



25 October 2017



**SENT TO LSU AGCENTER/LOUISIANA FOREST PRODUCTS DEVELOPMENT CENTER - FOREST SECTOR / FORESTY PRODUCTS INTEREST GROUP**

Please find attached this quarter's installment of my Market Trends. It's been a bit of a mixed quarter...

- Housing starts languish despite housing indicators suggesting gains
- forest product markets in the PNW and South moving dramatically, but in opposite directions
- subdued timberland markets with opposing trends year-to-date

In this quarter's "Deep Dive" I have taken a stab at assessing the long-term prospects for southern sawtimber supply coming off of maturing plantations – some interesting implications on prices and demand/supply dynamics. I hope you find it interesting, and as always, I look forward to hearing your comments.

Best Regards,  
Will

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# Market Trends

## 3rd Quarter, 2017

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Perspectives on current market trends and indices impacting the Timber and Wood Products sectors, compliments of WillSonn Advisory, LLC



# Q3 2017 Highlights

## Market Trends

- Homebuilder sentiment stays above 60 (page 4)
- Affordability drifts lower again, but remains favorable (page 5)
- Inventories of Homes for Sale continue to trend downward (page 6)
- Housing Starts have flat lined relative to 2016 (page 7)
- Wood Product prices soar in Q3 (page 8)
- PNW Log Prices move up, Southern log prices stabilize (page 9-10)
- Southern sawmills margins best PNW mills by \$58/MBF in Q3 (page 11)
- Timberland sales very quiet through Q3 2017 (page 12)

## In Depth Coverage

- The Twin Peaks in Historical Planting in the US South (page 14-19)



# Section 1: Current Trends



# Builder Sentiment

NAHB's Homebuilder Market Index (HMI) and Remodeling Market Index (RMI) are measures of home builder and remodeling contractor sentiment.

The HMI continued its slide, posting a reading of 64 in September, after peaking at 71 in March. An active hurricane season has had a dampening effect on homebuilder sentiment, as the prospect of reduced labor availability and increased building material costs weighed on the minds of builders in some regions.

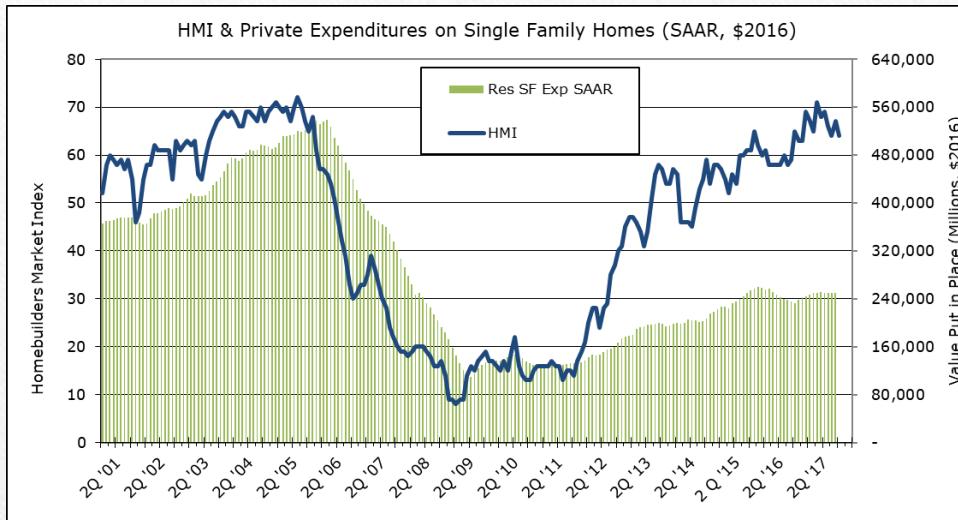
The RMI dipped 3 points in the second quarter, registering a reading of 55, still a relatively strong reading, within an historical context. Given the rising cost of new home construction, homeowners appear to be directing their dollars towards improving their homes, rather than trading up.

Seasonally adjusted Private Expenditures on Single Family Housing (in 2016 constant dollars) has remained tepid throughout the year, showing little if any gain over 2016 levels. On the other hand, YTD 2017 Private Residential Improvement Expenditures have improved 18% compared to the first eight months of 2016.

The monthly HMI and quarterly RMI are dispersion indices, measuring the proportion of respondents who have a positive versus negative view (neutral responses are ignored in the calculation). While a reading over 50 indicates a prevailing positive view of current and future conditions, it says nothing about the proportion in the neutral camp.

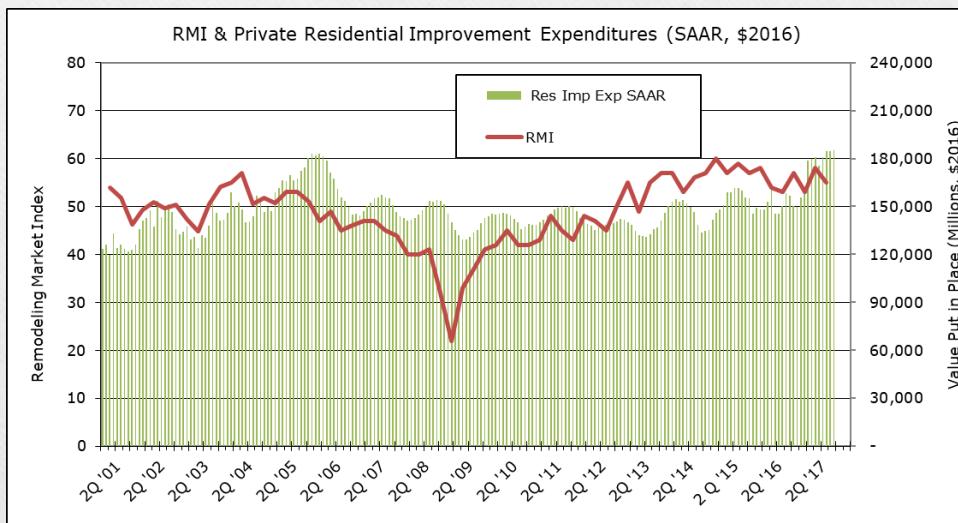
The expenditure figures in both charts represent Seasonally Adjusted Annual Rates, and were deflated using the US Census Bureau's "Fixed" Construction Price Index.

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Data Sources: Census Bureau, NAHB, Dept. of Commerce

Charts & Analysis: WillSonn Advisory



# Affordability

With a reading of **145 in June and 148 in July**, the monthly NAR Affordability Index (top chart) dipped below 150 for the first time since 2008.

Also depicted in the top chart is my measure of new home affordability, one that incorporates the transaction price of new homes (rather than the listing price of existing homes, as used by NAR). Using NAR's household income and interest rates and Census Bureau median new home sale prices, I calculate a more modest **New Home Affordability Index of 122 in Q2 2017**. New Home affordability has been essentially flat over the past 3+ years.

In the bottom chart, you can see that the gap between new and existing home affordability is due to new home premiums growing from ~10% prior to the housing bust, to over 30% the past six years.

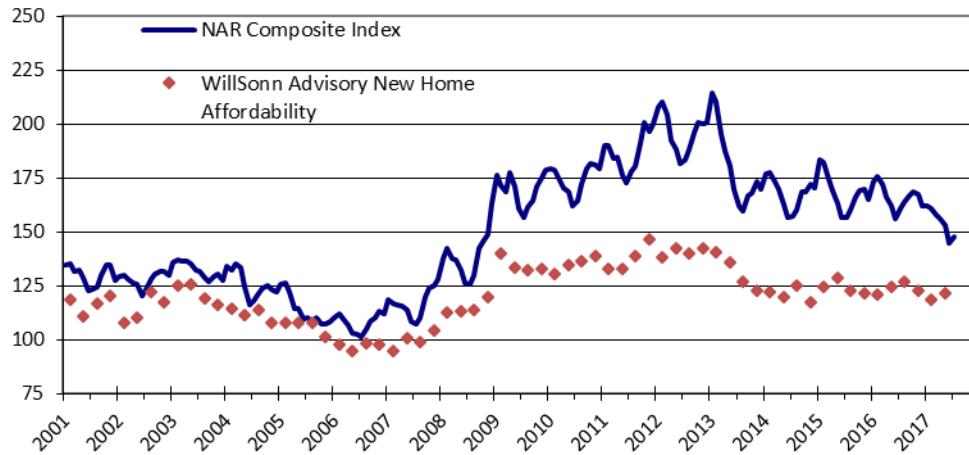
Through the first eight months of 2017, the New Home premium has dipped to 26%. New home sales as a percent of total home sales has also made steady gains since 2011.

