



## Re-Examining The Case For Timberland

by Sam Radcliffe, Vice President

Timberland is an attractive alternative investment which provides competitive returns, low risk and volatility, an effective inflation hedge, and effective diversification from financial assets.” So says a web site advocating timberland in 1997<sup>1</sup>. In the previous 10 years (1987-1996) the NCREIF Timberland Index<sup>2</sup> had averaged an annual return of 22.50%<sup>3</sup>, CPI inflation had averaged 3.65%<sup>4</sup>, the return on long-term US treasuries had averaged 8.26% and the return on the stock market<sup>5</sup> had averaged 15.97%<sup>6</sup>. During this period, single family homebuilding (a major driver of timber demand) averaged just over one million starts, and there was a brief economic recession during 1990-91.

In the next 10 years (1997-2006) NCREIF averaged 8.86%, inflation averaged 2.54%, US treasuries averaged 6.36% and the stock market averaged 9.90%. Nominal returns on all assets had moved down from the previous decade, but so had inflation. During this period, single family homebuilding averaged nearly 1.4 million starts. There was a brief recession during 2000-01, and the period encompassed the entire dot.com boom and bust.

Fast forward another ten years to the present. Most of the major TIMO websites describe the rationale for investing in timberland and continue to stress rate of return performance, portfolio diversification and inflation hedging<sup>7</sup>. For the previous ten years (2007-2016), NCREIF averaged 6.01%, inflation averaged 1.77%, US treasuries averaged 5.03% and the stock market averaged 8.64%. This period started with the Great Recession and ended with the Trump stock market. Single family homebuilding averaged just 630,000 starts.

So for thirty years we have seen dramatic changes in the economy and asset markets, yet timberland continues to be touted for the same three characteristics – rate of return, inflation hedging, and portfolio diversification. Even though inflation-adjusted returns on timberland have declined in each of those three decades, more money is entering the asset class and recent property prices, especially in the South, are hard for this writer to rationalize. It seems like an appropriate time to re-examine the case for timberland.

Before beginning the analysis, we should note that the NCREIF Timberland Index is not without warts. These have been addressed elsewhere in some detail<sup>8</sup>, but to summarize:

- NCREIF represents a basket of timber properties that is not tradeable, and that basket has changed over time, in terms of number of properties, location, and timber characteristics.
- The basket represents only a portion of US timberland owned by institutional investors, and does not contain any of the timberland owned by other private investors, or the timber REIT's.
- Timberland returns are calculated on the basis of appraised values, not actual transactions.
- Returns are reported on an unlevered basis.
- Returns are reported gross of investment fees. Typical TIMO annual fees are 1.0 percent of assets under management, and there may be additional performance fees, acquisition fees, etc.

Despite these problems, NCREIF is still the best available indicator of timberland investment performance.

This analysis applies to the performance of timberland in an investment portfolio – not as a stand-alone investment. That means the relevant measures to consider are timberland's rate of return relative to other asset classes and the comparative returns to portfolios with and without timberland. To facilitate this perspective, we will refer to a standard “60/40” portfolio, i.e. one composed of 60% stocks (S&P 500) and 40% bonds (10-year US Treasuries). The bond component is extremely conservative – Treasuries are thought to be “risk-free” due to the stability of the US government<sup>9</sup>. To the 60/40 portfolio we compare two hypothetical timber portfolios: a “59/39/2” with a 2% allocation to timberland and a “57/37/6” with a 6% allocation to timberland. Most institutions who have an allocation to timberland are typically in the 1% to 2% range; 6% would be considered very aggressive.

### Examination of Timberland's Rate of Return

The long term real (net of inflation) rate of return on timberland over the last thirty years is impressive: an average of 9.50% as compared with 8.67% for the S&P 500. From the perspective of an institutional investor with a typical 10-year holding period, timberland has shown



a positive return in every holding period in the history of the NCREIF index. Holding period returns have clearly been steadier and (on average) higher than S&P 500 returns over the last 20 years, although they have under-performed the stock market in the two most recent holding periods (Figure 1).

Holding period real returns for timberland have been very stable since 2003, always falling within a range of 4.00% to 5.96%. By contrast, S&P 500 returns have gyrated between -4.06% and 9.27%.

