the adjusted acreage distribution. And, the wife's estates under either pattern were approximately equal in value. Hence, these business structures have about the same reduction in gross cash flow over the planning horizon. When coupled with similar ownership distributions, the costs associated with these business forms-liquidation alternatives were equal.

Fee proprietorships did as well as the above cited forms (Table 6.10). Although early periods' income taxes were higher and estate settlement costs larger than for partnerships or tax-option corporations, post-mortem step-up in timber cost basis created substantial income tax savings for the proprietorship run's middle decades. The 50-50 proprietorship had a higher cost because the basis step-up at the husband's death was only for his 50 percent interest rather than for the entire interest as was true when the husband had a fee ownership.

When loans were selected as funding options, the same six business form-ownership patterns as in the base runs were least costly in the sensitivity run (Table 6.10). Although the order was somewhat different, with 50-50 (TF) and 75-25(TF) Subchapter S corporations as most preferred, the difference in cost from first to sixth place was only 0.7 percent, equivalent to \$12,000. Fifty-fifty (TF) tax option corporations and partnerships were less expensive than their 75-25 (TF) counterparts due to lower administration costs for the husband's estate.

A similar clustering of the top six choices occurred in the regulated forest scenario when life insurance was employed to meet estate settlement needs. The two trust arrangements were rated higher than 75-25 (TF) and 50-50 (TF) Subchapter S corporations, which, in turn,

ranked higher than the two partnership possibilities (Table 6.10). Although early periods' income taxes were much greater for trusts, estate settlement savings from excluding trust property is reflected in lower insurance premiums, and the post-mortem timber cost basis step-up were key factors in the trusts' supremacy.

Immediate liquidation of timber remained the most cost effective funding technique for all business structures when the forest was initially regulated. Again, this outcome stemmed from dispersing estate costs over the entire analysis period rather than incurring those costs at the beginning (insurance) or in the middle (loans).

Best all-round combinations of business form and funding method continued to be 50-50 and fee trusts linked with liquidation. After them, 50-50 (TF) and 75-25 (TF) tax option corporations and partnerships with liquidation were least costly, followed by those same forms with loans. Close corporations were still the most expensive, regardless of funding method.

In summary, altering the initial age class distribution did not greatly revise outcomes reached in the base results. Trust arrangements are still most attractive, especially when coupled with liquidation funding. Gross cash flow and estate values increased because more 60 year old timber was available for harvest or was included in the gross estate. As a consequence, the importance of diffusing business interest among family members to obtain estate and income tax savings was well-illustrated by the relatively low costs associated with 75-25 (TF) and 50-50 (TF) Subchapter S corporations and partnerships.

#### 6.4.6 Management regime

Area control management was used in the base run forest on the assumption that the owners desired a regulated forest. It was argued earlier that nonindustrial owners actually manage their forests quite differently, harvesting timber when it becomes merchantable or when



financial circumstances demand additional income. To model such behavior I developed a harvest model which scheduled stands for cutting whenever they reached an exogenously specified rotation age. This section discusses the impacts on the area controlled base results of switching to a stand maturity management regime.

The preferred business forms for liquidation funding were, in order, fee trusts, 75-25 (TF) partnerships, 50-50 trusts and 75-25 (TF) Subchapter S corporations (Table 6.11); nearly the same rankings as in the base runs. The 75-25 (TF) partnership moved ahead of the 50-50 trust because slightly lower estate costs left more timber to be harvested after the widow's death. Sole proprietorships became clearly preferred to 50-50 (TF) partnerships and tax option corporations, but this was a minor change.

The most significant feature of the liquidation alternative was that, except for the four least costly forms listed above, net cash flow was negative each year during period four for all other business structures. The widow's estate liability was sufficiently large to liquidate all 60-year-old timber in that period. With no regular timber harvest, income was zero. However, annual property taxes on forest land still had to be paid; consequently cash flow was negative.

