evident it would be necessary to strip out the value of the prepayment of silvicultural costs from the unit value.

The Greenplan asking prices shown include varying amounts of prepayments – the age 0 units relate to 2002 planting and will be all prepayment, the units for older stands include the cost of remaining silviculture.

While a graph of $/ha on age might be instructive, transaction information would be more comparable if it was presented in terms of the implicit discount rate in each transaction. Such an approach would be more generic because $/ha is not only influenced by age but also by such factors as location, productivity and terrain.

Fig. 2 shows the implicit discount rates for transactions on the Forest Enterprises secondary market from November 1995 to February 1999 as presented by Croskery (2000). They are the discount rate that equates the sum of discounted after-tax cashflows to the actual transaction price for each unit. They were calculated using standard assumptions including average MAF log prices for the previous 12 quarters.

Were all transactions on the secondary market publicly reported in a similar way, a rich source of information on discount rates in the market for shares or units in investment forests would be created. This information would complement that available from the limited number of forest sales that are reported.

Reference

Source Material
Material for this article was obtained from the websites of the various promoters and from follow-up communication with Richard Bourne of Roger Dickie New Zealand Ltd, Steve Wilton of Forest Enterprises Ltd and Bruce Maunsell of Greenplan Forestry Ltd.

Land and crop interface

Mike Marren

Introduction
The preferred method used by land valuers to estimate land value and foresters to estimate crop value is by reference to comparable market evidence. However, when this is not available the valuer of either profession has to determine the value estimate by other methods.

When applying other methods the interface between crop and land value must be considered and it is important to unbundle the forest-operating business from the landowning business. There has been much confusion from valuers of both land and the crop over recent years by failing to differentiate between these two entities. If the valuer at the outset draws a line between the landowning entity and the forest-operating business, the valuation exercise becomes much more defensible.

Foresters have increasingly adopted the Net Present Value (NPV) methodology and the NZ institute of Forestry (1999) has attempted to clarify the application of this method of crop valuation. This method values the cashflows of the forest (land and crop) expected by the forester. The value of the crop is then determined by deducting an estimate of the land value from the forest value.

The estimate of land market value (LMV - which is defined as the sum of the land value and the value of improvements applicable to the use of the land) is an issue for the crop valuation as a number of approaches can be used. Again the NZIF Forest Valuation Standards make consideration of the matter in that the preference is for the crop valuer to calculate the land expectation value (LEV). If the land can be purchased at the LEV price and all the assumptions in constructing the LEV and forest cash flows are met then the project will return the required investment rate.

When land market value (LMV) is less than the LEV then there is an advantage to the forest project and can be regarded as either an increase in the rate of return on the investment or a forestry land use differential. However when the LEV is less than the LMV and the project proceeds, then either a lower rate of return is implicit or there is some external financial input to top up the cash flows so that the crop value is maintained.

In any case the crop valuer needs to know the LMV when valuing a forest. The crop valuer also needs to be aware that the methodology used by the land valuer may impact on them.

Recent land valuation tribunal decisions
There have been two recent land valuation tribunal decisions where the subject land was in forest. In assessing the LMV, land had to be valued using available evidence for agricultural land with adjustment for the forestry use.

Tahorakuri
In this instance the issues related to what adjustments were appropriate to apply to pastoral sales evidence to estimate land value under forest. The subject property had a long history of forest use whereas the market evidence was from developed high production farmland.

The debate was between Fletcher Challenge Forests Ltd (the forest owner) and the Valuer General in relation to Rating Roll valuations. The Land Valuation Tribunal (LVT) decision was appealed to the High Court, their decision appealed to the Court of Appeal and its decision was referred back to the High Court for their reconsideration.

The legislation under which this valuation was undertaken required the Valuer General to determine the value of land and trees and deduct the tree value to determine the land value for the Rating Roll. In practice the tree value was ignored and only land value determined (land value as defined under the Valuation of Land Act

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1951 (VLA).

In the Tahorakuri case, among the issues traversed, the land condition and fertility are of particular interest for crop valuation. Other issues of size, immobility and harvest differentials are not discussed here.

