

Measuring timberland performance

NCREIF introduces the Timber Fund and Separate Account Index

Copenhagen, September 2012



1 Introduction

The National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Committee unveiled the NCREIF Timber Fund and Separate Account Index (TFSAI) in the first quarter of 2012, offering a new way to measure timberland performance. The TPI measures returns derived from individual properties, while the TFSAI measures returns from timber funds and separate accounts. Timber funds may consist of one property or several, and can include leases and timber deeds. The TFSAI will be a welcome compliment to the TPI because manager fees, cash held by the fund, and fund level expenses are included in the return calculation and therefore offer a more comparable return to those seen by investors.

2 Key attributes of the TFSAI

Some key attributes of the TFSAI are that it will incorporate fund level expenses such as legal, auditing, and other costs, cash, and advisory fees. Debt is also unrestricted for the TFSAI. One potential limitation of the TFSAI is data may change from now until the first quarter of 2013. This is because NCREIF has left a window of time for historical returns to be entered into the dataset if a fund manager not currently reporting to NCREIF decides to contribute historical data. Another reason for leaving the data open to change is to allow for the continued validation of the volume of data presented for returns, which may date back as much as fifteen years. For this analysis, we are assuming that the data will not change appreciably.

3 Key differences between the TPI and TFSAI

IWC has identified several differences between the TPI and TFSAI, highlighted in Table 1. Of interest is the difference in size between the two indices. The TPI represents 17% of total, private, investable timberland in the world, while the TFSAI represents 16% of this universe. Of more interest is the representation of institutional timberland, where the TPI represents 35% of US TIMO owned timberland - 4% higher than the TFSAI. The primary reason for this discrepancy is the TFSAI requires 95% of fund assets on a net value basis to be located in the US. Since several timberland funds hold more than 5% of their assets outside the US, they are excluded from the TFSAI. Any properties located in the US in such a fund would be included in the TPI.

Another difference between the two indices is the level of debt and ownership of assets. While return on debt is not taken into account in the TPI (returns are calculated on a property's fair market value, exclusive of debt), the performance of the portion of a fund that is leveraged is measured by the return for the fund and thus the TFSAI. Debt is not typically used significantly in timberland investments. It may be used if the projected return is higher than the interest expense and the purchaser of the property has insufficient capital to acquire the asset outright. Several large assets were purchased between 2005 and 2008 that used debt as a material portion of the acquisition. The performance of the debt is measured by its contribution to the fund return. For instance, if debt is accretive to the fund return, the TFSAI will be higher, but if interest on debt is higher than fund returns, the debt will act as a drag on return. Subsequent write downs in the value of these assets has reduced, or in some cases eliminated, the performance of

debt on several large properties purchased from 2005 through 2008. This is part of the reason the TPI has outperformed the TFSAI in recent years.

Table 1: Comparison of selected aspects of the NCREIF TPI and TFSAI

NCREIF TPI and TFSAI as of Q2 2012	Timberland Property Index (TPI)	Timber Fund and Separate Account Index (TFSAI)
Gross market value (billion USD)	22.9	19.9
Area (million acres)	13.3	11.9
Number of properties or funds	393	101
% of Global investable timberland (assume USD 130 billion investable universe*)	17%	16%
% of TIMO owned US investable timberland	35%	31%
Geography	100% US - broken down by S, PNW, NE, Lake, HI, Other	95% of NAV must be in US - no regional breakdown
Gross FMV geography	US S - 64%, US PNW - 29%, US NE - 4%, US Lake - 2%, US Other - 1%	US S - 73%, US PNW - 22%, US NE - 3%, US Lake - 1%, US Other - 1%
US location	US S - 75%, US PNW - 16%, US NE - 5%, US Lake - 3%, US Other - 1%	US S - 82%, US PNW - 13%, US NE - 2%, US Lake - 2%, US Other - 1%
Make-up	Timberland properties with 80% fee simple ownership	90% of NAV must be timber, timberland, or cash equivalent
Ownership	Must own 80% or more of fee simple - performance of debt is not measured	Allow any level of debt (Debt in index is 21.6%)
Enter and exit	Sold properties exit the index the quarter they are sold and can re-enter the next quarter, if applicable	Can change on a quarterly basis as funds enter, are liquidated or new members enter
Weighting	By market value	Average market value equity in fund
Inclusion	All eligible portfolios from voting members of NCREIF	All eligible properties from members of NCREIF
Third party appraisal requirements	Annual	Annual
masking	At least 3 managers and 3 properties	At least 3 managers and 3 funds
Advisory fee	No advisory fee	Gross and net of fee returns reported