As I presented last quarter in my Deep Dive: "Correlations Between Housing Affordability and Housing Starts," Affordability may have greater value as an indicator of housing market activity (Affordability is negatively correlated with Housing Starts), contradicting the notion that rising Affordability will lead to rising Housing Starts (or falling Affordability will hinder Housing Starts).

*A reading of 100 means that a family with median income would need to spend fully 25% of its monthly income on a mortgage to purchase the median priced existing home. A reading of 140 means that 25% of the median family income is 1.4 times the mortgage payment for the median priced existing home.*

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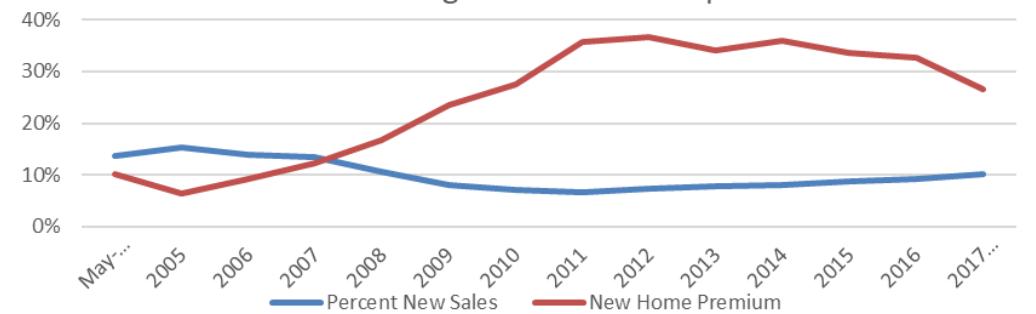
Housing Affordability Indices



Data Sources: NAR, Census Bureau, Dept. of Commerce

Charts & Analysis: WillSonn Advisory

New vs. Existing Home Sales Comparison



10/10/2017

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# Home Sales and Construction Trends

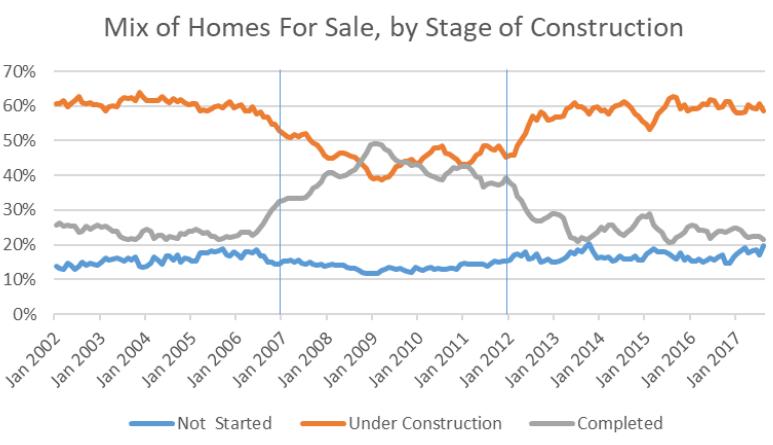
The Inventory of Home For Sale (Existing + New) totaled **2.168 million units** in August, up 261,000 units from December '16, but down 84,000 units from August, 2016. Separately, Existing Home Inventories are down 130,000 units, while New Home inventories are up 46,000 units, compared to August 2016.

At their respective current pace of sales, there are **4.2 months** of sales in Existing Home inventories, and **6.1 months** of sales in New Home inventories. The shrinking inventories of Existing homes for sale, along with the premium price for New homes discussed on the previous page, have both contributed to higher Existing home prices.

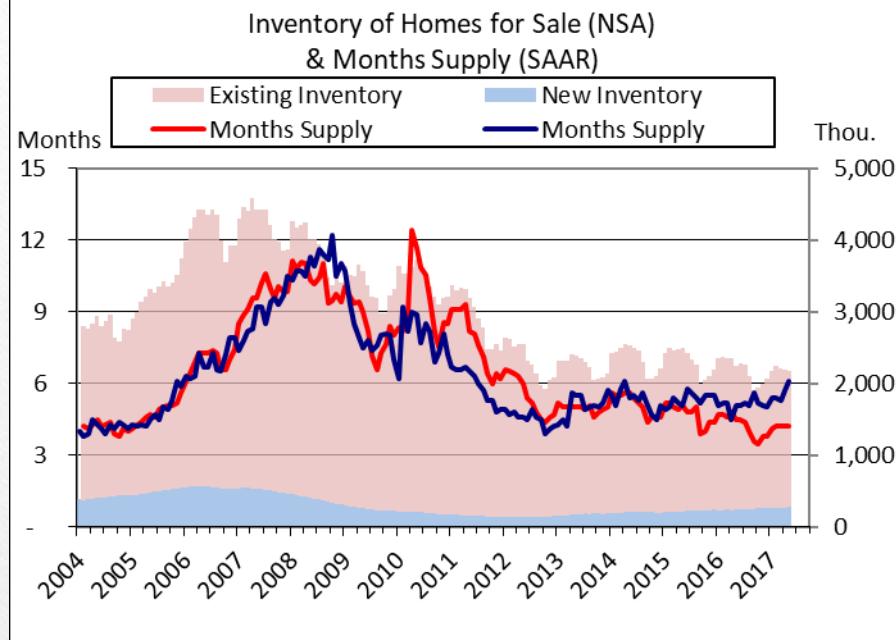
*Note: "Existing Homes" include both Single Family and Multi-Family units. "New Homes" include only Single Family Homes.*

Data Source: U.S. Census Bureau, NAR

Charts & Analysis: WillSonn Advisory



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As discussed in a previous Deep Dive, "New Homes For Sale" includes not only Completed construction, but also homes Under Construction and homes Not Started if listed for sale by the builder. Each of these three components has a distinct pace of sales (Table Below), so as the mix of sales/inventory between the three shifts (Bottom Left Chart), the "Months Supply" for New Homes shifts as well.

Months Supply the past five years for each segment is well below the levels experienced in the 2007-2011 time period. Compared to 2001-2006, Completed homes have been selling at a faster clip – not so for the other two categories.

