

Reforestation Tax Incentives Under the American Jobs Creation Act of 2004

Thomas J. Straka and John L. Greene

ABSTRACT

The American Jobs Creation Act of 2004 made significant changes in the reforestation tax incentives available to private forest owners. Owners can now deduct outright reforestation costs up to \$10,000 per year for each qualifying timber property and amortize any additional amount over 8 tax years. To assess the financial benefit the new incentives provide to forest owners, the authors developed spreadsheets that calculate after-tax Bare Land Value (BLV) for a representative southern pine management plan under three tax situations: no reforestation incentives, the incentives under previous law, and the incentives under the current law. They found that compared to no tax incentive, the current law chiefly benefits owners with high non-timber income, increasing BLV by an amount equivalent to a reforestation cost share of roughly 25 to 30% as opposed to 5 to 15% for owners with low or median income. Compared to previous law, the current law chiefly benefits owners of large forest holdings, increasing BLV by an amount equivalent to a reforestation cost share of roughly 10 to 20%. For owners of small forest holdings, however, BLV decreased by an amount equivalent to a 5 to 10% increase in reforestation costs. These findings are significant as Congress likely intended that the new incentives continue to benefit primarily "small woodland owners" with modest incomes and forest holdings.

Keywords: reforestation, income tax, incentive, cost share, financial analysis

The American Jobs Creation Act of 2004 (PL 108-357) made significant changes in the reforestation tax incentives available to private forest owners. Under the previous law (PL 96-451) owners could take a 10% tax credit on and amortize (write off) reforestation costs up to \$10,000/year over 8 tax years. [1] Beginning on Oct. 23, 2004, the day after President Bush signed the Act into law, owners could deduct outright reforestation costs up to \$10,000/year for each qualified timber property and amortize any additional amount, again, over 8 tax years. The reforestation tax credit is eliminated (RIA 2004).

With its \$10,000 cap on both the tax credit and the amortization provisions, the previous law was intended to benefit primarily "small woodland owners." In contrast, the current law benefits owners of forest holdings of all sizes, large and small. With its large, up-front deduction, the current law is comparable with a reforestation cost share. The size of the cost share it is equivalent to, however, varies with the size of the forest holding and amount of the owner's nontimber income.

Study Approach

The approach presented in this study was used to develop a measure of the net financial benefit that both the previous and the current reforestation tax incentives provide to private forest owners and to show the differences between them. To accomplish this, we developed spreadsheets that modeled a representative southern pine management plan under three tax situations. The first was the no-incentive situation, with reforestation costs established as "basis" until timber is harvested; the second was the previous law, with its limited reforestation tax credit and amortization provisions; the

third was the current law, with its reforestation deduction and unlimited amortization provisions.

Each spreadsheet calculates on a year-by-year basis the net financial effect of owning and managing a forest holding under the associated tax situation, including the costs of site preparation and planting; property tax; the effect on federal and state income taxes of deducting forest management expenses and using any reforestation incentives; and the returns, costs, harvest taxes, and federal and state capital gain taxes resulting from timber harvests. The annual net cost and return figures were discounted to the beginning of the rotation using the owners' personal discount rate (see in the following paragraphs) and summed to calculate after-tax net present value (NPV) and bare land value (BLV) per acre. The underlying equations used in the spreadsheets to calculate NPV and BLV are shown in Table 1. The spreadsheets also were capable of modeling real annual increases in reforestation costs, forest product prices, and property tax, but that feature was not used for this analysis.

The spreadsheets were used to calculate after-tax NPV and BLV for ownership scenarios representing five different combinations of forest size and nontimber income:

- Low-income owners with a small forest holding.
- Median-income owners with a small forest holding.
- Median-income owners with a large forest holding.
- High-income owners with a small forest holding.
- High-income owners with a large forest holding.

In each ownership scenario, the forest owners were assumed to be married couples who file jointly. Nontimber income was assumed to be \$60,000/year for the median income scenarios—a figure that

Received September 6, 2005; accepted October 20, 2006.

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Table 1. Equations used in the study spreadsheets to calculate NPV and BLV.

