



7 October 2020



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Another terrific report from our colleague, Will Sonnenfeld.

I hope all is going well. Please find attached your complimentary copy of my Third Quarter, 2020 Market Trends update. The third quarter held few secrets, as rising product prices and home values, low home inventories for sale, and improving housing starts have been widely reported. In this quarter's Market Update, this and more has been detailed, with plenty of historical context to provide perspective. In this edition's Deeper Dive, I present an update of the "Twin Peaks" analysis I last shared in 2017, and referenced in my roundtable session during the *Who Will Own The Forest: The Series 2020* on September 30 (Session 2).

As always, I look forward to your comments and questions, and wish you and yours good health and good fortune during these unusual and challenging times.

Best Regards,

Will

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Market Trends

3rd Quarter, 2020

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



Q3 2020 Highlights

Market Trends

- Builder sentiment hits a new high, up from its 8-year low in Q1 (page 4)
- Affordability continues to drift higher as lower interest rates offset rising home prices (page 5)
- 3rd Quarter Housing Starts rebound from Q2, up modestly from 2019 (page 6)
- Existing Housing Inventory levels continue to decline in the third quarter (page 7)
- Product Prices launch in the 3rd Quarter as supply is constrained (page 8)
- PNW and Southern Log Prices fail to keep pace with product prices in Q3 (page 9-10)
- Regional gross mill margins balloon in Q3 as lumber prices soar (page 11)
- US Timberland Sales subdued in first nine months of 2020 as travel curtailed (page 12)

Deeper Dive

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

In Case You Missed It

- NAHB's report on September Labor (page 21-23)

About WillSonn Advisory, LLC



Section 1: Latest Trends



Builder Sentiment & Private Residential Expenditures

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

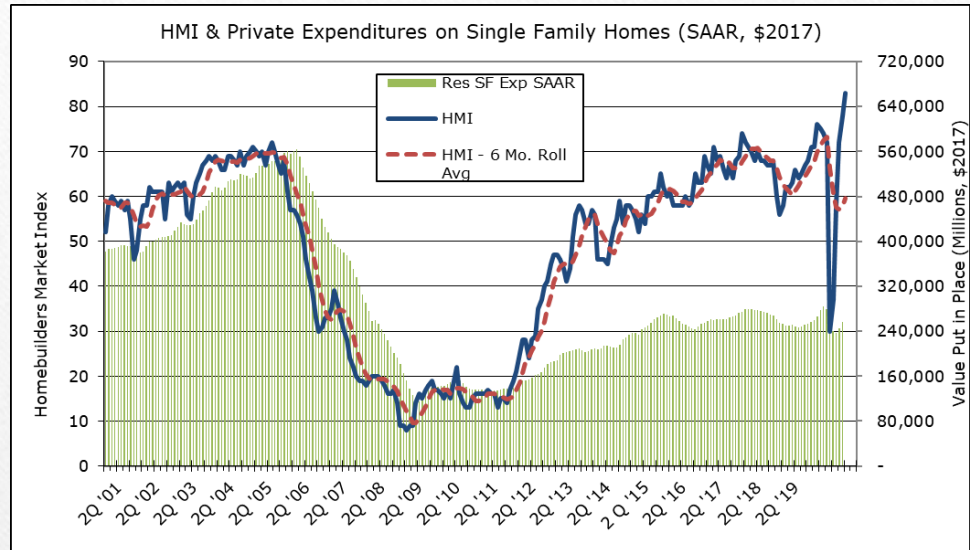
The HMI continued to improve during the 3rd quarter, after dropping to 30 in April, hitting an all-time high of 83 in September. Builder sentiment rebounded quickly as home demand proved more resilient to the pandemic than originally feared. The 6-month rolling average improved slightly to 60 in September, comparable to 2016 levels. Likewise, **the quarterly RMI rebounded in Q2 2020, posting a reading of 73 in Q2, up from 48 in Q1.** NAHB instituted a new survey beginning in Q1 2020, such that comparisons to prior years are largely meaningless.

