Proceedings

FOREST TAXATION SYMPOSIUM II

Publication FWS-4-82
1982
Price $6.00

School of Forestry and Wildlife Resources
College of Agriculture and Life Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061
Proceedings
of the
FOREST TAXATION
SYMPOSIUM II

February 10-11, 1982
Cascades Meeting Center
Colonial Williamsburg
Williamsburg, Virginia

Sponsored by
School of Forestry & Wildlife Resources
Cooperative Extension Service
Virginia Polytechnic Institute and State University
Southern Forest Experiment Station
United States Forest Service
Society of American Foresters

Edited by
Harry L. Haney, Jr. & William C. Siegel

FWS-4-82
SAF 82-08
Price $6.00
PREFACE

Taxes perennially concern all classes of forest landowner: industrial and nonindustrial, those with large holdings and small, whether in the North, South, East, or West. As American society increases in complexity, so do forest taxation questions. This complexity, plus recent developments, makes it imperative that persons dealing with tax matters keep well informed. While no one program can provide even a partial solution to all the important questions, this symposium provided a first step in that direction.

The symposium was organized to provide a forum for discussing the current economic, administrative, political, and resource allocation aspects of forest tax policy. Topics include the present impact, and future trends in the following taxes: income, estate, gift, property, yield, severance, and value added. One full day was devoted to federal taxes and one to State and local tax issues.

This volume documents the material presented by individual speakers and panel discussants at the sessions in Colonial Williamsburg. Papers are arranged in the order delivered. We have made limited revisions in the manuscripts submitted by the authors to standardize the format and rectify obvious errors; however, styles, opinions, and technical content have been published as delivered at the symposium. The information will be useful to anyone concerned with forest tax matters, especially those in middle and upper level positions with industry, academia, trade and professional associations, consulting firms, state and federal resource management agencies, and state departments of revenue.

Special thanks go to John B. Conklin, Zebulon W. White, W. David Klemperer, Fred Brett, Norman R. McDonell, and Robert D. Day, Jr., the planning committee for this symposium. We also gratefully acknowledge the assistance of the many individuals from Virginia Polytechnic and State University, the U.S. Forest Service, and Colonial Williamsburg who contributed to its success.

Harry L. Haney, Jr.
William C. Siegel
Co-chairmen
September 1982
TABLE OF CONTENTS

Session I -- The Federal Income Tax

Moderated by William K. Condrell

Recent Legislative and Administrative Changes --  
Implications for Corporate and Non-industrial Landowners.........1  
Russell B. Milliken

Financial Analysis of the New Reforestation  
Tax Incentive (PL96-451)........................................11  
D. Lester Holley, Jr.

Timber Casualty Losses -- Recent Developments..................31  
William C. Siegel

Tax Policy Issues in the 1981 General Accounting Office  
Report: "New Means of Analysis Required for Policy  
Decisions Affecting Private Forestry Sector".......................34  
John R. Hadd

Taxation, Housing Demand, and Supply-Side Economics............43  
Dwight R. Lee, Luncheon Speaker

Session II -- State and Local Taxes

Moderated by William A. Duerr

Emerging Patterns of Forest Property and Yield Taxes.............52  
Clifford A. Hickman

Tax Supported Forestry Incentive Programs --  
The Affirmative Viewpoint............................................70  
W. F. Custard

Tax Supported Forestry Cost Sharing Programs --  
The Opposing Viewpoint............................................72  
R.E. Lee, III
Session III -- State and Local Taxes

Moderated by John B. Conklin

Timber Taxes - Theory vs. Reality. Poem. ..........................81
  John B. Conklin

Building a Forest Taxation System for Idaho:
Lessons in Political Reality for a Naive Forest Economist.........83
  Charley Mcketta

Converting to a Productivity Tax: The Maine Experience..........90
  David B. Field

Ad Valorem Tax to Yield Tax -- The Oregon Experience............111
  Peter W. O'Brien

Forest Property Tax Valuation Issues and Problems
in the South...............................................................121
  Kenneth C. Stewart, Jr.

Session IV -- Federal Estate and Other Taxes

Moderated by Zebulon W. White

Overview of the Changes Made in the Estate and Gift Tax
  Fred M. Cone, Jr.

Impressions of the 1981 Federal Gift and Estate Tax
Changes from a Landowner's Perspective............................142
  Donald Macdonald

Potential Implications of a Value-Added Tax for Forestry........146
  W. David Klemperer and Cherie J. O'Neil

The Cumulative Impact of Taxes on Forest Investments............158
  B. Bruce Bare
RECENT LEGISLATIVE AND ADMINISTRATIVE CHANGES -- 
IMPLICATIONS FOR CORPORATE AND NON-INDUSTRIAL LANDOWNERS

Russell B. Milliken*

The brochure announcing this meeting states that "The Symposium has been organized to provide a forum for discussing the current economic, administrative, political and resource allocation aspects of forest tax policy," and that my topic for opening the meeting would be "Recent Legislative and Administrative Changes -- Implications for Corporate and Non-Industrial Landowners."

I am going to take a liberal interpretation of the meaning of the topic assigned to me and consider the subject broadly, or in modern-day terminology, take a "macro" approach. Others following me on the program will be dealing with specific subjects directly affecting forest tax policy. Also, primarily I will be considering only Federal tax policy, leaving state and local considerations to later speakers.

The Economic Recovery Tax Act of 1981 (ERTA) brought about the largest tax cut in history--almost $750 billion over a six-year period. It was like "Christmas in August" because in August, 1981, when the legislation was passed and signed into law by the President, benefits were included for virtually every taxpayer group--individuals, corporations, partnerships, estates and trusts.

The Act was not a revenue-raising measure, and does not purport to reform the tax law. It was tax cut legislation designed to increase savings and spur investments. ERTA was designed to be the ultimate in resource allocation; i.e., to reallocate the capital, and thereby the total resources, of this great country to the private sector and away from the public sector.

Let's review the campaign issues which resulted in President Reagan's overwhelming victory. I thought the campaign rhetoric sent a very clear message which said, if elected President I will:

1. Bring inflation under control,
2. Lower taxes to encourage savings and investment,
3. Balance the budget through a reduction in government expenditures, and
4. Through deregulation, get government off the backs of the American public.

*Vice President, Taxes; the Mead Corporation; Dayton, Ohio.
It was based on this platform that Ronald Reagan was elected President, and on the same theme new senators and congressmen arrived in Washington, D.C. To evaluate the significance of this election, it is helpful to examine the trends which this platform will reverse, which trends it will merely continue, and finally, the probable consequences of the indicated new trends.

First, let's look at the trend which has been established in relation to government spending.

Prior to 1975, government expenditures had remained relatively constant at approximately 20 percent of Gross National Product (GNP). In 1975, they jumped up to over 22 percent and stayed in that range through 1979. In 1980, they went to 23 percent, 23.7 percent for 1981, and are estimated to be in excess of 24 percent for fiscal year 1982.

The stated objective of the Reagan Administration is to reverse this upward trend and, hopefully, achieve a situation where government expenditures as a percent of GNP would decline to 19 percent. The projections in The President's recently proposed 1983 budget are that the trend will be reversed and 1983 spending will be down to 22.5 percent of GNP compared to the 24 percent plus for 1982; and that the trend will continue downward to 21.6 percent for 1984, and 21.1 percent for 1985.

Let's leave the trend in government spending and the objective of reversing the upward direction, and turn our attention to "Long-Term Trends in Tax Policy."

First, tax receipts fluctuated from just over 18 percent of GNP to just under 20 percent through the '70s. 1980 was the first year in over a decade that tax receipts had exceeded 20 percent—they were 20.1 percent. For 1981, they were up to 21 percent. The trend appears to have been reversed as the estimate for 1982 is 20.3 percent, and the trend is projected to continue downward with an estimate of 19.4 percent for 1983 and 19.1 percent for both 1984 and 1985.

Tax receipts as a percent of GNP is not the most important trend in tax policy. It is submitted that the most important trend in tax policy for the past 20 years has been to shift the burden of taxes away from a tax on income to a heavier burden of taxes on consumption. Granted, the major source of revenue to the U.S. Treasury continues to be the individual income taxes. But, if the impact of the income tax laws is shifted to a relatively higher burden on "earned" rather than "investment" income, then there has been a shift in the burden of taxation to a relatively higher burden on consumption because a higher percentage of earned income is spent on consumption as compared to investment income spent on consumption.

I believe this shift in the burden of taxes has been the most significant recent development in tax policy as it impacts on the corporate and non-industrial landowner.
Here are some of the developments over the past 20 years which lead me to this conclusion that the "long-term trends in the tax laws" have been to shift the burden to earned income as distinguished from investment income:

1. **Movement to "flatter" income tax rates on individuals**

In 1963, the tax rate on the lowest level of income was 20 percent which should be compared to a 91 percent rate applicable to the highest amount of marginal income, i.e., a 71 percent spread. Various changes over the years had reduced this difference so that in 1980, prior to the passage of ERTA, the spread was 56 percent, i.e., from 14 percent to 70 percent.

ERTA further reduced the spread for 1981 and future years to 39 percent, i.e., from 11 percent to 50 percent.

As a practical matter, the highest marginal rates are applicable only to investment income because very few "wage earners" achieve that level of income. Also, as you know, prior to 1981, the tax law made this distinction very clear by having a maximum rate on earned income of 50 percent compared to the 70 percent maximum on unearned or investment income. This bias against investment income has been eliminated.

2. **Phasing-Out of the Corporate Income Tax**

This may come as a shock to some of you, but the corporate income tax is losing significance as a source of revenue to the U.S. Treasury. In 1954, the corporate income tax accounted for 30 percent of U.S. Treasury revenue. By 1962, it had declined to 20 percent, and for 1981, it is expected to amount to approximately 10 percent.

The reduction in corporation income tax collections has come from a variety of provisions over the years, e.g., investment tax credit, a series of changes to reduce the time period of depreciating capital expenditures, etc. But one major reason is that over the last approximately 10 years, the maximum rate on corporate income has dropped from 52 percent to 46 percent.

The projections are that, with the full impact of ERTA, corporate income taxes as a percent of total U.S. Treasury revenue will continue to decline. This trend is consistent with the trend of lowering the upper marginal rates on individuals, i.e., a lower tax burden on investment income and a shift in burden to earned income, and thereby a shift in burden to a burden on consumption.
3. Adjusting Tax Laws for Inflation

ERTA contains one provision which has not received a lot of publicity but may in the long-term be one of the most significant aspects in the Act. Beginning for tax year 1983, the tax rate schedules will be revised annually to prevent the phenomenon of "bracket creep."

Bracket creep arises from the fact that increases in income made solely to keep up with increased living costs can result in a heavier tax burden without actually improving one's economic position. Specifically, commencing on December 15, 1984, for tax year 1985 and each December 15 thereafter, the tax rate schedules for individuals will be adjusted to reflect the percentage by which the Consumer Price Index (CPI) has increased over a one-year period. Also, the $1,000 personal exemption will be adjusted by the CPI. Other provisions in ERTA having the same effect of reflecting the impact of inflation were increasing the unified credit for the estate tax from the 1981 and prior years equivalent exemption of $175,000 to $225,000 in 1982, and continuing to increase the amount to $600,000 for 1987 and thereafter.

Indexing is fundamentally the removal of another bias against investment income. Without indexing, all income, whether the income after tax is saved or consumed, suffers from bracket creep. With indexing, income which will be saved, and thereby not consumed, benefits the same as income which will be consumed. The inflation effect on wages to a substantial degree reflected the effect of bracket creep. Therefore, it is submitted that indexing tax rates will benefit, on a relative basis, investment income more than earned income.

4. Reduction in Taxation of Capital Gains

Another change in the tax law which was effective as of November 1, 1978, for individual taxpayers, was to permit the exclusion of 60 percent of long-term capital gains instead of the previous provision which permitted a 50 percent exclusion. The combination of expanded exclusion and reduction in maximum tax rate on individuals has resulted in reducing to 20 percent the maximum tax rate on long-term capital gains for individuals. The tax rate on capital gains for corporations was 30 percent for years 1978 and prior, and was reduced to 28 percent for 1979 and thereafter. A few years ago, the rate was 35 percent and President Carter attempted to completely eliminate the difference between capital gains and ordinary income.

The lower rate in capital gains is clearly a recognition of a lower rate of tax on investment income, and the trend is clearly leaning towards a reduction in the tax burden for this source of income.
5. **Other Business and Savings Incentives in ERTA**

ERTA contained several other very important business and savings incentives. Probably the most important provision for larger corporations was the Accelerated Cost Recovery System (ACRS) which permits very early tax deductibility for capital expenditures. ACRS will be a major factor in corporate America contributing less than 10 percent of the revenue to the U.S. Treasury in future years. For small businesses, the right to expense the first $5,000 of annual capital expenditures will reduce their tax liability, and the amount increases to $10,000 for 1986 and thereafter.

Other business incentives included the 25 percent credit for incremental research and experimentation expenditures along with numerous more limited and specific incentives which will not be enumerated in this presentation, but which are very important in overall strategy of incentives to business.

Accompanying the business incentives were several tax incentives for individuals to save, i.e., not use their disposable income for consumption. Probably the most significant of these provisions is the extension of the use of Individual Retirement Accounts to individuals who are also covered by a qualified employer plan or are in a government plan. Under the new rules, such individuals may take an income tax deduction for their cash contribution to an IRA, and the income earned by investing such IRA cash is not taxable to the individual until the cash is withdrawn from the IRA for personal use.

Some of the other more significant provisions in the area of incentives for individuals to save were the "all-savers tax exempt savings certificates," and increases in the dividend and interest exclusion provision.

6. **Increase in Taxes Other Than Those Based on Income**

Taxes based on some measurement other than income have increased over the past decade at a dramatic rate and have, in fact, made up the difference in the decline of revenue from taxes based on income. Consider the increase in social security tax which is based on wages but not investment income. Also, in the State of the Union Message, President Reagan promised us "No New Taxes." Now we have before us a proposal of "Revenue Enhancement." The "No New Taxes" proposal involves an increase of $4.2 billion over the next two fiscal years through a network of user fees.
Let's stop for a moment and summarize:

1) Government expenditures as a percent of GNP had been increasing, but our government policymakers now state they are going to reverse the trend and cause government expenditures as a percent of GNP to decline.

2) Since adoption of the constitutional amendment in 1913, revenue collected by the U.S. Treasury has increasingly come from the taxation of income, i.e., the income of corporations as well as the income of individuals. Also, historically the income tax laws have had a bias against investment income as compared to earned income. In recent years, both of these trends have been reversed. An increasingly higher percentage of revenue collected by the U.S. Treasury is determined by factors other than "Income" and, more importantly, the bias against investment income is being mitigated with a definite shift to more equal sharing of the tax burden on earned as compared to investment income. ERRA, passed in 1981, has established the framework for this trend to accelerate in the future.

Look at the proposed 1983 budget--40 percent from individual income tax. The next highest source of revenue is Social Security receipts which are expected to be 29 percent of revenue. In third place as a source of revenue is "borrowing" at 12 percent. In fourth place, we find corporate income tax at 9 percent, and close behind is Excise Tax at 5 percent. (Miscellaneous sources account for the other 4 percent.) When the full impact of ERRA is in place, with the reduction in individual rates, it is quite probable that Social Security receipts may surpass individual income tax in importance as a source of revenue, and Excise Tax receipts probably will exceed corporate income tax receipts.

As I am sure The President realizes, it is going to take time and a lot of patience to reduce government spending. By contrast, continuation of the trend away from reliance on tax receipts based on income and the trend to reduce the burden on investment income as distinguished from tax based on earned income will and already has moved with much greater speed.

I believe as a result of these trends, and especially if they continue, the rate of savings and investments in this country will increase as distinguished from consumption spending.

The question for this group is --- What do these trends and their implications mean to the Forest Products Industry?

The Forest Products Industry, and the industries that are its customers, is among the most capital-intensive segments in the American and international economies. In such bleak conditions as the Industry faces today, it is difficult to be optimistic. But, if we can survive, it seems that in the long-term these trends are favorable. In the long-term, an increase in savings will make capital available--capital to
Invest in a new sawmill, pulp mill, etc. Also, and probably more importantly, eventually capital may be available for individuals to buy new homes! Individual landowners may realize the benefits of these tax and government spending policies only indirectly, but in a very important manner—there may be strong and favorable markets for their trees.

The current short-term situation, as we know, is different. The trend toward lower overall taxes and a shift in the burden to earned income, i.e., a heavier tax burden on consumption, is in place and working. The proposals to balance the budget through a reduction in government spending are lagging. However, President Reagan seems to be determined to follow through on these objectives.

In the short-term, The President's program faces a severe challenge. Only time will tell whether he can stand the political pressure to follow through on these objectives. If he does, again only time will tell whether or not the program will be successful.

A reduction in revenue to the U.S. Treasury through a reduction in taxes without an equal reduction in government expenditures obviously creates a deficit or, more accurately, increases the size of an already existing deficit. Everyone knows that Congress, the Administration and the American public in general are currently involved in a great debate over the size of the U.S. deficit and projections for the next few years.

In the past, deficits have been substantially financed by the Federal Reserve printing money, and yes, to some degree, by the government's borrowing. However, this time we have a strong-willed individual by the name of Paul Volcker running the "Fed." It is submitted that Mr. Volcker's approach to the current situation is very consistent and compatible to that of The President. Financing deficits through the creation of money only results in inflation. We have been down that road for several years. So, another major trend is evolving. The Fed has mothballed its printing presses and we will finance our deficits by borrowing.

Mothballing the Fed's printing presses is a very important aspect of this program. Financing a deficit by printing more money only adds to the demand for products, which causes inflation. Government borrowing only makes the demand for money increase which causes an increase in the price of money. When the price of money increases, it becomes more expensive for individuals and businesses to borrow. When money is more expensive to borrow, i.e., interest rates are high, individuals and businesses borrow less, which means they have less money with which to demand more products. When fewer products are demanded, the prices of the products decline and that is what is meant by controlling inflation.

Remember, one of President Reagan's four points in his campaign was to control inflation. As a candidate, Ronald Reagan did not make any great promises about the level of interest rates.

Maybe some of you in the Forest Products Industry have noticed that the program is working! According to the February 8, 1982, issue of the Wall Street Journal, the home builders concluded that things were in bad shape and probably would get worse. It seems that there has been a reduction in the
demand for new houses, and the National Association of Home Builders blame a mounting deficit and the Federal Reserve Board's apparent inability to control money supply. It was observed that when mortgage rates get up to 17 percent or 18 percent, people refrain from buying houses. Approximately a month ago, the Wall Street Journal ran another article which indicated that the average house in the U.S. today is actually declining in value.

It also should be noted that even in the context of high unemployment and high interest rates, public opinion polls continue to show that there is strong public belief that stopping inflation is as important as reducing unemployment.

The press has covered in great detail that the President is committed to his program. Whether right or wrong, his program is to continue the tax reduction program and exert pressure for further reductions in government spending. The pressure is tremendous—unemployment increasing and interest rates staying extraordinarily high. It is submitted that there is one non-economic factor which must be carefully considered. Ronald Reagan probably is a one-term President. Therefore, he can concentrate on the long-term merits of his program without the same reaction to pressure that there would be if he seriously planned to run for re-election.

Remember President Nixon's first term—he developed what was referred to as the "game plan." Immediately after coming into office, his first objective was to curtail the war in Vietnam which, among its other bad effects, was draining our economy. President Johnson, with his slogan of guns and butter for the great society, had let the rate of inflation skyrocket. President Nixon vowed to bring inflation under control so he had the investment tax credit suspended and in general raised taxes. The then Federal Reserve chairman, Arthur Burns, cooperated by controlling the supply of money. President Nixon combined higher taxes with a tight money supply, but Nixon ran out of time. Inflation would not come down fast enough in relation to the next election. The program was working, inflation was declining, but the economy had slowed down with increasing unemployment, etc.

In August, 1971, President Nixon took action to get the economy moving, thereby increasing employment, etc. The investment tax credit was reinstated along with other stimulative actions. But, in order to control inflation he simultaneously requested, and Congress approved, legislation to freeze wages and prices. Wage and price controls prevented the underlying inflationary pressures from surfacing. In spring, 1972, the wage and price freeze was removed. The stimulus to the economy had commenced to work—people were back to work—and everybody was happy. Inflationary pressures did not have time to recover from the wage and price freeze and start to be felt by the general public until after the November elections, when President Nixon was overwhelmingly re-elected for a second term.

I believe President Reagan will hold firm to his program. I believe The President believes in the program and that seeing that program through is the most important consideration in his value system. Any aspirations for a second term will ride on the success of his current program.
If the above assessment is correct, then the existing laws to continue the trend to lower taxes will generally stay in place. There will be a few nuisance items this year under the label of "Revenue Enhancement," but they will be minor compared to the overall trend. Continuing in the tax policy area, I think you can forget any new provisions to further reduce tax revenue for the next couple of years. Tax policy strategy for the Industry should be to protect what you have and prepare for longer range incentive programs, etc., but do not expect any congressional action or Administration approval soon. Also, I believe you can expect the deficits to continue to be financed by government borrowing, i.e., tight monetary policy.

What are the implications of the above conclusions (without debating whether they are right or wrong)?

The economy is obviously in a massive adjustment period. High interest rates have had their effect on demand, and that means that the rate of inflation is falling and will continue to fall for several years. When the rate of inflation settles down to an acceptable level, then we will start to see some stability. The new environment will be different. Government spending as a percent of GNP will be trending towards the 19 percent objective; inflation may be as low as 5 percent; the tax burden will be lower—even though administered through the framework of an income tax it will continue to be primarily a burden on earned income.

In history, the twentieth century in the United States may be referred to as the century of two major world wars, transition from an agricultural society to an industrial society, and from there to a technological/space exploration period, and the period of a great experimentation with a tax system based on income which discouraged earning income, saving and investing. By the turn of the century, this Country will have made the conversion from a tax system which penalizes the receipt of income to one which will place the burden on consumption.

But, back to reality and the short-term outlook. The key questions are how fast will things come into balance and whether or not President Reagan and Paul Volcker can withstand the pressure and see their program through. I believe they will resist the pressure and hold firm to their objectives. As we move through 1982, inflation will continue its decline and, as the economy adjusts, the demand for capital will level out and interest rates will start declining. By the end of the year, the economy will have made a partial adjustment and economic activity will start to pick up. Based on the lower interest rates, lower inflation, a lower tax burden and less government regulations (which is also one of The President's objectives), the economy will commence a new, solidly based period of recovery. The recovery will not be a rapid acceleration, but it will be solidly based. Also, interest rates will not drop as quickly as you and I in the Forest Products Industry would like, but the trend will be downward and as that occurs there will be a slow but steady upward trend in the demand for forest products.

If this prognostication is accurate, then the Forest Products Industry can continue to look forward to a slow 1982 with maybe some pick-up commencing in the third quarter, and little better in the fourth quarter. Then an improved performance in 1983 and a solid performance in 1984.
I indicated when I began these remarks that I was going to take a "macro" approach. The reason for taking this approach is that the broad movement in tax policy is by far the most important recent development in tax legislation and administrative policies affecting the Forest Products Industry. These policies probably are the most important factors affecting the demand for the trees you grow.
FINANCIAL ANALYSIS OF THE NEW REFORESTATION TAX INCENTIVE (PL96-451)

D. Lester Holley, Jr.*

In October of 1980, President Carter signed PL 96-451 into law. This law is primarily concerned with boating safety; but an amendment is attached, "Title III. Reforestation," which provides federal income tax incentives for establishing new timber stands. The incentives take the form of a 10% investment tax credit plus 7-year amortization on the first $10,000 invested in reforestation each year. Such a measure had long been sought by forestry interests as one of the keys to unlocking the timber supply potential of private ownerships. The objective of this paper is to illustrate how this new tax incentive dramatically reduces the landowner's cost of initiating a reforestation program. Although corporations can take advantage of PL 96-451, this paper is written from the viewpoint of the noncorporate landowner.

Treatment of Reforestation Costs Before PL 96-451

Before PL 96-451 was enacted, the entire amount invested in new timber crops had to be "capitalized." This meant that the dollars invested in timber capital could only be deducted from income generated by the resulting timber. "Depletion" is the term that applies when the capital cost in timber is deducted on a pro rata basis as timber harvest takes place.

Investors take a keen interest in the amount and timing of cost recovery, i.e., in this matter of using business costs as a deduction to reduce gross income subject to income taxes. Take the case of an individual in the 49% marginal income tax bracket (i.e., 49% is being paid on the last units of taxable income). Suppose this person comes up at the very end of the tax year with an additional business deduction of one dollar--perhaps a long distance telephone call to a potential client. The deduction will reduce taxable income by one dollar; and this, in turn, reduces the individual's annual tax bill by $.49. The businessman gets to keep this $.49 rather than send it to the IRS, and the tax saving is immediately available for reinvestment in his business. Stated another way, the after-tax cost of the telephone call is only $.51. This is not necessarily an unwise tax expenditure on the government's part because such telephone calls ultimately generate new business. If, for example, this telephone call resulted in an additional $10 of net business income the following year, the government would collect an additional tax of $.490--a considerable gain in tax revenue over and above the $.49 tax saving allowed on the telephone call.

Two aspects of capitalizing reforestation costs have a tendency to make timber stand establishment relatively unattractive to potential investors. First and foremost, it takes decades for seedlings to develop into merchantable timber. As a result, the recoupment of capital through timber depletion (the tax saving) is deferred for such a great number of years as to make the re-

*Professor, Department of Forestry, North Carolina State University, Raleigh, North Carolina.
captured dollars practically worthless when discounted to the present at market rates of interest. No other business venture that comes to mind forces the investor to carry major costs of nonpermanent capital for such a long period of time before deducting them. Furthermore, since the average woodland owner is over 50 years of age, many investors will go to the grave without ever being allowed to write off this sizeable front-end cost of creating a new forest.

Second, if and when reforestation costs are finally deducted from distant harvest income, the tax saving is relatively small because of the preferential capital gains tax treatment that timber income receives as a long-term capital gain. Since only 40% of individual capital gain income is subject to taxation, the effective tax rate on a dollar of timber income is 40% of the ordinary tax rate. The individual in the above example who got a tax saving of $ .49 for a one dollar deduction against ordinary income would get only $ .196 for a one dollar deduction against capital gain income (computed as 40% of $.49). This second point is by no means a complaint by woodland owners; it is used here merely as a statement of fact concerning the mechanics of cost recovery.

To illustrate the situation prior to passage of PL-451, take the case of an individual in the 30% marginal income tax bracket (federal) who spends $150 to site-prepare and plant an acre of forest land. For simplicity, assume that the resulting stand will be clearcut at age 30 without prior thinning. If the landowner's tax bracket does not change, then 40% of the timber income in 30 years will be subject to a 30% tax rate, for an effective rate of 12% on the total timber sale income (computed as .40 x .30). The original $150 cost in the acre of timber being harvested will reduce taxable timber income by $150 and thereby generate a tax saving of $18 (computed as $150 x .12).

It is instructive to compare this $18 tax saving in year 30 back to the original $150 invested in reforestation. But for a valid comparison of cash flows occurring at different points in time, one must adjust all cash flows to a common point in time. The simplest approach here is to discount future dollars back to their present equivalent value (i.e., back to the beginning of the investment). At a 12% discount rate, the above tax saving of $18 at the end of year 30 has a present value of $ .60 (computed as $18 + 1.12^{30})]. Thus the recoupment of capital through the mechanism of capitalization and depletion of reforestation costs is $ .60 as compared to the $150 invested. The recovery rate can be expressed as $ .004 per dollar invested (computed as $.60 + $150).\[2\] Compared with normal business investments, not to speak of tax-sheltered investments,

1/ Beginning in 1985, individual income tax rates will be indexed for inflation using the Consumer Price Index. This will eliminate "tax bracket creep" caused by inflation, and it makes more palatable the assumption of a constant marginal tax rate over time.

2/ For corporations, the income tax rate on long-term capital gain is a flat 28%. Thus with a 12% discount rate, the present value of capital recovery per dollar of reforestation is $ .009 (computed as $.28 \times 1.12^{30})
such an insignificant rate of cost recovery is tantamount to not being allowed to deduct business costs from business income. This is the longstanding disincentive and stigma that PL 96-451 attempts to remove from private woodlot management.

The reader should not forget that the above treatment of reforestation expenditures still applies to investment amounts exceeding $10,000 per year. If, for example, average cost of reforestation is $150, only 66.7 acres can be reforested before exceeding the $10,000 per year limit.

Provisions of PL 96-451

Under PL 96-451, the level of capital cost recovery is tremendously improved for the first $10,000 invested in reforestation each year. The law applies to qualifying expenditures made after December 31, 1979. Reforestation expenditures are defined as direct costs incurred in connection with planting or artificial or natural seeding, including costs for site preparation, seed or seedlings, labor and tools, and depreciation on equipment used in the process. The $10,000 per year limit applies to each separate income tax return, except that the limit is $5,000 in the case of a separate return filed by a married taxpayer. In addition, corporations and all components of controlled business groups and partnerships are subject to a single $10,000 per year limit. An estate may take advantage of this reforestation tax incentive, but trusts are excluded. The tax credit and amortized deductions are available even if the taxpayer does not itemize deductions.

Cost recovery under PL 96-451 is accomplished by two provisions. First, a 10% tax credit applies to qualifying expenditures up to the $10,000 per year limit. This results in a direct and immediate recovery of capital since the credit is subtracted from the federal income taxes owed that year. Second, rather than "capitalizing" the first $10,000 invested for deduction decades later against the resulting timber income, the landowner can "amortize" (deduct) these costs over a 7-year period. This deduction is made against ordinary income according to a prescribed 7-year schedule. Although the law actually phrases the amortization period in terms of 84 months, the resulting schedule is as follows: 1/14th of qualifying expenditures are deducted in the year incurred, 1/7th of the cost is deducted in each of the following six years and the remaining 1/14th is deducted in the seventh year following reforestation. Once reforestation costs are written-off in this manner, the landowner no longer has any cost (basis) in timber to offset gross income when the timber is sold.

The mechanics of PL 96-451 are illustrated in Figure 1 for a taxpayer in the 30% marginal tax bracket who invests $150 per acre in reforestation (on a tract that requires $10,000 or less to reforest). Tax savings are generated through year seven as a result of cost amortization. These tax savings are discounted back to the present (year zero) using a 12% rate of interest. In present value terms, the recovery of cost through the tax credit and 7-year amortization offset $46.09 of the landowner's original reforestation investment, or $.31 per dollar invested. Thus the net cost of reforestation to the landowner, after these tax incentives, is only $.69 per dollar invested. If the capitalization and depletion method of cost recovery had been applied to this same situation ($150 per acre invested, 30-year rotation, 30% tax
bracket, 12% discount rate), the present value of the tax saving would have been \$ .004 per dollar invested, leaving \$ .996 of each dollar invested for the landowner to shoulder.

Table 1. Mechanics of PL 96-451

<table>
<thead>
<tr>
<th>Year</th>
<th>Computation of Tax Saving</th>
<th>Tax Saving</th>
<th>Present Value of Tax Saving @ 12%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(.10)(150) tax credit</td>
<td>15.00</td>
<td>15.00</td>
</tr>
<tr>
<td>0</td>
<td>(1/14)(150)(.30)</td>
<td>3.21</td>
<td>3.21</td>
</tr>
<tr>
<td>1</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>5.74</td>
</tr>
<tr>
<td>2</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>5.12</td>
</tr>
<tr>
<td>3</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>4.58</td>
</tr>
<tr>
<td>4</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>4.08</td>
</tr>
<tr>
<td>5</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>3.65</td>
</tr>
<tr>
<td>6</td>
<td>(1/7)(150)(.30)</td>
<td>6.43</td>
<td>3.26</td>
</tr>
<tr>
<td>7</td>
<td>(1/14)(150)(.30)</td>
<td>3.21</td>
<td>1.45</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60.00</td>
<td>46.09</td>
</tr>
</tbody>
</table>

\[
\text{Tax Saving per Dollar Invested} = \frac{66.09}{150} = \$ .407
\]

\[
\text{Net Cost to Landowner per Dollar Invested} = \$ 1.00 - .307 = \$ .693
\]

\(a/\) Applies to the first \$10,000/year invested. This illustration is worked out on a per acre basis with the following assumptions: (1) cost of reforestation is \$150/acre, (2) landowner is in the 30% marginal tax bracket, and (3) the landowner discounts future cash flows at 12%.

Obviously, the percentage by which PL 96-451 reduces the landowner's net cost of reforestation depends on the landowner's marginal tax bracket and also on the interest rate at which future tax savings are discounted. Still another variable to consider is the tax treatment of any cost sharing payments which reimburse part of the landowner's cost of reforestation. We turn now to a systematic evaluation of these variables on the level of cost recovery. The method of analysis to be followed is: (1) to
identify the amount and timing of cost recovery per dollar invested in re- 
forestation, (2) to discount these tax savings back to the year of investment,
and (3) to arrive at the net cost to the landowner per dollar invested in 
forestation after subtracting out these discounted tax savings. Using
this method, treatment of reforestation cost under PL 96-451 will be con-
trasted with the capitalization of this cost to illustrate the dramatic
effect of the new law. Any evaluation of timber income and return on in-
vestment that a reader might link with this cost analysis should not forget
that the deduction of reforestation cost from income has already been accounted
for and that the gross income from selling timber will be fully taxable
(unless, of course, there are other types of cost to deduct).

Effect of Tax Bracket

Of the two forms of incentive provided by PL 96-451, the 10% tax credit
treats all taxpayers equally. Regardless of income level, every landowner
investing $10,000 per year in reforestation (including corporations) gets
the same $1,000 credit against taxes owed that year. The 7-year amortization,
however, provides tax savings in direct proportion to the landowner’s mar-
ginal tax bracket. The difference in capital recovery between the lowest
and the highest tax brackets is significant. Before continuing, therefore,
we must address the current range of federal income tax rates.

For a number of years, the marginal tax rate for ordinary individual
income has ranged from 14% to 70%. The Economic Recovery Tax Act of 1981,
however, made some basic changes in individual income tax rates. Beginning
on January 1, 1982, the top rate for individual income, regardless of source,
is reduced to 50%. (The maximum rate had earlier been reduced to 50% for
so-called "earned" income.) And beginning on October 1, 1982, a 25% reduc-
tion in individual tax rates is set in motion. This reduction is to be
phased-in over three years. The details of these changes are analyzed in
Appendix A, where a graph illustrates how tax rates are scheduled to fall
over time for specific amounts of net taxable income (the case of married
taxpayers filing a joint return). Appendix A also provides a reference for
translating tax rates back to corresponding levels of net taxable income.

Table 2 shows the impact of tax bracket on cost recovery under PL 96-451,
as opposed to capitalization of reforestation costs. Tax savings (costs
recovered) per dollar invested in reforestation are shown as positive num-
bers in the body of the table, and net cost to the landowner is shown as a
negative number. Reading across the line for the 30% marginal tax bracket,
PL 96-451 provides an immediate tax saving in the form of a tax credit
(10% of $1 = $ .10). And when the dollar is amortized over 7 years, the
present value of tax savings (discounted at 12% interest) add up to $ .207.
These computations are illustrated in Table 1 of the previous section.
Since the investment of a dollar generates total tax savings worth $.307
in present-value terms, the net cost to the landowner under PL 96-451 is
$.693. If this same dollar of investment was capitalized and deducted from
timber income 30 years hence, the present value of the tax saving would be
$.004 (computed as .3 x .4 x 1.00 + 1.12 ), which results in a net cost
to the landowner of $.996.
Table 2. Tax savings and net cost to the landowner per dollar invested in reforestation? PL 96-451 vs capitalization

<table>
<thead>
<tr>
<th>Landowner Marginal Tax Rate</th>
<th>PL 96-451 10% Tax Credit</th>
<th>7-Year Amort.</th>
<th>Landowner Net Cost (dollars)</th>
<th>Capitalization Depletion Allowance</th>
<th>Landowner Net Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>.10</td>
<td>.100</td>
<td>.069</td>
<td>-.831</td>
<td>.001</td>
<td>-.999</td>
</tr>
<tr>
<td>.20</td>
<td>.100</td>
<td>.138</td>
<td>-.762</td>
<td>.003</td>
<td>-.997</td>
</tr>
<tr>
<td>.30</td>
<td>.100</td>
<td>.207</td>
<td>-.693</td>
<td>.004</td>
<td>-.996</td>
</tr>
<tr>
<td>.40</td>
<td>.100</td>
<td>.276</td>
<td>-.624</td>
<td>.005</td>
<td>-.995</td>
</tr>
<tr>
<td>.50</td>
<td>.100</td>
<td>.346</td>
<td>-.554</td>
<td>.007</td>
<td>-.993</td>
</tr>
</tbody>
</table>

Assumptions: (1) future tax savings are discounted to the time of reforestation at 12%, and (2) rotation age is 30 years with no intermediate harvest income.

After December 31, 1983, the lowest marginal income tax bracket for any individual will be roughly 11% (actually 10.77%—see Appendix A). Even for landowners at this end of the income spectrum, PL 96-451 reduces net cost of reforestation by roughly 20%. For the highest tax bracket (50%), net cost of reforestation will be reduced by 45%, with the landowner paying, in effect, fifty-five cents on the dollar. It is frequently argued that timber growing is best suited to wealthy people in relatively high tax brackets who have the means to meet their consumer needs without reliance on frequent cash flows from every investment. Since PL 96-451 is offering its most significant tax incentive to the most likely class of investor, there is cause for optimism that considerable reforestation activity will result.

Effect of Discount Rate

The method employed in this paper requires discounting future tax savings back to the present for comparison with reforestation cost. A 12% discount rate was employed in Table 2. If a lower rate had been used, the present equivalent value of tax savings would have been higher, and the resulting net cost of reforestation to the landowner would have been lower in every tax bracket. Using a discount rate higher than 12% would have had exactly the opposite effect. To illustrate the impact of alternative discount rates, Table 2 was recomputed using rates of 4% and 20%. The results are summarized in Table 3.
Table 3. Cost to landowner per dollar invested in reforestation (tax savings netted out): PL 96-451 vs capitalization

<table>
<thead>
<tr>
<th>Landowner Discount Rate (%)</th>
<th>Net Cost to Landowner (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PL 96-451</td>
</tr>
<tr>
<td>4</td>
<td>-.638</td>
</tr>
<tr>
<td>12</td>
<td>-.693</td>
</tr>
<tr>
<td>20</td>
<td>-.730</td>
</tr>
</tbody>
</table>

Assumptions: (1) the landowner is in the 30% marginal income tax bracket, and (2) rotation age is 30 years with no intermediate harvest.

The discount rates used in Table 3 might be characterized as after-tax, nominal, interest rates, e.g., rates based on investment cash flows where the effect of inflation is included but where income taxes have been netted out. While the discount rate used has a distinct impact on effective net cost of reforestation to the landowner, each reader is left to draw his own conclusions about the significance of the differences illustrated in Table 3. In theory, at least, the discount rate one uses to evaluate new investment proposals is the rate that could be earned on the best alternative use of capital. The opportunity cost of capital is influenced by many factors and is distinctly an individual matter. Regarding the population of nonindustrial private landowners, we don't have good information on income distribution, let alone population data on opportunity cost of capital.

