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Vintage Year: The Underappreciated Diversifier in Timberland Investing

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Introduction

Diversification is a well-established strategy for managing portfolio-level risk. In timberland investments, diversification is often achieved across physical dimensions, such as geography, micro-market, species, and forest maturity. However, one essential dimension remains underutilized: vintage year—the timing of an investment.

Temporal diversification, commonly known in other asset classes as “dollar-cost averaging,” has long been employed by investment managers in equity and bond markets. This strategy acknowledges that successfully timing the market is difficult. By investing across a broader time horizon, some investments may benefit from market upswings, helping to balance those made in less favorable conditions.

The question is: can the same logic be applied to timberland, an inherently long-term and illiquid asset class? This paper explores whether vintage year diversification can reduce portfolio-level risk in timberland investing from a statistically quantitative approach.

Methodology

To evaluate the effects of vintage-year diversification on portfolio risk, we compared portfolios assembled over short and extended investment periods:

1. **Narrow-Vintage Diversification:** Properties acquired within ± 3 quarters from a randomly selected inception date (i.e., a span of 7 quarters or 1.75 years).
2. **Wide-Vintage Diversification:** Properties acquired within ± 3 years from a randomly selected inception date (i.e., a span of 25 quarters or 6.25 years).

If timing is inconsequential, then both portfolio strategies should exhibit similar return dispersions (known statistically as *variance*). If timing matters, then portfolios assembled over extended periods should show lower volatility.



Table 1.

Property portfolio attributes.

About the Model Data	Value
Average Market Value	\$22.1 million
Average Return of All Properties (unweighted, annualized)	8.32%
Longest Investment Length	21.75 years
Shortest Investment Length	0.50 years

Using data from 116 U.S. timberland investments managed by Timberland Investment Resources, LLC (TIR) from inception through 2025 Q2, we generated 30 synthetic five-property portfolios for each strategy. It is important to note that 20.1 billion combinations of five-property portfolios are possible with the amount of data available. These portfolios of five timberland assets reflect what an investor with \$1-\$3 billion in total assets and a 5% allocation to timberland might typically construct. A statistical F-test was applied to determine whether differences in return dispersions were statistically significant.¹

For more details, see Table 1 and the call out box on page 2. For a full description of the process, check out the appendix at the end of the paper.

About the Return Data

From 2003 Q2 to 2025 Q2, TIR managed 117 U.S.-based forest assets. One of the properties was recently acquired and subsequently excluded due to insufficient performance history. The remaining 116 properties included in the analysis span across all major timberland regions: Lake States, Northeast, Pacific Northwest, and South.

Returns are reported in compliance with NCREIF standards: time-weighted, at the property level, gross of management fees and excluding leverage. This ensures consistent, comparable performance data.

¹ P-value estimates the probability that the differences between the two groups of data are created by random chance. A low p-value suggests that the differences are likely caused by some fundamental difference and not by chance. A commonly selected threshold of statistical significance is a p-value of 0.05 (or 5%) or lower.



Discussion of Results

The analysis shows that vintage-year diversification reduces portfolio risk. As shown in Table 2, portfolios with a wider capital deployment span had a lower standard deviation of returns (2.85%) compared to their narrow-span counterparts (3.84%), a 25% reduction in variability. This tighter clustering indicates that investing across a longer period helps mitigate risk. The F-test confirmed the significance of this finding with a p-value of 0.057, reaching the 0.05 (or 5%) threshold level. Though marginal, this result suggests that vintage diversification may enhance the resiliency of timberland portfolios.

Table 2.

Modeling From 30 Random Five-Property Portfolios Under Two Different Capital Placement Strategies

30 Sample Run	Narrow-Vintage Portfolios	Wide-Vintage Portfolios
Standard Deviation of 30 Portfolio Returns	3.84%	2.85%
P-Value of F-Test Two Sample Variance	0.057% (lower the value, the greater the statistical significance)	

Distribution of Returns

Figures 1 and 2 illustrate the differing return patterns between the two strategies analyzed. In Figure 1 (left), narrow-vintage portfolios tend to exhibit a right-skewed distribution. A substantial concentration of returns falls below the 6% mark, followed by a long tail of outliers with notably higher returns. This distribution reflects a heightened exposure to timing risk, where modest gains are the norm and outsized returns less predictable.