Private Construction Expenditures on Single Family Housing (in constant 2017 dollars, SAAR) during the first eight months of 2020 have exceeded 2019 levels by 2.5%. **Private Residential Improvement Expenditures have accelerated faster, averaging 9.6% above 2019.** Longer-term, the combination of declining home size, constrained developed lots, and scarce labor and contractor availability have had a dampening effect on residential expenditures over the past few years.

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.

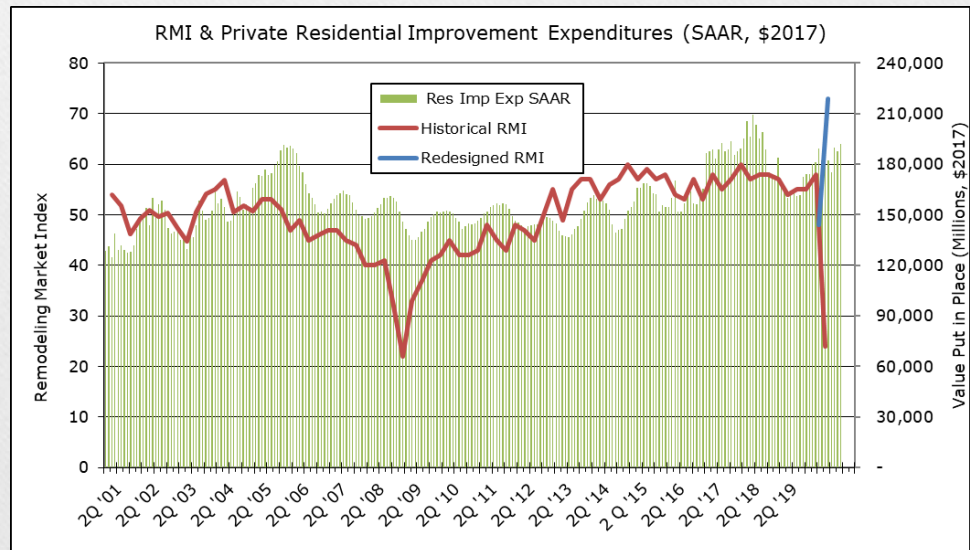
Seasonally Adjusted Annual Rate expenditure figures in both charts were deflated using the US Census Bureau's "Fixed" Construction Price Index which adjusts for both inflation and home size.

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

Charts & Analysis: WillSonn Advisory



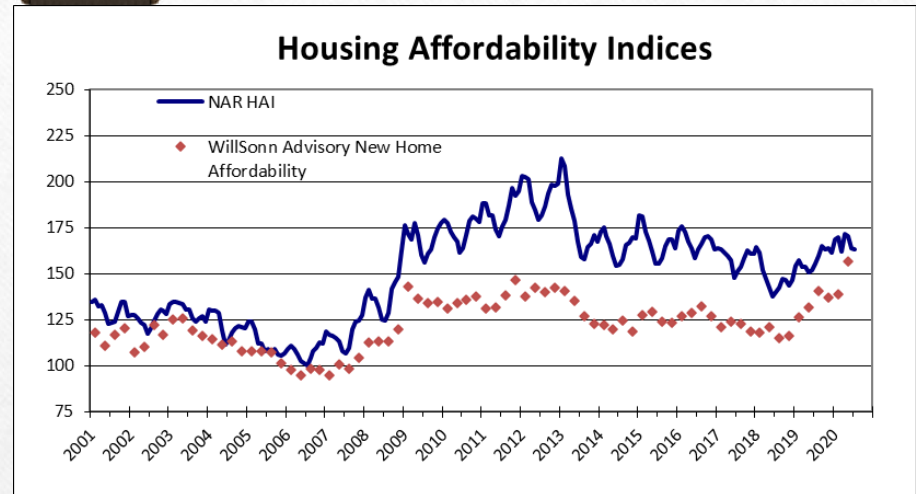
Affordability

The National Association of Realtors (NAR) **Housing Affordability Index** (“HAI”, top chart) has been on an uneven upward trend since June 2018, **registering 163 in July 2020**, marking a pause in the pattern of declining affordability since 2012, peak-to-peak, and trough-to-trough. Had the dearth of availability in existing homes for sale not driven existing home prices higher, the HAI would have been even higher.

