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**TIMBERLAND RETURNS AND THE HOUSING CYCLE:
DEMYSTIFYING THE LINK**

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

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Introduction

Timber price is just one component of timberland returns.

New home construction... represents a smaller percentage of the overall timber market than one may expect.

Recent history does not support a strong relationship between aggregate housing sector performance and timber price levels.

Timberland investment returns are often associated with the housing market cycle. This perceived linkage is based on three commonly assumed relationships:

- The primary source of return for timberland is timber prices.
- New home construction represents a major demand driver for timber products, and as a result, timber prices are closely linked to housing starts.
- Strength/weakness in the aggregate housing sector necessarily translates into higher/lower timber prices.

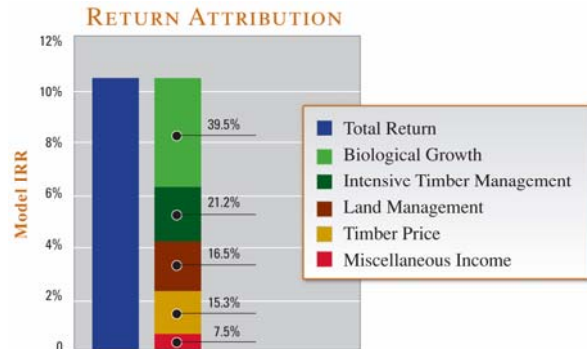
However, in reality, these relationships often do not hold for the following reasons:

- Timber price is just one component of timberland returns.
- New home construction, while a significant market for timber products, represents a smaller percentage of overall timber demand than commonly assumed, and the impact of housing starts on timber prices is generally modest.
- Recent history does not support a strong relationship between aggregate housing sector performance and timber price levels. Despite the current historically strong housing market, most timber prices have remained flat or below historic market trends.

The goal of this paper is to demystify the assumption that housing cycles necessarily lead to cycles in timberland investments returns.



Timber Price's Role in Timberland Return



Source: TIR Research

Figure 1. Return attribution estimated for a TIR managed Eastern US timberland portfolio.

While changes in timber price certainly have an impact on timberland returns, it is important to understand that prices represent but one component of total return. There exist a variety of other sources from which timberland returns are derived. Specifically, biological growth of trees and the appreciation of land prices often represent a larger portion of the overall return than do timber prices.

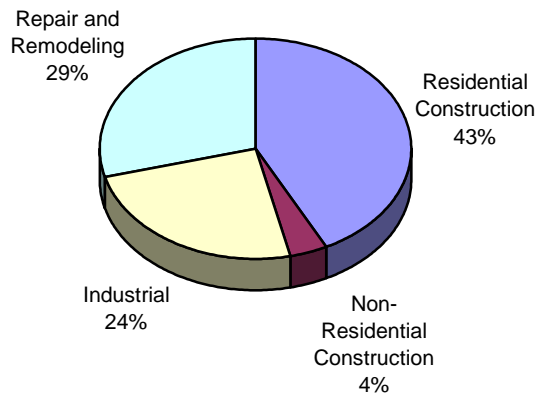
TIR Research has estimated that approximately 15% of the total return of a timberland portfolio investment in the Eastern United States is attributable to timberland prices keeping pace with inflation (**Figure 1**). In fact, if timber prices failed to keep pace with inflation and declined 2.5% annually in real terms, the impact on portfolio internal rate of return (IRR) for a typical 10-year timberland investment with a target return of 10.5% would be less than 150 basis points.

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New Home Construction's Role in Timber Markets

End-Use Share of U.S. Softwood Lumber



Source: RISI

Figure 2. End-use share of softwood lumber in the United States in 2005

Housing starts have less influence on timber prices than one might expect. Today, most homes are built primarily from structural lumber and panels, which are made from softwood trees (e.g., pine). In 2005, 16 billion cubic feet of timber was harvested in the United States. Out of that amount, 66% or 10.6 billion was softwood, such as pine, fir and spruce. These softwoods are used to produce structural material (e.g., dimensional lumber) as well as paper, packaging, and chemicals. Among these various uses of softwoods, only 67% or 7.0 billion cubic feet is made into lumber, plywood and oriented strand board (OSB) that can be used in construction. Of that amount, only 43% goes into new home construction (see **Figure 2**). The remainder goes into other uses such as industrial construction, home repair and home remodeling. **The net result is that just one fifth of the total timber harvested actually goes directly into new home construction.**

Because housing starts have a limited impact on the total demand for timber, its market cycles have only a moderate effect on timber prices. **Table 1** below shows the statistical correlation of housing starts with the price of various timber products. Notice in **Table 1** that the timber product category that one would most likely expect to have the closest relationship with housing starts, pine sawtimber, shows only a modest correlation of 21%.