	Last 5 Years 2007-2011	2002-2006
Not Started	2.8	5.4
Under Const.	8.6	13.6
Completed	3.9	4.2

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# Housing Starts

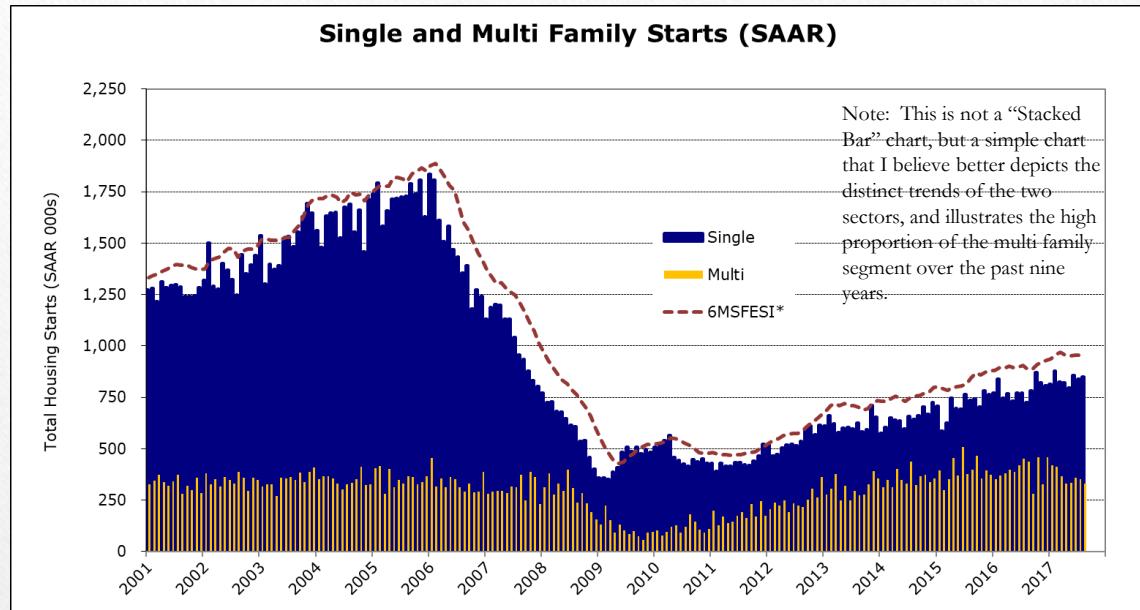
**Total Housing Starts registered 1.180 million units in August (SAAR), barely above the 2016 pace of 1.177 million units. In August, Single Family Starts improved to 851,000 units, while Multi-Family Units came in at 329,000 Units.**

Year-To-Date, Total Starts are up 3%, Single Family Starts are up 9%, while Multi Family Starts are down 9%, compared to the first eight months of 2016. Compared to the full year 2016, YTD Single Family starts are up 6% while Multi-Family starts are down 8%.

My “6 Month Single Family Equivalent Start Index,” which recasts a multi family unit into a single family unit based on relative wood use, dipped to an average of **945,000 units over the previous six months, barely above the 50% level of the 2006 peak.**

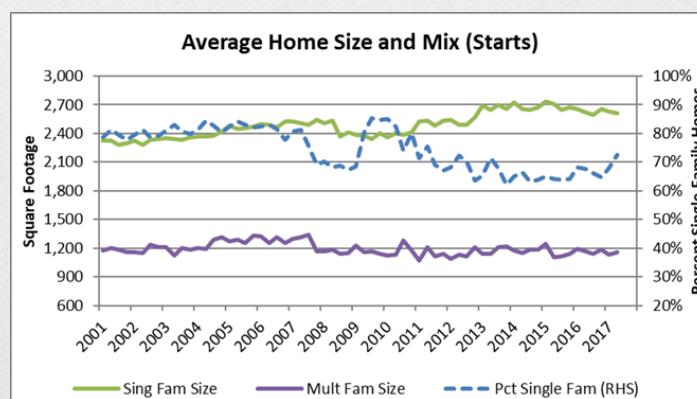
*Multi-family units use approximately 2/3 as much wood per square foot compared to a Single Family Unit, and since Multi-Family Units are about half the size of Single Family homes, I count them as a 1/3 single family equivalent.*

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Data Source: U.S. Census Bureau

Charts & Analysis: WillSonn Advisory



The size of the Single Family Home started in Q2 averaged 2,616 sq ft, down 0.5% from Q1 and 0.6% below 2016's average of 2,631 sq ft. The size of Multi-Family Units started in Q2 averaged 1,161 sq ft, up 2.5% from Q1, but down 0.9% from 2016 average of 1,172. **Single Family units made up 73% of Total Starts in Q2, the first quarter above 70% in four years.**

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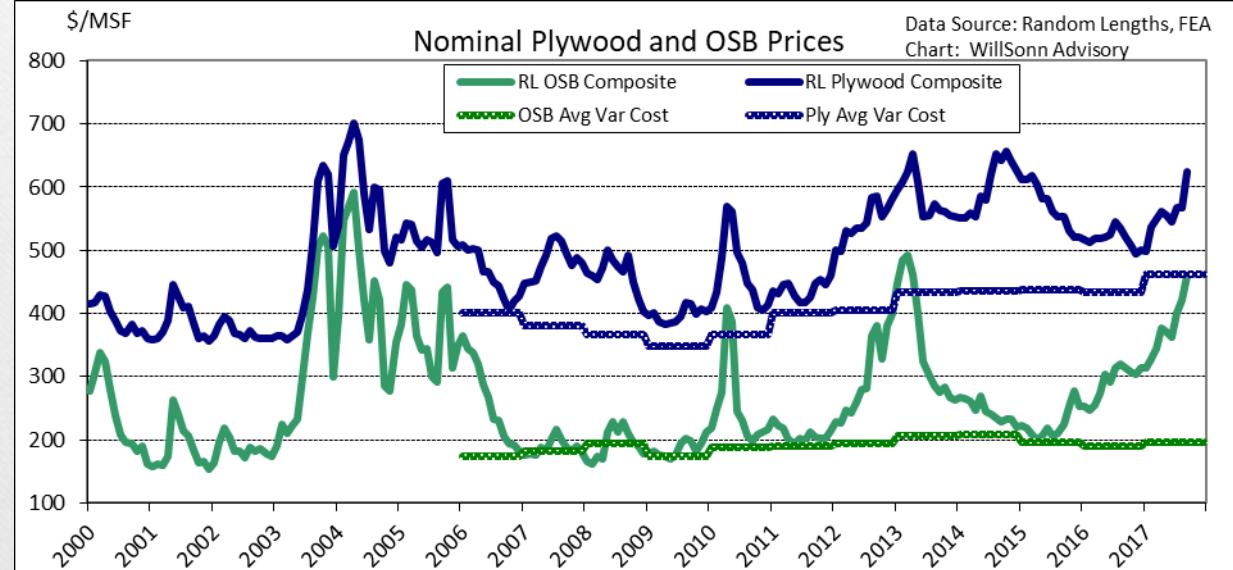
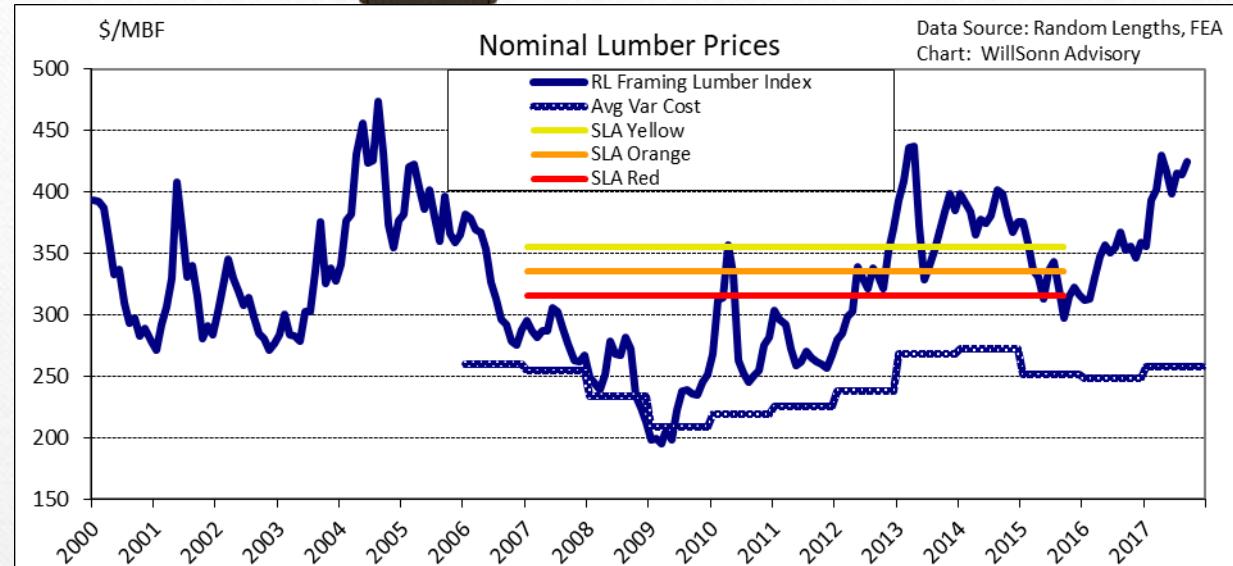
# Wood Product Prices

All products moved upward over the course of the quarter, erasing late Q2 retreats. YTD gains in Lumber are tied primarily to the Lumber Trade dispute, while Structural Panel prices were bolstered late in the quarter by Hurricanes Harvey and Irma.

