

# Investing in Timber

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*Institutional investors continue to increase their portfolio allocations to alternative investments, including timber. Timber investing is defined as the harvesting and sale of timber properties worldwide. Institutional investors have found timber to be an attractive investment because it has unique performance characteristics that are independent from the performance drivers of other asset classes. These performance factors include the unilateral growth in trees, both in terms of stature and higher value uses as a tree's diameter increases. Timber has also been an excellent inflation hedge. Long-term supply and demand factors for timber are favorable. Consequently, FEG recommends clients consider an allocation to this asset class.*

## INVESTING IN TIMBER

The fundamental reason to diversify an investment portfolio is to mitigate the risk in predicting total returns for asset classes. The expected returns for all asset classes can be broken down into primary factors or building blocks that comprise or influence the returns. In the case of equities, these primary factors are the expected dividend yield, expected earnings growth and expected price earnings ratio expansion or contraction. With regard to fixed income, they are the expected income stream (yield) and the potential impact of increases or decreases in interest rates. These primary factors in turn are affected by secondary factors such as economic growth, inflation, productivity, government regulation and geo political events. Secondary factors are difficult to predict, particularly in the short term. Surprises are always lurking around the corner.

A diversified portfolio will have a series of expected returns that are driven by a vast array of primary and secondary factors (knowing over the long-term some of the factors will be negative and some positive). Prudent investors will analyze the primary factors that drive investment returns for specific asset classes and seek to identify any large negative factors that could reasonably be expected to hurt long-term performance.

For example, over the past twenty years institutional portfolios have benefited from double digit equity returns and high single digit fixed income returns. In the case of equity, an expanding price earnings ratio (i.e., rising valuations) has been a primary factor contributing to the strong returns. This primary factor in turn has been favorably influenced by the secondary factors of declining interest rates, low levels of inflation, and reduced government deficits. Likewise, falling fixed income yields is the primary factor that has contributed to the high single digit returns for bonds over the past twenty years.

While we can't predict the timing and magnitude of changes in secondary factors, we can quite confidently look at the current level for the primary factors that drive equity and fixed income performance and reasonably assume investors are unlikely to experience double digit equity returns and high single digit fixed income returns over the next ten years. The starting point for dividend and bond yields is just too low while equity valuations are too high relative to their historical averages to repeat the stellar returns of the past.

# Investing in Timber

Consequently, FEG recommends clients further diversify the factors that drive their portfolio returns. In particular, FEG recommends clients rely less on traditional equity and bond investments and increase exposure to alternative investments and alpha generating strategies.