*RMS 2010

Since the TFSAI also accounts for cash balances held by funds, any cash balance held by fund managers will likely reduce positive returns. This is especially true given the current state of the economy. As log prices are near historic lows, fund managers are currently deferring harvests when possible. In turn, cash management by the fund becomes very important. If harvests are delayed, cash to cover fund activities is also delayed and fund managers must hold more cash to ensure there is enough to cover fund and property level expenses. When funds hold cash, they typically will invest in US government backed securities, which have extremely low risk. Since returns on these instruments are currently very low, the return on cash is a material drag on the fund total return.

4 Returns: TPI versus TFSAI

The TFSAI can be further separated to account for different fee layers. IWC has been able to compare the quarterly returns for the TPI, TFSAI Gross, and TFSAI Net from 1987, when contributing members first started reporting the data, marking the base year for the TPI.

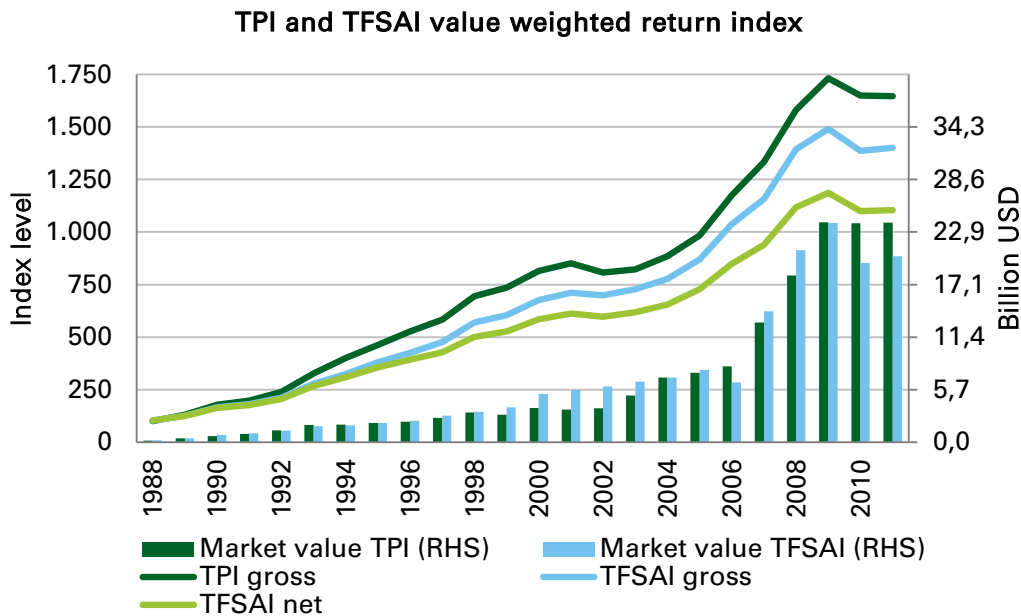


Figure 1: TPI, TFSAI gross total return, and TFSAI net total return cumulative since inception returns compared with total value of each index at year end, Source: NCREIF