In contrast, Figure 2 (right) shows that wide-vintage portfolios form a more balanced, bell-shaped distribution of returns, concentrated around the 7% to 8% range, suggesting more consistent performance and reduced volatility. By extending the investment horizon, portfolios are less likely to encounter extreme outcomes and more likely to deliver returns within a stable band.

Figure 1.

Distribution of Total Annual Returns of 30 Narrow-Vintage Portfolios

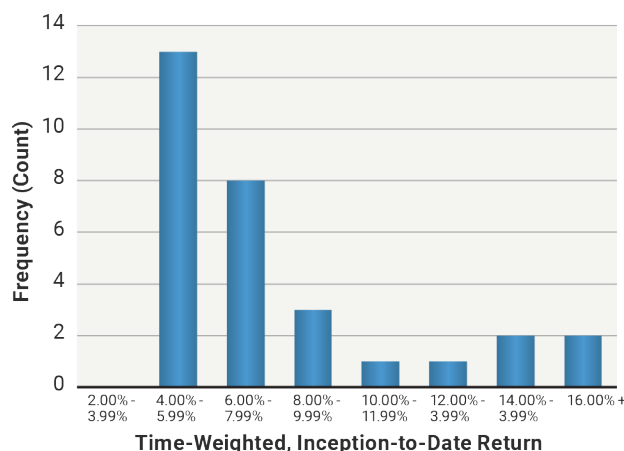
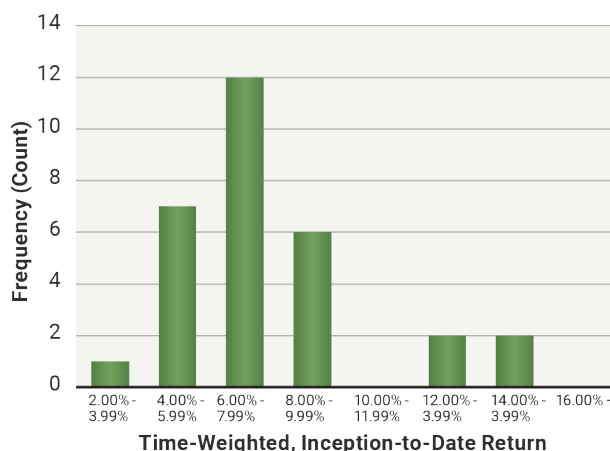


Figure 2.