Table 1. Statistical correlation of annual, seasonally adjusted U.S. housing starts against real (inflation adjusted) prices of various timber products

Timber Product	Interval	Range	Correlation
Southern Pine Sawtimber	Quarterly	1977-2005	20.8%
Southern Pine Chip n' Saw	Quarterly	1980-2005	15.9%
Southern Pine Pulpwood	Quarterly	1977-2005	-32.6%
Southern Hardwood Pulpwood	Annual	1987-2004	29.2%
Lake States Hardwood Pulpwood	Annual	1987-2004	62.7%
Northeast Hardwood Pulpwood	Annual	1987-2004	57.1%
Northeast Hardwood Sawtimber	Annual	1977-2003	-2.6%

Source: Timber Mart-South, U.S. Department of Commerce, USDA Forest Service – Northeastern Research Station, RISI



Timber Market Price Performance and Downside Protection

Despite one of the strongest housing markets on record... timber prices have not responded in kind.

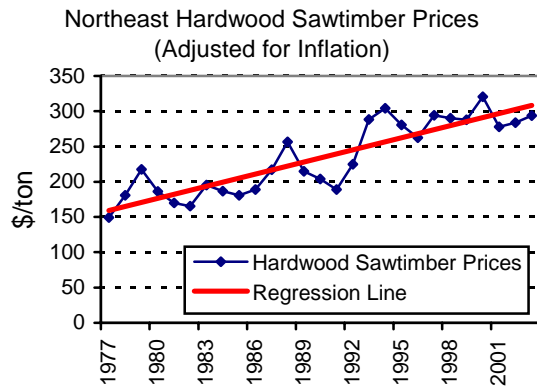
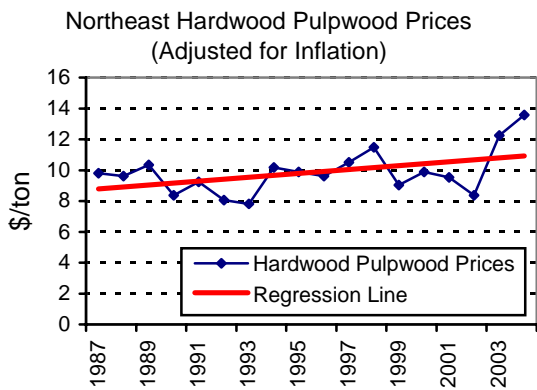
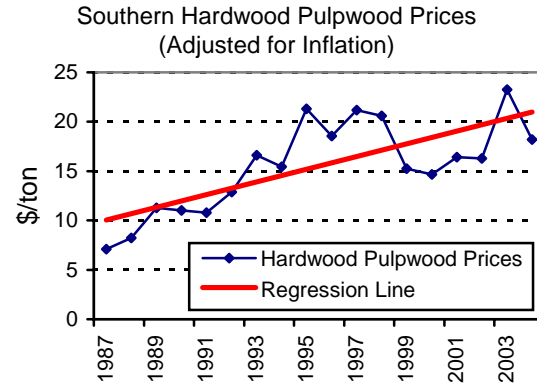
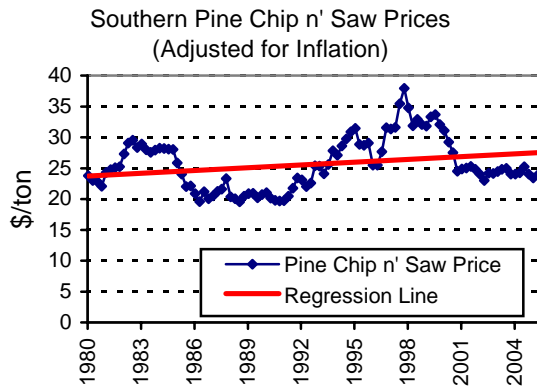
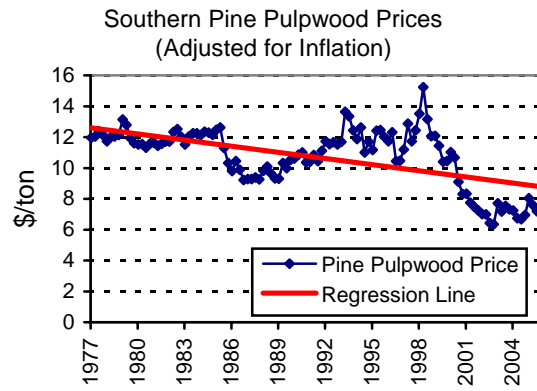
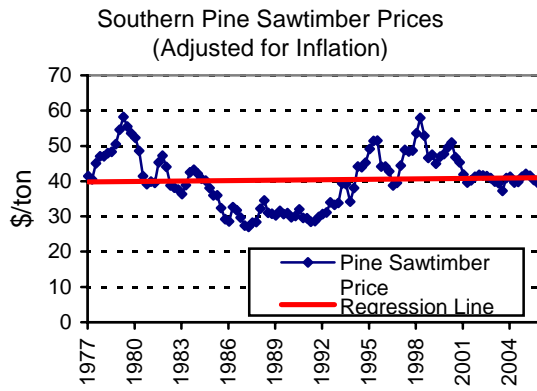
The low statistical correlation between timber prices and housing starts shown in **Table 1** suggest that the relationship between new home construction and timber markets is moderate at best. This relationship may also be expanded to timberland prices in the context of the aggregate housing market. Given the dynamic composition of both the housing and timberland markets, a cyclical movement in the housing market does not necessarily represent a precursor to a corresponding movement in the timber markets.

