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**THE NCREIF TIMBERLAND INDEX:
A CURRENT PERSPECTIVE**

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Introduction

The National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Index is arguably the only index currently available for tracking the performance of the timberland asset class in a private equity context. Other benchmarks, such as the S&P Global Timber & Forestry Index and Forisk Timber REIT Index, also follow the performance of the timber sector, but they only track the securities of publicly-traded forest products companies and timber REITs.

The NCREIF Timberland Index has significant influence over perceptions of the asset class and its investment attributes because it is the only private equity benchmark available for timberland investments. As a consequence, it is important for those investing in timberland, as well as those who are considering involvement in it, to understand its history and mechanics. This white paper was developed for that purpose. It provides an overview of the index's design, scope and limitations and offers recommendations on how investors can make the best use of it to inform their investment analysis and decision-making.

History

Since its inception, the NCREIF Timberland Index has been released quarterly as a composite measure of investment return.

The publisher of the timberland index, the National Council of Real Estate Investment Fiduciaries (NCREIF), is a non-profit association founded in 1982 by members of the real estate investment sector. NCREIF was created to provide institutional investors, such as pension funds, foundations and endowments, with market data and investment performance information. At present, the organization's members include large institutional investors as well as real estate investment managers, which contribute the performance data from which NCREIF builds its databases and benchmark indices. Other members of NCREIF include real estate investment consultants, appraisers, accountants and members of academia.

The NCREIF Timberland Index, in particular, was established when several timberland investment management organizations (TIMOs), and some other leading members of the institutional investment community, lobbied NCREIF in the early 1990s to establish a broad measure of performance for private timberland investments. These efforts culminated in the publication of the NCREIF Timberland Index in 1994,



which provided historical investment performance dating back to 1987.

Since its inception, the NCREIF Timberland Index has been released quarterly as a composite measure of investment return. Its data sets are derived from a collective aggregate of timber properties purchased and held for investment purposes – all of which must have been acquired by institutional investors - or on their behalf by TIMOs. Consequently, all of the timberland holdings that comprise the index’s data universe are held and managed in a fiduciary context.

Since its inception, the NCREIF Timberland Index has not only provided a composite measure of return for the United States as a whole, it also has tracked regional returns for properties held by, or for, institutional investors in the U.S. South and U.S. Pacific Northwest. Over time, as the index grew in size and scope two new investment regions were added. NCREIF began

reporting timberland returns for the U.S. Northeast region in 1994 and for the U.S. Lake States region beginning in the fourth quarter of 2006.

Through the third quarter of 2010, the NCREIF Timberland Index has averaged an annualized return of 14.04 percent on a time-weighted basis. This is against a quarterly standard deviation of 4.22 percent (Table 1). In short, for purposes of illustration, a \$1,000 investment in timberland made in 1987, if it performed in accordance with the index, would have been worth \$21,005 at the end of the third quarter of 2010 (Figure 1).

Table 1. Historic performance of the NCREIF Timberland Index through third quarter of 2010.

Time Weighted Average Quarterly Return Inception through Q3 2010 (annualized)*					
Region	Inception	Total Return	EBITDDA Return	Appreciation Return	Quarterly Standard Deviation
Whole U.S.	1987	14.04%	5.78%	7.92%	4.22%
South	1987	10.72%	3.31%	7.23%	3.25%
Pacific Northwest	1987	18.39%	9.54%	8.27%	7.41%
Northeast	1994	7.84%	4.65%	3.08%	4.15%
Lake States	Q4 2006	6.06%	0.37%	5.67%	4.62%

Result of a \$1,000 Investment in Timberland if Performance Tracked That of the NCREIF Timberland Index and All Income is Reinvested

