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Estimated effects of the Tax Cuts and Jobs Act of 2017 on private noncorporate forest landowners' timber income in the U.S. South

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ABSTRACT

Financial effects of the Tax Cuts and Jobs Act of 2017 (TCJA) on private noncorporate timber growers vary due to the difference in timber holdings, level of non-timber income, and intensity of forest management. This commentary reports on a financial analysis, which suggests that landowners holding timber as investments as a group are moderately worse off due to the changes in itemized deductions brought by the TCJA. The distinction in the net benefits of timber holdings becomes more significant between forest investors (as a group) and material participants. This may become an incentive for some investors to consider converting to a business and intensifying their forest management to meet the material participation requirement. Some investors, on the other hand, may reduce forest management costs or divest their timberland due to deterioration in profitability. It also suggests that owning and managing timber becomes less beneficial in terms of tax savings for forest landowners with moderate and high non-timber income (except for high income, large holding scenario) under the new law than under the prior law.

1. Introduction

Forests in the South (60% owned by noncorporate private landowners) provide 61% of the total U.S. industrial roundwood harvest with one-third of the nation's forestland in 2016 (Butler et al., 2016; Oswalt et al., 2019). Keeping and improving the economic viability of these private forests is crucial for sustainable growth of forests and rural communities in the region.

The Tax Cuts and Jobs Act (TCJA), which as signed into law in December 2017, brought the most significant tax law changes since 1986. The TCJA leaves intact most of the prior forest-related tax provisions (e.g., reforestation, timber sale, and cost share payment). However, many general changes affect the overall tax liability and forestry-related deductions for timber growers. Among the most notable changes, it reduced the tax rates for individuals and corporations, modified numerous tax deductions, exemptions or credits, and allowed new business deductions. Virtually all taxpayers and businesses are impacted.

Previous studies on federal tax reforms have shown that changes in tax provisions can have significant impacts on profitability of private forest management in the U.S. South (e.g., Dangerfield and Gunter, 1991; Greene and Kluender, 1989; Straka and Greene, 2007). This commentary explores the potential effects of the TCJA on net income due to timber holdings for noncorporate private forest landowners in the U.S. South. Our analysis provides timely information for federal income tax policy deliberation and debate relating to timber.

2. Selected changes made by the TCJA that affect timber holdings in this analysis

1) Tax rates on ordinary income are reduced. As a result, forest landowners' tax savings on non-timber income due to timber holdings are reduced.
2) Standard deduction is increased, personal exemption is eliminated, and itemized deductions are changed. These changes have complicated and mixed effects on private forest landowners. Forest investors are adversely impacted by the repeal of certain miscellaneous itemized deductions (MID). Under the new law, timber investors can no longer claim forest management expenses as MID, leaving capitalization the only option. Although investors can still itemize state and local taxes, many of them may no longer find it beneficial to itemize given the new higher standard deductions. The proportion of households who itemize is estimated to shrink from 40% in 2016 to slightly above 10% after the TCJA changes

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(Eastman, 2019; The Urban-Brookings Tax Policy Center, 2018).

3) Tax bracket thresholds for capital gains and ordinary income are indexed by the Chained Consumer Price Index for All Urban Consumers (C-CPI-U) instead of the traditional CPI-U. C-CPI-U uses consumer expenditure data to account for substitution between goods, and generally is lower than CPI-U (Cage et al., 2003). Due to the long-term nature of timber management, this change could affect landowners' overall timber taxes as a larger portion of a taxpayer's income may fall in a higher tax bracket.
4) The exemption amount and the phaseout threshold of individuals' Alternative Minimum Tax (AMT) are increased. The AMT is a tax calculated under an alternative set of rules to ensure that certain taxpayers pay at least the minimum. Timber income counts toward a landowner's AMT taxable income. The taxpayer starts losing his AMT exemption when his AMT taxable income is above the phaseout threshold. The AMT changes could reduce the overall tax liability of private forest landowners subject to the AMT.