**Interaction of PL 96-451 with Cost Sharing**

The most highly publicized incentive to grow timber has been the cost sharing programs which directly reimburse the landowner for up to 50-70% of the cost of reforestation and other silvicultural practices. The major federal program now in effect is the Forest Incentives Program (FIP). In addition, at least five states have a comparable program which supplements the federal program. For a limited number of landowners, cost sharing has provided an attractive incentive to reforest. But the cost sharing programs now in effect are falling short for the following reasons: (1) they are underfunded, (2) allotments per landowner are relatively small, (3) long waiting lists have developed, and (4) there is too much uncertainty over when and if a landowner's application will be funded. In its wisdom, Congress apparently felt that tax incentives, available to all taxpayers rather than just a lucky few, were needed.

PL 96-451 interacts with cost sharing programs in the following way. A law passed in November 1978 (PL 95-600) gave landowners the option of not treating cost sharing payments as taxable income. Up until that time, cost
 sharing payments had to be added to ordinary income and taxed as such.\textsuperscript{3/} PL 96-451 specifically states that the landowner is not entitled to the 10% tax credit and 7-year amortization on that part of reforestation costs reimbursed by cost sharing—unless the landowner pays income taxes on the cost sharing payment.

Table 4 illustrates a landowner's recovery of $150/acre in reforestation cost under a combination of 60% cost sharing and PL 96-451 tax savings. When the cost share payment is treated as income, the landowner pays an income tax of $27 on the $90 payment. But as a result, he gets to take the 10% tax credit and 7-year amortization on the full $150/acre reforestation cost. When the cost share payment is not included in gross income, income taxes are not paid on the $90/acre, and the incentives of PL 96-451 apply only to the $60/acre actually paid out of the landowner's pocket. When the reforestation cost recovered through a combination of cost sharing and PL 96-451 tax savings in Table 4 is discounted to the present at 12%, we see that treating cost sharing as income has a very slight advantage for a taxpayer in the 30% marginal tax bracket.

Table 5 presents a general summary of the combined impact of cost sharing and PL 96-451 on net cost of reforestation for the range of tax brackets. Although the specific results of this table depend on the assumption of 60% cost sharing and a 12% discount rate, it is clear that the two incentives in combination offer a most attractive invitation to reforest. In most situations, the landowner can get a dollar's worth of reforestation accomplished by actually giving up less than thirty cents.

Table 5 also illustrates the calculations necessary to decide whether or not a landowner should treat cost sharing payments as taxable income. It is apparent that landowners in low tax brackets are financially better off to treat cost sharing payments as income. By so doing, their net cost of reforestation is lowest. In contrast, landowners in the highest tax brackets are better off to avoid paying taxes on cost sharing payments.

The breakeven marginal tax bracket at which the net cost of reforestation is the same, regardless of the income tax treatment of cost sharing payments, is very close to 30% in Table 5. As might be suspected, the breakeven income tax bracket depends on the interest rate used to discount future tax savings. This relationship between tax bracket and discount rate is analyzed in Appendix B and summarized in Table 6.

\textsuperscript{3/} Because of ambiguous wording in PL 95-600, the IRS has questioned whether or not Congress really gave the landowner the option of not claiming cost sharing payments as income. However, any question about the intent of Congress in the earlier law seems to have been removed by the very clear wording of PL 96-451, Sec. 194, (a)(3)(B): "COST-SHARING PROGRAMS.—Reforestation expenditures shall not include any expenditures for which the taxpayer has been reimbursed under any governmental reforestation cost-sharing program unless the amounts reimbursed have been included in the gross income of the taxpayer." On the strength of this statement, this paper assumes that the landowner does, in fact, have the option of excluding cost sharing payments from taxable income.
Table 4. Alternatives for treating reforestation cost sharing combined with the incentives of PL 96-451

<table>
<thead>
<tr>
<th>Year</th>
<th>Description of Cash Flow Item</th>
<th>Cost Sharing IS Income ($ saving to landowner)</th>
<th>Cost Sharing IS NOT income ($ saving to landowner)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>cost sharing</td>
<td>90 - (.30)(90) = $63.00</td>
<td>not taxed</td>
</tr>
<tr>
<td>0</td>
<td>10% tax credit</td>
<td>(.10)(150) = 15.00</td>
<td>(.1)(60) = 6.00</td>
</tr>
<tr>
<td>0</td>
<td>amortization</td>
<td>(1/14)(150)(.3) = 3.21</td>
<td>(1/14)(60)(.3) = 1.29</td>
</tr>
<tr>
<td>1</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>2</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>3</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>4</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>5</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>(1/7)(150)(.3) = 6.43</td>
<td>(1/7)(60)(.3) = 2.57</td>
</tr>
<tr>
<td>7</td>
<td>&quot;</td>
<td>(1/14)(150)(.3) = 3.21</td>
<td>(1/14)(60)(.3) = 1.29</td>
</tr>
</tbody>
</table>

Present Value of Savings at 12% Discount Rate

<table>
<thead>
<tr>
<th>Present Value of Savings</th>
<th>109.09</th>
<th>108.44</th>
</tr>
</thead>
<tbody>
<tr>
<td>per Dollar Invested</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Landowner Net Cost per Dollar Invested

| Landowner Net Cost | $1.00 - .727 = .273 | $1.00 - .723 = .277 |

Assumptions: (1) cost of reforestation is $150/acre, (2) cost sharing payment @ 60% is $90/acre, (3) landowner is in the 30% marginal income tax bracket, and (4) the landowner discounts future cash flows at 12%.
Table 5. Net cost to landowner per dollar invested in reforestation under a combination of PL 96-451 and cost sharing

<table>
<thead>
<tr>
<th>Landowner Marginal Tax Rate</th>
<th>Cost Share</th>
<th>10% Tax Credit</th>
<th>7-Year Amort.</th>
<th>Landowner Net Cost</th>
<th>Cost Share</th>
<th>10% Tax Credit</th>
<th>7-Year Amort.</th>
<th>Landowner Net Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>.10</td>
<td>.540</td>
<td>.100</td>
<td>.069</td>
<td>-.291</td>
<td>.600</td>
<td>.040</td>
<td>.028</td>
<td>-.332</td>
</tr>
<tr>
<td>.20</td>
<td>.480</td>
<td>.100</td>
<td>.138</td>
<td>-.282</td>
<td>.600</td>
<td>.040</td>
<td>.055</td>
<td>-.305</td>
</tr>
<tr>
<td>.30</td>
<td>.420</td>
<td>.100</td>
<td>.207</td>
<td>-.273</td>
<td>.600</td>
<td>.040</td>
<td>.083</td>
<td>-.277</td>
</tr>
<tr>
<td>.40</td>
<td>.360</td>
<td>.100</td>
<td>.276</td>
<td>-.264</td>
<td>.600</td>
<td>.040</td>
<td>.111</td>
<td>-.249</td>
</tr>
<tr>
<td>.50</td>
<td>.300</td>
<td>.100</td>
<td>.346</td>
<td>-.254</td>
<td>.600</td>
<td>.040</td>
<td>.138</td>
<td>-.222</td>
</tr>
</tbody>
</table>

Assumptions: (1) rate of cost sharing is 60%, (2) landowner is in the 30% marginal income tax bracket, and (3) landowner discounts future tax savings at 12%.

Table 6 shows the breakeven marginal tax bracket for a range of interest rates. One enters Table 6 with the landowner's discount rate, and the breakeven tax bracket is read in the right-hand column. If the landowner's actual tax bracket is greater than the bracket shown, then he should not claim cost sharing as taxable income. If the actual tax bracket is lower than the breakeven bracket, cost sharing payments should be claimed as taxable income.

Readers should be aware that the guideline in Table 6 does not apply when more than $10,000 is spent on reforestation in a single year. In such a case, the landowner needs to make an additional check before treating cost sharing payments as income. The following example illustrates the reason. Assume that the total outlay to reforest a tract is $12,000 and that a cost sharing payment of $6,000 will be awarded. If the landowner treats cost sharing as income, his deductible cost in timber is the full $12,000. But only $10,000 qualifies for PL 96-451, and this leaves the landowner with $2,000 to capitalize. It has been demonstrated that the present value of cost recovery under capitalization is effectively zero. If the above landowner's marginal tax rate is 25% and his discount rate is 12%, Table 6 advises him to treat the $6,000 cost share payment as income. However, the landowner's net cost of reforestation would be $4,765.61 if he followed this advice (assuming a 30-year rotation) as opposed to $4,363.37 if he did not treat the payment as income.
Table 6. Breakeven tax bracket where a landowner with a given discount rate is indifferent about paying income tax on a cost share payment

<table>
<thead>
<tr>
<th>Discount Rate (%)</th>
<th>Breakeven Tax Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2*</td>
<td>151</td>
</tr>
<tr>
<td>4*</td>
<td>80</td>
</tr>
<tr>
<td>6*</td>
<td>56</td>
</tr>
<tr>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>16</td>
<td>26.5</td>
</tr>
<tr>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>30</td>
<td>18.5</td>
</tr>
</tbody>
</table>

Decision Rule: (1) If marginal tax rate is lower than breakeven rate, claim cost share as income.

(2) If marginal tax rate is higher than breakeven rate, do not claim cost share as taxable income.

Note: The above rule does not apply when more than $10,000 is spent in a single year.

*At these discount rates, all landowners should pay taxes on cost share payments since the maximum individual income tax rate is 50%.
As a general rule, when the annual expenditure on reforestation exceeds $10,000 per year, even by as much as $1,000, landowners who are advised by Table 6 to treat cost sharing as income should make the necessary calculations to see if that advice still applies. Since five variables are involved in these calculations, it does not seem possible to devise a simple table or chart of breakeven points for the case where reforestation exceeds $10,000 per year. Instead, a fairly simple computer program called NECORE (Net Cost of Reforestation) was written for those who have access to an Apple II micro-computer. The program is listed and illustrated in Appendix C.

Summary and Conclusion

This paper examines the extent to which reforestation costs are offset by tax savings generated when these costs are deducted from taxable income. When reforestation costs are capitalized, the present value of tax savings are negligible; in effect, the landowner bears the full burden of the investment. PL 96-451, however, gives a 10% tax credit and 7-year amortization for the first $10,000 invested each year in reforestation. These provisions significantly improve the level of investment cost recovery on this first $10,000. The precise amount of cost recovery depends on the landowner's marginal income tax rate and the interest rate at which future tax savings are discounted. In general, cost recovery per dollar invested under PL 96-451 ranges from twenty cents (for a combination of low tax rate and high discount rate) to fifty cents (for a combination of high tax rate and low discount rate).

The interaction between PL 96-451 and government cost sharing programs hinges on whether or not the landowner elects to pay income taxes on the cost share payment. If he does, then he gets to take the PL 96-451 incentives on the entire cost of reforestation (up to the $10,000 per year limit). If he does not treat the cost share payment as income, PL 96-451 applies only to the landowner's share of the reforestation cost. In general, if the total annual investment in reforestation is $10,000 or less, landowners in low tax brackets are financially better off to claim any cost share payment as income. In every other situation, landowners will be better off not to claim cost share payments as income. Precise break-even points and guidelines are presented in the paper.

The paper does not consider the impact of state income tax laws on reforestation capital recovery. For example, North Carolina allows reforestation costs to be amortized over a 60-month period. The resulting impact on capital recovery is limited, however, by the relatively low income tax rates in North Carolina (maximum of 7% on individual income). In general, a consideration of state tax provisions would have lowered the effective net cost of reforestation to some extent beyond what PL 96-451 has done.

It is generally agreed that a major obstacle to better forest management is the high front-end cost of reforestation. PL 96-451 takes a giant step toward reducing that front-end cost. In theory, PL 96-451 should accomplish the intended result—a higher level of investment in forest management on private lands. However, some troublesome questions
remain. First, PL 96-451 comes during an era of rapidly rising stumpage prices. If investments in private forest management increase dramatically, how much can be attributed to PL 96-451? Are the federal agencies gathering the data and doing the research necessary to measure the importance of this new venture in forest taxation policy?

Second, has PL 96-451, like the cost sharing programs, been under-funded by virtue of the $10,000 per year limit? Because of the possibility of site-preparing a tract one year and planting the tract the next year, the $10,000 per year limit might be parlayed into a $20,000 per tract limit (where the tract is treated as a single even-age stand). But even so, will PL 96-451 tend to limit reforestation to relatively small patches that fall short of the economies of scale for most efficient timber production?

Third, and most important, PL 96-451 cannot change investment behavior unless the law and its impact are recognized by private landowners. Viewed in the context of the average taxpayer and his tax advisor, PL 96-451 is but a tiny blip in the increasingly complex morass of federal income tax rules and regulations. Even after two years, it has probably gone largely unnoticed by a vast majority of nonindustrial private landowners. Is the forestry profession doing enough to assure that landowners understand this important new incentive?
APPENDIX A

The Economic Recovery Tax Act of 1981 legislates an across-the-board reduction in individual income tax rates to be phased-in over several years. All rates in effect prior to October 1, 1981, are reduced by 5% on that date, followed by a 10% reduction on July 1, 1982, and a final 10% on July 1, 1983. Although this has frequently been described as a 25% reduction, the actual rate of reduction is only 23%. This is the case because each successive reduction is applied to a rate which was lowered by the previous round of reduction. Mathematically, a tax rate of \( x \) before October 1, 1981, becomes \( .95x \) on that date. On July 1, 1982 the rate becomes \( (.90)(.95X) \), or \(.855X\). And on July 1, 1983 the rate becomes \( (.90)(.90)(.95X) \), or \(.7695X\). Rounded off, \(.77X\) is 23% lower than the original rate, \( x \).

Computation of tax rates for specific tax years during the phase-in period between 1981 and 1984 requires weighting the changing tax rate by the number of months each rate is in effect. The results of this weighting process are displayed in Figure 1. The falling tax rates on fixed income brackets are illustrated in Figure 2.
Figure 1. Computation of reduction in federal income tax rate for each year of the phase-in period.
Figure 2. Change in tax rate for specific dollar amounts of net taxable income (starting point in 1979 taken from Schedule Y for married individuals filing joint return)
\[
\text{is presented in Appendix C.}
\]

\[I(1 + r) + \frac{g}{r} \left( S - C \right) (L/I) + \left( S - C \right) (L/L) + \left( S - C \right) (L/I) + S = 0\]

By cost sharing:

\[
\text{If the cost share payment is not taxable income, } P \text{ of capital recovery:}
\]

\[
\frac{I(1 + r)}{r} + \frac{g}{r} \left( S - C \right) (L/I) + \left( S - C \right) (L/L) + \left( S - C \right) (L/I) + S = 0
\]

\[
\text{If the cost share payment is taxable income, the } P \text{ of capital recovery:}
\]

\[
I - \text{marginal income tax rate (decrement fraction)} = 1 - \frac{\text{discount rate (expressed as decimal fraction)}}{1 - \text{discount rate (expressed as decimal fraction)}}
\]

\[
S = \text{cost share payment (dollar amount)}
\]

\[
C = \text{total reforestation cost (dollar amount)}
\]

\[
\text{is defined as follows:}
\]

\[
\text{is the increment of economic returns, the landowner would be indifferent to}
\]

\[
\text{the income treatment of the landowner's net profit (net of any income tax on the}
\]

\[
\text{present value (PV) of the cost share payment, not of any income tax on the}
\]

\[
\text{payment, plus the tax savings generated under PL 96-514, forms the basis for the}
\]

\[
\text{cost share payment (income vs. not income), an argument is developed for the}
\]

\[
\text{cost share payment as a taxable income. This reforestation is}
\]

\[
\text{a cost share payment was treated as taxable income. This reforestation is}
\]

\[
\text{the Increment Point (BEP) below which the landowner would be indifferent to net}
\]

\[
\text{The Break-even Point (BEP) below which the landowner would be indifferent to net}
\]

\[
\text{Appendix B}
\]
APPENDIX C

The listing below is a computer program called NECORE (Net Cost of Reforestation) that calculates the landowner's cost of reforestation, net of PL 96-451 tax savings and cost share payments. The program is written in Applesoft Basic and runs on an Apple II microcomputer. When executed, the program gives complete instructions and leads the user along. The program asks for the following data: (1) total cost of the reforestation job, (2) amount of the cost share payment, (3) the landowner's marginal income tax bracket, (4) landowner's discount rate, and (5) the assumed rotation length. If the cost share payment is not a zero, net cost to the landowner is computed two ways: (1) treating the cost share payment as income, and (2) assuming that the payment will not be treated as taxable income. A sample run is displayed alongside the program listing on the next page.

5 REM D. LESTER HOLLEY, N.C. STATE UNIVERSITY.
10 HOME: CLEAR
20 PRINT "DO YOU WANT INSTRUCTIONS?"
30 PRINT "IF YES, TYPE Y."; PRINT "IF NO, TYPE N."
35 PRINT "(HIT RETURN KEY TO ENTER YOUR RESPONSE.)"
40 INPUT A$; IF A$ = "Y" GOTO 200
45 REM LINES 50-170 GIVE INSTRUCTIONS
50 HOME
60 PRINT "THIS PROGRAM COMPUTES COST OF"
70 PRINT "REFORESTATION TO LANDOWNER NET OF COST"
80 PRINT "SHARING AND PL 96-451 TAX INCENTIVES.": PRINT
90 PRINT "RULES FOR ENTERING DATA:";
100 PRINT "1. LEAVE OFF DOLLAR SIGN & COMMAS."
120 PRINT "2. DON'T NEED TO ENTER DECIMAL AFTER"
130 PRINT "EVEN DOLLAR AMOUNT.
"
140 PRINT "3. ENTER RATES AND PERCENTS AS DECIMAL"
150 PRINT "NUMBERS, I.E., ENTER .12 FOR 12%"
160 PRINT "5. HIT RETURN KEY AFTER EACH DATA ENTRY."
170 PRINT "TYPE C TO CONTINUE."; INPUT A$;
195 REM LINES 200-300 ASK FOR DATA
200 HOME: PRINT "ANSWER THE FOLLOWING QUESTIONS."
210 PRINT "1. HOW MUCH WILL IT COST TO ReforeST?"
220 PRINT "THE TRACT? (Dollars)"; INPUT C
230 PRINT "2. WHAT IS THE AMOUNT OF THE COST?"
240 PRINT "SHARING PAYMENT? (Dollars)"; INPUT S6
250 PRINT "3. WHAT MARGINAL INCOME TAX BRACKET IS?"
260 PRINT "LANDOWNER IN? (Decimal)"; INPUT T
270 PRINT "4. WHAT INTEREST RATE TO DISCOUNT?"
280 PRINT "FUTURE TAX SAVINGS? (Decimal)"; INPUT D
290 PRINT "5. WHAT ROTATION AGE IS ASSUMED FOR"
300 PRINT "THE NEW STAND? (Years)"; INPUT R
305 REM LINES 310-490 ECHO THE DATA
320 PRINT "TYPE C TO CONTINUE."; INPUT A$; HOME
400 PRINT "##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*##*
410 PRINT "1. COST TO ReforeST (Dollars) = "$C
420 PRINT "2. COST SHARE PAYMENT (Dollars) = "$S6
430 PRINT "3. INCOME TAX BRACKET (Decimal) = "$T
440 PRINT "4. DISCOUNT RATE (Decimal) = "$D
450 PRINT "5. ROTATION AGE (Years) = "$R
460 PRINT "WHAT DO YOU WANT TO DO?"
470 PRINT "TYPE C TO CONTINUE, OR"
480 PRINT "TYPE R TO REENTER DATA"
490 INPUT A$; IF A$ = "R" GOTO 200
495 REM GOTO LINE 600 IF NO COST SHARING
500 IF SD < = .0001 GOTO 600
505 REM SUBROUTINE 700 ASSUMES COST SHAR. IS INCOME
510 GOSUB 700
520 HOME : PRINT TAB(11)"**** RESULTS ****": PRINT
530 PRINT "IF COST SHARE PAYMENT IS INCOME, THEN"
540 PRINT "NET COST OF REFORESTATION IS: "; INT (LY @ 100) / 100
550 PRINT
555 REM SUBROUTINE 800 ASSUMES COST SHAR. IS NOT INCOME
560 GOSUB 800
570 PRINT "IF COST SHARE PAYMENT NOT INCOME, THEN"
580 PRINT "NET COST OF REFORESTATION IS: "; INT (LM @ 100) / 100
590 GOTO 999
595 REM SUBROUTINE 700 HANDLES THE CASE WHERE COST SHARING = 0
600 GOSUB 700
610 HOME : PRINT TAB(11)"**** RESULT *****": PRINT
620 PRINT "NET COST OF REFORESTATION IS: "; INT (LY @ 100) / 100
630 GOSUB 999
700 SSD = SD - T @ SD
710 IF C > = 10000 THEN WP = 10000
720 IF C > = 10000 THEN WC = C - 10000
730 IF C < 10000 THEN WP = C
740 IF C < 10000 THEN WC = 0
750 CD = (MC @ .4 @ T) / (1 + D) ^ R
760 GOSUB 900
770 LY = C - SSD - PD - CD
780 RETURN
800 BA = C - SD
810 IF BA > = 10000 THEN WP = 10000
820 IF BA > = 10000 THEN WC = BA - 10000
830 IF BA < 10000 THEN WP = BA
840 IF BA < 10000 THEN WC = 0
850 CD = (MC @ .4 @ T) / (1 + D) ^ R
860 GOSUB 900
870 LN = C - SD - PD - CD
880 RETURN
900 PD = .1 @ WP + (1 / 14 @ WP @ T)
910 PD = PD + (1 / 7 @ WP @ T) & (1 + D) ^ 6 - 1) / (D @ (1 + D) ^ 6)
920 PD = PD + (1 / 14 @ WP @ T) / (1 + D) ^ 7
930 RETURN
999 PRINT
1000 PRINT "DO YOU WANT TO ENTER ANOTHER CASE?"
1010 PRINT "TYPE Y OR N": INPUT A$
1020 IF A$ = "Y" GOTO 200
1130 END
1140 REM C,SD,T,D & R ARE DEFINED IN LINES 410-450
1150 REM LY=LANDOWNER NET COST IF COST SHARING IS INCOME
1160 REM LM=LANDOWNER NET COST IF COST SHARING IS NOT INCOME
1170 REM WP=DOLLAR AMT. TO WHICH PL96-451 APPLIES
1180 REM MC=DOLLAR AMT. CAPITALIZED
1190 REM BA=LANDOWNER BASIS IN TIMBER
1200 REM PD=PRESENT VALUE OF PL95-541 TAX SAVING
1210 REM CD=PRESENT VALUE OF TAX SAV. IF CAPITALIZE
1220 IRUN NECORE
DO YOU WANT INSTRUCTIONS?
IF YES, TYPE Y.
IF NO, TYPE N.
(HIT RETURN KEY TO ENTER YOUR RESPONSE.)
Y
THIS PROGRAM COMPUTES COST OF
REFORESTATION TO LANDOWNER NET OF COST
SHARING AND PL 96-451 TAX INCENTIVES.

RULES FOR ENTERING DATA:
1. LEAVE OFF DOLLAR SIGN & COMAS.
2. DON'T NEED TO ENTER DECIMAL AFTER
   EVEN DOLLAR AMOUNT.
3. ENTER RATES AND PERCENTS AS DECIMAL
   NUMBERS, I.E., ENTER .12 FOR 12%
4. HIT RETURN KEY AFTER EACH DATA ENTRY.
5. TYPE C TO CONTINUE.
   TYPE R TO REENTER DATA.

C
ANSWER THE FOLLOWING QUESTIONS.
1. HOW MUCH WILL IT COST TO REFOREST
   THE TRACT? (Dollars)
2. WHAT IS THE AMOUNT OF THE COST
   SHARING PAYMENT? (Dollars)
3. WHAT MARGINAL INCOME TAX BRACKET IS
   LANDOWNER IN? (Decimal)
4. WHAT INTEREST RATE TO DISCOUNT
   FUTURE TAX SAVINGS? (Decimal)
5. WHAT ROTATION AGE IS ASSUMED FOR
   THE NEW STAND? (Years)

C
#### HERE'S THE DATA YOU ENTERED ####
1. COST TO REFOREST (Dollars) = 12000
2. COST SHARE PAYMENT (Dollars) = 8000
3. INCOME TAX BRACKET (Decimal) = .25
4. DISCOUNT RATE (Decimal) = .12
5. ROTATION AGE (Years) = 30

WHAT DO YOU WANT TO DO?
   TYPE C TO CONTINUE, OR
   TYPE R TO REENTER DATA

C
#### RESULTS ####
IF COST SHARE PAYMENT IS INCOME, THEN
NET COST OF REFORESTATION IS: 4765.61
IF COST SHARE PAYMENT NOT INCOME, THEN
NET COST OF REFORESTATION IS: 4363.37

DO YOU WANT TO ENTER ANOTHER CASE?
TYPE Y OR N
N
Timber Casualty Losses -- Recent Developments

William C. Siegel*

Casualty losses fall within Section 165(a) of the Internal Revenue Code which states the general rule that all uncompensated losses are deductible from ordinary income in the year sustained. It is generally required that deductible losses be sudden and unexpected, as contrasted with gradual deterioration through a steadily operating force. The emphasis is on suddenness. The loss must also be evidenced by closed and completed transactions; fixed by identifiable events; and actually sustained during the taxable year. The amount of the loss must be ascertainable and measurable, and a deduction may not be taken as long as there is a reasonable possibility of recovery or reimbursement.

Timber casualty deductions may be taken for trees partially destroyed as well as for those totally destroyed. The deduction is limited to the timber's adjusted basis regardless of its fair market value. Proper adjustment must be made, however, for any salvage value, and for any insurance or other compensation received.

The Tract or Tree Question --

The regulations dealing with casualty losses state that the loss is to be determined by reference to the "single, identifiable property damaged or destroyed." As applied to timber, what is the "single, identifiable property damaged or destroyed"? The answer can have a substantial impact on the amount of the deduction. Is it all of the timber owned by the taxpayer, each separate block or tract owned by him, or perhaps the aggregate of all tracts or blocks suffering damage? Or is it only that portion of a tract affected, or an acre of timber, or a single tree? Is it a depletion unit such as cord or a thousand board feet, or, at the extreme, even a single cubic or board foot? This question has been the most hotly contested one in timber casualty law.

The issue was faced by the Tax Court in 1967 in Rosenthal v. Commissioner. The taxpayer took the position that all the timber on the tract where damage occurred should be considered as the "single, identifiable property damaged or destroyed". The internal Revenue Service contended that the phrase referred only to the particular board feet of timber lost. The Tax Court ruled in favor of the Government and the decision was affirmed by the Second Circuit Court of Appeals.

*Project Leader, Forest Resource Law and Economics, Southern Forest Experiment Station, U.S. Forest Service, New Orleans, Louisiana. David Singleton of the Tax Department of Westvaco Corporation spoke at the Symposium on "Recent Developments in Timber Casualty Law--the Westvaco Decision and Other Issues". Because the Westvaco case is still in litigation, however, the paper could not be published in these proceedings. These comments by Dr. Siegel have been substituted.

1Treasury Regulation 1.165-7(b)(2)(i).

248 T.C. 515(1967).
While the Rosenthal case was before the Tax Court, Revenue Ruling 66-9\(^3\) was issued which took the same position upheld by the Rosenthal Court. This position was judicially approved a second time during 1967 in Harper v. United States.\(^4\) The Federal District Court for South Carolina held that the "single, identifiable object damaged or destroyed" was the "measurable unit of merchantable timber (i.e., board feet) and that the deduction must be limited to the adjusted basis of the "measurable units" damaged or destroyed. The Fourth Circuit Court of Appeals affirmed the decision.

In 1980, however, the Court of Claims took a different position in Westvaco Corporation v. United States.\(^5\) The Court held that the "single, identifiable object damaged or destroyed" in this case was all of the taxpayer's standing timber, both merchantable and unmerchantable, in each of its individual depletion districts directly affected by the casualty and that the taxpayer could deduct a casualty loss for nonfatal injury to standing timber. The Court stated that the potential for future income from standing timber had a present value which could be damaged or destroyed, thus affecting the fair market value of the total tract, and could be considered in determining the casualty loss.

The Westvaco decision, however, has been appealed by the Government and thus is still in litigation. Regardless of the final outcome, it is not likely to be the end of the judicial history of the "tract or tree" question. Since large amounts of money are involved, some taxpayers are apt to seek to resolve the question in the U.S. Supreme Court.

Revenue Ruling 80-175 --

If income from a timber salvage sale following a casualty exceeds the taxpayer's adjusted basis, the gain is taxable. Some relief from this general rule, however, is now possible. A 1980 revenue ruling permits a deferment of the federal income tax on any portion of a gain attributed to a salvage sale that is reinvested in qualified replacement property. This reversal of a prior rule resulted in part from the timber damage caused by Hurricane Frederick in September 1979. The following all qualify as replacement property: standing timber; bare timberland; timberland and timber; capitalized reforestation costs on land purchased after the casualty; and capitalized reforestation costs on land owned prior to the casualty. The replacement property must be purchased, or the replacement costs expended, within two years after the end of the first taxable year in which any part of the gain upon conversion is realized.

**Insect Damage** --

Insect infestation leading to the death of timber does not ordinarily result in a casualty loss. Losses from a low level of pest incidence,

\(^3\)Revenue Ruling 66-9, 1966-1 C.B. 39,40.

\(^4\)274 F. Supp. 809(1967).

usually present under normal conditions, are not deductible. There have been a number of significant developments in this area of the law, however, that pertain to southern pine beetle attacks. In 1968, the Tax Court held that destruction of loblolly pine trees on residential property by a mass attack of southern pine beetles was both unexpected and sufficiently sudden to qualify as a casualty loss. The Tax Court rendered a similar ruling in 1977 in Black v. Commissioner. Based in part on these decisions, the Internal Revenue Service in 1979 issued Revenue Ruling 79-174 which recognized that under some circumstances, fatal damage to ornamental trees by southern pine beetle or other insect infestation can be of a sufficiently sudden nature so as to meet the required elements of a casualty loss. Despite this ruling, however, at least one taxpayer was still subsequently forced to litigate the issue. He was upheld by the Tax Court. It is important to note that all of these court decisions and the revenue ruling apply specifically to ornamental southern pine trees on residential property. They do have important implications, however, for commercial timber operations if the same type of circumstances are involved.

7 T.C.M. 1977-337.
8 McKeen, T.C.M. 1981-670.
TAX POLICY ISSUES IN THE 1981 GENERAL ACCOUNTING OFFICE REPORT:
"NEW MEANS OF ANALYSIS REQUIRED FOR POLICY DECISIONS AFFECTING PRIVATE FORESTRY SECTOR"

John R. Hadd*

About a year ago, the General Accounting Office issued a report which raised, from its perspective, an initial set of questions about the relationship between timber taxation policy, timber production, and private sector reforestation efforts. GAO views this national "Forest Taxation Symposium" as a large and important advance towards the analytical and policy formulation goals advocated in its 1981 report. I am pleased at the opportunity to bring this audience up-to-date on both the content of our report and its reception.

A copy of the GAO report "New Means of Analysis Required for Policy Decisions Affecting Private Forestry Sector" (EMD-81, January 21, 1981) has been made available to each participant in the Symposium. I am, therefore, only going to highlight certain parts of its content.

The Forest Service forecasts that future timber demand will increase dramatically over the next several decades. Projected demand for 2030 is more than double the 1977 level of timber consumption. Even greater increases, proportionately, are forecast for timber prices. In its report, GAO sought to examine the relationship of Federal capital gains tax treatment to overall timber production and reforestation by the private sector, the production potential of nonindustrial private forest lands, and alternative tax on other assistance/incentives for aiding realization of that potential.

Capital Gains Taxation of Timber Income

Many representatives of the forest industry have contended that the timber gains tax provision enacted in 1944 has encouraged reforestation of the Nation's private forests. However, the tax law does not require that capital gains benefits be applied to reforesting or improving management techniques. Tax benefits are based on income from timber cut rather than on what the taxpayer spends for site establishment, reforestation, and timber management.

None of the many sources GAO contacted could provide firm evidence to support generally claimed, nation-wide values for conservation and reforestation from capital gains tax treatment.

*Senior Group Director, Materials; Energy and Minerals Division; U.S. General Accounting Office; Washington, D.C.
Capital gains tax treatment of timber income is considered a tax expenditure. Based on the Department of the Treasury's method of calculating this tax expenditure, the true cost of capital gains tax treatment of timber income is unknown. The estimates which have been prepared for fiscal years 1976-1980 indicate that 76 percent of the benefits ($1.2 billion) accrue to industrial firms and 24 percent ($0.4 billion) accrue to individual nonindustrial landowners. However, the latter group supplies the largest percentage of timber.

The lack of alignment between actual timber production and estimated distribution of capital gains benefits is one reason for examining the effectiveness and equity of existing tax incentives policy, particularly in light of continuing concern over growth in the backlog of unre fores ted lands. And, with respect to capital gains treatment, GAO's report called one other major point to attention. We questioned the propriety of allowing capital gains tax benefits to parties who purchase for cutting and resale timber grown on and resulting from public forest management and investment, in contrast to producers who invest in forest stands over decades.

The capital gains tax expenditures associated with public lands sales are not insignificant. We estimated that, on Forest Service sales alone, tax expenditures calculated on the increase in sales value from the time of purchase to the time of harvest of public timber approximated $305 million for the 3 fiscal years 1975-1977, assuming the beneficiaries had held cutting rights for at least 2 years before harvesting. Since timber is sold from other public lands (such as those controlled by the Bureau of Land Management and the Department of Defense) under similar circumstances and cutting practices, the tax expenditure would be even greater.

Production Potential of Nonindustrial Private Lands

Although there are 278 million acres of nonindustrial forest lands, it is likely that only a fraction of that acreage could be managed for increased timber production. Such factors as the mix of motivations for owning timber land, marketing constraints, and a range of economic and financial problems small landowners face make it difficult to make realistic projections of timber production on nonindustrial lands.

Many studies conclude that the primary need of production-oriented, nonindustrial forest landowners is "up-front" assistance for site establishment and reforestation expenses. A detailed comparative assessment of alternatives—such as expensing of site preparation costs, Federal loans, or expansion of direct financial assistance—should be compiled as rapidly as possible. The assessment should also make clear prospective production implications of various levels of assistance and their prospective relationship to future timber prices.

Basic Conclusion

The basic conclusion of GAO's report is that there appears no way of resolving important but contentious issues associated with timber income capital gains tax treatment, or the comparative effectiveness of various
reforestation and production incentives, unless significantly different analytical techniques are adopted, specifically including a private sector forestry policy "model" or analytical framework.

The Treasury Department suggested to GAO five essential features of such an analytical model. These are:

--the market structure of the lumber and wood products industries;
--the relationships between inputs needed for timber production and the outputs produced, on a species-specific basis;
--a measure of the amount by which present subsidies (both within and outside the tax system) reduce private forest costs given the relationship between inputs and outputs;
--given the relationship between inputs and outputs, a measure of the responsiveness of future stumpage supply to a given percentage reduction in the private cost of production, i.e., a measure of supply elasticity; and
--information about capital markets and their roles in facilitating capital formation in forestry.

GAO agreed that there is a need to develop a framework model, or set of models capable of quantitatively assessing the effect of various financial incentives on the timber supply response of the private sector. Although such an analytical effort can be based on any of several possible approaches to studying investment and supply response behavior, it should be able to give detailed answers to questions such as:

--What are the inherent advantages and disadvantages of alternative incentive programs, such as capital gains, direct cost-sharing, or amortization of reforestation expenditures?
--What subgroups of timber producers--industrial, non-industrial, large, small, etc.--would most likely avail themselves of each type of incentive?
--How much of these incentives would be devoted to future timber production by the private land-holders and what sort of increases in future timber supplies might result from this utilization?
--How much would this potential supply response affect future timber prices, timber quantities marketed, and imports and exports, both nationally and regionally?
--What are the potential benefits to society of implementing the various incentive programs?
--What would the various incentives cost the taxpayers?

Basic Recommendations and Agency Comments

GAO recommended that the Secretary of Agriculture take the initiative through the Forest Service to develop a new analytical framework and expand its analytical capability to deal with tax policy, financial and technical assistance, and related considerations as they affect the performance of the timber industry in the private sector.
The Forest Service should call on the expertise of the Department of the Treasury in analyzing tax policy options and should elicit active collaboration of the forestry industry.

GAO also recommended that the Forest Service refine its data and analysis on the production potential of nonindustrial, privately-owned forest lands with the goals of: (1) identifying nonindustrial private forestlands with true potential for increasing future timber supplies, and (2) analyzing comparative costs and benefits of alternative forms of tax incentives or financial assistance for private, nonindustrial landowners.

Both Treasury and Agriculture were requested to comment on GAO's final draft report. Agency comments were discussed and incorporated in the report as issued in final form last January, and need no discussion here. Because of the action recommendations to Forest Service and Agriculture, the latter had (per statutory requirement) to provide a second, official, comment to the Senate Committee on Governmental Affairs and the House Committee on Government Operations. These "Section 236" comments are public information but not generally distributed, and deserve mention.

The Department's letter made three essential points. First, to the extent of staff/budget resources available, the Forest Service would increase its capabilities to analyze policies and programs affecting nonindustrial private forest lands. Second, it would seek to give priority to survey and analysis of landowner attitudes and motivations regarding reforestation and future harvesting. Third, and here I quote directly:

"The Department, however, does not feel that it would be appropriate for the Forest Service to take the leadership in an investigation and analysis of tax policy with respect to "the performance of the timber industry in the private sector," although it would cooperate in such a study, particularly furnishing basic resource and production information. Forest Service cooperative programs that concern private forestlands are oriented, in general, to improving management on nonindustrial private ownerships, and Forest Service knowledge of tax practices and concerns of large industrial ownerships is quite limited. Such information would have to be obtained through the Treasury or other means. Furthermore, many industrial landowners are also purchasers of timber from the Forest Service, which would put the Forest Service in the position of asking for sensitive financial data from its clients. This would not only make data collection extremely difficult, but could also lead to charges that any such study might be biased. Therefore, we still strongly feel that the most feasible way to conduct any such study would be by a disinterested third party."
Developments since report issuance

Since our report was issued, several things of note have transpired.

First, the convening of this very Symposium. There is no claim here of cause-effect, but I would like to believe the report added to the stimulus for this gathering.

Second, the Forest Service, notwithstanding the rigorous budgetary situation common to all Federal agencies, has sought to increase its staff capability for timber tax policy work.

Third, the Forest Service has already completed a pilot survey of landowner attitudes; has extended survey coverage to a 12-southern-state area; and is striving to achieve publication of initial findings by the summer of 1982. This, I think, is salutory progress toward better understanding of a foundational factor of timber production.

Fourth, the Forest Service continues to maintain, as its official position, regarding analysis of tax policy with respect to the performance of the timber industry in the private sector, "that the most feasible way to conduct any such study would be by a disinterested third party." I would like to offer several thoughts regarding that position:

—There should be no misconstruing GAO's position to imply that only a single study is needed, or that the Forest Service, alone, ought to shoulder the burden of timber tax policy analysis. The work must inevitably be of a continuing nature and just as inevitably involve extensive collaboration between agencies, between sectors—public, private, and academic.

—GAO has, and continues, to urge that the Forest Service lead in enlarging policy analysis capability in this vital area. When the Forest Service, in commenting on the draft report, suggested delegation to an "unbiased third party," we stated:

"GAO believes that the agency with primary programmatic jurisdiction should be responsible for assessing tax/investment options affecting its area of responsibility. With the recent enactment of legislation authorizing new tax incentives to private landowners, it is more important than ever that the Forest Service develop the capability to assess reforestation investment alternatives."

