

## Understanding Why Global Timberland Diversification Makes Sense

***Weak market linkages among major timber producing regions of the world mean that geographic diversification of a timberland portfolio may improve overall returns and reduce portfolio volatility. But, inattentive diversification outside the United States is not sufficient to achieve these benefits.***

Diversification helps to control investment risks. For timberland investments, geographic diversification is a particularly effective strategy to manage overall portfolio volatility and risk.

In the late 1980s, HTRG pioneered the concept of geographically diversified timberland portfolios. Careful analysis of the correlation of timber and timberland markets in the various regions of the United States supported this investment strategy. But, initially the focus was solely on domestic U.S. timberland.

Might there be important opportunities for further diversification beyond the U.S. national border? As the forest products industry expands globally — manufacturing wood products in many locations for consumption in many other locations — implementing global timberland investment strategies becomes increasingly desirable.

The reasoning is fairly straightforward. The returns from timberland largely depend on timber prices (see *Hancock Timberland Investor*, 4Q 1999). As a consequence, the correlation of timber prices among different regions is a good gauge of potential diversification. This is an especially valuable procedure when

considering investments outside the United States, as data on log prices are reasonably reliable and available, whereas data on timberland returns themselves are not.

The poor correlation of timber prices among regions arises because logs are costly to transport, especially over land. As a result, the supply and demand conditions in one region may not affect the markets in another. Changes in domestic demand for radiata pine timber in Australia, for example, have little influence on prices of pine trees in the United States.

This logic also suggests that we might find a high correlation among markets in instances where timber demand in one region simultaneously affects several supply regions. For example, changes in Japanese wood demand is likely to affect timber prices in New Zealand (primarily a Pacific Rim-oriented timber seller) as well as those in the U.S. Pacific Northwest, where log exports still comprise an important market for timberland owners. Relatively inexpensive water transport reduces the “friction of distance.”

At the same time, these changes in Pacific Rim markets will have a much smaller

impact on, for example, the U.S. South or Europe. This logic suggests that diversification beyond national borders must be carefully considered in light of the full set of market correlations.

### Historical Log Prices

Since timberland return indices similar to the NCREIF Timberland Index do not exist for properties outside the United States, we rely on the strong relationship between timberland performance and sawtimber prices to provide insight into global timberland diversification.

Figure A plots historical annual average sawlog prices in eight timber-producing regions of the world. Casual observation reveals similar historical price movement between several of the regions.

For example, despite differences in log specifications (e.g., species, quality, diameter and length) among British Columbia, Chile, New Zealand and the U.S. Pacific Northwest, log prices in all four regions exhibit similar patterns over time. This pattern of correlation is not surprising because the U.S. Pacific Northwest, British Columbia, Chile and New Zealand all sell substantial volumes of timber into Pacific Rim markets.

In contrast, timberland owners selling timber primarily to their local markets

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## Understanding Why Global Timberland Diversification Makes Sense *continued*

(the U.S. South, Brazil and Australia for example) are much less reactive to demand changes in the Pacific Rim.

Initial observations such as these suggest some general timberland diversification strategies.

### Portfolio Diversification

For simplicity, imagine the investable universe of timberland is limited to the eight countries shown on the graph in Figure A. Our research suggests that an investor can add international timberland to a domestic timberland portfolio without causing a substantial increase — and perhaps even a decrease — in the volatility of portfolio returns (*Binkley, Wasburn and Aronow 2000*). Seems like a free lunch; let's examine why this is so.

Figure B isolates three regions, the U.S. Pacific Northwest, U.S. South and Sweden, and charts the correlation coefficient between annual changes in log prices between these three regions and the remaining others in our investable universe. One would expect log prices in regions serving similar markets to exhibit a strong correlation. And likewise, regions in separate market areas should exhibit a weak correlation. This is precisely the pattern that emerges from the data in Figure B.