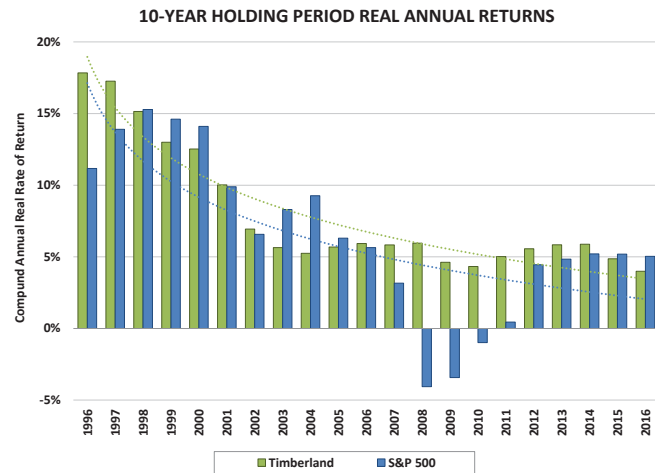


Figure 1. Comparison of 10-year Holding Period Returns for Timberland and the S&P 500.

### Examination of Timberland as an Inflation Hedge

The common definition of an inflation hedge is an asset whose nominal rate of return is positively correlated with the rate of inflation. In other words, when inflation rises the rate of return also rises (and correspondingly falls when inflation falls). Figure 2 shows that in the history of NCREIF, timberland returns have been positively correlated with inflation, while the S&P 500 returns can best be described as uncorrelated with inflation.

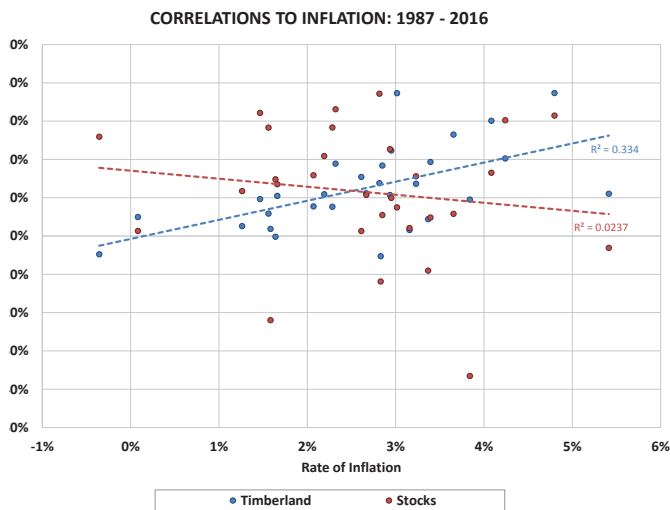


Figure 2. Correlation of Timber and S&P 500 Rates of Return to the CPI Inflation Rate, 1987-2016.

Yet another approach is to look at the response of returns to the annual change in inflation rate. This would get at the asset's response to unexpected inflation – which is what we are truly trying to hedge against. Figure 3 shows that over our thirty-year period, inflation increased in 15 years and decreased in 14 years.

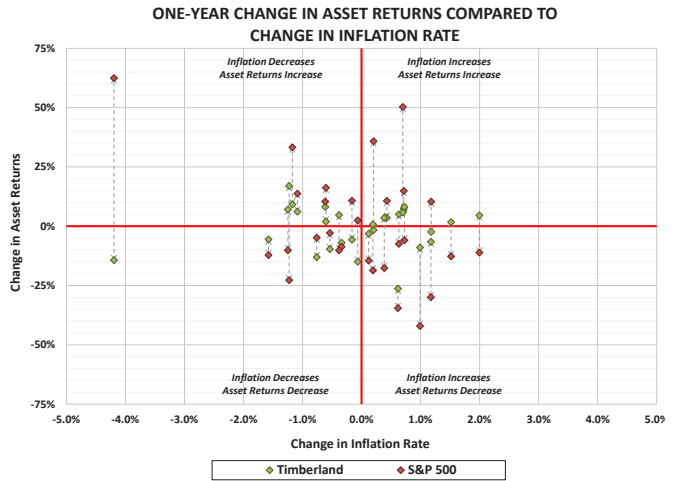


Figure 3. One-Year Change in Asset Returns Compared to Change in CPI Inflation Rate.

When inflation increased, stock returns decreased 67% of the time. This is not unexpected; the market generally feels that inflation is bad for business. However when inflation increased, timberland returns also decreased 40% of the time, although timberland returns decreased less than stock returns in all cases. When inflation declined, the opposite was true – stock returns tended to increase more or decrease less than timberland returns.

