TIMBERLAND
INVESTMENT RESOURCES LLC

Growing value for our clients every day

Timberland Investments:

A Strategy and Style Framework with Associated Risk Factors

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

Economic Research and Analysis

January 2020

TIMBERLAND INVESTMENT RESOURCES LLC

Introduction

Timberland investment opportunities take a wide variety of forms – from large radiata pine plantations in New Zealand to high-value teak plantations in Central America to natural forests of mixed hardwood species in the northern United States. Each type of investment carries different return expectations. Of course, a variety of factors affect an investment's targeted return, but the largest is risk. The more a forest asset is exposed to risk, the higher the return that is required to compensate an investor for the additional uncertainty it poses.

Herein lies the investor's challenge: It is crucial to know what adds risk and what reduces risk for a particular timberland asset. Being too optimistic about risk may expose a timberland portfolio to excess volatility. Likewise, being too pessimistic about risk may cause an investor to make unnecessarily defensive investments and forego the potential of additional return.

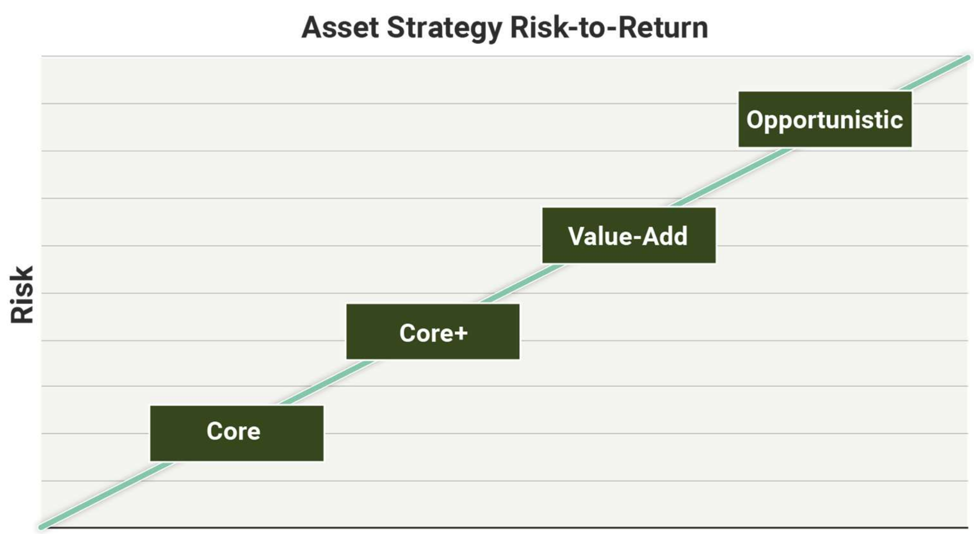


Figure 1. Conceptual relationship between (a) inherent risk and (b) potential return based on the strategy of an investable asset – typically a real asset such as timberland, farmland, real estate, or infrastructure.

Investors often categorize timberland investments by risk-to-return bucket. This concept is illustrated above in in Figure 1. As we move from a "core" investment bucket to a more "opportunistic" bucket, the potential return grows, and the risk level also increases.

As with other types of real assets, timberland is exposed to macro-level risks, such as currency exchange risk and country-level risk. For this paper, however, we focus on timberland-specific asset risks rather than these macro-level risks. The goal is to offer investors a working framework for assessing risk so that they can accurately categorize the timberland investments they currently hold – or establish the risk attributes of timberland investment opportunities they may be considering.

Timberland Risk Factors

Certain factors can lead to higher investment risk. When evaluating a timberland offering, an investor should look for certain identifying features that may "trigger" variability or unpredictability with respect to its projected performance. Here is a checklist of the risk triggers TIR believes are most important:

Table 1. Checklist of Factors that can Increase Risk Exposure for a Timberland Investment

✓	Niche Market Deal flow is reliant on a limited or irregular market
✓	Execution Complexity Success requires very specific expertise or credentials by the asset manager
✓	Policy Dependent Return is vulnerable to changes in government policy, law or regulation, or is subject to government approval or action
✓	Limited Income Options Few alternatives for revenue generation and asset appreciation exist if a market declines or a key buyer of a forest product is removed
✓	Uncertain Exit There is uncertainty in completing an investment at the investor's preferred timeline

Evaluating a timberland investment strategy or specific opportunity against this simple checklist of factors can provide a more informed perspective on its risk profile and return potential. The more matches a strategy or investment produces, the higher the risk potential – and the higher the required return premium that is required to compensate the investor. What follows is a more detailed analysis of each of the five factors.