NPV = returns from a single rotation minus costs, discounted to the present

$$NPV = \sum_{n=0}^r \frac{SP_n + (HR_n - AC_n) - PT_n - HT_n - (FT_{wO_n} - FT_{w_n}) - (ST_{w_a} - ST_{w_n}) - FC_n - SC_n}{(1 + i)^n}$$

BLV:

$$BLV = \frac{NPV \cdot (1 + i)^r}{(1 + i)^r - 1}$$

Where:

- r = Rotation length in years
- SP = Site preparation and planting cost per acre
- HR = Harvest return per acre
- AC = Harvest administration cost expressed as a percent
- PT = Property tax per acre
- HT = Harvest tax per acre
- FT_{wO} = Federal tax on the owners' ordinary, nontimber income, without including the effect of the forest holding
- FT_w = Federal tax on the owners' ordinary, nontimber income, including the effect of the forest holding
- ST_{wO} = State tax on the owner's ordinary, nontimber income, without including the effect of the forest holding
- ST_w = State tax on the owners' ordinary, nontimber income, including the effect of the forest holding
- FC = Federal tax on timber capital gain
- SC = State tax on timber capital gain
- i = Owners' personal discount rate, expressed as a decimal

closely approximates average 2005 disposable personal income for a two-person household (Council of Economic Advisors 2006)—\$20,000/year for the low-income scenarios and \$180,000/year for the high-income scenarios. It was further assumed that the owners qualify as material participants in their forest enterprise, have itemized deductions equal to the standard deduction, and a personal discount rate of 4% real (with inflation factored out).

The forest holding was assumed to consist of a single even-age stand constituting one qualified timber property. Stand size was assumed to be 40 ac for the small-holding ownership scenarios and 400 ac for the large-holding scenarios (Table 2a). Timber manage-

ment costs were adapted from the *Forest Landowner 34th Manual Edition* (DuBois et al. 2003). The sawtimber and pulpwood stumpage prices used were 5-year regional averages from the *Timber Mart-South Market Newsletter* (Timber Mart-South 2001–2005). Sale administration costs were assumed to equal 10% of the gross stumpage price (Table 2b).

Taxes the forest owners were assumed to be subject to include a property tax of \$5/ac per year, a harvest tax equal to 2.5% of the gross stumpage price, federal income and capital gain taxes at 2005 rates, and state income and capital gain taxes at 25% of the federal rates (Table 2c). The forest management plan was taken from Busby et al. (1990; Table 2d).

Table 2. Assumptions about the forest owners and ownership, costs and returns, taxes, and forest management plan used in the analysis.

a. Forest Owners and Ownership		
Married couple filing jointly with		
\$20,000 of nontimber income per year,		
\$60,000 of nontimber income per year, or		
\$180,000 of non-timber income per year		
Qualify as material participants		
Itemized deductions equal to the standard deduction		
Personal discount rate, 4% real		
Tract size, 40 or 400 ac		
b. Timber costs and returns		
Site preparation and planting	270.00/ac	0% Annual increase
Pulpwood stumpage price	18.00/ac	0% Annual increase
Chip-n-saw stumpage price	62.50/cord	0% Annual increase
Sawtimber stumpage price	277.00/mbf	0% Annual increase
Sale administration cost	10% of gross stumpage price	
c. Federal, state, and local taxes		
Property tax	5.00/ac per year	0.00 Annual increase
Harvest tax	2.5% of gross stumpage price	
Federal income and capital gain tax rates	2005 schedules	
State income and capital gain tax rates	25% of federal rates	
d. Forest Management Plan		
Year 0: Site preparation and planting		
Year 15: Commercial thinning	3.85 cords/ac pulpwood	
	0.75 cords/ac chip-n-saw	
	0.00 mbf/ac sawtimber	
	12.21 cords/ac pulpwood	
	25.44 cords/ac chip-n-saw	
	2.89 mbf/acre sawtimber	
Year 30: Final harvest		

Table 3. Comparison of the financial effect of reforestation tax incentives on owners under differing assumptions about forest size and nontimber income (all after-tax BLVs are on a per-acre basis).