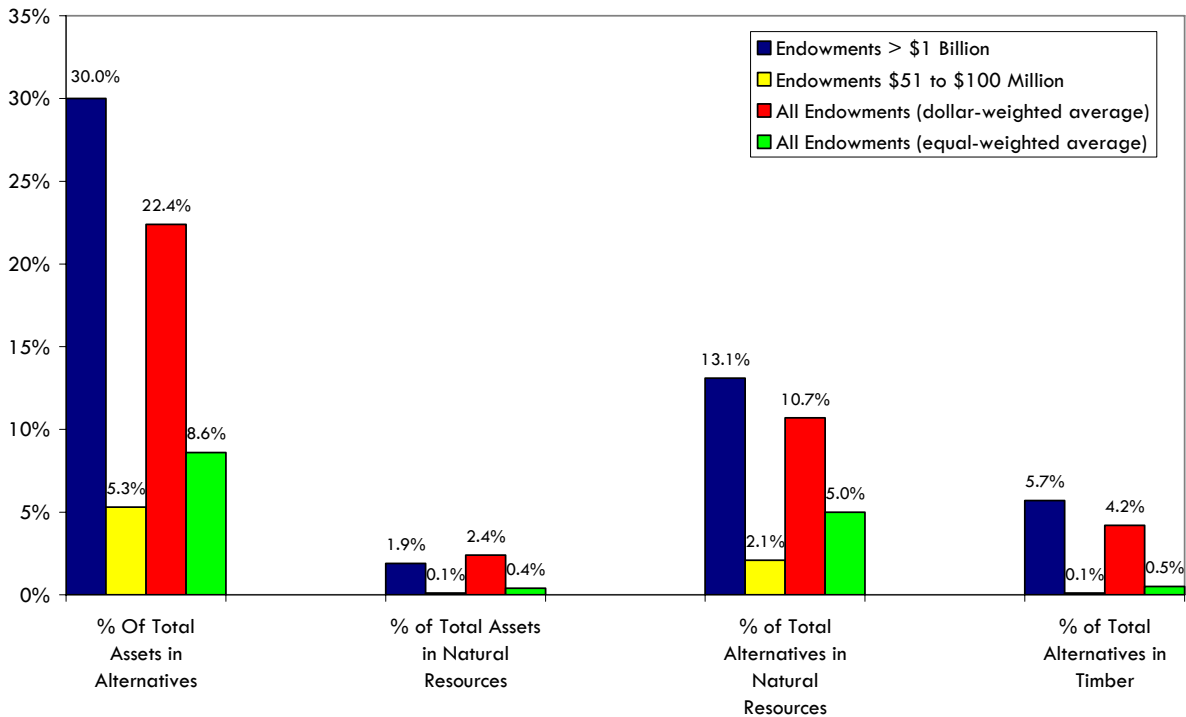
## INSTITUTIONAL ALLOCATIONS TO ALTERNATIVE INVESTMENTS

An analysis of survey data provided by the National Association of College and University Business Officers (NACUBO), shows endowments and foundations, while still relying heavily on equity and fixed income, are starting to increase allocations to alternative investments and alpha generating strategies such as hedge funds. As of June 2003, the average endowment had 11.8% in alternative investments (hedge funds, private equity, venture capital, natural resources and real estate). This compares to 7.5% in 1999 and 4.6% in 1994. The largest increase was to hedge funds, which has gone from 1.5% of asset in 1994 to 6.1% in 2003.

While mid and small sized endowments and foundations have started to increase their allocation to alternative investments, they are still well below the level of larger institutions. The percentage allocated to alternative investments continues to be stratified by endowment size.

The following graph shows the allocation to alternative investments for large and small endowments compared to the equal and dollar weighted averages.

2003 NACUBO Endowment Study - Allocations to Alternative Investments



# Investing in Timber

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Because larger institutions have a higher allocation to alternative investments, they have a greater number of factors driving their investment performance and, as a result their investment returns held up better in the recent bear market.

## Allocations to Real Assets

Besides the absolute percentage in alternative investments, the other striking difference between larger endowments and foundations and their smaller brethren, as shown in the table on the previous page, is the percentage allocated to natural resources, such as timber, commodities and oil and gas. Endowments greater than \$1 billion have on average five times as much in natural resources as the average endowment.

Interestingly, larger institutions have nearly half of their natural resources allocation invested in timber compared to 10% for the equal weighted average. Harvard University, for example, recently increased their allocation to timber to 12% of assets.<sup>1</sup>

FEG believes timber has primary factors that are not currently represented in most institutional portfolios. Therefore, by including a modest allocation, clients can improve the long-term predictability of the total portfolio return. The remainder of this paper will explore the timber asset class.

## **WHAT IS TIMBER INVESTING?**

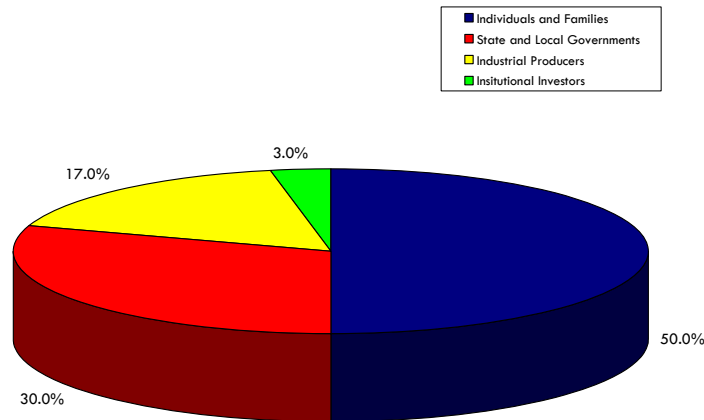
Timber investing is defined as the harvesting and sale of timber properties worldwide. Timber is consumed globally for fuel (mostly in third world countries), for solid wood products, such as building materials including treated lumber, plywood, molding, etc., and for pulp-based products such as paper, newsprint, and packaging. The forest industry is one of the United States' ten largest industries with annual shipments exceeding \$200 billion. Pulp-based products account for 85% of industrial annual revenue while wood products contribute 15% of annual revenue. 58% of U.S. timber volume is softwood and 42% is hardwood.<sup>2</sup> Markets are global and local depending on the product. For low value pulpwood, it is often uneconomical to transport wood beyond 50 to 100 miles. For higher value sawtimber or veneer, global shipments are economically viable.<sup>3</sup>