GAO's position in this matter is identical to that taken with regard to minerals of tax policy analysis: the primary programmatic agency, the Department of Interior, should exercise lead responsibility for analysis of tax options, with Treasury Department expertise to serve in a supporting role. Further, our position is entirely consistent with recently (1978) enacted law (P.L. 95-313) which, in part, explicitly updated and codified 56-year-old Forest Service authorities and responsibilities to "study the effects of tax laws, methods and practices on forest management." Given that history, there is no apparent justifi-
cation for now trying to search out some "unbiased third party" to exercise timber tax policy study leadership.

Lastly, a distinction in study requirements or options may help to assuage agency reservations. The Forest Service letter seems to imply that analytical progress would occur only if it concentrated on tax matters which might pertain to major "customers," which I read to mean large timber processing firms which are not supply self-sufficient, and have also been recipients of capital gains benefits. Such an exclusive concentration of effort was in no way intended by our report, and neither would it be appropriate.

The matter of alternative reforestation incentives -- competing and/or duplicative -- and their relative effectiveness has been a matter of real concern. The foreseeable Federal budget situation can only make it more so. There should be no delaying work on comparative assessments, especially for the nonindustrial lands when the relative importance of capital gains as an investment incentive is already open to serious question.

The most recent Federal budget data underscores the importance of comparative analysis of reforestation incentives. Consider the following brief table, and its two highlight points. (Table, p. 41)

--Estimated capital gains tax expenditures for timber income are even higher than cited in our 1981 report; continue to increase, to both corporations and individuals; but still in a ratio of over 3:1 in favor of minority supplying corporate industrial lands.

--The table shows a new line item regarding tax expenditures, reflecting adoption of P.L. 96-451, the 1980 reforestation incentive act. As explained by the Forest Industries Committee on Timber Valuation and Taxation:

"Public Law 96-451 changes prior law by permitting up to $10,000 of capitalized reforestation costs each year to be eligible for a 10 percent investment tax credit (subtracted from taxes owed) and 7-year amortization (subtracted from gross income to compute adjusted gross income).

The new reforestation incentives will principally benefit small and medium sized landowners."4/

There is no disagreement as to the intent of the Act. It is directly responsive -- in format -- to the "up front" capitalization needs of "interested" nonindustrial timber landowners, a need recognized by the GAO report and numerous other studies. But, beyond intent and format of the law, is the question: What will be its relative tax expenditure and reforestation effects? If we must continue to rely on current data bases and estimating procedures, the answer is: no one knows; no one -- including the Treasury Department and the Forest Service -- can offer even a reasonable guess.
I do not make light of the data deficiency problem. And I am not here to encourage appeals to, say, IRS/Treasury for expensive or large time-consuming efforts to expand exclusively the Federally-garned data base. I close with an appeal that the very data base issue be a matter of urgent concern to the collected talent and ingenuity of this assembly.

Thank you for this presentation opportunity.
THE BUDGET FOR FISCAL YEAR 1982*

TAX EXPENDITURE ESTIMATES BY FUNCTION
(In millions of dollars)

<table>
<thead>
<tr>
<th>Description</th>
<th>Corporations</th>
<th></th>
<th></th>
<th>Individuals</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital gains treatment of certain timber income</td>
<td>420</td>
<td>470</td>
<td>535</td>
<td>120</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>Investment credit and seven-year amortization for reforestation expenditures</td>
<td>......</td>
<td>*</td>
<td>10</td>
<td>......</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

*$5 million or less. All tax expenditure estimates have been rounded to the nearest $5 million.

Special Analysis G, p. 227.

Footnotes

1 Any request for further copies of GAO reports should be sent to:

U.S. General Accounting Office
Document Handling and Information Services Facility
P.O. Box 6015
Gaithersburg, MD 20760

Telephone (202) 275-6241

The first five copies of individual reports are free of charge. Additional copies of bound audit reports are $3.25 each.


3 Data on legislative history included in letter (January 27, 1981) to GAO from Robert E. Wolf, Assistant Chief, Environment and Natural Resources Policy Division, Congressional Research Service.

TAXATION, HOUSING DEMAND, AND SUPPLY-SIDE ECONOMICS

Dwight R. Lee*

Introduction

My remarks will not be concerned with direct forest taxation and how it impacts on the market for timber. Rather I want to consider the more general fiscal and monetary policy environment and how this environment has influenced the demand for residential capital (housing) and thus, in an indirect way, the market for lumber. I will also have some comments on what I see as the likely impact supply-side economic policy, if successful, will have on housing demand.

When mentioning housing demand and residential construction, one surely has in mind an industry where a great deal of pessimism prevails. Ask a pessimist how he is doing and the likely response will be: "About average. Not as well as yesterday, but better than tomorrow." Clearly those in residential construction are not doing as well currently as they have in the past. It is predicted that when the final numbers are in they will show only 1,070,000 housing starts in 1981. This is the smallest number of housing starts since before the 1960's and is little more than half the annual start rate of 2,019,000 that was experienced as recently as 1978. The average number of yearly housing starts was 1,777,000 during the 1970's and reached a peak of 2,378,000 in 1972. Table 1 shows housing starts by year since 1960.

Whether or not the housing market will remain depressed over the next few years no one knows with certainty. Surely the housing industry can expect an eventual upturn. But it is my view that if we are fortunate and experience a genuine supply-side economic recovery, it will be a decade or more before residential construction rebounds to those levels experienced during the 1970's. If supply-side economic policy does serve to stimulate economic productivity and growth, it will do so in large measure by keeping the demand for housing depressed over the next ten years or more.

Artificially Stimulating Housing Demand

This view obviously needs some clarification and support. A useful departure for the argument I wish to develop is the recognition that there is a long history in the U. S. of government policy that has artificially stimulated the demand for housing. This history begins with policies that were specifically designed to promote home ownership and, more recently, has continued with policies that have had the largely unintended consequence of motivating a demand for excessively large houses.

*Associate Professor, Center for Study of Public Choice, Virginia Polytechnic Institute & State University, Blacksburg, Virginia.
Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Housing Starts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>1,296,000</td>
</tr>
<tr>
<td>1961</td>
<td>1,365,000</td>
</tr>
<tr>
<td>1962</td>
<td>1,492,000</td>
</tr>
<tr>
<td>1963</td>
<td>1,642,000</td>
</tr>
<tr>
<td>1964</td>
<td>1,561,000</td>
</tr>
<tr>
<td>1965</td>
<td>1,196,000</td>
</tr>
<tr>
<td>1966</td>
<td>1,322,000</td>
</tr>
<tr>
<td>1967</td>
<td>1,546,000</td>
</tr>
<tr>
<td>1968</td>
<td>1,500,000</td>
</tr>
<tr>
<td>1969</td>
<td>1,467,000</td>
</tr>
<tr>
<td>1970</td>
<td>2,048,000</td>
</tr>
<tr>
<td>1971</td>
<td>2,378,000</td>
</tr>
<tr>
<td>1972</td>
<td>2,054,000</td>
</tr>
<tr>
<td>1973</td>
<td>1,351,000</td>
</tr>
<tr>
<td>1974</td>
<td>1,173,000</td>
</tr>
<tr>
<td>1975</td>
<td>1,550,000</td>
</tr>
<tr>
<td>1976</td>
<td>1,989,000</td>
</tr>
<tr>
<td>1977</td>
<td>2,019,000</td>
</tr>
<tr>
<td>1978</td>
<td>1,745,000</td>
</tr>
<tr>
<td>1979</td>
<td>1,291,000</td>
</tr>
<tr>
<td>1980</td>
<td>1,070,000</td>
</tr>
</tbody>
</table>

*Estimated

Source: U. S. Bureau of Census, Construction Reports.
Approximately 50 years ago the federal government began a policy of encouraging the saving and loan industry to channel more of the nation's savings to home buyers by providing long term, low fixed rate mortgages. Significant tax breaks were offered in return for directing saving almost exclusively into mortgages, Regulation Q was enacted to limit the cost of funds, the FSLIC was established to insure deposits, the Federal Home Loan Banks to loan money, the FHA & VA to insure mortgages and further subsidize them, and Fannie May and Ginnie May to facilitate secondary mortgage markets. The Federal involvement in the housing market, as represented by these policies and agencies, has increased the credit that has been allocated into residential construction, and made it available at subsidized rates.

The cost of home ownership has been further decreased by the tax law that allows mortgage interest payments to be deducted from taxable income. This has the effect of biasing investment decisions in favor of housing and away from business capital formation. Of course, interest payments on business investments are also tax deductible. But taxes are paid on the return to business investment, whereas the home owner does not pay taxes on the implicit rental income provided by home ownership. Also, the capital gains on owner-occupied housing are virtually untaxed. Additional, and in this case unintended, impetus to the demand for housing has been added by the inflation that was experienced throughout the 1970's. Because it is nominal rather than real interest payments that are tax deductible, inflation can significantly decrease the cost of purchasing a house. First of all, inflation has pushed middle income families into marginal tax brackets that were traditionally reserved for the rich. One needs little more than a modest income in terms of real purchasing power in order to be facing a marginal tax rate of 40% or more. When faced with such a high marginal tax rate, inflation can significantly reduce the after tax real interest rate being paid on a mortgage. For example, if inflation rate were zero and the mortgage rate were 4%, then the individual in the 40% marginal bracket pays an after tax real interest rate of 2.4%. But if the expected inflation rate is 8% and, as a result, the nominal interest rate increases to 12% (leaving the real rate at 4%), the after tax real rate of interest drops to minus 0.8% (the after tax nominal rate is 7.2%, which is 0.8% less than the inflation rate).

This contrasts with an increase in the tax burden that an increased inflation rate imposes on business capital. Under the tax law that existed throughout the 1970's and into the 1980's, inflation increased the taxation of business capital in two different ways. First, capital is carried on the books at its historical cost and thus inflation reduces allowable depreciation expense below real value. Secondly, a capital gains tax is assessed against increases in the nominal value of capital stock, which always overstates the real increase during inflation. Of course, just as homeowners, businesses are allowed to deduct nominal interest payments. This may appear to somewhat offset the previous two effects as it has the effect of understating taxing profits. But the interest which one business pays is generally received by another business which then pays taxes on nominal interest receipts that overstate the real return. Economists Marten Feldstein and Lawrence Summers have estimated that the effective tax rate on corporate incomes reduced by nominal tax payments is very close to the effective tax on corporate income increased by nominal tax receipts. 2 Therefore, the nominal interest impact of inflation on the taxation of business income is insignificant and on balance inflation serves to reduce the after tax return on business investment.
The result of this interaction between our tax laws and inflation has been to increase the return on residential investment in relation to non-residential investment and generate a pronounced shift toward residential investment during the inflationary 70's. During the last half of the 1960's the ratio of net investment in residential capital to net investment in plant and equipment was 52 percent. In the last half of the 1970's this ratio had increased to 76 percent. This significant shift toward investment in residential capital is reflected not only in the increased number of houses that were built in the 1970's, but also in the fact that bigger houses were being built. The average square footage of the newly constructed house increased every year during the 1970's, with the exception of 1975 (a recession year). Table 2 shows the yearly figures on median and average square footage of new houses sold from 1970 through 1979.

It is worth pointing out that, except for the distorting effects of government policy, one would have expected the size of new houses to have been decreasing, not increasing, in the 70's. Real incomes were not rising during the 70's, in fact, if anything they were falling. In 1970, the average gross weekly earning in 1967 dollars was $103.04. In 1979 this figure had declined to $100.73. Also, family size was getting smaller throughout the 70's. The number of children in the U. S. under 16 dropped from 61.92 million in 1970 to 54.29 million in 1979. Finally, the cost of space heating increased dramatically during the 1970's. While consumer prices in general increased by a factor of 1.98 from 1970 to December 1979, the price of household fuels increased by a factor of 2.89 over the same period.

So rather than directing the nation's savings into much needed productive capital, we were instead putting our investment funds into larger homes to house smaller families and to be heated and cooled by increasingly costly energy. One of the more unfortunate results of this misallocation of investment has been the stagnating productivity that characterized the U. S. economy during the 1970's. From 1973 through 1979 the U. S. economy experienced the lowest annual increase in labor productivity of any major industrial economy in the free world, as is shown in Table 3.

The Impact of a Successful Supply-Side Economic Policy

The objective of supply-side economic policy is to increase productivity by increasing the return on business investment relative to the return on consumption expenditures. The major prong of attack is a reduction in marginal tax rates on personal and business income. The expectation is that this will have a direct effect on the productivity of the economy by motivating more investment in plant and equipment. Indirectly these tax incentives will also exert a moderating influence on inflation by increasing the quantity of goods and services relative to the money supply. As a complement to supply-side tax reductions is a monetary policy designed to reduce inflation directly by putting a lid on monetary growth. To the extent that this supply-side package is successful at increasing the attractiveness of business investment and controlling the rate of inflation, the demand for housing will be decreased.
<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1,510</td>
<td>1,400</td>
</tr>
<tr>
<td>1971</td>
<td>1,575</td>
<td>1,415</td>
</tr>
<tr>
<td>1972</td>
<td>1,590</td>
<td>1,460</td>
</tr>
<tr>
<td>1973</td>
<td>1,660</td>
<td>1,540</td>
</tr>
<tr>
<td>1974</td>
<td>1,670</td>
<td>1,565</td>
</tr>
<tr>
<td>1975</td>
<td>1,660</td>
<td>1,560</td>
</tr>
<tr>
<td>1976</td>
<td>1,710</td>
<td>1,620</td>
</tr>
<tr>
<td>1977</td>
<td>1,720</td>
<td>1,630</td>
</tr>
<tr>
<td>1978</td>
<td>1,750</td>
<td>1,650</td>
</tr>
<tr>
<td>1979</td>
<td>1,760</td>
<td>1,650</td>
</tr>
</tbody>
</table>

Source: U. S. Bureau of the Census; Construction Reports.
### Table 3

<table>
<thead>
<tr>
<th>Country</th>
<th>Annual Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>U. S.</td>
<td>0.1%</td>
</tr>
<tr>
<td>Japan</td>
<td>3.4%</td>
</tr>
<tr>
<td>Germany</td>
<td>3.2%</td>
</tr>
<tr>
<td>France</td>
<td>2.7%</td>
</tr>
<tr>
<td>U. K.</td>
<td>0.3%</td>
</tr>
<tr>
<td>Italy</td>
<td>1.6%</td>
</tr>
<tr>
<td>Canada</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

The short-run impact of tax cuts and tight money on housing demand is clear. In the absence of fully offsetting cuts in government spending, tax cuts will, in the short-run, increase the federal deficit. If the commitment to restricted monetary growth is maintained, the bulk of this deficit will have to be financed with increased government borrowing, and this means increased demand for loanable funds and higher interest rates. It is this short-run, or transitional, impact of supply-side policy that has been a dominant consideration in the housing market over the last year. The record high interest rates that have been experienced in recent months have clearly been responsible for the current depression (not recession) in the residential housing industry.

But in the longer-run, a consistent application of supply-side policy, will reduce the squeeze on financial markets and result in a decline in both real and nominal interest rates. Given time, and it may take awhile, restored incentives for capital formation will generate a larger tax base and increased tax revenues which will, assuming the growth in government expenditures is controlled, reduce the deficit. A small (hopefully zero) deficit would greatly reduce the government's demand for loanable funds and ease the upward pressure on real interest rates.

The tight money policy that many see as the culprit behind the high current interest rates will, if continued, reduce nominal interest rates by reducing inflation. Indeed, unless inflation is controlled, high inflationary expectations will continue to be reflected in the high inflationary premium that makes up the largest component of the nominal interest rate. Unfortunately, even though reducing inflation is a slow process, it will take even longer to reduce inflationary expectations. We have had a long inflation, the longest in our history, and we have seen many purely cosmetic and completely unsuccessful attempts by practitioners of political illusion to control inflation. Therefore even if the current fight against inflation is ultimately successful, it will be a long time before expectation fully adjusts to this success. The decline in the nominal interest rate can be expected to lag behind the decline in the inflation rate on expectation grounds alone, and thus we have another reason for predicting that real interest rates will increase during the transition from high to low inflation rates.

So even if supply-side economic policy is completely successful in the long-run, the short-run effect is to create a climate that discourages entering into the long-term fixed financial commitments that have greatly facilitated housing demand in the past. But even after we have made the transition that a successful supply-side policy requires and move into an environment of stable prices, low nominal interest rates, and expanding business investment one can predict continued downward pressure on housing demand that will prevent residential construction from rebounding to the levels experienced during the 70's. The reasons for this mirror the previously discussed reasons housing demand received a boost from high inflation and low after-tax return on business capital during the 1970's.

Reduced inflation will increase the cost of carrying the mortgage on a house because the tax write off on nominal interest payments declines as this rate falls with inflation. To the extent that genuine income tax reduction puts people into lower marginal tax brackets, the after tax interest
payments will be further increased. With faster depreciation write offs on business capital, along with lower corporate profit and capital gains taxes, investment in business capital becomes increasingly attractive relative to the alternative uses of savings, particularly investment in housing. The attractiveness of business investment will be further increased by a reduction in the inflation rate as the inflationary exaggeration of corporate profits, and therefore corporate tax liability, is reduced.

In a nutshell, a successful supply-side economic policy will reduce the return on investment in housing and increase the return on investment in business capital. When it is observed that a lower percentage of our savings is flowing into residential construction and a higher percentage into business investment we will have compelling evidence that supply-side economic policy is working as it should. We will no longer find bigger and bigger houses being built at the expense of depressing capital formation below what is necessary to maintain the productive capacity of the economy. Rather, it is to be hoped that by providing the proper incentives for capital formation a revitalized U.S. economy will eventually be generating sufficient wealth to fully justify diverting resources into the construction of oversized houses, as well as other enjoyable extravagances, that we cannot now realistically afford.
Footnotes


8. Similarly, we experienced inflation for well over a decade before it was fully reflected in the nominal rate of interest on long-term loans. As inflation escalated during the 1970's the inflationary premium lagged the inflation rate and as a consequence real interest rates on mortgages were low, and in many cases negative, during the 70's. Note that we are here talking about very low pre-tax real interest rates, which translated into decisively negative after-tax real interest rates.
EMERGING PATTERNS OF FOREST PROPERTY AND YIELD TAXES

Clifford A. Hickman*

The general property tax has long been criticized as a method of raising public revenues.1/ This statement from a 1931 publication is illustrative:

"If any tax could have been eliminated by adverse criticism, the general property tax should have been eliminated long ago. One searches in vain for one of its friends to defend it intelligently. It is even difficult to find anyone who has given it careful study who can subsequently speak of its failure in temperate language. Should some prosecuting attorney drag the tax as a culprit before a bar of justice, he would be embarrassed by the abundance of expert evidence against it." (Jensen, 1931)

Over the years, the application of the property tax to forested properties has been especially controversial. Most studies aimed at evaluating the tax in terms of the generally accepted attributes of a "good tax system" concluded that it suffered from five major deficiencies:2/

1) The tax was not equitable -- it did not treat equals, in terms of ability to pay, equally. In part this was due to poor assessment practices. Lower value properties such as forest lands were often over-assessed relative to those of higher value. More importantly, the tax was perceived to be inherently biased against any land use which did not produce an annual income.3/

2) The tax was not neutral regarding allocation of resources. Indeed, it was seen as encouraging forest exploitation. Specific criticisms were that it worked to reduce stocking levels, shorten rotations, and shift marginal forest lands into other uses.

3) The tax was not convenient in the time and manner of its levy. Annual collections were mandated although most forest properties were not regulated to provide annual incomes.

4) The tax was not certain as to its amount. Indeed, because of the potentially long period of time required to grow timber to maturity, uncertainty concerning future tax obligations was viewed as a major deterrent to forestry investments.

5) The tax, if administered to provide accurate assessments over time, would not be economical. It was felt that forest properties, because their value is a function of many variables, would be particularly costly to assess.

*Principal Economist, USDA Forest Service, Southern Forest Experiment Station, New Orleans, Louisiana.
In view of this indictment, even though some elements of it have now been questioned or invalidated, it is not surprising that many states saw it fit to develop and enact "special" forest property tax laws. In this regard, objectives of this paper are: (1) to identify and define the different types of laws that have been adopted, (2) to show how their usage has changed over time, (3) to review key provisions of the statutes now in existence, and (4) to explore the implications of any apparent legislative trends.

Types of Special Forest Property Tax Laws

Special forest tax laws can be grouped into three classes: (1) exemptions and rebates, (2) yield taxes, and (3) modified property taxes. Statutes in the last group are themselves of three types -- deferred payment laws, modified rate laws, and modified assessment laws. A fourth class of special forest tax -- the severance tax -- will not be considered because it is not a substitute for the general property tax, but is imposed in addition to it.

Exemption laws provide for removal of forest land and/or timber from the property tax rolls, either permanently or for some specified number of years. A timber exemption may apply to all standing timber, planted stands, immature stands, trees of a particular species, or trees retained for specific purposes, such as reforestation or windbreaks.

Rebate laws provide that landowners who engage in some approved activity, such as tree planting, may subsequently apply for abatement (i.e., refund) of a portion of the taxes levied on the value of their land, timber, or both. The rebates generally continue for only a limited period of time, and may be given as a direct cash payment or a reduction from the total amount of taxes owed.

Yield tax laws provide for a conceptual separation of land and timber values. Land values normally remain subject to the annual property tax, although sometimes in modified form. Timber values go untaxed until the time of harvest. At this juncture a gross income tax, equal to some percentage of the stumpage value of the products cut, is imposed.

Deferred payment laws provide that annual taxes on forest land and timber are to be determined as for other classes of property, but that some portion of each year's tax is to be postponed until the time of timber harvest.

Modified rate laws provide that forest land and timber are to be assessed like other forms of property, but that a different tax rate, lower than otherwise applicable, is to be used in computing the tax.

Finally, modified assessment laws provide that forest properties are to be valued differently from other forms of property. If fair market value in highest and best use is retained as the basic valuation standard, forest assessments may be frozen or calculated using a reduced assessment ratio. Alternatively, fair market value may be abandoned in favor of another valuation standard such as current use value.
Long-Term Trends in Usage

Historical trends in usage of the different types of special forest property taxes have been depicted in Figure 1. As shown in the upper part of the diagram, exemption laws were the earliest form of tax relief enacted. Those states leading the way were located in essentially two regions: (1) The Great Plains—where states passing statutes included Nebraska (1861), Iowa (1868), Dakota Territory (1869), Wyoming (1878), and Colorado (1881); and (2) the northeast—where states passing statutes included Maine (1872), Connecticut (1877), Massachusetts (1878), and Rhode Island (1878) (Fairchild and Associates, 1935). In both areas, concern over existing or impending timber shortages and the possible adverse effects of deforestation on climate had generated considerable interest in tree planting. Accordingly, virtually all the early statutes were designed to stimulate this activity. Following the initial wave of interest, the number of exemptions continued to increase; by the mid-1940's a total of 15 states had such legislation. Since that time, however, the number has declined to 10. In part, the limited effectiveness of such statutes explains the decline (Williams, 1961). Another consideration is that exemptions run counter to the generally accepted idea that all property should pay its fair share of taxes.

The second form of tax relief to be adopted was the rebate law, which, as indicated in Figure 1, never achieved much popularity. Only two states have had such statutes. Pennsylvania established a system of rebates in 1887 and New Hampshire followed suit in 1903 (Fairchild and Associates, 1935). Both acts, like the exemption laws of the same general era, were designed to encourage tree planting and care. The New Hampshire statute, as amended in 1923 and 1949, remains in effect to this day (Timber Tax Journal, 1979).

Beginning in about 1910, exemptions and rebates began to give way to the yield tax as the most significant method of providing tax relief to forest owners. Michigan lead the way (1911), and was quickly followed by New York (1912), Connecticut (1913), Pennsylvania (1913), Vermont (1913), and Massachusetts (1914) (Fairchild and Associates, 1935). This type of tax was viewed as striking a good compromise between the annual revenue needs of local governments and the need of forest owners to defer their property taxes until the time that their properties produced an income. Accordingly, during the early years of the movement, interest in such legislation was extremely high. In less than 20 years, over 15 states enacted yield taxes. During the period from 1930-1960, however, usage declined somewhat and then stabilized. This is attributable to the fact that many early statutes failed to live up to the high expectations held for them. Marquis reported in 1952 that, in the 12 states with optional laws, only 2.6 percent of all eligible forest land was enrolled (Marquis, 1952). Reasons for the low levels of use were: (1) lack of landowner awareness, (2) administrative restraints and red tape, (3) restrictions on forest practices, (4) lack of sympathy or opposition by public officials, (5) stringent eligibility requirements, and (6) absence of a clear tax advantage (Marquis, 1952). Recently there has been some evidence of a renewed interest in the yield tax. During the 1970's, three important west coast timber producers -- Washington (1971), California (1976), and Oregon (1977) -- enacted such laws.
Figure 1. Long-Term Trends in the Use of Alternative "Special" Forest Property Tax Laws.
The forest tax relief measure now in widest use is the modified property tax. However, as indicated in the lower portion of Figure 1, the three possible types of statutes have not been equally popular. No state presently has a deferred payment law\(^\text{10}\) and only five have modified rate laws. By comparison, 34 states have statutes of the modified assessment type. The first states to adopt such legislation were Indiana (1899),\(^\text{11}\) Iowa (1906), and Louisiana (1910).\(^\text{11}\) All three provided that land devoted to timber growing was to be taxed on the basis of a fixed assessment. Prior to 1960, these were the only modified assessment laws in existence. At that time, however, there was a veritable explosion in the amount of such legislation. This was prompted not so much by a desire to protect forest owners from the inequities of the general property tax, as by a desire to prevent rising property taxes from forcing any type of rural land into development. Many states perceived such forced development to be a serious problem, particularly in urban-rural fringe areas and areas with recreation potential. In these settings, higher land values often combined with the increased costs of providing many governmental services to preclude retaining forest, farm, and other open space lands in their traditional uses. To address this problem, most new statutes, instead of providing for a fixed assessment, stipulate that certain lands may be assessed on the basis of current use value as opposed to fair market value in highest and best use.\(^\text{12}\)

Key Provisions of Existing Laws

The key provisions of all existing special forest property tax laws have been summarized in Tables 1, 2, and 3 -- each of which pertains to a different category of statutes.\(^\text{13}\)

Exemptions and Rebates

Table 1 shows that 11 states presently offer a total of 10 exemption laws and one rebate law. About two-thirds are mandatory and one-third optional. Of those states with optional statutes, all but one restrict eligibility. In two cases participation is limited on the basis of tract size, in two on the basis of land value, and in two on the basis of stocking level. Occasionally, several constraints are employed in combination. For example, Rhode Island, whose act is the oldest, requires that tracts be: (1) 300 acres or less in size, (2) valued at not more than $25 per acre, and (3) planted with at least 500 trees per acre of an approved species.

Regarding application requirements, most states have none -- i.e., all eligible property automatically receives the special tax treatment to which it is entitled. In states where an application is required, all except Hawaii call for initial applications only. Hawaii requires landowners to surrender control of their land, to the government, for a period of at least 20 years.

The type of tax treatment authorized is quite diverse. Three states -- Alabama, North Carolina, and Tennessee -- provide a permanent exemption for all standing timber. Three others -- Iowa, New Jersey, and Idaho -- also provide permanent exemptions, but in the first two cases they encompass planted timber only, and in the third only seed trees and young growth left for reforestation purposes. In the four other states with exemption laws,
the period of exemption varies from 15 to 30 years. In three of these states -- Delaware, Hawaii, and Rhode Island -- both land and timber are exempt. In the fourth -- Colorado -- only planted timber goes untaxed. New Hampshire, the only state with a rebate law, provides that the owners of qualified plantations may apply for abatement of 90 percent of their taxes in the first 10 years following planting, 80 percent in the second, and 50 percent in the third.

Only two states -- Delaware and Hawaii -- penalize landowners whose properties are declassified, either voluntarily or for failure to meet the conditions of continued eligibility. In both instances, the penalty equals the estimated taxes saved (i.e., the difference between the taxes actually paid and those that would have been paid without the exemption) during the period of classification. Hawaii also imposes a 5 percent interest charge.

Yield Taxes

Table 2 shows 16 states now have a total of 17 yield tax laws and four severance taxes which in actuality are yield taxes. Four of these statutes, however, remain in effect only for properties already enrolled. These are Louisiana's 1926 "Reforestation Contract Severance Tax," Minnesota's 1927 "Auxiliary Forest Tax," New York's 1926 "Fisher Forest Tax Law," and Washington's "Reforestation Act of 1931."

Approximately 30 percent of the existing laws are mandatory and 70 percent optional. States with optional statutes impose a variety of restrictions on eligibility. Ten have a tract size constraint, four a maximum value constraint, and one a minimum stocking requirement. Two states limit participation to tracts needing reforestation, four to tracts whose highest and best use is timber production, and two -- Oregon and Washington -- consider a property's location in relation to the summit of the Cascade Mountains. Often these various restrictions are employed in combination.

Predictably, those states with mandatory laws do not require applications. Where applications are required, no single procedure predominates. In six states, only an initial application is needed; in two, an annual application or statement of recommitment must be filed; and in seven, a contractual agreement is required. Contracts vary in length from 5 years in Alabama to 50 in Idaho. They normally stipulate that a property will be used for the continued production of timber, but may also prescribe minimal management standards.

With two minor exceptions, all yield taxes defer any tax on timber until the time of harvest.14/ The two exceptions are Connecticut and Minnesota. Connecticut requires, in addition to a yield tax at harvest, that timber 10 or more years old when classified shall be taxed annually on the basis of its value at that time. The rate is not to exceed 10 mills. Minnesota provides that timber on enrolled properties may be subject to either a yield tax at harvest or an annual tax based on the value of annual timber growth. The second approach is used only at the request of the landowner and only with the approval of the appropriate county board.
<table>
<thead>
<tr>
<th>Key Provisions</th>
<th>AL</th>
<th>CO</th>
<th>DE</th>
<th>HI</th>
<th>ID</th>
<th>IA</th>
<th>NH</th>
<th>NJ</th>
<th>NC</th>
<th>NY</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of Statute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) mandatory</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2) optional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restrictions on Applicability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none (i.e. app. to all forest land)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2) min./max. acreage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) max. land value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) min. stocking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) initial application only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) annual applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) enter contractual agreement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) perm. exemption (all timber)</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) perm. exemption (planted timber)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) limited exemption (planted timber)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) limited exemption (land &amp; timber)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Declassification Penalty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) penalty based on taxes saved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ E = Exemption law
2/ R = Rebate law
3/ 1878
| Key Provisions | AL | CA | CT | HI | ID | LA | LA | MA | MI | MI | MN | HS | NO | NH | NY | NY | OR | OR | WA | WA | WI |
|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Scope of Statute |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) mandatory   | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) optional    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Restrictions on Applicability |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) none (i.e. app. to all forest land) | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) min/max. acreage |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3) max. land value |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4) min. stocking |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5) areas requiring reforestation |    |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6) highest & best use in as forest |    |    |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7) geographical location |    |    |    |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8) other |    |    |    |    |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Application Requirements |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) none |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) initial application only |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3) annual applications |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4) enter contractual agreement |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5) other |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Tax Treatment (Timber) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) defer tax until harvest |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) other |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Tax Treatment (Land) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) exempted |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) fixed/reduced/use assessment |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3) fixed/land tax |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4) other |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Declassification Penalty |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1) none |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2) penalty based on stumpage value |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3) penalty based on taxes saved |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4) other |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

1/ Yield tax law
2/ Yield tax law known as severance tax.
The tax treatment of land under the various laws is somewhat more diverse. In states with mandatory statutes, land normally remains subject to the general property tax or any applicable modified property tax. Among states with optional statutes, two provide a land exemption — at least for certain properties; 11 provide a fixed, reduced, or use value assessment; and three provide a fixed tax.

Virtually all optional statutes have penalties for declassification. These are of essentially two types. The first, utilized in four states, entails a tax based on the stumpage value of all merchantable timber remaining on a tract at the time of withdrawal. The second, utilized in six states, entails recouping the estimated taxes saved during the period of classification. In four states, both types of penalties are employed.

Modified Property Taxes

Turning finally to the modified property taxes, Table 3 indicates that 38 states presently have 43 modified assessment and 5 modified rate statutes. One state, Vermont, has an act combining elements of both types of legislation.15/

Nearly one-third of the existing laws are mandatory and two-thirds optional. States with optional laws impose a variety of eligibility constraints. The most common, employed in 29 statutes, is based on tract size. The second most common, used in 10 statutes, pertains to the minimum number of years a property must have been in forest use before the owner can seek classification. Other constraints, in order of decreasing frequency of use, are based on: (1) income from past timber sales, (2) the existence of an approved timber management plan, (3) the question of whether or not an area has been "zoned" as forest land, (4) the level of stocking, and (5) the length of property ownership. Two states — North Carolina and Texas — have somewhat unusual restrictions on eligibility. North Carolina stipulates that tracts must be "individually owned." This requirement effectively precludes participation by all corporations except those where all shareholders are actively involved in the timber growing business. Texas prohibits enrollment of any property owned by a foreign government or nonresident alien.

Application procedures are also quite varied. Nine statutes require no application. Qualified properties are identified by the assessor or other designated official and automatically receive the special treatment to which they are entitled. Of those statutes which do require a person to apply, 14 call for initial applications only, 14 for annual applications, and eight require owners to enter a contractual agreement. Contracts vary from 5 to 10 years in length, and normally mandate a continuation of the existing land use. In some states, such as California and Pennsylvania, contracts are automatically extended at the end of the year.

Regarding the types of special tax treatment authorized, with modified assessment laws, the most common practice has been to substitute use value for market value assessment. Thirty-four statutes make such a substitution.16/ Four statutes provide for a differential assessment
Table (1): Key Provisions of Existing Modified Property Tax Laws Applicable to Forest Lands. (Jan. 1, 1982)

| Key Provisions                        | AL  | AL  | AZ  | AR  | AR  | CA  | CT  | DE  | FL  | HI  | IL  | IN  | IN  | IA  | IA  | KY  | LA  | ME  | ME  | MD  | MD  | MA  | MN  | MS  |
|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                       | 72  | 78  | 69  | 69  | 61  | 76  | 63  | 68  | 59  | 61  | 80  | 21  | 63  | 06  | 77  | 70  | 76  | 54  | 72  | 57  | 63  | 73  | 57  | 80  |
| **Scope of Statute**                  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1) mandatory                          | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   |
| 2) optional                           | X   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **Restrictions on Applicability**     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1) none (i.e., app. to all forest land)|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2) min./max. acreage                  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3) min. forest income                 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4) history of forest use              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5) min. length of tenure              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 6) areas "zoned" as forest land       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 7) min. stocking                      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 8) approved management plan          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9) other                              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **Application Requirements**          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1) none                               | X   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2) initial application only           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3) annual applications               | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   |
| 4) enter contractual agreement        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5) other                              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **Tax Treatment**                     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1) current use assessment             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2) differential assessment ratio     | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   |
| 3) differential tax rate              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4) fixed assessment                  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5) other                              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| **Reclassification Penalty**          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1) none                               | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   | X   |
| 2) penalty based on taxes saved      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3) other                              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

1/ MA = Modified assessment law
2/ MR = Modified rate law
<table>
<thead>
<tr>
<th>State, Type of Law and Year Enacted</th>
<th>NO (HA)</th>
<th>NV (HA)</th>
<th>NH (HA)</th>
<th>NJ (MA)</th>
<th>NM (MA)</th>
<th>NY (HA)</th>
<th>NC (HA)</th>
<th>ND (HR)</th>
<th>OH (1)</th>
<th>OH (2)</th>
<th>OR (1)</th>
<th>OR (2)</th>
<th>PA (1)</th>
<th>PA (2)</th>
<th>RI (MA)</th>
<th>SC (MA)</th>
<th>TN (1)</th>
<th>TN (2)</th>
<th>TX (MA/HR)</th>
<th>VT (1)</th>
<th>VT (2)</th>
<th>VA (MA)</th>
<th>WA (MA)</th>
<th>WI (HR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of Statute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) mandatory</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) optional</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Restrictions on Applicability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none (i.e., app. to all forest land)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) min./max. acreage</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) min. forest income</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) history of forest use</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5) min. length of tenure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6) areas &quot;zoned&quot; as forest land</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7) min. stocking</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8) approved management plan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Application Requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) initial application only</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) annual applications</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) enter contractual agreement</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tax Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) current use assessment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) differential assessment ratio</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) differential tax rate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) fixed assessment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Declassification Penalty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) none</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) penalty based on taxes saved</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
ratio, and three for a fixed assessment. In a few instances, such as Alabama and Tennessee, forest owners may enjoy the combined benefits of both use value assessment and reduced assessment ratio.

With modified rate laws, as one would expect, the principal form of tax relief is the use of a differential tax rate. In Ohio, for example, enrolled properties are taxed at 50 percent of the local rate otherwise applicable. In North Dakota an "equitable rate," not exceeding the regular rate, is determined by the State Forester and County Commissioners. In two states -- Minnesota and Wisconsin -- the law provides, at least in certain cases, for a fixed tax as opposed to a differential tax rate.

About two-thirds of the existing statutes include penalties for declassification. The most common, employed in over half the laws, is the so-called "Rollback Tax," a mechanism whereby local governments can recoup some of the tax savings realized by participating property owners. Back taxes are collected for periods ranging from 2 to 10 years. In some instances, annual interest charges are also imposed. Apart from this tax, the other types of penalties are of modest importance. A number of northeastern states -- Connecticut, Massachusetts, New Hampshire, Rhode Island, and Vermont -- impose a tax based on a property's full fair market value at the time of declassification.

Future Trends and Their Implications

At this juncture, all objectives of the paper have been addressed except one. It is now time to speculate about future legislative trends and to consider their implications.

Exemptions and rebates predominated from 1860 to 1910. While 11 such statutes still exist, they have declined in importance relative to the other forms of tax relief. Nevertheless, for at least two reasons a prediction of further decline would be premature. First, there is evidence of growing support for the idea that it is inequitable to tax both forest land and timber. Proponents of this viewpoint argue that the value of forest land is derived from the value of the timber products which it produces, and that to tax both constitutes double taxation. They feel that second and third growth timber, like other agricultural crops, should be exempt from the property tax. 17/ Secondly, there is evidence of growing interest in the use of so-called "circuit-breaker rebates" as a means of combating forced land development. Such laws provide that when property taxes exceed a specified percentage of a person's annual income, the excess is to be returned either as a direct cash payment or as a deduction from other taxes owed. 18/ At the present time, two states -- Michigan (1974) and Wisconsin (1977) -- have circuit-breaker rebates which apply to farmland owners. While experience with both statutes is limited, in theory they seem to offer a number of advantages over traditional use value assessment. 19/

As to the yield taxes, it has been shown that these predominated from 1910 to 1960. While 21 statutes still exist, four remain in effect only for properties already enrolled. As noted earlier, recent legislative activity in this area has been limited and confined mainly to the far western states. Little evidence suggests a reversal of this trend. While yield taxes eliminate any incentive for premature cutting and establish a close correspondence
between receipt of income and payment of tax, they do have drawbacks. Probably the most troublesome is the destabilizing effect which they can have on annual tax revenues.20/ In the years ahead, developments in this area will likely take the form of rate changes and other adjustments of existing laws.