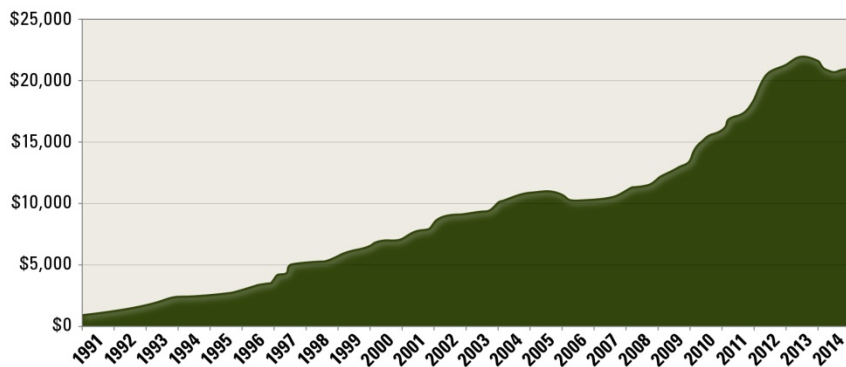


Figure 1. The resulting value of a hypothetical \$1,000 investment in timberland from 1987 through the third quarter of 2010 if performance tracked that of the NCREIF Timberland Index.



Reporting

NCREIF combines the performance data submitted by each contributing member of the index to calculate aggregate performance for the asset class. As one might expect, the methodology and data submission requirements are modeled after NCREIF's long-established commercial real estate indexes. After every quarter, each contributing member is required to submit five types of data concerning the operation and performance of the timberland properties they own and/or manage: (1) operating EBITDDA (i.e., earnings before interest, taxes, depreciation, depletion and amortization); (2) capital expenditures; (3) property sales; (4) timberland purchases; (4) ending market value; and (5) total area of represented assets.

The Timberland Index started with a value of 100 in the first quarter of 1987. From that point forward, it has been adjusted quarterly based on the aggregate returns provided by contributing NCREIF members (before management fees are deducted). The returns for each property tracked by the index are weighted by the property's market value, and performance is reported on a pure equity, unlevered basis.

In addition to reporting total return, NCREIF also breaks out performance into EBITDDA Return and Appreciation Return. The former is the income derived from the operation of the timberland holdings (timber sales, etc.). The latter represents the change in market value of the assets, adjusted for any capital improvements and partial lands sales. NCREIF also provides the market value of the properties represented in the index; the number of properties that comprise it during any given period; the total amount of capital expenditures made by members during that period; and, total acreage amounts.

Construction of the Index

Maintaining the integrity of the index is a major emphasis for NCREIF and its members and contributors are required to comply with certain rules and requirements with regard to data submission and use. Among other things, contributing members must report to NCREIF the performance of all qualifying properties under their ownership or management, which helps prevent selection bias. A qualifying property is one that is a wholly-owned or one that is held through a joint venture structure within a fiduciary context. The NCREIF

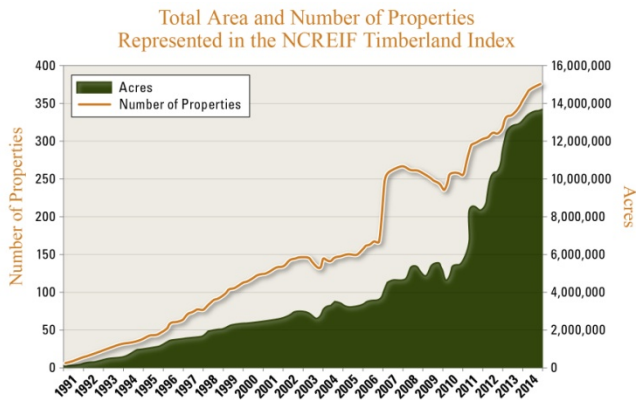


Figure 2. Total area and number of properties represented in the NCREIF Timberland Index through its data contributors from 1987 through Q3 2010.

Timberland Index only accepts data for pure forestland assets. Non-forest holdings, such as pastureland, farmland and commercial or residential real estate are excluded. Furthermore, at least 80 percent of each forest asset included in the index must be held on a fee simple basis. This excludes such holdings as leased lands and investments structured as timber deeds. Figure 2 shows the total number of properties and acreages represented in the NCREIF Timberland Index during its 24-year history.