Changes in log prices in Sweden over the past 20 years, for example, have had a low to negative correlation with the other seven regions. Timberland owners in Sweden are responding mainly to European demand for wood. Therefore, an investor holding timberland in regions focused on Pacific Rim demand, for example, such as Chile, could potentially offset changes in Japanese demand

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Figure A. Historical Log Prices

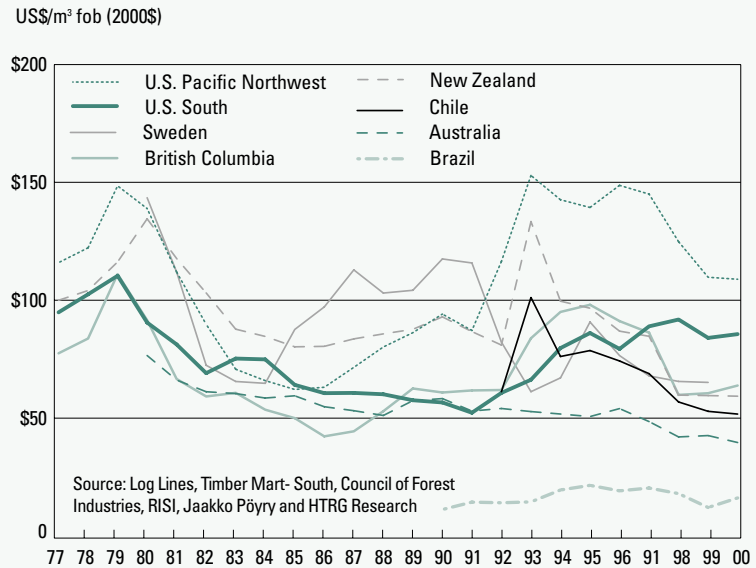
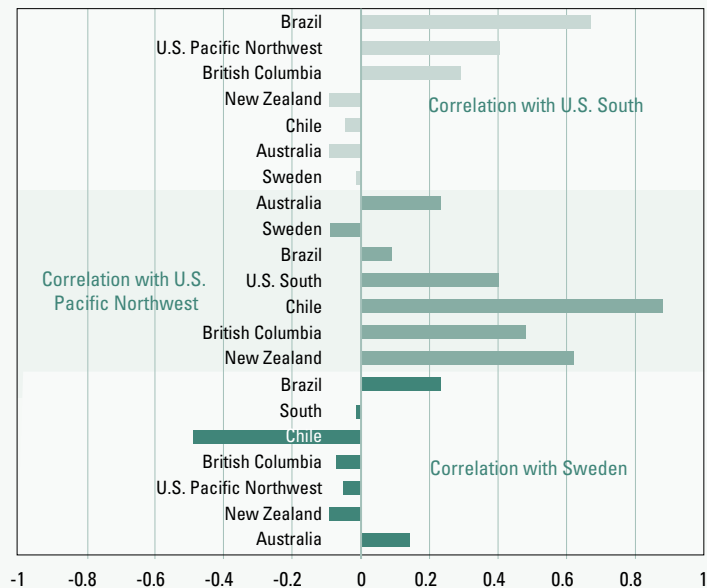
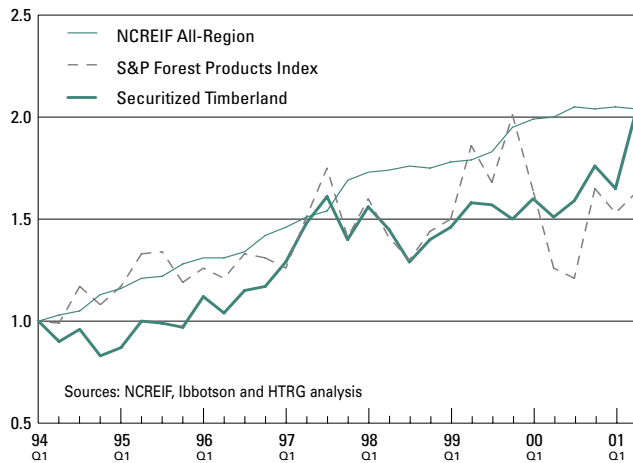


