Forest tax policy: The cost of bush and forest valuation in New Zealand, or it ain't perfect yet

Dr. E.M. Bilek

One important goal of most tax policy is tax neutrality. That is, through its imposition of taxes, government usually does not wish to influence market behaviour. However, in its current forestry tax legislation, the New Zealand government makes it financially less attractive for forest owners to sell immature forests than to sell forests at maturity. Similarly, it is less attractive to acquire immature forests than it is to plant new land. This paper explores and quantifies the anomaly and market distortion. It shows how even buyers and sellers with identical expectations will arrive at differing forest values.

The current forest tax regime is contained in the Income Tax Amendment Act (No. 3) 1991. Under this law, when income is realised from forestry operations, it is treated as ordinary income for tax purposes. Forestry costs are divided into three groups: non-deductible and non-depreciable, depreciable, and deductible. The non-deductible and non-depreciable costs as well as the depreciable costs all relate to the land costs. The deductible costs are all the forest establishment, management and harvesting costs.

The 1991 law created an anomaly for forest owners by treating new forests that are established from plantings differently than forests that are acquired as immature stands. When an immature forest or stand of trees is acquired, it must be capitalised into a "cost of bush" account. The "cost of bush" may not be deducted from income taxes until those trees are either harvested or sold. That means that when an immature stand is sold, the seller is taxed immediately on the income, but the buyer must capitalise the purchase price and is not allowed to deduct it until the trees are harvested or again resold.

The anomaly creates difficulties in forest valuation. It makes some forests worth more to a seller than to a buyer, even if the buyer and seller have identical perceptions of the trees' future growth and pre-tax harvest value. This paper documents and quantifies this difficulty and illustrates why some forest sellers and buyers may have difficulties in reaching an agreement on forest value.

To illustrate these differences, I will use a simple example. The cutting right to a medium-sized stand of trees is for sale. For this example, the seller and buyer have identical expectations regarding the trees. Both expect the trees' stumpage to be worth $2,000,000 at harvest in 10 years. Both would like to receive the same pre-tax alternative rate of return (ARR) on their forestry investments, 7 per cent. Both expect the income from their forestry operations to be taxed at 33 per cent.

With this information, the present value of the forest may be calculated for the seller using the basic discounting formula:

\[ \text{Today's value} = \frac{\text{Future value}}{(1 + A R R)^\text{Years to harvest}} \]

Using the numbers as given:

\[ \frac{2,000,000}{(1 + 0.07)^10} = 1,016,699 \]

That is, the pre-tax value to the seller is $1,016,699. However, income from forestry is taxed at 33 per cent. That means that the seller may either have the pre-tax value of $2,000,000 taxed in 10 years, or have the $1,016,699 taxed today. The seller's post-tax cash flow options are calculated below:

| Pre-tax value | $2,000,000 |
| Tax @ 33% | $660,000 |
| Net income | $1,340,000 |
| Net cash flow (post-tax) | $1,340,000 |

From these, the post-tax rate of return may be calculated by re-arranging formula (1) to solve for the rate of return:

\[ \text{Rate of Return} = \left( \frac{\text{Future value}}{(1 + A R R)^\text{Years to harvest}} \right) - 1 \times 100 \]

Using the numbers as given:

\[ \left( \frac{1,340,000}{681,188} \right) - 1 \times 100 = 7.0\% \]

The seller's expected post-tax rate of return is the same as the expected pre-tax rate of return, 7.0 percent. There is no difference between the seller's pre-tax and post-tax rates because the trees' growth is not taxed until harvest.

For the buyer, the expected rates of return are not the same. This is because the buyer is not allowed to take a tax deduction on the purchase of the trees until harvest. The buyer must capitalise the purchase price into a cost of bush and carry this value forward until harvest. If the

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The buyer accepts the seller's forest value of $1,016,699, then the buyer's projected cash flows are calculated below:

<table>
<thead>
<tr>
<th>Pre-tax value</th>
<th>$1,016,699</th>
<th>Value in ten years</th>
<th>$2,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of bush</td>
<td>1,016,699</td>
<td>Taxable value</td>
<td>$983,301</td>
</tr>
<tr>
<td>Tax @ 33%</td>
<td>324,489</td>
<td>Net income</td>
<td>688,812</td>
</tr>
<tr>
<td>Net cash flow (post-tax)</td>
<td>$1,016,699</td>
<td>Net cash flow</td>
<td>$1,675,511</td>
</tr>
</tbody>
</table>

The buyer's and seller's pre-tax rates of return are the same because the pre-tax values are the same. However, the post-tax rates of return are different. The buyer's projected post-tax rate of return may be calculated using formula (2):

\[
\left(\frac{1}{\text{Cost of bush}} - 1\right) \times 100
\]

The buyer's expected post-tax rate of return is 5.1 percent. By accepting the seller's values and capitalising the purchase price into the cost of bush, the buyer is accepting a lower post-tax rate of return than the seller. If the buyer also expects a 7 percent post-tax rate of return, the buyer will have to offer less than the seller believes the trees are worth.