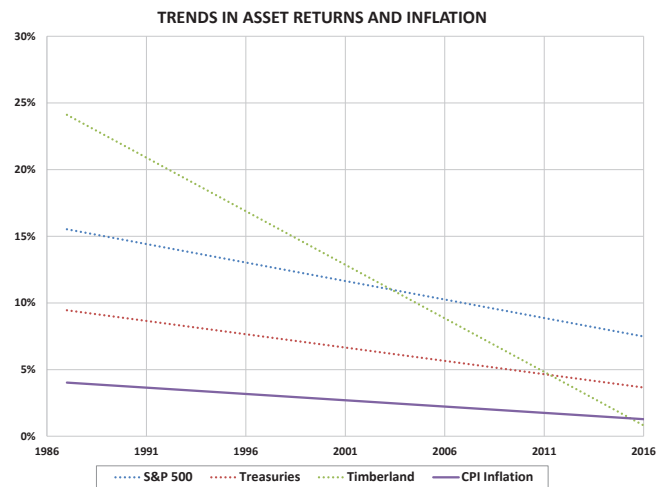


Figure 4. Trends in Asset Returns Compared to the Trend in Inflation, 1987-2016.

Figure 2 is the conventional way to look at inflation hedges, but note in Figure 4 that the trends in stock, bond and timberland returns are all in the same direction as the trend in inflation, which over this period has been negative. Moreover the slope of the trends for stocks and bonds is about the same as the



slope of the inflation trend, while timberland returns have declined much faster than the rate of inflation. Throughout this period, inflation has been relatively benign and returns for all three asset classes have moved in the same direction.

### Examination of Timberland as a Portfolio Diversifier

Diversifying a portfolio involves adding an asset class that is less risky than or uncorrelated to the portfolio's principal driver – typically stocks. When the returns from different asset classes in a portfolio do not all move in the same direction, the investor is provided with a less bumpy ride.

Risk is conventionally measured by the standard deviation of annual returns. When returns are less variable (lower standard deviation), the asset is said to be less risky. Standard deviation is more precisely a measure of volatility – the frequency and amount by which the asset rate of return varies from its long-term average.

Figure 5 compares the risk/return profiles for stocks, bonds, and timberland for each decade during 1987-2016. During the first decade, timberland provided a significantly higher return than both stocks and bonds, and at equal or lower risk. That return, as previously noted, dropped precipitously over the next two decades, but timberland continued to be the least risky asset.

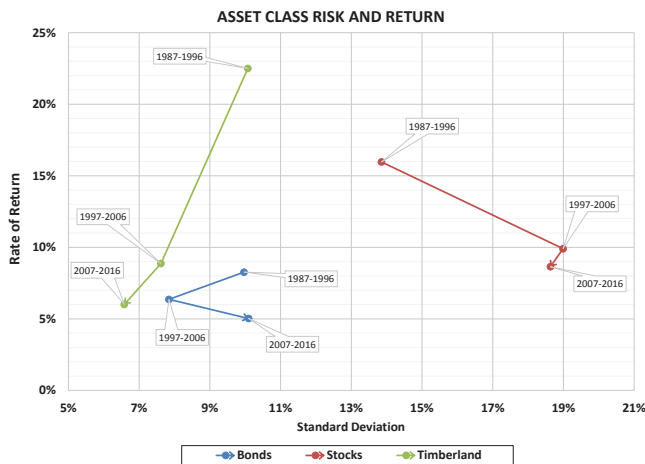


Figure 5. Risk/Return Comparison for Three Asset Classes During Three Decades.

Portfolio volatility is minimized when the returns to individual assets are either negatively correlated or at worst uncorrelated. Figure 6 shows that bonds are negatively correlated to stocks, but timberland is positively correlated. However, the timberland relationship is statistically insignificant so we would conclude, as others have<sup>10</sup>, that the two asset classes are simply uncorrelated. The inclusion of the uncorrelated timberland asset class is what reduces the volatility of the portfolio returns shown in Figure 7. At each decade as timberland is added to the basic portfolio, risk is driven down while return is maintained or slightly improved.