The cash flow situation was aggravated further when the chosen funding option was loans. Only the best two least cost business forms, 75-25 (TF) partnership and Subchapter S corporation, had positive cash flows in every year. Their top ranking matched their performance in the base results. Negative cash flow occurred in the fourth period for all other business forms. And, for three close corporation arrangements, negative cash flow also happened in period five.

If one ignored cash flow problems, the ordinal preference of business structures changed only slightly from the base results. Sole proprietorships dominated 50-50 (TF) tax option corporations and partnerships; exactly the opposite of the base findings. The domination can be traced to the availability of step-up in cost basis for

Table 6.11 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Unregulated, Stand Maturity Management, 60 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	40.9 (1)	42.9 (2)	63.4 (3)
Fee	40.8 (1)	43.3 (2)	63.9 (3)
<u>Partnership</u>			
50-5-,TF	43.01 (1)	43.7 (2)	58.9 (3)
75-25,TF	38.0	38.6	49.2 (3)
<u>Corporation</u>			
50-50	74.4 (1)	83.4 (4)	101.4 (5)
50-50,TF	70.5 (1)	76.5 (4)	89.0 (3)
75-25,TF	68.1 (1)	72.2 (2)	80.7 (3)
Fee	75.0 (1)	84.9 (4)	103.8 (5)
<u>Subchapter S</u>			
50-50	49.6 (1)	51.2 (2)	73.0 (3)
50-50,TF	42.9 (1)	43.6 (2)	59.1 (3)
75-25,TF	38.1	38.8	49.5 (3)
Fee	50.8 (1)	53.1 (2)	75.4 (3)
<u>Trust-Sole</u>			
50-50	38.7	42.5 (2)	56.8 (3)
Fee	38.0	42.5 (2)	56.8 (3)

Present Value Of Gross Cash Flow: \$1,274,301

Negative Net Cash Flow Occurred In:

- (1) All Years Of Period 4 And No Harvesting Took Place
- (2) Several Years In Period 4
- (3) All Years In Periods 1 And 2
- (4) Several Years In Periods 4 And 5
- (5) All Years In Periods 1 And 2; Present Net Value Was Negative For This Alternative

timber available to the proprietorship which results in greater income tax savings for it during the middle periods.

The negative cash flow problem became an unmitigated financial disaster when life insurance was used to fund estate liabilities. Every business form-ownership pattern had negative cash flows in periods one and two. The 50-50 and fee close corporations actually had negative present values. Insurance premiums paid by the corporation and other tax-related costs created such a large present value deficit in the first two periods that positive present values from later periods were wiped out. The acreage distribution of age classes was such that few acres were available for harvest in the first decades to meet premium payments. If negative cash flows were ignored, the order of least cost business structures for the insurance option was virtually unchanged from the base runs.

The best funding method for all business structures continued to be liquidation. For trusts, it was the only method which did not create negative cash flows.

In summary, only six of 42 possible combinations had positive cash flows for every year of the planning horizon. Four of those mixes used liquidation to fund estate settlement costs. Only 75-25 (TF) partnerships and tax option corporations avoided cash flow difficulties when using loans. Clearly, the lack of sufficient mature timber in early periods was responsible for the dismal showing of the stand maturity management regime in general, and of the insurance funding option in particular.

#### 6.4.7 Rotation age

The base runs utilized a rotation length of 60 years in regulating the forest. As described in section 5.3.2, the rotation length was determined by finding that age class whose marginal value growth percent equalled the alternate rate of return, five percent. Calculations suggested that optimal rotation length was between 50

and 60 years. Base runs used the latter value. This section discusses impacts on base results when rotation was shortened to 50 years.

For the liquidation funding method, preference ranking of business structures found no change from the base results in the top four positions when rotation was 50 years (Table 6.12). In the next four positions, 50-50 (TF) partnerships and Subchapter S corporations established clear dominance over sole proprietorships. Those results had been mixed in the base runs. Emergence of the 50-50 (TF) forms had two causes. First, because ownership interests were gifted to heirs during the husband's lifetime, gross estates for the husband and wife were reduced sufficiently so that even though the partnership and tax option corporation were subject to income taxes on the liquidated timber, the overall estate settlement costs were lower. Second, the early income tax savings from dispersing income among family members outweighed the later advantage of basis step-up in timber enjoyed by proprietorships.

