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FOMO: Have you missed the opportunity?

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Introduction

Sometimes, investors have a nagging “fear of missing out” – or FOMO. In the case of timberland investments, FOMO is a common sentiment for some investors today because we are ten years (and counting) into the continuing expansion of the U.S. economy. In addition, a decade has passed since the U.S. housing market bottomed out in April 2009 – dropping to 478,000 housing starts on a seasonally adjusted annual rate (as compared to the historic 50-year average of 1.5 million starts).

At this mature stage of the current economic cycle, some prospective timberland investors may be wondering if the recovery in timber markets has been fully priced into returns for the timberland asset class – and if so, whether they will miss out on the early-mover advantages that some investors enjoyed in the early 2000s?¹

In this short white paper, we consider the observational evidence. Our thesis is as follows: If the anticipated effects of the market recovery are already “priced in” to timberland values, this will be reflected in both the benchmark and transactional data that is collected to track the asset class’ performance. Furthermore, we can test this qualitative analysis by conducting a focused and deliberate assessment of the hard numbers.

Observational Evidence

Sometimes, analyses of timberland market data reveal that recovery values have already been “baked in” following a downturn. In other instances, however, it is less obvious that this phenomenon has occurred. In our analysis of current market conditions and valuations, we will focus on the world’s two main timberland investment regions – the U.S. South and the U.S. Pacific Northwest. These two regions combined make up 92 percent of the net asset value of the NCREIF Timberland Property Index.²

For our purposes, we must begin by reviewing the market’s key value drivers during the prior decade (2009-2019), which are shown in the charts below. The one-decade span is useful because 2009 represent the final year of the U.S. Great Recession. As such 2009 featured a cyclic low of timber markets for the United States. Timberland prices (figure 1) are heavily influenced by three market factors: Spot timber prices (figure 2); the outlook for future timber prices (figures 3a, 3b); and, discount rates (figure 4).

¹ Knowing the answer will not aid the investor in market timing – as such awareness is backward looking and market timing efforts are rarely effective. Rather, it informs the investor of how valuation fundamentals have adjusted over time. This helps shape performance expectations for the timberland asset class.

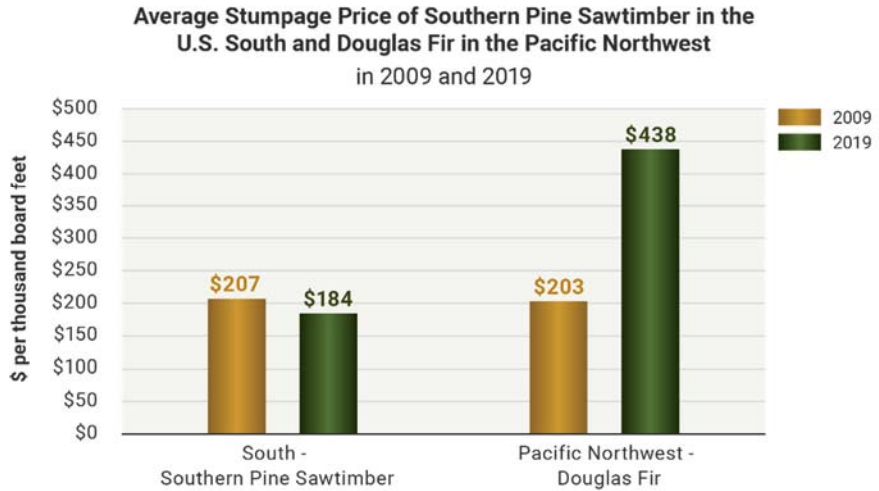
² NCREIF is the National Council of Real Estate Investment Fiduciaries, a non-profit organization that tracks the performance of real estate, farmland and timberland assets in service of the institutional investment community.



Figure 1. Source: NCREIF Timberland Property Index. All prices are reported nominal.



Figure 2. Source: RISI. 2019 price is a forecasted value made in Q1 of 2019.