Both leveraged and unleveraged properties can qualify for submission to NCREIF. However, as was mentioned earlier, leveraged properties are reported on an unlevered basis. Regardless, each property's market value is assessed by a real estate appraisal methodology that is applied on a consistent basis. Beginning in 2012, this requirement is expected to undergo an adjustment. At that point, NCREIF will likely require data contributors to conduct annual, independent, third-party appraisals on most properties whose data is submitted to the index for tracking. After a property is sold, it is removed from the index for the quarter in which the sale took place.

Contributors

Any organization that owns or manages timberland properties that qualify for the NCREIF Timberland Index is required to contribute data to the index in order to remain a NCREIF member. In other words, investors and TIMOs are not permitted to join NCREIF as a *Professional Member*, which is an option for investment consultants and academics. While this rule helps prevent "free riders," (non-contributors) from deriving direct benefits from the index, it has not prevented them from using it or referencing it in their marketing materials if they have been able to obtain it through other means.

At present, a total of 12 organizations, out of a total of more than 20 TIMOs operating domestically, belong to NCREIF and directly support the index.¹ While these organizations oversee a significant portion of the

¹ In addition to TIR, organizations that are members of the NCREIF Timberland Subcommittee are: The Hancock Timber Resource Group, The Campbell Group, Resource Management Service, RMK Timberland Investments, Forest Investment Associates, Molpus Woodlands, Brookfield Asset Management, Wells Timber REIT, Olympic Resource Management and Pennsylvania Timber (a unit of LandVest). Global Forest Partners also is a member, but the firm is not contributing data at present because its current activities are completely off-shore.



timberland assets being managed for institutional investors in the U.S., the reluctance of others to join and contribute prevents the NCREIF Timberland Index from being as broad and inclusive as it otherwise would be. From this standpoint, it is in that respect more akin to the Dow Jones Industrial Average than the Standard & Poor's 500. The Dow Jones Industrial Index uses the stocks of just 30 companies to generate its large cap U.S. equities index, while the S&P 500 uses the performance of the 500 largest U.S. stocks to cover effectively all U.S. large caps.

The Index and the Market: Caveats and Limitations

Like any other benchmark, the NCREIF Timberland Index can be a useful tool if it is employed in a manner consistent with its design and limitations. When analyzing or interpreting timberland asset class performance data from it, there are five issues that current and prospective timberland investors should consider.

In the late 1980s and early 1990s... the number of managers reporting performance information into the index typically amounted to fewer than half a dozen firms.

1 Participation and Coverage Inconsistency

As was discussed earlier, only NCREIF members contribute data to the index – but not all timberland investors or managers are members of NCREIF. Therefore, once aggregated into the index, the data may not be completely representative of the performance of the timberland asset class in its entirety. Today, this is less of an issue than it once was because the index roughly covers about two-thirds of all institutional timberland investments in the United States. On the other hand, it is important to understand that during the early years of its existence, the universe of contributors was quite small. In the late 1980s and early 1990s, there were far fewer TIMOs operating in the marketplace than there are today and the number of managers reporting performance information into the index typically amounted to fewer than half a dozen firms. In fact, one TIMO, in particular, constituted more than three-quarters of the index's value in the first few years of its existence. Although the national timberland index is now well populated with data from numerous managers, certain investment regions, the U.S. Northeast and U.S. Lake States, in particular, are still “data thin” when compared to the U.S. South and U.S. Pacific Northwest (Figure 3). This is because some of the TIMOs with the largest presence in those regions refuse to join NCREIF.



Net Asset Value of Contributing Properties to the NCREIF Timberland Index by Region (\$ Million)

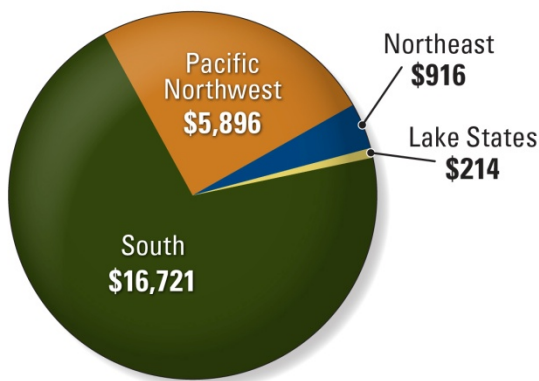


Figure 3. The relative contribution by market value of properties represented in the NCREIF Timberland Index, broken out by the four major timberland investment regions in the U.S. as of the third quarter of 2010.