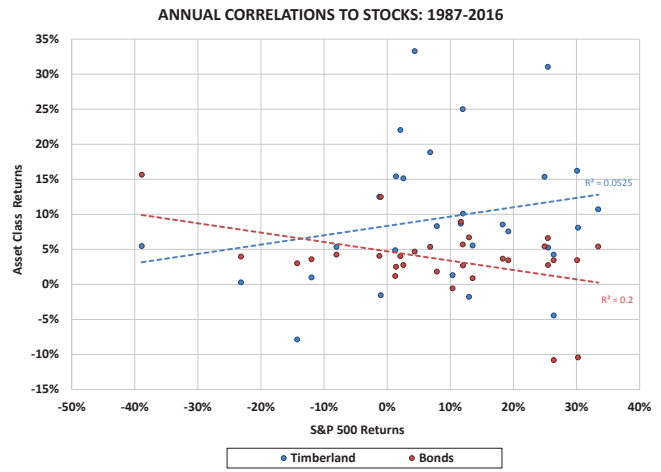


Figure 6. Correlation of Timberland and Treasury Bond Annual Returns to the S&P 500.

This conclusion is valid only for year-to-year correlations. Most institutional investors, despite having long-term liabilities, care very much about year-to-year portfolio returns – compensation and sometimes even careers are on the line. But true long-term investors would be expected to have an interest in how asset classes are correlated over longer time periods. Figure 8 shows that if we analyze correlations over 10-year holding periods, both bond and timberland returns are positively correlated to stock returns, with statistical significance. In other words, in a given year, timberland returns could move in the same or opposite direction as stock returns, but over a 30-year period we have seen all three asset classes move in the same direction – unfortunately returns have all moved down.

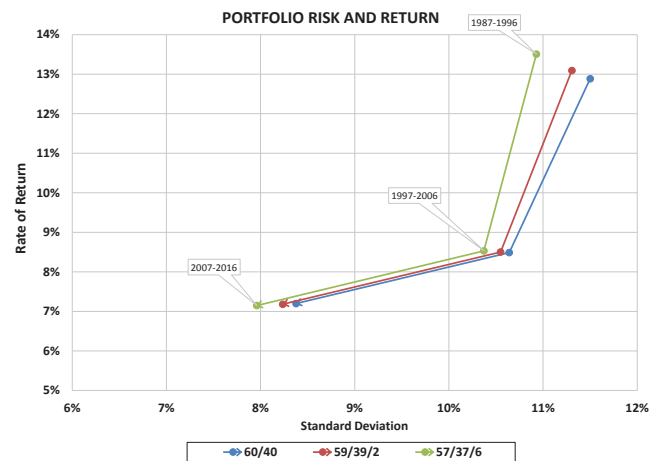


Figure 7. Risk/Return Comparison for Three Portfolios During Three Decades.

### Conclusions

Any conclusions to be drawn from this brief analysis must be prefaced by reiterating its limitations:

- The NCREIF Timberland Index may not accurately represent the performance of the asset class. Of particular concern are: (1) the influence of appraisals, which likely understate volatility, and;

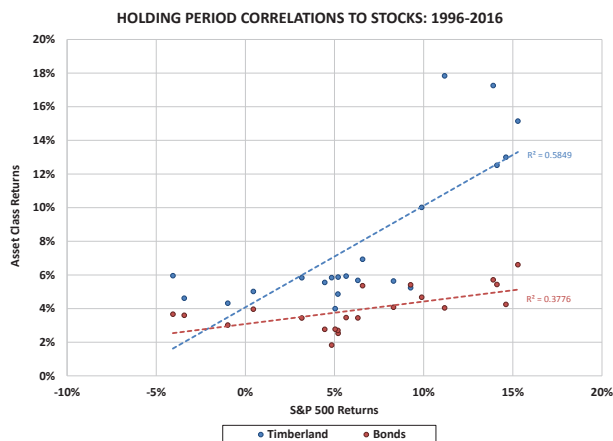


Figure 8. Correlation of Timberland and Treasury Bond 10-Year Holding Period Returns to the S&P 500.

(2) the exclusion of investment fees, which biases returns upwards.

■ The 60/40 portfolio and the two other timberland portfolios we have examined by no means represent the spectrum of possible portfolio constructions, and in fact are much more simplistic than typical institutional portfolios, which may include commercial real estate, hedge funds, oil and gas partnerships, etc. Even within the timberland portion of these portfolios, non-US properties may be prominently represented.