The ranking of business forms in the 50-year runs when loans were used to meet estate liabilities was virtually identical to the base results. The 75-25 (TF) partnership, 75-25 (TF) Subchapter S corporation, fee trust and 50-50 trust, in that order, were least costly. Perhaps the most significant change in the loans option was that neither sole proprietorship arrangement had negative cash flow in period four as had been true in the base runs. With the lower rotation age the value of timber inventory included in the gross estate was reduced significantly so that loans needed to pay estate liabilities no longer exceeded the cash available.

When life insurance was the selected funding technique in the sensitivity runs, fee trust was the least expensive business option, improving from fourth place in the base runs. Its dominance was due to the lower value of timber inventory when rotation was 50 years. That lower value had two impacts. First, it decreased estate

Table 6.12 Percent Reduction In Present Value of Gross Cash Flow for Combinations of Funding Method And Business Form for Sensitivity Runs: 200 Acres, Initially Regulated, Area Control Management, 50 Yr RTN.; Life Expectancies = 20 And 30 Years; Alternate Rate = .05, Real Price Increase = .02

	<u>Liquidation</u>	<u>Loans</u>	<u>Insurance</u>
<u>Proprietor</u>			
50-50	29.9	29.5	38.4
Fee	30.1	30.2	39.2
<u>Partnership</u>			
50-50,TF	29.3	28.5	34.8
75-25,TF	25.3	25.0	28.0
<u>Corporation</u>			
50-50	60.4	63.3(2)	67.5
50-50,TF	57.6	59.9(3)	62.8
75-25,TF	56.0	57.3	58.5
Fee	60.6	64.1(2)	68.4
<u>Subchapter S</u>			
50-50	34.3	32.2(1)	41.8
50-50,TF	29.5	28.4	34.8
75-25,TF	25.6	25.2	28.2
Fee	34.9	33.1(1)	42.9
<u>Trust-Sole</u>			
50-50	24.9	26.3	28.2
Fee	24.1	25.6	27.6

Present Value Of Gross Cash Flow: \$1,213,063

Negative Net Cash Flow Occurred In:

- (1) One Year In Period 4
- (2) Several Years In Periods 4 and 5
- (3) Several Years In Period 4

liability so that insurance premiums were smaller. Second, it allowed a larger fraction of the property to be placed in trust on a tax-free basis since \$600,000 represented a larger proportion of the forest business in the 50-year runs than in the 60-year rotation base runs. The ranking of the remaining business structures was essentially the same as for the base study.

With a 50-year rotation, immediate timber liquidation was no longer the preferred funding option for all business forms. Instead, for all partnerships and Subchapter S corporations and for the 50-50 proprietorship, loans were the least cost method (Table 6.12).

In these cases, deducting of section 6166 interest charges as estate administration expenses, subtracting private loan interest charges as income tax deductions, and avoiding additional taxes associated with liquidation, outweighed longer postponement under liquidation funding. And, as discussed in section 3.2.2, deducting 6166 interest charges lowered death tax levies.

Although life insurance finished as third choice in all structures, its costs were reasonably close to those of other funding methods for trusts and 75-25 (TF) partnerships and tax option corporations. This was caused by lower estate values in the 50-year rotation option.

In summary, trust liquidation combinations were still the least cost choices with the shorter rotation length. Loans became more cost effective than liquidation for partnerships and Subchapter S corporations. It should be noted that present value of gross cash flow under the 50-year rotation length was \$21,000 less than that under the 60-year rotation, confirming the appropriateness of the 60-year rotation.