Turning lastly to the modified property taxes, it has been shown that the emergence of such legislation has been the dominant trend in the forest property tax field during the last two decades. Since 1960, 41 statutes, mostly of the modified assessment type, have been enacted. In the years ahead, this legislation will undoubtedly continue as the principal form of tax relief available to forest owners. For at least two reasons, however, it seems likely that the proliferation of such laws will slow, and that increasing attention will be given to refining the statutes already in existence. First, the majority of states now have a modified property tax; thus opportunities for further expansion are becoming limited. Secondly, and more importantly, observation of the effects precipitated by the existing laws has stimulated a number of troubling questions such as:

1) **How effective is such legislation?** Most investigators have concluded that in the absence of other land use controls, modified property taxes will be of limited usefulness as a means of preserving forests and other rural lands. Their arguments stress two points. First, many property owners will be unable to resist the potentially large capital gains realizable through land sales and development (Coughlin et. al., 1978; Glaudemans, 1974). Secondly, the tax subsidy which such laws provide will likely be capitalized into higher land values and thus influence the development decisions of the initial property owners only (Atkinson, 1977).

2) **What are the equity implications of such legislation?** Studies have shown that as a consequence of extending property tax relief to forest and other rural landowners, a significant portion of the local property tax burden can be shifted to the owners of ineligible properties (Dunford and Marousek, 1981). The magnitude of the tax-shift depends on essentially two things: (1) the reduction in taxes of participating properties, and (2) the proportion of the total tax base in participating property.

3) **What are the efficiency implications of such legislation?** Critics argue that differential assessment and rate laws interfere with the free-functioning of the real estate market, and thus preclude achieving an optimum allocation of land resources (Hady, 1970; Waldrop, 1976).

4) **What effect does such legislation have on the ability to raise needed tax revenues?** In theory, any decline in the value of the tax base caused by differential assessment can be offset by an increase in the tax rate. In practice, however, rate adjustments may be constrained by political pressures or legislation. In such cases, local tax revenues -- and ultimately the services which they provide -- can be adversely affected.
Over the years, similar questions have been raised regarding each of the tax relief measures available to forest owners. The conclusions reached after analyzing these questions, coupled with the workings of the political process, determined which types of statutes increased in importance and which declined. In the last analysis, perhaps the most certain statement that can be made about future legislation trends is that they too will emerge as the end-result of rational analyses tempered by political realities.
Footnotes

1/ As used in this paper, the term "general property tax" refers to a tax levied annually on a uniform percentage of the fair market value of all taxable property in its highest and best use.

2/ These five points correspond to the generally accepted attributes of a "good tax system." For a discussion of these attributes, the reader is referred to either of the following references:


3/ For a more complete discussion of the so-called "parcel bias" and "time bias" problems, the reader is referred to either of the following references:


4/ The "parcel bias" problem has been largely eliminated by gradually improving assessment standards. The validity of the "time bias" problem has been called in to question by a continuing controversy over whether a stand's annual value increment should be treated as deferred income or current income that is automatically reinvested. For an in-depth treatment of this controversy, the reader is referred to the following publications:


5/ Some states have severance tax laws which are in actuality yield taxes. These statutes have been recognized in this paper. The reader who is interested in a fuller discussion of the differences between yield and severance taxes is referred to the annual "Survey of State Forest Tax Laws" contained in any recent issue of the *Timber Tax Journal.*
6/ Figure 1 was constructed using data obtained from the following sources:


7/ While the first exemption law was not passed until 1861, forest taxation issues were of interest at a much earlier point in our national history, even dating back to colonial times. A discussion of these early forest tax policies is contained in Part 9 of the previously cited Fairchild Report.

8/ At about the same time that the forest exemption movement was getting underway, a number of states sought to encourage tree planting and care through the passage of so-called "bounty laws." Instead of offering a tax break, these statutes provided that cash payments or prizes could be awarded to those landowners who engaged in the desired activities. The last bounty law, South Dakota's, was repealed in 1961.

9/ Washington was the only state to adopt a deferred payment law. It was implemented in 1941 and repealed in 1971.

10/ The original Indiana law was repealed in 1905. However, the same form of tax relief was reauthorized in 1921.

11/ The original Louisiana law was revised several times between 1910 and 1924. In 1926, it was superceded by the adoption of a yield tax.

12/ In several states, progress in implementing use value legislation was impeded by constitutional provisions mandating uniform assessment of all classes of property. This problem has been discussed at length in the following publication:


13/ The information used to construct Tables 1, 2, and 3 was, for the most part, compiled from Volumes 15, 16, and 17 of the Timber Tax Journal. In a relatively few instances, these sources were supplemented with data obtained directly form state assessment officials and/or state legislative codes.

14/ Yield tax property rates vary from 2.25 to 12.50 percent of the stumpage value of the timber products cut. One state, Mississippi, levies its tax as a specified amount per unit volume for different types of timber products. This is in the tradition of a typical severance tax.
Some degree of subjectivity had to be exercised in compiling Table 3. On the one hand, some states have laws which, while they apply to forest lands, were passed primarily to benefit agriculture. On the other hand, some states apparently apply differential assessment to forests and other rural lands even though there does not appear to be any legislative basis for doing so. Generally speaking, states falling into the first group were included in the table while those falling into the second group were not.

The methods used to determine use value are not uniform. Thirteen statutes specify that an income capitalization approach is to be employed. The remaining statutes simply stipulate that in determining the value of an enrolled property, the assessor is to assume that there is no possibility of its being used for anything but its present use. In some instances, relevant indicators of value such as forest or farm income, soil productivity, topography, and rental value are specified.

The reader interested in a full discussion of this viewpoint is referred to the following article:


States with circuit-breaker rebates typically have a state income tax from which the excess property tax can be deducted.

Principal advantages of the circuit-breaker rebate approach are as follows: (1) tax relief is more directly targeted to those property owners who need it, (2) the costs of providing tax relief are distributed over all taxpayers in the state, (3) costs of administration would likely be lower, and (4) the tax base of local units of government is not eroded. The reader who desires a full discussion of these points is referred to the following publication:


This problem can be dealt with by providing that all yield tax revenues are to be paid into a central fund maintained by the state. This fund is then used to make relatively uniform annual disbursements to each local taxing jurisdiction. For a discussion of how this solution has worked in Washington, the reader is referred to the following publication:

Literature Cited


TAX SUPPORTED FORESTRY INCENTIVE PROGRAMS
THE AFFIRMATIVE VIEWPOINT

W. F. Custard*

Our future forests will reveal our foresight—or lack of it—to our grandchildren and great-grandchildren. The technical skills and forest management systems we possess and utilize today should assure adequate forest stands three to five decades hence. Our present knowledge about genetics, soils, insect and disease protection, improved fire detection and suppression, and our continuing research breakthroughs have contributed to our excellent growth rates. But, today's forests are only growing at 60% of normally stocked stands. Our problem is not state-of-the-art, but, rather, a lack of capital to underwrite the reforestation and forest management plans that will satisfy the forest products needs of 2030.

I'd like to speak about southern forests. I know them best. National data from the U. S. Forest Service shows a shift of projected timber supply from the west coast to the South. The west coast softwood inventory will drop from the current 52% to a projected 27% by 2030. A reversal in the South denotes an increase from 35% to 55% during the same period. This puts the onus on the South to increase regeneration of cut-over lands. Recent surveys on southeastern non-industrial private forest lands record one acre in nine artificially regenerated, 2 acres naturally regenerated, and the remaining six acres ending up as scrub hardwood or poorly stocked stands. The two million NIPF owners in the south own 89 million acres (72%) of the south's commercial forestland. It is on these acres that the future productivity increases must occur.

Tax supported forestry incentive programs are a good basis; the up-front capital (which averages 61% in Virginia) has increased NIPF reforestation efforts nearly two-fold during the period 1972-1980. An average of 27 thousand acres were planted during 1968-1971. The nine-year average (1972-1980) was 51 thousand acres annually. The 61,200 acres planted on NIPF forestlands in 1980 set a new high. A spot survey in 1979 revealed that 88% of those landowners engaged in tree planting projects received some type of incentive to initiate the project. Incentives ranged from free trees to incentive cash payments from the Federal Incentives Program or the state Reforestation of Timberlands Act.

Four states (Virginia, Mississippi, North Carolina, and South Carolina) have enacted forestry incentive programs to increase reforestation of pine lands. Three other southern states (Texas, Louisiana, and Alabama) are considering similar legislation.

Trees play a larger role than supplying forest products. The value of forested land to water quality, recreation, wildlife, erosion control, and aesthetics is seldom added to the financial equations that reveal

*State Forester, Virginia Division of Forestry, Charlottesville, Virginia.
percent of return on capital. They are the "freebies" we all take for granted. And then there are taxes. The landowner underwrites a property tax throughout the rotation. He also assumes the risks of insect, disease, storm, and wild-fire losses.

Are forestry incentives so wrong in a country that applauds free enterprise? Government grants to the railroads provide transportation links; the Homestead Act gave land to the settlers; government subsidies aid the airlines; the Small Business Administration guarantees loans at low interest rates; farm price supports aid agricultural production; and many government agencies underwrite schooling, housing, and similar programs. Many of these government programs have been more costly and less effective than the current forestry incentive payments.

Our country recognizes the need for long-term investments in forestry to meet projected deficits in both the U. S. and foreign forests. Wood and wood fibre could well be an offset export product for oil, scarce metals, and manufactured products.

Other forms of incentives for the timber grower are tax credits, early amortization of capital funds, and/or other financial measures such as tax deferment, yield taxes, and lower tax bases for agricultural, forest, horticulture, or open-space areas. It is also well to recognize the need for reform of the Federal Estate Tax to protect family farms and woodlands.

New ways must be sought to set aside prime agricultural and forestal lands. The conversion to residential areas, roads, shopping centers, impoundments, and industrial uses is chipping away forestland at an annual rate of 3 million acres nationally.

The small non-industrial private landowners must be motivated to manage and reforest their lands. It is going to require the combined efforts of the forest industry, state and federal governments, and the NIPF to achieve the goal of productive forestlands by the year 2030. Technical assistance, financial incentives, and personal landowner input and investment have proven to be effective when a practical delivery system is available.

The major question is...."What will happen if we don't make investments in the NIPF?"

My guess is that......

1. Wood will double in price in 20 years,
2. wood will triple in price by the year 2030,
3. prime forestlands will be eroded annually by speculation and land-use change, and
4. the landowner will wait on "the market" to force a decision.

Our challenge, therefore, is to provide the forest incentives today, together with any other motivators, that will increase reforestation and intensive forest management.
TAX SUPPORTED FORESTRY COST SHARING PROGRAMS --
THE OPPOSING VIEWPOINT

R. E. Lee, III*

In putting my thoughts together for this paper, I had a great deal of trouble getting started. Something about the title "Tax Supported Forestry Incentives Programs -- The Negative Viewpoint" didn't ring true.

Finally it hit me. To discuss incentives, even from a negative viewpoint, would be to concede that cost sharing programs are incentives. More often, they are disincentives as we will discuss later. The matter of expressing a negative viewpoint also bothered me. Thus, I have re-titled my talk "Tax Supported Forestry Cost Sharing -- The Opposing Viewpoint."

Now, let me seek a common starting point with those who contend that tax supported cost sharing programs are needed in forestry. I believe strongly that foresters in both the private and public sectors can, should and must do more to promote forest regeneration and productivity. Without resorting to Forest Service statistics, I would hope we can agree that unless action is taken now, there is likely to be a shortfall of softwood in the South early next century, given the increases in consumption that are projected. And I am sure we all hold to the old wood procurement axiom "Better Too 'Nuff than Too None".

Finally, my views as an industrial forester apply largely to the South and particularly to Alabama. For the views of a forest economist on this subject you may wish to read the paper that W. David Klemperer of VPI presented to the Society of American Foresters in Orlando last September.

Are tax supported cost sharing programs really needed in forestry?

If we walk around colonial Williamsburg, one has the illusion of stepping back in time, that all is peace and tranquility, that our world is immune to change. Not so, of course, we live in a fast-moving, complicated world where change is constant. (Even interest rates seem to behave like a yo-yo.) As the world changes so must we. Sometimes, this means changing directions. Yesterday's answers may be today's problems.

What are some of the developments that suggest we should retreat from cost sharing in forestry? Here are four:

1. First, are recent changes in federal tax laws. If a need for tax supported cost sharing programs in forestry ever existed, that need began to diminish in October 1980, when the President signed Public Law 96-451. This law provided forest landowners with a real incentive --

*Manager, Alabama Woodlands Region, Union Camp Corporation, Montgomery, Alabama.
a 10 percent investment tax credit and 7-year amortization on up to $10,000 of capitalized reforestation cost each year. Then, last August, with passage of the Economic Recovery Act of 1981, any need for cost sharing was even further reduced. This legislation, of course, provided for an effective maximum capital gains rate of 20 percent and new, improved estate and gift tax rules.

What has been the result of these sweeping changes? Is it too early to tell? Our field foresters advise me that landowners have been quick to seize this new opportunity. 1981-1982 seedling production seems to verify this.

According to figures obtained from the Southern Forest Institute, seedling production in Alabama from both state and private nurseries for the 1980-81 season was 128 million. In 1981-82, production rose 12 percent to 144 million seedlings. While in the past couple of years, two new industrial nurseries have come on stream, state nursery production also increased from 58 million seedlings in 1980-81 to 65 million seedlings in 1981-82.

Do we have a surplus of seedlings? No indeed. Seedlings are almost as scarce as hen's teeth. Alabama has no state cost sharing program. While seedling production has gone up, federal FIP monies have been reduced.

In fiscal year 1979-80, Alabama received $1,522,000 through FIP. In fiscal year 1980-81, these funds were reduced 18 percent to $1,239,000 and for fiscal year 1981-82 they remained about constant at $1,269,000.

The Alabama Forestry Commission plans to build a new nursery and at least two industrial forest tree nurseries are under consideration. I'm told Georgia, Florida and Virginia also are seeking to add seedling capacity at this time. If we are using the seedlings being produced and there is demand for more, at a time FIP money is being reduced, why do we need cost sharing? Instead, it seems to me we need more nurseries and better seedlings.

2. A second important development concerns hardwood utilization. While foresters doubtless will find it beneficial to pursue hardwood control for many years to come, important changes already are turning a sow's ear into a silk purse.

In the last five to ten years, the pulp and paper industry has begun to adapt to a wood furnish more in keeping with the available resource. New mills, or old ones that have modernized or expanded, seem to be shifting to a furnish that includes more hardwood. In the past two years for example, one new mill and two expansions have occurred in Alabama. Two more expansions are underway. All show a significant appetite for hardwood as a part of their wood diet.

Nor is it news to this group that hardwood is being used as a substitute for fossil fuels by the forest products industry and others including textile mills, institutions and brick manufacturing firms.

New, or expanded markets for hardwood are a Godsend for forest landowners in those areas where such developments are occurring. It means both
additional front-end money from pulpwood sales and more affordable regeneration. It also raises doubts about the need for cost sharing.

3. A third group of changes are more subtle, but nonetheless real. More research has been undertaken to understand landowner motivation.

There has been increased emphasis on technical assistance and educational programs. Industry has initiated landowner assistance programs and consulting foresters have experienced growth within their ranks.

The medium of television is being used increasingly to spread the word, and computers are available to assist foresters in heretofore time-consuming analyses for landowners. Both technical assistance and educational programs, as we shall see shortly, ranked as higher needs than cost sharing in one recent study of landowner interest. (Royer, Goss, and Townsend, 1981.)

4. A fourth and final factor to consider as we evaluate cost sharing is the target audience - the non-industrial private landowner. Here again, profound changes are occurring.

In Alabama, as in most of the South, about 75 percent of the commercial forest is in the hands of non-industrial owners. Years ago, we called these "small private landowners", and I pictured them as farmers with a few acres and a mule. Not anymore.

Today, about 55 percent of non-industrial private timberland in Alabama is held by non-farmers -- doctors, lawyers, businessmen, investors who believe in Tom Clephane, and others. Farmers own the remaining 45 percent. While the percent of non-industrial timberland held by farmers has shrunk, the average size of the farm forest has grown. While the modern farmer is confronted with a host of problems, he is certainly no less receptive to investments in forestry than his predecessors.

How do landowners feel about cost sharing?

In September 1981, Royer, Goss, and Townsend reported on a 1980 survey of 1,050 randomly selected landowners in seven North Carolina counties. These Duke University researchers sought opinions on the effect that various improvements to public programs would have on decisions to manage forest land. The landowners were asked to react to nine programs and then to rank the three they felt would have the greatest favorable impact on their land. (Royer, Goss, and Townsend, 1981).

The top three answers all concerned tax reform -- "deduction of expenses at occurrence, greater capital gains executions, and reduction of inheritance tax."

After these in descending order were: "offer technical assistance, new educational programs, increase cost sharing, offer federal price guarantees, offer insurance, offer government guaranteed loans."

Quoting from the study: "Improved cost sharing, the sixth ranked item, received only modest support relative to other actions."
North Carolina, of course, has a state cost sharing program, so perhaps this lack of enthusiasm over cost sharing means that Tar Heels are satisfied. It could also mean they view cost sharing as a disincentive.

If more people are turned off by cost sharing than are turned on, it seems to me we have a disincentive. Consider for a moment the Georgia experience. State forester, Ray Shirley, is among those opposed to cost sharing programs in forestry. He is quick to point out, however, that his views only concern Georgia.

According to Mr. Shirley, for every four applicants requesting assistance under the federal FIP program in Georgia, only one receives funding. The three that are turned down get mad. Some go ahead and do forestry work without assistance. Others procrastinate and reapply the following year. Three out of four is a pretty high "Mad People" ratio.

But that isn't all. Others get mad too. Consider the landowner who has invested in forestry without seeking government assistance. Or consider the consulting forester who has a client ready to direct-seed a tract. Just before the work is to start, the landowner backs out. Someone has shown him he can get the work done at less personal expense through cost sharing.

Are we being fair with those who practice forestry without cost sharing? Are we attracting new investment, or are we merely subsidizing those who would have invested anyway?

According to Mullaney and Robinson, it would appear we frequently are subsidizing people who would have invested in reforestation anyway. (Mullaney and Robinson, 1980).

There are indications, too, that the vendors who provide reforestation services also want in on the dole. Flick and Mills noted reports from foresters of higher prices being asked when the vendor knows an "incentives" payment is involved. (Flick and Mills, 1981).

When it comes to state cost sharing programs, it appears even Uncle Sam wants a share. With the federal FIP program, capitalized reforestation expenditures may be included in gross income. Under state cost sharing programs, according to a temporary IRS ruling, similar expenditures have been deemed to be income. Thus, at least for now, cost sharing funds generated by a state program are diluted because of income tax obligations to Uncle Sam.

There are several other areas of concern with cost sharing -- the costs of administration, the geographic disbursement of funds within a state, the level of control and the effectiveness of safeguards against abuse and fraud to name a few. But perhaps the most ominous implication of all is what cost sharing does to society and the recipient.

As we look around Williamsburg, there are many reminders of the values of our forefathers -- perseverance under adversity, self-reliance, industry and thrift. Freedom. On January 26, in his State of the Union Address, President Reagan outlined his proposal for a new federalism. He called on free enterprise to save America. He called for the volunteer spirit in social programs.
Is cost sharing in forestry "free enterprise"? I submit there is an amazing resemblance between forestry cost sharing and many of our modern day social programs. If we continue with cost sharing, where will it lead us?

In the January 19, 1982, Mobile Register, I clipped an Ann Landers column. It was captioned "Three Generations on Welfare."

"Dear Ann Landers: I am 30 years old and have one child age three. Six months ago I left my husband. He was an alcoholic who became physically abusive and wouldn't seek help. Finally, I had enough.

I moved into my parent's home temporarily. After four weeks of looking for employment, I finally applied for public assistance. Ann, I nearly died inside. No one can know the feeling without going through it. I was determined to get off the dole as soon as possible.

I hounded the employment agencies, watched the ads and left my name everywhere. Finally, I found a part-time job. Being an honest person, I immediately reported my earnings to the Department of Social Services. Guess what they did? Cut my grant by exactly the amount I earn. I understood that my grant would be reduced, but why should I work at all if I come out exactly the same as if I sat on my butt?

Isn't there something wrong with a system that provides no incentive to work? No wonder this country is in a financial mess. Comment please. 'There's Got To Be a Better Way.'"

In her reply, Ann Landers observed that "Better Way" had identified one of the most critical issues of our time. Ann noted it was more than a financial problem, that it involved motivation, integrity, and a federal government that started welfare programs to alleviate human misery. The result, she noted, was "Three Generations on Welfare".

Motivation and integrity, money, government. Are forest landowners who seek cost sharing likely to react differently from "Better Way"? Already, there are people seeking repeated subsidy. Already there are people who delay reforestation when they miss out on cost sharing.

Suppose we have too many trees in 2030, will we then pay people not to plant? This has a familiar ring.

For those who support cost sharing in forestry, the argument is advanced that a large waiting list for assistance "proves" that cost sharing is working, and more money is needed for such programs. This is like the banks announcing they will offer $1,000 in cash for each person who will put $500 in a savings account. It is like the food stamp people changing the rules and offering food stamps on a first-come basis to anyone who applies.
It seems to me, the pendulum has begun to swing away from tax supported cost sharing as a solution to forestry problems. Recently the Association of Consulting Foresters and at least one major forest products company have gone on record in opposition to cost sharing in forestry.

For some of us, the jury is still deliberating. In recent years, numerous companies have endorsed the concept of state cost sharing programs in forestry funded by severance taxes. My counterparts in Virginia and the Carolinas supported these programs as did my management. My associates feel the Virginia package has been effective. All this, of course, was before recent changes in the federal tax laws.

Whether or not these changes will result in a retreat from cost sharing remains to be seen. Obviously, each state has its own set of problems, values and opportunities. While there is more than one way to skin a cat, there still is no free lunch. Somebody has to pay.

My assignment today has been to present an opposing viewpoint concerning cost sharing in forestry. We discussed the positive implications of recent tax reforms, and how these -- along with expanding markets for low grade hardwoods -- are making investments in forestry more attractive without cost sharing. We touched briefly on improvements that have occurred with educational programs, technical assistance and the delivery system for getting information to landowners. We noted changes in landownership and reviewed opinions of certain North Carolina landowners who were not enthusiastic about cost sharing. Then we outlined deficiencies and possible problems with cost sharing. Finally, we expressed deep concern over where cost sharing in forestry can take us.

So once again, many of us are at the crossroads! Some already have committed themselves to the road to the left. President Reagan, however, has been saying "We've already gone that route. Turn right."

For those who wish to go left, it seems to me there is a lesson to be learned from the Virginia experience. If you want to go the cost sharing route, then it would seem prudent to take along a seed tree law. If not, your wagon is likely to get loaded with all the landowners who will demand a ride. And you'd better get ready to be pelted by those for whom there is no room.

Is there a better route? Royer, Goss, and Townsend, in addition to learning that certain North Carolina landowners preferred tax reform to subsidy, also obtained some other opinions. In a series of questions where landowners were asked to agree, disagree or offer no opinion, they found the biggest area of agreement -- about 80 percent with this statement. "A major difficulty with forest management on small private ownerships is a lack of technical knowledge." About 75 percent of the respondents agreed to the statement "A key role of government should be to provide technical assistance to landowners." In contrast, about 65 percent of the respondents disagreed that state government should regulate harvesting practices and about 75 percent opposed federal regulation of harvesting practices on private lands. As for whether government should require regeneration of harvested sites, about 43 percent agreed, 35 percent disagreed and some 22 percent had no opinion.
From this, it appears that getting a seed tree law to take along on the road to the left is far from a sure thing. But regardless of the direction we take, paving the road in the 1980’s is up to us. This can best be done through a partnership of government and the private sector. Both are needed to engineer the road, survey, acquire and clear the right-of-way, put in the base and surface the road.

At the federal level, the enactment of Public Law 96-451 is equivalent to obtaining the road right-of-way. It has gone a long way toward clearing obstacles from the roadbed. Unfortunately, the annual $10,000 limit in capitalized reforestation is likely to cause some landowners to spread reforestation investment over several years, sacrificing productivity loss for greater tax benefits. Since most landowners do not make capital investments in forestry very often, a higher limit that provides for carryover and which perhaps is indexed to provide for inflation, would further clear the right-of-way.

In addition to the paving project, we also should place our order for road signs from the Forest Service. As we rapidly approach the turn of the century, we need to know more frequently how growth compares to drain. We can’t let our vehicle run out of fuel. Ten years is too long between forest surveys. We’ll need twice as many as in the past.

And for those who have detoured to the left, of course, recipients of state cost sharing programs should get the same treatment by IRS as federal programs. Both vehicles carry government tags.

State forestry commissions also have a heavy responsibility in road building. Whether the road will hold up depends to a large extent on the base. For the stretch of road that passes through Alabama, there is nothing more important than adequate forest fire protection. Enthusiasm will turn to despair unless we get on with this job.

Like other states, Alabama’s base also includes a nursery program. Ours needs additional funding before we can put on the surface coating. According to state forester, Bill Moody, it will be the end of the century before Alabama’s state-produced seedlings will all be genetically improved. This could throw us behind surrounding states and delay the whole project. We will need the incremental growth from improved seedlings as well as more seedlings to get home safely. Last week I talked with John Betha, Florida state forester, about how road building was progressing in Florida. John told me a recent survey showed that only 8 percent of the right-of-way across non-industrial lands was in good shape. Florida has no state cost sharing program, but a project has been started to reimburse non-industrial landowners for seedlings they have purchased and planted. This is a whole lot cheaper than cost sharing for the whole job.

A slightly different approach was taken in Alabama after Hurricane Frederic. Here, the partnership of the public and private sectors undertook to help regenerate 13,000 acres of non-industrial land from which storm damaged timber had been salvaged. Industry from as far away as Tennessee contributed over 11 million seedlings to non-industrial owners to help restore the productivity of the forest factory.
The private sector has an important stake in the whole road building project. And it isn't just a surface thing. New commitments are being made all the time.

Frankly, I'm bullish about forestry in the South. Whichever route the various states choose to travel, we have leadership, know-how and tools to get the job done.

No other field of resource management has the army of professionals we have in forestry. It is always good to be with friends to discuss road building techniques. But it is also good to get back home and get on with the job!
Literature Cited


TIMBER TAXES – THEORY VS. REALITY

John B. Conklin*

Last week I met a logger
named Max,
Who was furious
about the timber yield tax!

His tax forms were laid out
on a stump,
As he scowled at the instructions
he looked quite the grump!

"Them damn bureaucrats really done it
this time!"
"This here yield tax
is really a crime!"

"I scrape and I scratch
to make ends meet,
Then along comes the revenuer
to knock me offa my feet."

"Prices are down
and costs are sky high;
But the government don't care
if I live or die!"

"Poor ignorant fellow,"
I thought to myself.
"If he spoke Economics
he'd be a happy old elf."

"If you'd analyze your taxes
with the appropriate model,
you'd invest in more timberland
instead of a bottle."

"Here, let me show you."
I said with a grin.
I pulled out my calculator
as Max scratched his chin.

"Simply forecast your prices
out to age fifty;
Then input your planting costs,
Isn't this nifty!"

*Forest Tax Supervisor, State Department of Revenue, Olympia, Washington.
"And don't overlook
the effects of inflation;
This econometric model
is the latest sensation!"

"Figure in your costs
for silviculture and taxes.
And for overhead costs
like the shovels and axes."

"Now push this red button'
and listen to it hum;
Till it spits out your answer
now isn't this fun!"

"There now my friend,
my theory was right;
Your yield tax is trivial
when viewed in this light!"

"What say you now?"
I said to the old chap.
He frowned and grumbled,
"You're full of CRAP!"
BUILDING A FOREST TAXATION SYSTEM FOR IDAHO:
LESSONS IN POLITICAL REALITY FOR A NAIVE FOREST ECONOMIST

Charley Mcketta*

Good morning, I'm Charley Mcketta from the University of Idaho and I'm here to tell you about the forest taxation systems we use back home. There is only one problem with my assignment. I don't know what the current forest tax system is. Before you rush over to Harry Haney and demand your money back, let me explain.

When I got on the plane in the wee hours of Tuesday morning, Idaho still had the ad valorem system, taxing trees as real property. Bill Duerr told us why almost everyone abandoned or modified the system long ago because of a multitude of faults. Bill Condrell tells us that timber is capital and more capital pays more tax in a wealth oriented tax system. This is often interpreted as an anti-timber bias since tree farming is about the most capital-intensive industry I know of. Idaho must have at least $700,000 of asset for every tree farm sector employee.

The first lesson I learned took a long time to sink in, and it still pops up from time to time. The effects of forest tax systems cannot be estimated from a theoretical structure, Fairchild notwithstanding, but only from the political realities of their actual administration.

In 1978, the year of our one percent limitaiton initiative, approximately $1.8 billion worth of timber and timberland assets in market terms paid only about $1.6 million in taxes. That's an effective tax rate of less than a tenth of a percent when the average rural levy was .77 percent. The system was basically ignored in 27 of 30 timbered counties, and only one maintains an updated standing timber roll. Why get rid of something that benign?

Well, you may have noted a rising tax consciousness from non-foresters, there are complaints of inequitable treatment between timber owners, alleged violations of the constitution included a threat to jail county assessors, and obeying the existing regulations would be prohibitively expensive. Although one creative assessor realized a 10 percent cruise costs more than five years worth of tax collections and just assumed a new timber inventory, most of the participants feel that a change is finally imperative. Change, however, can take many shapes.

The Idaho legislature is at this moment deciding on a replacement system. That's why I don't know what our system is. It doesn't exist yet. I've called every day to keep track of the front runner, House Bill 468, but it's still in committee.

---

*Associate Professor of Forestry Economics, University of Idaho, Moscow, Idaho.
Even though I don't have a bottom line for you, a lot of interesting, and I would wager familiar, issues have cropped up in the four years of my involvement in Idaho. From the looks of this symposium we have income taxes in hand, but local forest tax specialists have largely opted to battle among themselves for fifty years in a Dogpatch of conflicting theories. It is clear from the front lines and the diversity shown in Cliff Hickman's tables that we have never pulled the theories of local forest taxation into a consistent whole, and have failed to communicate even those simple elements we may agree on to the practitioners who design, enact, administer, and suffer under forest tax laws.

Our leader here, John Conklin, summed this sentiment up nicely in a couplet or two of his poem, "The Logger's Lament"

Men with fancy degrees
Who know nothin' about trees
Hold big meetings on tax economics.

If you wanta know what I think
All their tax theories stink
There's more wisdom in Lil Abner comics.

Well Daisy Mae, here are four related topics which we can focus on from the Idaho experience which taught me new things about local forest taxation and may be a useful refresher for you.

1. What forest assets are taxable?
2. Deadly confusions in productivity taxation.
3. Using valuation errors and inflammatory rhetoric to establish current use and preferential taxation.
4. The first law of politics is to please all the voters you can.

Even Mammy Yokum would agree that land, including the land that forests sit on, is real property and subject to property taxation. The treatment of standing timber is less consistent. The Idaho constitution defines it to be real property and subject to taxation. There are several economists who have tried to prove that timber should be tax exempt, but this is no forum for the Georgian debate.

In Idaho, the question is a legal rather than an economic one. Property tax authors habitually exempt some forms of tangible wealth, and to stimulate our economy all agricultural crops and all business inventories are so blessed. Well, almost all. The old growth is gone, but in this modern era of intensive tree farming when timber could rationally fall into either exempt category, it is singled out in law by language a century old.

There is a forester's movement afoot to eliminate this inventory tax of standing timber but the issue clouds in translation. The arguments link timber to the crop and business inventories just fine but have overlooked the idea of exemption. Rather than press for an equivalent tax-free status, proponents argue for either yield tax or forest productivity
alternate treatment. These replacements still tax inventory in some form. In one case it is explicit taxation of harvested inventories, in the other, an implicit tax of growing stock. What's this about an implicit inventory tax? Stay tuned for Joe Blitznick and his little black raincloud.

During our deliberation with new systems there was a certain fascination with the productivity tax. Productivity hardly ever changes, so re-inventory is unnecessary, and asset value rarely changes except with inflation and indexing can take care of that. In addition, since constant real value equates to a constant real annual tax and the first derivative of timber asset wealth with respect to a constant annual tax is zero, timber management decisions are tax neutral over most tax rates, right?

Well, partially right. Simplicity is the bane of its beholder. I've been deliberately vague about defining the nebulous productive timber asset because in 1979, a major point about this tax system finally dawned on me. How had I ignored Williams and Canham for so long? There are two kinds of productivity taxation in forestry. While their names are similar, behavior under these two systems is distinctly different. I've used my own simple names for them rather than the standard ones because I think it clears up some of the confusion. Lord knows we don't need to add any.

The land productivity tax is where the base productive asset is the bare forest land only. Each parcel has a unique optimal capacity to produce timber and Herr Faustmann worked out the income approach to valuation back in 1849. The value of bare land for timber production is the highest NPV (SEV) of an infinite periodic series of harvest incomes and costs possible from the single acre as in equation one.

\[
\text{Bare Land Value (When Max Possible)} = \frac{H}{(1 + i)^r - 1}
\]

Here I've used a simple form without costs or additional treatments, things will get plenty complex without striving for realism. My \( H \) is harvest revenue. If it is big for relatively short rotations, NPV will be higher and reflect the relative productivity of the land base. This is all elementary but let me make a point. If you have used this as an asset base alone you have implicitly exempted standing timber from taxation! That is, unless timber is taxed separately somewhere else.

A common example of this is the land and yield tax combination. Since any tax gets capitalized out of land values, you can see the asset valuation formula is a little different, \( Y \) being the yield tax rate. At normal tax rates this land tax is innocuous and is timber management neutral.

\[
\text{SEV} = \frac{(1 - Y) H}{(1 + i)^r - 1}
\]

\( Y = \) Yield Tax Rate
The forest productivity tax concept is quite different. Dave Klemperer will soon have an article in the Journal of Forestry explaining some of these differences. Even when I'm full of Kick-a-poo joy juice, I only get rabid about one of them. I hope this is as new to you as it was to me. In our state this forest tax base is an expansion of the annuity income approach used to value agricultural crop land. The value of the productive asset is defined by a perpetuity of harvested timber.

\[
\text{Forest Value} = \text{NPV} = \frac{H/r}{i}
\]

\[
\frac{H}{r} = \text{Value of Annually Harvested MAI}
\]

What is the annual crop here? Use of the perpetuity presumption that a timber cash flow (usually price times mean annual increment) \((H/r)\) is harvested each and every year. To produce a harvestable MAI a sufficient growing stock must be present on the acre to create this amount of cellulose year after sustained yield year. According to capital asset valuation theory, when this formula is invoked the productive asset that you are valuing is the whole black box. It is the acre of land plus the entire assumed level of sustained yield growing stock, which is then subject to taxation each year whether or not it actually exists. The fact that you are valuing a whole sustained yield forest and not just the land it sits on is the reason that the asset value under this formula is so much larger than bare land value alone.

Remember the arguments against ad valorem taxes that the increasing growing stock was repeatedly taxed as it accumulated? Here you implicitly tax a complete sustained yield growing stock present from the start each year on every acre. In even aged forests, growing stock isn't even measurable for the first half of a rotation yet you are taxed each year on it regardless. The following statement is the wolf cry I'm starting to get famous for. "If the forest productivity assets are assessed at market values the tax isn't just nonneutral, it is probably confiscatory." A claim like that requires verification.

\[
\text{Bare Land} = \frac{\text{Bare Land (Value AT)} - \text{Annual Tax Rate (Asset Value AT)}}{\text{Value BT}}
\]

We know that bare land value after tax is the primary indicator for producer behavior. Bare land value after tax comes from its untaxed value less the capitalized value of taxes. Since the land and growing stock assessed value is an after-tax value there is some circularity here but it all boils down to the following:

\[
\text{BLV}_{AT} = \frac{H}{(1 + i)^r - 1} - \frac{t \left( \frac{H/r}{1 + t} \right)}{i}
\]

\[
t = \text{Annual Tax Rate}
\]
Notice that $H$, the annual value of productivity, can be factored out. This means that the sign of after-tax bare land value is independent of the relative productivity of the asset. To me this is an astounding result.

$$\frac{BLV_{AT}}{H} = \frac{1}{(1 + i)^r - 1} - \frac{t}{ir(i + t)}$$

The sign is determined by the relative magnitude of two terms which are functions of only $i$ (interest rate), $r$ (rotation age), and $t$ (tax rate). The tree farmer has no control over physical productivity, because the law defines it as some standard potential whether or not it is reached. Even if bare land value after tax is negative, the existing growing stock still has a positive value. If the land value is negative, the incentive is to sell the growing stock and change the land use. The next table hints at where the confiscation frontier would lay for total abandonment, and the transfer margin where you would change land use lays inside that.

<table>
<thead>
<tr>
<th>$r$</th>
<th>.03</th>
<th>.05</th>
<th>.07</th>
</tr>
</thead>
<tbody>
<tr>
<td>.005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>$+.0080$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>$+.0017$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td>$-.0021$</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
<td>$+.0021$</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>$+.0073$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td></td>
<td>$+.0073$</td>
<td></td>
</tr>
<tr>
<td>.010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>$+.0270$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>$-.0006$</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td>$+.0010$</td>
<td></td>
</tr>
<tr>
<td>.015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>$+.0086$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>$+.0032$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$-.0203$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$+.0192$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$-.0141$</td>
<td></td>
</tr>
</tbody>
</table>

I can see at a glance why you short-rotation folks in Maine and Florida are unconcerned about having this tax. With the typical rotations of the Rockies, the forest products industry there would be flat doomed. Unless... Unless what? Here's where I hedge my bets and move on to the next topic.
As I hope Dave Field is going to confirm for Maine, full market valuation will never happen anywhere. In Idaho this was already the unofficial system that resulted in those previously indicated tax loads which couldn't have been much lower. All foresters would like to see timber production favored and it is lots of places. But how can you pull this off if full market valuation was mandated by a very popular tax initiative?

To explore this, we need help from Fearless Fosdick and a refresher in actually computing an income approach. As close as I get to reality is my next example for natural mid-site Douglas-fir in Idaho. I will assume a 5 percent rise in real prices even though Haynes and Adams project in excess of 9 percent real increases per year in our region for the next decade, MAI = .275 MBF/year, stumpage at $100/MBF, and a real discount rate of 5 percent includes risk.

\[
\text{Forest Value} = \frac{.275 \text{ MBF} \times ($100/\text{MBF}) \times (1.03)}{1 - \frac{1.03}{1.05}} = \$1,420/\text{AC}
\]

My apologies to Mills and Goforth if I've abused their effective discount rate formula to get sustained yield forest value in an increasing market. The answer is about ballpark compared to 90M+ stocked acres that sold last year at $1450/acre. I admit this is a stilted example without management costs but bear with me.

\[
\text{Assessed Forest Value} = \frac{.275 \text{ MBF} \times ($100/\text{MBF})}{.05} = \$550/\text{AC}
\]

If we assume prices will be constant forever we also tag them as real prices. They will have a current year base and contain no future inflation. Return to our familiar formula with the Douglas-fir example and the assessed value drops. This is a common practice. Assessors hate to make projections and prefer to rely on historical averages. I hope they realize that the constant price assumption is just as much a projection and just as hard to defend.

\[
\text{Assessed Forest Value} = \frac{.275 \text{ MBF} \times ($100/\text{MBF})}{.098} = \$281/\text{AC}
\]

Now what happens if I use an inflated discount rate with the real price numerator. For our example I have used the subsidized but nominal capitalization rate from the Federal Land Bank which we are required to use for rural land valuation in Idaho. Some drop in value, huh? And we all know why. Mixing real and nominal values in the same formula is an analytical No-No! My forest economics students would flunk if they did anything like that. In my county this use of the income approach, counting costs, yields an estimate of $73/acre for stocked forest lands similar to my example. We would all agree that the market for stocked timber lands is imperfect, but a $1380 difference stretches credibility.
This aberration from valuation theory does solve two problems however. First, we can kiss McKetta's wolf cries away. It was an interesting but unrealistic mental exercise. Second, in Idaho at least, we can use the error to establish current-use assessment and preferential taxation for agriculture and forestry.