Along with the issue of total coverage, the consistency of coverage remains a problem. The number of properties that go into the NCREIF Timberland Index changes from quarter to quarter as lands are purchased and sold and as members enter or drop out of NCREIF. If a large property, one that represents a sizable proportion of the land base being tracked in a given region, is added or removed from the index, it can skew NCREIF's returns by having undue influence on the performance of that region, and perhaps even the national index.

An example of this occurred in late 1990s. The performance of the Northeast region as tracked by the NCREIF Timberland Index was heavily skewed by the extraordinary performance of a single hardwood property, which constituted more than half of the Northeast regional index. Because of this phenomenon, the fourth quarter of 1999 saw the Northeast portion of the index produce a 77.2 percent annualized total return. After 1999, the property was removed from the index, which meant a second, significant adjustment had to be made to the Northeast component because the circumstances clearly did not reflect actual market fundamentals.

2 Appraisal Lag and Smoothing

Unlike commodities, precious metals and tradable securities, timberland and other forms of real estate are not fungible assets. In short, they lack established and transparent markets, which means that the value of any given timberland asset must be estimated through an appraisal process. Appraisals do not perfectly reflect movements in the timberland investment sector and generally lag the market, which tends to dampen the perceived volatility of the asset class. One reason for this is that appraisers must take the time to incorporate comparable sales into their estimates of market value. Another is the valuation process itself. Most institutional investors and TIMOs do not perform independent, third-party appraisals on every property, every quarter because of the time and costs involved. In most cases, a single timberland property is appraised independently once a year or even less frequently (see Figure 4).² During the intervening quarters between full appraisals, some NCREIF contributors use internal assessments to

² Likely in 2012, NCREIF would require annual independent appraisals at a minimum for all contributors to the Timberland Index



Average Total Return for a Given Quarter
in the NCREIF Timberland Index 1987–2009

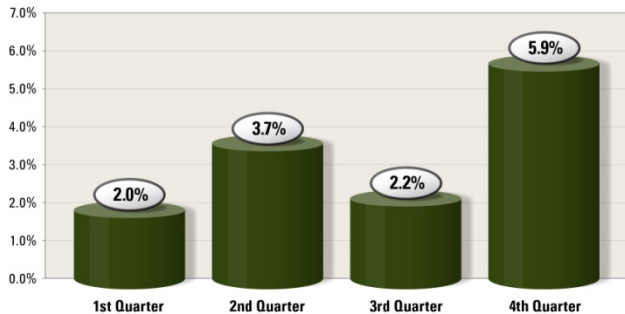


Figure 4. The average return observed for a given quarter in the NCREIF Timberland Index from 1987 through 2009. This suggests the outsized affect of whole-property external appraisals on the values of the timberland index, due to the observation that external appraisals are more commonly performed at the end of the year (fourth quarter).

adjust property valuations based on perceived movements of wood markets, but hold land values from the latest appraisal constant.

Consequently, the practice of relying on periodic outside appraisals and using internal valuation assessments to bridge process gaps creates a lag and smoothing effect. For that reason, the NCREIF Timberland Index – like many other private equity-based indices – should not be used as a representative indicator of spot timberland market performance. This means that if one attempts to project the performance or movement of the asset class based on current data shown in the index, the market cycle that generated that data may have already long since passed.

3 Winner's Bias

Another issue to keep in mind when using the NCREIF Timberland Index is the fact that the index naturally trends toward a “winner’s” bias. This is because returns are weighed by the market value of the contributing property, which means larger timberland properties carry more weight in the index. This is because successful, well performing properties tend to have net asset values that rise faster than those of poorer performing properties. As a result, there can be a bias in the NCREIF Index toward reporting higher returns than are actually being generated within the market as a whole.