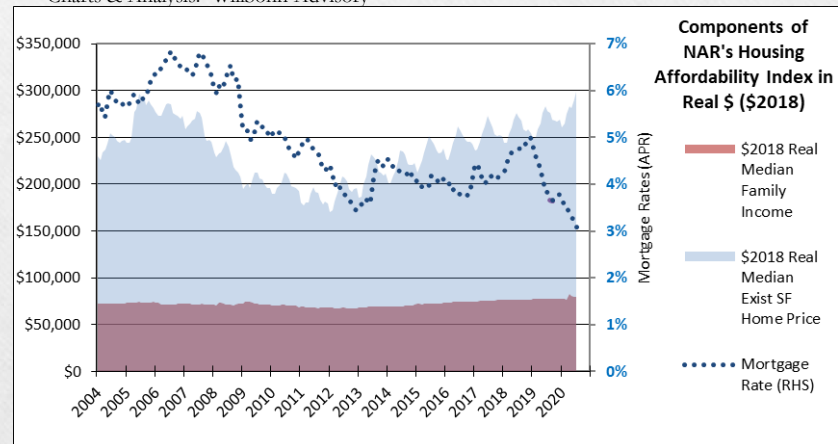
Also depicted in the top chart is my measure of new home affordability, one that incorporates the transaction price of new homes (rather than the listing price of existing homes, as used by NAR). Using NAR’s family income and interest rates and Census Bureau median new home sale prices, I calculate a slightly lower **New Home Affordability Index of 157 in Q2 2020**. With a lower median new home price (-5% Q/Q) and declining interest rates, the Affordability of New Homes rose to its highest point since the turn of the century.

The bottom chart displays the movement in the three components of the NAR Affordability Index – home prices, mortgage rates and family income – in Real dollar terms. Though July 2020, compared to full-year 2019, home prices were up 5.2% and Median Family Income was up 2.9%, while Mortgage rates declined -16.3%. As a result, Mortgage Payments, as a percent of Income declined -5.9%, resulting in the higher HAI, up 6.0% from 2019.

In September 2020, mortgage rates dropped to an average of 2.89%, 72 bps below the average September 2019 rate. Holding home price and income steady, **a 50-basis point decline in mortgage rates bumps the Affordability Index up about 10 points**.



Data Sources: NAR, Census Bureau,, Dept. of Commerce
Charts & Analysis: WillSonn Advisory



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.

Housing Starts

Total Housing Starts registered 1.416 million units in August (SAAR), 9.1% above the 2019 pace of 1.290 million units. In August, Single Family Starts registered 1,021,000 units, while Multi-Family Starts came in at 395,000 units.

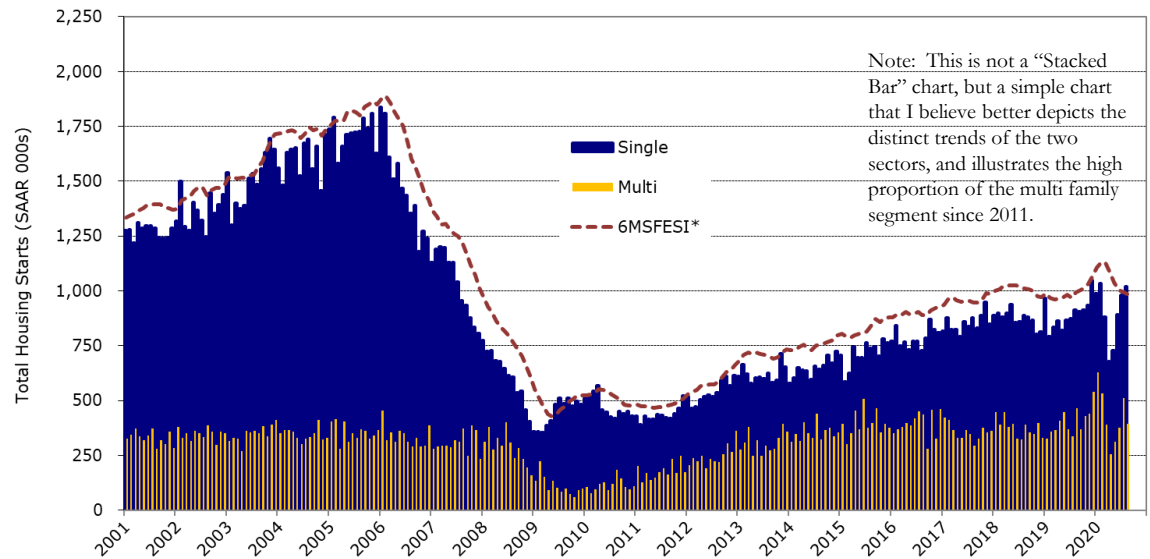
Year-to-date (SAAR) through August, Total Housing Starts have averaged 1.325 million units, a modest improvement of 2.1% versus full year 2019. YTD, Single Family Starts are up 0.8%, while Multi Family Starts are up 5.4%, compared to full-year 2019.