Figure B. Correlation Coefficients



## Timberland Investment Performance

Indexed: 1994(1)=1

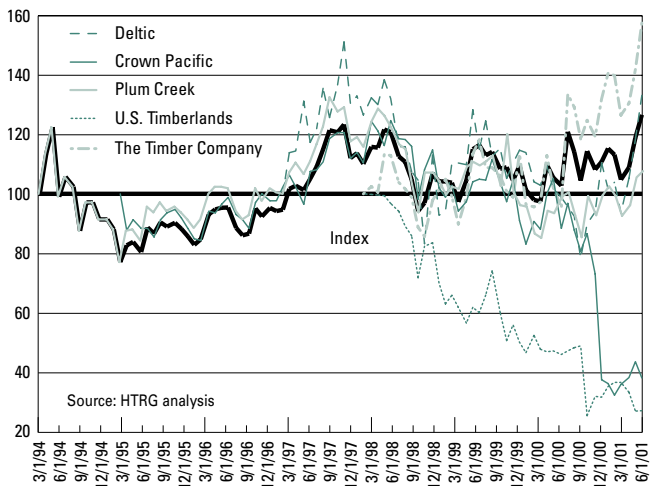


**Figure 7. Timberland Returns (1994-2001)**

Both the S&P Forest Products Index and our estimate of publicly traded securitized timberland moved upward second quarter, while private timberland equity remained unchanged.

## Securitized Timberland Performance

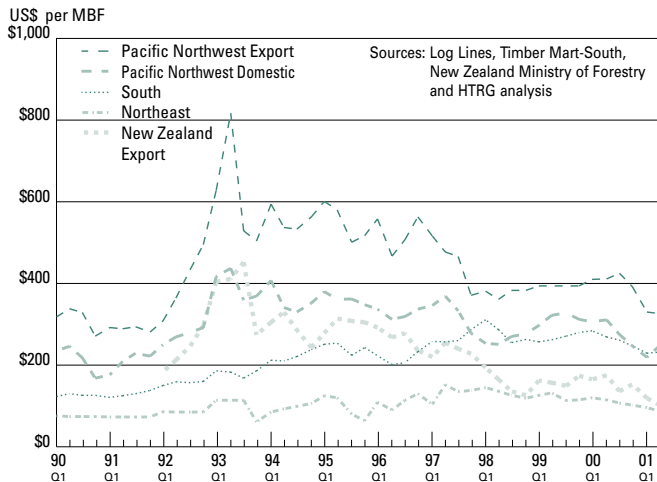
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**Figure 8. Hancock Securitized Timberland Index**

Plum Creek (PCL) and The Timber Company (TGP) both advanced during the quarter, as they moved closer to completing their merger. Combined, they comprise nearly 90 percent of the Hancock Securitized Timberland Index (HSTI), and their positive movements helped to raise the Index more than 20 percent in the second quarter. Deltic Timber (DEL) also rose strongly during the quarter, perhaps as part of a broader industry trend off cyclical lows at the beginning of the year. Crown Pacific (CRO) and US Timberlands (TIMBZ) remain in financial limbo as they both contemplate private market alternatives to their current structure.

