The current status of forest valuation in NZ

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In writing this paper, it was initially tempting to try to list all of the various areas in which forest valuation warrants further development and improvement. Such a catalogue could then be re-examined in a future edition of the Journal. The comparison might provide some gauge of progress.

Having started the list, it then expanded, and ultimately reached the point where it included almost every aspect of the forest valuation process. This was a vaguely depressing outcome of consorting with forest economics. At times, it seems no less dismal a science than its generic parent.

Dispensing then with any plans of an exhaustive catalogue, my shortlist of key issues has become (in no particular order):

1. Land value

   This continues to provide troubling issues. What is unsettling is that this should be the case despite the thoughtful approach in the NZ Institute of Forestry Forest Valuation Standards (NZIF 1999). For those prepared to spend time to absorb the concepts, (and more acronyms than an average NATO military incursion), there is reward. The treatment is logical and reasonably adaptable. There are two aspects that remain disconcerting:
   
   • The substantial margin between Land Expectation Values (LEV’s) and land market values (LMVs) that currently appear to apply; and
   
   • the frequency with which negative LEVs arise.

   At the rates of return currently proposed as necessary for forestry investment, land market values are frequently found to substantially exceed the LEV. The market values cannot be disputed, because they are based on ample empirical evidence. But how then are such values to be rationalized in the forest valuation process? If the forest investment is asked to service them in full, they lead to negative tree crop values at young stand ages. Certainly the election to charge the tree crop with servicing just the LEV (as the NZ Institute of Forestry Standards propose when ongoing forestry is compatible with some other highest and best land use) may resolve the negative tree crop value, but it does not help rationalize the LEV-LMV difference. It defies credibility to propose that the alternative land use, pastoral farming, is that much more profitable.

   There does seem to be a place for further discussion and analysis along the lines of that provided by Wilson (1999). On the basis of the grazing returns prevailing at the time of his study, he calculated that the grazing land prices in New Zealand were so high as to only permit a return of about 2% on asset value in the 1990s. However, there was a general expectation among farmers and their financiers that the land would continue to demonstrate real appreciation. Part of land’s value could be allocated to the capitalised value of this anticipated real gain. The prospect that a component of the land’s value might arise in this manner is interesting because the speculative activity and the growing of a tree crop are to a large extent compatible, rather than competitive, land uses.

   While symmetry demands that negative LEVs may exist, practical experience does not provide us with examples where the landowner pays rent to the tree crop owner. Does the explanation lie in unrealistic expectations of rates of return? Is the sobering truth that many of our sites cannot support a viable plantation forestry investment? Knowing that Alan Barnes has a forthcoming paper in this Journal addressing LEV-related complications, I’ll leave the matter for him to discuss (for now).

2. Discount rate

   In selecting the discount rate, forest valuators may follow two paths. The first is to calculate “Implied Discount Rates” as demonstrated by the market. This process involves estimating future cashflows for a transacted forest and then finding the discount rate at which the Net Present Value of these matches the price at which the forest has changed hands. The second main alternative is to turn to a Weighted Average Cost of Capital (WACC) approach. This includes the costs of both debt and equity. The most common means of calculating the latter is to apply the Capital Asset Pricing Model (CAPM).

   When examining their application over the last decade, both systems are revealed to have pronounced limitations. The available evidence with which to calculate Implied Discount Rates in Australasia is sparse, with less than 60 transactions of substantial forests over the last 12 years. Care is needed in interpreting the results because the traded forests have differed significantly in their strategic appeal and physical attributes. Further, over the 12 years there has not only been a startling price spike but also a significant change in the New Zealand forestry taxation regime and a regional currency crisis. Such events can reasonably be expected to affect investor perceptions of forestry investment, and therefore their selection of discount rate.

   The WACC/CAPM derivation of discount rate offers the appealing prospect of a formulaic approach. This suggests a potential system that might be both objective and consistent. Unfortunately, such worthy targets remain unattainable. There are several key components of the calculation where professional judgment remains necessary.