Worldwide there is over 8 billion acres of timberland. The United States represents only 6.5% of global timberland supply but over 30% of global timber production. Canada is second in production with 18%. The largest timberland holdings are in South America and Russia.<sup>4</sup>

## **OWNERSHIP OF U.S. TIMBERLAND**

Within the United States, timberland ownership among institutions represents a small fraction of overall timberland (see following graph).<sup>5</sup>

# Investing in Timber



There are several trends currently affecting the ownership of timberland. First, institutional investors have increased their participation in the asset class as part of the overall trend toward higher institutional allocations to alternative investments. Institutions first began investing in timber in the 1970s and 1980s. Investments by institutions were \$150 million per year in the mid-to-late '80s, approximately \$400 million per year in the first half of the 1990s and approximately \$1 billion per year in the second half of the 90s. Total current institutional timber holdings are approximately \$10 billion.<sup>6</sup>

Institutional investor participation in the asset class has been facilitated by the creation of timberland investment management organizations (TIMO's). TIMO's are organizations that invest in timberland on behalf of individuals, pension plans and endowments and foundations. Investments are completed either on a separate account basis or through a limited partnership structure. TIMO's collectively have about \$10 billion in assets under management.

At the same time institutional investors are increasing their percentage ownership of timber, industrial producers, such as integrated forest and paper product companies are divesting their timber holdings. Since the late 1980s, 20 of 40 publicly traded forest product companies have merged, been acquired or exited from owning timberland. Others have announced their intention to divest of timberlands. Drivers of this trend include a desire to improve balance sheets, artificially low valuations on balance sheets (i.e., GAAP accounting does not recognize timber growth), and a recognition that captive timberlands have been underutilized.<sup>7</sup> One large processor found it received a higher price when selling its own wood to outside entities, and a lower price when buying wood for its production needs from outside vendors.<sup>8</sup> The increased supply of timber precipitated by industrial producer divestiture has put downward pressure on timber prices and land in the last several years, contributing to overall lower timber returns. However, this large supply of timberland is allowing timber investors to purchase land for future harvesting at attractive prices.

## PRIMARY DRIVERS OF TIMBER RETURNS

Since 1986, timber for all regions as measured by the National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Property Index has produced an annualized return of 15.1% through December 31, 2003. For the ten-year period, timber has generated 8.7% on an annualized basis. NCREIF and its Timberland Property Index is the leading source of institutionally verifiable timber return

# Investing in Timber

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information. Later in this document, we'll discuss the mechanics of and shortcomings in quantifying timber performance, but first it is important to understand what are the primary drivers of timber returns.

The four primary drivers of timber returns are:

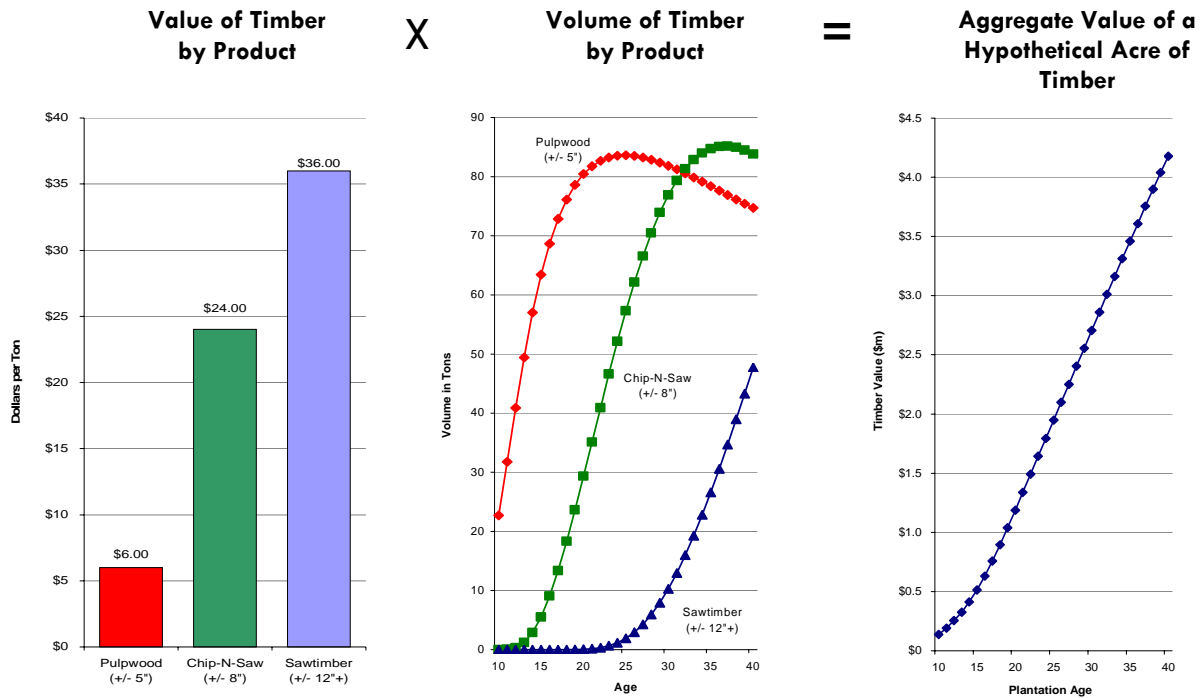
1. Biological growth
2. In-growth
3. Timber price changes
4. Land price changes.

Biological growth is the primary factor driving timber returns. Tree growth is highly predictable and independent of other factors, although the level of growth depends on the species, site quality, age, care in fertilizing and thinning, and other factors. The fact that trees grow irrespective of the level of interest rates, inflation, or equity valuations is one reason why timber investments exhibit low correlation to other asset classes. The biological growth rate varies over time and by species. A plantation with 10 year old trees can experience annual growth rates of 7% to 9% over the subsequent 10 years and then slow to 4% to 7% annual growth rates over the subsequent 15 years.<sup>9</sup>

In-growth is another unique characteristic of timber that contributes to absolute returns and low levels of correlation with other asset classes. As timber grows in diameter, its value on a per unit basis increases due to multiple higher end uses. For example a 5 to 6 inch diameter tree can be used only for pulpwood (such as paper products), while a 10 to 12 inch diameter tree can be used for sawtimber (i.e. made into boards).<sup>10</sup> For comparison, the price of southern pine pulpwood is currently about \$6.76 a ton while southern pine sawtimber sells for \$37.51 a ton.<sup>11</sup>

The following diagram supplied by FIA Timber Partners illustrates the combined impact of biological growth and in-growth.

# Investing in Timber



Timber and land price changes are the final primary drivers of timber returns. Historically, timber price increases have outpaced inflation. Changes in prices are influenced by both macroeconomic and microeconomic factors. Macroeconomic factors include new housing activity, interest rates, environmental/legislative issues, and the overall level of economic activity. Microeconomic factors include regional timber processing capacity.<sup>12</sup> Timber prices can be volatile over the short-term, but most experts expect softwood and hardwood prices to keep pace with inflation and could potentially outpace inflation.<sup>13</sup> The value of timberland for uses other than timber can also influence timber returns. For example, in areas near growing cities, the land could be worth more for development than for growing timber. Given the lengthy growth cycle for timber of 20 to 40 years, there is ample time for land use dynamics to change.