As shown in Figure 1, the TPI provides a higher accumulated return than both return indices. In a world without debt, the differences between the three indices represent different fee layers as introduced above. The TPI is calculated net of asset management fees, and asset level expenses, but gross of all fund level expenses excluding, fund management fees, fund level expenses, and cash drag on return (remember we are in a debt free world). The TFSAI gross includes all fees except fund management fees and is net of asset management fees and asset level expenses. Thus the difference in the TPI and TFSAI gross are fund level expenses. The historical difference between these two indices is 0.80%, corresponding to the average costs associated with fund management. The differences between the TFSAI gross and TFSAI net are fund level management fees. Logically speaking, the TFSAI net is the return most comparable to the return an investor would see on their timberland portfolio. The TFSAI net is also net of any performance incentives if those exist. The historical difference between the gross and net TFSAI is 1.10% corresponding to the average fund level management fee. Debt could increase or reduce the difference between the indices depending on the performance of the debt, but does not change the inherent message. Average annual returns over a 25 year period are 12.2%, 11.4% and 10.3% respectively, illustrating the various fees and returns with or without those fees.

An assessment of key risk figures shows a slight difference between the TPI and TFSAI gross and net indices. Throughout the reporting period, average annual volatility has been 8.2%, 7.3% and 7.2% respectively. Although the TPI exhibits the highest rate of return over the period, it appears

that the risk-adjusted rate of return is actually equal the TFSAI gross index, expressed by a Sharpe Ratio of approximately 0.98 for the TPI versus 0.97 for the TFSAI – with an average 4.25% risk free rate applied. While the TFSAI net exhibits similar volatility to the gross index, a somewhat lower annualized return brings the Sharpe Ratio down to 0.84.

5 Structural differences between the TPI and TFSAI

Typically, the primary difference between the TPI and the TFSAI will be due to the inclusion of various expenses in the TFSAI gross and net, but periodically, larger or smaller differences will occur. IWC has identified the three largest quarterly deviations between the TPI and TFSAI.

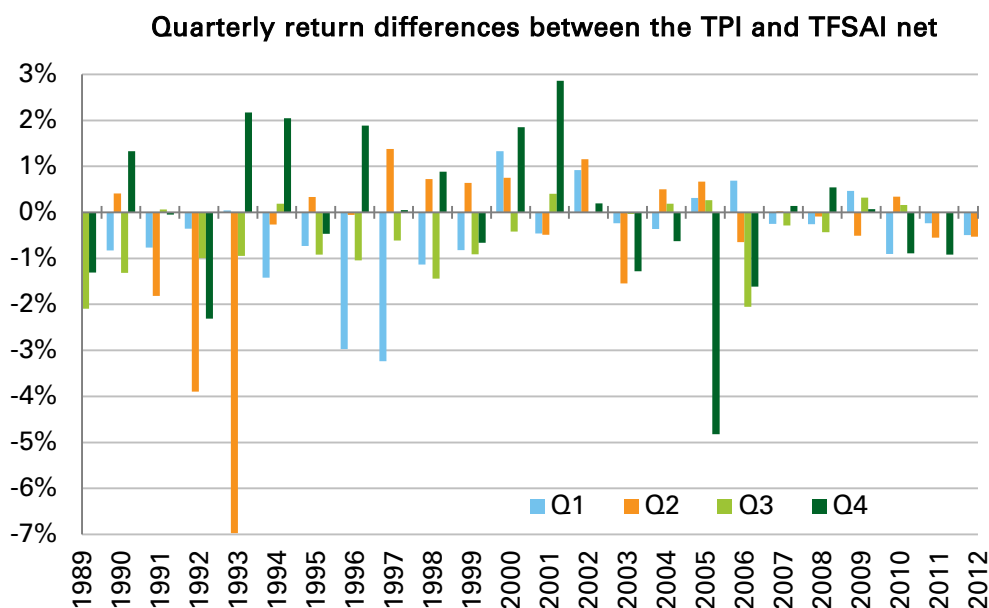


Figure 2: Quarterly differences between the TPI and TFSAI net (TFSAI net % minus TPI %)

Figure 2 displays the percentage difference between individual quarterly returns for TPI and TFSAI net indices. As might be expected, quarterly returns are fairly consistent, but a few outliers have been identified. Although there are differences in all quarters, it is obvious that the biggest differences are in the 2nd and 4th quarters.

