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## INVESTING IN THE HARDWOOD FORESTS of the EASTERN US



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## INTRODUCTION

The forests of the eastern US are capable of producing some of the finest-quality hardwood timber in the world. Naturally biodiverse and resilient, these forests are truly sustainable and are well suited to intensive use. As deforestation of tropical forests continues and remaining public timber reserves are protected, properly managed and privately held timberland will be increasingly important in providing timber resources to the growing world population.

Financial returns from timberland investment are historically comparable to or better than other real estate investments, and *real* returns from 5%–10% are generally achieved. Returns are driven by the rate of appreciation of the timber asset, which gains in value in part from physical growth, but more important, from managing and channeling that growth into higher-value products. Historically, lumber prices have appreciated well ahead of inflation, and as available supplies of timber continue to diminish worldwide, returns could easily double.

For the private investor, timberland investment often provides returns beyond financial needs, as a managed forest can enhance wildlife, protect water quality, and provide the investor with immeasurable personal satisfaction and enjoyment.

Timberland ownership is a long-term investment based on the physical growth of trees. It is characteristically low in risk, offers a hedge against inflation, and provides diversification potential to investment portfolios. Although timberland is generally perceived to be illiquid, liquidity is related to the maturity of the standing timber and increases as the forest matures. Timberland investment is one of appreciation of the asset value as the timber grows, followed by realization of cash yield as the timber is harvested.

## INVESTMENT CHARACTERISTICS

### 1. *The Market for Hardwood Timberland*

The market value of a tract of forestland is driven by two major components: 1) the current value of the standing timber and 2) the inherent value of the land. The relative importance of these two factors varies from parcel to parcel, depending upon a variety of factors including but not limited to the following:

- *Regional Location* – The proximity to populated areas directly impacts how a parcel is valued. On parcels close to cities, timber value has less importance than in rural areas.
- *Timber Liquidity* – The more mature timber becomes, the more liquid an asset it is perceived to be. Mature, large timber has a much stronger impact on market value than less-mature timber, even if volumes and total value of the less-mature timber equal or exceed the mature timber. Future value and long-term income potential of standing timber have little impact on current market value.
- *Frontage* – Frontage on road or water greatly enhances land values and lessens the relative importance of the timber component, even though frontage enhances the liquidity of the timber asset.
- *Access* – Developed internal access enhances both timber liquidity and development values, although access good enough to facilitate logging may not be sufficient to improve land values. Developed external access is critical for land values but not quite as critical to timber.
- *Zoning Regulations* – Local or regional zoning may limit non-timber-related uses, lowering overall land value.
- *Tax Abatement Programs* – Virtually all "current use" tax abatement programs involve commitment to not change the current use of the land for an extended period, subject to penalty, and such commitment usually survives any change of ownership. This tends to lower land values.
- *Market Climate* – The relative importance of the land and timber components change with changing times. Land values were relatively unimportant in the early 1980s, increased dramatically through the boom period of the mid 80s, weakened through the recession of the late 80s and early 90s, kept pace with timber through the late 90s and early 00s, and have strengthened again in recent years. Timber value declined in relative importance through most of the 80s, increased dramatically in importance relative to land through the 90s, and although land values have increased in recent years, timber remains a critical driver of market value on most forested properties.

- *Knowledge of Timber Value* – In spite of the potential influence of timber on market value, many buyers and sellers have little accurate knowledge of the timber value, resulting in increased emphasis on land values and often underestimated perceptions of market value.

At present, the market climate for forest properties is extremely strong. Demand for investment properties exceeds supply of suitable land, and competition for properties as well as softened timber prices have increased attention and value assigned to nontimber assets. Well-timbered, unencumbered parcels with some recognizable nontimber aspects tend to change hands at values exceeding full capital timber value.

## **2. TIMBER VALUE TRENDS AND INFLUENCES**

The price of standing timber (stumpage) is essentially the price paid at the mill less the cost of logging. Mill prices tend to be competitive with each other and are driven by the market and price of lumber. Logging costs tend to be more variable according to the specific property situation.

