



**TIMBERLAND INVESTMENT RESOURCES** LLC

growing value for our clients every day

**TIR**

**SEEKING TIMBERLAND ALPHA**  
**RECOGNIZING THE INEFFICIENCIES OF THE ASSET CLASS**

Chung-Hong Fu, Ph.D., *Managing Director*

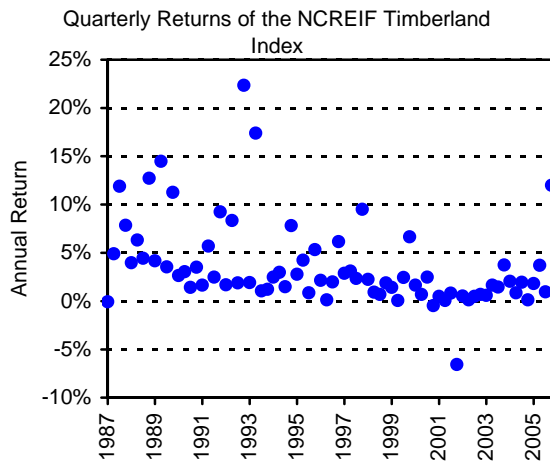
Economic Research and Analysis

April 2006





## Introduction



Source: NCREIF

**Figure 1.** NCREIF Timberland Index quarterly total return across time periods from 1987 through 2005.

If you are an investor in timberland, you may have noticed that the reported total returns for the NCREIF Timberland Index<sup>1</sup>, the benchmark index of timberland returns, has declined since its inception in late 1980's (**Figure 1**). A common explanation for the NCREIF performance is that the "compression" of returns in the timberland asset class is the result of an increasingly crowded market with new players and greater levels of capital to deploy. From five timberland investment managers (TIMOs) in 1985, the industry numbers over eighteen today. Similarly, institutional investment in timberland has grown from less than a billion dollars in the mid-80's to around US\$25 billion worldwide.

With greater competition among an expanding investor base, it is not unreasonable to expect increasing efficiencies within the asset class and an accompanying standardization of certain investment processes. In a maturing, more efficient market, some investors believe that the selection of investment manager has become less important, i.e., *the process of selecting, managing and selling timberland assets is fairly standardized. As a result, everyone will make close to the same return.*

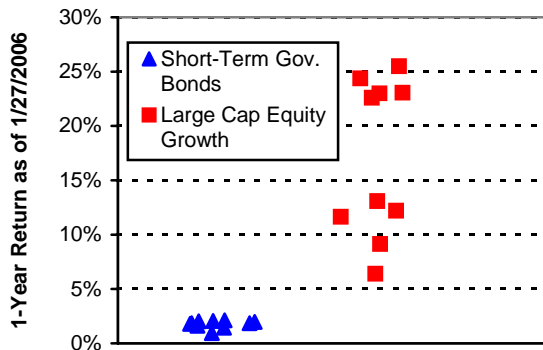
This is not the case for timberland investment. As will be demonstrated in the analysis to follow, material inefficiencies persist throughout the timberland investment and management processes, and the ability to capture these opportunities will be determined by the experience and capabilities of the timberland investment manager. In other words, there is *alpha*<sup>2</sup> in timberland.

<sup>1</sup> The National Council for Real Estate Investment Fiduciaries (NCREIF) Timberland Index is an index of financial returns of timberland investments administered by investment managers.

<sup>2</sup> Alpha refers to the ability to sustain a level of return above or below the average for that specific asset class or sector, in accordance with the sector's risk characteristic. The term is derived from the Capital Asset Pricing Model (CAPM) where *alpha* ( $\alpha$ ) and *beta* ( $\beta$ ) are the coefficients that define expected investment performance.



## The Inefficiency of Timberland



Source: Morningstar

**Figure 2.** 1-year returns of the 10 largest mutual funds in two separate investment categories – short-term government bonds and large cap equity growth (as of Jan. 27, 2006).

The selection of a timberland investment manager is important because the timberland asset class remains inefficient. To understand this, one must recognize the link between efficiency and *alpha*. In an ideal world, a totally efficient market is a market in which everyone has perfect knowledge to make informed investment decisions and transaction costs are low or negligible. Opportunities to identify and capture excess risk adjusted returns are limited.