If the buyer also expects a post-tax rate of return of 7.0 percent, then these trees are worth only $818,495 to the buyer today. This may be seen below:

Using the rate of return formula (2), confirms this:

\[
\left(\frac{1}{818,495} - 1\right) \times 100 = 7.0\%
\]

Alternatively, from the seller's perspective, if the market is only valuing the trees at $818,495 today, then using formula (2), the seller could potentially earn...

\[
\left(\frac{1}{818,495} - 1\right) \times 100 = 9.3\%
\]

...or 9.3 per cent on the timber investment by holding the trees ten years until harvest.

The relative values of the trees to the buyer and seller depend on the length of time until harvest. These values are shown in Figure 1:

In order to achieve a post-tax return of 7.0 percent, the buyer should offer the seller nearly 20 percent less than the seller's value. This discount will change with the length of time until harvest. In Figure 1, it appears as if this discount diminishes with time. However, in percentage terms, it increases as the period until harvest lengthens. The discount reaches its maximum at the marginal tax rate as may be seen in Figure 2:

The reason for this discount is that the buyer must carry the cost of bush on the books and is not allowed to deduct it until the trees are harvested. As the period of time until harvest lengthens, the cost of bush is worth less in present terms and so the discount increases. Where the cost of bush is nearly worthless (at 100 years to harvest), the buyer will offer the seller 33 percent (the marginal tax rate) less than the seller's value.

Discussion:

There is a structural imperfection in the market for immature forests due to the fact that the value of immature forests sold is taxed immediately for the seller but must be capitalised by the buyer. This imperfection probably impedes exchanges of immature forests because it makes it difficult for buyers and sellers to come to an agreed forest value even if they have identical growth, price, and discount rate expectations. This may hinder any rationalisation New Zealand forest owners may wish to undertake for their holdings. It makes it financially less desirable for a forest owner to sell timber before harvest.

This has not been a large issue in the past. Most forest holdings have been owned by larger companies and, apart from the State forest asset sales in the early to mid-
1990s, there have been relatively few large-scale transfers of forest assets in New Zealand. However, this is changing.

Annual new forest plantings over the five years have averaged nearly 80,000 hectares, over the past 20 years nearly 50,000 hectares, (Ministry of Agriculture and Forestry, 1998). The most recent new plantings have been dominated by smaller-scale forest growers. This may be seen by the increases experienced over the past several years by partnerships, individuals, and other owners (Figure 3). The increase experienced by the registered public companies was largely a result of the acquisition of established forests previously owned by a State-owned enterprise.

Simply projecting current trends in new planting by ownership group forward, it may be seen that smaller forest owners may control over 40 percent of the forest resource by the year 2010.

With smaller holdings becoming increasingly important, one might envisage more buying and selling of immature forests in the future as owners may wish to either consolidate their holdings or exit the forest industry before their forests mature. In the future, this structural imperfection in the taxation of the transfer of immature forests, which causes a difference of up to 33 percent between sellers’ and buyers’ forest values may become relatively more important, hindering such transfers and rationalisation of forest holdings in the marketplace.

References:

Notes:
1 This simple analysis ignores impacts of inflation. In effect, inflation raises the discount rate. Inflation increase the difference between the seller’s and buyer’s values. This is because the cost of bush is fixed at historic levels. If there is inflation, the buyer’s eventual cost of bush deduction will be worth less due to the decrease in purchasing power of the dollar.
2 Note that the cost of bush is a tax deduction, but is not a cash flow. Therefore the Net post-tax cash flow = Pre-tax value - Tax.
3 \[ \frac{1 - \frac{818,495}{2,000,000}}{} \times 100 = 19.5\% \]
4 For example, if there are 100 years until harvest, then the seller’s value is $2,305. However, the buyer’s value is just $1,545, a discount of 33 percent.

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Risk Management in Forestry - Assessment and Management

The first NZIF conference of the new millennium will explore the assessment and management of risks associated with commercial forestry in New Zealand. The conference will address marketing, socio-political and biophysical risks. While many of us are familiar with aspects of these risks, particularly the biophysical, few are well acquainted with modern methods of risk assessment and how these can be used in strategies to minimise exposure to risk.

The committee has identified several areas of risk that should be considered by the conference.

Marketing Risks
- Is the risk of a future surplus of wood real when viewed in a wider Pacific Rim context?
- What are the risks that our products will not be eco-acceptable overseas?
- Do tariffs and trade barriers threaten our future? What if Chile is admitted to NAFTA?

Socio-Political Risks
- Is there a risk that the local (versus national) implementation of resource management rules will influence investment direction?
- What is the risk that current forest land may revert to agriculture now that agricultural technology has solved some of the problems that led to land being allocated to plantations?
- Is the loss of management experience a risk?

Bio-physical Risks
- There have been a number of insect interceptions at the border. Will our main production species be at more risk than our competitors?
- Has forest management still got a role to play in risk management or are investors diversifying into other species and areas to manage the risk?
- Has forest management been able to reduce the risks
The conference will be held on the University of Canterbury campus from Monday 17 to Wednesday 19 April, 2000. The timing of the conference coincides with University holidays ensuring that university facilities will be readily available. The venue is close to a range of accommodation including high quality hotels, motels and university hostels.

The conference will commence with the AGM and conclude with a field trip. Plenty of time will be allocated for “networking”. Those interested in contributing to the conference are invited to contact members of the technical committee.

For other information about the conference contact Russell Coker (phone/fax (03) 358 7211 or email RJCoker_HQ@xtra.co.nz).

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