Appraising Timberland in a Volatile Marketplace

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Abstract

Compared to the return on investment (ROI) in financial securities, the ROI in timberland appears to be both less volatile and consistently more positive. But timberland trades in thin private markets, so ROI's and values are not readily observable. As a result, analysts rely on value estimates provided by timberland appraisals. In a volatile market, appraisers must recognize: (1) appraisal is inherently a backward looking process that by its nature tends to miss shifts in trends, and; (2) timberland valuation models depend on inputs with short-term volatility, but the appraisal problem is to value a long-term asset. These issues surface in all three of the standard real estate appraisal approaches: market, cost and income. Timberland appraisers can adopt a variety of strategies for minimizing the impact of these process shortcomings.

Keywords: Timberland valuation, appraisal, volatility, rate of return
Introduction
During the 2008-09 period of extreme volatility in values and investment returns for financial securities and real estate assets, many in the timber business have proudly pointed to the steady performance of timberland investments. After all, as the story goes, trees keep growing regardless of what happens in the economy. Figure 1 seems to support that story, as timberland returns over the last 20 or so years showed some volatility but not nearly as much as the stock market. More importantly, timberland returns were rarely negative during this period.

How do we know how well timberland is doing? Compared to financial assets, or even to other types of real estate, investment grade timberland trades in a pretty thin and private market. We do not have a timberland ticker tape. Our understanding of changes in values and return on investment depend to a great extent on appraisals because there simply are not many transactions to provide a more reliable guide. In fact, the most widely known timberland price index, published by the National Council of Real Estate Investment Fiduciaries (NCREIF, 2009), is heavily based on appraisals rather than actual transactions.

So it’s an appropriate time to examine the characteristics of the timberland appraisal process that affect appraisers' ability to accurately estimate timberland values in a time of economic change and volatility.

Figure 1. NCREIF Timberland Index (Total Returns, All Regions) Compared to Quarterly Change in Value of the S&P 500.
Valuation Concerns

With respect to shifting and volatile markets, two timberland appraisal issues arise: (1) appraisal is inherently a backward looking process that by its nature tends to miss shifts in trends, and; (2) timberland valuation models depend on inputs with short-term volatility, but the appraisal problem is to value a long-term asset.

We can see one or both of these issues in each of the three standard appraisal approaches:

- **Market approach**
  The market or comparable sales approach uses transaction data to indicate what properties are selling for in the marketplace. This is the most backward looking approach because in this thinly traded market, appraisers may have to utilize transactions that are as much as two or three years old. The comparability problem is compounded because transactions are becoming increasingly complex, often involving conservation easements, timber supply agreements, and/or subsidized financing.

- **Cost approach**
  The cost approach is based on a summation of component values (land, premerchantable timber, merchantable timber). As such, it is heavily driven by contemporary timber prices. Because timber prices can be quite volatile in the short term (see for example Prentiss & Carlisle, 2008), issues can arise if current prices are in a cyclical peak or trough. This gets even more complicated as the relationship between timber prices and timberland prices changes (Figure 2). Bare land values that are input to this approach are usually based on an analysis of timberland transactions, so they suffer the backward-looking problem of the comparable sales approach.

Figure 2. Relationship between Southern Timberland Per Acre Values Reflected in the NCREIF Index and Southern Pine Sawtimber Stumpage Prices.
• Income approach
The income approach is based on a projection of cash flows for the subject property, discounted back to estimate net present value. This is obviously a forward-looking approach, but it too depends on model inputs that can be quite volatile – timber prices, interest rates, fuel prices, etc. (see Figure 3). Embedded in this approach is a timber management model that may not incorporate options that respond to economic volatility (for example an inflexible harvest schedule).

Figure 3. Volatile Economic Elements and the Three Appraisal Approaches.

Appraisal Strategies
In order to deal with these inherent process shortcomings, appraisers need to be creative and should make a special effort to:

• Understand current buyer/seller mentality. Have market participants adjusted their thinking and expectations for the asset class? How are these changes in expectations reflected in price formation? What are current hurdle rates of return?
• Recognize the current state of markets and structure the valuation analysis accordingly. Are prices in cyclical peaks, troughs, or on the long-term trend?
  - timber
  - fuel, chemicals, etc.
  - timberland
  - capital markets
• Utilize alternative methods of estimating model inputs and projecting those inputs into the future. For example, one could start with current "off-trend" timber prices and develop a projection as to when those prices will reach a stable "normal" level, or one could start with a more "normal" price level and not project any severe change. Either of these approaches could be justified, depending on how buyers and sellers would be expected to think about the specific subject property.

• Perform sensitivity analysis on all of the key variables – timber prices, discount rates, expense levels, sale adjustments, valuation multipliers, etc.

• In reconciling the values indicated by each of the three appraisal approaches, special consideration should be given to:
  - the age and volatility of data analyzed within the approaches
  - the applicability or suitability of the approaches based on how sensitive they are to volatile inputs

Real estate appraisal is often described as part art and part science. In these volatile times, that observation has probably never been more true.

**Literature Cited**