Mills buy timber according to species and grade. Grades are based on quality and size of individual stems. Most mill price levels are based on the availability of timber and the market for the final product. Historically, lumber prices have shown real (above-inflation) increases of 1.75% per annum for the past 175 years. Although significant fluctuations do occur over the short term, the trend has been surprisingly steady over the long term.

Since the early 90s, while prices for higher-grade lumber have moved steadily upward, prices for mid- and lower-grade hardwood lumber have fluctuated, strongly influenced by local economic conditions. However, higher-grade lumber, influenced by export markets, has shown steady and strong price appreciation well above inflation, as demand for US hardwood exports has increased almost fivefold over the last 15 years. Increased exports of quality hardwoods are seen as a response to the reduced availability of tropical hardwoods.

Softwood lumber is used primarily as a structural material and is strongly affected by the housing market. The recent real estate boom was favorable to softwood lumber pricing, while the current decline in the housing market is creating a dampening effect.

Hardwood pulp prices have not significantly appreciated in recent years, and the number of hardwood using pulp mills in the northeastern US has declined. Use of pulp-quality material for energy production in wood-fired electricity generating plants and in the production of wood fuel pellets is said to be growing. Demand for softwood fiber, particularly hemlock and spruce, has increased in part due to increasing competition for much of the same material used by the structural timber mills. Pine pulp value remains low in today's market.

Logging costs include felling the timber, removing it from the woods, and delivering it to the mill. Logging costs can vary tremendously according to type of equipment used, distance from the mill, size and distribution of the timber to be cut, topographic features of the land, and condition of access. During recent years, logging costs have increased

with rising fuel, transportation, insurance, and equipment costs. Logging costs on any particular parcel of land can be reduced by improving internal access.

### **3. Timber Value Growth**

The performance of a timber investment is largely determined by the rate at which the timber assets grow in value. Growth in timber value comes from three basic sources:

- *Physical Growth* – One of the unique characteristics of forestry investment is also one of the most obvious: trees are growing organisms. As biological growth is relatively predictable and independent of economic conditions, timberland investment offers natural protection from the ups and downs of economic cycles. In the hardwood regions of the East, most commercial hardwood species under management on good sites grow at an annual rate of 2%–4% and at minimum can be expected to increase in value by at least that much.
- *Ingrowth* – While the biological growth rate of eastern hardwoods does not compare very well with southern pine plantations, where growth is usually 6%–8%, hardwoods gain substantially more in value through growth into different commodity product classes. Trees are valued according to end product, and the value of the end product is a function of size and quality. As trees get bigger and new product classes are achieved, unit price value can jump dramatically. This is referred to as ingrowth. Because of hardwood lumber grading, individual hardwood trees can make as many as seven product shifts during a rotation, compared to only two product class changes for softwood. This allows the annual rate of value growth of hardwood timber to greatly exceed the physical growth rate.
- *Price Growth from Management* – The effect of physical growth and ingrowth on timber prices can be dramatically enhanced through active management. Favoring the highest-quality stems and the highest-value species through careful thinning and other cultural treatments will maximize the rate at which timber value appreciates. The combined effect of physical growth and ingrowth determine the rate of timber value growth, which can be enhanced significantly through active management of the trees.

#### **4. Time Frame**

A crop of commercial timber in the eastern hardwood region of the US generally requires from 80 to 120 years to reach economic maturity. Because of the regional land use history of agricultural abandonment and uncontrolled cutting, many forests in the east US are middle-aged, dominated by trees that are slightly more than midway through their rotation cycle. Therefore the maturing process of much of the existing crop will last another 30 to 50 years. This is ideal for capital appreciation, as this is the period in the rotation where jumps in optimum volume growth occur and when forecast world timber shortages are predicted to be at their greatest. Initially, cash flow is poor as the amount of harvesting of the high-value trees is not significant, but the investment becomes very cash positive as the timber reaches maturity and is harvested. Effective forest management minimizes the time required to reach maturity by controlling density and favoring rapidly growing species. As the timber matures, the correlation between timber value and property market value strengthens, minimizing market risk to properties held until substantially mature.