The WillSonn Advisory “6 Month Single Family Equivalent Start Index,” recasts a multi-family unit into a single-family unit based on relative wood use, so a better measure of Housing Start demand for wood. After 10 years below 1 million, the six-month rolling average temporarily breached that level in 2018, then again in September 2019. August’s 986,000 unit reading represents 52% of the 2006 peak of 1.9 million SFES’s.

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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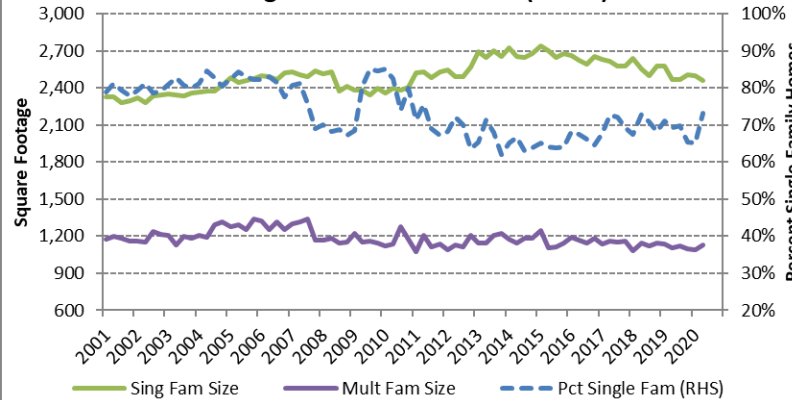
Single and Multi Family Starts (SAAR)



*6MSFESI = 6 Month Single Family Equivalent Start Index
Data Source: U.S. Census Bureau

Charts & Analysis: WillSonn Advisory

Average Home Size and Mix (Starts)



The size of Single-Family Home Starts in Q2 2020 averaged 2,458 sq. ft., down modestly (-1.7%) from 2019’s average of 2,500 sq. ft. The average size of Multi-Family Units started in Q2 2020 averaged 1,126 sq. ft., up 1.2% from the 2019 average of 1,112. Single Family units made up 73% of Total Starts in Q2 2020, 4% higher than 2019’s 69% figure and 9 points below the pre-bust average of 82%.