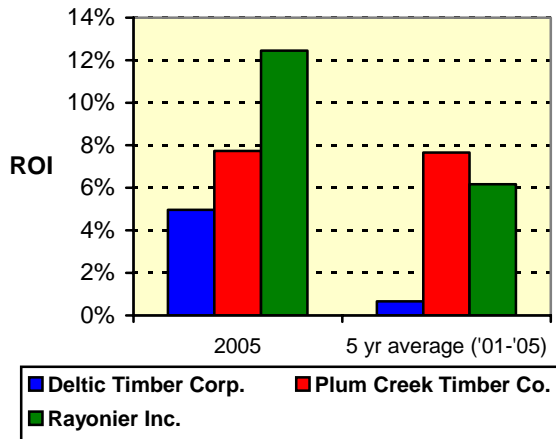
An inefficient market, in contrast, is one in which transaction costs are high and/or the cost of information is great or difficult to obtain. In such an environment, there will typically be a greater variation of returns because some investors will have a better ability to unlock critical information not readily available to others. Or the investor can understand and exploit the limited available information better than others, e.g. making better forecasts.

### ***Inefficiencies Vary By Asset Class***

Some sectors are highly efficient, and manager selection is less critical. Other sectors are more inefficient, and thus, the selection of an investment manager becomes a greater determinant of return. Inefficiency in an asset class creates alpha opportunity. To illustrate, **Figure 2** charts the 1-year returns of the 10 largest mutual funds in two different strategies: one, short-term U.S. government bonds and the other, large cap growth stocks. From the distribution of returns in the chart, it is easy to identify which asset class is more inefficient; it is hard to pick the wrong mutual fund for short-term government bonds, but the large cap growth fund selected will make a significant difference in the return on investment.

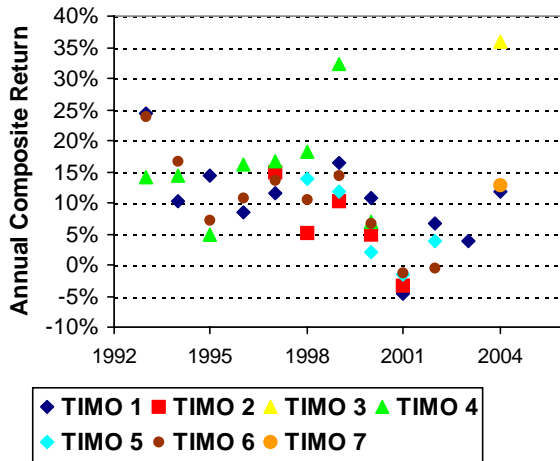
### ***Variability of Performance in Timberland***

In the case of timberland, market inefficiency may be observed by examining the relative performance of timberland based companies. There are very few public companies whose primary business is timber, but there are three in the U.S. who qualify: Deltic Timber Corp., Plum Creek Timber Company, and Rayonier Inc.; the latter two are real estate investment trusts (REITs). Unlike other forest product companies such as Weyerhaeuser or



Source: Reuters

**Figure 3.** 1-year and 5-year return on investment (ROI) of three U.S. based public companies whose primary business is the harvest and sale of timber.



Source: TIR Research

**Figure 4.** Sample of composite annual returns of seven timberland investment management organizations (TIMOs).

Temple-Inland, these three companies derive the majority of their revenue from timber sales; manufacturing is of modest or negligible value. **Figure 3** charts these public timber firms' 1-year and 5-year return on investments (ROI)<sup>3</sup>. Recognizing the limitations of the small sample size involved in this assessment, it remains interesting to note the magnitude of the difference in ROI between the best performer (Plum Creek) and the worst performer (Deltic): a significant 749 and 550 basis points for 1-year and 3-year returns, respectively.

Even more compelling is the observation that this variability in return performance carries through to the private sector timberland investment managers. Return statistics from TIMOs are typically not publicly available, but TIR Research has been able to compile a selection of reported returns from some of the major managers from various sources. **Figure 4** charts annual composite returns of a selection of timberland investment managers since 1993.

**Value of Manager Selection in an Inefficient Market**

From **Figure 4**, one can observe noticeable industry cycles conforming to those observed in the NCREIF returns of **Figure 1**: there is rising performance through the mid-90's, a decline in the late 90's, followed by an upswing beginning in 2002. More importantly, even amid these observable cycles, the performance across managers varies widely. Of the 18 years of reported returns, the average difference from the best and worst performing timberland investment managers was over 10%. The median difference was 9.9%. Not many investors believe that 1,000 basis points is a trivial matter when picking a manager to handle an allocation of their portfolio.