Except for the change in 3), most of the changes above are temporary and will expire by the end of 2025.

3. Analytical approach

3.1. Classification of timber holdings for federal income tax purposes

For federal income tax purposes, a private forest landowner's timber holding can be classified into one of three categories: 1) timber held for personal use; 2) timber held as an investment; and 3) timber held for use in a trade or a business (Greene et al., 2013). Under business classification, landowners can be considered material participants in their business or passive participants. In general, landowners as material participants receive more favorable tax treatments.

3.2. Discounted cash flow (DCF) approach

This analysis uses a discounted cash flow (DCF) approach, as in Straka and Greene (2007). The net benefits of timber holdings include: 1) tax savings on non-timber income, and 2) net after-tax return from timber holdings. Tax savings arise when forest landowners who qualify as material participants can deduct annual timberland management costs against any source of income. The annual net after-tax income is discounted to the present and summed to calculate the after-tax per acre net present values (NPVs) and land expectation values (LEVs) using the assumed discount rate (Table 1). Table 2 presents the assumptions about major variables used in the DCF approach.

3.3. Tax scenarios

For forest landowners holding timber as material participants in a trade or a business, nine scenarios are set up by the size of timber holdings and the level of non-timber income (Table 3). For simplicity, forest landowners holding timber as investors are assumed to own 100 acres of timberland and have a non-timber income of $75,000.

For each ownership scenario, we estimate the NPVs and LEVs under the prior law and the new law, respectively. This enables us to compare the results due the changes in law.

3.4. Indexing under C-CPI-U

Using data from the U.S. Bureau of Labor Statistics (2018a, 2018b), we estimated the average annual difference between C-CPI-U and CPI-U to be 0.26% per year (Fig. 1). For the estimates under the prior law, tax rate thresholds were held constant in real terms, implicitly making CPI-U the real rate of inflation for calculation purposes. In the post-TCJA estimates, tax rate thresholds were lowered at a rate of 0.26% annually.

Table 1
Equations used to calculate NPVs and LEVs.

(1)	$NPV = \frac{1}{A}\sum_{n=0}^{r}\frac{R_n - MC_n - FC_n - SC_n + (FTwo_n - FTw_n) + (STwo_n - STw_n)}{(1+i)^n}$
(2)	$LEV = \frac{NPV \times (1+i)^r}{(1+i)^r - 1}$

Where:

r	=	Rotation age in years
A	=	Stand size in acres
n	=	Stand age in years
R	=	Gross revenue from timber sale
FC	=	Federal income tax on timber capital gains
SC	=	State income tax on timber sale
MC	=	Forest management costs, including reforestation costs, annual forest management costs, property tax, harvest tax, and timber sale expenses
$FTwo$	=	Federal tax on the landowners' ordinary non-timber income, without including the effect of timber holdings
FTw	=	Federal tax on the owners' ordinary non-timber income, including the effect of timber holdings
$STwo$	=	State tax on the owners' ordinary non-timber income, without including the effect of timber holdings
STw	=	State tax on the owners' ordinary non-timber income, including the effect of timber holdings
i	=	Owners' personal discount rate

4. Observations

4.1. Material participants

4.1.1. Prior law

As expected, after-tax LEVs vary due to the differences in timber holdings and income levels, ranging from $278/ac in the high-income, large-holding scenario to $388/ac in the low-income, small-holding scenario (Table 4). Low-income, small-holding forest landowners have the highest LEV mainly because their timber income is within the amount subject to 0% capital gains tax rate.

The after-tax LEVs decrease as landowners' non-timber income and timber holding increase. In general, because of the progressive tax rate structure, a greater proportion of timber income is taxed favorably at the 0% capital gains tax rate for low- or moderate-income landowners than high-income landowners with the same size of timber holdings. Similarly, for landowners with the same level of non-timber income, a larger proportion of timber income may be subject to the lower tier of the capital gains tax rates for those with smaller timber holdings, which results in higher after-tax LEVs.