Ownership scenario	Tax situation					
	1. No reforestation incentives		2. Previous law (PL 96-451)		3. Current law (PL108-357)	
	After-tax BLV	Increase over tax situation 1	After-tax BLV	Increase over tax situation 1	After-tax BLV	Increase over tax situation 1
Low income, small holding	\$504.48	—	\$566.81	12.4%	\$526.54	4.4%
Median income, small holding	458.54	—	538.07	17.3%	507.74	10.7%
Median income, large holding	438.73	—	446.55	1.8%	474.84	8.2%
High income, small holding	453.69	—	574.73	26.7%	557.17	22.8%
High income, large holding	453.69	—	465.79	2.7%	543.44	19.8%

This marginal approach enabled us to show the effect of the change in reforestation tax incentives on private forest owners with various sizes of forest holdings and income levels. The remainder of this article presents and discusses the study findings.

Results

No Reforestation Incentives

Even in the absence of reforestation tax incentives after-tax BLV varied with owner income and forest size, from \$504.48 in the low-income, small-holding scenario to \$438.73/ac in the median-income, large-holding scenario (Table 3, tax situation 1). Two factors contributed to the high BLV in the low-income, small-holding scenario, both related to the owners' low level of nontimber income. First, the deductions for property and harvest taxes removed a much larger fraction of the owners' nontimber income from taxable income than in the other scenarios. Second, because capital gains are allocated between the 5 and 15% tax rates based on total income, most of the owners' timber capital gains were taxed at the lower rate (Table 3, tax situation 1).

Comparing the two median-income scenarios—median income, small holding and median income, large holding—the higher forest acreage under management in the large-holding scenario resulted in higher timber capital gains in years with a thinning or final harvest. But, again, because capital gains are allocated between the 5 and 15% tax rates based on total income, a substantially higher proportion of the large-holding owners' timber capital gains were taxed at the higher rate, reducing BLV (Table 3, tax situation 1). Had there been only one capital gain tax rate, BLV would have been the same for both scenarios.

Comparing the two-high income scenarios—high income, small holding and high income, large holding—in both cases, the owners' nontimber income was above the ceiling for the 5% tax rate for capital gains. All their timber capital gains were taxed at the 15% rate with the result that BLV was the same for both scenarios (Table 3, tax situation 1).

Comparing the two large-holding scenarios—median income, large holding and high income, large holding—property and harvest taxes were deducted against nontimber income in the 28% federal tax bracket in the high-income scenario, as opposed to income in the 15% bracket in the median-income scenario. This resulted in a greater reduction in federal and state income taxes in the high-income scenario and a higher BLV (Table 3, tax situation 1).

BLV was nearly the same in the two remaining small-holding scenarios—median income, small holding and high income, small holding—but for different reasons. The advantage to the median-income owners of having a proportion of their timber capital gains taxed at 5% rather than 15% slightly exceeded the advantage to the

high-income owners of having their property and harvest taxes deducted against nontimber income in the 28% federal tax bracket rather than the 15% bracket (Table 3, tax situation 1).

Previous Law

The previous law (PL 96-451) increased after-tax BLVs over the no-incentive tax situation in all five ownership scenarios (Table 3, tax situation 2). The greatest increases occurred in the scenarios characterized by small forest holdings. In these scenarios, the reforestation tax credit provided a dollar-for-dollar reduction in the amount of income tax due. In two scenarios—median income, small holding and high income, small holding—the owners were able to take the full amount of the credit in the 1st year of a rotation. In the other scenario—low income, small holding—the owners had to spread the credit over 6 tax years because it exceeded their income tax due; thus, the economic value of the credit was reduced for the lowest-income owners (Table 3, tax situation 2).

More important from an economic standpoint, the law's amortization provision enabled all three sets of owners to recover nearly all of their reforestation costs during the first 8 years of a rotation. For the low-income, small-holding owners the amortization deduction was taken against nontimber income in the 10% federal tax bracket, providing the smallest increase in BLV of the three. For the median-income, small-holding owners it was taken against nontimber income in the 15% bracket, providing somewhat larger increase in BLV. For the high-income, small-holding owners it was taken against nontimber income in the 28% bracket, providing the largest increase in BLV (Table 3, tax situation 2).

In the ownership scenarios characterized by large forest holdings—median income, large holding and high income, large holding—the increases in BLV were substantially lower (Table 2, tax situation 2). This is because the \$10,000 cap on both the reforestation tax credit and the amortization provisions allowed the owners to recover only a fraction—less than one-tenth—of their reforestation costs in the early years of a rotation. The large majority of the costs had to be carried as "basis" until timber was harvested. Again, the high-income owners took the amortization deduction against nontimber income in the 28% federal tax bracket as opposed to the 15% bracket for the median-income owners, resulting in a larger increase in BLV (Table 3, tax situation 2).