**Lumber prices in Q3 were up just 1% from strong second quarter prices, now 21% above full year 2016 prices.** Regionally for the third quarter relative to the previous quarter, West Coast lumber mills saw 7% higher prices and Inland mills saw prices edge up 4%, while Southern sawmills saw a decline of 7% in lumber prices, offsetting most of the gains seen out West.

**Plywood pricing also improved for the quarter, rising 6% in Q3 from Q2 prices, and were up 13% from FY 2016 levels.** Third quarter gains over Q2 were greater in the West again this period (up 10%, vs 3% in the South).

**OSB had another great quarter, posting prices in Q3 15% above Q2 prices, and a whopping 47% above FY 2016 prices.**



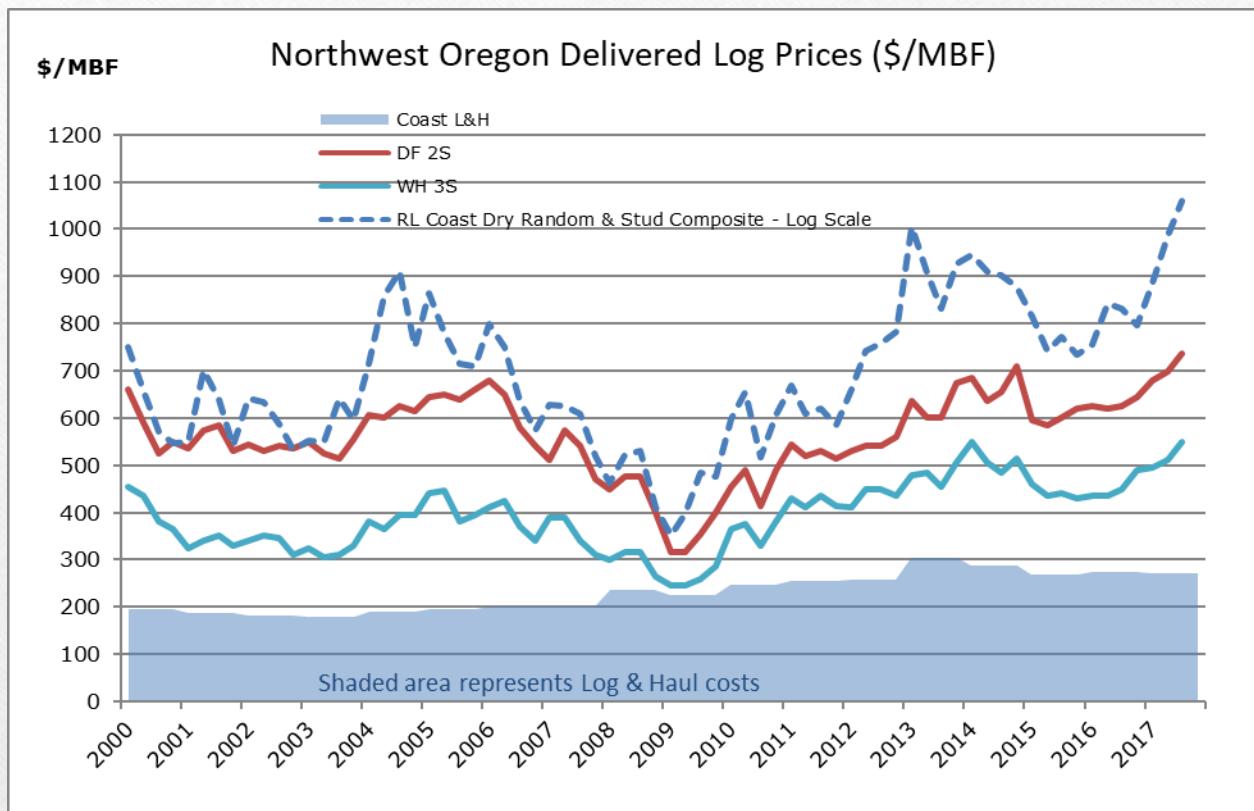
# PNW Log Prices

Sadly, after 40 years of reporting log prices by grade and region in Oregon, the Oregon Department of Forestry threw in the towel in 2017. Their data will be sorely missed. This quarter, as a stop gap measure, I used the WA DNR Q/Q as a proxy for West coast log price changes.

In the third quarter of 2017, delivered prices for both Douglas-Fir 2saw and Western Hemlock 3saw gained about \$35-40/MBF (5% and 7%, respectively). Compared to full year 2016, third quarter prices were up 17% for DF 2saw and up 21% for WH 3saw.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) moved up another \$72/MBF in the third quarter, a 7% gain over Q2 2017 prices, and 31% above full year 2016 prices.

Converted back to the stump, DF 2saw prices for the third quarter were 31% higher than FY 2016 prices, while WH 3saw stumpage prices were 56% higher in Q3.



Data Source: Oregon DOF, WA DNR, Random Lengths, FEA  
Charts & Analysis: WillSonn Advisory

Southern Yellow Pine stumpage markets were significantly impacted by Hurricanes Harvey and Irma this quarter, yet price gains were meager. SYP Sawtimber halted its 6-quarter slide, inching upward in the third quarter, coming in 1% above Q2 '17 prices, still 4% below the dismal FY 2016 average. Chip-n-saw stumpage prices were up 2% in the quarter. Concurrently, the Random Lengths SYP Lumber Composite, adjusted for lumber recovery, moved down 7% in Q3 compared to Q2 prices, but remains 1% above the average FY 2016 price.

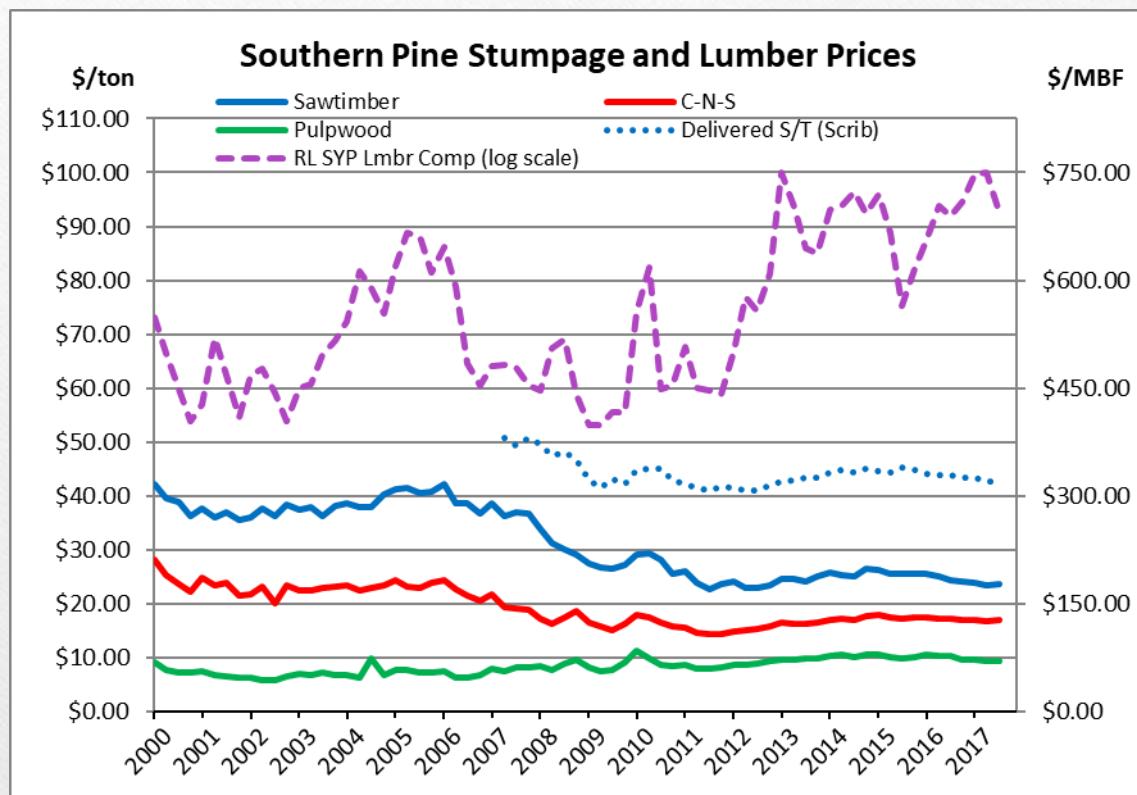
Please see this quarter's "Deep Dive" discussion starting on page 14, which has clear implications for the future prospects for the SYP Sawtimber price recovery.

