Southern Timber Markets and Forest Sustainability

Housing Starts and Timber Supply

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My Research Focus

• Bio-economic assessment at a spatial scale and in a time frame that is useful for strategic public and private decision-making
• Focus on economic fundamentals applied to detailed forest resource projections
• Usually take current inventory, growth, and removals as a starting point to model supply over time
• Then look at the impact of various demand scenarios
• Energy demand scenarios and carbon consequences dominate current research
OUTLINE

• Plantation Trends
  • Age class structure
  • Projecting Impact
• Growth/Removals vs. Sustainability
• Pellets, Residues, and Sawtimber Linkages
Plantation acres have leveled out in most states.
In the South, rural land shifts between forest and agriculture.
Forest rents are low
Ag rents are high

South-wide Pine Stumpage Prices
2003 to present

- Sawtimber
- Chip-n-saw
- Pulpwood

CORN

SOYBEANS

Revenue estimates for planted pine management,
regime by Timber Mart South zones (1977-2011).
Tree Planting in the South

Southern Tree Planting, All States and Ownerships, 1945-2007

Acreage of Tree Planting

Fiscal Year

Source: USFS, GFC, TMS
AGE CLASS STRUCTURE
U.S. South Acres
*by Forest Type by Age Class*

U.S. South Removals
*by Forest Type by Age Class*
Current Plantation Age Class Structure

State Totals Mask Big Local (Timbershed) Differences

Growth/Removal Implications
GROWTH VS REMOVALS AND SUSTAINABILITY
G/R cycles within 10 years average was above 1

Why Growth/Removals Ratio Is Not a Good Sustainability Measure
Management Intensity
Inventory Increased Dramatically

Softwood Inventory Trends
Areas where G/R < 1 in 1950 (9 survey units)
In the long run, harvest shifts to lower price regions (vice versa) so that growth drain moves through cycles. SRTS captures this effect since inventory decreases lead to higher prices and less harvest over time (vice versa). Ray Sheffield
Growth vs. Removals Today

- Means little in terms of long term sustainability.

- In an active market – decreasing inventory means less supply which means higher prices.

- Higher prices means production moves elsewhere.

- Land management intensifies.

- Takes about 20 years.

Natasha James
PROJECTING AGE CLASS STRUCTURE
Timber Famine Meets Wall of Wood

Bob Abt, Karen Abt, Ray Sheffield, and Mac Lupold.

The Plot: First: plant a lot of trees, then stop planting trees. Next: have a big housing recession when all those trees we planted reach sawtimber size. Next: increase demand for pine pulpwood when the trees we didn’t plant reach pulpwood size.
Current Plantation Age Class Structure

The Supply-Side of Too Much or Too Little
Projecting Inventory by dbh class

Take 2008 based FIA inventory and removals by dbh class and project it out.
Age Class Distribution (in-growth and out-growth) dominates biological growth rates

**South Carolina (index 2008=100)**

**Georgia (index 2008=100)**

*Product equilibrium requires small roundwood to expand from 9” to 13” dbh*
Q: What’s the inventory impact on PST price recovery? A: BIG

**ALFLGA w/inventory effect**
(WoW affects price and removals)

**ALFLGA no inventory effect**
(what if the WoW didn’t affect price)

PST prices slow rebound

PST prices rebound
Q: What’s the inventory impact on PST price recovery?
A: Southwide Not as BIG, but real

ALFLGA pine sawtimber

Southwide pine sawtimber
What we can say about pine sawtimber?

• In many areas of the South growth exceeds removals because:
  – 1990’s planting boom is now sawtimber
  – Recession in housing means prices down 40%, production/harvest down 30%
  – Pine sawtimber inventories are expanding quickly
    • projected 20% higher southwide
What we can say about pine sawtimber?

- Why is this important:
  - Landowners are postponing sawtimber harvest until prices recover
  - Build-up in inventories will dampen prices when demand recovers
  - Pine sawtimber prices are the best predictor of how forest and agriculture compete for land in the South.
  - Low pine prices/high agriculture prices mean less timberland.
  - Postponed harvest means drop-off in planting will continue through recession
What we can say about pine pulpwood?

