Constructing and Managing a (Global) Timberland Portfolio

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Agenda

I. Overview: Why Invest in Global Timberlands?
II. Top Down – Portfolio Perspective
III. Bottom Up – The “do it” challenge
IV. Examples
   U.S. South
   Uruguay
   New Zealand
   Australia
V. Observations and Implications
Why Forests?

- Interesting returns in a low-interest rate environment
- Improvement in portfolio efficiency (shift of efficient frontier)
- Source of CAPM alpha
- Inflation-hedge
- Steadiness of returns within the alternative-asset sector
- Independence of growth and ingrowth relative to macroeconomic factors
- Forest markets less efficient
- Match with long investment horizon
- Attractive income-tax attributes

Why Not?

- Rising interest rate environment
- Low relative liquidity
- Are returns commensurate with illiquidity? Risk?
- Duration exceeds investment horizon
- Relatively high denominations required
- Time lags between development and achievement of asset-allocation targets
- Timing
Why Invest in (Global) Forests?

Investment performance
Inflation hedge
Low volatility
Uncorrelated to other asset classes
Diversification
Long-term markets for wood fiber
**Biological Growth: “Trees grow...”**
Inefficient Markets
Active Management
Optionality/Investment Horizon
Intergenerational Wealth Transfer

Environmental, Social & Corporate Governance objectives (ESG)
Sustainably managed renewable resource
Eco-friendly source of building products
Renewable energy
Carbon storage
Habitat and other ecosystem services

**How do these translate into investment value?**
Why go Global?

1. Modern Portfolio Theory (MPT) (√)
2. Replicating Global Timberland
3. Managerial Expertise
   (Spectrum of Global Investment Breadth)
   (Strategic Fit)
   (Execution Risk)
4. Emerging Markets
   (Increasing Blended Returns)
   (Managing Factor Loadings)
5. Biological Growth
   (Actively Managing Components of Return)
6. Option Value
   (Reduced Real-Estate Value Offshore)
Investing + Forestry: Unlikely Marriage?

- Portfolio Theory
- Underwriting
- Selection

- Markets
- Operations
- Silviculture
Top Down: Portfolio Approach

- Portfolio Theory
- Underwriting
- Selection
Forest Investment Value Chain

Investors
- Pension Funds
- Foundations
- Endowments
- Family Offices
- Clubs
- Conservation Orgs.
- Individuals

Investment Advisors
- RIAs
- TIMOs
- REITS
- C-Corps
- Consultants

Investment Vehicles
- Funds
- Separate Account
- Trusts
- MLPs
- Portfolio Companies
- LLCs
- Fee Simple

Forest Assets
- Land
- Trees
- Non-timber Values
How?: Three Questions

- How is Value Created?
- What’s it Worth?
- Willingness to Pay?
What’s it Worth?

Valuation:
Like any other project the value of a forest investment may be estimated to be the net present value (NPV) of its future cash flows.

Simple Business:
Cash Flow = Price x Volume

Discount Rates:
DR is both a tool to estimate and express risk but also a reflection of expected returns...

Based on a survey of market participants by James W. Sewall Company, investors see current discount rates for U.S. Timberland at about 5%

Based on CAPM -- ? Closer to 10%!
Risk Premia: “Core” Geographies

W. Central Brazil
Panama Teak
S. Brazil Euc.
S. Brazil Pine
Uruguay - Pine
Australia - Euc.
Uruguay - Euc.
Chile -- Pine
Canada - B.C....
Australia - Euc
Australia - Pine
New Zealand - ...
UK
Risk Premia: “Emerging (?) Markets”
What a timber portfolio might look like

<table>
<thead>
<tr>
<th>Geography/Investment</th>
<th>Size (USD mm)</th>
<th>%</th>
<th>Expected Return</th>
<th>Risk??</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>200</td>
<td>29%</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>200</td>
<td>29%</td>
<td>8.5</td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>100</td>
<td>14%</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>100</td>
<td>14%</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>50</td>
<td>7%</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>50</td>
<td>7%</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$700</strong></td>
<td><strong>100%</strong></td>
<td><strong>9.1%</strong></td>
<td></td>
</tr>
</tbody>
</table>
Diversification: Good, Better...

**Geography**
- Australia: 29%
- New Zealand: 29%
- Chile: 14%
- Brazil: 14%
- Uruguay: 14%
- Other: 7%

**Species**
- E. globulus: 33%
- P. radiata: 29%
- E. urograndis: 14%
- E. spp: 2%
- P. spp: 23%
Diversification: Even Better…

**Market**
- North America: 28%
- Asia: 33%
- Local LatAm: 7%
- Europe: 7%
- India: 10%
- Australia: 15%
- Europe: 7%

**Product**
- Sawlog: 53%
- Pulplog: 41%
- Specialty: 5%

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**Comparative Ranges:**
- Asia: 33%
- North America: 28%
- Local LatAm: 7%
- Europe: 7%
- India: 10%
- Australia: 15%
- Pulplog: 41%
- Sawlog: 53%
- Specialty: 5%
Bottom Up: Forest Value Chain

- Markets
- Operations
- Silviculture
How?: Three Questions

How is Value Created?

What’s it Worth?

