Future Forest Prospects: Look Back to See Forward

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Factors driving capital differ across sectors.

- **Timberland**
  - Risk-adjusted returns and diversification
- **Bioenergy**
  - End markets
- **Wood-Using Manufacturers**
  - Return on assets (ROA)
Annualized Returns
2000 - 2013

- S&P 500
- Public REITs (NAREIT)
- Private Timberlands (NCREIF)
- Public Timber REITs (FTR Index)
For stocks: diversify with 10+ stocks.
For timberlands: diversify with 3+ tracts.
US-based investors in international timberlands have specific concerns.

- Forisk conducted research on behalf of Colombia’s Ministry of Agriculture and Rural Development

- 83% of TIMOs had strong interest in international assets. Interest tempered by two categories of questions and concerns:
  - International/country risks
    - Includes political stability, property rights, tax regulations, and exchange rates
  - Forest asset quality and market risks
    - Includes volume risk, demand and prices for wood, and forest industry capacity
% of TIMOs who identified these issues as critical to evaluating potential international timberland investments

<table>
<thead>
<tr>
<th>Issue</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political stability</td>
<td>83%</td>
</tr>
<tr>
<td>Markets for wood</td>
<td>83%</td>
</tr>
<tr>
<td>Property rights</td>
<td>75%</td>
</tr>
<tr>
<td>Legal structure/ contracts</td>
<td>67%</td>
</tr>
<tr>
<td>Tax regulations</td>
<td>58%</td>
</tr>
<tr>
<td>Exchange rates</td>
<td>58%</td>
</tr>
<tr>
<td>Repatriation of capital</td>
<td>25%</td>
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<tr>
<td>Available timberlands</td>
<td>25%</td>
</tr>
<tr>
<td>Volume risk</td>
<td>25%</td>
</tr>
<tr>
<td>Liquidity of land market</td>
<td>25%</td>
</tr>
</tbody>
</table>
Key insights from previous research and investment execution:

• While approaches to evaluating investments differ, the key concerns are similar.
  – Data.

• Wide range of risk tolerances across investors.
  – Risk for one is opportunity for another.

• Comfort with doing business in the country more important than forest asset quality.
  – Step 1: TIMO/investor gets comfortable.
  – [Step 2: TIMO helps clients get comfortable.]

• Exchange rates (ER) poorly understood.
Investors “build up” DRs for overseas timber.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base/Benchmark</td>
<td>Cost of capital or minimum hurdle rate for the allocation</td>
</tr>
</tbody>
</table>
| Country risk          | Sovereign/political risk  
Start with spread between US/country treasuries  
Accounts for regulatory concerns                                                        |
| Market risk           | Maturity, diversity and access to wood markets  
% domestic versus export  
% growth rates of domestic wood demand                                                  |
| Firm/Client risk      | Execution risk  
Most relevant for first and/or greenfield investments  
Client specific; can vary over time with staggered DRs                                  |

Accounting for (1) client experience and (2) risk tolerance directly influences applied discount rates.
Real DRs for overseas timberlands can vary over time as experience and transparency increases.

<table>
<thead>
<tr>
<th>Element</th>
<th>US South</th>
<th>New Zealand</th>
<th>Colombia (Phase 1)</th>
<th>Colombia (Phase 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Country</td>
<td>0%</td>
<td>1.5%</td>
<td>2.5%*</td>
<td>2.5%</td>
</tr>
<tr>
<td>Market</td>
<td>0.5 – 1.5%</td>
<td>1 – 2%</td>
<td>1.5 – 3.5%</td>
<td>1.5 – 3.5%</td>
</tr>
<tr>
<td>Firm/Client</td>
<td>0%</td>
<td>-1.5%</td>
<td>1 – 3%</td>
<td>0 – 1%</td>
</tr>
<tr>
<td>Estimate</td>
<td>5.5 – 6.5%</td>
<td>6 – 7%</td>
<td>10 – 14%</td>
<td>9 – 12%</td>
</tr>
</tbody>
</table>

*Current spread is 5%; assuming normalized spread with U.S. treasuries

Actual/applied real DRs between 2005 and 2010
- Australia: 5.4 – 9.3%
- Colombia: 10.0 – 15.0% (2008+)
- New Zealand: 6.1 – 8.7%
- Uruguay: 6.5 – 8.5%
Wood Bioenergy: Why do Projects Fail?

Source: Forisk Consulting, as of February 2014
Projects face practical limits to growth. Example: pellet plants in U.S. South
Projected Wood Demand: U.S.

Source: Forisk Consulting, Ince & Nepal 2012
U.S. Capital Investments by Canadian Lumber Producers

Source: 2014 Forisk Forecast
About Forisk Consulting

- Forisk provides management consulting and educational services to senior management and investors in the forest industry and timberland investing sectors.
- Founded in 2004.
- Key products:
  - *Forisk Forecast*
  - *Wood Bioenergy US*
  - *US Timberland Owner List*
- Books:
  - *Wood for Bioenergy* (Forest History Society)
  - *Forest Finance Simplified* (Forisk Press)