Figures 3a, 3b. Forecasted stumpage price of sawtimber, as a percentage of the base forecast year in real (inflation-adjusted) values by RISI, a leading provider of economic analysis and forecasts for the forest

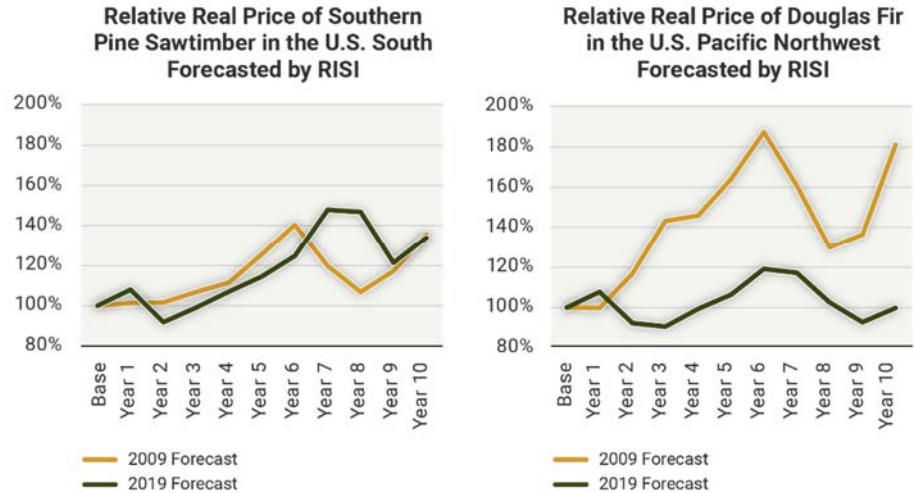
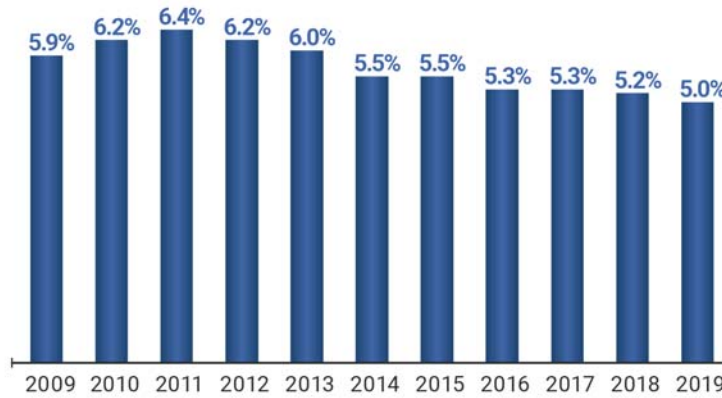




Figure 4. Sources: Surveys by James W. Sewall Co. and Sizemore & Sizemore U.S. to timberland investors and timberland managers (TIMOs). Discount rates are on a real (inflated-adjusted) basis.

Surveyed Median Real Discount Rate Employed By Timberland Managers and Investors

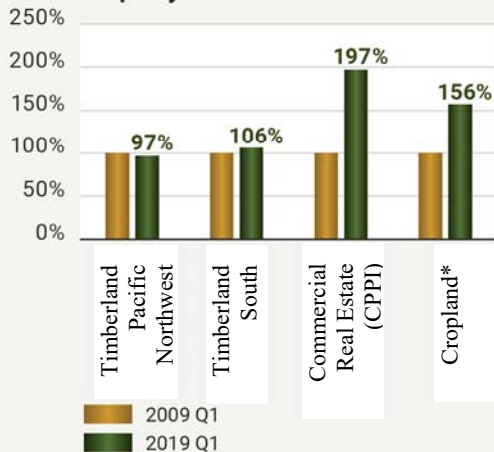


Across the ten-year span we are studying, from the onset of the Great Recession in 2009 through the first quarter of 2019, we see some interesting trends in both regions.

A Decade of Real Asset Pricing

Interestingly, U.S. timberland values have remained remarkably flat while other real assets such as real estate and farmland saw significant increases over the past decade. Explaining difference will require a separate paper onto itself.