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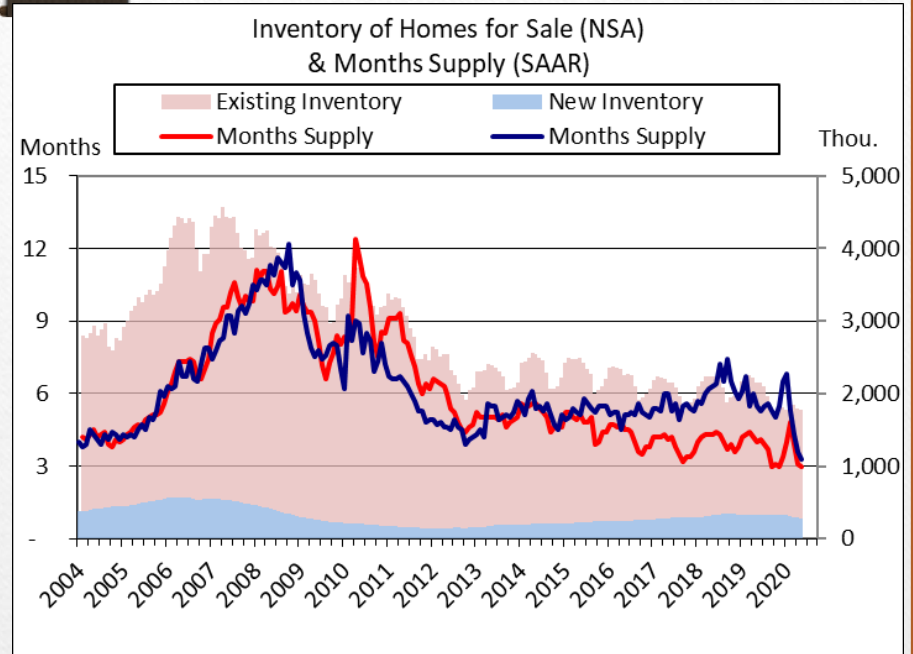
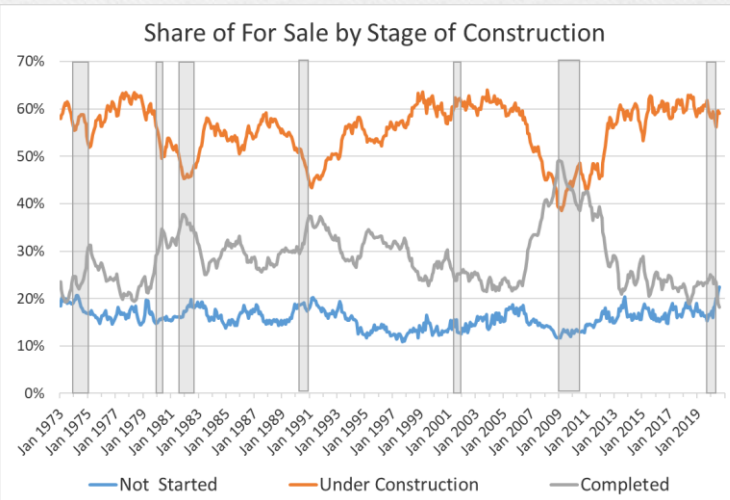
Home Sales Trends

The Inventory of Homes For Sale (Existing + New) totaled 1.771 million units in August, up 54,000 units from December 2019, but down 18% (384,000 units) from August 2019. Separately, Existing Home Inventories are down 340,000 units, while New Home inventories are down 44,000 units, compared to August 2019.

At their respective current pace of sales, there are a scant 3.1 months of sales in Existing Home inventories, and 3.4 months of sales in New Home inventories. Relative to historical levels, expressed in Months of Sales and in absolute numbers, both New and Existing Home inventories have tightened.

Of the 281,000 New units for sale at the end of August 2020 (a three-year low), 18% were Completed, 59% were Under Construction, and 22% had Not Yet Started.

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

In the chart to the left, I've plotted the share of homes for sale, by stage of construction going back to 1973. Also shown on the chart are the US recessions, in grey bars. What I notice in this chart is that a US recession is typically accompanied by a buildup (to 30%+) in the share of Completed Homes for Sale. What I also see is that the longer the recession, the more pronounced the shift in share of Completed Homes becomes. These patterns are typically mirrored by a decline in the share of homes Under Construction (as builders got stuck with more completed homes on hand).

With the onset of the pandemic, and its impact on construction activity (curtailed) and demand (heightened) we saw the inventory of homes Under Construction and homes Completed decline, while the inventory of homes Not Yet Started climbed. Thus, in the current market, we saw the share of units Not Yet Started rise to 22% in August (a 47-year high).