   One of the key components is the so-called beta factor. Strict application of the theory behind the CAPM model suggests that this should be drawn from companies that are engaged in pure-play forest ownership activity. There are comparatively few examples available. Despite this, the WACC/CAPM approach has been applied in some circumstances to produce discount rates that are reported to the second decimal place. This definitely appears to be spurious precision given the uncertainty that surrounds the formulation’s input factors.

   Refining the derivation of the discount rate may never become straightforward, or precise. However the process

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3. **Time of harvest**

This issue involves the final years of a stand’s rotation. Considered at the stand level, the optimum time to harvest is as the marginal rate of value growth coincides with the opportunity cost of capital. At the estate level the decision-making may be a little more complicated, with the need to consider forest-level constraints.

We may, in Wink Sutton’s terminology, be well down the path of domesticating radiata pine. However, this does not mean that the species will be any less heterogeneous in its performance. Given the differences in growth rates, it is unwise to propose harvest ages that are too general, especially as in modern forestry business it becomes more important to extract profits at the margins. Analysis points to the prospect that at the currently popular harvest ages the crop may be demonstrating very high rates of marginal value growth.

There may therefore be significant opportunity cost in harvesting too soon. Astute examination of the optimum rotation age at the individual stand level may be one of the most important means by which we can transform the “wall of wood” into a “wedge of wood” with technical aplomb rather than hysterical blather.

4. **Harmonisation of the valuation with the forest business plan**

There is a need to be careful in proposing this target. The truly independent valuer should certainly not accept unquestioningly the proposition that the harvesting strategy employed by the forest owner is necessarily the best. Once, however, a harvesting strategy and associated business plan are accepted, it becomes important for the credibility of the valuation that the cashflows on which it is based reasonably align with those of the business plan. Securing the alignment requires high resolution modelling, at least for the near term. Fortunately, the improvements in computer speed coupled with advances in software are making this a practical reality. The valuation process is increasingly moving beyond the crochet concept - originally designed to allow computational efficiency – to where each stand is individually represented and its fate can be readily traced.

5. **Integrating the valuation with the requirements of emerging accounting standards**

The introduction of the accounting standard, AASB1037 (AASB 1998) in Australia has created a certain level of consternation among forest owners there. It is expected that New Zealand’s accounting fraternity will not be long in introducing a new standard of similar form. The template may not be the Australian standard itself, but instead a model developed by the International Accounting Standards Committee within its agricultural reporting standard, IAS41 (IASB 2001).

There are two main attributes that may impinge on forest valuation practice. The first is a requirement to report forests in the accounting statements at their “fair market value”. For forest valuers this should be no cause for dismay, since most of our activity is designed to produce just this result. Indeed, there is the appealing prospect that forest values for all purposes - asset reporting, transactions, insurance, compensation, etc - may be brought to a more consistent footing. Further, many New Zealand forest owners are already reporting their forest values based on a market value rather than an historically-based book value.

A second important attribute of the new standards is the requirement to report changes in the asset value in the Income Statement. This is a more prominent representation than the alternative practice, which is to book changes arising from revised valuations to a Revaluation Reserve.

This process does have the potential to create some challenges. Forest values may be very sensitive to certain key inputs. Examples include the assumed log prices, the discount rate, the harvesting strategy and levels of overhead costs. All of these defy precise, authoritative quantification. There is then the risk that there may be significant value change from one valuation to the next as a result of movement in the key inputs that is essentially arbitrary. Having to report such movement in the Income Statement may be disconcerting, especially if it swamps the trading results.

Arbitrary changes to forest value may arise from the valuer attempting to refine the valuation process. Just as disconcertingly they may also come about from linking the valuation inputs to available indicators in an unduly mechanical fashion. Examples of this process include the use of either spot prices, or even log prices prepared from rolling averages. Similarly, if the discount rate is exclusively derived from a WACC/CPM formulation, this may lead to some marked volatility.