Percent Change in Pricing of Real Property Between 2009 and 2019



* Reflect full-year values for 2009 and 2018 respectively (2019 value not yet available)

Sources: NCREIF, USDA, Green Street Advisors

U.S. Pacific Northwest

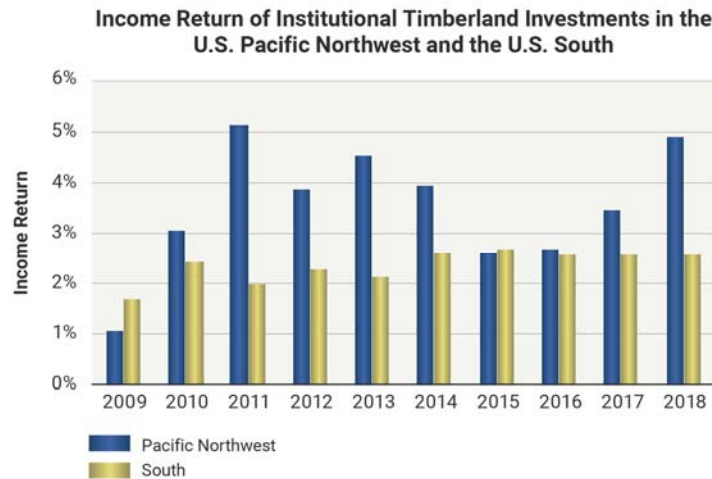
What is immediately obvious upon review of the data from the Pacific Northwest is how little commercial timberland values in the region changed between 2009 and 2019. From an average of \$3,076 per acre in the first quarter of 2009 to an average of \$2,972 per acre in the first quarter of 2019, values only moved 3.1 percent (lower) according to the NCREIF Index. This relatively flat pricing was a result of lower levels of optimism about the performance of regional timber markets. Interestingly, this decline occurred despite the fact that timber prices in the Pacific Northwest recovered significantly during that ten-year period (Figure 3b).

These higher prices helped generate higher income returns for the region, which caused it to outpace the U.S. South in total performance for the decade (Figure 5 below). Higher timber prices also would normally boost timberland values, as would a 90-basis point decline in discount rates (Figure 4). However, the regional market outlook for the U.S. Pacific Northwest has turned bearish. This is because the region has become a high-cost lumber producer. According to Forest Economic Advisors (FEA), the average variable cost of production for sawmills in the U.S. Pacific Northwest was \$319 per thousand board feet in 2018. This compared



unfavorably with the \$244 average for mills in the U.S. South. This differential made achieving profitability a challenge in the Pacific Northwest as the Random Lengths Framing Lumber Composite index dropped to \$335/mbf by year-end 2018. Because of these factors, very few investments are being made in new sawmill infrastructure in the U.S. Pacific Northwest, which is essential for sustaining future timber demand and for supporting regional log prices.

Figure 5. Income returns reported by the NCREIF Timberland Property Index.



At the bottom of the cycle during the U.S. housing downturn of 2008-2009, many economists expected timber markets in the U.S. Pacific Northwest to rebound within a few years. RISI, for example, predicted in 2009 that Douglas fir prices would increase a robust 80 percent, in real (inflation-adjusted) terms, within five years (orange line in Figure 3b). This prediction stands in contrast to the one RISI made in 2019 – which anticipates Douglas fir prices experiencing, at most, a 20-percent real gain over five years – after which they are expected to retreat (green line). Consequently, based on an educated observation of the market data, it seems investors have become more cautious about the Pacific Northwest, which makes the notion that a recovery has been “baked in” to timberland valuations for the region less easy to support.

U.S. South

In the U.S. South, average timberland values were little changed in the ten years following 2009. NCREIF has reported that average per-acre values of institutional timberland investments in the region increased 6.2 percent from the first quarter of 2009 to the first quarter of 2019 – rising from \$1,707 to \$1,814. This increase fell short of the rate of inflation over that same time period. This is largely a result of market trends, which were quite different than those observed in the Pacific Northwest.



Timber prices declined (Figure 2) during the period, but forecasts for timber markets remained largely consistent and intact (Figure 3a). The reason southern timberland assets were able to hold their value from 2009 to 2019, despite a decline in timber prices, can be attributed to a reduction in discount rates. The reported median discount employed by timberland investors, as measured through surveys conducted by James W. Sewall Company and Sizemore & Sizemore, declined by 90 basis points – falling from 5.9 percent in 2009 to about 5.0 percent in 2019.

Inconclusive Evidence of Full Buy-In of Recovery

In short, the notion that a full-market recovery has been "baked in" to the performance of the timberland asset class in the U.S. Pacific Northwest and U.S. South since the cyclic bottom was reached in 2009 is difficult to support based on a high-level qualitative analysis of available market data. However, a deeper, quantitative dive can help clarify the picture by washing out any valuation bias that may have been created during that time period.