An AFL-CIO suit had charged that farmers were treated preferentially by the use of this income approach to land valuation, causing workers and home owners to bear an unfair proportion of the tax burden. A new 1980 law, however, made the action moot by defining the gap between the incorrectly computed income estimate and actual fair market value as speculative value. This sold perfectly. Those pesky Californians have been seen buying rural property. You in the East may not understand this sentiment but a lot of Idaho bumperstickers read "Don't Californicate Idaho." And clearly all the world hates a speculator.

Now we come to the final issue. What have we chosen to replace the mandated ad valorem and the host of de facto timber and timberland tax systems? I was party to four years of arguments and supplied my obvious (or is that oblivious) technical insight to all sides. Last year all bills failed because of splits between yield, inventory, and forest productivity factions. You can see they didn't believe the McKetta wolf call either.

This year we have laid theorists and their arguments aside. The Tax Commission said we will enforce the existing ad valorem if no new tax appears but no single tax system is going to satisfy all concerned. The assessors are adamant about making sure the small lakeside recreational plots don't escape under preferential timber classification, but they don't like the costs of timber inventories either. The NIPF landowners really liked the tax cash flow of yield systems and the West is in love with the yield tax anyway. Forest industry has gotten used to the low effective tax rates of the de facto forest productivity system and would dearly like to avoid the accounting costs and publication of their inventories or harvest data.

Forest taxation theory has been unable to resolve this morass of conflicting interests, but there is an obvious political solution. And it is known by every schmoo. Remember them? They are the critters that jump in your frying pan and taste like anything you like. That is the theme of House Bill 468 which has an excellent chance of passage in the next few days. Why not have three different taxes for this sector? Landowners under 5 acres face an ad valorem, with 6-2000 acres you can choose between forest productivity or a land plus 3 percent yield system, and the big guys have their forest productivity. What's Hickman going to do? This bill will put blips on all his graphs at once. Oh well, what's good for General Bullmoose....

Administrative costs? Timber tax equity? Theoretical problems? These are all minor troublesome details which will be worked out in the regulatory process. Perhaps now you can see how I've learned about forest taxation. If the last episode is any indicator, I have a prosperous future in store analyzing Idaho forest taxes, and I've promised Al Capp a copy of my speech today.

Thank you.
CONVERTING TO A PRODUCTIVITY TAX: THE MAINE EXPERIENCE

David B. Field*

In November, 1970, the Constitution of the State of Maine was amended by voter referendum to permit the current-use valuation of real property for tax purposes. Following a year-and-a-half of work by two taxation study committees, and failure of several pieces of introduced legislation, LD 2034, "An Act Establishing a Forest Lands Taxation Policy Using a Productivity Approach", became law on March 10, 1972. This "Tree Growth Tax Law" (TGLT) has survived nearly ten years of controversy, but only with substantial revision.

The purpose of this paper is to provide enough information about the Tree Growth Tax Law to enable others to judge whether Maine's experience offers any lessons that might be of value to their states. I will discuss the structure of the current version of the law, trends in classification and valuation, and most importantly, the evolution of forest productivity taxation in Maine. Politics, not theory, has dominated that evolution.

Much about Maine's experience with its Tree Growth Tax Law may not translate readily to other states. Maine is the most heavily forested state in the Union, and contains more industrial forest land and a higher percentage of privately-owned forest land than any other state. Moreover, 42 percent of Maine's land is located in unorganized territories: townships with no local government that are taxed by the State, in the aggregate, as a single quasi-municipality. Finally, Maine has fewer miles of public roads serving its forest lands, on a mile/acre basis, than any other state. These facts have significantly influenced both the technical administration of the TGLT and the nature of public debates over the law's efficacy and equity. Organized vs unorganized areas, large owners vs small, forest landowners vs other taxpayers, and a general lack of understanding of a complex issue have all contributed to the development of today's version of Maine's productivity tax. But despite Maine's uniqueness, the story should hold some lessons for other jurisdictions.

The Tree Growth Tax Law--1982

This section presents the statement of purpose for and substance of the Tree Growth Tax Law as of February 1, 1982. It covers provisions of the law regarding classification, administration, valuation, assessment, and withdrawal.

It has for many years been the declared public policy of the State of Maine to tax all forest lands according to their productivity and thereby to encourage their operation on a sustained yield basis. However, the present system of ad valorem taxation

*Edwin L. Giddings Professor of Forest Policy, School of Forest Resources, University of Maine at Orono, Orono, Maine.
does not always accomplish that objective. It has caused inadequate taxation of some forest lands and excessive taxation and forfeiture of other forest lands.

It is declared to be the public policy of this State that the public interest would be best served by encouraging forest landowners to retain and improve their holdings of forest lands upon the tax rolls of the State and to promote better forest management by appropriate tax measures in order to protect this unique economic and recreational resource.

This subchapter implements the 1970 amendment of Section 8 of Article IX of the Maine Constitution providing for the valuation of timberland and woodlands according to their current use by means of a classification and averaging system designed to provide efficient administration.

Therefore, this subchapter is enacted for the purpose of taxing forest lands generally suitable for the planting, culture and continuous growth of forest products on the basis of their potential for annual wood production. . .1

This statement of the purpose of the Tree Growth Tax Law has survived from the original with no more change than the insertion of the third paragraph in 1973.

Classification

A forest landowner must apply for inclusion under the terms of the TGTL, by April 1 of the year in which the classification is to take effect. To be classified, a parcel of land must contain ten acres or more of forest land and must meet one of the following four tests of eligibility:

1. Business: A sworn statement form the landowner establishing that the landowner is engaged in the business of selling or processing forest products and that the land is used in such business.

2. Inspection by a registered professional forester: A sworn statement from the landowner that the land has been inspected by a registered professional forester within the past 5 years and that the landowner is following the recommendations of that forester.

3. Written forest management plan for commercial use: A written forest management plan for commercial use of the land, accompanied by a sworn statement from the landowner that he is following that plan.

4. Land of less than 100 acres: The land is less than 100 acres and the landowner is managing the land according to accepted forestry practices designed to produce trees having commercial value.

The landowner must file an application with the assessor of the municipality where the land is located (or with the State Tax Assessor, for land not located in organized towns). The application must be accompanied by a forest type
map and must show: 1) the acreages contained in each of three broad forest types: softwood (75 percent or more of the stocking in pine, spruce, fir, hemlock, cedar, or larch), mixedwood (neither hardwoods or softwoods comprising 75 percent or more of the stocking), hardwood (75 percent or more of the stocking in maple, beech, birch, oak, elm, bass-wood, poplar, or ash); 2) the acreages contained in land unsuitable for forest growth (natural water areas, man-made water areas, wetlands and barrens); 3) the acreages contained in land not used primarily for commercial forest production (agricultural lands, open mines, roads, rights-of-way, camp lots, and other areas that the owner chooses not to classify).

By definition, eligible forest land includes only "land used primarily for growth of trees to be harvested for commercial use," but "land which would otherwise be included within this definition shall not be excluded because of multiple use for public recreation."2

Assessors are responsible for determining whether applications are valid and justified. Landowners must report to the appropriate assessor any change in forest type or in the use of lands classified under the TGTL. Assessors may approve or initiate changes in forest type for lands so classified when the facts justify such action.

Administration

Maine contains an area of 21,257,600 acres, of which 19,797,000 are land and 1,458,600 are forest land (Field, 1980). Forty-two percent of Maine's land—8,376,278 acres—is located in "unorganized territories": areas with no local government and few or no inhabitants (Figure 1). All lands classified under the TGTL are valued by the State Tax Assessor, who also levies all property taxes in the unorganized townships. These townships, in the aggregate, are treated as a single quasi-municipality.

In organized towns and "plantations" (semi-organized townships), municipal assessors adjust State valuations of TGTL lands according to the local assessment ratio, then levy taxes according to the same rate used for all property in the town.

Valuation

The key to Maine's TGTL, and source of much of the controversy over it, is the valuation process. By March 1 of each year, the State Tax Assessor must determine the 100 percent valuation per acre, for each of the three forest types, for each county or region in the State. (For 1982, valuations have been set for two counties and four regional groups. Thus, every acre of land registered under the TGTL will be assessed in 1982 at one of eighteen values.)

By statute, classified land is assessed at the "value of the annual net wood production", defined as "the average annual net wood production rate per acre for a forest type multiplied by the weighted average of the stumpage values of all species in the type."3 Thus, the TGTL is a form of the "sustained yield approach" to productivity taxation (Williams and
Figure 1. Maine's Unorganized Territory Tax District
Canham, 1972). Timber and land are assessed together at the capitalized gross value of statewide-average, net mean annual increments, by type, regardless of the actual stocking or site value of individual parcels.

The basic valuation formula is:

\[ V = \frac{P \cdot G(1 - D)}{i} \]

where \( V \) = 100 percent valuation/acre for a given forest type,

\( P \) = weighted, average, current stumpage price for species comprising the type,

\( G \) = average, annual growth rate, for the given type,

\( D \) = a growth rate percentage discount factor,

\( i \) = capitalization rate (a current rate, not adjusted for inflation).

This formula clearly contains theoretical inconsistencies. In practice, the use of current stumpage prices (in effect, real-dollar estimates of future stumpage prices), a current-dollar (rather than real) capitalization rate, and the rather subjective discount factor, represents a mixing of countervailing forces that allows valuations to remain within politically-acceptable ranges.

**Growth rate.** The TGTL calls for determination of the "estimated average net usable amount of wood one acre of land is growing in one year" based on "surveys of average annual growth rates applicable in the State made from time to time by the United States Forest Service or by the Maine Forestry Department." Rates were originally determined for each county, using data from the 1970 U.S.F.S forest inventory. This practice was abandoned in 1974 because of the length and complexity of the calculation process and because "an unreasonable variation existed in rates between counties." (Maine Bureau of Taxation, 1974). Assured by the U.S. Forest Service that growth rates for a given species are similar throughout Maine, but that mean county volumes for each species and forest type vary greatly from one county to another, the Bureau of Taxation determined the average, annual, gross wood production rates by forest type, and county, for 1975-1984 as:

\[ \sum \left[ \frac{(A/B)(C/E)(I/C)}{S} \right] \]

where, \( S \) = species in forest type,

\( A \) = total state growth for a given species and forest type,

\( B \) = total state volume for a given species and forest type,

\( C \) = total county volume for a given forest type,

\( E \) = total county forest land acreage in a given forest type,

\( I \) = total county volume for a given species and forest type.
In this formula, \((A/B)\) expresses uniform statewide growth rates, for each species and forest type, to be used for all counties; \((C/E)\) expresses mean county volume/acre, for each forest type; and \((I/C)\) states the ratio of species in a given forest type, by county.

This gross growth rate is reduced by a percentage discount factor to account for differences between forest survey growth estimates and the growth which experience shows "can be extracted on a sustained basis." This factor (D in the valuation formula) is currently set at 10 percent and is to be reviewed annually by the Legislature.

\textbf{Stumpage price.} LD2034 established a requirement that any owner of forest land who sells stumpage or cuts stumpage for his own business use "during a calendar year shall render an annual report to the commissioner during the month of January of the following year stating the species, volume and stumpage price per unit of measure for each transaction and the municipality or township where the stumpage was located." These confidential reports are used to calculate average stumpage prices for individual species, weighted by volumes harvested, for each of the four broad product groups: 1) softwood pulpwood, 2) softwood sawtimber, 3) hardwood pulpwood, and 4) hardwood sawtimber. These average prices are then totaled by product group and further weighted by the forest inventory product mix and converted into product group stumpage values per cubic foot using U.S. Forest Service conversion factors.

\textbf{Capitalization rate.} The rate at which the "value of annual net wood production" is capitalized "... shall be based upon the opportunity cost of owning forest land. Determination of the opportunity cost shall consider risk, access to financial markets, relative non-property tax treatments and all other relevant factors." The rate must be reviewed annually. It is currently set at 8.5 percent.

\textbf{Final valuation.} The 100 percent valuation/acre for each of the three forest types is determined for each county as the product of the average product group stumpage rates and their respective growth rates totaled by forest type and county, reduced by the discount factor, and capitalized.

\textbf{Reduced valuations.} If fire, disease or other natural disaster reduces stocking to less than three cords of merchantable wood per acre, the valuation of classified land shall be reduced by 75 percent for the first ten years following the loss.

\textbf{Non-forest land.} Areas other than forest land that are located within any parcel of forest land are valued on the basis of fair market value. They cannot be classified under the TGLT.

\textbf{Assessment}

Municipal assessors in organized towns are required to assess forest lands classified under the TGLT according to the State 100 percent valuations, adjusted by whatever percentage of fair market value is being used in the assessment of other property in the town. The forest lands are then taxed at the mill rate applicable to other property.
Municipalities may claim reimbursement from the State General Fund for tax losses suffered from the classification of lands in the town under the TGTCL. The reimbursement is the greater of: 1) 15 cents per classified acre, or 2) the full loss in excess of a 10 percent loss from the aggregate tax assessed on the same lands in 1972 if the aggregate tax assessed on classified forest land for any year is less than 90 percent of the 1972 tax. Reimbursement may not exceed a measure of actual loss, defined by statute.

The unorganized towns, aggregated into the Unorganized Territory Tax District, are assessed and taxed by the State. The aggregate tax levied may not exceed the cost of services provided to the District.

Withdrawal

Land classified under the TGTCL may be withdrawn from taxation under that law by an assessor, for cause, or by the landowner at his option. In either case, unless the change is due to the threat or exercise of the power of eminent domain, withdrawal imposes a penalty on the landowner which is the greater of: 1) the sum of the taxes that would have been assessed for the previous five years (or the years for which the land has been classified, if less than five) if the land had been assessed at its fair market value at the date of withdrawal, less taxes actually paid for the penalty years, plus interest at the legal rate; 2) 20 percent (30 percent after March 31, 1983) of the difference between the 100 percent valuation of the classified land on the assessment date immediately preceding withdrawal and the fair market value of the property on the date of withdrawal. No penalty is assessed if land withdrawn from the TGTCL is accepted for classification under the Farm and Open Space Law.

Evolution of the Tree Growth Tax Law

Maine’s current Tree Growth Tax Law differs substantially from the statute that first took effect in 1973. This section presents a chronology of events leading to passage of the TGTCL and of the ten years of conflict and change that have shaped its present form. The story is one of politics, not theory or science, and underscores the power of the intensely political foundations of real property taxation in the United States.

1953

The foundation for productivity taxation was set by enactment of the "Chase Amendment" (MRSA 36, Sections 563-564. 1964), said by Williams and Canham (1972) to be "perhaps the first explicit recognition in this country of the productivity principle as applied to timber taxation":

It is declared to be the public policy of the State, by which all officials of the State and of its municipal subdivisions are to be guided in the performance of their official duties, to encourage by the maintenance of adequate incentive the operation of all
forest lands on a sustained yield basis by their owners, and to 
establish and maintain uniformity in methods of assessment for 
purposes of taxation according to the productivity of the land ...  

August 14, 1970

A Maine Woodlands Taxation Committee was created by Executive Order of 
Governor Kenneth M. Curtis. The Committee was charged with examining "the 
broad scope taxation of the forest lands of Maine both in the organized and 
umorganized areas" and with considering "our present taxation practices and 
various alternatives with the aims for fair and productive taxation and the 
effect of tax policy in producing desirable land use."5

November, 1970

The Maine constitution was amended by voter referendum to allow for the 
current-use valuation of real property.

January, 1971

After four months of debate, review of theories of woodlands taxation, 
examination of forest land taxation in other states, and discussions with 
consultants, the Maine Woodlands Taxation Committee presented its report to 
the Governor. Some Committee members had strongly favored linking tax change 
with land use control but the report, while endorsing land use control to 
favor forestry and open space, recommended strongly "against relying on taxation to effect land use decisions." The other recommendations were for: 
1) mandatory, 100 percent of value, state-level assessment of all woodland 
parcels larger than a certain acreage, 2) application of local mill rates to 
state assessments (adjusted by the State for those towns with less than full-
value assessment of other property) in organized towns, 3) use of a mill rate 
in unorganized towns equal to a weighted average of the mill rates of all 
the unorganized towns, 4) all assessment of woodlands on the basis of produc-
tivity or current use, whichever is higher, and 5) rollback penalties for 
changes in land use from timber production to other uses.

This report resulted in a bill presented to the 105th Legislature that 
adopted a growth productivity approach, but it did not pass the Committee on 
Taxation. Another bill (LD 1837: "An Act to Encourage Improvement in Forest 
Growth by Creating a Method of Taxation Based Upon the Productivity of Various 
Classes of Forest Land") was submitted by an industry committee and was passed 
by both houses, but Governor Curtis did not sign it, thus deferring action on 
it to the following session of the Legislature. During the summer of 1971, 
Curtis appointed another Committee (the Forest Lands Taxation Review Committee) 
to study LD 1837 and recommend whether the Governor should sign it or not. 
Chaired by University of Maine economist John Coupe, a member of the original 
Woodlands Taxation Committee, the new review committee recommended veto of 
LD 1837 and introduction of an amended version: LD 2018. Among other things, 
this bill called for a mill rate of 16.5 for the unorganized territory, to 
increase annually by one-half mill until the weighted average mill rate (about 
33) of the organized towns was reached. An industry-supported bill, submitted 
at the same time, was identical to LD 2018 except that it set the maximum wild-
lands mill rate at 19.5. A compromise bill, LD 2034 which allowed the mill 
rate to rise to 24 in 1978, passed both houses.
Governor Curtis allowed LD 2034, the "Tree Growth Tax Law", to become law without his signature of approval. In a news release on March 10, 1972, the Governor stated that he was willing to give the new approach a chance to work, but was not convinced enough of its merits to endorse it fully. His explanation included a list of the pros and cons that had been presented to him by proponents and opponents of the law. These foreshadowed the debates of the next decade:

There are several expected advantages to the productivity approach. It provides a uniform policy for setting valuation. This will provide a reasonable basis for predicting taxes for both small and larger owners of woodlands. The new law will equalize tax levels on woodlands in the organized municipalities and in the so-called unorganized "wildlands". Tax assessments will be based on the expected value of the wood grown, being highest on the more valuable soft woods such as spruce and lowest on lands growing lower priced hardwoods. According to the proponents of the bill, the new approach would yield an additional $400,000 in the unorganized townships for each of the years 1974-1978. Based on 100% valuation, the rate would increase yearly from 16.5 mills in 1973 to 24 mills in April 1978. An appeal of tax assessments is also provided which is intended to assure fair treatment to all owners. The proponents point out that as tax rates on woodlands in organized municipalities will generally be lower than current levels, many owners of small wood lots and family sized farms, as well as the large landowners, will benefit. It is possible that the anticipated greater future share of school support from taxes other than property taxes will make the woodland tax levels in this bill higher relative to other land use categories. Also, when an owner withdraws land from his tree crop classification to use it for recreational, commercial or residential purposes, the law has a recapture penalty that would require payments in partial replacement of the lost taxes that would have been levied if the land had been taxed at a higher level of use during the previous five years. For these reasons, I have allowed L.D. 2034 to become law with the hope that it proves to be as reasonable and fair as its proponents claim.

However, the new law has several unknown qualities which have also been expressed to me.

The critics maintain that this untried productivity approach will allow a vast part of Maine land to be retained by a relatively few large owners at an unrealistically low tax rate based on assessments that are far below the market value of the land if it were developed for recreation or other purposes. Further, it is claimed by some that Maine's productivity tax approach does encourage land speculation, particularly in the case of large tracts, either not in production or with significant amount of shore frontage. A major concern is the potential danger of significant loss of revenue from both organized and unorganized communities,
which could result in a subsidy of land owners by a greater tax burden on other forms of property or sources of income in the 495 organized municipalities in Maine.

The original Tree Growth Tax Law differed from the current version in a number of important respects: 1) Classification was mandatory for all parcels of forest land containing more than 500 acres. 2) Classification of parcels between 10 and 500 acres in size was at the election of the landowner. 3) The growth rate discount factor and the capitalization rate were fixed by statute at 30 percent and 10 percent, respectively. 4) Stumpage rates were to be revised every other year.

The first few years after passage of the TGTL were relatively calm ones. Over ten million acres were classified by 1976, but 74 percent of this acreage was in the unorganized territory. Organized towns did not yet perceive a significant decline in tax revenues from forest properties. Criticism was limited largely to those who believed that landowners—especially large, industrial landowners—in the wildlands were not paying a fair share to the State's general fund.

On January 1, 1974, a law went into effect which, although not directly related to the TGTL, would have a profound influence on public attitudes towards forest land taxation. The "Act Equalizing the Financial Support of School Units" was Maine's reaction to national concern and litigation over the variation in public educational opportunities available to students among towns with different property tax bases. The new law called for public primary and secondary education in Maine to be supported 40 percent by property taxes and 60 percent by State tax sources. Administrative needs of the law led to requirements for 100 percent valuation of all real property and placed pressure on municipalities for the preparation of tax maps and reliance on professional assessment. Regardless of the assessment ratio chosen by towns to raise taxes for their own purposes their obligation to pay into the State education fund was based on 100 percent valuation, and the State saw to it that the valuation process was also as uniform as possible.

The net effect of these changes, for many properties, was a dramatic increase in property taxes. Because forest lands registered under the TGTL were already being assessed at full value, and because that value was limited by the TGTL formula, non-forest properties and unclassified forest lands felt the brunt of the increased tax levies. Not surprisingly, enrollment of forest lands under the TGTL rose rapidly, and the impact of the law suddenly became a major issue. As the full impact of the UPT took effect during 1975 and 1976, the stage for a drive to modify or repeal the TGTL was set by a coalescing of the following forces: 1) An element of the public, including some members of the Woodlands Taxation Committee, had long believed that forest lands held by large landowners did not contribute their fair share of taxes. 2) "Preference" taxation of forest lands was perceived as the cause of a major shifting of the property tax burden to non-forest properties. This perception became especially strong after enactment of the Uniform Property Tax legislation and, no doubt, many persons associated subsequent tax increases with the TGTL rather than the UPT. 3) State valuation of forest lands under the TGTL was strongly resented by "local control" advocates, and this feeling was reinforced by the State valuation and school fund distribution provisions of the UPT. 4) It was believed by many municipalities, especially coastal towns and those with inland
lakes and ponds, that the TGTL was being used by real estate speculators to shelter shorefront and other development properties from fair market value taxation. It was believed, also, that some landowners who had classified their forest lands had no intent to grow timber for commercial use but, rather, were using the TGTL to tax shelter lands held primarily for recreational purposes. At the same time, a number of forest landowners whose property had been classified mandatorily by the TGTL complained that they did have development plans, would not have enrolled under the law voluntarily, and now were faced with a severe rollback penalty if they did develop the land for non-forest purposes.

Those were the dominant issues surrounding the Tree Growth Tax Law at the start of the second session of the 107th Legislature. The primary actors in the debate that took shape during the spring of 1977 (and continues to the present) included:

1. The Maine Municipal Association: Representative of the governments of Maine's organized towns, and primary organized opponent of the TGTL.

2. Owners of large areas of forest land: Major supporters of the TGTL, both through their own representatives and through two landowner associations: The Paper Industry Information Office and the Maine Forest Products Council.

3. Owners of small parcels of forest land: Increasingly vocal supporters of the TGTL, through individual spokesmen, the Small Woodland Owners Association of Maine, and the Maine Forest Products Council. (Some owners have spoken against the law, largely on grounds of equity.)

4. Conservation/preservation groups: Organizations such as the Maine Audubon Society, the Nature Conservancy, and the Natural Resources Council of Maine have lent general support to the TGTL because of its influence in deterring development and maintaining open space.

5. Governmental reform groups: The leadership of Common Cause of Maine, in particular, has opposed the TGTL strongly, largely on ideological grounds and with a clear focus on large landowners.

6. The Maine Woodsmen's Association: The MWA, an association of wood workers, has used debates over the TGTL as a forum for attacks on large landowners, especially those in the paper industry, with whom the MWA has a number of differences.

May 31, 1977

At a public hearing before the Legislative Committee on Taxation, two bills relevant to the TGTL were presented:

LD 318: "An Act Concerning the Administration of Property Tax Laws Administered by the Bureau of Taxation." (An attempt to repeal the "Chase Law" and make numerous changes in the TGTL.)
'LD 1734: "An Act to Improve the Administration of the Maine Tree Growth Tax Law." (An attempt to drastically change the TGGT valuation procedure.)

July 22, 1977

A modification of LD 1734 was signed by Governor Longley, to be effective October 24, 1977. This bill repealed the fixed discount factor and capitalization rates, directed the State Tax Assessor to determine an appropriate discount factor by February 1, 1978, and every fourth year thereafter, directed the State Tax Assessor to set an appropriate capitalization rate by February first of each even-numbered year, and established a Land Classification Appeals Board.

November 14, 1977

First public hearing (required by LD 1734) on determination of the discount factor and the capitalization rate.

December 5, 1977

After several years of growing discontent, fueled by high taxes and local control issues, the Uniform Property Tax was repealed by voter referendum, effective March 3, 1978. The State retained an indexing scheme for State support of public schools and continued to insist on improved local valuation.

January 12, 1978

Professors John D. Coupe and Robert H. Sapp, economists at the University of Maine at Orono, presented to the State Tax Assessor a consulting report entitled "Assistance in the Determination of the Capitalization Rate and Reduction Factor Under Maine's Tree Growth Tax Law" (Coupe and Sapp, 1978). The authors interviewed publicly-employed foresters and weighed information from those professionals against public testimony to conclude that the discount factor should be set at between 15 and 25 percent. They used four approaches to determination of the capitalization rate: 1) a study of actual forest land market transactions occurring during 1975, 1976, and 1977; 2) an econometric derivation of the capitalization rate determined by fitting market transactions evidence to models based on the TGGT; 3) an analysis of yields on investments in cumulative preferred stocks (The authors chose this alternative investment as somewhat comparable to forest investments, but emphasized that "no ideal alternative investment is apparent."); 4) an examination of the capitalization rates specified in Florida's "Greenbelt Law". They concluded that the capitalization rate should be set at 8.5 percent.

January 31, 1978

State Tax Assessor Raymond L. Halperin certified the TGGT discount factor at 20 percent and the capitalization rate at 8.5 percent.
February 27, 1978

LD 2159, "An Act Relating to the Taxation of the Unorganized Territory" was introduced to the 108th Legislature. Repeal of the Uniform Property Tax and an opinion by the State Attorney General that the "local and state government tax" might be illegal threatened to leave the State with no authority to tax property in the unorganized territory. LD 2159 ("emergency legislation", to take effect when passed) created the "Unorganized Territory Tax District", a quasi-municipality including all unorganized townships in the state, and established a district tax, the "Unorganized Territory Educational and Services Tax". The purpose of this tax was "to recover from the unorganized territory the state's expenses attributable to providing governmental services and education therein . . . . the organized territory is treated as if it were a municipality and the tax imposed is the equivalent of a local municipal property tax." Thus, the Unorganized Territory is taxed for the cost of services provided by the State that would not be borne by the State if the District were actually a municipality. The law called for the Legislature to determine annually the cost of providing governmental services and education to the unorganized territory and for the State Tax Assessor to set a mill rate calculated to raise that sum. Services were to be identified and valued by the Governor's office and reported to the Legislature. In 1980, the wildlands were taxed $6,195,296 to pay for the State's share of expenses for the education of children living in the unorganized territory and for the following governmental services: 1) forest fire protection, 2) public safety, 3) Land Use Regulation Commission, 4) Secretary of State expenses relevant to the wildlands, 5) property tax assessment, 6) reimbursement to counties for services, 7) human services.6

One significant effect of this legislation was to remove from the Unorganized Territory Tax District the long-standing threat from those who feel that the large industrial forest ownership should be taxed in such a way as to reduce taxes paid in the organized towns. (Maine Common Cause has proposed that the University of Maine be supported by property taxes from the unorganized territory.)7 Now, by law, the District tax is limited to services provided to the District. Tree Growth Tax Law changes have consequently become of far less importance to landowners whose forest properties are located entirely or primarily in the wildlands.

September 15, 1978

LD 2213, An Act to Limit Government Spending and Provide Property Tax Relief and to Correct Inequities in the Tree Growth Tax Law" failed to pass. This "Proposition 13"-type bill would have replaced the TGTL discount factor and capitalization rate by a "factor that reflects the average market price of land sold for timber production."

The First Regular Session of the 109th Legislature, in 1979, saw a flurry of legislative attempts to eliminate or modify the TGTL:
February 14: LD 563, "An Act to Require that Forest Land be Taxed According to Current Use", called for valuation according to average sales price, a written management plan approved by a Registered Professional Forester, and an affidavit by the landowner certifying his intent to grow timber for commercial use. This Maine Municipal Association bill included a tax rebate for the first 50 acres of land classified.

February 27: LD 802, "An Act to Amend the Tree Growth Tax Law", called for a repeal of mandatory classification for parcels over 500 acres, exclusion of coastal shorelands from eligibility, changes in the formula for municipal reimbursement, and a requirement that enrollment depend on either a sworn affidavit that the owner is in the forest products business, certification by a Registered Professional Forester, or a written management plan.

March 5: LD 1033, "An Act to Provide that the State Tax Assessor Shall Use Information from Federal Income Tax Forms to Determine Appropriate Valuation of Land under the Tree Growth Tax Law for Those Taxpayers who Declare Capital Gains from Timber Sales on Federal Income Tax Returns".

March 20: LD 1453, "An Act to Establish an Excise Tax on Timber Harvest", would have levied on the landowner a severance tax of 50 cents/cord or $1.00/MBF in addition to TGTL taxation. (The first 500 cords harvested annually would have been exempt.)

March 24: LD 1244, An Act to Amend the Tree Growth Tax Law", was similar to LD 802.

March 30: LD 1523, An Act to Impose a Tax on Timber at Harvest to Provide for Reimbursement to Communities for Loss from the Tree Growth Tax Law", called for a "yield tax" levied on the landowner, in addition to the TGTL tax levy. The rate would have been five percent of stumpage values for 1980 and would then have been set annually by the Legislature at a level sufficient to reimburse towns for "losses" due to the TGTL.

None of these bills passed, but they caused a good deal of debate. The severance tax approach was the latest attempt by municipalities to make up perceived revenue losses due to TGTL classifications in their towns.

June 15: Both LD 1237, "An Act Relating to Withdrawal Penalties Under the Tree Growth Tax Law", and LD 1656, "An Act Establishing the Municipal Cost Component for the Unorganized Territories", were signed into law. LD 1237 defined "fair market value" to be used in calculating the rollback penalty as "the assessed value of comparable property in the municipality adjusted by the municipality's certified assessment ratio." LD 1656 modified the definition of the "municipal cost component" for the Unorganized Territory Tax District to specify that the cost of forest fire protection included in that component be determined by applying the mill rate set for organized municipalities to the 100 percent valuation of all property in the unorganized
territory. (The Maine Forestry District, a forest fire control region covering both organized and unorganized towns, is administered by the State. LD 1656 was concerned with the uniformity of support for the District between organized and unorganized territories.)

October 22, 1979

In a speech at the University of Maine at Fort Kent, Richard E. Barringer, Commissioner of the Maine Department of Conservation, stated:

And to compensate municipalities for taxes foregone under Tree Growth I can think of no remedy other than the imposition of a severance tax to be paid at the time of harvest, when the deferred benefits of reduced taxation are realized by the forest landowner. Income from this tax would be redistributed to the municipalities to bring their revenues back to pre-Tree Growth Tax levels.

The final round of debates over the TGTL to be reported in this chronology took place during the first regular session of Maine's 110th Legislature in 1981. Between February 5 and April 1, four bills were introduced that called for a full range of changes, including another severance tax proposal, elimination of the discount factor, exclusion of shorlands, and even the prohibition of posting of classified lands against hunting, fishing, and trapping. In the end, the Maine Forest Products Council, the Maine Municipal Association, large and small landowners, and conservation groups joined to support LD 955, whose changes are reflected in the current TGTL: Repeal of mandatory classification, tightened eligibility requirements, annual valuation, the use of market regions rather than counties for the valuation base, fixing of the discount factor at 10 percent (to be revised only by the Legislature), and revision of the town reimbursement formula.

On October 1, 1981, 1982 valuations were changed from counties to regions that include both single counties and aggregates of counties. In November, the capitalization rate was re-certified at 8.5 percent.

One final effect of the 1981 amendments is that all forest landowners who wish their land to be certified under the TGTL must, prior to April 1, 1982 file affidavits showing that they qualify under the terms of the new eligibility criteria. Attorney General James E. Tierney has issued two options that both landowners who have not changed the use of their land, but who are unable to qualify under the new law, and those owners of more than 500 acres who were involuntarily classified and still do not wish to be classified, will be subject to full rollback penalties on withdrawal from TGTL classification.

(Late update: on March 17, 1982, two new bills will be heard before the Committee on Taxation. One would ensure that no zoning ordinance or other artificial barrier would prevent classification under the TGTL, and would require assessors to notify landowners who are denied TGTL classification, for any reason, of the opportunity for classification under the Farm and Open Space Law. The other bill would keep the discount factor at 10 percent.)
Trends in Classification and Valuation

In 1976, three years after the TGTL went into effect, 10,374,850 acres of Maine's forest land had been classified under the law—61 percent of the state's 16,894,000 acres of commercial forest land. 2,696,600 of these acres were located in organized towns (Table 1); 7,678,250 in the unorganized territory. By 1980, enrollment had grown to 11,846,600 acres—70 percent of Maine's commercial forest land—with 3,496,600 acres in the towns and 8,350,000 acres in the wildlands.

In 1976, 3,125 parcels were classified in the organized towns, and 1,678 in the unorganized territory. By 1980, these figures had risen to 13,170 and 2,100, respectively. In 1980, the average parcel of land classified under the TGTL encompassed 776 acres. Averages for the organized and unorganized towns were, respectively 265 acres and 3,976 acres.

Tables 2 and 3 show, respectively, changes between 1973 and 1982 in TGTL valuations and both current dollar and real dollar rates of change in those valuations. Interestingly, although TGTL valuations are substantially lower than ad valorem assessments in most of Maine, a number of towns still value forest lands ad valorem at less than TGTL values.

Prospects for the Future

Maine's Tree Growth Tax Law has led a stormy life. Despite recent major revisions, it remains the target of a number of interests that would like to see it repealed altogether. It retains the advantages of encouraging timber productivity, maintaining open space, being inexpensive to administer, ensuring predictable tax burdens for landowners and tax revenues for governments, and fostering stability of landownership. It still is burdened by the disadvantages of being difficult for many to understand, having too many factors subject to administrative interpretation, and providing assessments and tax revenues perceived as far too low by taxpayers who own non-forest properties.

The law also possesses theoretical flaws. Its valuation formula is inherently biased against poorly-stocked forest lands and new plantations, indeed, anything less than a fully-regulated forest. Its use of average growth and stumpage values although conservative in the aggregate, is regressive: overassessing some land and underassessing others.

But, the primary lesson to be learned from Maine's experience with its Tree Growth Tax Law is that the forest tax planner must pay at least as much attention to the political forces that must absorb his theories as to the theories themselves. It is probable that, after ten years, very few of Maine's citizens understand the theories underlying the State's Tree Growth Tax Law—or care. It will be interesting to watch their reaction to the recalculation of the valuation formula's growth rate component if, as expected, the new forest survey shows that Maine's dominant spruce-fir forests have actually reached zero or negative growth as a result of the spruce budworm epidemic. Only the bottom line will reach the headlines.
Table 1. Trends in the acreage of lands classified under Maine's Tree Growth Tax Law in the organized towns. a

<table>
<thead>
<tr>
<th>County</th>
<th>1976</th>
<th>1980</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Androscoggin</td>
<td>4,338</td>
<td>35,100</td>
<td>30,762</td>
</tr>
<tr>
<td>Aroostook</td>
<td>535,155</td>
<td>614,000</td>
<td>78,945</td>
</tr>
<tr>
<td>Cumberland</td>
<td>32,225</td>
<td>78,700</td>
<td>46,475</td>
</tr>
<tr>
<td>Franklin</td>
<td>239,766</td>
<td>284,900</td>
<td>45,134</td>
</tr>
<tr>
<td>Hancock</td>
<td>152,228</td>
<td>201,300</td>
<td>49,012</td>
</tr>
<tr>
<td>Kennebec</td>
<td>11,520</td>
<td>76,000</td>
<td>64,480</td>
</tr>
<tr>
<td>Knox</td>
<td>352</td>
<td>12,300</td>
<td>11,948</td>
</tr>
<tr>
<td>Lincoln</td>
<td>763</td>
<td>23,900</td>
<td>23,137</td>
</tr>
<tr>
<td>Oxford</td>
<td>256,190</td>
<td>392,600</td>
<td>136,410</td>
</tr>
<tr>
<td>Penobscot</td>
<td>482,776</td>
<td>565,900</td>
<td>83,124</td>
</tr>
<tr>
<td>Piscataquis</td>
<td>293,542</td>
<td>339,300</td>
<td>45,758</td>
</tr>
<tr>
<td>Sagadahoc</td>
<td>0</td>
<td>16,000</td>
<td>16,000</td>
</tr>
<tr>
<td>Somerset</td>
<td>251,049</td>
<td>347,700</td>
<td>96,651</td>
</tr>
<tr>
<td>Waldo</td>
<td>9,701</td>
<td>24,700</td>
<td>14,999</td>
</tr>
<tr>
<td>Washington</td>
<td>393,980</td>
<td>419,900</td>
<td>25,920</td>
</tr>
<tr>
<td>York</td>
<td>32,951</td>
<td>64,200</td>
<td>31,249</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,696,596</td>
<td>3,496,600</td>
<td>800,004</td>
</tr>
</tbody>
</table>

aSource: Maine Bureau of Property Taxation
Table 2. 100% valuations (per acre) under Maine’s Tree Growth Tax Law.\(^a\)

<table>
<thead>
<tr>
<th>County</th>
<th>For 1973</th>
<th>For 1982</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Softwood</td>
<td>Mixedwood</td>
</tr>
<tr>
<td>Androscoggin(^b)</td>
<td>34.80</td>
<td>19.30</td>
</tr>
<tr>
<td>Aroostook</td>
<td>26.60</td>
<td>18.00</td>
</tr>
<tr>
<td>Cumberland(^b)</td>
<td>29.90</td>
<td>17.90</td>
</tr>
<tr>
<td>Franklin(^c)</td>
<td>31.10</td>
<td>18.60</td>
</tr>
<tr>
<td>Hancock(^c)</td>
<td>18.90</td>
<td>11.20</td>
</tr>
<tr>
<td>Kennebec(^b)</td>
<td>22.50</td>
<td>12.90</td>
</tr>
<tr>
<td>Knox(^b)</td>
<td>23.20</td>
<td>13.20</td>
</tr>
<tr>
<td>Lincoln(^b)</td>
<td>23.20</td>
<td>13.60</td>
</tr>
<tr>
<td>Oxford(^c)</td>
<td>30.90</td>
<td>19.20</td>
</tr>
<tr>
<td>Penobscot(^e)</td>
<td>20.30</td>
<td>15.50</td>
</tr>
<tr>
<td>Piscataquis(^d)</td>
<td>33.10</td>
<td>18.30</td>
</tr>
<tr>
<td>Sagadahoc(^b)</td>
<td>34.40</td>
<td>19.50</td>
</tr>
<tr>
<td>Somerset(^d)</td>
<td>33.10</td>
<td>17.90</td>
</tr>
<tr>
<td>Waldo(^b)</td>
<td>22.90</td>
<td>13.80</td>
</tr>
<tr>
<td>Washington</td>
<td>21.70</td>
<td>16.10</td>
</tr>
<tr>
<td>York(^b)</td>
<td>28.80</td>
<td>17.80</td>
</tr>
</tbody>
</table>

\(^a\)Source: Maine Bureau of Property Taxation

\(^{b,c,d,e}\)1973 valuations were made for each county. 1982 valuations are for two counties and the four regional county groups indicated by these letters.
Table 3. Current\textsuperscript{a} dollar and real\textsuperscript{b} average annual rates of compound change in the 100% valuation per acre by county and forest type, Maine Tree Growth Tax Law, 1973 valuation to valuation for 1982. (In percent)

<table>
<thead>
<tr>
<th>County</th>
<th>Softwood</th>
<th></th>
<th>Mixedwood</th>
<th></th>
<th>Hardwood</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Real</td>
<td>Current</td>
<td>Real</td>
<td>Current</td>
<td>Real</td>
</tr>
<tr>
<td>Androscoggin</td>
<td>12.7</td>
<td>2.7</td>
<td>13.6</td>
<td>3.6</td>
<td>10.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Aroostook</td>
<td>14.3</td>
<td>4.1</td>
<td>15.1</td>
<td>4.9</td>
<td>15.2</td>
<td>5.0</td>
</tr>
<tr>
<td>Cumberland</td>
<td>14.6</td>
<td>4.4</td>
<td>14.5</td>
<td>4.3</td>
<td>13.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Franklin</td>
<td>12.2</td>
<td>2.2</td>
<td>13.4</td>
<td>3.3</td>
<td>13.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Hancock</td>
<td>17.5</td>
<td>7.1</td>
<td>19.1</td>
<td>8.5</td>
<td>19.3</td>
<td>8.7</td>
</tr>
<tr>
<td>Kennebec</td>
<td>18.3</td>
<td>7.8</td>
<td>18.8</td>
<td>8.2</td>
<td>15.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Knox</td>
<td>17.9</td>
<td>7.4</td>
<td>18.5</td>
<td>8.0</td>
<td>15.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Lincoln</td>
<td>17.9</td>
<td>7.4</td>
<td>18.1</td>
<td>7.6</td>
<td>15.2</td>
<td>5.0</td>
</tr>
<tr>
<td>Oxford</td>
<td>12.3</td>
<td>2.3</td>
<td>13.0</td>
<td>3.0</td>
<td>12.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Penobscot</td>
<td>16.6</td>
<td>6.2</td>
<td>14.9</td>
<td>4.7</td>
<td>12.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Piscataquis</td>
<td>14.1</td>
<td>4.0</td>
<td>15.3</td>
<td>5.1</td>
<td>16.1</td>
<td>5.8</td>
</tr>
<tr>
<td>Sagadahoc</td>
<td>12.9</td>
<td>2.9</td>
<td>13.4</td>
<td>3.3</td>
<td>10.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Somerset</td>
<td>14.1</td>
<td>4.0</td>
<td>15.6</td>
<td>5.3</td>
<td>16.9</td>
<td>6.5</td>
</tr>
<tr>
<td>Waldo</td>
<td>18.1</td>
<td>7.6</td>
<td>17.9</td>
<td>7.4</td>
<td>14.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Washington</td>
<td>14.1</td>
<td>4.0</td>
<td>15.7</td>
<td>5.4</td>
<td>19.5</td>
<td>8.9</td>
</tr>
<tr>
<td>York</td>
<td>15.1</td>
<td>4.9</td>
<td>14.6</td>
<td>4.4</td>
<td>14.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Average</td>
<td>15.2</td>
<td>4.9</td>
<td>15.7</td>
<td>5.4</td>
<td>14.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

\textsuperscript{a}"Current" changes are based on valuation sheets issued by the Maine Bureau of Taxation for tax years 1973 and 1982. Changes include the influence of revisions in the TGTL discount factor and capitalization rate between 1973 and 1982.