Current Law

The current law (PL 108-357) also increased after-tax BLVs over the no-incentive tax situation in all five ownership scenarios (Table 3, tax situation 3). The pattern, however, was quite different from under the previous law, with the greatest increases occurring in the ownership scenarios characterized by high nontimber income. In

Table 4. Reforestation cost share equivalents that make tax situation 1 and 2 after-tax BLVs equivalent to tax situation 3 after-tax BLV for each ownership scenario.

Ownership situation	Percent reforestation cost share that makes tax situation 1 BLV equivalent to tax situation 3 BLV	Percent reforestation cost share that makes tax situation 2 BLV equivalent to tax situation 3 BLV
Low income, small holding	6.0%	-10.9%
Median income, small holding	13.3%	-8.2%
Median income, large holding	9.8%	7.8%
High income, small holding	28.5%	-4.8%
High income, large holding	24.7%	21.3%

the high-income, small-holding scenario the owners benefited most from the law's reforestation deduction provision, which enabled them to recover nearly all of their reforestation costs in the year they occurred. Little was left to amortize. In the high-income, large-holding scenario the owners benefited most from the law's unlimited amortization provision, which allowed them to recover reforestation costs above the \$10,000 deduction amount during the first 8 years of a rotation. In addition, in these scenarios, both the reforestation and the amortization deductions were taken against nontimber income in the 28% federal tax bracket (Table 3, tax situation 3).

In the scenarios characterized by median income, BLV increased by roughly one-half as much as in the high-income scenarios (Table 3, tax situation 3). The median-income, small-holding scenario mirrored the high-income, small-holding scenario, mentioned previously, with the owners benefiting most from the law's reforestation deduction provision. The median-income, large-holding scenario mirrored the high-income, large-holding scenario, mentioned previously, with the owners benefiting most from the law's unlimited amortization provision. The increases in BLV were lower than for the high-income owners because in these scenarios the reforestation and amortization deductions were taken against nontimber income in the 15% federal tax bracket (Table 3, tax situation 3).

In the low-income, small-holding scenario the owners were not able to make full use of the \$10,000 reforestation deduction, because it exceeded their taxable income by a sizeable amount. As a result, they benefited most from amortization of their reforestation expenses. The deductions were taken against nontimber income in the 10% federal tax bracket, resulting in the lowest increase in BLV (Table 3, tax situation 3).

It should be noted that after-tax BLVs for the two large-holding scenarios were higher under current law than under the previous law, but those for the three small-holding scenarios were lower (Table 3, tax situations 2 and 3). This indicates that regardless of income level, for owners of small forest holdings, the current law's more generous provisions for reforestation and amortization deductions are outweighed by the loss of the previous law's reforestation tax credit.

Cost Share Equivalents

Two sets of cost share equivalents were calculated; the first was to determine what size reforestation cost share made the no-incentive situation equivalent to the current law and the second was to determine what size reforestation cost share made the previous law equivalent to the current law. The same procedure was used in both cases: reforestation costs were changed incrementally until after-tax BLV equaled that for the current law for each ownership scenario.

The results were again divided by characteristics of the forest ownership. Compared with the no-incentive situation, the current law increased BLV by an amount equivalent to a reforestation cost share of 5–15% in the low- and median-income scenarios and by an

amount equivalent to a cost share of roughly 25–30% in the high-income scenarios (Table 4).

Compared with the previous law, the current law increased BLV by an amount equivalent to a reforestation cost share of roughly 10–20% in the large-holding scenarios. In the small-holding scenarios, however, BLV decreased by an amount equivalent to a 5–10% increase in reforestation costs (Table 4). As mentioned previously, this result is chiefly because of the elimination of the previous law's reforestation tax credit.

Discussion and Conclusions

The objective of reforestation tax incentives is to encourage reforestation on privately owned forestland. With its limited reforestation tax credit and amortization provisions, the previous law was clearly intended to benefit primarily "small woodland owners." In contrast, the broader reforestation deduction and amortization provisions of the current law benefit owners of both large and small forest holdings.