#### **5. Risk**

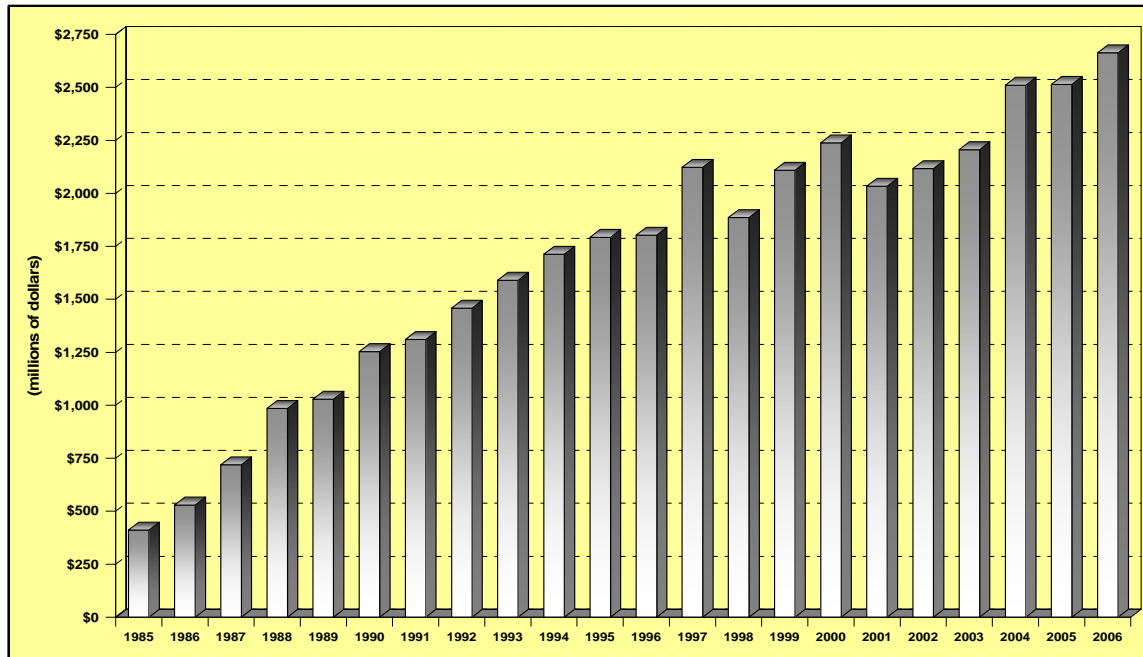
Physical risks to forestland are relatively low. On average, losses to US timberland from natural hazards such as fire, insects, storms, and disease exceed normal timber mortality by less than 1%.<sup>1</sup> On managed lands this risk is substantially less. Hardwood lands in the eastern US have even lower risk, as fire danger here is substantially less than it is in southern and western softwood lands, and the natural stands of the eastern forests are inherently more biodiverse than plantations and forests of other regions, minimizing the threat of insects and disease.

A potential risk of timberland is from political or regulatory changes, such as restrictive environmental laws that limit or control harvesting practices. This is a real and significant risk, but this risk is considerably less in the eastern US than in other parts of the country and the world. The natural biodiversity of the region, the long history of use (no remaining "old-growth" or virgin timber), and a common enemy (land conversion) of both environmental and timber industry interests have created a middle-ground public consensus to maintain a "working" forest landscape.

Risk from timber price fluctuations is relatively low, especially for quality grades of hardwood. As softwoods are the primary source of structural lumber, hardwood lumber is far less sensitive to the volatility of housing starts. Timber prices in general have stayed ahead of inflation over the long term. While fluctuations do occur for certain species and products, price appreciation for lumber has exceeded inflation by 1%–2% for the past 175 years.<sup>2</sup> With western timberland now more restricted for environmental reasons, and eastern and southern timberland declining from development and land use change, the overall supply of timberland in the US is expected to decline. Demand is expected to continue to increase as US hardwoods continue to replace tropical hardwoods worldwide (see Figure 1) and reliance on renewable resources becomes more and more important. Due to the generally unregulated cutting that is prevalent in the US, the availability of high-quality timber relative to volume will likely decline, pushing up prices for veneers and high-grade sawtimber at an accelerated rate. An important advantage of timberland is that timber sales can be deferred if prices are currently inadequate.

