



Prehistoric Timberland Returns

Comparing the NCREIF Timberland Index and the John Hancock Timber Index

The NCREIF Timberland Index was first published in 1994 by the National Council of Real Estate Fiduciaries (NCREIF). It was developed using data from three contributors: Hancock Timber Resource Group, Wachovia Timberlands (currently BTG Pactual Timberland Investment Group) and Forest Investment Associates. Timberland return data for the US South and Pacific Northwest were available back to 1987, Northeast data back to 1994 and Lake States data back to 2002 were added later.

The Index was created to deal with annoying questions being asked of TIMOs by potential timberland investors—questions like

- What kind of returns can we expect from timberland?

and

- Can you prove that with publicly-available data?

Prior to the establishment of the NCREIF index, the answer to the second question was “No, but we have a really good theoretical model that proves it.” Each of the three TIMOs had their own model.

John Hancock Timber Index (JHTI)

Hancock Timber’s John Hancock Timber Index (JHTI) is the most widely known of the theoretical models because it is still being used to estimate pre-NCREIF returns and returns for areas not covered by the NCREIF Timber Index.

The JHTI uses timber prices to calculate a return for timberland according to the following formula:

$$\text{Rate of Return} = ((\text{NetIncome}_t + \text{CapitalValue}_t) / \text{CapitalValue}_{t-1}) - 1$$

where:

- Net Income_t is an index of the net revenue during quarter t and is the current price multiplied by an income rate which is specific to each region.
- Capital Value_t is an index of the value of the forest land and timber growing stock during quarter t. The value is based on an eight-quarter weighted average of timber prices.

The JHTI includes returns for the South, Pacific Northwest and Northeast US. HTRG has also used the methodology to estimate returns for Chile and New Zealand.

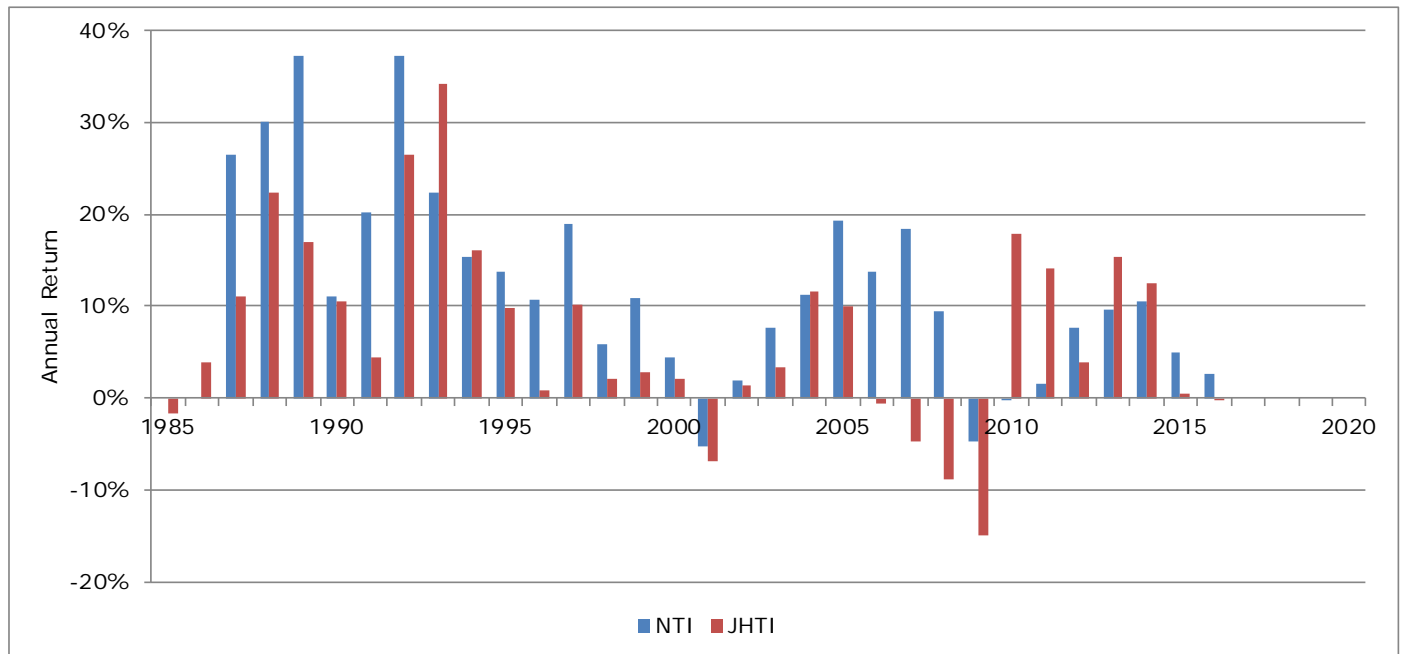
So, just how does the JHTI compare to the NCREIF index? Does it produce reasonable estimates of timberland returns?