Niche Market

A narrow market segment could mean sporadic or irregular opportunities. Fewer transactions can then lead to wider market cycles and price swings. In the case of timberland, some tropical hardwoods such as teak and mahogany face a more exclusive market with a limited number of buyers. As a result, teak and mahogany plantations can experience wider price fluctuations than major softwood species such as loblolly pine from the U.S. South and Norwegian Spruce in Scandinavia.

Teak Plantation in Brazil

Execution Complexity

Some timberland strategies require a depth of knowledge, or insider knowledge, to be successfully executed. An example might be anchoring a forest investment strategy around the concept of working with renewable energy companies to develop forestland into wind or solar farms. Another might involve a strategy of working with governmental bodies to obtain approval for the development of forest plantations on leased public lands in emerging markets. To be successful, such specialized strategies often require deep, but narrow and highly-focused timberland investment expertise. However, engaging a specialized forest investment manager to execute such a focused strategy also may pose unforeseen risk. If changes occur in the business or market environment in which the niche forest investment has been made, the specialized manager engaged to oversee it may not have the versatility, skills and experience to shift strategies to adapt to the new competitive circumstances.

Policy Dependent

When government spending, regulation, or policy is at the core of a timberland investment strategy, risk may lie in the government altering course. Regulated carbon offset markets, where carbon credits produced from forest assets are often sold, fall into this category. So, too, does the notion of building an investment strategy around the potential for monetizing a forest's conservation values. Such strategies can be heavily influenced by the budget constraints of state governments, which are among the principal buyers of tracts that have significant conservation attributes. Finally, in many resource-rich emerging economies, such as China, Russia and East Africa, obtaining long-term leases on public forestlands typically requires complex negotiations with governmental stakeholders, which can result in delays and a range of other challenging obstacles.

Optionality Can Mitigate Risk and Raise Performance

Optionality is the flip side of the coin when it comes to managing timberland investment risk. Every potential source of income from a forest asset adds flexibility for an investor – provided the forest investment manager that has been engaged has the ability to recognize and capture these values. This not only can reduce investment risk, it also can generate *alpha* by boosting total returns above those of an investment's peer group. For further information on this subject, please see the TIR white paper, "Timber, Land, and Optionality: Rethinking Risk in a Timberland Portfolio" (Aug 2017).

Limited Options

As an investment, timberland offers many sources, or "levers," of return. A representative sample of these is provided in Table 2. The fewer levers available for creating a strong total return, the greater the potential risk exposure of an investment. Essentially, *specialization* creates risk. If a forest asset's income or appreciation is reliant on a single market or a limited range of markets, the asset could face greater volatility as its optionality is reduced.

Table 2. Potential Source of Forest Income and Return

Conservation
Conservation Easement
Sale to a conservation organization

Ecosystem Services
Carbon offset credits for compliance or voluntary carbon markets
Clean water / watershed renumeration
Species habitat / ecology / biodiversity banking
Stream restoration and mitigation banking
Wetlands mitigation banking

Growth, Harvest and Sale of Timber
Logging Residuals (branches, tree tops, and stumps)
Poles
Pulpwood (small logs chipped and made unto paper, pellets or board)
Sawtimber (large logs to be made into lumber and plywood)

Infrastructure
Cell phone and communication towers
Pipeline or powerline right-of-way
Solar farms (solar cell arrays)
Wind farms (wind mill generators)

Minerals
Energy (oil, gas, coal)
Quarry for stone, mining for sand

Non-Timber Ancillary Income
Agroforestry (e.g., honey, mushrooms)
Pine straw raking

Property Sale or Lease
For higher & better use, such as farmland, roads, development
To corporate buyers as an investment (including timber REITs and TIMOs)
To government for a nature preserve or park
To individual private landowner

Recreation
Eco-Tourism
Fishing Leases
Hunting Leases

Uncertain Exit

If there are restricted or limited options to exit or liquidate a timberland investment, this also adds a layer of risk. Some forestry investments, like those that entail developing REDD+ (reduce emissions from deforestation and forest degradation) certified projects or forest ecotourism operations, can take years to develop. Until such a project reaches a critical level of maturity, an investor may not be able to exit early without taking a significant loss – regardless of the circumstances.