## 6.5 Conclusions

The most striking conclusion to be drawn from the results of the base runs and sensitivity analysis is that ordinal ranking of business

forms and estate funding techniques remained remarkably consistent from one set of runs to the next. With few exceptions, the same four business structure-ownership patterns were most cost effective for each funding method, regardless of the values assigned to case study parameters. Moreover, these same business forms, when joined with immediate liquidation funding, were almost always the preferred business structure-funding method mix in each set of runs. The discussion which follows focuses almost exclusively on these outstanding business arrangements: the fee and 50-50 trusts and the 75-25 (TF) partnership and tax option corporation. The hypothesis that 50-50 (TF) partnerships and Subchapter S corporations would, with their 75-25 (TF) counterparts prevail over other business forms must be modified by replacing the 50-50 (TF) combinations with the two trusts. That trusts dominated the results was, initially, a surprising event. The business structure preferences found in this research are similar to those found by Buss (1971) and Rouch (1978).

For any given funding technique, the top four business forms were those cited above. The exceptions occurred either when both husband's and wife's life spans were shortened or when the forest was initially regulated. In the former case, 50-50 (TF) partnerships usurped 75-25 (TF) Subchapter S corporations for fourth place in each funding method. In the latter situation, 50-50 (TF) Subchapter S corporations and partnerships displaced 75-25 (TF) partnership and/or fee trust depending on funding method.

The two top trust arrangements owe their cost effectiveness to estate tax savings from excluding some property from taxation in the widow's estate and income tax savings from a step-up in the timber's cost basis. The basis step-up eliminated any taxable gain from immediate liquidation at the time of death and lowered taxable gains on subsequent sales.

The other pair in the top four, 75-25 (TF) partnership and tax option corporation, trace their attractiveness to estate and income

tax savings obtained by gifting ownership interests to the heirs.

The superior funding technique for the top four business forms was liquidation, for almost all parameters values. Postponement of costs, in the form of reduced gross cash flow over several decades, was generally better than loans or life insurance.

Loans were alluring only when the percentage of forest business included in the wife's estate was lowered due to parameter changes such as shortening the husband's life span, decreasing total acreage, or diminishing rotation length. I originally hypothesized that the combination of postponing liabilities through loans repaid from an appreciating asset and the deductibility of interest charged on 6166 and Federal Land Bank loans would cause loan funding to be the least cost method of settling an estate. The simulation runs showed that tax savings from deducting interest did not outweigh the benefits of still further postponement available in the liquidation option.

Insurance was cost effective only when the husband's life span was shortened or total acreage diminished. In those cases, the trusts created from the husband's interest were larger fractions of the total business than in other sensitivity runs. Putting more property in trust decreased the wife's estate liability and the requisite insurance coverage. The general poor performance of insurance was expected because its costs occur in early periods.

The best overall combinations of business form and funding techniques were fee and 50-50 trusts and 75-25 (TF) partnership and tax option corporation coupled with immediate liquidation of timber. And, except for runs made with a ten percent alternate rate of return, the two trust arrangements were always less costly than the 75-25 (TF) structures. This relative ordering was due to decreased estate taxes on the widow's estate from excluding the trust property from her estate and to income tax savings from stepping up the cost basis in timber. The basis step-up for partnerships and corporations is in the partnership interest or corporate stock, not in the underlying timber assets.



The manner in which the basis is stepped up is responsible for the fee trust's consistent ranking above the 50-50 trust. In the fee alternative, the entire basis is stepped up to market value upon the husband's death. But, in the 50-50 trust, only the husband's 50 percent share receives the step-up (see section 4.6.3).

When life expectancy parameters were altered for both spouses or for just the husband, trusts coupled with all three funding techniques occupied the top four places. A similar result happened when the forest's size decreased to 100 acres. These exceptions which eliminated the 75-25 (TF) partnership and Subchapter S corporation from the top four groups stem from diverting a larger proportion of the business into trust, thereby reducing estate-related outlays.

A few other exceptions to the dominance of the original best four occurred when rotation was shortened or price level increased. In those instances, the replacement combination ranked either third or fourth and never displaced trust options. These substitutes all involved inter vivos gift programs by the husband which dispersed business interests directly to heirs rather than through an estate.

It can be concluded from the simulation results that forest landowners should adopt business organization forms which have the following three characteristics.