## TIMBER RISKS

The primary risk in investing in timber is the impact of supply and demand on timber prices and its subsequent impact on timber investment returns. Prices and demand for logs and wood products are subject to cyclical fluctuation. The demand for logs and wood products is primarily affected by the level of new residential construction activity, and to a lesser extent, repair and remodeling activity and other industrial uses. Of the softwood lumber consumed in the United States, almost 40% is used for new residential home construction and another 30% is used for home repair and remodeling.<sup>14</sup> These activities in turn are subject to fluctuations due to among other factors, changes in domestic and international economic conditions, interest rates, population growth and changes in demographics and seasonal weather patterns.

While the land-base for timber is generally fixed, the supply of timber coming to market can vary depending on changes in trade and other government regulations, the price of the dollar in foreign ex-

# Investing in Timber

change markets, price and availability of substitutes and other environmental and political factors. All of these factors work in tandem. For example, a strong U.S. dollar discourages timber exports and encourages timber imports. While the strong showing for the dollar in the late 1990's encouraged imports, particularly from Latin America, the supply of logs coming from Asia decreased as a result of harvest restrictions in the Philippines and Malaysia.

Historically, Canada has been a significant source of lumber in the U.S., particularly for the new home construction market. However, Canada and the U.S. have negotiated back and forth regarding dumping charges, the appropriate amount for import tariffs, etc. The status of these agreements can have a significant impact on timber supply.<sup>15</sup>

While it is difficult to project long-term supply and demand factors, generally speaking the long-term demand for timber is expected to continue to increase over the next twenty to thirty year period as global economies expand. Within the United States, demographic and immigration trends point toward higher demand for timber both for new housing and for remodeling projects. In addition, the amount of new timber used in the average new home is up 65% since 1965.<sup>16</sup> Supply is not expected to keep pace with demand particularly as the supply from natural forests is expected to decline.<sup>17</sup>

## Natural Hazards and Environmental / Regulatory Changes

Timber investments are exposed to natural hazards such as age, wind, insects, disease, drought and fire. Mortality rates in privately owned and managed forests from such causes have historically been reported at approximately 0.25% annually.<sup>18</sup> Timber firms seek to mitigate this risk through diversifying into various forest tracts and through conscientious forest management practices. In addition, these normal rates of mortality for trees are accounted for in expected growth patterns. Because the loss rate due to natural hazards is so low, timber managers generally do not take out insurance to protect against these hazards.

Timber returns can be affected both positively and negatively by changes to environmental and regulatory issues. For example, the placement of the northern spotted owl on the endangered species list resulted in changes to harvest practices on both public and private timberland. This resulted in an increase in the value of private timberland by restricting the ability to harvest federal timberlands. This development is a primary reason for the unusually high returns for timber in the late 1980's, particularly in the Pacific Northwest region. In the future, other wildlife species could be put on the endangered species list. In 1994, legislation was introduced in Congress banning the exporting of logs from privately owned timberlands. This ban is already in place for federal lands. While the legislation didn't pass, it is indicative of the regulatory risks associated with timber investing. If such legislation had passed, it likely would have resulted in lower domestic log prices.

## **TIMBER RETURNS**

As with many illiquid alternative investments, historical return data is only available in the relatively recent past. In the case of timber investing, institutionally verifiable performance data is available from December 1986 through the NCREIF Timberland Property Index. The NCREIF Timberland Property Index is based on generally accepted measures of asset valuation. Timberland investment managers contribute information each quarter on appraised value, net income, capitalized expenses and any partial sales or purchases for every prop-

# Investing in Timber

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erty in the United States they manage that satisfies criteria for inclusion in the Index. As of December 31, 2003, the index was comprised of 268 properties encompassing 4.7 million acres with a market value of \$5.8 billion. The index has its flaws due to the limited number of participants (4 firms), a large percentage of the trees in their early stages of growth, and the appraisals used to generate a portion of the return series are subject to interpretation.

Total returns for timber are broken down into an income component and a capital return component. The income return is known as EBITDDA, which stands for earnings before interest expenses, income taxes, depreciation, depletion and amortization. Income is generated mainly by harvesting of timber, but also may include hunting and fishing lease income, petroleum royalty income and income for the sale of development rights. The capital return reflects the change in market value primarily due to the biological growth of the trees, but it also includes the realized net proceeds from the sale of land (with or without trees).