• Why is this important:
  – Logging residue potential is overstated
  – Biomass will compete for pulpwood
  – Pulpwood supply is price inelastic (prices will react more than harvest)
  – Even high pulpwood prices can’t justify timberland ownership, especially with high ag rents.
  – Key question is price sensitivity and feedstock flexibility of pulp, osb, and pellets
How can a strong housing recovery change things?

SAWMILL RESIDUE/PELLET DEMAND INTERACTION AS HOUSING RECOVERS
Pellet Demand

South Pct of U.S. Pellet Capacity

- Existing
- Since 2007
- Announced

19 mil grn tons

Source: Forisk Consulting
Traditional Product Production Trends
Southern Coastal States

**Hardwood Consumption SE Coastal States**

- PPW prices and production up during recession
- Announced Pellet Capacity = 20% of 2009 total pulpwood consumption in coastal states

**Pine Consumption SE Coastal States**

- PPW prices and production up during recession

Source: USFS FIA TPO

10/22/2013
SE Atlantic Coastal Plain
Linking PST production and PPW demand

• Pine roundwood pulpwood demand has increased through the recession
• Partly due to having to offset decreased sawmill residues with roundwood
• Increasing pellet demand is potentially adding demand and price pressure to small roundwood
• Housing recovery should alleviate some of this pressure
• How much difference does it make?
Focused on the 7 coastal plain survey units, where most pellet demand is located.
SE Atlantic Coastal Plain

Plantation Age Classes by Survey Unit
Assumed Demand Trend

Pine sawmill residue offset calculated as % of increase from starting point
PST/Pellet Feeback Scenarios

• Run baseline demands for region
• Add 8mil green tons of pellet demand
• Run 3 PST residue to PPW demand scenarios
  • No feedback
  • 30%
  • 50%
Baseline Results

No Demand Increase *(mpconst.prj)*

Baseline Demand Increase
Biomass Results

Baseline

Biomass – (70% pine)
Timberland

Natural Forests
- Natural Pine
- Mixed Pine Hardwood
- Upland Hardwood
- Lowland Hardwood

With Pellet Demand

Without Pellet Demand

Natural

With Pellet Demand

Without Pellet Demand

Plantation
Total Forest Carbon

- Baseline
- Baseline + Pellet
Pellet Conclusions

• Southeast capacity significant and likely to rise, primarily due to EU.
• Adds demand for small roundwood.
• Pine small roundwood supply shows the effect of planting gap (varies by timbershed)
• Higher pine pulpwood prices increases supply response
• Residues from sawtimber production recovery important to offset small roundwood demand
Business Cycles vs. Longterm Trends

• Timing and scale of housing recovery will potentially drive the next 20 years of plantation supply.
  • Could extend or shorten decreased planting due to delayed harvest
  • Sawtimber prices best empirical predictor of re-planting decision
  • Robust recovery will immediately provide some relief from shortage of small pine roundwood due to sawmill residue feedback.
My Thoughts on Pellet Feedstock Demand

- Will it use mainly logging residues?
  - Residue label can be self-fulfilling

- Will it use surplus supply due to low recession demand?
  - Surplus is in pine sawtimber not pine small roundwood (in the South)
  - Could be true around closed hardwood pulp mills (Franklin-Courtland)
    - Not recession driven – long term decline in writing/publishing papers
    - But growth/removals in some basins don’t justify “surplus” tag
  - Not true in pine pulpwood market

- Will use sawmill residue?
  - Already fully utilized

- Will not compete with pulpmills or OSB plants?
  - Varies by region, but they will compete at some level

- In my view, pellets don’t need to apologize for competing for roundwood.
  - Provides income which keeps land in timber and encourages timber management/supply response
My Thoughts on Logging Residues

• Logging Residue advantages
  – Clear and easy to understand carbon advantage
  – Reduces competition with traditional industry
  – “Potential” cost advantage
  – Value-added to harvesting operation

• Logging Residue disadvantages
  – Concentrates demand (near high cost roundwood)
  – Significantly expands procurement circle
  – Supply Uncertainty (tail wagging the dog) - business cycles
  – Limits supply response (can’t manage for residues)
  – Apparently not feedstock of choice
  – Limits renewable potential

• Large scale use will likely be deferred until roundwood prices increase
Questions