The Alternative Minimum Tax (AMT) is triggered when the high-income, large-holding landowners harvest timber, which results in the low LEV for the group.

4.1.2. New law after the TCJA change

Compared to the prior law, the after-tax LEVs under the new law increase slightly in the low-income scenarios and modestly in the high-income, large-holding scenario. In comparison, the after-tax LEVs decrease in the moderate-income scenarios and most of other high-income scenarios (Table 4). The increased standard deductions allow more long-term capital gains to be taxed at 0%, increasing LEVs in most scenarios (except for the high-income scenarios). Meanwhile, the reduced ordinary income tax rates reduce tax savings on non-timber income. The net effects of these two changes determine the ultimate change in the LEVs for each scenario. High-income, large-holding landowners pay less in taxes on non-timber income under the new law due to the AMT changes.

Overall, the TCJA has minor effects on after-tax LEVs for most forest landowners holding timber as material participants. The decreases in the after-tax LEVs are mainly due to reductions in tax savings on non-timber income. Owning timber becomes less tax beneficial for most

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Table 2
Assumptions about major variables used in the analysis.

Variables	Description/Values
1. Forest landowner and timberland ownership	
a) Holding timber as material participants:	
Tax filing status	Married couple filing jointly
Non-timber income and timber holding	See Table 3
b) Holding timber as investors:	
Tax filing status	Married couple filing jointly
Non-timber income	$75,000/year
Stand size	100 acres
2. Timber stand	
Site index (SI)/TPA	60 (base age 25)/600[a]
Stand	Even-aged Loblolly pine plantation
3. Forest management regime and costs	
Year 0: Site preparation and planting	Mechanical site-prep with prescribed burning @ $230/ac[b]
Year 12: First thinning (25% row thinning)	5.84 tons/ac pulpwood[c]
Year 20: Second thinning (25% row thinning)	0.02 tons/ac sawtimber, 6.52 tons/ac CNS, and 10.86 tons/ac pulpwood[c]
Year 25: Final harvest	3.44 tons/ac sawtimber, 45.29 tons/ac CNS, and 32.98 tons/ac pulpwood[c]
Year 1-25: annual custodial management costs	$3/ac, including boundary line maintenance, road construction, insect and vegetation control, and disease management
4. Stumpage prices and timber sale costs	
Sawtimber	$24.85/ton[d]
CNS	$16.97/ton[d]
Pulpwood	$9.94/ton[d]
Timber sale expenses	10% of gross stumpage values[e]
5. Taxes	
Timberland property tax	$3/ac/year
Federal income tax	2017/2018 schedule
State income and capital gains tax rates	25% of federal income tax[e]
Harvest/severance tax	2.5% of gross timber stumpage value[e]
6. Personal discount rate (nominal)	4%

Sources:
[a] Lutz (2015)
[b] Maggard and Barlow (2017)
[c] Harrison and Borders (1996)
[d] TMS 2013-2017 average
[e] Straka and Greene (2007)

Table 3
Ownership scenarios of forest landowners holding timber as material participants in the analysis.

Timber holding size	Non-timber ordinary income		
	$35,000	$75,000	$125,000
50 acres	Low income Small holding	Moderate income Small holding	High income Small holding
100 acres	Low income Medium holding	Moderate income Medium holding	High income Medium holding
200 acres	Low income Large holding	Moderate income Large holding	High income Large holding

moderate- and high-income forest owners.

4.1.3. Effects of the C-CPI-U

Using the C-CPI-U as the inflation index reduces the after-tax LEVs slightly for most landowners with low- or moderate non-timber income. Due to the slower growth in tax bracket thresholds and standard deductions, more timber income is subject to the 15% capital gains tax rate for forest landowners in the low- or moderate-income categories (Table 5). The change has limited impacts on high-income forest landowners as they would pay taxes on full timber income at the 15% tax rate under either scenario.