The following analysis uses the JHTI methodology to calculate JHTI returns, but the numbers here are not identical to those that have appeared in HTRG publications. We have used a simplified mix of log grades for the Pacific Northwest and we have used prices for northern New Hampshire from the New Hampshire Timberland Owners Association for the Northeast since 1994 because Maine¹ changed to publishing an annual price report that is often not published until late in the following year. There are differences in timber markets between Maine and New Hampshire, but there is a lot of cross-border wood flow so markets are similar along the border.

Figure 1 compares the NTI and the JHTI and Table 1 shows some statistics for them.

¹ For our international readers: Maine is the northeasternmost state in the continental United States. New Hampshire is the state immediately to the west.

Figure 1. NCREIF Timberland Index (NTI) and John Hancock Timber Index (JHTI)



Sources: NCREIF and Forest Research Group

The two are strongly correlated, but the NTI has shown stronger cumulative returns in the past. In a 2008 Western Forest Economists presentation, we noted that the two indices seemed to head in different directions in 2006. Since 2011—admittedly a very small sample size—the two have shown more similar returns again.

Table 1. Statistics for NTI and JHTI

	NTI	JHTI
Correlation Coefficient	0.6082	
Annualized Return		
1987-2016	12.0%	7.0%
1987-2005	15.3%	9.6%
2011-2016	6.1%	7.5%
StDev 1987-2016	10.8%	10.6%

The JHTI has a fixed distribution of regional returns in its portfolio: 50% South, 40% Pacific Northwest and 10% Northeast. But the regional distribution of properties in the NTI has changed over time as institutional timberland investment has expanded. If we weight the JHTI regional returns by the market values of the NTI regions, we get a stronger correlation (Table 2 and Figure 2).

Table 2. Statistics for NTI and NTI-weighted JHTI

	NTI	JHTI
Correlation Coefficient	0.6803	
Annualized Return		
1987-2016	12.0%	7.3%
1987-2005	15.3%	10.1%
2006-2010	7.0%	-2.0%
2011-2016	6.1%	6.3%
StDev 1987-2016	10.8%	10.5%