First, the magnitude of the spouses' estate must be reducible by easy transfer of business interests to other family members. Partnership interests and Subchapter S corporation stock can be gifted to heirs, thereby reducing death tax liability on the husband's and wife's estate. Alternatively, the size of the widow's estate can be minimized by vesting a trust with all or part of the decedent husband's interest in the forest. Testamentary trusts were shown to be more effective in this regard than inter vivos gifts. In fact, when the gift program was cut short due to the husband's early death, trusts held the top four preference ratings, displacing partnership and tax option corporation options.

Second, it is essential that forest owners choose business forms which protect the tax preference status of timber income as long-term capital gains. The simulation model's results showed that close corporations were the most costly business structures due to double taxation of timber income. Moreover, Subchapter S corporations which avoid double taxation were still less preferred than partnerships because a portion of the tax option corporation's timber income was taxed at ordinary rates. Therefore, it is unlikely that complete avoidance of double taxation in close corporations by exhausting income in salaries to employee-shareholders, would improve the relative standing of close corporations since salaries are taxed at ordinary, not capital gains, rates.

Third, forest owners should select business forms which offer income tax savings. The form selected will depend on when the owner wishes the savings to occur. Life-time savings is available by gifting interests in partnerships or Subchapter S corporations. Effective lower marginal rates are obtained by spreading income among family members. Post-mortem income tax savings for widow and heirs is available by adopting the trust option which preserves much of the step-up in cost basis. Interestingly enough, 75-25 (TF) partnerships and Subchapter S corporations which did not enjoy this feature were less costly than sole proprietorships which did, thereby illustrating the importance of spreading ownership interests to save income taxes.

As described in section 6.3 and sections 6.4.1 through 6.4.2, ordinal ranking of business forms, funding techniques, and their pairings were determined largely by the relative importance of estate tax savings to income tax savings. And, changes in those rankings with changes in parameter values also depended on whether death tax savings outweighed income tax savings. Results from the simulation runs showed that the relationship of taxes was a function of the magnitude of gross cash flow and gross estates.

Parameter changes which enlarged both gross cash flow and gross estates were increases in real price trends for land and timber, increases in total acreage, and more even distribution of age classes as represented by the initially regulated forest. Income tax savings obtained by spreading business interests among family members appeared to be more important than estate tax savings in those cases. Therefore, business forms which offer income tax reductions like partnerships and Subchapter S corporations made strong showings.

Parameter changes which decreased gross cash flow and gross estates were decreases in real price trends, total acreage, rotation length, and life expectancies for husband and wife. With lower gross values, estate tax considerations dominated. Therefore, trusts were the most preferred business structures.

Clearly, then, business structures which accomplished estate and income tax savings regardless of the direction of parameter change must dominate all business form options. The top four structures, fee and 50-50 trusts and 75-25 (TF) partnerships and Subchapter S corporations, not only have the three desirable characteristics discussed earlier, but their relative performance was not altered by parameter changes.

In selecting a method for funding estate settlement costs, forest owners must be wary of potential cash flow problems. As shown in many runs using loans for funding and as illustrated vividly by the stand maturity sensitivity runs, the forest may not be able to provide enough net revenue from planning harvests to meet financial requirements of estate funding. If an owner is totally dependent on the forest as a source of income, he or she may be forced to cut financially immature timber to meet those estate-related cash demands.

A related conclusion is that, despite the massive changes in federal estate and gift taxation and the major reduction in federal income tax rates enacted in the Economic Recovery Act of 1981, estate settlement-induced cash flow problems may continue to plague forest owners. As shown in the model's results, this will be true

even if the tax structure is continuously updated to eliminate bracket creep.

Cash flow problems are generally cured by relying on immediate liquidation as funding method. In stand maturity runs, when liquidation prevented a regular harvest for one decade resulting in negative cash flows, the problem can be alleviated by relaxing the harvest age constraint.

The nearly exclusive preference for liquidation was not expected. Loans under section 6166 and from the Federal Land Bank were expected to dominate due to the combined effects of postponing payments and deducting interest charges. The model's results showed that the longer postponement with liquidation was more advantageous than interest deductibility. Also the liquidity option was attractive partially because the model assumed that liquidated timber sales were made at fair market value. If a factor had been included to discount sales made under duress, liquidation would probably not have performed as well.