These individual returns demonstrate the inefficiencies in the timberland asset class: performance of the NCREIF index is not a representative indicator of a particular manager's return opportunities. Manager selection remains important in timberland investment.

<sup>3</sup> Return on Investment (ROI) is net profit divided by total invested capital, which is the sum of long-term debt and equity.



## Sources of Inefficiency

**Of the 18 years of reported returns, the average difference from the best and worst performing timberland investment managers was 17.0%. The median difference was 9.9%**

**Table 1.** The three dimensions of timber and timberland in the U.S. that help form its basis of value. They include (a) the major market regions; (b) species present; and (c) log products to be harvested

Major Regions	Specie or Species Group	Major Product Types
Northeast	<u>Softwoods</u>	Chip n' Saw
Lake States	Douglas Fir	Pole
Appalachian	Eastern hemlock	Pulpwood
Inter-Mountain	Eastern white pine	Sawtimber
Pacific Northwest	Loblolly	Veneer Log
Pacific Southwest	Lodgepole pine	
	Longleaf	
	Ponderosa pine	
	Redwood	
	Shortleaf	
	Sitka spruce	
	Slash Pine	
	Spruce	
	True firs	
	Western hemlock	
	Western white pine	
	White fir	
	<u>Hardwoods</u>	
	Alder	
	Ash	
	Aspen	
	Basswood	
	Beech	
	Birch	
	Cherry	
	Cottonwood	
	Cypress	
	Elm	
	Hackberry	
	Hard Maple	
	Hickory and Pecan	
	Red Oak	
	Sassafras	
	Soft Maple	
	Sweetgum	
	Sycamore	
	Tupelo	
	Walnut	
	White Oak	
	Willow	
	Yellow Poplar	

The broad span of performance across public timber companies and private timberland managers suggests that the asset class is inefficient. The basis of that inefficiency is threefold:

1. Timberland is a complex asset class
2. There is a certain measure of risk and uncertainty that is difficult to assess for each timberland investment
3. There exists an asymmetry of information

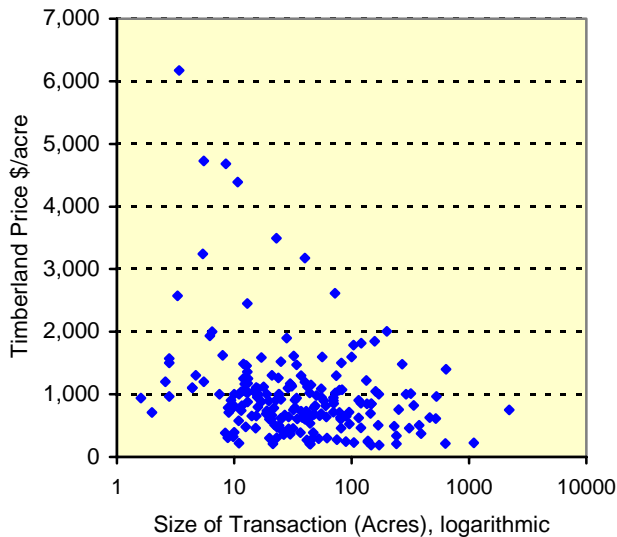
### 1. Complexity of the Asset Class

At first glance, timber appears to be a basic homogenous commodity akin to oil, corn or coffee. However, unlike many common agricultural or natural resource commodities, it is a complex, multifaceted sector that can be challenging to understand entirely.

One source of the complexity is the wide range of species used to produce the many different timber products. Each market region has its unique combination of species and products. **Table 1** illustrates this variety of products and species available in the United States. Added to this complexity is the whole spectrum of different ages, quality and productivity of each timberland property.

As a bulky product, timber is generally not transported more than 100 miles from its source to its destination at a mill. As a result, timber markets are highly localized; prices can vary significantly from one state to another, depending on the make up of the mills in the region. A region with many paper mills will have a different market dynamic from another region with mostly sawmills producing lumber.

Furthermore, timberland is purchased or sold across a span of sizes and ownerships ranging from industry and institutional owners to small private landowners. Timberland may also be encumbered or restricted in a variety of ways such as reserved mineral rights, conservation easements, watershed and wetland protection, road access, and endangered species. On the other hand, timberland value can be enhanced by higher and better use (HBU) real estate values when the timberland is converted to recreational property or residential development.