Testing for Valuation Bias of a Timber Market Recovery

We can test whether timberland investors have adjusted their price expectations for the asset class by understanding that timberland, like most real assets, is valued by the stream of income it is expected to produce, discounted to the present (i.e., net present value or NPV). Setting aside timberlands that are destined to transition to other land uses – such as agriculture, recreation, or development – a timberland asset's value is assumed to be a reflection of its capacity to produce a future stream of *timber* income for perpetuity – divided by the discount rate one employs. This is succinctly summarized in the equation below:

$$\text{Timberland Value} \equiv \text{NPV} = \frac{\text{annual income}}{\text{discount rate}}$$

Therefore, if we know the discount rate being employed, and the price paid for a given timberland asset, we can calculate the income needed to sustain its price.

$$\text{Annual Income} = \text{timberland value} \times \text{discount rate}$$

For instance, if a timberland property is purchased for \$1,500 per acre, and the buyer utilizes a five-percent real discount rate, then that timberland asset would be valued as if it could produce an annual, real income stream of \$1,500 x 5 percent = \$75. It is not necessary to know whether the timberland property will truly produce a consistent \$75 a year. Income streams from forest investments are often lumpy and irregular. What is important is that the forest asset will earn income that is



financially equivalent to earning a real (inflation-adjusted) \$75 per year in perpetuity – enough to support a \$1,500 purchase price and the application of a five percent real discount rate.

To complete the picture, timberland income is the combination of harvest volume, timber prices and expenses:

$$\text{Income} = \text{Harvest} \times \text{Price} - \text{Expenses}$$

This allows all of the pieces of our analysis to fall into place because, fortunately, data is available for timberland values, timber prices, forest management expenses and timber price forecasts (harvest rates become a default value). By employing the market data and the two equations above, we can test whether a valuation bias has entered the timberland asset space.

To help conceptualize how this will be done, let's assume a simple case where timberland is purchased for \$1,500 per acre with a real discount rate of 6.0 percent. Several years later, timberland is traded for \$2,000 per acre. If timber prices and expenses³ remain the same, one can easily assume that timberland buyers have added a 1.50-percent rate of appreciation to their timber price forecasts. Said in a different way, adding a 1.50-percent incremental rate to timber prices can justify the move in value from \$1,500 per acre to \$2,000 per acre. In such a scenario, it would be safe to assume that buyers have become more optimistic about the future and have incorporated more aggressive expectations of a market recovery into their timberland valuations.

Of course, in the real world, markets are rarely constant. In the analysis just outlined, we also must account for changes to discount rates, price forecasts and spot market timber prices. Nevertheless, the analytical method as described in the example above remains applicable. The results are shown in the table below for the U.S. South and U.S. Pacific Northwest (Table 1).

³ In this hypothetical example, we assumed an expense ratio to revenue of 15%.



Table 1.

Year	Average Q1 Timberland Market Value (\$/acre)	Timber Price (\$/MBF)	Real Discount Rate	Additional Annual Gain (+) or Decline (-) of Future Timber Prices to Reflect Shifts in Timberland Value*	Forward Outlook of Timber Prices by RISI (avg 10y rate)	Timberland Value's Convergence (+) or Discounting (-) of Forecast Prices
US South: Southern Pine						
2009	\$1,707	\$207	5.90%		3.54%	
2019	\$1,814	\$184	5.00%		3.58%	
Chg	6.3%	-11.1%	-0.90%	0.06%	0.04%	0.03%
US Pacific Northwest: Douglas fir						
2009	\$3,067	\$203	5.90%		7.24%	
2019	\$2,972	\$438	5.00%		0.41%	
Chg	-3.1%	115.8%	-0.90%	-8.14%	-6.82%	-1.31%

*After adjusting for the effects of a new spot price for timber and discount rate for timberland between the time periods of 2009 and 2019, this percentage change reflects the change in forecasted timber prices at the beginning of each period. For example, for the US South, when you adjust for these two variables, timber price forecasts have not materially changed over the time period 2009 to 2019. Note that the price forecasts presented are from RISI's published forecasts.

Determining the Adoption of a Market Recovery in the South

This analysis largely supports our earlier assessment of the U.S. South as a timberland investment region. As was illustrated, timberland values in the U.S. South, on average, rose 6.2 percent between 2009 and 2019. This was despite the fact that southern pine sawtimber prices declined by 11.1 percent (Table 1). In addition, this increase in value largely can be attributed to a 90-basis point decline in discount rates.