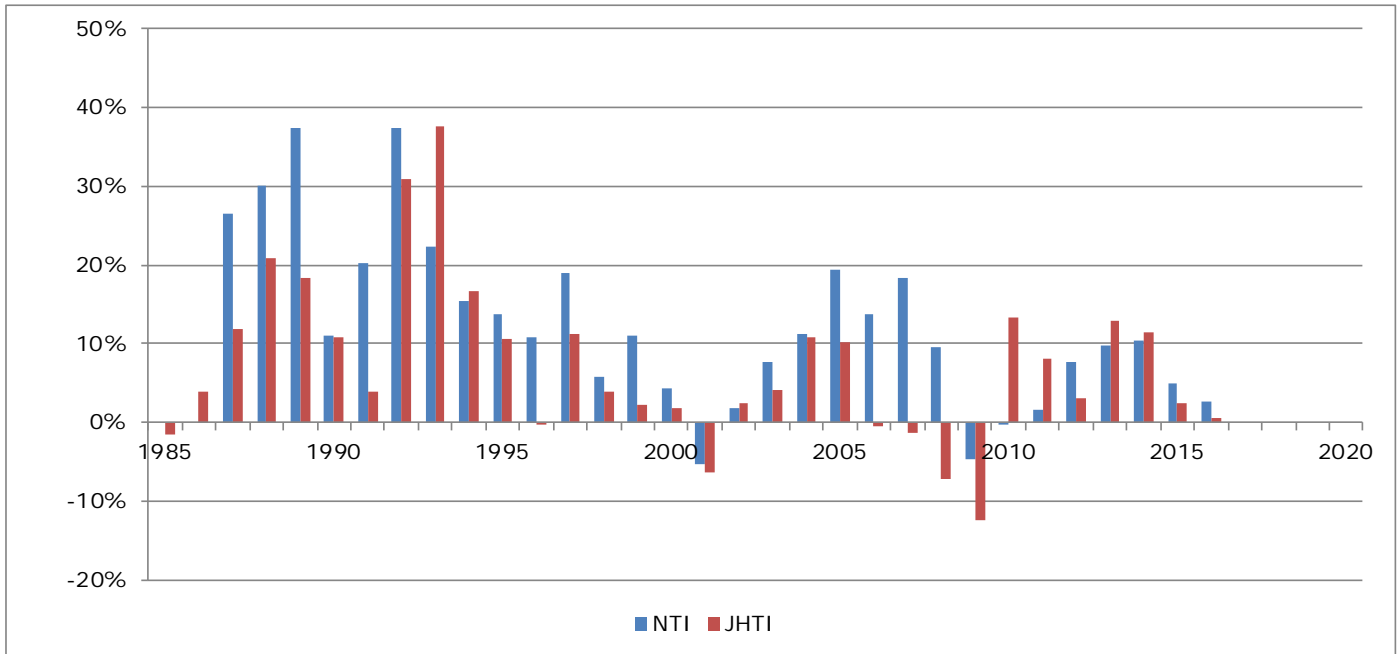
South

Returns for the South are shown in Table 3 and Figure 3. The correlation is stronger than for the US portfolio and the differences in the returns are less—except for the last five years.

Table 3. Statistics for NTI South and JHTI South

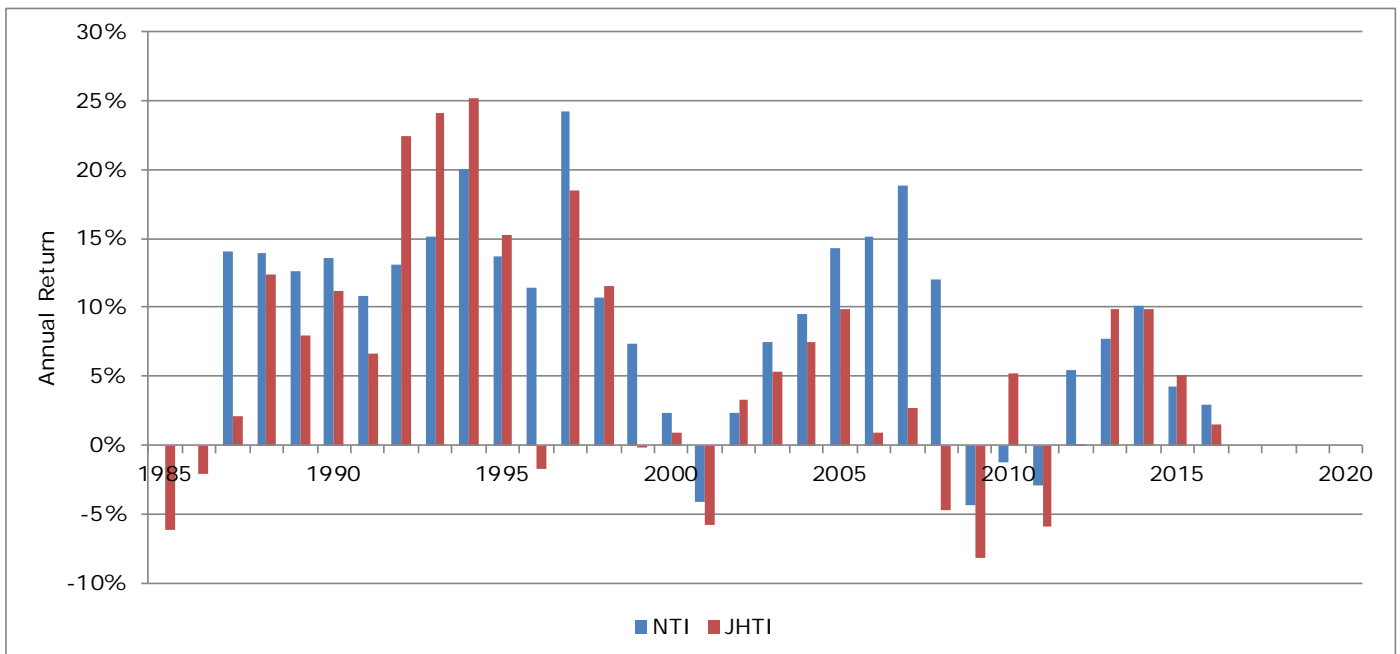
	NTI	JHTI
Correlation Coefficient	0.6642	
Annualized Return		
1987-2016	9.1%	6.1%
1987-2005	11.0%	9.0%
2006-2010	7.7%	-0.9%
2011-2016	4.5%	3.3%
StDev 1987-2016	7.1%	8.7%