4.2. Investors

4.2.1. Prior law

Our analysis indicates that forest investors with medium timber holding and moderate non-timber income who choose to capitalize their state and local taxes (SALT) and other operating expenses earn 8% lower after-tax LEV than material participants with the same combination of income and timber holdings (Table 6).

4.2.2. New law after the TCJA changes

Under the new law, forest investors have two options to recover their operating expenses and carrying charges: 1) itemize SALT expenditures and capitalize investment management costs; or 2) claim standard deduction and capitalize SALT and investment management costs. The after-tax LEV for forest investors choosing option 2) is $288/acre, 7% lower than material participants with moderate income and medium timber holding and 11% lower than the highest LEVs they could get under the prior law. If they elect option 1), their after-tax LEV is $295/acre, only 4% lower than material participants. However, due to the increased level of standard deduction, fewer forest landowners would find it beneficial to choose option 1) under the new law. In other words, forest investors as a group are worse off due to the changes in provisions related to itemized deductions under the TCJA. Because high-income taxpayers are more likely to claim itemized deductions, those forest investors may get higher LEVs than the forest investors with moderate income.

5. Discussion and conclusions

The TCJA is considered the most significant tax overhaul since 1986. The tax reform, however, has limited effects on timber income of private forest landowners holding timber as material participants for federal income tax purposes. Compared to the prior law, the new law does not significantly increase federal taxes on timber income, but it reduces tax savings for private forest landowners on their non-timber income due to timber holdings. Owning and managing timber becomes less beneficial in tax savings for forest landowners with moderate and

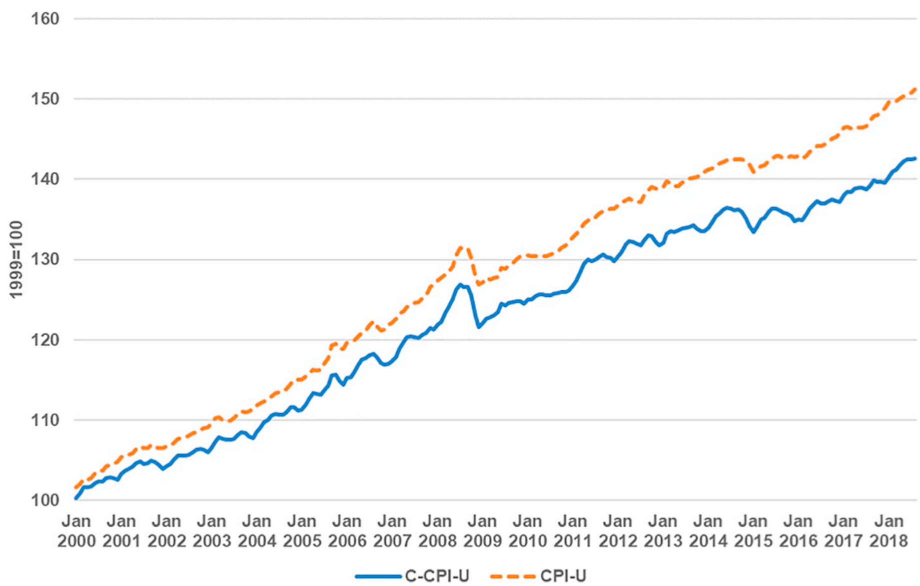

Fig. 1. Comparison between C-CPI-U and CPI-U.
(Source: U.S. Bureau of Labor Statistics)

Table 4
After-tax LEVs of timber holding for material participants.

	a) Prior law	b) New law (TCJA)	
		Value	Change
Low income ($35,000)	$342	$344	0.8%
Small holding	388	388	0.0%
Medium holding	337	342	1.5%
Large holding	300	302	0.8%
Moderate income ($75,000)	324	311	−4.2%
Small holding	352	342	−2.8%
Medium holding	323	309	−4.4%
Large holding	297	284	−4.5%
High income ($125,000)	316	302	−4.6%
Small holding	327	306	−6.2%
Medium holding	320	301	−6.1%
Large holding	278	298	7.1%
Average	*325*	*319*	*−1.7%*

Table 5
Impacts of the C-CPI-U on forest landowners as material participants.