Such mechanical processes are appealing, because once selected they offer the promise of consistency in the valuation process. Further, if the input values are publicly reported, they may be defended on the basis of their seeming objectivity. Unfortunately, neither of these justifications carries much weight if the resulting movement in the valuation scuttles credibility.

The emerging accounting standards can be expected to encourage forest valuers to carefully consider the potential sources of variation in forest market values. Given the target of “fair market values”, it would be inexcusable to quash volatility per se. However, if it is volatility arising through arbitrary processes, it is fair game.

6. **Reconciling the results of forest asset sales with forest company share prices**

This is an itch that various commentators have chosen to scratch but without much effort spent in diagnosis. Thus there have been some disconcertingly trite observations from the likes of the NZ Institute of Economic Research with their suggestion that, “...The fact that forestry shares trade at substantial discounts to the non-market valuations suggests that nobody believes these valuations...” (NZIER 2000).

Those tracking forest transactions are aware that there is an apparent difference between the implied discount rates associated with purchasing forests as assets versus buying shares in a listed forest owner. The issue would benefit from some more assiduous investigation of the
effects of thin trading, and the behavioural characteristics of dominant shareholders. It remains necessary too, to consider what some of the listed forest-owning companies might have to spend in order to buy more forest assets.

7. Exchange rate treatment

The treatment of the exchange rate becomes an issue where the forest is not in the same country as the investor who requires the forest value to be reported in their home currency. If the currency conversion processes are too rudimentary, the forest value may be relatively stable in one currency, but volatile in the other, fluctuating in response to the spot exchange rate. Such volatility is intuitively discomforting. It also raises the question of if there is to be volatility in the value, within which of the currencies should this occur?

There is room for further guidance on this issue. An article in this edition of the Journal by Joe Cheung and Alastair Marsden (Cheung & Marsden 2002) represents a necessary first step in addressing the subject further.

Final comments

Notwithstanding my introductory comments, I believe that there are aspects of New Zealand forest valuation practice about which it is possible to be positive. There is now a substantially greater quantity of forest valuation activity than 15 years ago.

It is encouraging that in the process of evolving practice, considerable consistency in the valuation methodology has emerged.

As a participant in the NZ Institute of Forestry Forest Valuation Working Party, I might stand accused of self-congratulation by saying fine things about the NZIF Forest Valuation Standards. However, having missed enough of the Working Party’s meetings I believe that I can say with impunity that I consider the Standards a remarkable accomplishment. They provide the technical platform from which to consider all of the issues described above, and others besides.

References


Current forest valuation issues in NZ

Mike Colley

Background

In the early decades of plantation forest development in New Zealand, forest valuation was a discipline that developed slowly. There were very few and infrequent sales, but two notable ones were the purchase of Matae forest by the NZ Forest Service in the early 1960s, and the purchase of Tauhara forest by the Fletcher Timber Company in 1965.

The number and frequency of forest sales increased markedly (by historical standards) in 1990 with the sale of the State plantation forests by the government. Sales of plantation forests have continued at a reasonable pace (again, by historic standards) since then, with around three or four sales of large forests, on average, each year. The practice of forest valuation has been developed and refined in tandem with this increased sales activity. The publication of the NZ Institute of Forestry Forest Valuation Standards in 1999 is an example.

A number of issues exist in the field of forest valuation and it is timely to reflect upon them. They are listed in no particular order as follows.

Transaction evidence

Although the number of sales has increased markedly since 1990, there are still relatively few sales. Fig. 1 presents the number of significant (more than 1,000 ha) forest sales since 1990 in New Zealand and Australia that have been recorded by Chandler Fraser Keating Limited (CFK). (Note: some of the sales include a number of forests in one transaction.)

By contrast, urban land, vehicles, and many other classes of assets enjoy markets with a large number of transactions. In some parts of the world – notably the US South – forests also enjoy markets with a reasonably large number of transactions. The New Zealand (and indeed the Southern Hemisphere) plantation forest industry must therefore continue to rely on sales.

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