Case Study Comparison: US Core versus US Conservation Forestry

Examples can be helpful in illustrating how risk can be evaluated in a timberland investment. Here we compare two different timberland investment strategies using the five-factor risk framework that was introduced earlier in this white paper.

1. U.S. Core Timberland: Timberland investment in the United States where most of the income comes from the growth and harvest of commercial timber.
2. U.S. Forest Conservation: Timberland investment where income is largely projected to be derived from the sale of conservation easements.

As we can see in this comparison, the two types of timberland investments offer very different risk profiles.

Market Size Effect on Price Volatility

A key factor that influences risk is market size. Commercial timberland investments in both the U.S. Pacific Northwest and the U.S. South benefit from access to deep and diverse timber markets. Based on 2019 estimates for commercial harvest and log prices, about $4.7 billion of timber was sold in the South and $3.0 billion in the Pacific Northwest. When one also adds about $0.7 billion from the Northeast and Lake States, the combined market size for the U.S. is close to $8.5 billion.

Conservation Easements as a Timberland Investment Strategy

A select number of timberland investment managers (or TIMOs) offer conservation easements as a fund or portfolio strategy for investors. The strategy involves selling the development rights of ecologically-significant or high heritage value forestland to a conservation group, land trust, or government agency. The investor retains ownership of the land and may qualify for federal or state tax incentives and lower property taxes.

There are no sources that accurately track the monetary value of conservation easements in the United States. However, the National Conservation Easement Database (NCED) indicates that an average of roughly 1 million acres have been placed under easements each year for the past two decades. Of that amount, only a portion of these lands was classified as forests – the remainder being grasslands, scrub, former agricultural lands, and still other land types. The value of a conservation easement is typically a fraction of the full market value of the land involved if it was valued as commercial timberland (which averaged close to $1,500 an acre in 2018). TIR estimates that the market in the U.S. for conservation easements derived from forested land assets has been under a half a billion dollars a year, on average, which is less than six percent of the total average value of timber sold in the U.S. in a typical year.

As an even smaller, niche market, the conservation easement market is more volatile than the commercial timber market. As noted previously, there is no national pricing data base for conservation easements; nevertheless, we can use acreage as a coarse proxy for market volatility. As Figure 2 demonstrates, acreage of land placed under conservation easement protection can shift up or down by 20 percent or more from one year to the next. One reason for this volatility is that funding from public agencies and conservation groups, which usually capitalize the purchase of conservation easements from private landowners, is unpredictable and highly variable. Timber markets, however, are driven by more consistent and somewhat predictable levels of demand for wood products like paper, packaging, tissue and building materials. Consequently, timber prices for Douglas-fir in the U.S. Pacific Northwest (Figure 3) and southern yellow pine in the U.S. South (Figure 4) are comparatively less volatile. To better delineate these differences, all three graphs have matching vertical scales.

Figure 2. Annual Change in U.S. Conservation Easemetn Acreage 20-Years (1997-2016)