This point is most readily observable in recent timber price performance. Despite one of the strongest housing markets on record - where January 2006 starts of 2.28 million SAAR¹ is the highest monthly rate since 1973 - timber prices have not responded in kind. As shown in **Figure 3**, prices for sawtimber and chip n' saw, the primary contributors to the housing market, have remained flat during this period of exceptional housing market strength.

Nevertheless, timberland investors may still display caution if they believe timber prices are intrinsically high and poised for a correction. Fortunately, current pricing relative to historic trends does not reflect this concern. As also illustrated in **Figure 3**, prices of the major leading timber product classes have been graphed and fitted with a linear regression line. With the exception of pulpwood in certain markets, current prices are actually either at or below long-term trends.

Another important characteristic of timberland is the ability of the timberland manager to "warehouse" the timber and buffer returns against downward price movements. During periods of market weakness, timber sales may be reduced and the standing timber left to continue to grow and appreciate in value. Effectively, the investor can adjust downward timber sales to accommodate weaker market conditions, and still benefit from biological growth, thereby mitigating a portion of the opportunity cost of delaying harvest.

¹ SAAR: seasonally adjusted annual rate



Sources: Timber Mart-South, RISI, USDA Forest Service – Northeastern Research Station

Figure 3. Historic prices of various timber products, adjusted for inflation to the most current reported year.



Conclusion

Recent strength in the housing market has raised concern that the sector is due for a correction. If this does occur, several important factors mitigate the impact of a housing market decline on timberland investment returns.

First, approximately 85% of timberland returns are generated from sources outside of timber prices. TIR Research has concluded that as much as 60% of total return from timberland investment is derived from biological growth. When coupled with land prices and ancillary income (e.g., hunting leases), timberland returns can remain positive in a negative timber price environment.

Second, timber demand, which is driven by the forest products sector in aggregate, is comprised of a broad range of industries that include, but are not limited to, the residential construction industry. Only 19% of harvested timber is used directly in new home construction. Timber is also applied to industrial construction as well as repair and remodeling of existing homes. Wood is processed into pulp, which is then made into many products, including packaging containers, newspapers, bathroom tissue, paper towels, and disposable diapers. Trees may be harvested for their chemical properties, which include acetate and rayon for clothing and carpets. In short, the demand for wood-based products is far broader than simply new home construction.

Third, despite the current historically strong housing market cycle, most timber market prices have not responded in kind. For the higher valued chip n' saw and sawtimber product categories, the market is currently neutral or below the long-term trend. Further, demand driven price risk is mitigated to a degree by the "warehouse" option of timberland owners.

In conclusion, the housing sector is clearly an important end market for the timber industry. However, the housing market cycle's influence on timberland returns tends to be significantly less material than is frequently assumed.