The three largest deviations between the two indices occur in the second quarter of 1992 and 1993, and the fourth quarter of 2005. It is typical for volatility in the TFSAI and TPI to occur in the second quarter, but especially in the fourth quarter due to booking of third party appraisals. While appraisal bookings may cause volatility, increases or decreases in value on a property level should be included in fund level returns, thus the difference between the two indices should not change significantly. A brief investigation of the deviations between the TFSAI and TPI reveal the following:

- *Second quarter 1992 & second quarter 1993:* Returns, in the typically more volatile Pacific Northwest region were much higher in both years at 36% and 27%, respectively. The

appreciation aspect of the TPI was quite high in 1992 and 1993 at 9.6% and 23.1%. This increase in asset value is due to the Northern Spotted Owl controversy, where timber harvests of old growth timber on federal public land were essentially stopped and logs sourced from private timberlands became the primary source of fiber in the region. With a large source of fiber removed from the supply chain, essentially overnight, mills and Asian exporters paid higher prices for logs. This increase in value was reflected in both the TFSAI and the TPI, but more so in the TPI. While IWC can only speculate on the use of leverage and fund level expenses affecting the difference between the indices, it is difficult to point to the exact reason for the large difference between the two. One potential issue could be a small sample size as both the TFSAI and the TPI were only a fraction of the size they are today.

- *Fourth quarter 2005:* Large property sales in the Pacific Northwest and Northeast regions were most likely attributable for the volatility and unusually high property returns. One issue with return figures in the TPI is the method used to calculate appreciation. Due to the methodology used to calculate appreciation in the TPI after a property sale, returns can be higher than expected due to the denominator effect. Alternative appreciation methods have been shown to calculate lower returns; more in line with those calculated by TIMOs (see Appendix A).

A further issue that could complicate the TFSAI is the calculation of returns by TIMOs themselves. In the TPI, returns are calculated by NCREIF with accounting data supplied by TIMOs. In the TFSAI, returns are calculated by TIMOs with NCREIF only aggregating returns. In our work with the TFSAI, several errors were identified. These errors were corrected, but other, smaller errors could still be present. The potential for error is why NCREIF is keeping the data open to changes until 2013.

Logically, the indices should not have large discrepancies from quarter to quarter and property level returns should also be reflected in fund level returns. Debt and cash drag can increase or decrease the differences between the indices, but these differences should be gradual and not increase or decrease from quarter to quarter. IWC is seeking further explanation for some of the quarterly differences between indices, but at this point, some of the larger differences remain unexplained.

6 TPI and TFSAI versus the Forisk Timber REIT Index

Direct investments in either timberland properties or timberland funds have been the preferred vehicle for institutional timberland investments. Alternatively, public Timber Real Estate Investment Trusts (TREITs) have been available for the past decade. Publicly traded TREITs offer timberland investments to non-institutional investors, and return performance for these investments are measured on yet another platform.

The forest research and consulting organization Forisk, has developed a public TREIT index that has measured TREIT performance since the second quarter of 2009, when Plum Creek became the first publicly traded TREIT. The index, referred to as the Forisk Timber REIT Index (FTR), has grown to include Potlatch, Rayonier and most recently at the start of 2011, Weyerhaeuser.