Unlike real estate, the income and capital returns are closely linked. When timber prices are high, both income and capital returns increase because timber managers are willing to harvest more logs (hence more income) and the higher price of timber translates into higher market values for timberlands.

In the last ten years, the regional composition of the index has changed significantly with a greater percentage of assets now coming from the Southern region. For example, in 1994, properties from the Pacific Northwest comprised 43% of the index while the South comprised 53%. Currently, the Northwest comprises 18% of the index while the South comprises 78%. Timberland from the Northeast had consistently been about 4% of the Index. One impact of this changing composition is the index's income return component has declined. On average, trees in the South that are included in the index are younger and faster growing than those in the Northwest, resulting in lower income from harvesting and greater capital appreciation from biological growth and land value increases.

The following tables contain historical performance, volatility and correlations for the NCREIF Timber Index compared to other indices for the years ending December 31, 2003.

# Investing in Timber

## NCREIF Timber Index – All Regions – For Periods Ending December 31, 2003

	<b>Income Return</b>	<b>Capital Return</b>	<b>Total Return</b>
<b>1987</b>	10.4%	15.2%	26.5%
<b>1988</b>	10.3%	18.4%	30.1%
<b>1989</b>	9.8%	25.8%	37.4%
<b>1990</b>	8.2%	2.7%	11.1%
<b>1991</b>	8.1%	11.5%	20.3%
<b>1992</b>	7.3%	28.6%	37.3%
<b>1993</b>	6.7%	15.1%	22.4%
<b>1994</b>	6.7%	8.4%	15.4%
<b>1995</b>	7.5%	6.0%	13.8%
<b>1996</b>	6.5%	4.0%	10.7%
<b>1997</b>	6.9%	11.4%	18.9%
<b>1998</b>	5.2%	3.7%	9.1%
<b>1999</b>	4.2%	8.4%	12.9%
<b>2000</b>	4.7%	-0.2%	4.4%
<b>2001</b>	3.4%	-8.5%	-5.2%
<b>2002</b>	4.0%	-2.1%	1.8%
<b>2003</b>	3.7%	3.9%	7.7%
<b>1 Year</b>	3.7%	3.9%	7.7%
<b>3 Year Annualized</b>	3.7%	-2.4%	1.3%
<b>5 Year Annualized</b>	4.0%	0.1%	4.1%
<b>10 Year Annualized</b>	5.3%	3.3%	8.7%
<b>15 Year Annualized</b>	6.2%	7.5%	14.0%
<b>Since 12/86 Annualized</b>	6.4%	8.3%	15.1%

## 15-Year Period Ending December 31, 2003

<b>Asset Class</b>	<b>Annualized Return</b>	<b>Standard Deviation</b>	<b>Correlation with Timber</b>
NCREIF Timber – All Regions	14.0%	11.3%	1.00
S&P 500	12.2%	18.4%	0.45
Russell 2000	11.0%	19.6%	0.36
MSCI EAFE	4.0%	18.9%	0.22
MSCI Emerging Markets Free	10.8%	35.8%	0.45
Wilshire REIT	9.9%	17.0%	-0.03
NCREIF Property	6.7%	6.0%	-0.52
LB Aggregate Bond	8.4%	5.6%	0.17
Consumer Price Index	2.9%	1.2%	0.33

# Investing in Timber

For the last four years, timber returns have been below historical averages. This has been due to the higher than average supply of timber properties for sale arising from the continued divestiture of forest properties by forest product companies. The second factor has been reduced global demand over the past several years as many nations experienced a slowdown in economic activity. This has been especially pronounced in the Pacific Northwest, which exports a significant amount of wood to Asia. The supply glut also softened prices in other regions. As mentioned earlier, long-term supply and demand characteristics are favorable with timber price increases expected to keep pace or exceed inflation. Timber has performed well in periods of moderate and high inflation as evidenced by the following table.<sup>19</sup>

<b>Inflationary Period</b>	<b>Timber Returns</b>	<b>Consumer Price Index</b>
Low Inflation (1956-1965)	4.4%	1.7%
Moderate Inflation (1982-1996)	8.4%	3.5%
High Inflation (1973-1981)	17.1%	9.2%