Even with no reforestation incentives (Table 3, tax situation 1), after-tax BLV varies with size of the forest holding and amount of the owner's nonforest income. Allocation of a large part of their timber income to the 5% capital gain tax rate increases BLV for low- and median-income owners. Deduction of property and harvest taxes against income in a high marginal tax bracket increases BLV for high-income owners.

The previous law (PL 96-451; Table 3, tax situation 2) increased after-tax BLVs over the no-incentive tax situation in all five ownership scenarios. The largest percent increases occurred for the owners of small forest holdings. This is primarily because the \$10,000 cap on both the reforestation tax credit and the amortization provisions limits the deductions available to owners of large forest holdings to a fraction of their total reforestation costs.

The current law (PL 108-357; Table 3, tax situation 3) also increased after-tax BLVs over the no-incentive tax situation in all five ownership scenarios, but the pattern of benefits is quite different. Compared with the no-tax incentive, the current law primarily benefits owners with high levels of nontimber income, because the tax savings from the \$10,000 reforestation deduction and unlimited amortization provisions is greatest for owners in high marginal tax brackets. Compared with the previous law, however, the current law primarily benefits owners of large forest holdings, because removal of the \$10,000 cap on benefits enables them to recover all their reforestation costs in the early years of a rotation. For owners of small forest holdings, loss of the previous law's reforestation tax credit outweighs the current law's more generous provisions for deduction and amortization of reforestation costs.

With its large, up-front deduction, the current law is comparable with a reforestation cost share, and a straightforward way to show its

effect is to calculate its cost share equivalent. We did this by calculating the percent reduction in reforestation costs under the no-incentive situation and under the previous law that made after-tax BLV equal to that under the current law for each ownership scenario. Compared with the no-incentive situation, the current law chiefly benefits owners with high nontimber income, increasing BLV by an amount equivalent to a reforestation cost share of roughly 25–30% as opposed to 5–15% for owners with low or median income. Compared with the previous law, the current law chiefly benefits owners of large forest holdings, increasing BLV by an amount equivalent to a reforestation cost share of roughly 10–20%. For owners of small forest holdings, however, BLV decreased by an amount equivalent to a 5–10% increase in reforestation costs.

The study results indicate that the current law is less favorable than the previous law for owners of small forest holdings. In addition, its provisions are most beneficial to high-income owners who may have less need for a reforestation incentive. These findings are significant as Congress likely intended that the new incentives con-

tinue to benefit primarily “small woodland owners” with modest incomes and forest holdings.

Endnote

- [1] The regulations for the amortization provision required that forest owners reduce the amount amortized by half of any reforestation tax credit taken.

Literature Cited

- BUSBY, R.L., K.B. WARD, AND V.C. BALDWIN JR. 1990. *COMPUTE_MERCHLOB: A growth and yield prediction system with a merchandizing optimizer for planted loblolly pine in the West Gulf Region*. USDA For. Serv. Res. Pap. SO-255. 22 p.
- COUNCIL OF ECONOMIC ADVISORS. 2006. *Economic indicators: March 2006*. Prepared for the Joint Economic Committee, 109th Cong., 2nd Sess., US Government Printing Office, Washington, DC. 38 p.
- DUBOIS, M.R., T.J. STRAKA, S.D. CRIM, AND L.J. ROBINSON. 2003. Costs and cost trends for forestry practices in the South. *For. Landown.* 62(2):3–9.
- RESEARCH INSTITUTE OF AMERICA (RIA). 2004. *RIA's complete analysis of the American Jobs Creation Act of 2004: With code sections as amended and committee reports*. RIA, New York. 3,525 p.
- TIMBER MART-SOUTH. 2000–2005. *Timber Mart-South Market Newsletter*. Daniel B. Warnell School of Forest Resources, The University of Georgia, Athens, GA. 392 p.

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Southern Journal of Applied Forestry (ISSN 0148-4419) is
published quarterly—February, May, August, November—by
the Society of American Foresters, 5400 Grosvenor Lane, Be-
thesda, MD 20814-2198. ©2007 by the Society of American
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POSTMASTER: Send address changes to A. Ziadi, *Southern
Journal of Applied Forestry*, 5400 Grosvenor Lane, Bethesda,
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SOUTHERN JOURNAL of Applied Forestry

February 2007

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