To illustrate this point, hypothetically assume that an investor made a \$100 million investment – splitting the allocation between two timberland properties, each having an inbound value of \$50 million. Assume those two properties are the only ones being contributed to the NCREIF Timberland Index. Assume the first property performs very well, generating a 5.0 percent annual income return. It is then sold for \$100 million at the end of 10 years – generating an 11.0 percent IRR. For purposes of comparison, then assume the second property performs poorly – generating income of 3.4 percent during the same 10-year holding period and selling for \$60 million. It produces a total IRR of just 6.0 percent. To the investor, the initial \$100 million portfolio netted out an annual return of 8.0 percent (i.e., the average of 11.0 percent and 5.0 percent). However, for those same two properties, the NCREIF Timberland Index would have reported a biased total return that was higher than 8.0 percent because the 11.0 percent property would carry more weight within the index across



the 10-year holding period because of its higher market value.

4 Survivor's Bias

Closely related to the winner's bias is a characteristic that could be called "survivor's bias." Timberland investments that show high returns may be held for longer durations. By contrast, assets or portfolios that are performing poorly may be sold relatively quickly. As a result, the NCREIF Index may be skewed because better performing assets may remain a part of it longer than those that perform less impressively.

5 Geographic Limitation

Finally, as was explained earlier, the NCREIF Timberland Index only tracks timberland investments made in the United States. At the time of writing, there is no established, industry-accepted benchmark available by NCREIF or any other organization that covers important, non-U.S. timberland investment regions such as Latin America, Oceania, and Europe. Given that timberland is quickly emerging as a global asset class, one that spans all forested continents, this is a need that the timberland investment community broadly recognizes and efforts are underway to address the shortcoming.

Future Developments and Trends

NCREIF understands the limitations of its timberland index and has made efforts to deal with many of them. As was referenced earlier, annual, independent, full-property appraisals are likely to be required of all contributing members beginning in 2012. While this will not fully resolve the issue of the index lagging current market performance, it will improve its responsiveness to market conditions on an annual, if not on a quarterly, basis.

In addition, efforts have been made to develop a new fund-level benchmark that will track property-level performance for assets held within commingled funds. In contrast to the property-level timberland index, the fund-level index would notably include the impacts of advisory fees, interest income and leverage.

An outgrowth of having a separate fund-level timberland index would be that funds could be segregated by strategy or type. Domestic funds, for instance, could be separated from global or offshore funds. This would



facilitate the establishment of a benchmark index for global or international timberland investments.

Conclusions

Similarly, caution should be used when employing the index to assess volatility or risk. Whenever possible, measure risk and return on an annual basis.

The NCREIF Timberland Index offers the best measure available for tracking the performance of the timberland asset class. To derive the most benefit from the index, however, it is important to understand its construction and to use it with its limitations in mind. The best advice TIR can offer investors is not to employ the NCREIF Timberland Index as a measure of current timberland market performance. The lagging and smoothing effect caused by the practice of employing periodic appraisals means that any market movement may take several quarters to be manifested through the index's performance.

Similarly, caution should be used when employing the index to assess volatility or risk. Whenever possible, measure risk and return on an annual basis. Furthermore, take the index's reported performance from the 1980s and early 1990s with a grain of salt. The small data set used to populate the index during its early years of existence, combined with frequent movements of large properties and multiple contributors into and out of the index, tends to distort the performance of the asset class during that period. Finally, the problem of thin data sets for the U.S. Northeast and U.S. Lake States continues to be a challenge.

A Closing Note: Can Everybody Really Have Above Average Performance?

Those involved in the timberland investment sector often observe that a large number of TIMOs tout performance numbers that exceed the returns reflected in the NCREIF Timberland Index. It may seem odd that so many market participants can beat the index when the index is supposedly meant to be a credible benchmark for the entire, domestic timberland investment universe. However, there are several reasons for this seeming dichotomy. One explanation is that, again, a significant number of institutional investors and TIMOs are still not members of NCREIF and do not submit data to the organization. Another explanation is that several types of timber investments are not included in NCREIF, such as timber leases and timber cutting rights. However, firms and investors that do not contribute data to NCREIF are widely suspected of incorporating the performance of such assets in their return numbers, A



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third factor is that NCREIF deleverages the performance of all properties used in the index. When leverage is added back, it can augment equity returns on a fund or TIMO level if the overall return exceeds its cost.