## TIMBER INVESTMENT VEHICLES

### Limited Partnerships

For institutions considering allocating less than \$30 million to timber, a limited partnership is the most appropriate vehicle for investment. These limited partnerships typically have an initial term of nine to ten years with subsequent annual or multi-year renewal periods that generally are no longer than three or four years. The capital is typically drawn down over 1 to 3 years. Generally, part of the capital is used to set up a working capital reserve to pay future operating expenses related to buying, managing and selling the timber lands. Some fully integrated timber companies factor in operating expenses as part of the investment management fees. Management fees vary by partnership. They generally range from 75 to 150 basis points of capital committed. Often after the initial investment period, the management fee is applied to the fair market value of the assets or the costs of the assets purchased. The limited partnerships generally have a profit sharing component after the limited partners receive a preferred return (typically 6% to 8%). This profit split is in the 15% to 20% range (after receipt of the preferred return). Timber investment managers generally do not employ leverage.

The cash flow pattern varies by fund, but generally involves a capital draw down over three years with most of the capital being drawn in the first eighteen months. After the initial investment period through the middle years of the partnership, the cash distributions range from 3.5% to 5% a year. In the later years of the partnership, cash distributions are higher as timber tracts are sold. Lower cash flow investments can often lead to higher returns because emerging growth forests can often be bought at a lower price since timber is not ready to be harvested. The targeted nominal internal rate of return net of all fees for timber limited partnerships is approximately 10%. On individual parcels, timber managers generally seek real gross internal rates of return in the 6% to 8% range. This real expected return is gross of investment management fees but net of all timber management operating costs.

The primary exit strategy for timber limited partnerships is to sell the timber and timber interests at the end of the term. The purpose of the renewal periods is to allow for the orderly disposition of these timberlands when market conditions are optimal. In addition to the sale of timber, other exit strategies include converting the fund to a master limited partnership, real estate investment trust or other publicly

# Investing in Timber

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traded vehicle. Some integrated partnerships elect to market the timber tracts on their own. Even some non-integrated partnerships will establish their own marketing entities to handle this function. Others will outsource this function. Each partnership has their own opinion of what is the most effective strategy, and the effectiveness of a given marketing approach can vary depending on market conditions. It is in the general partners' best interest to employ the marketing approach that maximizes the value of selling the timber.

## Timber Real Estate Investment Trusts (REITs)

Another way to invest in timber is through timber real estate investment trusts. Timber REITs are publicly traded vehicles that invest in timber and timber operating entities (such as pulp mills). The advantage of a timber REIT is the immediate liquidity. The disadvantage is timber REITs have quarterly debt service and dividend requirements. This means the timber REIT must be constantly harvesting timber, eliminating the flexibility afforded private timberland investments, who can refrain from harvesting in poor pricing environments. In addition, because timber REITs are publicly traded they can trade at prices that do not reflect the underlying net asset values, increasing volatility. Currently, timber REITs are trading at a premium to their net asset values.

## **CONCLUSION**

The fundamental reason to diversify an investment portfolio is to mitigate the risks of predicting total returns for asset classes. A diversified portfolio will have a series of expected returns that are driven by a vast array of factors (knowing over the long-term some of the factors will be negative and some positive). FEG believes timber has factors that are not currently represented in most institutional portfolios. These factors include the unilateral growth in trees, both in terms of stature and higher value uses as a tree's diameter increases. Timber growth is independent from all other factors present in institutional portfolios. Timber is an excellent inflation hedge as demand for real assets increases during inflationary periods. Long-term supply and demand factors for timber are favorable. Finally, the continued divestiture of timberland holdings by integrated forest product companies presents an opportunity for institutions to invest in timberland at relatively low prices compared to historical norms. This divestiture trend should slow over the next several years, producing a favorable impact on timberland prices. FEG expects timber to return 9 to 10% over the next ten years and we do not see any outsized negative factors for timber. FEG recommends clients consider an allocation to this asset class.

# Investing in Timber

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# Investing in Timber

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