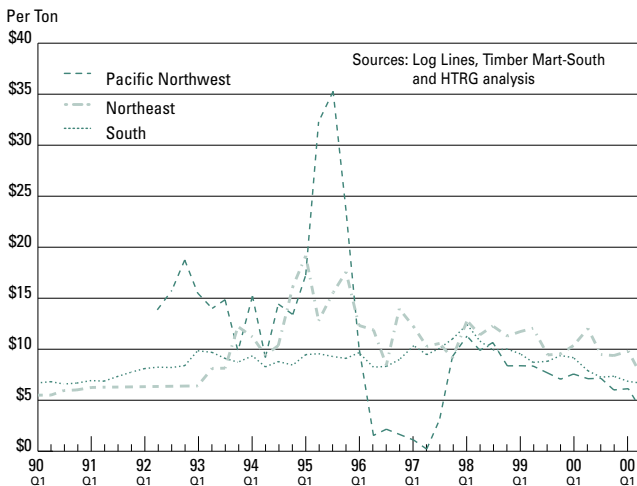
### Quarterly Average Regional Composite Prices: Softwood Sawtimber Stumpage



**Figure 1. Regional Softwood Sawtimber Stumpage Prices**

Export sawtimber prices were down during the second quarter — with New Zealand radiata prices hit hardest, dropping close to 15 percent. The weakness of the yen relative to the US dollar, in an already sluggish market, has pushed up costs for timber in Japan — to the detriment of exporters. With radiata logs from New Zealand sold in US dollars, competing with logs from Russia has been difficult.

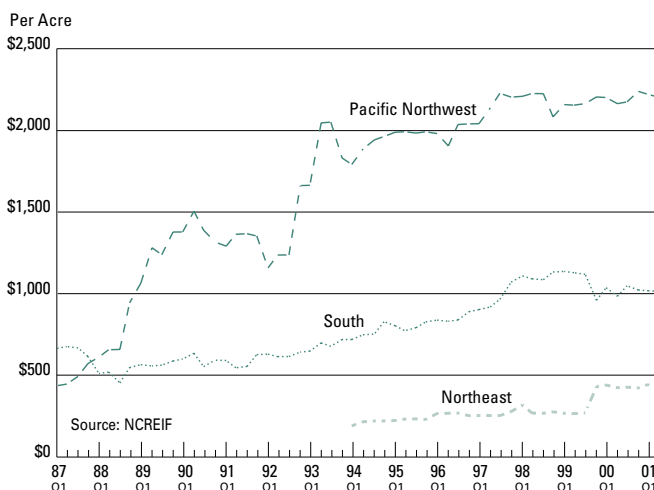
### Quarterly Average Regional Composite Prices: Softwood Pulpwood Stumpage



**Figure 2. Regional Softwood Pulpwood Stumpage Prices**

Pulpwood prices in the South stayed close to last quarter's low — some observers are speculating that a bottom may finally be reached. In the Northeast and Pacific Northwest, the story is quite different. Pulpwood prices fell dramatically over last quarter, 24 and 33 percent, respectively. Sluggish pulp and paper markets forced more machine shutdowns at some mills in both regions, while fiber inventories ran too high at others.

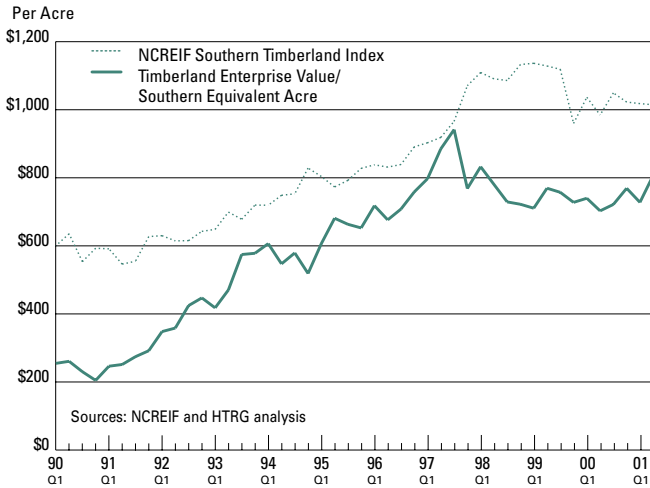
### Regional Timberland Values



**Figure 3. Timberland Prices**

Private timberland values moved mostly sideways during the second quarter — with the Northeast showing a bit of a decline in value. It's important to note that market values reflected on a quarterly basis may be misleading, as many timberland properties submitted to the NCREIF Index are not appraised until year-end.