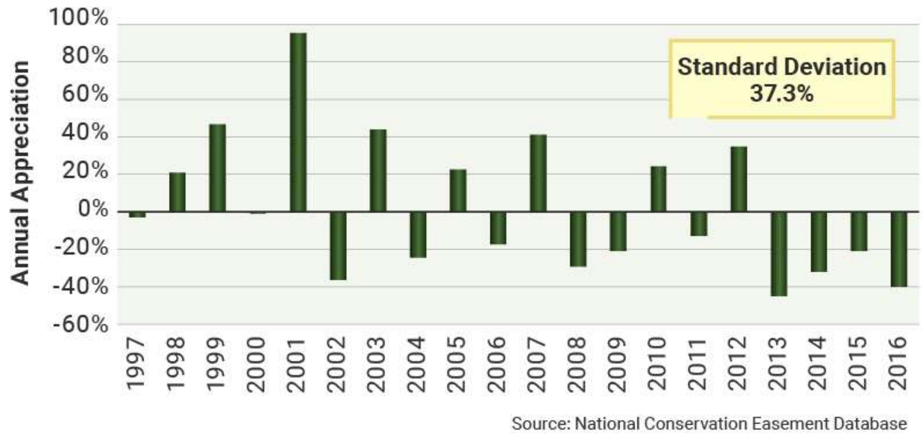


Figure 3. Annual Change in U.S. Douglas-Fir Prices 20- Years (1999-2018)

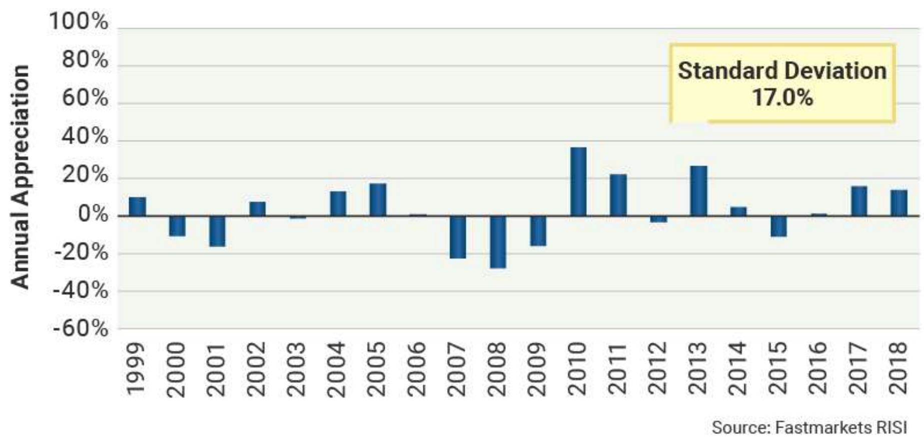
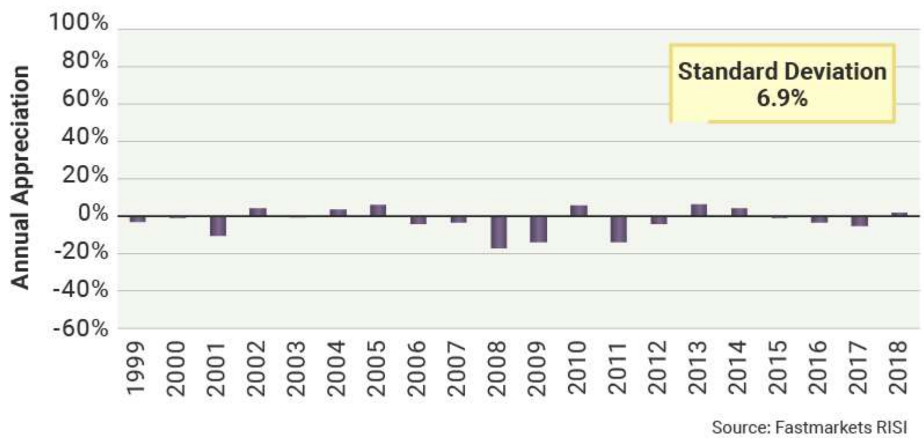


Figure 4. Annual Change in U.S. Southern Pine Sawtimber Prices 20-Years (1999-2018)



Complexity and Uncertain Exit

An additional risk factor for the U.S. conservation market is that the easement process is not simple or linear. Conveyance of a conservation easement can take 9 to 18 months from conception through negotiation and close. However, in certain circumstances, it can take five years or more. Negotiations with governmental buyers and non-profit, private conservation groups take patience and persistence. In addition, the public agencies, land trusts or conservation organizations involved may need time to raise the funds needed to pay for the easements.