Source: *Timberland Market Report*

**Figure 5.** Reported timberland sales from 2001 to 2005 in the United States by size and price.

All of these many factors affect timberland values. Not surprisingly, the price paid for timberland will range dramatically. As seen in **Figure 5**, prices of timberland sold in the market over the past four years vary greatly.

Because this is a complex asset class with a multitude of variables and factors to consider, the best management practices for a particular timberland investment are not always evident. Consider, for example, the U.S. South timber region. Genetic variations and different planting densities as well as the impact of soil and climate conditions can affect the growth of the timber crop. Harvest of pine timber can occur from age 18 through age 35. Thinnings (where tree density is reduced to promote growth) can occur once or twice within a ten year window. Fertilization may or may not occur at planting and after each thinning. Herbicide treatment may or may not be applied. Given all these choices, there can easily be 300 or more management options for a timber stand in this region.

Which one among hundreds of choices will yield the best return? Not every timberland manager can handle all aspects of the complex science with equal acumen. Managers with different skills, different capabilities and different investment styles will have different ways of managing timberland, thus creating different returns.

Therefore, it is not uncommon for TIMO's to specialize in a niche. Just as venture capitalists specialize in an industry sector such as communications, media or biotech, some timberland managers focus on select areas of expertise in order to better pursue above market returns.

## **2. Difficult to Assess Risk**

A second driver of timberland inefficiency is the difficulty in assessing risk on an investment level. Consider this: bond risk can be assessed through available market data such as its credit rating; stock risk can be assessed by its *Beta* and analyst research reports. In contrast, there is no published risk evaluation or metric for timberland.

By definition, risk is anything you cannot predict with confidence. Timberland investment risk comes from the following:



- **BIOLOGICAL RISK:** variations in climate, disease outbreaks, and natural disasters such as fire and hurricanes
- **MARKET RISK:** unpredictable shifts in land prices and timber prices
- **MANAGEMENT RISK:** the potential that the management and harvest of timber will deviate from its volume or cost targets due to manager error
- **LEGAL AND REGULATORY RISK:** changes in taxes and regulation that affect the management and revenue from a timberland property

The responsibility of assessing these risks is shouldered by the timberland manager. Assessment of timberland investment risk is unlike publicly traded bonds or stocks where risk is already evaluated by outside experts or can be assessed in-house through publicly available market and financial data. If General Motors' bonds are rated by Moody's as BBB-, we have a good idea of what the risk level is and we have a good starting point to price the bonds. For timberland properties, there is no equivalent.

In this sense, timberland is analogous to other types of private equity investments; investment managers who fail to properly assess the many risk factors in a private enterprise – timberland included – are vulnerable to adding too much risk to an investor's portfolio, or not taking effective measures to mitigate or contain that risk.

### ***3. Asymmetric Information Challenges Investors***

Finally, the third key source of asset inefficiency for timberland is due to the asymmetry of information. In timberland, it is often difficult to obtain all the necessary information required to make a fully informed decision. Information is not always available to all interested parties, and obtaining it usually entails a measure of cost. To count and measure every tree on thousands of acres is not economically feasible.

Since it is cost prohibitive to know everything, timberland managers must be selective on what information to pay for. To illustrate, consider the comparison in **Table 2** between timberland and

**In timberland, it is often difficult to obtain all the necessary information required to make a fully informed decision. Information is not always available to all interested parties, and obtaining it usually entails a measure of cost.**



commercial real estate. An investor in real estate would know the square footage, new expansion plans and rental rates of her buildings. A timberland investor has only approximations for how many trees are on his property, how big they are, and how fast they are growing. In other words, many important facts regarding a property are missing for timberland. An investment manager in timberland must then make an effort to fill in those gaps in data, but do so in a cost effective manner.

**Table 2.** Comparison of the ready availability of information needed to make informed investment decisions in timberland and in commercial real estate. Information not readily available can be obtained, but at cost to the manager.