\textsuperscript{b}Real changes were derived by deflating the current changes by the average, annual rate of compound increase in the producer price index for all commodities from 1973 (PPI = 119.1) to 1982 (PPI = 275.9), equal to 9.78\%. 

Footnotes

1 Title 36 MRSA, Sec. 572. Purpose. 1972, C.616, §8; 1973, C.308, §1.

2 Title 36 MRSA, Sec. 573. sub-§3, as amended by PL 1981, C.517, §3.


4 Title 12 MRSE, Sec. 520-B.

5 Minutes of the Maine Woodlands Taxation Study Committee.

6 Personal communication, May 11, 1981, from James P. Norris, Deputy Director, Property Tax Division, Maine Bureau of Taxation.

7 Common Cause/Maine Newsletter of December 4, 1980.

Literature Cited


AD VALOREM TAX TO YIELD TAX
THE OREGON EXPERIENCE

Peter W. O'Brien*

This paper was prepared to present an overview of the transition from property tax to yield tax. The statements made are general in nature and leave much unsaid. There are a multitude of details not included here but which are important to the administration of these laws. More specific information may be obtained by contacting the Oregon Department of Revenue, Timber Section, Room 256, Revenue Building, Salem, Oregon 97310.

Conditions Affecting Tax Treatments

Oregon is neatly divided into an eastern and western region by a line of beautiful, majestic mountains called the Cascade Range. The area east of the Cascades is a high and relatively dry country. The most important timber species is Ponderosa Pine. As in many of the drier pine areas in the west, the land is subject to multiple uses. Also, the timber stands are selectively cut and uneven age stands are common.

In western Oregon, the timber lands tend to be hilly, the average temperature is moderate and rainfall plentiful. Many timber growing sites are blessed with deep soils and are highly productive. In this country, Douglas fir is king. Its associates of Western hemlock and Sitka spruce are clustered near the northwest coast line. The timber is usually clear-cut and stands tend to be even-aged.

Yield Tax Evolution

The change from taxing timber on the property tax rolls to another system of timber taxation is rarely abrupt. When the Oregon legislature passed the Western Oregon Severance Tax law in 1977, it was not a startling or new idea to Oregon taxpayers or tax administrators.

As early as 1929 the Forest Fee and Yield Tax law (The Reforestation Act) was enacted. This law taxed forest land at five cent per acre and provided for twelve and one-half percent yield tax on the value of forest crops harvested from these lands. About one million acres had the status of reforestation land in 1977.

In 1974, the Forest Products Harvest Tax came into existence. This is a privilege tax and today it furnishes funds for a forest research laboratory, an emergency fire fund and the administration of the Forest Practices Act. This tax is based on the volume of timber removed and is not related to value.

Timber Section Chief, Oregon Department of Revenue, Salem, Oregon.
In 1961, the Eastern Oregon Severance Tax became a reality. This tax is a percentage of the value of the product harvested. Also in 1961, a new kind of yield tax was introduced to western Oregon. This tax was called the "Additional" tax. This "Additional" tax was based on the difference in timber value carried on the tax roll and the stumpage value of the harvested timber.

Political Forces in 1977

Any change in public policy and particularly in taxing policy, stimulates a flurry of political activity. In practically every legislative session since 1940, some form of yield tax has been suggested and arguments for and against have been heard many times. By 1977, some earlier arguments had been resolved and others had polarized into unmoving positions. This proved to be true at the time the Western Oregon Severance Tax law was enacted.

The major political forces which aided the legislature in making its decision were:

1. The timber industry. An industrial association drafted the bill and lobbied for its passage. Despite the fact that the severance tax bill was drafted by the association, industry was split. Individual members did not want a severance tax; therefore, the industry did not present a unified front. Those corporations who were depleting their old growth stands quickly were opposed to the severance taxes. (After all, their timber values on the tax rolls were being reduced at a fast rate and the taxes on their properties would soon be relatively low). Those corporations who had large inventories of standing timber and did not intend to harvest their timber in the next few years tended to support the concept of a yield tax. This lack of unity defeated yield tax bills in the past; and without the support of most of the industry, such a bill as the Western Oregon Severance Tax would not be passed. In 1977, despite the objections of some individuals, enough support was mustered to eventually gain passage of the present law.

2. The local taxing districts and county officials. The main concerns of these groups were the erosion of the tax base for property tax and the possible shifting of taxes from timber property to other properties. Their support to the yield tax bill was gained by setting up a transition account which was intended to minimize the effects of any shifts.

3. The small owner association. Over the past decade, an association comprised of timber owners with small holdings has grown and each year it exercises more political muscle. They were not opposed to the idea of severance taxes and supported this bill. The fact that the bill recognized some of the small owner problems helped in gaining their support.

4. The Department of Revenue. The Department's role was to study the bill for potential administrative problems and to report the effects on the tax shifts if the bill was enacted. The
Department's position neither supported nor opposed the bill.

5. The forecasted dwindling supply of timber. There were many who predicted an undersupply of timber in the near future. Cited as one of the causes of this short-fall was the burden the yearly property tax placed on timber. It was argued that a severance tax would remove this burden and the harvesting of timber would be delayed until the proper harvest time arrived.

Interestingly enough, an argument was made that the transferring of the tax burden until the timber was harvested would allow owners to "hang on" to their timber too long. Too long, that is, to help furnish the harvest needs for the period between the final depletion of the old growth stand and the full production of second-growth stands.

Political and Equitable Considerations

The political questions and the questions of equity become interdependent and so I will treat these questions without regarding whether they are political or equitable.

Some of the considerations were basically administrative in nature. Four of the main areas that were addressed were: the administration of the law, the payment for this administration, revenue recipients and revenue distribution. It was decided that the Department of Revenue would administer the law and the severance taxes would pay for the administration. The revenues would be used as offsets to property taxes and the local taxing districts would benefit from these monies. The methods of distributing the revenues to the local districts will be discussed later.

The question whether the change-over should be sudden or gradual was addressed. Because of the concern of dramatic shifts in local taxes, it was decided to have a gradual change-over, so a transition period between the full implementation of the harvest tax and the ad valorem tax was established.

Whether forest land taxes should be included in the severance tax or their value remain on the tax rolls was another question raised. There were some who argued in favor of having forest land taxes included with the severance tax. There were two main reasons given to support this view; one, finding the value of forest land is difficult because of the lack of bare-land sales, and two, land values are directly related to productivity as are harvest volumes and values -- as volume and values increase, so do yield taxes. The decision was to keep land values on the tax rolls.

The idea of whether young growth timber should be taxed at all was explored. The proposal that young timber should not be taxed has been offered several times over the years. The main argument is that timber is a crop and crops should not be taxed. In Oregon, farm crops
and forest trees are exempt from taxation. This fact gives some substance to the argument. The idea received little consideration and did not gain much acceptance. (Actually, there is a law in Oregon which exempts young timber from property taxes. It is called the Western Oregon Small Tract Optional Tax. The amount of taxes is based on the productivity of the land.)

The local taxing districts and county tax officials generally took the following positions:

1. The timber industry should pay its fair share of the tax load. Most of them seemed to support the idea that the present level of taxes paid by industry was a good measure of its fair share.

2. Forest land should continue to be carried on the tax rolls and should be valued at its market value. The legislature accepted this idea with some modifications. The resulting law indexed the 1977 market value of forest land to arrive at the taxable value for each ensuing year. This index was based on the rate of change in timber values.

3. The land and timber classified as "Reforestation" lands should not be allowed to enjoy the same tax rate as other timber properties. This was a two-fold problem. The land was paying lower taxes than similar property and harvested timber was paying higher yield taxes than proposed by this new law. The legislative solution was to gradually increase the land values and decrease the yield tax on "old" reforestation areas until these forest lands and timber were taxed on the same basis as other forest lands and timber.

4. The distribution of severance tax revenues should not go only to those districts with harvest but to all districts containing forest land. The basis for this contention was that districts with stands of timber but no harvest would lose the value on the tax roll and receive no offset. On the other side of the coin, it was argued that districts with cut-over land might receive too much of the revenues and contribute very little to harvest tax revenues in the foreseeable future. This issue was resolved by giving districts with forest lands a minor share of the revenues and districts with timber harvested a major portion of them.

5. The distributed revenues should not be based on one year's harvest. It was claimed that this could give some districts a mammoth amount of offsets one year and very little the next. The result would be an excessive fluctuation in tax rates from year to year. The legislative response was to stipulate that a five-year rolling average of harvest values be used in determining the distribution.

The small owner representatives expressed a concern that the probable stumpage values which would be used for computing taxes would
be much higher than they would realize from the sale of their timber. The rationale behind this concern was that the small owner occupied a weak bargaining position and therefore paid more to have his timber logged and received less for his logs than the larger owners. Also, the stumpage values would probably be based on sales purchased by the large owner who can bid high because he commands a dominant position in the log selling market place or can choose to convert the logs into a high-value product. The legislature agreed and the small owner was allowed to use the price paid for his logs less logging costs to arrive at his taxable value.

Instituting the Change

The last major change in timber taxation in Oregon occurred in 1977 with the passage of the Western Oregon Severance Tax law. This law made provisions for a transition from ad valorem taxation to the taxation of timber by a yield tax. Under these provisions, four accounts were established. These accounts are the vehicles by which the administration costs are dispersed, the change-over from ad valorem is accomplished without dramatic shifts in taxes, and the revenues are distributed to the local taxing districts.

These accounts are:

1. The Administrative Account. This account is used to deposit the revenues to be used for administration.

2. The Transition Account. This account distributes revenues back to the local districts based on ad valorem timber taxes in 1977.

3. The Reserve Account. The money in this account is to be distributed to districts which receive less from the Transition Account than timber paid in property taxes in 1977.

4. The Timber Tax Account. This account is for distributing money to the local taxing districts. This distribution is based on the location of the harvested timber paying yield taxes and the location of forest land.

The Administrative Account and Timber Tax Account are permanent accounts. The Timber Tax Account received no revenues until the last half of 1981. The Transition Account will be phased-out in 1985 and the Reserve Account shall be terminated in 1987 or before, if funds run out.

The evolution from property taxes to yield taxes, which began in 1929 with the Reforestation Act, will be completed in 1986. All private timber will be paying a yield tax instead of a property tax. The old "Reforestation" land values and timber tax rates will not be treated the same as the rest of the timber and timber lands until the year 2001, but this has little impact on the administration and workings of the Western Oregon Severance Tax law. The following statements will be
confined to the period between the "old" ad valorem taxes in 1977 and the end of the transition period in 1986.

The "Old" (Ad Valorem 1977)

As of January 1, 1977, all "merchantable" timber was on the property tax rolls. The assessed value of this timber was thirty percent of the "immediate harvest value". The immediate harvest value is the stumpage value of timber purchased for immediate cutting.

All timber that was harvested in 1977 paid an "additional" tax. This tax was based on immediate harvest value less the value on the tax rolls.

Forest land was carried on the tax rolls at its market value.

The "New" (Yield Tax 1986: Timber Tax Account)

In 1986 and thereafter, all yield tax revenues (except administration costs) are deposited in this account. The distribution formula for funds from the Timber Tax Account is composed of two major parts:

1. Seventy-five percent of the receipts are distributed back to those local taxing districts on which a harvest occurred during the previous five years. This seventy-five percent is distributed to the counties and they distribute to the districts.

   a. Each county's share is in the same proportion to total receipts as the county's harvest value is to the total harvest value of western Oregon.

   b. The taxing district's share of the county receipts is in the same proportion as its harvest value is to the county's total harvest value.

2. Twenty-five percent of the total revenues are distributed to the local taxing districts which have forest land values. This twenty-five percent is distributed to the counties and they distribute to the districts.

   a. Each county's proportion is determined by dividing the county's forest land values by western Oregon's forest land values.

   b. Each taxing district's proportion is determined by dividing the district's forest land values by the county's forest land values.

The division of receipts between harvest values of timber and forest land values answered most of the objections to a distribution based strictly on harvest history. Having land values receive a minor portion of the revenue allayed the concern that areas without timber stands would receive a lot of money with little potential of contributing into the system.
The Transition (Yield Taxes 1977 to 1986: Transition & Reserve Accounts)

The main purpose of the transition period is to eliminate any abrupt shift in taxes and still end up with a yield tax on timber.

One method studied was to phase-out the property tax and to phase-in the yield tax. To do this equitably, meant that timber inventories and assessed values would have to be kept current until the property tax phased-out. This would mean an increase in staff to administer the yield tax. But, one of the purposes of having a yield tax was to reduce staff and thereby reduce administration costs. Therefore, this method was dropped from consideration.

The method that was adopted had the provision that the timber taxes paid to the local districts during the next five years would equal the property taxes paid by timber in 1977 if possible. Except for administration funds, all yield taxes collected after the first quarter of 1978 and through the first quarter of 1981 were deposited in the Transition Account. The money in this account is distributed back to the local taxing districts. Each district’s 1977 timber value divided by western Oregon’s 1977 timber value established the district’s share. It was certainly possible that the Transition Account would not contain enough monies to match the 1977 taxes. To meet this contingency, the Reserve Account was formed. If the money in the Transition Account cannot match the 1977 taxes, money is to be transferred to the account from the Reserve Account.

In 1982, the Transition Account will start to phase out and the Timber Tax Account will begin to phase in. This phasing out-and-in period will last until 1986. (See page 118 for a table showing the phasing of the Transition and Timber Tax Accounts.) By August, 1987, any funds left in the Reserve Account will be transferred into the Timber Tax Account. After August, 1987, only the Administrative and Timber Tax Accounts will remain.

Administrative Procedures

We were fortunate in western Oregon in that we had a well-trained appraisal staff and nine district offices manned with foresters who were knowledgeable about the timber in their districts. The appraisal staff is being used to compile the various tables needed by the taxpayers in computing their taxes. The field crews’ time is used in the audit and compliance functions and in doing field work for the appraisal staff.

The Western Oregon Severance Tax law is a self-assessment law. Each taxpayer is responsible for filing a return and must notify the Department that logging is going to take place. On receipt of this notice, an account is established in the name of the taxpayer and a tax packet containing the necessary forms, tables and instructions is mailed. When the return is filed, it is edited by computer to check the mathematics and is scanned to catch obvious errors. A percentage of the returns are sent to the field offices for complete audits.

If a taxpayer fails to submit a return, a failure-to-file notice
Table Showing the Phasing-out of the Transition Account and the Phasing-in of the Timber Tax Account

<table>
<thead>
<tr>
<th>FISCAL YEAR Ending</th>
<th>PERCENT* OF YIELD TAXES</th>
<th>Timber Tax Account</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 1979</td>
<td>100%</td>
<td>none</td>
</tr>
<tr>
<td>June 30, 1980</td>
<td>100%</td>
<td>none</td>
</tr>
<tr>
<td>June 30, 1981</td>
<td>100%</td>
<td>none</td>
</tr>
<tr>
<td>June 30, 1982</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>June 30, 1983</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>June 30, 1984</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>June 30, 1985</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>June 30, 1986</td>
<td>none</td>
<td>100%</td>
</tr>
<tr>
<td>and thereafter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The percentage of Western Oregon Severance taxes (less administration costs) to be deposited into the Transition and Timber Tax Accounts.
is sent. If the taxpayer still fails to respond, an auditor field-inspects the property, checks with mills for log sales and attempts to contact the taxpayer. If it is found that a harvest took place, an assessment is sent.

The records of all mills are audited on a cyclical basis. The largest corporations are assigned to three specialists who are continuously checking harvests in the field and do regular audits of the records.

Summary

I realize that I have not given many details relating to the development of stumpage tables, the accounting process, the auditing procedures or any of the other processes that actually use up most of our time in this work. As I stated in the beginning, this was intended. If each of these functions were described in detail, their individual contributions would be much larger than this manuscript.

Yet, it is my hope that this overview will help those who are contemplating having a yield tax program by giving them a general picture of how one state dealt with the problems; particularly the problem of transition.

Conclusion

I will conclude by giving suggestions of items I believe others may want to consider when looking at yield tax proposals.

1. Handle your accounts manually for the first year or so, unless you have a talented programmer and machine access. This will give you time to determine what kind of system is best suited to your needs.

2. Study the possibility of treating small owners differently from the large owners. If you decide that a need for separate treatment exists, try to isolate your small accounts so that they don't receive a bunch of information they don't need.

3. Have notifications of harvest sent directly to the administering agency by the taxpayer.

4. Make the transition period as short as possible. This will eliminate carrying two distribution accounts for many years.

5. Model a transition after Oregon's or a like system rather than phase-out the property tax.

6. Have a valuation system as simple as possible and still ensure equity between taxpayers. The more complex the system the harder it is to administer, audit and gain strict compliance.

7. Have the person utilizing timber products at a conversion center responsible for the taxes.
8. Auditors should have a forestry background. It is easier to teach a forester how to check books than it is to teach a bookkeeper the vagaries of log scales and grades.

9. Eliminate as many miscellaneous products as possible from taxable material lists. These return little money and cause many headaches.

10. Define all common terms under one legal heading where possible. Minor word differences in separate parts of a law can be construed to mean different things when the intent is to have the meaning the same. Oregon has four major timber tax laws and each has its own set of definitions. In most of these, such terms as forest products, timber, forest land, merchantable and harvesting are intended to have the same meaning but in some cases a difference of a word or two has resulted in different meanings.

Basically, I believe that a severance tax benefits the timber grower and therefore the timber economy as a whole. I am sure that in the past, hefty tax bills from the assessor's office have caused some harvest activity by small timber growers. On the other hand, I disagree with those who believe that reduced taxes will stimulate most small owners to better management. My observation over the years has been that those who are serious about growing trees do so in spite of the property taxes. Most of the other small owners harvest when the price is right or as soon as the trees obtain a marketable size. Still, a reduction in the yearly tax burden of property tax will help those who are serious about timber management. It should also reduce the number who are harvesting too early in their attempt to reduce their tax loads.
FOREST PROPERTY TAX VALUATION ISSUES AND PROBLEMS IN THE SOUTH

Kenneth C. Stewart, Jr.*

In 1895, it was said, "The general property tax as actually administered is beyond all doubt one of the worse taxes known in the civilized world." Even though the property tax is one of the oldest forms of taxation, it is the subject of sustained criticism even today when we have refined appraisal procedures, adequate data source systems, and computer automation.

Today, I will attempt to review this "worse tax" (the property tax) especially as related to forest tax valuation problems and issues facing Southern forestland owners. In order to adequately review Southern forest tax valuation problems, however, we must approach the subject in definite stages—allowing us to gain a "Southern" perspective. First I will cover a few forest resource statistics with which many of you will be familiar. Secondly, I will comment generally on the political environment in the South. Then I will review existing forest tax laws, their administration, and finally the meat of this presentation—valuation problems faced by forestland owners. I will not attempt to pose specific solutions to the problems raised because of the diverse nature of the laws and their administration in individual Southern states.

Overview

So as to put the South into perspective, I will begin by reviewing a few Southern socio-political and forest resource statistics. For purposes of this presentation, the Southern states will be those states from Texas through the Virginias.

The property tax obviously is not an exact science. In the South, it many times appears to be more of a political science even as much as we try to replace subjective procedures with so-called advanced systems and techniques of appraisal. As with the remainder of the country, local government’s reliance on the property tax in the South is increasing at a rate proportionate to the increased burden on state and local governments to generate additional tax revenue. These additional fiscal pressures are obviously the result of increased service demands and decreased state and federal funding of local activities to include education. Compounding these fiscal problems is the fact that many Southern jurisdictions have not felt the need to adequately maintain property tax valuation systems over the years. As a result, recent revenue demands and the courts have forced rapid change in property tax administration in the South. Not being able to react as swiftly as the demands on the tax system, the property tax has become quite political. I will discuss this in more detail later.

*Region Tax Manager, Georgia-Pacific Corporation, Atlanta, Georgia.
Land ownership patterns in the Southern states impact the property tax differently than in most other sections of the country. Of the total commercial forestland acreage in the United States, 59 percent is owned by the private nonindustrial landowner, 28 percent is publicly owned and 13 percent is held by industrial landowners. In the South, 72.7 percent of the commercial forestland is held by the private nonindustrial landowner, 9 percent publicly owned, and 18.3 percent is owned by the forest industry. It is interesting to note that more than one half of the 59 percent private nonindustrial ownership in the United States is in the Southern states. Ownership patterns in the South are significant as related to the property tax, simply because rural landowners traditionally have controlled the political process in individual counties and Southern states in general.

Like other sections of the country, the property tax is the primary revenue device for local government in the South with federal and state aid running a close second. Administration of the property tax has historically been politically motivated with only courteous regard to the standard appraisal procedures, laws and equity among all property types. As long as the tax level remained low in the South, there was little to be gained by contesting the inequities that existed. But as effective property tax rates began to increase, the property tax began to be viewed as a substantive economic concern by those treated less equitably under the system.

Agricultural, timberland and residential properties have generally been treated with favor as compared to commercial and industrial properties in most rural counties. But commercial and industrial property owners reacted as effective tax rates increased. The de facto classification systems and inequities existent in the South were challenged by the commercial and industrial owners. They took their issues to the courts after the political machinery yielded only placative responses. As expected, the courts (usually appellate level courts) forced de jure compliance with the statutes. Compliance was manifested through broad scale reappraisal programs. The reappraisal programs, whether court ordered or not, usually resulted in multiple fold increases in the property tax on rural agricultural and timberland owners as well as homeowners. Accordingly, a great deal of political pressure has been and will in the future be brought upon local and state officials to change the property tax system.

The South finds itself fast catching up with the rest of the United States in regard to administration of the property tax. As a result of increased effective property tax rates, laws are being passed which legalize past discriminatory practices such as de facto classification systems. Timber and timberland, for the most part, are receiving reasonably satisfactory treatment, but a bias against industrial forestlands is becoming common. In many state legislatures, terminology such as "big land owners", "land barons", "land-holding companies", etc., is frequently heard. The State of West Virginia is currently considering an "excessive acreage tax" which would impose a progressive tax up to $4 per acre on all ownerships greater than 12,000 acres.
State Forest Tax Laws

Forest property tax laws in the Southeast generally provide for current use treatment of timberland. Standing timber is expressly exempt in eight Southern states, while several other states assess timber value as a part of the land valuation. Actual valuation practices vary widely throughout the states and individual counties within those states, but only in Georgia is timber separately listed and appraised for property tax purposes.

**TABLE 1. FOREST PROPERTY TAX LAW SUMMARY**

Southeastern U.S.

<table>
<thead>
<tr>
<th>State</th>
<th>Current Use</th>
<th>Highest &amp; Best Use</th>
<th>Standing Timber Exempt</th>
<th>Yield/Severance Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arkansas</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Georgia</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mississippi</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>North Carolina</td>
<td>x₁/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Carolina</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Tennessee</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>x₂/</td>
<td></td>
<td>x</td>
<td>x(B&amp;O)</td>
</tr>
<tr>
<td>West Virginia</td>
<td>x</td>
<td>x₃/</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

₁/ Excluding corporations.
₂/ By local option.
₃/ Constitution allows current use.

Administration/Valuation

"The ad valorem tax has serious deficiencies as a basis for taxation of forest properties. In practice, it is virtually impossible to apply general definitions of fair market value to establish an assessment base for ad valorem taxation of timber that will be held for many years for cutting. Neither the transactions evidence approach nor the income approach (and its modifications by the use valuation factors) provides a practical basis for establishment of stumpage values and mass appraisals of timber."³ The fact that timber and timberland characteristics are not homogeneous from acre to acre and the fact that every acre of timberland is in a state of continuous dynamic change as a result of growth, management, and damage from fire, ice and storms, present the broad property tax valuation problem. Southeastern state legislatures have proposed various techniques for the valuation of timber and timberland, some of which recognize the unique characteristics of the forest resource. The necessary objective of each of these valuation systems is to provide an equitable basis of taxation as compared to other property—but none of these systems have been without problems."
From a valuation standpoint, problem areas can be generally distinguished between those states having current use statutes and those appraising for tax purposes on a market value standard. There are, however, some common problems in the valuation of timber and timberland without regard to the valuation standard applied—namely: (1) a lack of adequate valuation data, (2) a lack of recognition of the delayed nature of income from the forest investments, (3) a lack of assessor expertise in appraisal methods, (4) a lack of uniformity of appraisal application within the state and/or within the subject county, (5) reappraisal cycles which vary from different classes or types of property within the county and/or state, (6) non-timber valuation influences driving up timber and timberland valuation, (7) little or no consideration for nonproductive properties such as right-of-way easements and overflow areas. In states where standing timber is exempt, there is a common and often major problem of imputing the valuation of timber into timberland appraisals. More specifically, the value of natural regeneration, seedlings and merchantability ingrowth is included in comparable bare land sales data. The timber valuation problem will be discussed in more detail later.

Current Use States

In states which have enacted current use statutes, the valuation problem is most often two-fold. Initially, either the statute or the department of revenue, which is granted broad authority for the promulgation of rules and regulations, defines current use and prescribes standards of application. As mentioned earlier, many ideas of what "current use" means and how it should be applied exist in various Southern states. An example of this problem occurred recently in Mississippi.

The Mississippi legislature enacted a current use statute giving authority to the Mississippi State Tax Commission to promulgate necessary rules and regulations for implementation of the statute. The Tax Commission first defined current use as the highest use to which property could be put in a particular soil class. This would result in the capitalization of agricultural income streams for forest properties, and in some cases, timberland income streams for certain agricultural properties. The net result of this definition is obvious. A heavy protest by timberland owners resulted in a changed definition of current use.

The changed definition of current use adopted by the Tax Commission proved, however, to be equally as interesting as the former. In the revised definition, individual county U.S. Forest Service Survey data was used to determine the standing volume of timber in each Mississippi county. Stumpage values were estimated by Forest Service regions in the State and the potential net income streams resulting from the actual standing timber in each county were calculated. The result of such an approach is that counties having greater standing timber volumes will have higher current use values than other counties with similarly productive soils. Also, current use values would be highly susceptible to harvesting activities and would be affected by U.S. Forest Service ownerships where timber volumes are characteristically greater and more stable. One result of such a current use valuation approach is that current use values in adjoining counties will be significantly different. Accordingly, forest taxpayers find themselves in a position of seeking uniform statewide values simply because there are no viable alternatives at this stage.
in the state's current use appraisal process.

The second broad problem encountered in current use states is related to data used in the productivity or income approach. Soil mapping availability, forest income data, and growth data applied on a mass appraisal basis inherently require a certain degree of subjective determination. Mass appraisal standards are applied to this data and residual valuation techniques are used in arriving at unavailable or highly subjective statistics. The results of such an approach are many times unpredictable and easily manipulated.

A secondary problem being discovered in most current use states is a tendency to compress agricultural and timberland current use values. The reasons for this compression problem are wide-ranging, but availability of comparable data for agricultural and timberland applications appears to be the primary reason. In many instances, the current use valuation of timberland has been found to be a significantly greater percentage of net income than for agricultural and/or pasture lands (see Tables 2 and 3).

**Fair Market Value States**

Only two Southern states appraise timberland on a highest and best use market standard—Georgia and West Virginia.

The valuation of forestland on a market standard without distinction of use results in a disparate tax effect—progressively dissuading an investment in forestry as the tax level rises. Mass appraisal techniques under a highest and best use standard compress property values of all types towards a mean value resulting in rural properties carrying a higher proportionate valuation than nonrural real properties. It has been my experience that mass appraisal contractors use comparable sales throughout the county including both urban and rural influenced properties. The average of these comparables is used to establish a uniform valuation for timberland throughout the county. In many instances adjustments to value for road frontage, depth, access, urban and industrial influence, and other factors are made but effectively, rural properties subsidize urban ownerships through the property tax.

Timberland valuations in the South vary from $10 to greater than $10,000 per acre on a fair market value standard. Table 2 below is a schedule of values adopted in two Alabama counties. A constitutional amendment providing for current use appraisal of agricultural, pasture, and timberland was enacted in Alabama in 1978 but many counties, including those shown below, continue to apply highest and best use appraisal standards.

As can be readily seen from Table 2, there is a tendency toward the averaging of values within a particular use classification. An MAI appraiser who conducted extensive market studies in the two counties shown below concluded that cut-over timberland sold for between 25 percent and 40 percent of cropland values. County A has appraised timberland at 83 percent of cropland and County B timberland is appraised at 44 percent of cropland. The tax effect is that the timberland owner would pay more than twice as much tax as should be due relative to the agricultural landowner. The MAI appraiser also found significantly greater variations in values within each use category.
TABLE 2. SELECTED COUNTY TAX APPRAISALS, 1982

<table>
<thead>
<tr>
<th>Productivity Level</th>
<th>Cropland</th>
<th>Pastureland</th>
<th>Timberland$^1/$</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTY A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>$1500</td>
<td>$1500</td>
<td>$1250</td>
</tr>
<tr>
<td>Average</td>
<td>1200</td>
<td>1200</td>
<td>1000</td>
</tr>
<tr>
<td>Poor</td>
<td>900</td>
<td>900</td>
<td>750</td>
</tr>
<tr>
<td>COUNTY B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>1300</td>
<td>1050</td>
<td>800</td>
</tr>
<tr>
<td>Average</td>
<td>1200</td>
<td>1000</td>
<td>500</td>
</tr>
<tr>
<td>Poor</td>
<td>1100</td>
<td>900</td>
<td>300</td>
</tr>
</tbody>
</table>

$^1/$ Standing timber exempt.

Table 3 below is an example of current use tax appraisals of three south Arkansas counties. Each of these counties are similar in physiographic characteristics and virtually all of the rural land in each of these counties could be devoted to agricultural, pasture or timberland uses.

TABLE 3. SOUTH ARKANSAS COUNTIES 1981 APPRAISALS

<table>
<thead>
<tr>
<th>Cropland per Acre</th>
<th>Pastureland per Acre</th>
<th>Timberland per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>$187.47</td>
<td>$168.88</td>
<td>$174.53</td>
</tr>
<tr>
<td>156.69</td>
<td>159.84</td>
<td>207.28</td>
</tr>
<tr>
<td>298.60</td>
<td>174.43</td>
<td>162.74</td>
</tr>
</tbody>
</table>

Problems inherent with current use valuation schedules are not totally distinct from problems found with fair market value schedules. The tendency toward compression of values among and within use classes is present in both current use and fair market value schedules, but an additional problem is found where timberlands are valued at amounts greater than agricultural lands in significant portions of the county. Table 3 demonstrates this problem.

As with the valuation of land, the predominant problem in timber valuation for tax purposes is data availability. Specific mix, quality, markets, volume estimates, access, among other factors, all present a significant problem in the valuation of timber. When mass appraisal methodology is applied to standing timber, the result is an averaging of effective tax rates. Several counties in one Southern state attempt to determine the standing volume of timber on individual tracts. The tax administrator must either rely heavily on the taxpayer to provide volume data and/or spend significant amounts of time and money in photogrammetry, check cruising, and auditing to verify standing timber volumes. In regard to the valuation of timber, many factors affect stumpage valuation. Each of these factors should be considered on each tract to insure equitable taxation. Again, however, mass appraisal
methods are applied resulting in a varying tax impact. An additional problem is the use of small timber tract sales evidence to establish stumpage values, which evidence is applied on large volume tracts for tax purposes.

The valuation of standing timber is a significant problem in only one Southern state—Georgia. In Georgia, significant time is required by the taxpayer and county in reporting current year harvesting, growth, and volumes. Not all counties in Georgia are tracking volumes but are using average or "windshield" valuation methods. Other states such as Arkansas and West Virginia, which tax standing timber, consider timber to be included in the valuation derived through the income approach. An obvious inconsistency is evident here because several states which exempt standing timber use similar income valuation techniques in arriving at bare land values.

Notwithstanding the technical approaches to timber and timberland values, the greatest impact on the value assigned to forest properties may be found in the political system which designs the valuation approach, and in many cases the values themselves. Being frustrated with the subjective and many times elusive data necessary to arrive at timberland and tax appraisals, and being cognizant of tax shifts will result from the implementation of technically sound appraisal systems, simple work is often made of the process of arriving at property tax values. The result is many times a compression of agricultural and timberland values, discrimination upon certain properties depending on where political strengths may be, and preferential treatment for certain landowner classifications based on ownership or size.

Future

Private ownership of land in the South is likely more important to the forest industry than in any other section of the country. Privately owned non-industrial lands provide the bulk of the raw materials utilized in Southern manufacturing facilities. Legislation which will significantly impact future timber supplies on all private land (industrial and non-industrial) is being considered in most Southern state legislatures. A large part of this legislation is and will be tax related. It is incumbent upon us to enhance future timber supplies on these lands in the South by insuring that taxes are equitably applied at levels consistent with competitive capital investments.

Using current legislative trends as a basis, there is a definite tendency toward the taxation of an individual timberland acre on the basis of ownership classification as opposed to use classification. As in the case of North Carolina, corporate ownerships are valued on a highest and best use standard while closely held corporations and non-industrial owners are valued on a current use standard. Trends such as these are not unique to North Carolina—Georgia and Alabama are very close to enacting legislation which is similar in effect.

Summary

A good property tax system can be characterized as having a reasonably predictable tax level, reasonable tax impacts, standard application throughout the state, and reasonable state regulation minimizing intercounty disparities.
The states of Louisiana and Florida have developed tax systems which most nearly meet those goals. Almost every state, however, which has some form of current use assessment system has faced near identical problems—the development of a valuation system which is readily adaptable to different forest types and productivity potential, yet simple in application, politically attractive, and inexpensive to maintain. The solution to these problems in many Southern states has been the adoption of a simple statewide or regional valuation system utilizing mass appraisal techniques. The forest resource taxpayer has responded favorably to such an approach to value when applied equitably as compared to other rural land uses and applied equally to all forest owner classifications.

We cannot expect the administration of any ad valorem tax system to be without problems. The inherent problem of forest resource data availability and reliability will not go away, but must be dealt with in a simple straightforward manner. Regardless of the technical approach to value, prime consideration must be given to effect of the tax on the forest resource itself. Our orientation must be toward adequate future timber supplies. The tax problems we are now dealing with in the South have the potential to affect the level of future timber supplies significantly whether the specific tax effect manifests itself in terms of confiscatory tax levels or in shifts in the tax burden on the basis of ownership such that adequate timber supply reserves necessary to adequately operate manufacturing facilities are jeopardized.

Throughout this presentation, I have essentially molested the integrity of the ad valorem tax system. I feel strongly, however, that the property tax when equally levied against all taxable properties, is the only form of taxation which can most nearly meet the equity goal for the multitude of property types. I have intentionally not posed any model solutions to the tax problems in the South. These problems must be dealt with on a county by county and state by state basis. My convictions are that Southern property tax problems are resolvable through a pragmatic approach to valuation with a keen eye toward the economic effect of the tax in the long-term.

Footnotes


OVERVIEW OF THE CHANGES MADE IN THE
ESTATE AND GIFT TAX LAWS BY THE
ECONOMIC RECOVERY TAX ACT OF 1981 ("ERTA")

Fred M. Cone, Jr.*

I. INTRODUCTION

The changes contained in ERTA, while not nearly as complicated as those in the Tax Reform Act of 1976 and prior major tax acts, will have a greater impact on estate planning because they affect more estates. It is estimated that when the unified credit reaches its maximum level of $600,000 in 1987 the number of estates subject to tax may be reduced by 90%. Furthermore, it is estimated that over 99% of all estates will be free from taxes. Secretary Regan Hails Approval of Tax Act, 120 Trust & Estates 10 (Oct. 1981).