Limited Income Options

Compared to a core timberland investment that holds fee simple land, a conservation easement, by its nature, precludes a landowner from developing or converting the asset to some other use. Easements also usually restrict or limit the parceling of a property by subdividing it into smaller pieces. Furthermore, the deed restrictions of most easements could make eased properties ineligible for inclusion in wetlands or stream restoration banking projects and for the creation and monetization of carbon offsets. With limited optionality, the forest asset is devalued correspondingly. According to the Western Landowners Alliance, a conservation easement typically reduces the value of a property by one-third to two-thirds.[1]

A timberland portfolio that is being managed under a strategy that emphasizes the sale of conservation easements therefore has its income strategy reduced to two options: (1) the sale of the easement(s); and (2) the ongoing sale of timber after the land is placed under easement protection. Having few income options can raise the risk level above the 6 to 10 percent standard deviation seen for core U.S. timberland, as tracked by NCREIF's Timberland Property Index, which is predominately weighted with assets managed using core timberland strategies (Table 3).

---

[1] Western Landowners Alliance (www.westernlandowners.org): "Conservation Easements" by Ben Guillon (June 20, 2018).

Table 3. Standard Deviation of 20 Years of Annual Timberland Returns and Annual Differences in Conservation Easements Acreage

Category	Standard Deviation (a measure of risk)
U.S. Conservation Easement Acreage	37.3%
U.S. Northwest Timberland Returns (NCREIF)	9.7%
U.S. South Timberland Returns (NCREIF)	6.5%
U.S. Wide Timberland Returns (NCREIF)	6.6%

Period covers 1999-2018 for timberland returns and timber prices and 1997-2016 for conservation easements,as NCED records are yet incomplete for 2017 and 2018.

Sources: Fastmarkets RISI, National Council of Real Estate Investment Fiduciaries (NCREIF), National Conservation Easement Databsae (NCED)

5-Factor Comparison

When evaluated on our five-factor checklist, the conservation easement strategy shows an increased exposure to risk compared to the core timberland strategy (see Table 4 below).

Table 4. Income returns reported by the NCREIF Timberland Property Index.

Risk Factor	Core US Timberland Strategy	Conservation Forestry Strategy	Comments on Conservation Forestry Strategy
Niche Market		●	Demand is specific to a locale and is subject to available funding by public agencies and conservation groups.
Complexity	●	●	Requires expert judgment of a forest property's suitability to carry a conservation easement.
Policy Dependent		●	Significant demand for conservation easements comes directly or indirectly from state or federal agencies
Limited Income Options		●	Conservation easements have few alternative sources of income after deed restrictions are in place.
Uncertain Exit		●	Can take several years for the easement buyer to agree to a landowner's terms and have access to adequate funding.
	Low Risk	Moderate Risk	
	Risk Assessment		

Case Study: Comparison by Region

Risk extends beyond an investor's choice of investment strategy. Geography also is a significant factor. Table 5 below illustrates how our five-factor risk framework can be used to profile a country and region for a timberland investment's suitability.

Table 5. Qualitative Evaluation of Potential Risk Exposure Between a Core US Timberland Strategy and a US Forest Conservation Easement Strategy