*For an investor to make an informed investment decision to buy, sell or manage an investment in ...*

Feature of the Property	Timberland	Commercial Real Estate
<b>Quantity</b>	? Do not know the exact volume of timber on the property	✓ Know the exact square footage of office or retail space available
<b>Quality</b>	? There is margin of error in estimating the size and quality of the standing timber	✓ Know with reasonable confidence the breakout of prime and sub-prime rental space
<b>Growth</b>	? Not sure the future growth rates of timber	✓ Know how planned construction will add new office or retail space
<b>Income Stream</b>	? Future harvests and timber prices are uncertain	✓ Tenant occupancy rates and long-term lease contracts give a fair measure of predictability of revenue over the next few years

### **Comparing Timberland to Other Assets**

To summarize, timberland, despite an increasingly developed and competitive market, offers many areas where a quality investment manager can exceed its peers by exploiting some of the inefficiencies that remain in the asset class. **Figure 7** provides a perspective of how the timberland asset class fits in the qualitative spectrum of market efficiency. By efficiency, we mean the inability of any market player to apply an advantage over others through better knowledge, skill, technology or arbitrage. In other words, the more efficient the market, the more level the “playing field.” On the most efficient end of the spectrum we see money markets and fixed income instruments from the U.S.





Treasury. On the opposite, inefficient end of the spectrum we see private equity categories, particularly venture capital. Timberland falls more closely to that end of the spectrum.

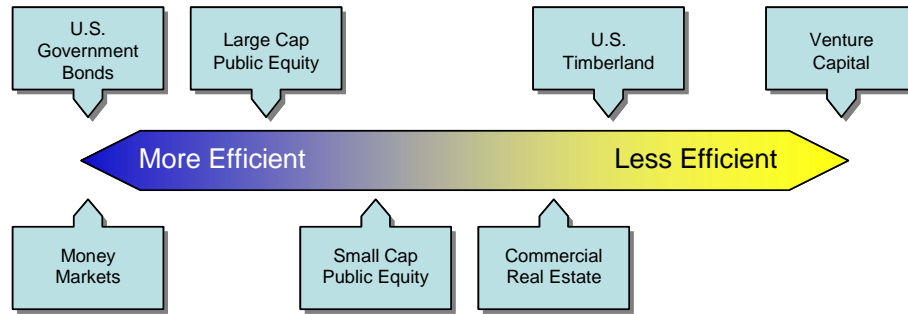


Figure 7. Relative placement of efficiency of various selected asset classes

## Seeking Timberland Alpha

**...inefficiency does not indicate lower returns for the asset class as a whole. Rather, it indicates more opportunities to exceed (or under perform) relative to the industry average.**

Through the course of our discussion, we have argued that timberland is inefficient. At this point, it is important to clarify that inefficiency does not indicate lower returns for the asset class as a whole. Rather, it indicates more opportunities to exceed (or under perform) relative to the industry average. Of course, the ability to capture these inefficiencies will be a function of the skills and capabilities of the timberland manager. **Table 3** offers a list of considerations to evaluate a timberland investment manager. Accompanied by their track record, these considerations help assess a manager's ability to capture timberland alpha.



**Table 3.** Evaluation criteria for selecting a timberland investment manager that can produce *alpha*.

	Questions to Ask a Timberland Manager	Impact on Alpha
<b>Complexity</b>	Does the manager have experience in structuring investments adapted to the needs and market? (Such as timber leases, fiber supply agreements, structured notes, etc.)	To be adaptive and innovative is critical in capturing inefficiencies others may overlook in a competitive market .
	Are there years of proven performance and experience that support the manager's chosen investment strategy for the client?	Whether it is exploiting higher and better use (HBU) values or investing in a particular species or region, the management team should have track records and credentials in those areas. Otherwise, mediocre returns will likely result.
	Do you have professional foresters and biometric research capability to maximize the biological growth potential of your portfolio?	Would you put money in a venture capital fund focusing on health care if none of the staff have medical degrees or worked in medicine? The same applies to timberland. Specialists know best how to unlock hidden value in a specialty field.
<b>Risk</b>	Can the manager perform a quantitative assessment of risk on a portfolio and property level?	Managers who do not discuss risk management in their marketing and sales information are likely to have no formal capability. Lack of a formal risk strategy opens up vulnerability of a portfolio to poor risk-adjusted returns.
<b>Asymmetric Information</b>	Are decisions of acquisition, disposition, or day-to-day forest management handled by outside contractors and consultants or by in-house specialists?	Hiring outside expertise that other TIMOs can also hire is a sure recipe to get only industry average returns. Above average returns require above average expertise.
	How quickly can new research and knowledge be put into practice?	Having researchers and experts in forest management, biometrics and economics is crucial to quickly putting the latest science into practice.