Pine Pulpwood prices stayed below \$10/ton in the third quarter, and remains 8% below 2016 prices. Pulpwood also ended a five-quarter slide this quarter, inching up 1% from Q2. As lumber production expands in the South over the next few years, mill residual supplies will increase and exert downward pressure on pulpwood prices.

Note that in some key markets, CNS logs are selling to pulpwood buyers (and being reported as pulpwood), effectively overstating pulpwood prices. Timberland buyers beware...!

Another cautionary note: **Sawtimber to Pulpwood price ratios have narrowed from 5.5:1 in the 2000-07 period, to a very meager 2.5:1 in the 2012-17 period.** As a rule of thumb, if ratios persist below 4:1, landowners have a harder time justifying a sawtimber management regime, and bare land values (in part a function of expected future timber revenues) decline.

# Southern Pine Log Prices



Data Source: Timber Mart South, Random Lengths, FEA  
 Charts & Analysis: WillSonn Advisory

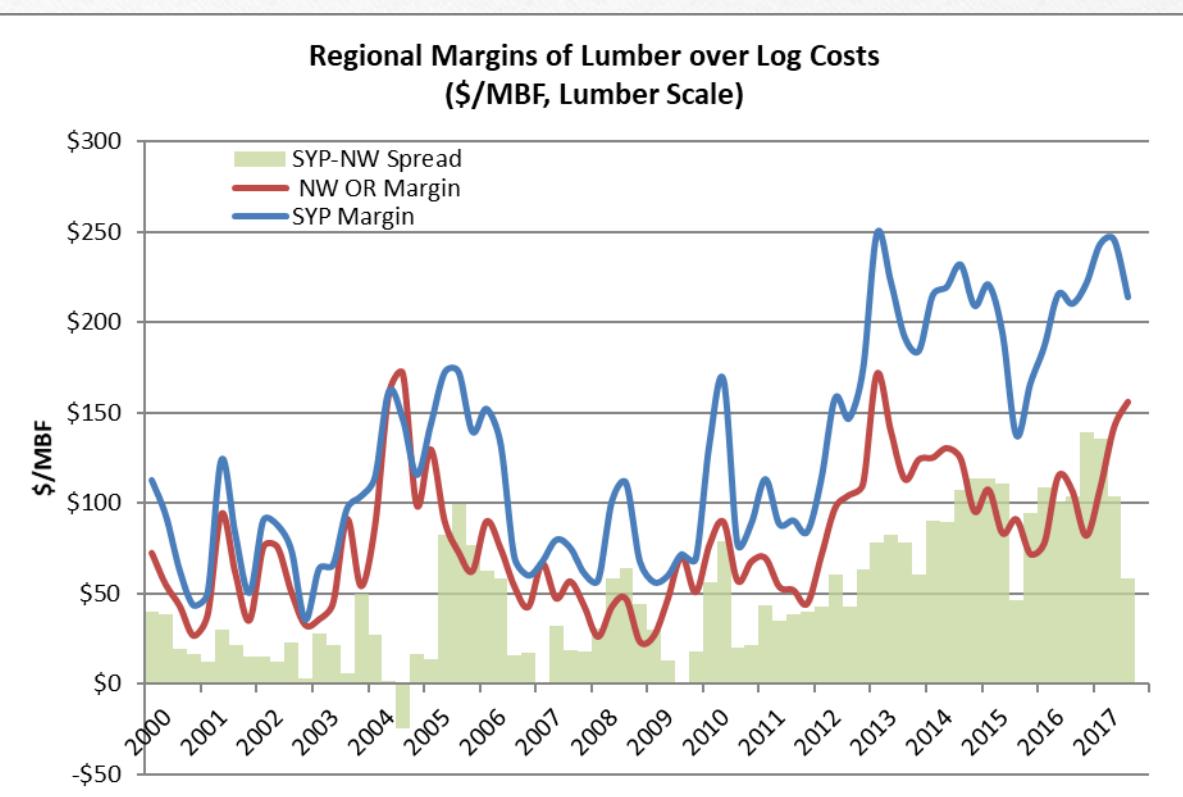
Sawmill Gross Margins (lumber price minus delivered raw material costs) in the Northwest and South were derived from the figures on the previous two pages. From 2000-2011, the average spread between the regional gross margins was \$30/MBF. From 2014 through Q2 2017, this spread expanded to an average of \$104/MBF.

In Q3 '17, the spread between Southern and PNW mills narrowed to \$58/MBF, down from a \$104/MBF spread in Q2. During the quarter, PNW Gross margins expanded \$14/MBF as lumber prices outpaced log costs, while in the South, declining lumber prices caused a \$32/MBF contraction.

Since the beginning of 2012, we saw log export markets push PNW log prices near long-term averages, while in the South, growing inventories of mature sawtimber on the stump kept downward pressure on log prices, even as lumber prices improved. The net result was that the gap between the PNW's and South's gross margin grew to an average of \$106/MBF in the last two year time period, about 3.5x the 2000-2011 average.

Little wonder that acquisitive lumber producers, mostly Canadian, have focused their mill purchases in the South. Going forward, Lumber producers are expected to focus Capital Investments in the US South to capture outsized margins.

# Regional Gross Margins



*Assumptions: 67/33 weight of DF2saw and WH3saw in the PNW, and a 75/25 weight for S/T and CNS in the South (using 7.5 tons/MBF, along with FEA's estimates of Cut & Haul cost for S/T and CNS). All figures are lumber scale, and regional differences in lumber recovery factors are incorporated.*