In recent years, technological changes have increased utilization of wood in the US, adding value to timberland. As wood is one of the most plentiful and relatively easily renewed natural resources in the world, reliance on it will likely increase with developing technology as replacement of wood with other materials becomes more environmentally costly. The ability of the eastern hardwood forests to self-regenerate is striking and readily allows intensive utilization of the resource without risk of long-term degradation.

Figure 1. Value of U.S. Hardwood Exports 1985–2006<sup>3</sup>



## 6. Inflation Protection

Timberland, like real estate in general, is considered a hedge against inflation because of its finite supply; additional land cannot be manufactured. Timberland has the further benefit of growth. Increases in volume and movement of timber into higher product classes can often outweigh the effects of higher interest rates and loss of purchasing power from inflation. Studies have repeatedly shown a positive correlation coefficient between real returns from timberland and the Consumer Price Index.<sup>4</sup>

## 7. Portfolio Diversity

Timberland is considered to have strong diversification potential and the capability of reducing an investment portfolio's risk. According to modern portfolio theory, investors should be more concerned with the portfolio's overall standard deviation than the standard deviation of individual components of the portfolio. Therefore, the addition into the portfolio of an investment that runs counter-cyclical to existing components of the portfolio would reduce the overall volatility of the portfolio and therefore risk. The

relationship between investments can be quantified by the correlation coefficient statistic, which can vary between -1.0 and +1.0. If investment returns rise and fall together, the coefficient is positive. If they are counter-cyclical and rise and fall inversely, the coefficient is negative. Timberland has been repeatedly shown to have a negative correlation coefficient when compared to, among other financial assets, common stocks, corporate and government bonds, and the S&P 500 (see Table 1), and in recent studies reduced real portfolio risk by an average of 5%.<sup>5</sup>

*Table 1. Timberland Correlation Coefficients 1959–1978*<sup>6</sup>

<i>Investment</i>	<i>Correlation Coefficient</i>
Timberland	1.0000
Residential housing	-0.0905
Farm real estate	0.5612
S&P 500 index	-0.4889
OTC stocks	-0.4917
Preferred stock average	-0.3533
No-load mutual fund average	-0.6351
Municipal bonds	-0.0900
Treasury Bills	0.3118
Long-term corporate bonds	-0.2704
Commodity futures average	0.8988

## 8. Liquidity

As a form of real estate, timberland is less liquid than many other investments. However, timberland liquidity can vary tremendously and is strongly influenced by the age and merchantability of the timber. Young forests are far less liquid than mature forests. This creates a potential opportunity for investors willing to purchase young forests at discount prices, hold until the crop approaches maturity, and then sell at a premium.

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<sup>1</sup>W.L. Mills, "Forestland: Investment Attributes and Diversification Potential," *Journal of Forestry* 86 (January 1988), 19–24.

<sup>2</sup>"An Analysis of the Timber Situation in the United States 1952–2030," *USDA Forest Service Report 23*.

<sup>3</sup>M. Cochran, "Bulletin of Hardwood Market Statistics: 2006," *USDA Forest Service Research Note NRS-8*, 2007.

<sup>4</sup>F.C. Zinkhan, W.R. Sizemore, G.H. Mason, and T.J. Ebner, *Timberland Investments*, Portland, Oregon: Timber Press, 1992.

<sup>5</sup>Ibid.

<sup>6</sup>R.G. Ibbotson and C.L. Fall, "The United States Market Wealth Portfolio: Components of Capital Market Values and Returns, 1947–1978," *Journal of Portfolio Management* 6, no. 1 (1979), 82–92.