Figure 2. NTI and NTI Market-Weighted JHTI



Sources: NCREIF and Forest Research Group

Figure 3. NTI South and JHTI South



Sources: NCREIF and Forest Research Group

Table 4. Statistics for NTI Pacific Northwest and JHTI Pacific Northwest

	NTI	JHTI
Correlation Coefficient	0.5999	
Annualized Return		
1987-2016	15.9%	7.8%
1987-2005	20.1%	10.4%
2006-2010	6.7%	-6.6%
2011-2016	10.9%	12.8%
StDev 1987-2016	20.5%	18.7%

Northeast

The relationship between the NTI and the JHTI in the Northeast is weaker (Table 5) because NTI Northeast includes Pennsylvania and our JHTI calculation is Maine-based through 1993, then New Hampshire-based after that. The differences between Maine and New Hampshire markets are much smaller than the difference between those two states and Pennsylvania.

Table 5. Statistics for NTI Northeast and JHTI Northeast

	NTI	JHTI
Correlation Coefficient	0.3675	
Annualized Return		
1987-2016	4.8%	4.8%
1987-2005	6.8%	6.9%
2006-2010	-0.5%	-2.1%
2011-2016	2.9%	4.1%
StDev 1987-2016	8.8%	7.7%

Discussion

One reason for the difference in returns between the two indices is that the JHTI does not explicitly recognize non-timber values. For example, part of the divergence beginning in 2006 is likely due to the boom in HBU values that would have been reflected in the appraisal-based NTI, but not the JHTI.

Non-timber values that appear in the NTI, but not the JHTI include:

- Land (tree-growing land and HBU)
- Recreation (hunting leases)
- Conservation (easements)
- Financing (leverage)

Another difference between the two indices is that the income rate for the JHTI is fixed for each region, while the discount rate applied to NTI properties has generally declined from 8-10% (real) in the 1980s to something between 5-6% (real) in recent years. It would be fairly easy to add an adjustable income rate to the JHTI calculation.

Summary

The analysis shows that the John Hancock Timber Index produces return estimates similar to those of the NCREIF Timberland Index since 1987. This indicates that it is a reasonable estimator of timberland returns prior to 1987.

References

Hancock Timber Resource Group, 2003, *Historical Returns for Timberland*, Research Note 03-2.

Lutz, Jack, 2008, *Timberland Models and HBU*, Western Forest Economists 2008 Annual Meeting, May 5-7, 2008.



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