	After-tax LEV		Present value of federal and state income taxes on timber income		Present value of federal income taxes on timber income	
	Value	Change	Value	% change	Value	% change
Low income ($35,000)	**$341**	**−1%**	**$92**	**2%**	**$23**	**9%**
Small holding	388	0%	64	0%	0	0%
Medium holding	335	−2%	95	5%	25	17%
Large holding	299	−1%	117	2%	43	4%
Moderate income ($75,000)	**300**	**−4%**	**126**	**6%**	**49**	**13%**
Small holding	321	−6%	114	13%	40	35%
Medium holding	302	−2%	124	4%	48	8%
Large holding	277	−2%	139	3%	60	6%
High income ($125,000)	**302**	**0%**	**166**	**0%**	**81**	**0%**
Small holding	306	0%	166	0%	81	0%
Medium holding	301	0%	166	0%	81	0%
Large holding	298	0%	166	0%	81	0%
Average	**314**	**−2%**	**128**	**3%**	**51**	**5%**

Table 6
After-tax LEVs (per acre) of timber holdings for forest investors.

Prior law		New law (TCJA)			
Itemize SALT deductions and investment management costs	Capitalize SALT and investment management costs	Itemize SALT deductions and capitalize investment management costs		Capitalize SALT and investment management costs	
		Value	Change	Value	Change
$323	$296	$295	−9%	$288	−11%

high non-timber income under the new law than under the prior law. The only one exception is the high-income, large-holding landowner group, whose after-tax LEV is higher under the new law mainly because of changes to the AMT.

The TCJA has moderately adverse effects on forest investors due to the changes in miscellaneous itemized deductions and standard deductions. More forest investors must capitalize their timber investment costs. Their average LEV from timberland management is 7% less than material participants. The distinction in LEVs between forest investors (as a group) and material participants becomes more significant. This may become an incentive for some investors to consider converting to a business and intensifying their forest management to meet the material participation requirement. Some investors, on the other hand, may reduce forest management costs or divest their timberland due to deterioration in profitability. This is probably one of the unintended consequences of the TCJA. However, it also indicates the importance of dialogue between stakeholders inside and outside of the forestry group. This coincides with the findings of Sténs and Mårald (2020) and suggests that participation and dialogue is critical in finding common grounds and fair trade-offs among stakeholders with divergent interests.

Due to the long-term nature of forestland management, forest landowners with low or moderate income will be affected adversely by the change in the inflation index used to calculate cost of living adjustments to tax bracket thresholds and the standard deduction.

This analysis assumes that private forest landowners fully utilize the major preferential federal income tax provisions to reduce their income tax liabilities. However, many studies found that knowledge of the tax aspects of timber management varies greatly among private noncorporate forest landowners and some of them have not utilized the preferential tax provisions (Butler et al., 2012; Greene et al., 2004). Depending upon specific circumstances, this suggests that the actual net benefits of timber holding for many private forest landowners in the South could be significantly lower than the estimates in this analysis. The actual effects of the TCJA on timber income of private forest landowners could differ greatly from each other.

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Author statement

The material in the manuscript has not been published yet, is not being published or considered for publication elsewhere, and will not be submitted for publication elsewhere unless rejected by you as the journal editor or withdrawn by us. The material in the manuscript, to the best of our knowledge, does not infringe upon other published material protected by copyright.

We (Yanshu Li, Gregory Frey, and Linda Wang) certify that we have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

Disclaimer

The findings and conclusions in this publication are those of the authors and should not be construed to represent any official USDA or U.S. Government determination or policy.

Declaration of Competing Interest

We (Yanshu Li, Gregory Frey, and Linda Wang) certify that we have no NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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