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Wood Product Prices

If the first six months of 2020 was a rollercoaster, the third quarter was a rocket ship! Early in the half, strong housing starts drove prices higher, only to be dashed by initial reactions to stay-at-home orders related to Covid-19. When home center demand surprised on the upside, and residential construction resumed in short order, producers fell behind in shipments. While dimension prices have plateaued in the last few weeks, uncertainty remains.

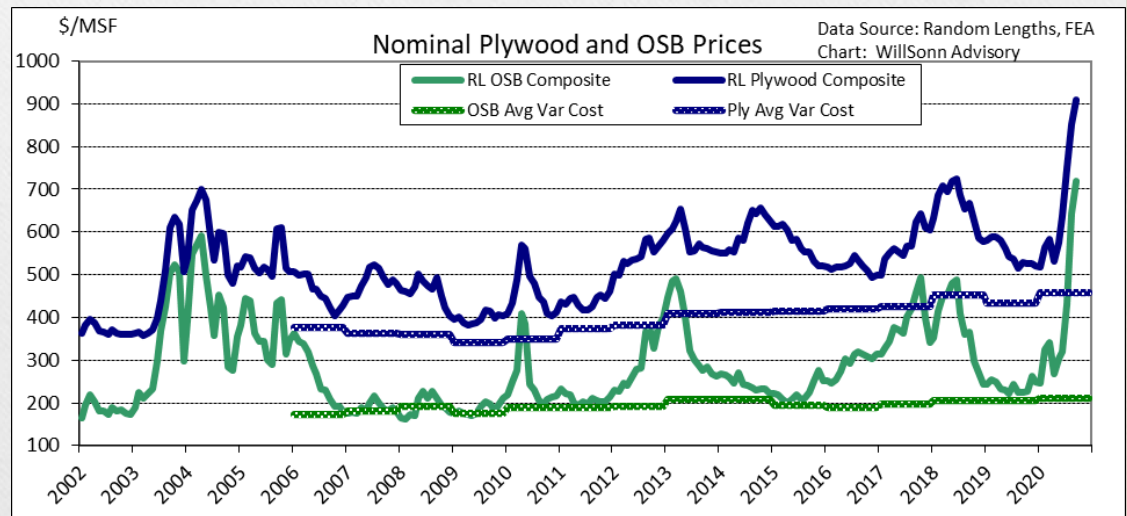
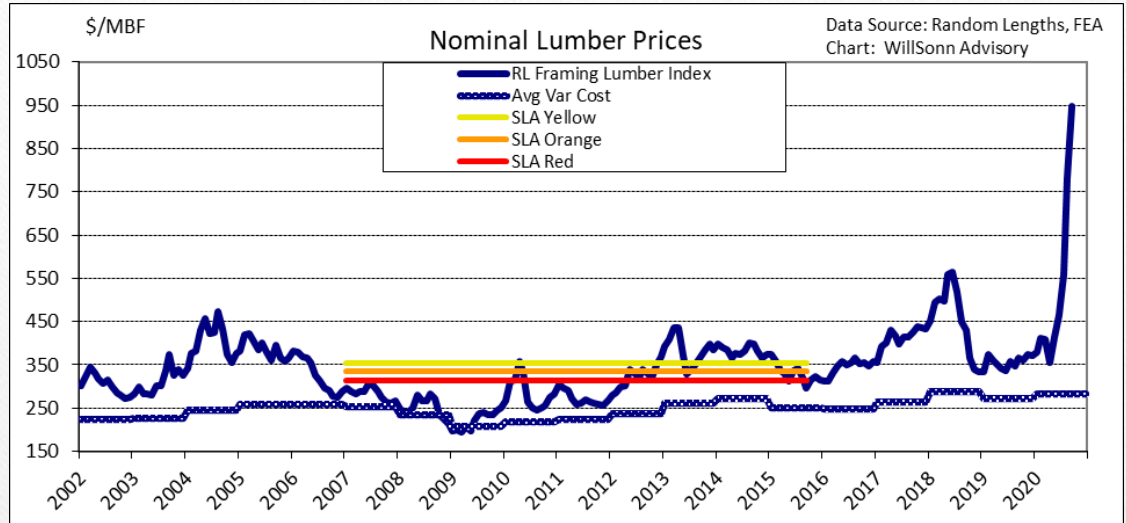
The Random Length Framing Lumber Composite Index in Q3 2020 gained 85% over Q2 and 114% above full year 2019.