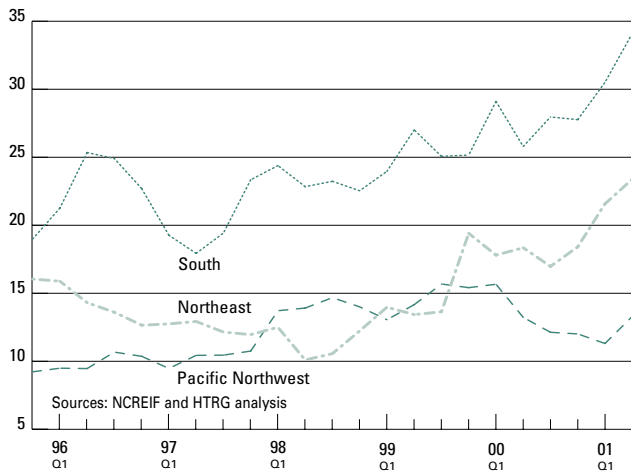
### Timberland Enterprise Value per Southern Equivalent Acre



**Figure 4. Public Market Timberland Value**

Public timberland values, as measured by our Timberland Enterprise Value (TEV) per southern equivalent acre, increased 10 percent this quarter — while private timberland values in the South moved downward slightly. The rise in both Plum Creek (PCL) and The Timber Company (TGP) helped buoy public market timberland values.

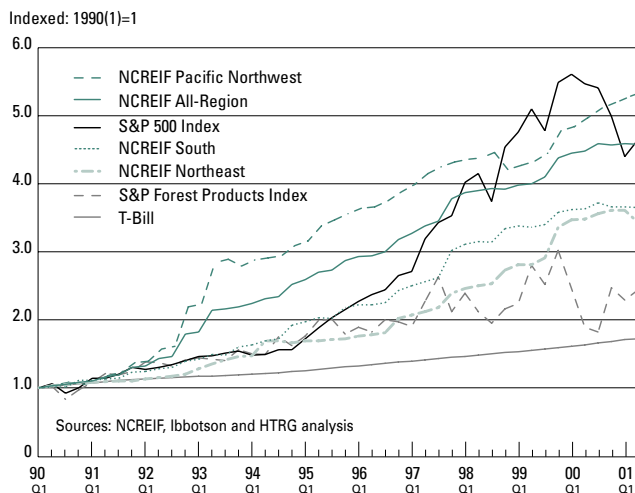
### EBITDDA Multiples for Privately Traded Timberland



**Figure 5. Timberland Pricing Multiples**

Privately traded timberland income second quarter slowed in all regions as timber prices continue to be depressed in most markets. Timberland values remained mostly unchanged. The resulting four-quarter trailing EBITDDA multiples rose in all three regions second quarter. Pricing multiples continue to be extremely high in the South and Northeast. Timberland markets are continuing to value the future cash flows from young southern pine stands.

### Timberland Investment Performance



**Figure 6. Timberland Returns (1990-2001)**

Privately traded timberland moved mostly sideways second quarter, with timberland in the Northeast dropping off from last quarter's returns. Publicly traded timberland gained back last quarter's drop.

by adding an investment in Sweden — a region that has historically been negatively correlated with Chile (-0.49).

An investor holding a U.S. portfolio comprised of a large percentage of Pacific Northwest timberland may not find the addition of New Zealand timberland to be an effective means to diversify her portfolio. For both regions are responding to market forces in the Pacific Rim, and therefore have a strong correlation (0.62). In contrast, if her portfolio were concentrated in the U.S. South, an investment in New Zealand

could provide superior diversification than an investment in the U.S. Pacific Northwest — changes in log prices in the U.S. South and New Zealand have virtually no correlation (-0.04).