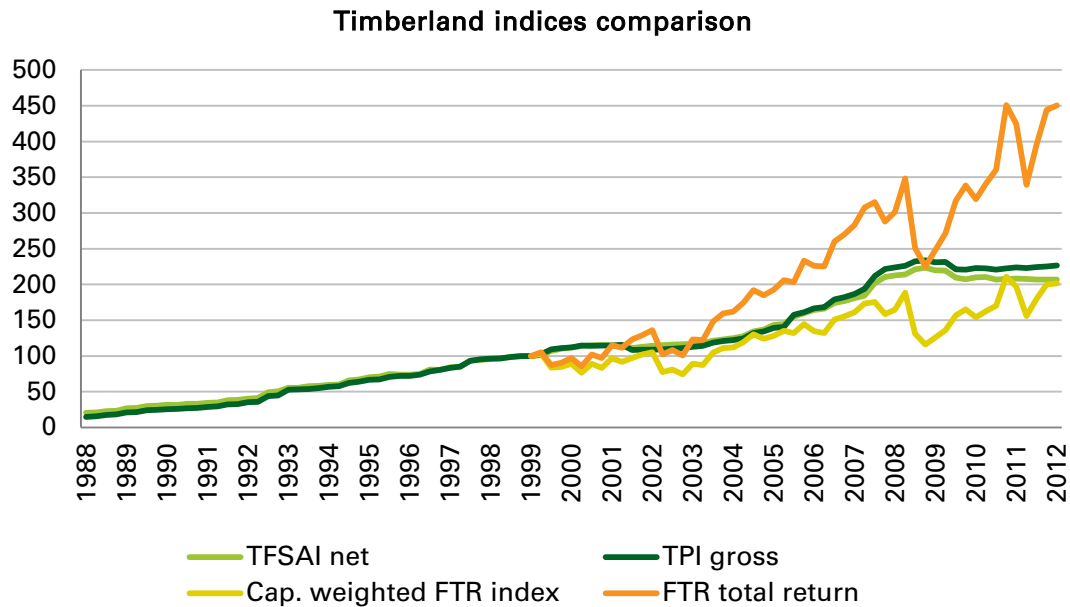


Figure 3: Comparison of the TFSAI net, TPI gross, FTR total return and FTR market cap weighted indices - all returns are indexed at 100 at Q2 1999; the starting point of the FTR index, (FTR Index courtesy of Forisk Consulting)

Compared to the NCREIF indices, the higher volatility in the FTR index is apparent, as is its connection to the stock market. While TREITs offer timberland investments, their returns are highly volatile. Also, interesting to note is over the long run, TREIT performance, as indicated by the weighted FTR index, is below that of the TFSAI and TPI. Direct or fund timberland investments offer less volatility because investors are invested for the longer term (ten years or more) and investments have much less liquidity than TREIT shares.

7 Conclusions

The TPI and TFSAI both provide an indication of timberland return for institutional investors in the US. The TFSAI will further legitimize returns for timberland as the TPI has shown higher returns because of its value calculation methods and its exclusion of fund level expenses. The TFSAI net return is a more accurate and realistic estimation of what a typical institutional investor would receive in returns on a large scale timberland investment. Differences between TPI, TFSAI gross and net address the different fee layers in timberland investments offering more clarity to investors. Furthermore, the NCREIF Timberland Committee recently approved the requirement for annual third party appraisals, a move that should create more transparency and stability in return calculations for both the TPI and TFSAI. As neither the TFSAI or the TPI represent even close to 100% of the investable institutional universe in the US, room for improvement remains. As more TIMOs contribute data to the indices, the more realistic the return data becomes. This will help legitimize return calculations, providing further clarity to the asset class.

8 Appendix A

Example timberland sale using NCREIF appreciation formula and alternative method		
<u>NCREIF appreciation formula</u>	<u>NCREIF</u>	<u>Alternative</u>
NUMERATOR		
	Ending market value	0
	Beginning market value	17,453,725
<i>Minus</i>		
<i>Plus</i>	Timberland sales	14,931,118
<i>Minus</i>	Capital Expenditures	0
<i>Minus</i>	Partial purchases	0
		<hr/>
	2,522,607	2,522,607
DENOMINATOR		
	Beginning market value	14,931,118
<i>Plus 1/2 of:</i>		
<i>Minus</i>	Capital expenditures	0
<i>Plus</i>	Timberland sales	0
<i>Minus</i>	Partial purchases	0
<i>Minus</i>	Operating EBITDDA	27,342
		<hr/>
	6,217,926	14,940,132
	APPRECIATION RETURN	
	40.57%	16.88%

NCREIF property index appreciation calculation versus alternative calculation method, courtesy of Regions Timberland Group