Extending the results of the model slightly, forest owners could realize greater income and estate tax savings than those suggested in the results by placing the forest in a family partnership and, upon the death of the first spouse, put as much as possible, tax free, into trusts with the surviving spouse as income beneficiary. At the survivor's death, only the property initially owned by the widow(er) and that received from the first spouse would be included in the second estate. Trust property and interests held by other family members are not included.

This partnership-trust combination provides for income tax saving by spreading income among family members. Estate tax savings are enhanced by coupling inter vivos gifts with testamentary trusts to exclude a large portion of the business from the widow(er)'s estate. One disadvantage encountered in this mix is that the surviving spouse and heirs would lose the income tax benefits from a

step-up in the cost basis for timber, which may offset estate tax advantages. Because trusts are generally not eligible stockholders in Subchapter S corporations, trusts and Subchapter S cannot be used together.

## CHAPTER 7

## CONCLUDING REMARKS

7.1 Introduction

The preceding chapters have discussed death taxes in general and estate planning through alternate business organization forms and funding methods specifically. Building on recent research in agricultural economics, a forestry estate planning simulation model was constructed and used to test the cost effectiveness of alternative combinations of business structures and funding techniques.

The purpose of this final chapter is to step back from the intricate details of the law, the model, and the results, and re-establish the broader view of Chapter 1. First, I will provide a summary of the problem statement and research objectives and highlight the development of legal-economic estate planning models including the forestry estate planning simulation model. Next, I will give an abridged restatement of the model's results and the conclusions drawn from those results. The last section is devoted to discussing the uses of the current model and suggestions for further research.

7.2 Problem Statement Reprise

Private nonindustrial forests are expected to be an increasingly important source of U.S. timber in the coming decades. In several regions, such forest lands are the major supply sector.

Government and industry have expended considerable amounts of effort and dollars to increase the flow of timber from private nonindustrial lands. They have not been very successful because many landowners have ownership objectives which exclude or demote timber production. In addition, forest landowners face many economic obstacles to profitable forestry investment programs. Perhaps the

greatest of these impediments is taxes and interest costs of those taxes.

The forestry profession has studied income and property taxation intensively since the Fairchild Report (1935). However, a generally neglected aspect of forestry taxation is death taxes. Only in recent years, when rapid inflation of land and timber values brought increasing numbers of forest owners into the purview of the transfer tax system, has serious study been made of these taxes. Recent research efforts have pointed out that owners of forest capital are in more precarious situations than owners of other kinds of capital due to personal characteristics and the illiquid form of their wealth.

Many adverse impacts of death taxes can be avoided by careful estate planning during the lifetimes of individual owners. A major consideration in the plan's development is the organizational form of the forest business. Although most private nonindustrial forests are operated as sole proprietorships and owned by husbands and wives in tenancies by the entirety, other business forms are available which are more advantageous from an estate planning viewpoint. These forms are partnerships, corporations, Subchapter S corporations, and trusts.

A second consideration in forestry estate planning is providing cash to settle estate liabilities. Several methods are available, including immediate liquidation of timber capital, loans from public and private sources, and life insurance.

The objectives of this research were

1. to examine the impacts of alternative business organization form on estate and income tax liabilities of nonindustrial forest owners.
2. to examine the effects of different methods for providing liquidity to meet estate settlement costs under each possible business form.

3. to examine the interaction of estate and income taxes when estate liabilities are being met under alternative combinations of business form and funding technique.

To accomplish these objectives, I constructed a simulation model whose origins can be traced to similar models fashioned by agricultural economists.

### 7.3 Highlights of the Literature Review and Methodology

The literature review began with the early history of death taxes and their role in society. Their retention in today's U.S. tax structure is due exclusively to redistribution goals rather than revenue raising. The literature indicates that, at the macro level, no discernible impact has occurred. At the micro level, however, transfer taxes do influence investment behavior and production decisions.