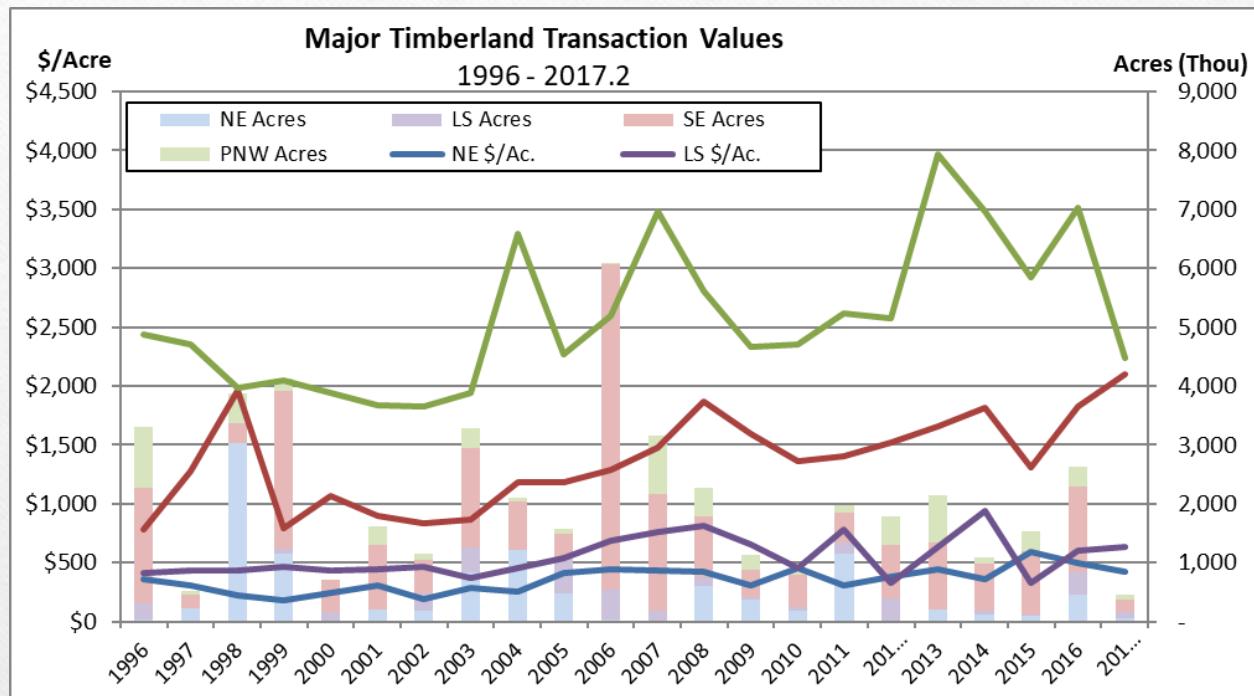
Data Sources: Timber-Mart South, Random Lengths, FEA, Oregon DOF  
Chart & Analysis: WillSonn Advisory

# Regional Transaction Values

Through the end of the third quarter, relatively few acres had changed hand in 2017. Across the US, transactions totaling \$860 million have been announced, involving 574,000 acres, in 22 transactions, only one of which was over \$100 million. In 2016, 2.9 million acres, totaling \$4.6 Billion traded hands; 43 transactions, 13 of which were in excess of \$100 million.

In the PNW, 80,000 acres has traded hands, over 75% of which was located in southern Oregon, and sold for less than \$2,000/acre. In the South, 216,000 acres passed title, the largest of which, 95,000 acres acquired by Rayonier, transacted at \$2,285 per acre (~90% fee, ~10 % leased). In the Lake States, 93,000 acres were sold, all in Wisconsin. In the Northeast, a single transaction involving 62,000 acres in Maine were sold. Not presented on this chart are sales of 38,000 acres in Appalachia and 84,000 acres in the Inland Northwest.

More than 2.0 million acres remain in the pipeline as of October, sort of... A number are very challenged (due to stocking, encumbrances, and/or markets), thus there is a distinct risk that some may “no sale.”



NE:Northeast LS:Lake States

SE:Southeast PNW:Pacific Northwest

Data Source: TMS, TMR, Press Releases Charts & Analysis: WillSonn Advisory



## Section 2: Deeper Dive



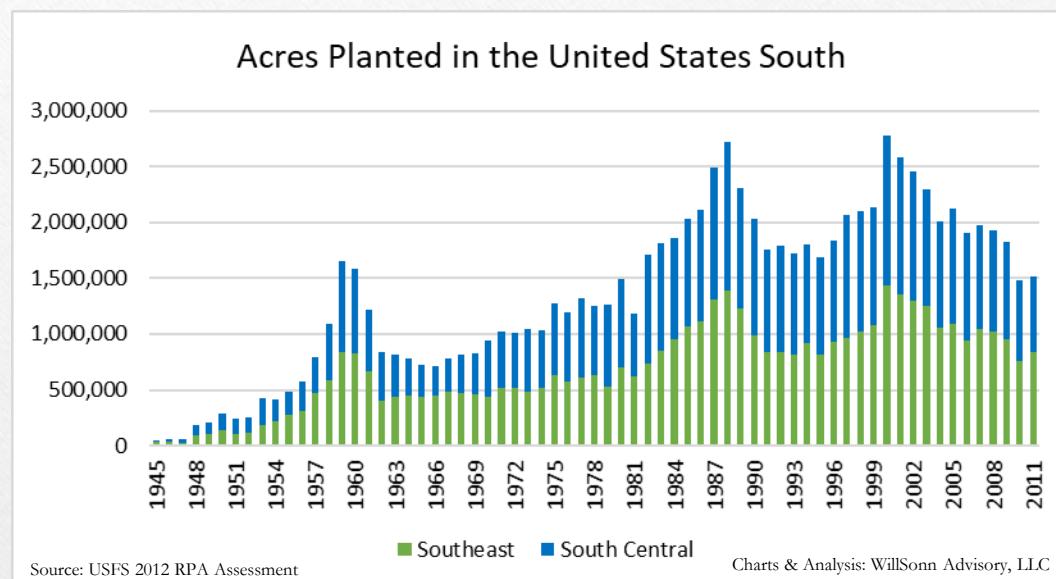
# The Twin Peaks in Historical Planting in the US South

After reading the 2012 USFS RPA Assessment, I was curious about how the pattern of historical planting in the US South may have impacted southern log availability in the past, and what its impact will be in the years to come.

Given the poor pricing that we have seen for Pine Sawtimber in the US South over the past several years, questions around **the timing and degree of recovery in Southern sawtimber log pricing** are on everyone's mind, both timberland owners and sawmill operators.

As the basis of my analysis, I relied on the USFS 2012 RPA Assessment planting data, presented to the right. You can see that through the years, planting activity has been anything but flat.

- Most notably, during the late 1980's, planting in the South rose steadily, a result of Federal subsidies aimed at soil conservation. During this time, a lot of lower productivity crop land was put (back) into timber production.
- In the early 2000's, there was a concerted push by a number of industrial and institutional land owners to convert older, natural stands to plantation.



On the following pages, I am going to test a couple of scenarios around forest productivity, to see what this pattern of planting might suggest about future harvest levels, and in particular, the availability of sawtimber in the future. I will blend these scenarios to arrive at what I view as the more likely outcome. My conclusions appear on Page 18.

Overarching assumptions I used in my analysis appear on Page 19, while scenario-specific assumptions regarding yields, rotation ages and grade mix, appear on the next two pages. On the whole, I believe my assumptions are on the conservative side.

# “Flat Site Index” Scenario

In this scenario, you can see that my yield assumptions (shown in the table at the bottom) are quite conservative, in terms of both volume and grade mix. Essentially, there are no gains in forest productivity or grade mix over 1970 era levels.

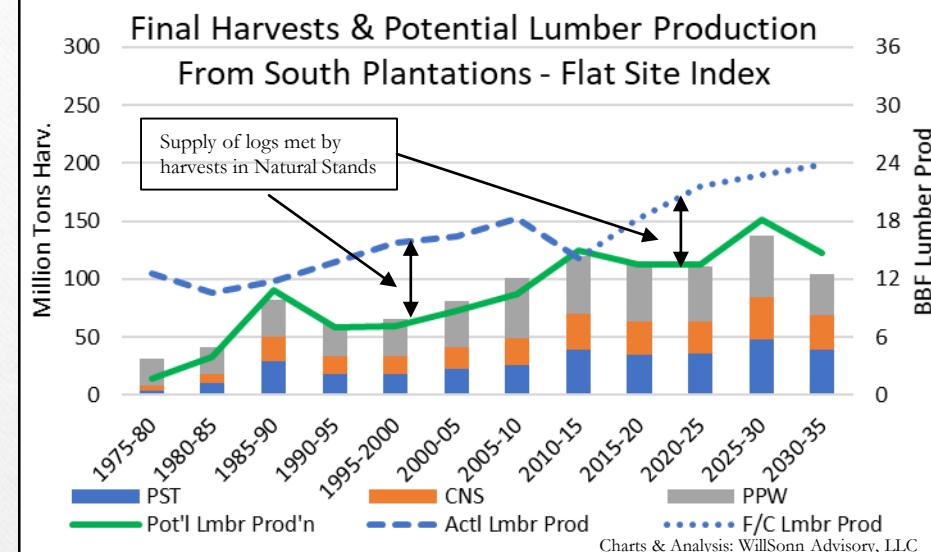
Prior to 2010, the supply of sawlogs from plantations (“Potential Lumber Production”) was unable to meet annual sawmill needs (“Actual Lumber Production”), with the shortfall being met by harvesting in Natural stands and by drawing down inventories of mature timber, which together supplied logs for ~8 BBF, by my estimation. This prolonged supply/demand tension helped push pine sawlog prices up during this period.