■ As the mutual funds are so fond of saying, “Past performance is no guarantee of future results.” 1987-2016 was a unique period in the history of institutional timberland investment. Actually, it was almost the entire history! The outsized performance of timberland in the early years was due to, among other things, the lack of transparency in markets, public policies limiting timber supply, changes in the tax code, and Wall Street pressure on publicly traded companies to divest their timberlands, coupled with an insufficient albeit growing pool of buyers. The middle period was characterized by a housing boom, and the most recent period by a housing bust. In those latter two periods, timberland went from a relatively unknown to a mature asset class. That development along with persistently low inflation and interest rates combined to drive timberland prices up and returns down.

This last limitation is particularly important because it suggests that recent history is a better guide to the future than the entire thirty-year period. Historic returns have been more than satisfactory, but current returns are quite low when considering investment fees, the illiquidity of timberland, and the complexity of the asset class for most investors.

These low returns may persist for a while:

■ For existing investors, returns can increase only if there are very substantial increases in real timber prices, which have been wrongly forecast for several years now. While housing starts have begun to creep up at a faster rate, southern sawmill capacity has increased, and Canadian lumber imports are likely to be curtailed, it is not clear that these timber price stimulants are enough to overcome the sawtimber inventory “overhang” that has been accumulating due to low harvest rates since the recession<sup>11</sup>.

■ For new investors, higher returns can be realized if the initial acquisition is priced more reasonably than today. But as timberland prices decline, seller returns will be driven down until prices settle at a level that motivates discriminating new entrants. In other words, a lot of investors will have to lose money for the asset class to look attractive to new buyers. How to explain that irony?

The available evidence seems to suggest that timberland can viably hedge against inflation, a conclusion reached by others<sup>12</sup>. But this evidence spans a period in which inflation averaged only 2.65%, and only 1.77% in the last 10 years, a challenging period with which to gauge inflation hedging<sup>13</sup>. Long-term inflation expectations are for 2.15% over the next 10 years<sup>14</sup>. Given that history and projections, it is reasonable to ask whether inflation hedging is very high on the list of portfolio needs. Nevertheless, there are inflation bulls and bears.

The stability of holding period returns to timberland should be of interest to the long-term investor, but it is hard to imagine that returns of 3% to 5% after investment fees are enough to entice institutional investors into an asset class that many do not understand. One thing should be clearly understood: the days of 10% to 20% returns to timberland, as experienced in the 1980’s and early 1990’s, are long gone. There is simply too much demand for an asset class that is in limited supply. Steady but relatively low returns are the name of the game for the future.

We have noted that timberland’s short-term risk-reducing impact might be important to institutional portfolio decisionmakers, but question whether riskiness is lessened for long-term patient investors. Moreover, we wonder whether riskiness as defined by the standard deviation of NCREIF returns is a meaningful measure. NCREIF index volatility is very much influenced by the appraisal process that underpins it<sup>15</sup>.



Because timberland is such a thinly traded market, the set of comparable sales used by the appraiser may vary little from year to year. In addition, appraisers often use trend-line or "return to trend" timber pricing approaches, which limit volatility. Finally, there is a cultural abhorrence to volatility among both appraisers and investors alike.

In summary, although a given property may present an attractive investment opportunity, we think that the general case for including timberland as a portfolio asset cannot be made as it has for the past thirty years. Maybe steady low returns are good enough – might timberland be an absolute return asset? There is also a case to be made for timberland as an impact investment. But are either of these rationales appealing to institutions who are already underfunded with respect to long-term liabilities?

Clearly there are timberland properties that would perform well both as stand-alone investments and as portfolio enhancers. But we believe these properties should be sold on their own individual merits, not on the rationale that they are members of a desirable asset class.

Institutions are generally geared toward an asset class focus rather than an individual property focus, so it is not surprising that TIMO's have maintained the general asset class pitch. In our view, successful timberland investing requires a nimbler investor, one free of institutional constraints. However, there is no doubt that successful timberland investing also requires scale. Both of these characteristics suggest that the ultra-high net worth (UHNW) sector might be better equipped than institutions to successfully invest in timberland. A recent report<sup>16</sup> pegs the global wealth of this sector at \$27 trillion, while institutional timberland investment was estimated at \$57 billion in 2016<sup>17</sup>.

In our view, the timberland market is due for a correction to remain competitive with other assets. Might this correction be facilitated by a transfer from institutions to the UHNW sector? There would be significant cultural and structural adjustments required, but we're keeping our eye on this potential long-term transition.