The applied economics work in death taxes is confined almost exclusively to the field of agricultural economics. The applied work in forestry is but a small fraction of agriculture's efforts. In the late 1960's and throughout the 1970's, agricultural economists introduced and developed legal-economic estate planning models. Of particular importance was the emergence of the concept of estate management which encompassed creation, operation, and transfer of the family farm. The concept recognized the interrelationship of pre- and post-mortem events.

Models based on the estate management idea cover a wide range of techniques, including simulation, optimization, and combinations of the two. Due to the complexity of the situation to be modeled, most models have employed simulation. And, because most estate planners implicitly work in a deterministic framework, these simulation models rarely had any stochastic elements.

The forestry estate planning simulation model, FEPS, represents a further advance in legal-economic estate planning models. Like



its agricultural predecessors, it is an estate management model, concerned with creation, operation, and transfer of private non-industrial forest land. It accounts for income and estate taxes under several business organization forms, and tracks the disposition of property rights from one generation to the next. It also follows gross and net cash flow from the forest under different business structures and parameter values.

The most unique feature of FEPS is the integration of the methods for funding estate settlement costs into the estate management model. The entire costs imposed when a landowner dies are included in changes in gross cash flow, income taxes and estate taxes. The model allows decision makers to select the least costly combination of business organization form and funding method. Also, the FEPS model is the first legal-economic estate planning model applied to forestry, a business which requires several decades, rather than a single growing season, to bring a crop to maturity.

The FEPS model is based on the tax and business law outlined in Chapters 3 and 4. It incorporates estate and income tax provisions from the U.S. Internal Revenue Code which are applicable to sole proprietorships, partnerships, close corporations, Subchapter S corporations, and trusts. Since timber revenue, the only source of income, is eligible for tax preference treatment as long-term capital gains, capital gains deductions, depletion, minimum tax, and reforestation amortization and tax credits are important facets of income taxation in the model.

The model, itself, is a deterministic simulation model consisting of four interconnected major parts: a harvest scheduling algorithm, an estate tax calculation and funding subprogram, an annual financial management routine and a report writer. The user of the model can specify a wide range of parameters which are either read from external sources or entered interactively by the user.

As did earlier agricultural researchers, I used case studies

to determine the cost effectiveness of various combinations of business form and funding method. Forty-two combinations of business organization structure (and their initial ownership distribution) and estate funding techniques constituted the base runs. Seven parameters were changed one at a time to test the stability of base results.

Based on the literature review and discussion of tax laws, I expected partnerships and Subchapter S corporations which spread ownership interests among all family members through a tax-free inter vivos gift program to be least costly in terms of percent reduction in present value of gross cash flow. Because loans postponed estate settlement costs and related interest charges were deductible for estate or income tax purposes, I anticipated loans would be less costly than other funding techniques. Combinations of loans and partnerships or tax option corporations were expected to be the best overall mixes of funding option and business structure.

#### 7.4 Results and Conclusions

Results of base runs and sensitivity analysis displayed remarkable stability for the four least cost business structures. Fifty-fifty and fee trusts and 75-25 (TF) partnerships and Subchapter S corporations were, with rare exceptions, the preferred business structures for all funding technique options. The relative ranking within the top group changed with funding option and parameter values, favoring trusts whenever liquidation was used, the husband's life span shortened or total acreage decreased.

The most favorable funding technique was immediate liquidation of timber capital due to the long postponement of costs. Insurance was almost universally the most expensive method because its costs were incurred in the early decades of the planning horizon. Loans occupied the middle ground, but frequently created cash flow problems. The results showed that longer postponement of estate costs in the

liquidation alternative outweighed tax savings from deducting interest charges on estate and income tax returns.

The best overall combinations were fee and 50-50 trusts coupled with immediate liquidation. They were followed by 75-25 (TF) partnerships and tax option corporations using the same funding method.

From these results I concluded forest owners should adopt business forms with the following three characteristics. First, the business structure must provide for reducing the surviving spouse's estate either through easily executable inter vivos gift programs with the children as donees or creation of a testamentary non-marital deduction trust with the children designated as remaindermen.