The land value arguments in relation to land condition focused on the cost differentials to establish forest on clean farmland in comparison to recently felled forest cutover. It was recognised that an adjustment was needed to account for the age-class structure of the forest, as the full cost could not be applied to every hectare as the cost expired over the life of the crop. In arriving at a deduction the second High Court decision had to find on the evidence presented and recognised that adjustments would vary from forest block to forest block and would need to be assessed on a case-by-case basis.

The ability of the existing forest owner to use current taxation rules to expense post-harvest land clean up, as against the farmland purchaser required to capitalise land preparation for farmland planting, was not recognised.

Evidence was considered in relation to the higher productivity that a forest established on the farmland could achieve due to induced fertility of the farm sites. The evidence was by way of modelling the expected recoverable volumes and comparison of farm and forest sites. A reduction in value derived from farm market evidence was considered appropriate for estimating the subject forest land value.

In this instance the farmland values were reduced by $156 per hectare, on a base land price of $1750 per hectare, for the envisaged state of the land and then a 20% value reduction for fertility.

**Eyrewell**

This case was between Carter Holt Harvey Ltd (CHH) and the Valuer General in relation to a forest owned by CHH but on land subject to a Crown Forestry Licence. The main point of difference was the proposition that the Rating Roll value should be based on the value of the owner's interest rather than the land value per se. Secondary to that were issues of fertility and forest risk of fire and windthrow in comparison to farm sales evidence.

This case post-dated Tahorakuri but CHH made no claim for an increased cost of reestablishment of forest in comparison to the farmland evidence. In fact, evidence (in answer to questions) was to the effect that it would be cheaper to replant cutover than to plant trees on land that has previously been in pasture. Accordingly as there was no evidence for an adjustment (positive or negative) none was made in the judgements.

This case ha, as a precedent, the earlier decision of Tahorakuri, which made a reduction of 20% for fertility as evidence. The LVT decision was to only allow a 5% deduction between pastoral and forest land, as the evidence was that the environmental factors of Eyrewell are different and issues of highest and best use needed consideration.

The LVT decision was appealed by both parties but the High Court dismissed these appeals.

**Crown Forestry Licence Arbitrations**

The Crown Forestry Licence (CFL) regime has now been operative for 12 years. The regime calls for three yearly periodic reviews and nine yearly general reviews of the annual licence fee. For the first nine-year period the fee was defined as 7% of the land value. A number of arbitrations have been held in the process of settling the fees.

In February 1999 an award with respect to Karori forest was released which is relevant to this discussion. The valuers were unable to agree on adjustments to pastoral land acquired for forestry to equate to the subject land. The litigation post-dated Tahorakuri and Eyrewell. However the definition of the land value under the CFL is different to that of the VLA and specifically excludes the trees growing or standing or lying on the land.

In this case there was market evidence of purchases of farms for forestry development. The umpire concluded that the sales of pastures to levy forest operators did provide a good basis to assess land value at Karori forest and that the CFL land value definition required a value of land separate from trees and improvements. Consideration of the Tahorakuri pre-plant argument was rejected, as there was satisfactory evidence and because of the differences in the land value definition.

The award was appealed to the High Court but no changes resulted.

**Problems for the forest crop valuer**

**The LEV concept**

The concept of LEV envisages a perpetual series of rotations so that at the conclusion of one rotation the land by inference should be ready for planting the next. Given that the LEV starts with the land immediately prior to planting then a rotation cycle must end with land in a plantable condition. Thus the crop valuer must ensure that all the costs of getting the land to a plantable condition are factored into the crop operating business when deriving LEV. If this is not done an incomplete forestry cycle is being assessed in calculating the LEV.

**Envisaged state of the land**

In valuing the forest business the forest valuer attempts to derive a project net cashflow. In a perpetual forest situation this will include all the operating costs associated with harvest and reestablishment and should reflect the same approach adopted in assessing the LEV.

If a terminating forest situation is to be valued then the condition the land is to be left in needs to be considered. If the land is owned and its sale is envisaged then the concept of the prudent well-informed forest owner should apply. Deductible expense to effect post-harvest clean up prior to sale minimises the land owner's taxation and adds value to the forest (crop and trees).