Regionally in Q3 2020 relative to Q2 2020, West Coast lumber mills saw an 89% gain in Dry Dimension and a 56% rise in Green DF prices, Inland mills saw prices gain 64%, while Southern sawmills saw prices surge 75%. Canadian components of the Random Lengths Framing Composite Index saw S-P-F prices balloon 103% and 84% in the West and the East, respectively.

Plywood pricing was more modest, adding 44% in Q3 from Q2, to a level 52% above FY 2019 levels. Third quarter movements were uneven regionally, with the Southern Plywood prices up 54% and Western Plywood up 28% during the quarter.

OSB price gains in Q3 exceeded lumber and plywood gains, moving up 102%, following a 3% retreat registered in Q2.

Relative to FY 2019, Q3 OSB prices were up 150%.



PNW Log Prices

Historically, western lumber prices (with about a one-quarter lag) remain the primary driver in West Coast domestic log pricing, though changes in demand and export log prices do exert some influence.

Delivered log prices moved up modestly in the third quarter and now sit 7-9% above full year 2019 prices. During Q3, **Douglas-fir 2saw improved 12% while western hemlock 3saw log prices gained 10%.**

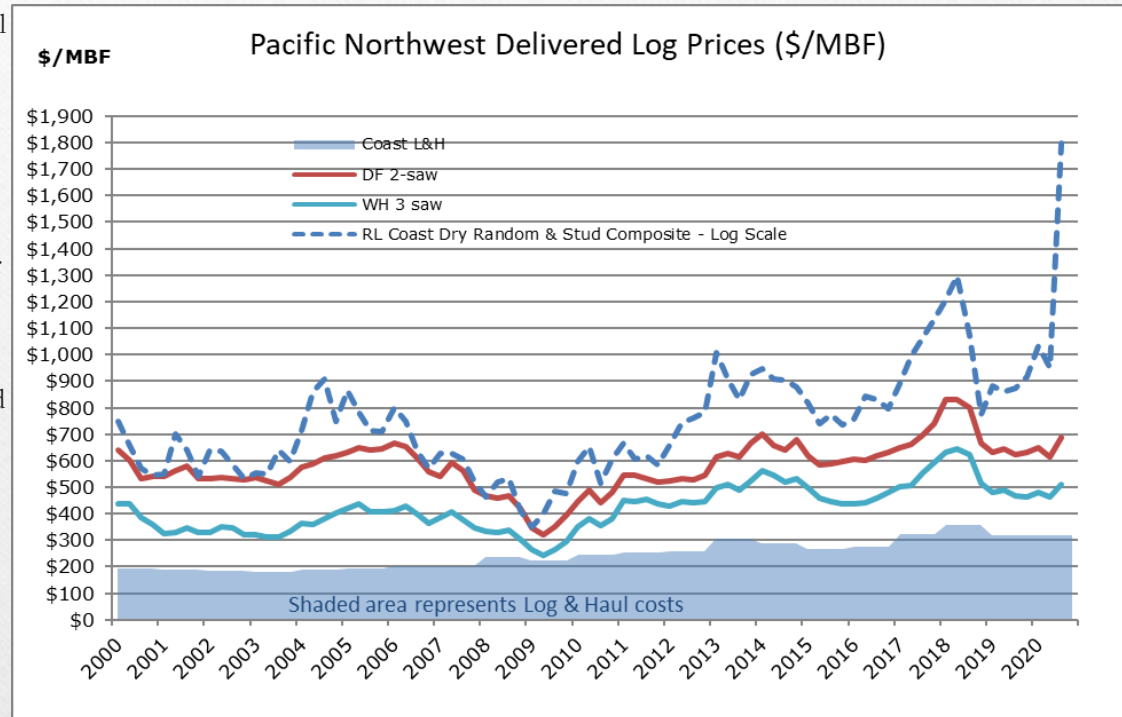
Over the past 10 years, log prices have typically lost \$9/MBF in the third quarter, on average, so this year's gain was a marked improvement. Fourth quarter price movement is usually mixed, with Douglas-fir gaining \$7/MBF and whitewoods losing \$10/MBF.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) entered the stratosphere, increasing \$845/MBF (up 89%). Third quarter lumber prices reflected the demand and supply dynamics due to Covid-19.