In 2010-2015, the decline in lumber production associated with the severe decline in US Housing Starts, coincided with the bump in maturing sawtimber related to the peak in planting that occurred in the late 1980’s – the first of the Twin Peaks. Just terrible timing. This confluence lead to the current surplus of US South sawtimber on the stump.

Looking forward, despite conservative yield and grade mix assumptions, the volume of plantation sawtimber and CNS logs coming of age through 2030 would be able to satisfy all but 6 BBF of expected lumber production, versus ~8 BBF in 1990-2010. It isn’t until 2030-35 when we finally see meaningful supply constraints, as harvests from maturing plantations established in 2005 and later take a dip, and while sawmill demand continues to climb.

*“F/C Lmbr Prod” is a consensus expectation around future lumber production coming out of the US South*

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Assumptions about stands planted in the year:		
	Sawtimber	Pulpwood
Average Expressed SI in 1950:	60	60
Average Expressed SI in 1970:	65	60
Average Expressed SI in 1990:	65	60
Average Expressed SI in 2010:	65	60
Avg Rotation for 1950 Planting:	30	21
Avg Rotation for 1970 Planting:	27	21
Avg Rotation for 1990 Planting:	27	21
Avg Rotation for 2010 Planting:	27	21
Avg Yield from 1950 planting	75	80
Avg Yield from 1970 planting	76	80
Avg Yield from 1990 planting	76	80
Avg Yield from 2010 planting	76	80
	PST	CNS
Grade from 1950 planting	45%	27%
Grade from 1970 planting	40%	29%
Grade from 1990 planting	40%	31%
Grade from 2010 planting	40%	29%
	PPW	
Grade from 1950 planting	28%	0%
Grade from 1970 planting	31%	0%
Grade from 1990 planting	31%	0%
Grade from 2010 planting	31%	0%
		89%
Grade from 1950 planting		11%
Grade from 1970 planting		11%
Grade from 1990 planting		11%
Grade from 2010 planting		11%

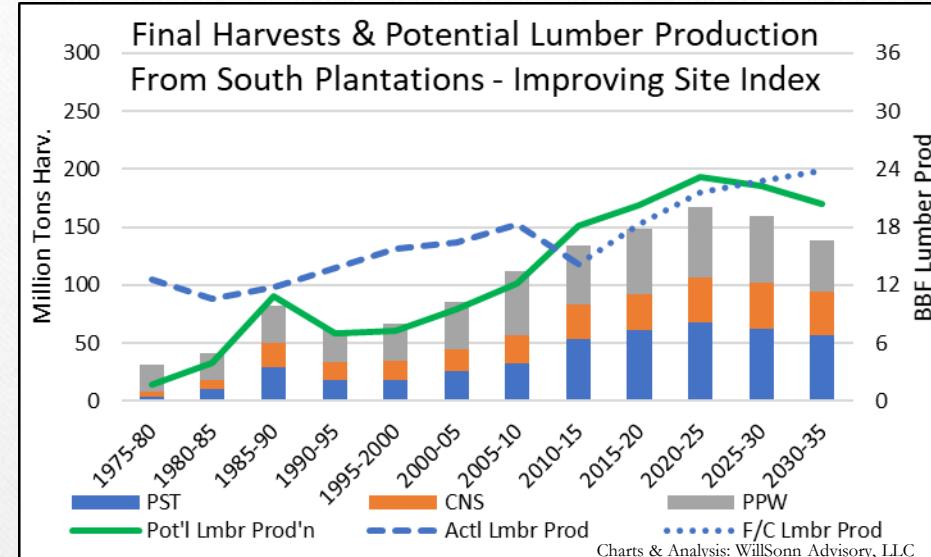
# “Improving Site Index” Scenario

In this scenario, my assumptions are more optimistic than the previous “Flat Site Index” scenario: shorter rotations, more tons, and strong grade mix.

- Nevertheless, I am convinced that a sawtimber regime, with 96 tons per acre at age 24, with 71% sawtimber and CNS, is still quite modest in comparison to what many timberland managers are modeling for future plantation harvest yields.

With the historical planting in place, under this set of plantation yields and grade mix, **the volume of sawtimber and CNS logs available to southern sawmills, just from plantations, will exceed sawmill needs.** The implication on log prices are easy to visualize – great for the mill, terrible for the landowner.

- One might take issue with any number of the assumptions I used in this scenario, not the least of which is that all landowners, both the Corporate and Private Non-Corporate subsets, manage their timberlands in the same way.
- Please turn the page...



Assumptions about stands planted in the year:

	Sawtimber	Pulpwood
Average Expressed SI in 1950:	60	60
Average Expressed SI in 1970:	65	60
Average Expressed SI in 1990:	70	65
Average Expressed SI in 2010:	75	65
Avg Rotation for 1950 Planting:	30	21
Avg Rotation for 1970 Planting:	27	21
Avg Rotation for 1990 Planting:	27	21
Avg Rotation for 2010 Planting:	24	21
Avg Yield from 1950 planting	75	80
Avg Yield from 1970 planting	76	80
Avg Yield from 1990 planting	86	95
Avg Yield from 2010 planting	96	95
	PST	CNS
Grade from 1950 planting	45%	27%
Grade from 1970 planting	40%	29%
Grade from 1990 planting	52%	22%
Grade from 2010 planting	42%	29%
	PPW	PPW
Grade from 1950 planting	28%	0%
Grade from 1970 planting	31%	0%
Grade from 1990 planting	26%	0%
Grade from 2010 planting	29%	0%
	CNS	PPW
Grade from 1950 planting	11%	89%
Grade from 1970 planting	11%	89%
Grade from 1990 planting	15%	85%
Grade from 2010 planting	15%	85%

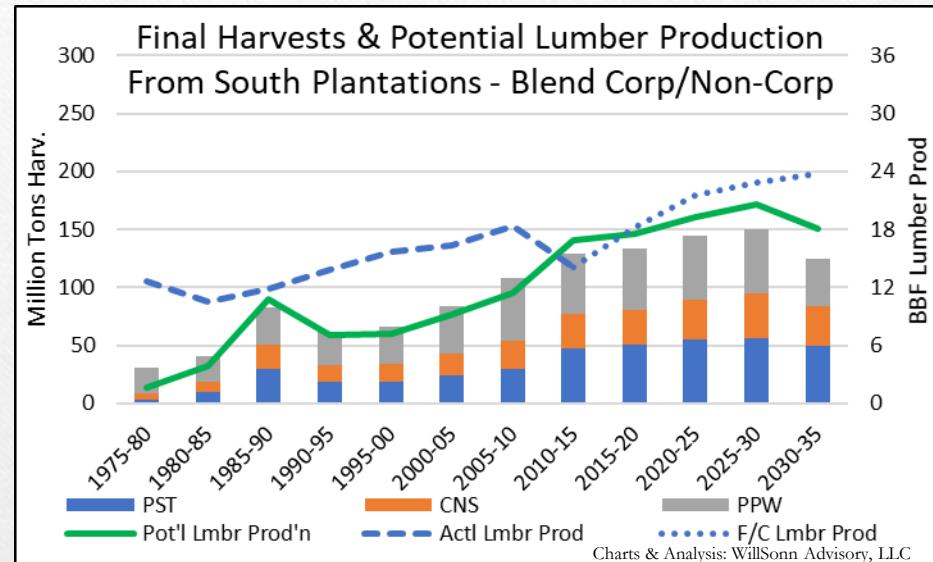
# “Blended Corporate/Non-Corporate” Scenario

My guess is that it will end up somewhere in between the “Flat” and “Improving” scenarios, because I suspect that Non-Corporate land owners do not manage their timberlands to the same degree of intensity as Corporate landowners.