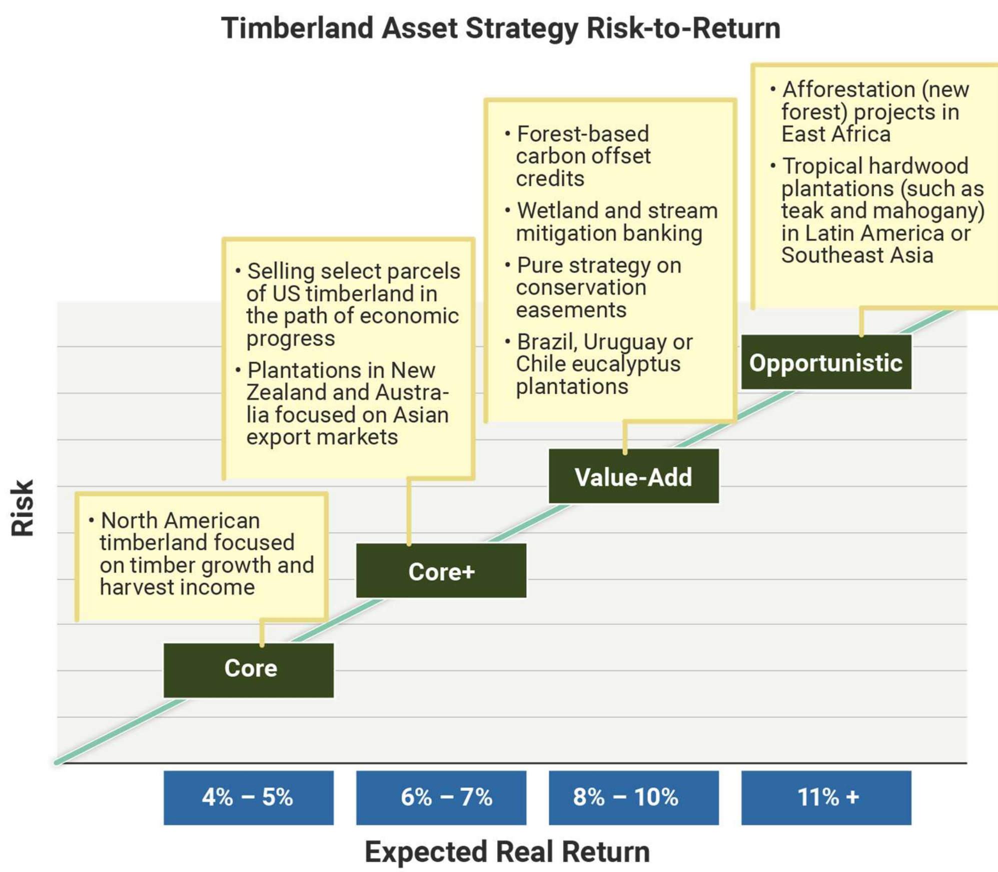
Lower Risk → Higher Risk

Risk Factor	US South	US Northeast	US Pacific Northeast	New Zealand	Brazil	Southeast Asia
Niche Market	Broad and deep mill network across region	Populated by small family-owned mills Low Risk	Primarily a softwood sawlog market Low Risk	Market heavily dependent on exports to China Moderate Risk	Dominated by 2 species, mainly for export Low Risk	Large exposure to China with few alter-natives High Risk
Complexity	Strong forestry support services	Natural forest management is non-intensive	Forestry practiced on steep terrain	Well established silvicultural practices	Heavy government regulation	Limited foresty support services High Risk
Policy Dependent	Mild state-level regulation	Moderate state-level regulation Low Risk	Moderate state-level regulation Low Risk	NZ government welcomes foreign investments	Foreign investment restrictions Moderate Risk	Often under long-term lease from government High Risk
Limited Income Options	Wide diversity of timber and non-timber options	Wide diversity of hardwood species and grades	Little or no non-timber income sources	Main income source is radiata pine sawlog Moderate Risk	Demand often dependent on dominant mill in area Moderate Risk	Dependent on exports to Pacific Rim markets High Risk
Uncertain Exit	Over $1 billion in transactions a year	Fewer transactions compared to South	Heavy competition for quality timberland	Forestland in strong demand by foreign investors	Land values sensitive to agricultural markets Low Risk	Limited market of private investors High Risk

Conclusions

As demonstrated in the case comparison between core U.S. timberland and a conservation easement strategy, not all timberland is the same when it comes to risk. Likewise, different countries and regions offer higher or lower exposures to risk. The differences can, in fact, be striking. The five-factor risk checklist that we define in this white paper can be a helpful starting point for investors in framing the risk exposure of a timberland portfolio or individual investment. An investor can utilize it to establish the appropriate hurdle rate for any given investment strategy. When considering a high-risk/high-return timberland investment opportunity, an investor may wish to balance it with another that offers a lower-risk/fundamental-return profile. To conclude the discussion, it may be helpful to revisit the risk-to-return relationship chart displayed in Figure 1. With the aid of the risk template, we can assign a representative sample of timberland investment strategies into risk-to-return buckets, as is shown in Figure 5 below.

Figure 5. Income returns reported by the NCREIF Timberland Property Index.



TIMBERLAND INVESTMENT RESOURCES LLC

For questions and additional information, contact:

Chung-Hong Fu
Managing Director of Economic Research and Analysis
Timberland Investment Resources, LLC
1330 Beacon St., Suite 311
Brookline, MA 02446
Phone: (404) 736-3482
E-mail: fu@tirllc.com