Distribution of Total Annual Returns of 30 Wide-Vintage Portfolios



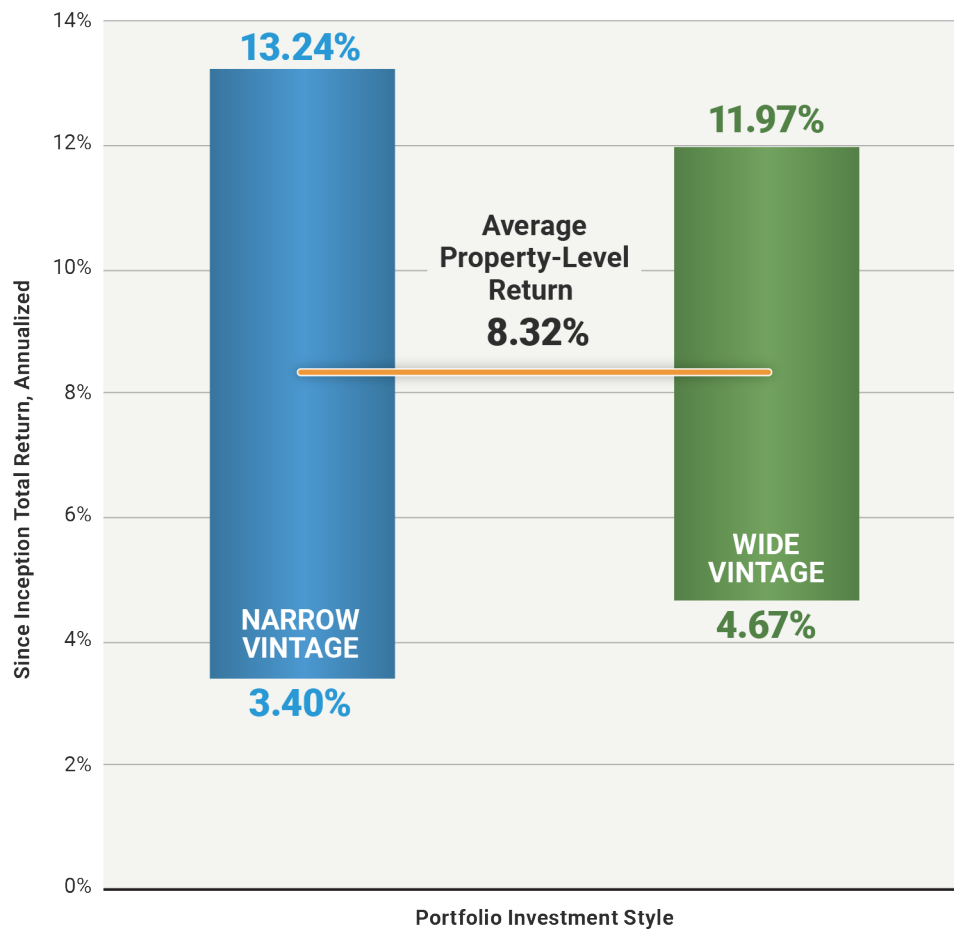


Confidence Interval

The distinction between the two strategies becomes clearer when viewed through the confidence interval lens, as shown in Figure 3. Portfolios assembled over a shorter horizon (left bar) display a wider range of potential outcomes. These narrow-vintage portfolios show a 90% confidence interval of returns ranging from 3.40% to 13.24%. In comparison, portfolios constructed over a broader investment window (right bar) demonstrate a more stable return profile. Their 90% confidence interval is tighter, ranging from 4.67% to 11.97%. This narrower band of outcomes suggests that a methodical, time-staged investment can help manage portfolio risk.

Figure 3.

90% Confidence Intervals of Return for Five-Property Portfolios Using Short or Long Capital Placement Periods



Note: Confidence intervals are based on the variance of a 30-sample synthetic portfolios of five properties managed by TIR, using historic property-level total returns. The narrow-vintage portfolios have a capital placement period of 7 continuous quarters. Wide-vintage portfolios have a capital placement period of 25 continuous quarters. Average return is a non-weighted arithmetic average of all quarterly returns, annualized.