The two changes that will affect the greatest number of estates are (1) the increase in the unified credit and (2) the unlimited marital deduction. The unlimited marital deduction eliminates the problem that planners have had over the years - the possibility that property in excess of the 50%/250,000 marital deduction will be taxed in both estates if it passes outright to the surviving spouse. This problem was particularly acute for rural families where property was often jointly owned.

Now, as estate planners, we want to:

(1) Prevent property taxed in the first estate from again being taxed in the second estate.
(2) Prevent the property not taxed in the first estate (exemption equivalent) from being taxed in the second estate; and
(3) Equalize the two estates where possible.

To carry out these three goals one must have a basic understanding of the unified credit and how it operates, the new treatment of jointly owned property, potential use of disclaimers, and the changes to the "special use" requirements.

II. INCREASE IN UNIFIED GIFTS AND ESTATE TAX CREDIT

A. Estate and gift taxes have been unified since 1976 so that a single progressive rate schedule is applied to cumulative gifts and transfers at death. Generally, the estate or gift tax liability is determined by first computing the gross estate or gift tax amount, and then subtracting the unified credit to determine the amount of the estate or gift tax payable. ERTA continues to increase the amount of the unified credit from the present $47,000 to $192,000 over a six-year period. In 1987, with the unified credit of $192,000, there will be no estate or gift taxes on transfers aggregating $600,000 or less. When the unified credit was enacted in 1976, it was phased-in over a five-year period in approximately equal amounts. ERTA does not follow this equal phase-in period. A larger percentage of the credit increase occurs in the later years of the period than in the earlier years. The amount of the credit and the exemption equivalent is as follows:

*Attorney at Law; Culverhouse, Tomlinson, Mill, Anderson and Cone; Jacksonville, Florida.
<table>
<thead>
<tr>
<th>Year</th>
<th>Unified Credit</th>
<th>Exemption Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>$30,000</td>
<td>$120,667</td>
</tr>
<tr>
<td>1978</td>
<td>34,000</td>
<td>134,000</td>
</tr>
<tr>
<td>1979</td>
<td>38,000</td>
<td>147,333</td>
</tr>
<tr>
<td>1980</td>
<td>42,500</td>
<td>161,562</td>
</tr>
<tr>
<td>1981</td>
<td>47,000</td>
<td>175,625</td>
</tr>
</tbody>
</table>

**ERTA**

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 and thereafter 192,800 600,000

B. Generally, under current law, an estate tax return is required when the gross estate exceeds $175,000. The amount is based upon the size of the estate for which no estate tax will be payable (assuming no post-1976 gifts and no use of the specific exemption after September 8, 1976) by operation of the unified credit. Since the unified credit is increased, the size of the gross estate for which an estate tax return is required is also revised upwards. Generally, no estate tax return is required if the gross estate is equal to or less than the exemption amount applicable in the year of the decedent's death. If a gross estate is in excess of the exemption equivalent, an estate tax return will be required even if no tax is payable.

Since the exemption equivalent is not transferable, it is lost forever if not utilized. Therefore, unless the combined estates of both spouses are less than the exemption equivalent one should plan the estates in such a way that the exemption equivalent is carved out even before the marital deduction. Assume that H & W each have an estate of $225,000. If H leaves "everything" to W, then H's estate owes no tax because of both (1) the unlimited marital deduction, and (2) the exemption equivalent. However, if W dies before 1986, W's estate (which is then $225,000 plus $225,000 or $450,000) will have a tax due. The possibility of a tax due could have been completely eliminated if H's estate plan had used only the exemption equivalent.

**III. REDUCTION IN MAXIMUM GIFT AND ESTATE TAX RATES**

A. Under the pre-1982 unified gift and estate tax rate schedule, the rates ranged from 32% on the first taxable transfers which exceeded the exemption equivalent ($225,000) amount to 70% on taxable transfers in excess of $5,000,000. ERTA reduces the maximum rate from 70% to 50% when fully phased-in in 1985. The 50% rate will, in 1985, apply to taxable gifts and estates which exceed $2,500,000. The reduced maximum rate is phased-in
as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum Unified Tax Rate</th>
<th>Applicable to Aggregate Transfers in Excess of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>65%</td>
<td>$4,000,000</td>
</tr>
<tr>
<td>1983</td>
<td>60%</td>
<td>3,500,000</td>
</tr>
<tr>
<td>1984</td>
<td>55%</td>
<td>3,000,000</td>
</tr>
<tr>
<td>1985</td>
<td>50%</td>
<td>2,500,000</td>
</tr>
</tbody>
</table>

It is important to note that as the top rate of tax is reduced and the exemption equivalent is increased, the spread between possible rates of estate tax is reduced to only thirteen (13) percentage points. That is, in 1986 the lowest tax rate is 37% and the highest 50%.

Another point worth remembering is that income tax brackets are being widened in addition to the maximum tax rate on earned income or passive income being 50%. For instance, the following amounts of taxable income in a joint return will be subject to the indicated tax:

<table>
<thead>
<tr>
<th>Taxable Income</th>
<th>1982</th>
<th>1983</th>
<th>1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16,000</td>
<td>$2013 + 24%</td>
<td>$1846 + 19%</td>
<td>$1741 + 18%</td>
</tr>
<tr>
<td>35,200</td>
<td>7323 + 39%</td>
<td>6624 + 35%</td>
<td>6274 + 33%</td>
</tr>
<tr>
<td>60,000</td>
<td>17705 + 49%</td>
<td>16014 + 44%</td>
<td>15168 + 42%</td>
</tr>
<tr>
<td>109,400</td>
<td>42149 + 50%</td>
<td>38702 + 50%</td>
<td>36630 + 49%</td>
</tr>
</tbody>
</table>

50% tax rate begins $60,000 $109,400 $162,400

B. In order to calculate the estate tax payable, a tentative tax first is calculated on the taxable estate and the decedent’s adjusted taxable gifts. This tentative tax is then reduced by the aggregate amount of gift tax on the decedent’s post-1976 gifts. It is then further reduced by the unified credit and any other applicable credits. In order to take into account the reduction in the maximum tax rate and prevent it from having a retroactive effect, Code Sect. 2001 (b), as amended, provides that the tentative estate tax is reduced by the taxes that would have been payable on the decedent’s post-1976 gifts under the rates in effect in the year of his or her death. For example, where a decedent dying in 1982 made a post-1976 gift which was entirely subject to a tax of a 70% marginal gift tax rate, the amount of the gift tax attributable to that gift for purposes of computing the estate tax will be the gift tax that would have been payable using the maximum rate in effect at his death (i.e., 65% in 1982).

IV. GIFT TAX EXCLUSIONS

A. Before 1982 the first $3,000 of a gratuitous transfer of cash or a present interest in property to any individual each year was excluded in determining taxable gifts. EKTA Sect. 441(a) amends Code Sect. 2503 (b) by increasing that amount to $10,000 per donee per year. The increase was made to take into account inflation and to continue the original purpose of
the Act which was to "obviate the necessity of keeping an account of and reporting numerous small gifts." House Ways and Means Committee Report, HR4242, p. 193.

1. Effective January 1, 1982 a spouse is able to give $20,000 (in lieu of $6,000 as under prior law) to each donee and have the full amount qualify for the exclusion if the other spouse elected to split the gift pursuant to Code Sect. 2513.

2. No gift tax return is required when a donor does not make gifts in excess of the amount of the exclusion. A return is still required, however, when the gifts are in excess of the single annual exclusion. Code Sect. 6019. Gift tax returns are due only on an annual basis.

B. ERTA Sect. 441(b) amends Code Sect. 2503 by adding a subsection (a) which provides for an unlimited exclusion from gift tax for certain educational and medical payments. These new exclusions for tuition and medical care payments ("qualified transfer") became effective January 1, 1982.

1. A "qualified transfer" is a payment to an educational organization as tuition for the education and training of a donee. This exclusion is permitted without regard to the relationship between the donor and the donee. The payment must be to an organization which must qualify as an educational institution within the meaning of Code Sect. 170(b)(1)(A)(ii) (an institution with a regular faculty and curriculum and which normally has a regularly enrolled body of students in attendance at the place where the educational activities are regularly carried on). The exclusion applies to direct tuition costs and does not apply to payments for books, supplies or dormitory fees.

A "qualified transfer" also includes payments to a person who provides medical care for an individual.

V. GIFTS WITHIN THREE YEARS OF DEATH

A. Under prior Code Sect. 2035(a), transfers made by a decedent within three years of death were generally included in the decedent's gross estate. With respect to the estates of decedents dying after December 31, 1981, ERTA provides that Sect. 2035(a) generally will not be applicable. Therefore, most gifts made within three years of a decedent's death will not be included in the gross estate, and the post-gift appreciation will, therefore, not be subject to transfer taxes. As a result, such property will not be considered to pass from the decedent so that no step-up in basis under Code Sect. 1014 will result. This rule applies to gifts made by such a decedent dying after December 31, 1981 for gifts made before 1982 as well as gifts made after that date.

B. Code Sect. 2045(a) which requires the inclusion of gratuitous transfers made within three years of the donor's death will continue to apply to transfers of insurance on decedent's life as well as transfers of an interest in property which, if held until the decedent's death, would have resulted in its inclusion in the donor's gross estate under Code Sect. 2036, Sect. 2037,
VI. BASIS OF PROPERTY ACQUIRED FROM A DECEDENT

A. For decedents dying after 1981, the step-up in basis rules of Code Sect. 1014 will not apply to appreciated property gifted to a decedent within one year of the decedent's death if the property passes directly or indirectly from such decedent back to the donor or the donor's spouse. The donor-heir's basis will be donee-decedent's adjusted bases in such property immediately before death. Code Sect. 1014(e)(1).

VII. PROPERTY JOINTLY HELD BY SPOUSES

A. Prior to 1982 the general rule with respect to jointly-held property was that such property was includable in the estate of the first joint tenant to die, except to the extent that the surviving joint tenant could prove that he or she provided consideration for the purchase or improvement of the property or received it by gift from a third party. Although the rule was easily stated, the development of satisfactory evidence relating to the "consideration" placed an enormous burden on the surviving spouse in terms of tracing. In 1976 a Congressional desire to lessen this burden was intended so that the creation of a joint tenancy between spouses as a "qualified joint interest" would allow only one-half of the value of the jointly-held property to be includable in the estate of the first to die. The treatment of such property as a "qualified joint interest", however, required that a gift be declared upon the creation of the joint tenancy. If no gift was declared, the old "consideration furnished test" was utilized. Furthermore, in 1978, there was an additional change relating to farm or business property so that some of the property would not be included in the first joint tenant's estate if the surviving spouse could show "material participation" in a farm or business. All of such changes merely complicated the law and did not result in any easing of this administrative burden.

B. Last year Congress determined, in light of the unlimited marital deduction, that such rules were unnecessary, complex and burdensome, especially since the creation, severance or termination of a joint tenancy between spouses would no longer result in a gift or a taxable transfer. Pursuant to ERTA Sect. 403(c), Code Sect. 2040(b) was amended to provide that any property (real or personal) held by the decedent and his or her spouse as joint tenants with right of survivorship or as tenants by the entirety will constitute a "qualified joint interest" so that only one-half of the value of such property will be included in the gross estate of the first spouse to die.

C. Although this splitting of jointly-owned property gives a reasonable result for tax purposes, nevertheless the state law concept of joint ownership still provides that all of the property belongs to the surviving spouse. Therefore, the result is still an "overfunding" of the marital deduction because the amount of the exemption equivalent cannot be salvaged in the estate of the first to die if all assets are jointly owned.

D. Since the application of new Sect. 2040 (b) is mandatory, only one-half of the jointly-owned property will receive a stepped-up basis under
Sect. 1014. Therefore, it may be better to consider undoing the joint ownership (which would be tax-free) so that all of the property would pass through the estate and receive a new basis.

E. There are also other relevant aspects to the treatment of jointly-held property owned by spouses. The qualification of the estate of the deceased spouse for certain provisions which depend upon value of certain assets exceeding a specified percentage of the value of the decedent's estate (e.g., Code Sect. 303 stock redemptions, Code Sect. 2032A special use evaluation and Code Sect. 6166 estate tax deferred payments).

F. ERTRA also repealed the material participation rule, the rules concerning retroactivity of the fractional interest rule and the gift tax provision governing the creation of spouse's joint interest.

VIII. DISCLAIMER

A. When Congress added the qualified disclaimer rules in 1976, it intended to create a uniform federal standard so that a disclaimer would be effective for federal estate and gift tax purposes whether or not valid under the local law. However, since one of the requirements for qualified disclaimer is that the disclaimer be effective under local law to pass title to the property being disclaimed, a disclaimer which is not effective under state law to pass title to someone other than the disclaimant cannot constitute a "qualified disclaimer". In order to remedy the situation and provide uniform treatment of disclaimers in all states, ERTRA provides that certain transfers will be treated as disclaimers.

B. ERTRA Sect. 426 amends Code Sect. 2518(c) to provide that a person may take a qualified disclaimer of an interest in property even if the disclaimer is not valid under local law.

The transfer will qualify as a qualified disclaimer if it is timely, in writing and passes the property to the person "who would have received the property had the transferor made a qualified disclaimer" which would have been valid under local law. Furthermore, the transfer must be made within the time limits provided for federal qualified disclaimers and the transfer must be made before the transferor has accepted the interest or any of its benefits. A transfer qualifying under the new provision must be made within nine months of the transfer which created the transferor's interest, or, if later, within nine months after the transferor's 21st birthday. A transfer will not be considered a transfer of the "entire interest" in the property (and thus will not be a qualified disclaimer) if the transferor has any power, after the transfer, to control the beneficial enjoyment of the property, or, if some or all of the beneficial enjoyment in the property returns to the transferor by reason of the transfer.

C. The effective use of a disclaimer can be an important estate planning tool. It allows for the use of the unlimited marital deduction and yet gives the surviving spouse a "second" look to see if it would have been better tax-wise for the decedent's estate to incur some estate tax and at least fully utilize the exemption equivalent. In planning for the use of a disclaimer one must carefully analyze where the disclaimed property will fall and whether the surviving spouse is otherwise protected. Another important consideration
is the conflict between jointly-owned property and the disclaimer. The proposed regs. for Sect. 2518 seem to encompass a disclaimer of jointly-owned property if all other tests for a qualified disclaimer are satisfied. I recommend that one planning to use this tool be very watchful for new developments in this area.

IX. UNLIMITED MARITAL DEDUCTION

A. There are now major additional elements in the marital deduction determination that must be considered. If an individual dies leaving a surviving spouse, it is possible to defer estate taxes on his or her property until the death of the surviving spouse by transferring all property to the surviving spouse in a form eligible for the marital deduction. The disadvantage of doing so is a possibility that the estate of the surviving spouse may be subject to a higher tax than would have been paid by the decedent if he or she had bequeathed the property in a form not eligible for the marital deduction. On the other hand, thrusting of the surviving spouse's estate into a higher bracket may be more than compensated for by a number of factors. One relates to the ability of the surviving spouse to make effective use of the increased annual exclusion. Second, by avoiding the estate tax on the death of the decedent, the money that would have been needed to pay the estate tax otherwise due may be invested to produce a return that may be passed on to the children free of gift tax.

B. The new unlimited marital deduction applies generally to the estates of decedents who die after December 31, 1981. If: (1) the decedent executed a will or a trust agreement before September 12, 1981 and that instrument contains a formula providing that a surviving spouse is to receive a maximum amount of property qualifying for the marital deduction; (2) the formula is not amended after September 21, 1981 to refer specifically to an unlimited marital deduction; and (3) the state within which the decedent is domiciled does not enact a statute construing this type of formula as referring to the unlimited marital deduction, the unlimited marital deduction will not apply to his or her estate.

C. Through the use of the unlimited marital deduction the estate planner is faced with several major decisions. First, should he advise that the entire estate pass to the surviving spouse so that no tax will be due on the decedent's death? Second, should the estate planner advise the testator about the protection of children (especially in a second marriage) by providing the marital deduction through the new qualified terminable interest? Third, should the estate planner utilize mortality tables, investment return analysis and assets appreciation factors? In addition, should the estate planner represent only one spouse because of potential conflicts in the asset transfer alternatives?

D. The new law eliminates the quantitative limits on the marital deduction. Therefore, unlimited amounts of property may pass free of estate tax to a decedent's surviving spouse. The legislative history indicates Congress believed, as a policy matter, that an individual ought to be able to devise his or her entire estate to his or her surviving spouse without incurring any estate taxes.
E. The new law also permits amounts of property to be given free of gift tax to a donor's spouse. Code Sect. 2523(a).

F. Under prior law, the transfer of certain "terminable interests" in property to a surviving spouse did not qualify for the estate or gift tax marital deduction. Code Sect. 2056(b). Congress perceived a desire on the part of taxpayers to give their surviving spouses the use and benefit of their property yet retain control as to who would be the beneficiary of the property at the death of the surviving spouse. As part of the Act, Congress enacted new Sect. 2056(b)(7) to permit an estate tax marital deduction for "qualified terminable interest property" ("QTIP"). A similar provision is found in the new gift tax provisions under Sect. 2523(f).

G. QTIP is defined as property (1) that passes from the decedent, (2) in which the decedent's surviving spouse has a "qualifying income interest for life", and (3) with respect to which an election has been made by the personal representative (or the donor) on the decedent's estate tax return (or the donor's gift tax return filed for the calendar year in which the property was transferred). Once made, the election is irrevocable.

H. A surviving spouse is deemed to have a "qualifying income interest for life" in property if he or she is entitled to all the income from the property, payable at least annually, and if no person (including the spouse) has a power, exercisable prior to the death of the spouse, to appoint any part of the property to anyone other than the spouse. Trustees of a QTIP trust, however, may be given a power to distribute principal to the spouse during his or her lifetime.

I. A QTIP disposition is entitled to a stepped-up basis because it is part of the estate of the first to die. Also, the QTIP is includable in the estate of the surviving spouse. It should also be eligible for a second stepped-up basis at that time. However, ERISA is silent on the point.

J. Section 2207A provides new tax apportionment rules for the transfer tax imposed on QTIP. If Sect. 2044 requires the value of QTIP to be includable in a surviving spouse's estate, Sect. 2207(a) provides his or her personal representative with a right of recovery for the estate tax attributable to the property. Unlike Sect. 2207, which provides a recovery right to the personal representative in the estate of a decedent who had a general power of appointment, the recovery right under Sect. 2207(a) is for the marginal (top incremental) estate tax caused by includability, rather than the average estate tax. The more liberal recovery right under Sect. 2207(a) is deserved because the surviving spouse has no control over the ultimate disposition of the assets in a QTIP trust.

X. SPECIAL USE VALUATION FOR FARM OR BUSINESS REAL ESTATE (2032A)

IRC Sect. 2032A was added by the Tax Reform Act of 1976. It allows the personal representative the right to value certain real property used in farming or a closely held business at its current use value, rather than its highest and best use value. This valuation alternative was added to recognize the inequity of valuing farm land at its "highest and best use" when the income generated may be insufficient to service extended estate tax payments or loans.
to pay the tax, or when the value of the land reflects speculative or inflationary factors which do not have any relationship to the productive capacity of the land.

To take advantage of the Sect. 2032A special use valuation provisions, the following requirements must be satisfied:

1. The real property included in the decedent's estate must be "qualified real property", used in farming or in another trade or business.

2. The property must pass to a "qualified heir".

3. The property must be applied to a "qualified use". Sect. 2032A9(a).

ERTA increases the maximum decrease of $500,000 in the value of qualified real property to the following amounts for decedents dying in the following years: 1981, $600,000; 1982, $700,000; 1983 and thereafter, $750,000.

B. ERTA has made several important changes to the "use" valuation provisions.

1. Prior to 1982, the election to utilize special use valuation had to be made on a timely filed estate tax return. After 1981, the election can be made on the first estate tax return filed.

2. Between 1976 and present, most valuations used the cash rent capitalization rather than the five-factor formula. The cash rent capitalization involves dividing average annual gross cash rents on comparable land in the locality, minus property taxes, by the average annual effective Federal Land Bank interest rate in the district where the land was located. Finding that cash rents sometimes don't exist in some areas, after 1981, ERTA now allows the use of "average net share rentals" if comparable land with cash rents is not available. The term "net share rental" means the lessor's (landowner's) share of the crop value minus the cash operating expenses paid by the lessor.

3. Prior to 1982, to be eligible for special use valuation, at least 50% of the estate had to be comprised of farm real and personal property and pass to qualified heirs by inheritance and not by purchase. The new law changes that requirement, retroactive to January 1, 1977, by permitting property to pass to qualified heirs by purchase without losing eligibility. But the qualified heir who purchases the property is limited to the use value as the basis for income tax purposes. The estate recognizes gain on the sale only to the extent the fair market value on the date of the sale exceeds the fair market value on the date of death.

4. The term "member of family" is important in use valuation for five reasons. It limits (1) who can be a qualified heir, (2) who can satisfy "material participation" in the predeath period, (3) who can satisfy "material participation" in the recapture period after death, (4) who can meet the "qualified use" test before death, and (5) who is an eligible purchaser after death without triggering recapture. Before 1982 the term meant an individual's ancestors and lineal descendants, lineal descendants of grandparents, the individual's spouse, and the spouse of any descendants.
Now the definition has been narrowed by eliminating lineal descendants of grandparents and substituting in its place lineal descendants of parents and lineal descendants of the individual's spouse (2nd marriage situation).

5. Prior law required that the decedent himself employ the property in a qualified use in order to satisfy the qualified use requirement. Now this requirement is satisfied if either the decedent or a member of his family uses real property eligible for special use valuation in a qualified farm or business at the time of the decedent's death and for the required period prior to death.

6. Under prior law, material participation was measured during the eight-year period prior to the decedent's death. ERTA changes this period so that the decedent or a member of his family must have materially participated in the farm or closely held business for five of the eight years preceding the earliest of: (1) the date of the decedent's death; (2) the date the decedent became disabled or (3) the date that the decedent retired.

7. ERTA also provides an alternative to the material participation requirement during the post-death period for qualification of real property for special use valuation. Active management by a surviving spouse who acquired the property from a decedent in whose estate it was included at its special use value will satisfy the material participation requirement. Active management means the making of business decisions other than daily operating decisions of the farm or closely held business and, thus, requires less activity than actual material participation. In addition, if the surviving spouse dies within eight years after the decedent, the surviving spouse's period of material participation can be aggregated with that of the decedent in order to allow the spouse to fulfill the material participation requirement.

8. ERTA permits the aggregation ("tacking") of ownership, qualified use, and material participation periods in the case of replacement property acquired pursuant to like-kind exchanges under Code Sect. 1031 or involuntary conversions under Code Sect. 1033. This tacking is available only if the replacement property is employed in the same qualified use as was the original property and only for that portion of the replacement property that is equal in value to the original property.

9. Under prior law, estate tax benefits realized from a special use valuation election were fully or partially recaptured by means of a "recapture tax" if the qualified property was transferred out of the family or ceased to be employed in a qualified use within fifteen years after the decedent's death (and before the qualified heir's death). Failure by the heir or a member of the heir's family to materially participate in the business operations for periods aggregating three years or more during any eight-year period ending within 15 years after the decedent's death is treated as a cessation of qualified use. This additional "recapture tax" is imposed on the qualified heir(s). ERTA generally liberalizes the recapture rules, thus making it easier for qualified heirs to avoid imposition of the recapture tax.

ERTA reduces the recapture period from fifteen to ten years and eliminates the partial recapture tax that may occur under present law between the
tenth and fifteenth years.

ERTA does not change the present requirement that the qualified heir must use the real property for which special use valuation was elected in the qualified use throughout the recapture period. However, the Act provides a special two-year "grace period" immediately following the decedent's death in which failure by the qualified heir to use the property in the qualified use will not result in a recapture tax. The 10-year recapture period (15 years for estates of decedents dying before 1982) is extended by the part of the two-year period that expires before commencement of the qualified use. If special use valuation property is involuntarily converted and replaced with qualified replacement property, the two-year period is extended until the qualified heir begins qualified use of the replacement property.

10. Active management of property that qualifies for special use valuation will constitute material participation in the case of eligible qualified heirs. Thus, no recapture tax will be imposed on these heirs solely because their involvement with the property is not full material participation. Eligible qualified heirs include the decedent's spouse or a qualified heir who has not attained the age of 21, who is a full-time student, or who is disabled. In the case of an eligible qualified heir who is under age 21 or disabled, the active management may be by fiduciary (e.g., a guardian or trustee, but not an agent).

11. ERTA provides that a Code Sect. 1031 tax-free exchange of qualified real property solely for "qualified exchange property" that is employed in the same qualified use as was the original property does not trigger recapture of tax benefits from special use valuation. Additionally, the Act repeals the requirement that a qualified heir make an election to avoid imposition of recapture tax upon involuntary conversion of property for which a special use valuation election has been made. These provisions apply to like-kind exchanges and involuntary conversions occurring after 1981.

12. Under prior law, a qualified heir's income tax basis in property for which an election has been made is its special use valuation without any adjustment for recapture tax. ERTA permits a qualified heir to make an irrevocable election to increase the income tax basis of special use valuation property to its fair market value on the date of the decedent's death (or on the alternate valuation date, if the estate so elected) if recapture tax is paid. If the heir elects this basis adjustment, he must pay interest on the amount of the recapture tax from the date nine months after the decedent's death until the due date of the recapture tax, computed at the rate(s) charged on deficiencies of tax for the period involved.

13. Under prior law, standing timber, like other growing crops, was not valued as part of qualified real property for special use valuation purposes. ERTA permits an executor to elect special use valuation for standing timber as part of "qualified woodlands," which are identifiable areas of real property (for which business records are normally maintained) used for growing and harvesting timber. The amount of the recapture tax is equal to the lesser of (1) the amount realized on disposition of the timber (or its fair market value if the disposition is not a sale or exchange at arms-length) or (2) the amount of the recapture tax that would have been imposed on disposition
of the heir's entire interest in the qualified woodlands, reduced by the amount of the recapture tax imposed on prior dispositions involving such woodlands. A recapture tax will be imposed when the qualified heir severs or otherwise disposes of the timber during the recapture period. The Committee Reports provide that standing timber is to be specially valued by reference to similar timber located on comparable land where both the land and timber are rented for timber growing purposes under a cash or share rental lease. If no comparable timber and land are so rented in the locality of the decedent's property, the timber and land are to be specially valued using the multiple factor method.

XI. INSTALLMENT PAYMENT OF ESTATE TAXES

A. Under prior law, an estate of a decedent who owned an interest in a closely held business could elect to defer payment of the estate tax attributable to such interest under two Code provisions. The first provision provided that if the value of the interest exceeded 65% of the adjusted gross estate, the executor could elect to defer payment of estate taxes (paying interest only) for five years and thereafter pay the tax in up to 10 annual installments. In addition, interest was payable at a special 4% rate on the estate tax attributable to the first $1,000,000 of the interest in a closely held business. Second, if the value of the interest exceeded either 35% of the gross estate or 50% of the taxable estate, estate taxes attributable to the interest could be paid in up to 10 annual installments.

B. ERTA consolidated these provisions, effective for the estates of decedents dying after 1981. Under the Act, if the value of the closely held business interest exceeds 35% of the adjusted gross estate, the estate taxes attributable to that interest may be deferred for a maximum of 14 years, with the estate making an annual interest payment for the first 4 years and thereafter paying the balance in up to 10 annual installments of principal and interest. The special 4% interest rate on the first $1,000,000 of the business is applicable under this provision.

C. The 4% interest is not quite the benefit it appears. Under Sect. 6601(j) the "4-percent portion" is defined to be $345,800 reduced by the unified credit. Therefore, in 1982 the maximum amount of tax deferable at 4% is $283,000 ($1,000,000 less the exemption equivalent of $225,000 or $775,000) and in 1987 the maximum amount of tax deferable at 4% is $153,000 ($1,000,000 less the exemption equivalent of $600,000 or $400,000).

D. ERTA makes the following changes in the rules governing acceleration of unpaid taxes:

1. Portions of an interest representing less than 50% of the value of the decedent's interest in a closely held business may be disposed of and/or withdrawn before payment of the balance of the estate taxes attributable to the interest will be accelerated. For this purpose, dispositions and withdrawals are aggregated.

2. The transfer of the decedent's interest in a closely held business upon the death of the original heir, or upon the death of any subsequent trans-
feree receiving the interest as a result of the prior transferor's death, will not cause acceleration of taxes if each subsequent transferee is a family member (within the meaning of Code Sect. 267(c)(4)) of his transferor.

3. A delinquent payment of interest or tax will accelerate the due date of the unpaid tax balance if the full amount is not paid within six months of the original due date. However, the late payment will not be eligible for the special 4% interest rate, and a penalty of 5% per month of the amount of the payment will be imposed.

E. ERISA also makes conforming changes regarding Code Sect. 303 stock redemptions to pay estate taxes and funeral and administration expenses, which allow such redemptions if the decedent's interest in closely held corporations comprises at least 35% of the adjusted gross estate. In addition, the Code Sect. 303 rules regarding aggregation of interests in two or more corporations are amended to conform to changes in the rules regarding installment payment of estate taxes.
Sixty-three percent of the land area in the Commonwealth of Virginia is covered with forest, and more than three-fourths of this forested area is in private ownership. The remainder of the forested area is owned about equally between industry and the Federal government.

One year ago, Virginia completed a five-year interim survey to determine its forest drain or gain ... that is the rate of timber cut to its timber growth. It was found that we were barely holding our own. It was also found that 25,000 acres per year were being diverted from forest use, and that the rate of diversion per year had increased eightfold over the previous period.

It has been estimated that the demand for timber in the United States will double by the year 2030, and that the South's share will increase from its present 35% of the total to 55%.

Now let's go back to the present forestland ownership. The industrial owners operate at a very high level of productivity and they will not be able to significantly increase production on their present acres. The Federal government is hampered by many restrictions such as those imposed in the large wilderness areas where absolutely no cutting is allowed. This, of course, leaves only the private landowners ... and last year they planted 54,700 acres of pine, but the interim survey indicated the acreage would need to go up to 85,000 acres per year to keep up with the demand.

Farming is a fine life, and I am proud to be a product of that society, but its economic uncertainties have haunted the occupation, if not the life. The farmer must always be looking for ways to improve the return he gets from his labors and cash investments. He might need to ask himself the question, "Shall I plant corn or trees?" The crops compete for the use of the soil and in this case, the six-month cycle for the corn crop would usually win over the forty-year cycle required for the loblolly pine we plant in Virginia for a cash crop. Yes, I said forty years!

Forest Management

In talking with many of you who are participating in this symposium, it is apparent that a diverse background of experience is represented but many may not be familiar with actual forest management practices. In order that we may have a common understanding I would like to give you a thumbnail sketch of our normal forest management.

During the first few centuries in this country nature did an acceptable job of providing us with logs for lumber; however, she could not keep up with the expanding population, the chain saw, and the skidder. You often see the slogan, "Plant More Trees", but as our Lester Holly, who spoke to us yesterday, once said, "The composition of a site's vegetative cover at the time management is initiated predetermines the silviculture options and the ultimate profitability over at least the first rotation." Our usual practice in Virginia is to plant on cut-over areas, and since I am in the middle of such an operation let me give you the steps and the cost.

We cut eighty acres of mature hardwood and planned a replanting in pine. After the harvest the tract was a horrible mess of limbs and laps and required major site preparation. The first step was to cut and sell the firewood after it dried. This took one year and resulted in some income and a considerable improvement in the site. Next we drum-chopped the area to compact the waste and make a fuel bed for the controlled burn which followed. Finally the site was ready to plant the seedlings, and this operation is scheduled to start next week. In three or four years we will likely need an application of herbicide to control any hardwood overstory in order to give the pine full sunlight for maximum growth opportunities. The cost of the site preparation and planting will be $175.00 per acre...that's $14,000.00 for the eighty acres. Fortunately for us, either federal or state incentive programs, which you have just heard about, should be available to absorb part of this expense.

Build-Up Of The Problem

For a great many years, by custom and practice, the family farm was handed down to the next generation for a continuity of operation that had a major impact on the stability of the farm and its profitability. In the last thirty or forty years, however, the application of heavy estate taxes has frequently disrupted the important father-to-son farm succession. In 1981 Congress wisely recognized this and changed the gift and estate tax package with the primary purpose of reestablishment of the opportunity of this continuity of farming and family businesses.

We are now seeing the effects of past estate tax policies, not only in Virginia, but the nation as a whole. There is a definite trend towards more and more landowners owning smaller and smaller forest tracts. The U.S. Forest Service says that private land ownership has decreased by fourteen million acres since 1960, but that the number of people owning forestland has increased by 75 percent during the same time. Estate taxes have certainly contributed to this breakup which has a grave implication on forest productivity...as smaller tracts are generally considerably more expensive and inefficient to manage.

We are also seeing the effects of past estate tax policies in the level of forestry investments that are being made, or not being made, by private landowners. Southwide, the landowners are regenerating only one acre out of each nine acres cut. In Virginia, this ratio is better...it's approximately one in five...thanks to the effort of the Division of Forestry,
our Seed Tree Law, and our Reforestation of Timberlands Act. Obviously, landowners are putting their dollars in investments other than forestry, and certainly excessive estate taxes are partly to blame.

A number of years ago the General Assembly of this Commonwealth enacted legislation requiring all counties and cities to re-appraise all real property every five years. It might have appeared that the appraisers had the philosophy that higher was better; actually, the rapid escalation in property tax appraisals has come from developmental pressures and the law of supply and demand. Developmental pressures near cities have been tremendous, and since there is a fixed or diminishing supply of land, the fair market values have skyrocketed. In this case, Mr. Reagan's "supply side" economics is not applicable.

Timber stands are also caught up in inflation of prices. Timber values have been going up at over ten percent a year. This means that timber worth $1,000 per acre today will be worth $2,000 per acre in 1987, this increase in value also includes the timber growth factor. Remember that 1987 is the year that the estate tax exemption reaches the maximum of $600,000. Therefore, the ownership of 300 acres of good mature timber will exhaust the maximum tax exemption. It is interesting to note that a recent study by the U.S. Forest Service shows that 30 percent of all privately owned forest land is in ownership of tracts of 100 to 500 acres.

**Continuity Of Ownership**

The real test for the 1981 Gift and Estate Tax laws will come when it is seen to actually accomplish the main objective of preserving the family farm for the next generation. The forty-year cycle for timber farming makes owner continuity extremely important for profitable operation.

By the end of this winter we will have planted four hundred acres of pine on our tree farm and the plantings are staggered over twenty years so that the tracts will mature at intervals. The next generation has helped plant the trees and has a personal interest in seeing them grow and mature for their use and for their children. Were this farm to be sold, it would probably be bought by a developer or speculator ... and usually the first thing they do is to cut all the merchantable timber regardless of size. If the pulpwood-size trees were allowed to grow to good sawlogs their value would increase five times. Continuity of ownership is the answer.

The soil is a sacred trust, and we all have an obligation to preserve it. In my personal case, I feel I have a custodial responsibility to pass on the family farm to the next generation in a well managed condition.

**Concerns Continue**

While the 1981 Gift and Estate Tax law will surely help accomplish the purpose of the changes, the view from the farm raises some questions. There are major provisions in the present law which need to be understood and communicated to the forest landowners so that they may undertake forestry investment and make long-range plans to utilize the benefits
available under the provisions of the new law.

Perhaps we already need to start talking about more changes in the law even before the ink is dry. Let's consider the following.

1. The present $600,000 maximum exemption for the estate tax is too low to save many existing tree farms and an increasing number of farms will be joining the taxable level.

2. The escalation of timber prices will present added problems to estate planning. The long-term nature of timber investments need to be recognized in future estate tax policies. When estates are valued for tax purposes a certain weight should be given to the value of the standing timber and the length of time it took to grow. A more equitable treatment might be to value the land on its potential to grow timber. This practice now has application for real estate use valuation on crops like corn, where a farm which produces 100 bushels per acre has a higher value than one that produces only 50 bushels per acre.

3. Perhaps the most needed reform would be to allow land use valuation for timberland estate tax purposes without most of the remaining restrictions which are still in the 1981 law.

Return On Investment

What kind of a return should you expect from a tree farm investment? It may depend on the tree farmer and how well he manages, and it may depend on the assumptions one needs to make for the long-term calculations. One thing is certain, the recently enacted Public Law 96-451 which provides for a tax credit and a seven-year write-off of reforestation expense, will significantly improve the return on investment. It will also make for an improvement in the troublesome problem of cash flow for the very long-term investment.

More and more people are now beginning to believe that a tree farm investment is looking attractive. I do not know the answer, so I am still adding the "S" Factor to the income side and feel comfortable that there will be a favorable return. The "S" Factor ... the "S" is for the SATISFACTION I get from seeing that horrible looking cut-over area converted into a beautiful stand of young pine ... and then, watching it grow... and grow.

And also, there is that additional satisfaction of expecting that the final harvest may provide the needed funds for an education, a home, or a private space ship ... for our children, grandchildren, and great grandchildren.

And for the satisfaction bonus, you top it off with the provision for recreation, a wildlife habitat, better air and water, good scenery, and the knowledge that some future citizens will have a supply of lumber and the many other wood and very essential paper products.
POTENTIAL IMPLICATIONS OF A VALUE-ADDED TAX FOR FORESTRY

W. David Klemperer
and
Cherie J. O'Neil*

Critics of the U.S. tax system allege that it is too complex and subject to widespread evasion, and that it discourages saving and capital formation. Some maintain that our heavy reliance on payroll and income taxes reduces work effort and productivity. Still others feel that in the U.S. the tax system increases export prices more than in competing countries relying on sales taxes which are refundable on exports. This appears to place us at a disadvantage in international trade.

Replacing a portion of payroll and income taxes with a value-added tax (VAT) has often been suggested as a cure for the foregoing alleged problems. Being a tax on consumption, the VAT would appear less discouraging to saving and investment than an income tax. In principle, the VAT is fairly simple, and not as avoidable or noticeable as the income tax.

Supporters of the VAT point to the apparent success of the tax in Western Europe, Japan, and several South American countries. All the European Economic Community countries (Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom) have enacted a VAT. In addition, Norway, Sweden, and Austria rely on the value-added tax.

Critics note that the VAT is a consumption tax which takes a higher percentage of income from low-income individuals who consume most of their income than from wealthier individuals who place more in savings which are exempt from the VAT. Not only is the VAT regressive, but it is expensive to administer and tends to increase prices.

Despite the possible disadvantages of a VAT, the potential advantages have continued to stimulate interest in the tax over the last 20 years in the U.S. During the 1960's, numerous VAT proposals were suggested as solutions to lagging U.S. economic growth and capital formation. In the early 1970's, merits of the VAT were examined by the President's Task Force on Business Taxation, the Treasury Department, the Advisory Commission on Intergovernmental Relations, and the Congressional Joint Economic Committee. Congressman Al Ullman sponsored unsuccessful bills in 1979 and 1980 proposing a national value-added tax.

*Associate Professor of Forest Economics and Assistant Professor of Accounting, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. The authors are grateful to Karen D'Angelo and Therese Weiner for research assistance.
Recent studies on value-added taxation have been published by the Brookings Institution (Aaron 1981), the U.S. General Accounting Office (GAO 1980 & 1981), and the U.S. Treasury Department (Carlson 1980).

In view of this continuing interest in the VAT, the U.S. Forest Service has funded a Virginia Tech research project which started in January 1982 to examine the implications of a VAT for forestry in the United States. This paper discusses initial phases of the project.

What is a Value-added Tax?