Willingness to Pay?
Forest Products Value Chain

The basic economic system of value creation

- Forest Production
- Harvest, Transport, Manufacturing
- Marketing, Distribution
Disaggregation of value chain allows identification of opportunities to create value
Forest (Investment) Management Strategies

- Freehold w. Land Rental*
- Freehold, Even-aged
- Freehold, Mature
- Freehold, Mid-rotation
- Freehold, Regeneration
- Anchor/Aggregation
- Turnaround/Reposition Species
- Aggregation
- Greenfield
Forest (Investment) Management Strategies

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Return vs. Risk

ES
Ag
EM
VI
Thousands of Southerners Planted Trees for Retirement. It Didn’t Work.
U.S. South Plantation (re)Establishment

US South Pine Tree Plantings

Million Acres

Source: RISI
Forestry in the South

BUT WHAT ABOUT PRICING?
U.S. South: Summary Thoughts

1. Robust Supply: Reforestation Subsidies
2. Demand Shock
3. “10 years into a 4 year recovery”
4. Key Risk: Price Projection
5. Timber/Timberland Pricing Divergence
6. Discount Rate Decline...
Uruguay

If you build it, will they come?
Relative Global Softwood Growth Rates

- Russia Boreal
- Canada BC/Alberta
- Nordic Countries
- U.S. South
- South Africa
- Australia
- New Zealand
- Uruguay
- Southern Brazil

m³/ha/yr
Uruguay (Pine)

Trees grow quickly and factor costs are relatively low.
Uruguay (Pine)

Incentives for plantation establishment in 1990s

Solid wood industrialization is still in its early stages
Uruguay

From the late 1990s, a landscape was transformed and a forest products economy developed.
Uruguay (Hwd.)

Solid wood industrialization is still in its early stages
Uruguay (Hwd.)

Solid wood industrialization is still in its early stages
Uruguay

Forest technology fundamental in developing resource
Uruguay
Uruguay

Industrial development has been most successful with hardwood pulp production.
Brazil
Uruguay: Summary Thoughts

1. MPT ✓
2. Active Management of Return Component ✓
3. Managerial Expertise: Differences ... ✓
4. Emerging Markets: ✓ , HW yes/SW not yet...
5. Option Value: Mitigated by Soil Governance ?
6. How do you price the risk?
7. What do you do if it doesn’t work out?
New Zealand: Small Islands, Big Timber
New Zealand: Small Islands, Big Timber
New Zealand
Carbon value of forests is becoming a factor in land use decisions
New Zealand

Just like Wisconsin...
Cows and Trees
New Zealand ETS: the Early Days

Certified Emissions Reduction Scheme
Forestry admitted into scheme in 2008; recognized as “Carbon Sink” (19% of NZ emissions)

Distinction between “pre-1990” and “post-1989” forests
  Pre-1990: allocation of 60 NZUs per hectare as partial compensation (no deforestation)
  Post-1989: generation of NZUs through rotation; liability incurred at harvest unless reforestation occurs (i.e. no deforestation)

1 NZU = 1 ton of CO₂ emission; initial surrender price of $25/NZU
“2 for one” surrender obligation (i.e. ½ price!)
Linked to international certified carbon markets, notably Europe
Dairy Pricing Adds Another Wrinkle!
2007

CARBON DATING: A RACE AGAINST TIME ON THE WAIKATO PLAIN...
2008

With introduction of ETS carbon value of forests is becoming a factor in land use decisions.
New Zealand

Competing land uses including carbon value drive reforestation decisions
New Zealand

Carbon value of forests is becoming a factor in land use decisions
New Zealand
Carbon value of forests is becoming a factor in land use decisions
New Zealand Unit Pricing

Policy-driven Changes in New Zealand ETS have driven price volatility of NZUs

Data: ‘NZU monthly prices’ https://github.com/theecanmole/nzu
New Zealand Forestry Carbon

Development of NZ ETS created dynamic that drove land use choices

Investment Landscape

• Carbon “windfall” for dedicated forest landowners given acquisition pre-ETS

• Later acquisitions, both assets and liabilities associated with credits priced into market

Value can be created in many ways

• Sale of pre-1990 credits
• Leasing of post-1989 credits
• Curing of carbon liabilities with external credits
• Curing of liabilities with shortened rotations
• Optimization of land use in financial terms given carbon liabilities allowed production forest to remain as forest

• However, optionality of forest for carbon has been eliminated
New Zealand: Summary Thoughts

1. Softwood Core Competency
2. Globalization Winner
3. Environmental Market Early Adopter
4. Opportunities Limited
5. Supply Chain Complexity and Expense
6. Currency!
Australia
Australia
They’re on the road, mate…
Australia
Australian MIS Hardwood Plantations

Bachman, J., Presentation to “Who Will Own the Forest 11”, September, 2015
Australia: Transport and Logistics Key
Brazil in Australia

Australia is a net importer of finished forest products and yet a net exporter of raw materials.

Go figure...
Australia Hardwood: Summary Thoughts

1. Aussie = Net Wood Importer
2. Political Stability
3. Emerging China Market
4. Supply Side Volume Threat (Vietnam, Chile, Acacia spp.)
5. Supply Chain Complexity and Expense
6. Operational Challenges: Trucks, Ports, Boats
7. Currency!
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Making it happen...