1. <http://www.iforest.com/finance2.htm> last accessed on 8/28/2017. The article indicates "Copyright 1997" and cites no data later than 1995.
2. The NCREIF Timberland Index consists of 457 investment-grade timber properties with a market value of \$25.4 billion. This includes 319 properties in the South, 91 in the Northwest, 31 in the Northeast, and 15 in the Lake States. <https://www.ncreif.org/news/timber2q2017/>, last accessed on 8/28/2017.
3. All US regions aggregated, 4-quarter compounded return before investment fees.
4. Consumer Price Index-All Urban Consumers. Bureau of Labor Statistics, Series ID: CUUR0000AA0, annual averages. <https://data.bls.gov/timeseries/CUUR0000AA0>, last accessed on 8/28/2017.
5. As represented by the S&P 500.
6. Source of historical data on returns for the S&P 500 and 10-year US Treasury bonds is the website of Professor Aswath Damodaran of the Stern School of Business at New York University [http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/histretSP.html](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html), last accessed on 8/28/2017.
7. For example: Timberland Investment Resources at <https://tirllc.com/investing-asset-class/value-proposition/>; Hancock Timber Resource Group at [http://htrg.com/wp-content/uploads/sites/2/Hancock-Timber-White-Paper-Timberland\\_-The-Natural-Alternative\\_2012.pdf](http://htrg.com/wp-content/uploads/sites/2/Hancock-Timber-White-Paper-Timberland_-The-Natural-Alternative_2012.pdf); Forest Investment Associates at <http://www.forestinvest.com/why-timber/>. All last accessed on 8/28/2017.
8. See for example "The Tao of Timberland", Forest Research Notes, Vol. 5 No. 2, 2008. Forest Research Group, <http://www.forestresearchgroup.com/Newsletters/V5No2.pdf>, last accessed on 9/1/2017.
9. Note that the bond returns shown here do not represent the "risk-free rate". The treasury bond return includes coupon and price appreciation. It will not match the treasury bond rate each period.
10. See for example "Correlation Update: Timberland is still not correlated with stocks –but the pendulum is swinging", Forest Research Notes, Vol 10, No 1, 1st Quarter 2013. <http://www.forestresearchgroup.com/Newsletters/Vol10No1.pdf>, last accessed on 9/14/2017.
11. "Forisk Forecast: Six Reasons Why Timber Prices in the South Do Not Track U.S. Housing Starts Today" Forisk Blog May 10, 2017. <http://forisk.com/blog/2017/05/10/forisk-forecast-six-reasons-timber-prices-south-not-track-u-s-housing-starts/> last accessed on 9/21/2017.
12. Yang Wan, Bin Mei, Michael L. Clutter, and Jacek P. Siry, 2013. "Assessing the Inflation Hedging Ability of Timberland Assets in the United States". Forest Science 59(1), [https://www.researchgate.net/publication/272271474\\_Assessing\\_the\\_Inflation\\_Hedging\\_Ability\\_of\\_Timberland\\_Assets\\_in\\_the\\_United\\_States](https://www.researchgate.net/publication/272271474_Assessing_the_Inflation_Hedging_Ability_of_Timberland_Assets_in_the_United_States) last accessed on 9/29/2017.
13. Court Washburn and Clark Binkley, using a different approach and datasets, found timberland (with some regional exceptions) to be inflation hedging during the period 1955-87, when the CPI averaged 4.7%. <http://greenwoodresources.com/wp-content/uploads/2014/06/DoForestAssetsHedgeInflation.pdf> last accessed on 9/29/2017.
14. Median of estimates from 13 studies by federal reserve banks, investment banks, and consultants.
15. Bert Scholtens and Laura Spierdijk discuss the impact of appraisals on volatility more technically in "Does Money Grow on Trees? The Diversification Properties of U.S. Timberland Investments", Land Economics 86(3), August 2010. <http://investmentforestry.com/resources/3%20-%20Does%20Money%20Grow%20on%20Trees.PDF> last accessed on 9/29/2017.
16. "The World Ultra Wealth Report 2017", Wealth-X. <https://www.wealthx.com/report/exclusive-uhwi-analysis-the-world-ultra-wealth-report-2017/> last accessed on 9/19/2017.
17. Christopher O'Dea, "Forestry: Slow growth market", IPE Real Estate, January/February 2016. <https://realestate.ipe.com/markets-/sectors/alternatives/forestry-slow-growth-market/10011831>, article last accessed on 9/19/2017.

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