Second, the business form must protect the tax-favored status of timber income as a long-term capital gain. Failure to do so results in unnecessarily high income tax costs.

Third, the business type must provide for income tax saving either through legitimate spreading of income among family members or by utilizing the step-up in timber cost basis upon an owner's death.

It is also clear that business forms differ in the way they save taxes. Trusts perform best for smaller estates and gross cash flow when death tax savings are most important. But as estates and cash flow increase, the ability of partnerships and tax option corporations to save income taxes make these forms more attractive. In addition, the simulations showed that in spite of the great changes in tax law enacted in 1981, forest owners will still experience estate tax-induced cash flow problems, especially if they do not have other sources of income.

#### 7.5 Uses of the Model and Topics for Further Research

The Carter administration's interagency task force which investigated federal activities related to nonindustrial owners identified

the federal estate and gift tax system as one of five tax problems which hinder the practice of forestry on nonindustrial lands. Their report advocated a federal role in bringing knowledge of estate taxation to forest landowners through technical assistance and education programs. The investigators rated such an education program as highly important, low cost, and likely to lead to increased investment over the long term (Interagency Report, 1978). The complexities of tax law and the hard task of presenting the information in an easily understood manner make such education programs difficult. And, as was made clear in earlier chapters of this report, estate taxes, income taxes and business law are all interrelated and their study requires an integrated approach.

The forest estate planning simulation model developed in conjunction with this research is the first attempt to study the above interactions. As such, the model has played a useful role in providing forestry professionals and their clients with useful guidance about structuring forest businesses.

The model results obtained in this research project have identified business structures and funding techniques which may be less costly than current practices of forest owners. Moreover, key characteristics of desirable business forms have been isolated to help decision makers choose the least cost mix.

But, the model's usefulness extends beyond the immediate results of this project. Because many initial values for important estate planning variables are entered interactively into the program, the model can readily simulate a wide range of actual landowner situations. It is quick and inexpensive to operate so that with a teletype and acoustic couple, the model can be operated from anywhere a telephone is available, making the model an effective demonstration aid at extension programs or woodland owner association meetings. Cost of a single simulation, including report writing, is about two dollars, exclusive of telephone connection charges.

It is also a useful teaching device for university students, helping them to develop an awareness of the intricacies of tax law, the special status of timber income, and the considerations involved in structuring a forest business.

Since the model can be updated rapidly to reflect actual or proposed changes in tax laws, it can be used as a tool for policy analysis. For example, if long-term capital gains for timber or basis step-up were to be repealed, the model could quickly show how typical nonindustrial forest owners would be affected.

The general nature of the model, with a large list of variables and parameters that can be altered by the user, provides a framework for further research in several areas related to estate taxation of nonindustrial forest owners.

Among the first topics which should be explored are those whose addition to the model lends more realism to the simulations and may alter the results of the current model. For example, impacts of an estate liquidation timber sale made under duress could be modeled by reducing prices from fair market value by a fixed percentage. Such a change would make liquidation a less attractive option. Conversely, life insurance could be made more attractive if dividend payments from a mutual insurance company were added to the model. Further realism is possible by allowing the original owners to die at any time rather than restricting death to the first year of a period and keeping the deaths ten years apart.

Other research projects could be directed toward more elaborate estate planning techniques, such as multi-class partnerships and preferred stock corporate capitalizations. Special use valuation under section 2032A with new provisions for timber warrants particular attention. It also may be fruitful to study the use of a mix of funding techniques rather than a single method as done in the current model. Estate-related costs may be reduced if only the portion of federal estate liability eligible for the four percent

rate is funded with a section 6166 deferral; the balance would be funded by immediate liquidation or Federal Land Bank loans.

Finally, the entire approach of the model could be changed to reflect the uncertainties of life expectancies, prices, and timber yields or to incorporate non-timber objectives held by many nonindustrial forest owners.

The current FEPS model can be viewed as a first-generation legal-economic forestry estate planning model. Further enhancements along the lines suggested above will make the model more useful to landowners who desire to manage all facets of their increasingly valuable forest estates.

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