A value-added tax is levied as a percentage of the sale price of every taxable good or service at all stages of production, including the final sale to consumers. Typically, each seller collects the VAT from the buyer and pays to the government the difference between VAT collections and the VAT paid on purchases during a specified period. The VAT is added to the sale price but must be separately listed on invoices, except on final sales to consumers. Table 1 illustrates this type of invoice, as used in Great Britain.

The net effect of the foregoing is that the VAT is levied on the sum of wages, interest payments, rents, profits, and other inputs not subject to the VAT at the previous production stage. At each stage, the tax base tends to be the difference between the value of a firm's sales and the value of material inputs—i.e., the value added. At each intermediate production stage, buyers willingly pay a VAT on inputs since it can be deducted from the VAT they collect and owe the government on sales (ignoring administrative costs and possible cash flow problems). Under these conditions, the VAT has little immediate impact on a producer's net income: while he pays a VAT on certain inputs, he collects a VAT on sales. Any excess of collections over payments is paid to the government. If the VAT on inputs exceeds that on outputs, a refund is received from the government.

Since the final consumer receives no refund on the VAT paid, the tax functions like a retail sales tax born entirely by the consumer. Only the collection pattern is different: a VAT collected piecemeal at several stages in the production process, while a retail sales tax is collected entirely at the final consumption stage. Given the same tax rate at the retail stage, both systems would raise equal revenues if we ignored differences in compliance and administrative costs.

Table 2 illustrates VAT collection principles with a forest products example using a 10% VAT. For simplicity, the timber grower in stage 1 is assumed to purchase no inputs to the VAT. The grower sells stumpage for which the mill has bid $100 per thousand board feet (MBF), but he charges $110 to cover the 10% VAT. Since the grower remits the $10 VAT to the government, his income is exactly the same as if the VAT had not been levied, in which case he would have received only $100/MBF for his stumpage.

In Table 2, the lumber mill pays $110/MBF for stumpage and sells lumber at a price of $200 to which is added a $20 VAT for a total of $220. Since the mill pays to the government the $10 difference between VAT paid
TABLE 1. Example of a value-added tax invoice.*

SALES INVOICE No. 74

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION AND PRICE</th>
<th>AMOUNT EXCLUSIVE OF VAT</th>
<th>VAT RATE</th>
<th>VAT NET</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>RADIOS, SW14 AT 21.30</td>
<td>£ 127.80</td>
<td>%</td>
<td>£</td>
</tr>
<tr>
<td>12</td>
<td>RECORD PLAYERS P38 AT 9.30</td>
<td>117.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>AMPLIFIERS J27 AT 11.80</td>
<td>70.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>316.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>45.06*</td>
</tr>
<tr>
<td></td>
<td>DELIVERY (STRICTLY NET)</td>
<td>6.00</td>
<td>15</td>
<td>0.90</td>
</tr>
</tbody>
</table>

TERMS: CASH DISCOUNT OF 5% IF PAID £ 322.20 WITHIN 14 DAYS

VAT 45.96

TAX POINT: 14/8/79 TOTAL 368.16

*CALCULATED ON THE DISCOUNTED PRICE.

*Adapted from Carlson (1980).
<table>
<thead>
<tr>
<th>Production Stage</th>
<th>Price/MBF Before Tax</th>
<th>VAT</th>
<th>Price/MBF After Tax</th>
<th>Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timber Growing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchases</td>
<td>$ 0</td>
<td>$ 0</td>
<td>$ 0</td>
<td>100</td>
</tr>
<tr>
<td>Sales</td>
<td>100</td>
<td>10</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Tax to Govt.</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lumber Mfg.</strong></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Buys Stumpage</td>
<td>100</td>
<td>10</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Sells Lumber</td>
<td>200</td>
<td>20</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Tax to Govt.</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Retailer</strong></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Buys Lumber</td>
<td>200</td>
<td>20</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Sells Lumber</td>
<td>250</td>
<td>25</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>Tax to Govt</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total VAT Collected</td>
<td></td>
<td></td>
<td>$25</td>
<td></td>
</tr>
</tbody>
</table>
and VAT received, the $100 value added is the same as it would have been without the VAT (a $200 sale price minus a $100 purchase).

Under the procedures in Tables 1 and 2, throughout the production chain, the VAT has no initial impact on producers' incomes aside from compliance costs and cash flow problems (other impacts are discussed under "shifting"). Only the final consumer is affected by paying 10% more for the lumber. In Table 2 the result is equivalent to a 10% sales tax, except that the VAT has been collected at three points in amounts of $10, $10, and $5. Due to the multi-stage collection, the VAT is therefore more expensive to administer than a sales tax. However, some argue that compliance problems may be fewer under the VAT where less revenue would be collected from a large number of small retailers, as compared to a retail sales tax (Carlson, 1980).

Major Types of VAT

The three major types of VAT are classified by the way in which the tax on capital expenditures is recovered.

Under the national income type VAT, the VAT paid on capital expenditures is not deducted immediately but gradually deducted over a depreciation period. Argentina uses this method.

With a gross national product type VAT, producers are allowed no recovery of the VAT paid on capital goods, as is the case in several South American countries.

The consumption type VAT allows producers to fully recover the VAT paid on capital goods in the year of investment. This type is the least discouraging for capital investment. It is the type most commonly applied by countries using the VAT (including the EEC nations), and is generally considered to be the type most likely to be adopted in the U.S. Therefore, only the consumption type VAT will be considered here. Let us initially consider the VAT as an addition to existing taxes.

Although sometimes referred to as a VAT, Michigan's "single-business tax" (SBT) differs significantly from the traditional VAT. The SBT is levied annually as a percentage of value added, for example as a percent of the last column in Table 2 (ACIR 1978). Because the SBT lacks the VAT's direct invoicing and payments and credit system, it is less likely to be passed forward than a VAT. The SBT thus more closely resembles an income tax.

Impacts on Consumption vs. Capital Goods

Since no VAT is levied on investment goods used in businesses, and consumers pay a VAT on consumption goods, investment expenditures appear to be favored. However, one must also consider the possible depressing effect of a VAT on consumer expenditures which could lead to increased inventories and a decline in investment. The extent of such impacts would depend on elasticity of demand for products of given industries. The
question of possible VAT impacts on U.S. investment in various industries is therefore not at all clear and needs further study.

Substituting the VAT (which does not tax capital goods) for the current federal income tax might appear to favor investment. However, one must remember that much capital investment bears a relatively low income tax burden due to features such as accelerated depreciation deductions, investment tax credits, and reduced capital gains tax rates. Thus, the substitution might not have a major impact on investment (GAO 1981).

**Tax Shifting**

Why are most current forest taxes commonly assumed to be largely shifted back to landowners, while a VAT is seen to be primarily shifted forward to consumers? Under competitive conditions, the upper limit to bids for stumpage is dictated by prices paid for wood products in national and international markets. Thus, both the log processor and the timber grower are predominantly price takers. If a timber grower attempts to pass his income tax or local government tax forward into higher stumpage prices, buyers will shop elsewhere. The grower's taxes are therefore largely capitalized into lower forest values. Capitalization is not complete because taxes can discourage marginal forestry investments and eventually reduce wood output, which can lead to some increase in wood product prices—a partial forward shifting of taxes.

On the other hand, by convention, value-added taxes are separately listed as an addition to stumpage prices—an addition which processors would willingly pay, since they receive a tax credit or refund for the full amount. The VAT is thus largely shifted forward. Again, not completely, because at the final consumption stage, the higher product price caused by the VAT will depress consumption, eventually leading to lower prices for and quantities of stumpage demanded—a partial backward shifting into lower forest values.

Let us examine this last point more closely. The degree to which a VAT could depress consumption depends on the elasticity of demand for the good in question. Consider Figure 1 which shows a relatively elastic national demand curve for a consumption good. Suppose before imposing a VAT, quantity demanded was Q at price P. If after a VAT, price becomes P', the quantity demanded becomes Q', a significant decline.

On the other hand, if demand is relatively inelastic, as shown in Figure 2, the same VAT produces a far smaller reduction in quantity of a consumer good demanded.

So, while the first round effects of a VAT, as viewed in Table 2, suggest no change in producers' profits, the ultimate effects of decreased consumption could reduce income levels.

In reality, the VAT-induced reduction in consumption is likely to be less than that suggested in Figures 1 and 2. Consider Figure 3, for example, which shows a consumption good supply-demand equilibrium of P and Q before imposing a VAT. Given that a VAT increased price to P', an
FIGURE 1. Impact of VAT when demand for consumption good is elastic.

FIGURE 2. Impact of VAT when demand for consumption good is inelastic.
initial surplus of Q'Q would exist. To sell this surplus, suppliers would reduce prices so that an eventual equilibrium would likely lie at some \( Q_E \) with price \( P_E' \) below the initial \( P' \). For this reason, the institution of a VAT will generally not stimulate price increases equal to the VAT. If the commodity in Figure 3 were lumber or plywood, the decrease in consumption would work its way back to decreased demand for stumpage, resulting in lower log consumption and lower net stumpage prices than before the VAT.

**A VAT Accompanied by Reduced Income Taxes**

The question of VAT impacts upon forestry becomes still more complex if we assume that a VAT would be accompanied by reduced income taxes. In that case, the demand curve in Figure 3 would shift to the right—at any given price, more of the consumer good would be demanded since disposable income would be increased. If reduced income taxes shift the demand curve far enough to the right, the new VAT could be absorbed without any decrease in quantity of the good demanded. The end result is indeterminate and would vary with the consumption good in question.*

**VAT Rates**

Except for Denmark, most European countries levy a VAT on luxury items at rates above "standard rates" and at reduced rates on "necessities" such as food, clothing, and medicine. Standard rates in the EEC countries range from 10% to 25%.

Some VAT systems apply a "zero rate" to preferential items such as food, in which case the seller charges no VAT to customers and receives a refund from the government for all VAT paid on inputs.

By tradition an "exemption" differs from the zero rate. Although no VAT is charged on an exempt good, the government pays no refund to producers for the VAT paid on inputs. The result can be reduced rates of return for producers of exempt goods, leading to decreased output and ultimately higher prices.

**Reduced VAT at Intermediate Stages**

At the final consumption stage, a VAT can cause changes in consumption patterns if the tax rate varies for different commodities. For example, a lower VAT on wood products at the consumer level would stimulate more consumption of wood relative to other products.

However, where the VAT is effectively passed forward, changing VAT levels at intermediate production stages should have no effect on resource

* Impacts would depend on the income elasticity of demand and the price elasticity of demand.
FIGURE 3. Consumer good supply-demand equilibrium after VAT.
allocation. Consider, for example, zero-rating the VAT on timber-growing
in the forest products case of Table 2, in which case the VAT paid by growers
on any inputs would be refunded. This in no way favors the timber grower,
since he now charges no tax on stumpage receipts and remits no VAT to the
government. His net revenue is unchanged. The net effect is that the next
stage (milling) remits a correspondingly higher VAT to the government—in this
case $20/MBF, since no VAT on inputs was paid or claimed as a credit. Again,
the mill's net revenue is unchanged, since the remitted tax was paid to the
mill by the retailer.

Figure 4 illustrates the above case. The solid curve traces VAT collec-
tions as shown in Table 2 while the dashed curve shows the case of a zero-
rate for stumpage. The tax reduction on stumpage simply shifts the VAT
farther down the production chain, and the total VAT collected is unchanged
as long as the VAT at the final consumption stage is the same. Therefore,
reducing or zero-rating the VAT on timber-growing or any intermediate stage
causes no change in profitability of that stage or any subsequent stage, other
things equal.

Cash Flow Questions

Effects of a VAT upon a firm's cash flow will vary depending on the
timing of VAT receipts and collections and on changes in inventories. For
example, imposing a new VAT on a sawmill with stable log inventories will
temporarily increase available cash, given the same VAT rate on logs pur-
chased and lumber sold. Throughout one taxing period, the total VAT collected
on lumber sales will exceed that paid on logs, the difference not being due
to the government until the end of the period.

If input inventories are being increased rapidly enough, the VAT paid
on inputs for one period could exceed that collected on outputs, the firm's
refund not being received until the period's end. Cash flows to the firm
would be reduced. Of course, the government's view is the reverse.

Administrative Costs

European experience indicates high government costs of informing
private and public employees about compliance requirements of a new VAT
(Carlson 1980). Because taxes are generally collected monthly, costs of
processing, collection, and enforcement are high. Although administrative
costs as a percent of taxes collected will vary with the VAT rate, general
experience is that the VAT is about twice as expensive to administer as an
income tax, for a given revenue collected (GAO 1981).

Firms would also incur costs of implementing a VAT collection and
remitting system. Some have suggested compensating businesses for such
costs.

Conclusions and Research Needs

Since a consumption type value-added tax would be primarily shifted
FIGURE 4. Zero-rating the VAT on one production stage.

TOTAL VAT = $25/MBF FOR BOTH CASES.
forward to consumers, the immediate effects on timber growers would be negligible, except for compliance costs and possible cash flow problems. This would hold whether or not the VAT on stumpage were levied at rates that were full, reduced, or zero.

If a VAT were added without changing existing taxes, long-run consumption of wood products could be reduced, resulting in lower stumpage output at reduced prices, net of the VAT. The magnitude of this impact would depend on the elasticities of demand for wood-based consumption goods. Thus, the first order of research to predict these impacts would be to estimate the above elasticities and the resulting reductions in demand for relevant products, given various VAT levels. These reductions in consumption would then have to be traced back to estimated stumpage demand for selected species and regions.

References


THE CUMULATIVE IMPACT OF TAXES ON FOREST INVESTMENTS

B. Bruce Bare*

To an owner or manager** of private forest lands, taxes loom as a "special" cost which must be reckoned with at the local, state, and federal levels. They are a "special" cost because it is a cost they cannot reduce by more efficient management or by making cuts in programs or production schedules. In short, taxes are a cost which is largely out of the manager's control. For this reason it attracts the attention of the forest manager every time he/she inspects the income statement for a given accounting period. The only way to reduce or control this cost is to seek relief from local, state, or federal legislative bodies. And, as a quick glance at a recent survey of state timber tax laws shows (e.g. see the paper by Cliff Hickman in these Proceedings), most states have passed special tax laws which affect timber landowners. This, coupled with special concessions granted in the federal income tax code, leads to the logical question of determining the total impacts of taxes on forest investments. Are things as bad (or better) as some authors lead us to believe? Do timber landowners deserve preferential tax treatment? Do they deserve more (less) that they currently enjoy? Or, do the long investment periods, high risks and delayed returns warrant continued special tax treatment?

Importance of Taxes

By way of introduction, it is instructive to sample some quotes from past tax experts concerning the significance of taxes to forest owners as they evaluate potential investments in forestry. The following quotes will succeed if they do nothing more than jog our memories and start us thinking about the cumulative impacts of taxes on forest investments.

1. From the 1920's and 30's, we find the following statements: "... the notion that concessions in taxation are necessary to promote forestry is a mistake." Further, "... the kind of favors the legislature will grant are useless, and the kind that would do any good will never be granted and ought not to be granted." (Murphy, 1925, quoting Fairchild).

2. "Taxation is not now and never has been in broad way the chief factor in determining the time and rate of cutting mature timber." (Fairchild, 1935).

3. In addressing the impacts of taxes on land use shifts, McKetta concludes that, "Land abandonment and use shifts out of forestry do occur, but the taxation causality hypothesis -- even though it is not dismissable -- is a weak one." (McKetta, 1980).

* Associate Professor, College of Forest Resources, University of Washington, Seattle, Washington.
** Throughout the paper the terms forest manager and owner are used interchangeably.
4. Reaching different conclusions, Condrell (1976) points out that timber is treated no more favorably than any other capital asset, and that this fair treatment of timber investments has been one of the most significant reasons that forestry has flourished since the end of World War II.

5. Sunley (1972, 1975) argues that the corporate timberland owner enjoys a significant "tax subsidy", with five companies, in 1971, receiving almost forty percent of the benefit accruing to all taxpayers.

6. Finally, the GAO has recently reported that, "We could find no publicly available, definitive evidence that capital gains tax treatment has augmented timber supplies." (GAO, 1981). Further, the level of the tax subsidy for fiscal years 1976-80, as reported by the GAO, was $1.2 billion; and seventy-six percent of this subsidy accrued to corporate taxpayers even though the non-industrial owners provided the largest percentage of timber supply.

Clearly, additional authors could be cited. However, the results would be just as inconclusive. It appears that each author reaches different conclusions partly because he(she) uses different sets of evaluative criteria and partly because political judgments weigh more heavily in certain analyses—thus masking the effects of analytical differences.

Framework for the Analysis

In an attempt to take a rational look at the cumulative impacts of taxes on timber investment decisions, I propose to perform some fairly simple cash-flow analyses to demonstrate the impacts of current tax policy. The analyses which follow are conducted on a per acre basis for hypothetical corporate and non-industrial landowners* using an after-tax cash flow soil expectation value investment criterion. The soil expectation value reveals the value of all future incomes less all future costs when properly discounted to the present at an appropriate rate of interest. By expressing the soil expectation value in terms of after-tax cash flows we are better able to simulate a taxpayer who: (a) receives capital gains treatment when timber is harvested, and (b) offsets certain timber-related expenses against surplus ordinary income.

The first of these benefits is brought about by the use of the lower long-term capital-gains tax rate in place of the higher tax rate on ordinary income. For corporations, the capital-gains rate (28 percent) is 18 percent lower than the ordinary rate (46 percent for income in excess of $100,000), while for the non-industrial owner comparable tax rates used in the analysis which follows are 30 and 12 percent, respectively.

Offsetting timber-related expenses against surplus ordinary income is also beneficial to timber owners because it allows ordinary income to be converted to long-term capital gains, with the attendant tax savings. This occurs because the IRS allows certain types of expenditures to be expensed (the year incurred) against ordinary income. This is allowed

* The non-industrial landowners described in the paper are assumed to be individual taxpayers.
on many expenditures associated with timber growing even though the income from timber harvesting is taxed as long-term capital gains in some future year. Of course, the taxpayer must have a surplus of ordinary income in order for these additional expenditures to have the desired effect. In essence, long-term capital-gains income is increased while taxable ordinary income is simultaneously decreased. With an 18 percent tax rate differential, this is to the taxpayer's advantage**.

One way to accomplish this is to generate high bid prices for public stumpage. These prices may then be used to aid the establishment of the fair market value under Section 631a of the Internal Revenue Code. In a rising stumpage market these sales, which will be harvested in some future year, will generate higher fair market values than timber being harvested today. Since this fair market value is deducted against surplus ordinary income, it reduces the size of the total tax bill. Again, the taxpayer pays tax on a larger long-term capital gain but receives compensation in the form of reduced income subject to ordinary rates. The significance of these consequences of current tax policy has been discussed in detail by Sunley (1972, 1975), Condrell (1976), and Fortson and Hargreaves (1974).

Cash Flow Model

The standard definition of after-tax cash flow is used in this paper. This definition holds that the after-tax cash flow is computed as:

\[
\text{Cash flow} = \text{After-tax profits} + \text{depletion expense} - \text{capitalized expenditures} + \text{amortized expenses}
\]

This formula is used to calculate the actual flow of cash through an organization in any given accounting period. Depletion and amortization expenses are additive terms because they are subtracted from before-tax profits to arrive at the amount of profits subject to the federal income tax. However, because these expenses do not require the actual expenditure of cash, they are added to after-tax profits when calculating the after-tax cash flow. Capitalized expenditures such as planting and site preparation are deducted when calculating the after-tax cash flow because an actual outlay of cash has been made but the expenditure has not been reflected in the calculation of before-tax profits.

It is assumed that the hypothetical taxpayer has excess ordinary income against which certain timber management activities can be expensed. Included in this category are precommercial thinning, spraying, state yield tax, annual land tax, and other annual costs. For the corporate taxpayer it is further assumed that the costs of site preparation and planting are capitalized and recovered through depletion at the time of thinning or final harvest. The unit depletion rate is determined by dividing the sum of these two costs by the total volume (thinnings plus final harvest) produced over the rotation.

**

This is the corporate tax rate differential which, as previously stated, is also assumed to apply to the non-industrial owner.
The impacts of the Recreational Boating Safety and Facilities Improvement Act (PL 96-451), signed into law on October 14, 1980, are included in the analysis. This law allows taxpayers to: (a) amortize the first $10,000 of qualifying reforestation expenditures over a seven year period and (b) claim a 10 percent investment tax credit on qualifying reforestation expenditures. In the analysis which follows, the investment tax credit is included in the corporate ownership case. However, because of the $10,000 limitation, the corporate analysis does not consider the amortization provision. The analysis of the non-industrial owner is done with and without the amortization of reforestation expenditures and the tax credit.

The cash flow formula is the basis for the treatment of all expensed and capitalized expenditures included in this analysis. For those expenditures being expensed against surplus ordinary income, the after-tax cash flow is computed as:

\[(S - E) - Y(S - E) = (1 - Y)S - (1 - Y)E\]

Where, \(S\) = Surplus ordinary income
\(E\) = Expenditures being expensed against surplus ordinary income
\(Y\) = Tax rate applied to ordinary income

For investments being considered, \(S\) is assumed to exceed \(E\) but the former is not directly included in the per acre analysis because the intent is to determine the profitability of forestry investments and not the total enterprise. All expenditures being expensed are computed at \((1 - Y)\) percent of their before-tax values when calculating the after-tax cash flow. This represents a tax savings on an after-tax basis.

Income from a revenue-generating activity, such as thinning or final harvest, affects the after-tax cash flow as shown below:

\[(T - D) - g(T - D) + D = (1 - g)T + gD\]

Where, \(T\) = Timber income from thinning or final harvest
\(D\) = Depletion expense
\(g\) = Long-term capital gains tax rate

The fertilization expenditures included in the analysis are amortized over a three-year period (Bare, 1979). This represents the period of benefit for such expenditures for purposes of this paper. Such expenditures are incorporated into the cash flow analysis as shown below:

\[(S - F/n) - Y(S - F/n) + F/n = (1 - Y)S + YF/n\]

Where, \(F\) = Fertilization expenditure
\(n\) = Number of years over which fertilization expenditure is being amortized

As previously outlined, planting and site preparation expenditures are capitalized for the corporate taxpayer. Since these expenditures are not expensed against surplus ordinary income, the after-tax cash flow is calculated at 100 percent of the before-tax value. In the case where the reforestation expenditures for the non-industrial taxpayer are being amortized, the after-tax cash flow is computed as shown below:
\[(S - R/n) - Y(S - R/n) + R/n = (1 - Y)S + YR/n\]

Where, \(R\) = Qualifying reforestation expenditures
\(n\) = Number of years over which reforestation expenditures are being amortized

By law, \(n\) is defined to be seven years. However, only one-half year's amortization can be claimed in the first year. In years two through seven, the fully amortized amount can be claimed, leaving the final one-half year's amortization expense to be claimed in the eighth year. As previously discussed, an investment tax credit of 10 percent of qualifying reforestation expenses may also be claimed. This tax credit is added directly to the after-tax cash flow. Once computed, all before-and after-tax cash flows are discounted to the present at the appropriate rate of interest to obtain the present value for one rotation. This present value is subsequently converted to a soil expectation value to incorporate revenues and costs from all future rotations.

**Single-acre Analysis**

To demonstrate the cumulative impact of the above taxes, a simple hypothetical example is shown below. In this example we investigate the growing of Douglas-fir on a single acre of medium site land (site quality 110 at 50 years) in Washington State. A management regime consisting of planting with 2-0 stock following a one year regeneration delay, spraying for brush in the fourth year, precommercial thinning in the fourteenth year, fertilization with 200 lbs. of \(N\) in years 14, 24, and 34; commercial thinnings in years 34 and 39 when the average stand diameter reaches 10 inches; and a final clearcut harvest in the forty-ninth year is assumed.

The Scribner board foot yields for this management regime are shown in Table 1. These yields assume that commercial thinning will commence when the average stand diameter reaches 10 inches with trees 11 inches and larger being removed.

The economic assumptions incorporated in the example are shown in Table 2. These data are assumed to reflect the average forest landowner. Cost and price appreciation rates for deriving future costs and prices are also shown in Table 2. The interest rate and all rates of appreciation shown in Table 2 are in nominal terms (i.e., including inflation). Thus, in real terms a 2 percent price appreciation rate, a 3 percent cost appreciation rate and a 7 percent real interest rate are used in the analysis. These values are typical of those cited by forest analysts in the Pacific Northwest and generally represent the time period between 1979-80.

A sample worksheet illustrating the calculation of cash flows and net present values for a corporate taxpayer following the above described management regime is shown in Table 3. The after-tax soil expectation value for this sample acre is $424.59/acre. This is the maximum amount an investor can spend and earn 12 percent on his/her investment using the assumed board-foot yields and economic inputs. In the absence of taxes, the before-tax soil expectation value rises to $566.46/acre. Thus, the
soil expectation value has been reduced by $141.87/acre, or 25 percent, because of taxes.

Similar calculations for the non-industrial forest landowner with and without the amortization of reforestation expenditures and the investment tax credit are summarized in Table 5. A worksheet detailing the procedures used in the calculation of after-tax cash flows is shown in Table 4. This worksheet includes the investment tax credit and the amortization of reforestation expenditures. As shown, the before-tax soil expectation value is still $566.46/acre—just as it was for the corporate taxpayer. However, the after-tax soil expectation value is now calculated to be $583.50/acre. This result shows the cumulative effects of current tax policy and illustrates how this policy can seriously distort the allocation of capital to forest investments as seen by two taxpayers. Because of current tax policy, the non-industrial taxpayer can afford to outbid the corporate taxpayer by $158.91/acre for an identical acre of land. Further, this acre only possesses a "real" value of $566.46/acre. However, because of current tax policy, non-industrial owners are (theoretically) given misleading signals which could lead to a misallocation of scarce capital resources.

Also shown in Table 5 are the soil expectation values for a non-industrial taxpayer under conditions where the reforestation expenditures are capitalized and recovered through depletion at the time of thinning or final harvest. Additionally, the investment tax credit is not used in this illustration. Under these circumstances, the after-tax soil expectation value falls to $528.66/acre. The difference of $54.84/acre is the difference in soil expectation value solely attributable to the amortization of reforestation expenditures, the investment tax credit, and the depletion allowance. Clearly, it is more advantageous to recoup $55.02/acre out of $199.80/acre of reforestation expenditures ($0.28 per dollar invested) than $0.18—the present value of the depletion expense on an after-tax basis.

Lastly, in Table 5 we show the after-tax soil expectation value for the non-industrial taxpayer for the case where a cost-sharing payment covering 60 percent of qualifying reforestation expenditures is assumed. Added to this, the taxpayer utilizes the investment tax credit and the amortization of reforestation expenditures. It is further assumed that the cost-sharing payment is not treated as ordinary income in the year received. Under these circumstances, the after-tax soil expectation value rises to $633.15/acre more than when no cost-sharing payment is received and $66.69/acre more than under the no-tax case. Again, the effects of current tax policy are evident.

At this point, a few qualifications should be enumerated. First, in the above analyses we have assumed that the optimal financial rotation is unaffected by tax policy. This, unfortunately, may not always be true. However, it is unlikely that incorporation of this factor would alter the conclusions of the analysis. More than likely, the magnitude of the soil expectation values would shift, but the ranking of the values would remain unchanged. Second, in the above analyses we have assumed that any increase (decrease) in taxes would be fully capitalized into lower (higher) land values. Thus, with this assumption—which is generally justifiable given the competitive nature of the forest products industry—the supply of forest land is treated as being fixed. While this is an unrealistic assumption, it is a consequence of the
earlier assumption that taxes are fully capitalized into higher (lower) land values. More than likely, lower (higher) taxes are probably partially shifted into higher (lower) land values. Some of the decrease (increase) of taxes would be passed forward to consumers and some would be absorbed by the land owner, thus lowering the financial attractiveness of forestry vis-a-vis other investment opportunities. Passing costs forward might stimulate both land-use shifts into forestry from other land uses and lead to an increase in the level of management intensity. Absorbing costs would tend to drive land out of forest production and reduce management intensity. It is difficult to quantify these general trends due to a dearth of empirical evidence. Last of all, in all of the above analyses, we have all assumed that we are starting with bare land. If we assume that land is generally stocked with mature timber, then our conclusions don't necessarily hold.

Conclusions

What, if any, conclusions can be drawn from these analyses? If the assumptions used are valid, then we are justified in concluding that:

1. The non-industrial taxpayer receives substantial benefits from existing tax policy; at least to the extent that reforestation expenditures can be amortized. Of course, as higher marginal tax rates are used in the analysis or as the $10,000 annual limitation is reached, the after-tax soil expectation values will approach those of the corporate taxpayer. Under current policy, the soil expectation values are distorted in favor of the non-industrial owner. However, the corporate taxpayer is witness to a 25 percent reduction in the before-tax soil expectation value. This suggests that: (1) corporate taxpayers are over-taxed, (b) non-industrial taxpayers are under-taxed, or (c) neither of the above. Unfortunately, we can't draw definitive conclusions from the analyses because we have not compared forestry across other forms of income-producing property. Hence, we are unable to determine whether current tax policy is vertically equitable. All that we can conclude is that current policy treats non-industrial taxpayers more favorably than corporate taxpayers.

2. It is difficult to accept the arguments of non-industrial taxpayers when they request additional tax breaks. In fact, the above analyses suggest that too many preferential tax breaks have already been granted. It certainly would be difficult for these taxpayers to argue for lower state property taxes using the argument that current tax policy is unfair vis-a-vis the corporate taxpayer.

The above analyses have hopefully demonstrated that it is necessary to examine the cumulative impacts of all taxes before making any recommendations for a change in tax policy concerning any one of the taxes. Only in this manner can the synergistic effects of the different forms of taxation be treated. The simple-minded analysis presented in this paper has shown that current tax policy significantly distorts before-tax soil expectation values -- especially in the case of the non-industrial taxpayer.
Literature Cited


Table 1

Scribner Board Foot Yields (32 Foot logs)
For Site Index 110 - 50 year basis.

<table>
<thead>
<tr>
<th>Stand Age</th>
<th>Av. Diameter</th>
<th>Thinning</th>
<th>Clear cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>11.0</td>
<td>5,028</td>
<td>-</td>
</tr>
<tr>
<td>40</td>
<td>11.1</td>
<td>5,747</td>
<td>-</td>
</tr>
<tr>
<td>50</td>
<td>13.1</td>
<td>-</td>
<td>27,170</td>
</tr>
</tbody>
</table>

Table 2
Economic Data Used in Analysis

<table>
<thead>
<tr>
<th>Stand Age</th>
<th>Stumpage Prices&lt;sup&gt;a&lt;/sup&gt; ($/MBF)</th>
<th>Costs&lt;sup&gt;b&lt;/sup&gt; ($/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>180</td>
<td>Site Preparation $85.00</td>
</tr>
<tr>
<td>40</td>
<td>180</td>
<td>Planting 100.00</td>
</tr>
<tr>
<td>50</td>
<td>215</td>
<td>Spraying 20.00</td>
</tr>
</tbody>
</table>
<pre><code>                                  | Fertilization 70.00     |
                                  | Precommercial Thinning 80.00|
                                  | Annual 4.00             |
</code></pre>

Other Inputs<sup>c</sup>

- Nominal interest rate: 12%
- Inflation rate: 5%
- Nominal Cost Appreciation rate: 8%
- Yield tax rate: 6.5%
- Nominal price appreciation rate: 7%

<sup>a</sup> Source: Charles Chambers, Washington State Department of Natural Resources, Olympia, Washington, August 21, 1979.

<sup>b</sup> Source: Per acre management costs were patterned after those found in Land Expectation Values for Western Washington Timber Species, Washington Forest Productivity Study, Phase III, Part II, Washington State Department of Natural Resources, Olympia, Washington, June 30, 1980.

Table 3
Sample Worksheet of Cash Flow Analysis
for Corporate Taxpayer

<table>
<thead>
<tr>
<th>End of Year</th>
<th>Activity</th>
<th>Cash Flow Before Tax</th>
<th>Cash Flow After Tax</th>
<th>Present Value Single Rotation Before Tax</th>
<th>Present Value Single Rotation After Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Site Preparation</td>
<td>-91.80</td>
<td>-91.80</td>
<td>-81.96</td>
<td>-81.96</td>
</tr>
<tr>
<td>1</td>
<td>Planting</td>
<td>-108.00</td>
<td>-108.00</td>
<td>-96.43</td>
<td>-96.43</td>
</tr>
<tr>
<td>1</td>
<td>Tax Credit</td>
<td>-</td>
<td>19.98</td>
<td>-</td>
<td>17.84</td>
</tr>
<tr>
<td>4</td>
<td>Spraying</td>
<td>-27.21</td>
<td>-14.69</td>
<td>-17.29</td>
<td>-9.34</td>
</tr>
<tr>
<td>14</td>
<td>Precommercial Thinning</td>
<td>-234.98</td>
<td>-126.89</td>
<td>-48.08</td>
<td>-25.96</td>
</tr>
<tr>
<td>14</td>
<td>Fertilization</td>
<td>-205.60</td>
<td>-205.60</td>
<td>-42.07</td>
<td>-42.07</td>
</tr>
<tr>
<td>15-17</td>
<td>Fert. Amortization</td>
<td>68.53</td>
<td>31.52</td>
<td>-</td>
<td>15.49</td>
</tr>
<tr>
<td>24</td>
<td>Fertilization</td>
<td>-443.88</td>
<td>-443.88</td>
<td>-29.24</td>
<td>-29.24</td>
</tr>
<tr>
<td>25-27</td>
<td>Fert. Amortization</td>
<td>147.96</td>
<td>68.06</td>
<td>-</td>
<td>10.76</td>
</tr>
<tr>
<td>34</td>
<td>Thinning</td>
<td>9663.82</td>
<td>6957.95</td>
<td>204.99</td>
<td>147.59</td>
</tr>
<tr>
<td>34</td>
<td>Thinning Depletion</td>
<td>26.50</td>
<td>7.42</td>
<td>-</td>
<td>0.16</td>
</tr>
<tr>
<td>34</td>
<td>Yield Tax</td>
<td>-628.15</td>
<td>-339.20</td>
<td>-13.32</td>
<td>-7.20</td>
</tr>
<tr>
<td>34</td>
<td>Fertilization</td>
<td>-958.31</td>
<td>-958.31</td>
<td>-20.33</td>
<td>-20.33</td>
</tr>
<tr>
<td>35-37</td>
<td>Fert. Amortization</td>
<td>319.44</td>
<td>146.94</td>
<td>-</td>
<td>7.48</td>
</tr>
<tr>
<td>39</td>
<td>Thinning</td>
<td>15488.17</td>
<td>11151.48</td>
<td>186.42</td>
<td>134.22</td>
</tr>
<tr>
<td>39</td>
<td>Thinning Depletion</td>
<td>30.29</td>
<td>8.48</td>
<td>-</td>
<td>0.10</td>
</tr>
<tr>
<td>39</td>
<td>Yield Tax</td>
<td>-1006.73</td>
<td>-543.63</td>
<td>-12.12</td>
<td>-6.54</td>
</tr>
<tr>
<td>49</td>
<td>Final Harvest</td>
<td>172067.61</td>
<td>123888.68</td>
<td>666.83</td>
<td>480.12</td>
</tr>
<tr>
<td>49</td>
<td>Harvest Depletion</td>
<td>143.19</td>
<td>40.09</td>
<td>-</td>
<td>0.16</td>
</tr>
<tr>
<td>49</td>
<td>Yield Tax</td>
<td>-11184.39</td>
<td>-6039.57</td>
<td>-43.34</td>
<td>-23.41</td>
</tr>
<tr>
<td>1-49</td>
<td>Annual</td>
<td>-4.00</td>
<td>-2.16</td>
<td>-89.80</td>
<td>-48.50</td>
</tr>
</tbody>
</table>

Present Value of One Rotation

Soil Expectation value
<table>
<thead>
<tr>
<th>End of Year</th>
<th>Activity</th>
<th>Cash Flow</th>
<th></th>
<th></th>
<th></th>
<th>Present Value Single Rotation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Tax</td>
<td>After Tax</td>
<td>Before Tax</td>
<td>After Tax</td>
<td>Before Tax</td>
<td>After Tax</td>
<td>Before Tax</td>
</tr>
<tr>
<td>1</td>
<td>Site Preparation</td>
<td>-91.80</td>
<td>-91.80</td>
<td>-81.96</td>
<td>-81.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Planting</td>
<td>-108.00</td>
<td>-108.00</td>
<td>-96.43</td>
<td>-96.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Refor. Amortization</td>
<td>14.27</td>
<td>4.28</td>
<td>-</td>
<td>3.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tax credit</td>
<td>-</td>
<td>19.98</td>
<td>-</td>
<td>17.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-7</td>
<td>Refor. Amortization</td>
<td>28.54</td>
<td>8.56</td>
<td>-</td>
<td>31.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Refor. Amortization</td>
<td>14.27</td>
<td>4.28</td>
<td>-</td>
<td>1.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Spraying</td>
<td>-27.21</td>
<td>-19.05</td>
<td>-17.29</td>
<td>-12.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Precommercial Thinning</td>
<td>-234.98</td>
<td>-164.49</td>
<td>-48.08</td>
<td>-33.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Fertilization</td>
<td>-205.60</td>
<td>-205.60</td>
<td>-42.07</td>
<td>-62.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-17</td>
<td>Fert. Amortization</td>
<td>68.53</td>
<td>20.56</td>
<td>-</td>
<td>10.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Fertilization</td>
<td>-443.88</td>
<td>-443.88</td>
<td>-29.24</td>
<td>-29.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-27</td>
<td>Fert. Amortization</td>
<td>147.96</td>
<td>44.39</td>
<td>0</td>
<td>7.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Thinning</td>
<td>9663.82</td>
<td>8504.16</td>
<td>204.99</td>
<td>180.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Fertilization</td>
<td>-938.31</td>
<td>-958.31</td>
<td>-20.33</td>
<td>-20.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-37</td>
<td>Fert. Amortization</td>
<td>319.44</td>
<td>95.83</td>
<td>-</td>
<td>4.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Thinning</td>
<td>15488.17</td>
<td>13629.59</td>
<td>186.42</td>
<td>164.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Yield tax</td>
<td>-1006.73</td>
<td>-704.71</td>
<td>-12.12</td>
<td>-8.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Final harvest</td>
<td>172067.61</td>
<td>151419.50</td>
<td>666.83</td>
<td>586.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Yield tax</td>
<td>-11184.39</td>
<td>-7829.07</td>
<td>-43.34</td>
<td>-30.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-49</td>
<td>Annual</td>
<td>-4.00</td>
<td>-2.80</td>
<td>-89.80</td>
<td>-62.87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Present Value of One Rotation: 564.26  581.24
Soil Expectation Value: 566.46  583.50

1 Amortization of reforestation expenditures; investment tax credit; no cost-sharing receipts
Table 5
Summary of Soil Expectation Values

<table>
<thead>
<tr>
<th></th>
<th>Before Tax ($/A)</th>
<th>After Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without reforestation</td>
<td>$566.46</td>
<td>$424.59</td>
</tr>
<tr>
<td>amortization; with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>investment tax credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-industrial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With reforestation</td>
<td>$566.46</td>
<td>$583.50</td>
</tr>
<tr>
<td>amortization and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>investment tax credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without reforestation</td>
<td>$566.46</td>
<td>$528.66</td>
</tr>
<tr>
<td>amortization or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>investment tax credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With reforestation</td>
<td>$566.46</td>
<td>$633.15</td>
</tr>
<tr>
<td>amortization, investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tax credit and cost-sharing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>