The RPA data (as of 2012) indicates about 75% of Corporate pine land is in Plantation, while about 50% of Non-Corporate pine land is in Plantation. The Corporate proportion, 75%, seems low to me, but without evidence to the contrary, let's assume it is right – it is likely conservative.

Applying those ratios to the respective pine timberlands owned by each ownership class, suggests that about 60% of Southern Pine Plantations are held by Corporate owners, 40% by Private Non-Corporate.

In this Blended Scenario, I assigned the rotation ages, yields and grade mix in the “Flat Site Index” assumptions to Private Non-Corporate landowners (weighted 40%), and rotation ages, yields and grade mix in the “Improving Site Index” assumptions to Corporate landowners (weighted 60%).



While the results don't suggest a surplus of sawlogs and CNS logs coming from final harvest of pine plantations going forward, as we saw on the previous page, the prospects for improving log prices in the US South in this “Blended” case would likely remain elusive until after 2030. Pine sawlog harvests from Natural stands are still out there, and Corporate landowners are likely expecting better yields and grade mix than what I have used in my analysis.

# Conclusions

- In only the very conservative “Flat Site Index” scenario, could we reasonably expect to see log prices return to 1995-2005 era levels within the next 10-15 years. In reality, Southern Pine Plantations are more productive than depicted in the “Flat Site Index” scenario, current excess standing sawtimber inventories need to be worked off, Natural Stands will continue to supply sawlogs, and the second peak of plantations will certainly come of age in the next few years. All of these will combine to mitigate more intense price pressure on logs in the face of increasing lumber production in the US South.
- In balance, the risks in the assumptions underpinning my analysis are likely skewed to the downside (for log prices).
  - Some subset of Private Non-Corporate landowners are managing their timberlands more intensively than the “Flat Site Index”, e.g. more intensive silviculture, while another subset is likely managing less intensively, e.g. on longer rotations. The risks here are probably evenly balanced.
  - However, Corporate landowners, as a group, are likely pursuing management regimes and making investments, with expectations surpassing both the yield and grade mix I used in my “Improved Site Index” scenario.
- This highlights a key issue I raised recently in my presentation, “Optimization Cubed”:
  - **Widely used Linear Programming (LP) Models provide us with an “optimum solution” under static conditions, in isolation of, and immunity from, what competing landowners are doing on their land.**
- As a result of this ubiquitous and myopic optimism, harvest plans are hatched and investments are made that may lead one to pursue a harvest/management plan which in isolation appears optimal, but within the context of the entire industry, may lead everyone down a path of excess log supply and disappointing log prices.
  - This may be a no-win situation for some. If these, or even higher, productivity levels are broadly achieved across the industry (or even in a broad wood basket), prices will certainly languish, and with it, timberland values will suffer. On the other hand, if volume and grade fall short of LP model predictions, timberland investment returns will be equally disappointing.
- In the longer-term, if sawlog prices remain subdued, management regimes may change, as well as thinking around silvicultural investments. At some point, supply has to bump up against demand in order to support the higher log prices needed to incent landowners to plant trees, and to wait for them to grow into sawlogs.

# Common Assumptions:

- **Pine Plantations:** RPA data suggests only 85% of Acres Planted were planted to pine, therefore I reduced the number of Planted Acres accordingly in my analysis. This is probably a conservative assumption.
- **Final Plantation Harvest Only:** Since I am primarily concerned about sawtimber, I ignored harvests from first and second thins (which tend to yield mostly pulpwood), and just considered yields at final harvest. Chip-n-Saw logs from second thins would add further to log supply, so I also see this as a conservative assumption.
- **HBU:** I assumed 0% of plantations established before 1970 were sold as HBU prior to harvest, 5% of plantations planted in the 70's were sold prior to harvest, and 10% of plantations planted since the 80's have or will be sold prior to final harvest. I chose these levels, and their timing, because it wasn't until the late 1990's that HBU land sales became a staple in TIMO and REIT business plans. This is probably a bit conservative (too much of a reduction), in my view.
- **Site Index:** I assumed that the Site Index in the South was ~60 (what I remember being taught in forestry school back in the early 1980's), and assumed it moved up to 65 by the 1970's, due to the use of improved seed stock and moderate levels of silviculture that would have been applied to those stands over the course of their rotations. When I modeled an increase in yields and reductions in rotation ages in the "Improved Site Index" scenario, I eased into it over the preceding 20 year period.
- **Management Regime:** RPA data on Pine species breakout (Loblolly versus Slash) suggests that prior to the 1990's, ~75% of plantations were managed on a sawtimber regime and 25% on a pulpwood regime, moving to an 80/20 mix afterwards. I followed suit; I increased sawtimber regimes to 80% in the 1990's, and from 2000 forward, to 85% sawtimber regimes, trying to capture the trend away from pulpwood regimes as Paper Company timberlands were sold to TIMOs and REITs. This may also be a bit conservative.
- **Lumber Only:** "Potential Lumber Production" is the estimated volume of lumber that could be produced from sawtimber and a portion of CNS logs harvested **solely from final harvest on Pine Plantation forests**. I first assumed that 100% of the sawtimber and 75% of the CNS harvested will be available to sawmills (the rest of the CNS going to pulpmills). To convert tons of logs to MBF, I assumed 7.5 tons/MBF Scribner and a Lumber Recovery Factor of 1.8 (admittedly high looking back, but arguably a bit low going forward).



## Section 3: About WillSonn Advisory, LLC



# WillSonn Advisory Services

- Timberland & Mill Valuations
- Acquisition "Post Mortem" Audits
- Conversion of Acquisition Pro Forma to Lender Financial Projections
- Acquisition and Operational Due Diligence
- Development of Company Enterprise Valuations
- Incorporating Economic Forecasts

**Business Assessments & Due Diligence Services**



- Acquisition and Divestiture Process Management
- Conduct Regional or Global Market Studies
- Plan and Oversee Inventory & GIS Projects and/or Audits
- Independent Review of Harvest Flow Projections and Processes
- Prepare Offering Memorandums and Prospectuses

**Project Management Services**



- Fiber/Log Supply Agreements
- Purchase & Sale Agreements
- Timber Deeds and Leases
- Conservation Easements & Carbon Projects
- Service and Offtake Agreements
- Joint Ventures & Partnerships
- Contract Negotiating Strategies

**Contract Structuring and Negotiation Services**



- Strategic Plan Process Design, Facilitation and Documentation
- Company Specific Price, Supply and/or Demand Forecast Development
- Contingency Plan Development and Monitoring
- Financial Planning and Capital Restructuring
- Work-out Strategy Development
- Capital Investment Assessments

**Strategic Planning & Business Restructuring Services**



- Validate Acquisition Valuations & Due Diligence Procedures
- Evaluate Existing or Proposed Agreements or Easements
- Interpret Annual Management Plans & Appraisals
- Examine Proposed Transfers of Ownership
- Review Divestiture Timing & Strategies
- Track Investment Performance

**Institutional Investor Services**



# WillSonn Advisory

## Critical Experience for Critical Endeavors

WillSonn Advisory brings senior management experience, across multiple sectors of the wood products industry, with expertise in leading an array of strategic initiatives



I look forward to your comments and questions, and welcome the opportunity to serve your consulting needs.

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