After taking the discount rate shift into account, timberland buyers in the U.S. South increased their sawtimber price forecasts a slight 0.06 percent per year, which was roughly comparable to the 0.04 percent increase RISI employed in its 2019 forecast. At a low 0.03 percent, the analysis did not demonstrate any significant “buy-in” of a timber price recovery in 2019 when compared to earlier in the economic cycle (2009). In other words, investors in the U.S. South do not appear to have been any more aggressive (or cautious) in their buying behavior in the U.S. South over the past decade.

Determining the Adoption of a Market Recovery in the Pacific Northwest

The results for the Pacific Northwest are more interesting. As was referenced earlier, in the ten years following the housing market collapse in 2009, average timberland values in the Pacific Northwest declined 3.1 percent to \$2,972 per acre (Table 1). Over that time frame, Douglas fir, the bellwether species of the region, jumped in value by 116 percent. When considered in the context of a falling discount rate



environment, it is safe to conclude that this indicates investors' log price outlooks for the Pacific Northwest flipped – turning pessimistic during the decade.

Based on our analysis, investors' annual stumpage appreciation rates for the Pacific Northwest dropped 8.14 percent. Likewise, RISI's forecast also turned negative, moving 6.82 percent lower. This indicates that timberland buyers in the region are taking a more conservative view relative to consensus projections provided by third-party forecasters. By our estimate, Pacific Northwest timberland values added a 131-basis point discount to forecasted price trends. In short, rather than believing in the likelihood of a timber market recovery, timberland investors in the region were discounting the possibility that such a recovery would occur.

This widening gap is likely a consequence of market uncertainty, which is being caused by the current trade friction between the United States and China. China is a major export destination for logs and lumber grown and produced in the Pacific Northwest and the tariff stalemate is fostering a great deal of uncertainty for the region's timberland owners and its forest products industry. In addition, the Pacific Northwest is fully exposed to the unresolved lumber trade dispute between Canada and the United States. As was mentioned earlier, lumber manufacturers have stopped new mill investments in Western Canada due to the high cost of fiber in the region. When these factors are viewed in their entirety, one can conclude that timberland investors have become cautious and have added a significant safety margin to their projections for future timber prices in the Pacific Northwest. When many mills are operating at break-even levels, investors may conclude there is little potential for timber prices to rise any further, which will restrain timberland returns in the region.

Conclusions

Timberland investors should not be too concerned about FOMO ("Fear of Missing Out") as it pertains to timberland investments. Our quantitative analysis confirms what we inferred from our qualitative study of the relevant market data. Current timberland values do not reflect the adoption of more aggressive industry-accepted price forecasts than was the case in 2009. In short, the opportunities to uncover and capture value in the asset class are as viable today as they were at the bottom of the economic cycle in the late 2000s.

Of course, expected returns do not always match with realized returns. Back in 2009, timberland investors underwrote timberland at 5.90 percent real. Yet in the 10-year period ending in 2019 Q1, the NCREIF Timberland Property Index generated an annual return of 3.72 percent nominal, well short of underwriting targets. However, the next 10 years can play out very differently than the past 10. Who can say? At the very least, investors, based on our analysis, do not appear to have the recovery of timber markets baked in.



Appendix

Analysis Methodology

1. Knowing the timberland value and real discount rate, we can determine the annual real income needed to sustain that valuation.
2. We take surveyed cost data from Sizemore & Sizemore to calculate the expense ratio for timberland revenue.
3. Knowing the (a) expense ratio, (b) annual income and (c) the price of timber, we can infer the implied harvest rate.
4. That implied harvest rate is held constant between 2009 and 2019. We then update the timberland value and timber price for 2019 to know how the effective discount rate has changed between 2009 and 2019.
5. That difference between the 2019 effective discount rate and the observed (i.e., surveyed) discount rate is the shift in the market's collective outlook for timber price appreciation. For example, if the effective discount rate was 4.00% when the observed discount rate was 5.50%, that indicates there was a $5.50\% - 4.00\% = 1.50\%$ additional annual timber price appreciation incorporated into timberland prices. That 1.50% increase must occur in order for the valuation formulas to stay consistent.



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