Both Figure A and B show that important market linkages exist within and beyond national borders. It is not enough simply to add international timberland to a domestic timberland portfolio to diversify risk — a prudent investor must determine the best combination of timberland investments to offset opposing market fluctuations.

### Literature Cited

Binkley, C.S, C.L. Washburn and M.E. Aronow. 2000. Timberland isn't strictly domestic investment. *Pensions & Investments*. October 16.

To What Extent Do Timber Prices Drive Timberland Returns? *Hancock Timberland Investor*. Fourth Quarter, 1999

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### NOTES:

**Figure 1.** The composite price for southern sawtimber is based on quarterly average Timber Mart-South published prices for pine sawtimber and chip-n-saw stumpage. Pacific Northwest prices are derived from quarterly average Log Lines published prices for whitewoods and Douglas-fir with internal analysis of logging costs for stumpage calculations. New Zealand export prices are based on New Zealand Ministry of Forestry quarterly average published prices for Radiata unpruned A, J and K sort export logs with internal analysis of logging costs for stumpage calculations. Northeast sawtimber prices are calculated from internal analysis.

**Figure 2.** Pulpwood composite prices are derived from quarterly average Timber Mart-South published prices for southern pine pulp wood stumpage, Log Lines published whitewood and Douglas-fir pulp logs with internal analysis of logging costs for the Pacific Northwest, and HTRG analysis of Spruce/Fir pulpwood in the Northeast.

**Figure 3.** Regional NCREIF timberland market value per acre is derived by dividing the total regional market value at quarter end by the number of acres reported in that region. Due to the small sample of property in the Pacific Northwest in 1987 Q1 and 1987 Q2, these values were back cast from 1987 Q3 with quarter-end appreciation returns. Market values for Northeast timberland were re-estimated for the period 1998Q4 through 1999Q3 to adjust for what we believe to be an anomalous property included in the NCREIF database during those quarters.

**Figure 4.** Timberland Enterprise Value per Southern Equivalent Acre (TEV/SEA) for five timber-intensive publicly traded companies compared to southern timberland values per acre calculated from the NCREIF database. TEV is a quarterly estimate based on total enterprise value (total market equity + book value debt) less estimated value of processing facilities, other non-timber assets and non-enterprise

working capital. SEA uses regional NCREIF\$/acre values to translate a company's timberland holdings in various regions to the area of southern timberland that would have an equivalent market value.

**Figure 5.** EBITDDA multiples are calculated using NCREIF timberland value per acre at quarter end divided by a trailing four-quarter average NCREIF net income per acre.

**Figure 6.** Total quarter-end returns to timberland based on the NCREIF database. Northeast returns prior to 1994 are based on the John Hancock Timber Index. Additional adjustments were made to return calculations in the Northeast for the period 1998 Q4 through 1999Q3 to adjust for what we believe to be an anomalous property included in the NCREIF database during those quarters. This re-calculation in the Northeast results in a re-calculated All-Region NCREIF return series during the same period. Ibbotson Assoc. database was used for S&P 500, U.S. T-Bill and S&P Forest Products quarter-end returns (dividends reinvested).

**Figure 7.** Total quarter-end returns to securitized timberland based on internal analysis. The Securitized Timberland Index includes Plum Creek (PCL), Crown Pacific (CRO), U.S. Timberlands (TIMBZ), Deltic (DEL) and The Timber Company (TGP) (dividends reinvested).

**Figure 8.** The Hancock Securitized Timberland Index (HSTI) uses a base-weighted aggregate methodology (similar to that used to construct the S&P 500) to calculate a market capitalization-weighted value for five publicly traded timber-intensive forest products companies. Base weights were readjusted for the emergence of new companies or at the beginning of each year. Dividends are not reinvested. The companies included in the HSTI have no investment relationship with the Hancock Timber Resource Group.

References to expected investment performance in this newsletter are based on historical information and are not to be interpreted as guarantees of future results.