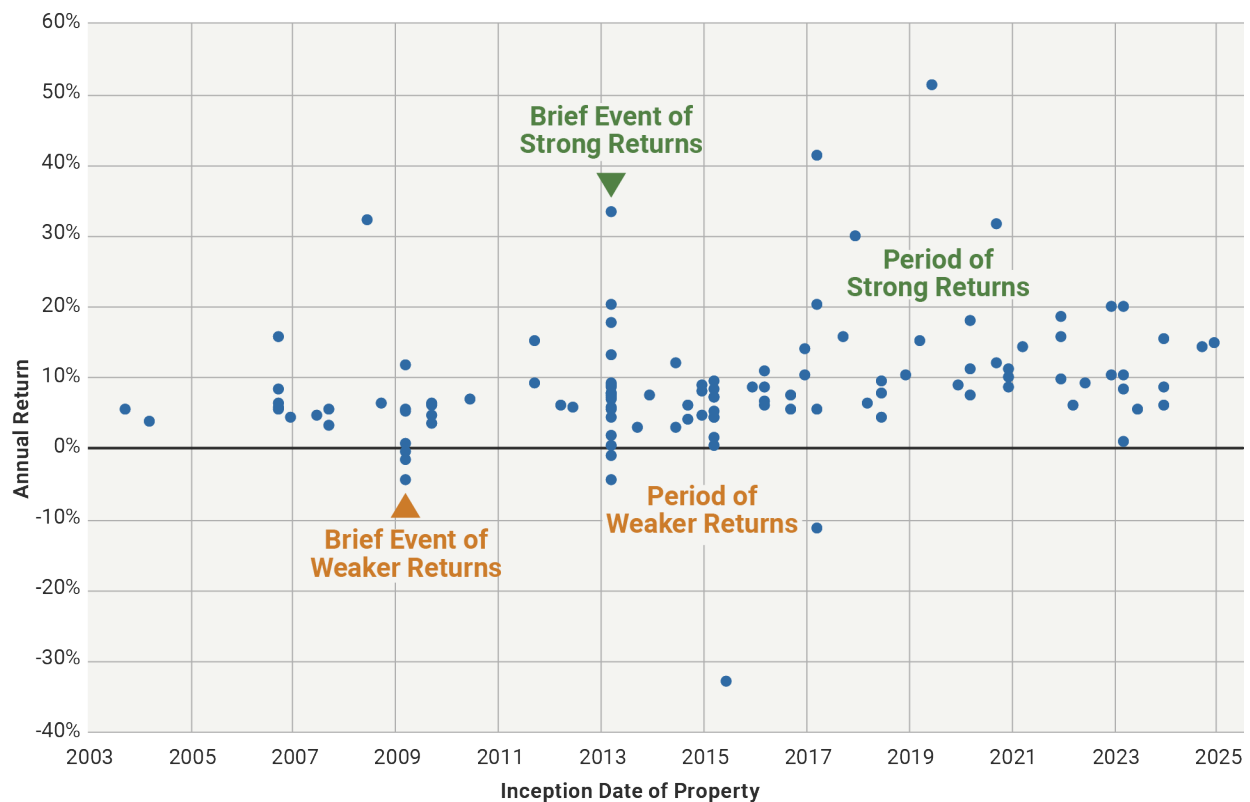
Observational Insight into the Data

A deeper look at the underlying data offers perspective into why timing matters. Figure 4 plots total annual return and inception date for all 116 timberland properties included in the analysis. While dispersion is significant, most returns cluster between 5% and 15%.

Upon closer inspection, however, notable patterns emerge. Specific quarters—such as Q1 2009—correspond with market stress and lower returns, while periods like Q1 2013 reflect strong market tailwinds. Broader cycles are also evident; returns trended lower during 2013–2015 amid weak housing demand, then lifted from 2016–2022, supported by favorable interest rates and rural land demand.

Figure 4.

Total Annual Return of 116 TIR-Managed Timberland Properties



Note: Returns are time-weighted, geometrically-linked total annualized return since inception. If the property is sold or transferred before 2025 Q2, the return represents a life-of-investment performance. The inception date is first quarter where returns are reported for the property

These observed patterns affirm the rationale behind time-based diversification. When investment entry points are spread across different market conditions, portfolios are better positioned to capture upside moments and buffer against downturns.



Conclusions and Recommendations

Timberland is often viewed as a resilient asset class, supported by biological growth and the ability to defer harvests during unfavorable market conditions. Yet, it remains subject to macroeconomic events and structural industry shifts that can materially affect returns. Notable events include:

- The ruling to protect the northern spotted owl in 1990, which restricted much of the timber harvest from public forestlands in the U.S. Pacific Northwest.
- The sale of timberland from integrated forest product companies into the hands of institutional investors in the late 2000's and early 2010's.
- The wake of the Global Financial Crisis of 2007 created a long period of depressed home construction in the U.S.
- The events following the Covid-19 pandemic resulted in a spike in demand for both retail land markets and the expansion of natural capital markets.