If the LMV has been derived with allowance for post-harvest clean-up costs then the enterprise is being double-charged and land value lowered. The crop valuer needs to assess the cost adjustments that may apply (positive or negative) to the specific situation or in fact, given the situation, whether they are relevant at all (i.e. there is need for consistency in assumptions used to calculate LMV and crop value).
Fertility
While increased growth on ex-farm sites is proven, the issue of log quality and timber quality from logs grown on such sites is increasingly becoming an issue. Extending the modelling beyond merely volume increase to value increase on current models and evidence indicates the differentials between farm and forest are not so clear cut.

Thus the crop value may need to consider whether the methodology of the estimated land value, if adopting production differences as one of its adjustments, has also given due consideration to the quality differences.

Improvements – are they adequately accounted for?

Forest improvements
In all the deliberations on LMV the improvements made by the forest business during the first rotation have not been specifically addressed. The cost of these to the forest enterprise can be significant and in terms of roadways infrastructure the more difficult the soils and topography the more expensive the road which is generally inverse to the LMV.

This suggests that calculation of LEV for a new land or first rotation forest should consider whether the costs of the second and subsequent rotations are in fact the same. Commonly harvesting costs include provision for road construction and it is most unlikely the same construction effort will be needed for a subsequent rotation as some roads will endure while for others the formation at least will survive for the next rotation. Both actions will serve to lower harvest road costs.

This also begs the question of planning and consent costs for subsequent rotation harvesting being comparable to costs for the initial harvest.

Farm Improvements
In assessing LMV for farms the improvements such as fences, water reticulation, sheds and curtilage development are assessed as being part of that LMV. The LMV (sometimes referred to as capital value) is made up of the value of structural improvements and land value as defined historically under the VLA. The VLA (1951) has now been replaced by the Rating Valuations Act 1996.

However, if the market price for a property is paid and the land used for a forest, then the land value per hectare warrants reconsideration. If none of the improvements are salvageable or contribute to the forest operation they have zero value and then the total price paid by the forest operator reflects in the land value rather than in the added value that those structural improvements give the LMV as the farm assets are subsumed into the land value.

The market price for land does not change just because the land is purchased for a different use, however when analysing sales of land it is important to know the intentions of the purchaser as this enables the valuer to place the appropriate weighting on the components of the land. This is particularly so where land is purchased from pastoral use for forestry as the forester has to compete with the farmer in the same market and pay $1 more for the land to acquire it for forestry purposes. The forester in this instance is paying the market price for the farm land which has upon it structural improvements which would add value in a pastoral use but are of no value in the forestry use. Accordingly the value that a farmer would put on those improvements has, upon analysis of the pastoral-to-forestry sale, to be reflected in the land value.

This is more simply explained by example of considering a sale of one hectare of land sold for $1000.
In farm use it could have been valued as:

| Land Value  | $750  |
| Value of Improvements | $250  |
| Land Market Value | $1000 |

Had that land been purchased for forestry purposes the forester would have no use for the structural improvements apart from a small amount of boundary fencing. The analysis of the sale for forestry purposes would reflect the added value of that boundary fencing only and could result in the following:

| Land Value  | $900  |
| Value of Improvements | $100  |
| Land Market Value | $1000 |

This example shows the traps that uninformed practitioners can fall into when assessing forestry land values and the value of an investment in forestry, which also includes the ownership of the land upon which the tree crop is growing.

Conclusion
The increasing requirement for forest valuations and the need to base valuations on sound methodology has been debated by foresters with the NZIF Forest Valuation Standards evidence of the progress made over recent years. The interface between land and crop has been addressed in the standards with a preference to report the value of the land to the forest project via the LEV. Differences between LEV and LMV should also be considered in reporting the crop value.

Land valuers, when forced to use farm sales evidence, have sought to assess differences that should be accounted for in applying the evidence to land used for forest. Adjustments to the sales evidence have been based on forest operating cost and fertility differentials.

The issue for the crop valuer is to evaluate whether the derivation of the LMV has accounted for some parts of the crop operating business or has correctly accounted for improvements in relation to the envisaged use of the land. It is fundamentally important that the valuers involved in such exercises have the knowledge or seek advice to enable them to differentiate between the two entities - the land-owning business and the forest-owning business.

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References