These events are largely unpredictable and can create a large headwind or tailwind for timberland investments. Vintage-year diversification adds resiliency. Extending capital deployment from two years to six years could reduce portfolio risk by as much as one-quarter (25%), comparable to the benefits of geographic, wood basket, or species diversification.² Given timberland's illiquidity and long investment horizon, the case for measured, staggered investment is compelling.

Recommendation

Timberland offers compelling qualities: return resilience, inflation hedging, and diversification. A balanced diversification strategy will position a timberland portfolio to achieve these objectives. Diversifying across time is a straightforward yet underutilized strategy that complements existing diversification approaches. A methodical, time-staged investment strategy can help portfolios weather market cycles and capitalize on long-term value.

² See white paper, "Timberland Diversification: Insights and Analysis." (March 2015)



Appendix: Testing Vintage Year Diversification

What follows is a step-by-step process on how we statistically tested whether temporal diversification reduces the risk exposure of timberland portfolios.

1. Chronologically Arrange Property-Level Performance Data by Inception Date

- Record the quarterly market value and returns of 116 forest properties that Timberland Investment Resources has managed for its clients for the purpose of generating a financial return. This is arranged chronologically by inception date – which is the date when the property reported its first quarterly return after it was acquired.

2. Randomly pick a property

- Among the 116 properties, one is randomly selected. The inception date becomes the anchor point from which other properties are selected to fill out the synthetic portfolio.
- If a property completed its investment (i.e., made a “round trip”) before 2025 Q2, then the returns are life-of-investment returns. If a property was still being managed by Timberland Investment Resources as of 2025 Q2, then the returns are considered inception-to-date returns through 2025 Q2.

3. Select four other properties to complete a synthetic five-property portfolio

- Four other properties are randomly selected whose inception date is within a specified number of quarters ahead or behind the inception date of the first property.
- For a *narrow-vintage diversified* portfolio, the inception date of the four properties must be within three quarters ahead or three quarters behind the inception date of the first property. For example, if the first chosen property started reporting returns on 2010 Q1, then the other four properties in the portfolio must have started between 2009 Q2 and 2010 Q4. That is an eligible time span of seven quarters or 1.75 years.
- For a *wide-vintage diversified* portfolio, the inception date of the four properties must be within 12 quarters ahead or 12 quarters behind the inception date of the first property. For example, if the first chosen property started reporting returns on 2010 Q1, then the other four properties in the portfolio must have started between 2007 Q1 and 2013 Q1. That is an eligible time span of 25 quarters or 6.25 years.

4. Generate inception-to-date time-weighted return for the portfolio

- Compile the quarterly returns of the five randomly selected properties, weighted by market value, to create returns of a synthetic five-property portfolio.
- Example: Assume a portfolio consists of two properties in 2020 Q2. The first property had a starting market value of \$20 million and a total return of 4% for the quarter. The 2nd property



had a starting market value of \$40 million and a total return of 1% for the same quarter. Then the portfolio-level return for 2020 Q2 is 2%:

$$\frac{(\$20 \times 4\%) + (\$40 \times 1\%)}{(\$20 + \$40)} = 2\%$$

5. Collect 30 observations each for narrow-vintage and wide-vintage portfolios

- Steps 1 through 4 are repeated 100 times to collect 30 data points of inception-to-date annualized returns for portfolios with a narrow-vintage diversification.
- The process is replicated for portfolios with a wide-vintage diversification, again with 100 observations.

6. Perform Two-Sample F-Test for Variances

- An F-test for variance is performed between the two sets of portfolio returns: 1) portfolios with narrow-vintage diversification and 2) portfolios with wide-vintage diversification.
- The F-test determines whether the variances between two types of portfolios are the same (i.e., the null hypothesis). A low p-value calculated from the F-test suggests that there is a fundamental difference between the two that cannot be explained by chance.



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