Extensive fires throughout the West surpassed 4 million acres in California, more than 1 million acres in Oregon, and over 700,000 acres in Washington, and the fire season is not yet over. Supply chains will be disrupted as access in the forest is limited in the short-term, and salvage operations raise costs and volumes and lower log quality in the intermediate term.

Log & Haul costs were expected to remain relatively flat in 2020, absent the fire situation.

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

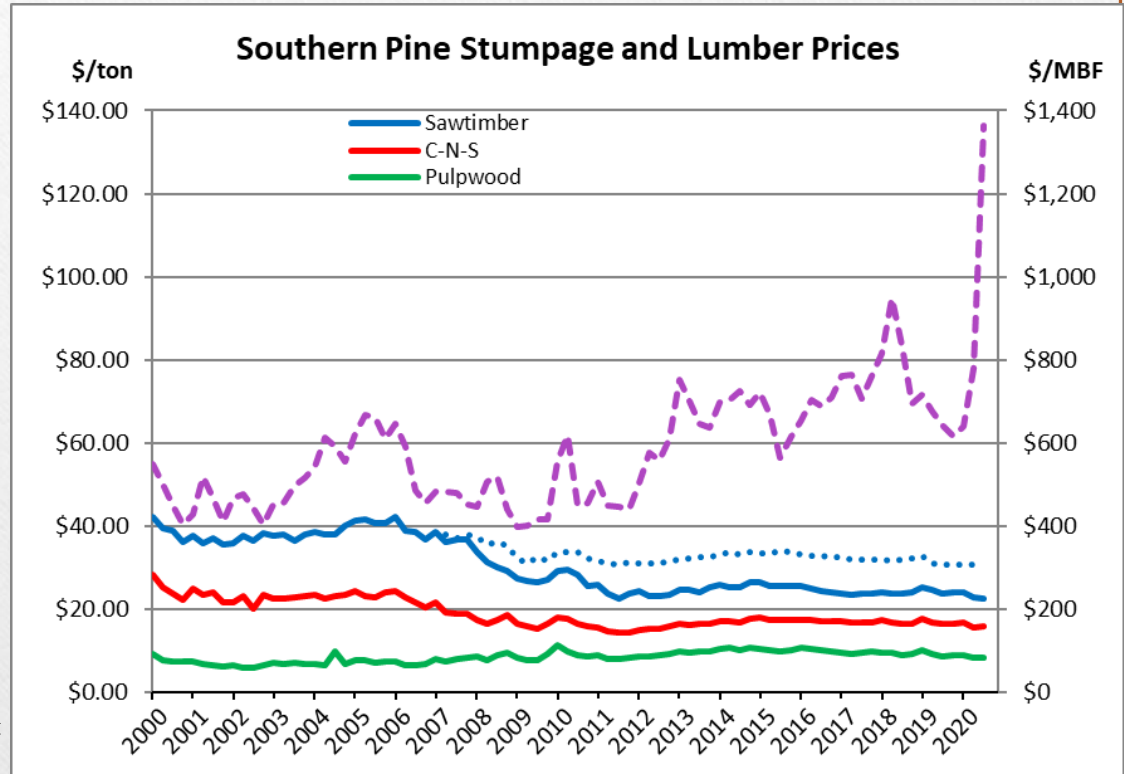
Southern Pine Log Prices

Third Quarter Southern Yellow Pine stumpage prices moved sideways, in stark contrast with significant gains in lumber prices. SYP Sawtimber prices lost \$0.24/ton in the third quarter (-1%), Chip-n-saw stumpage prices were up \$0.30/ton (+2%) and pine pulpwood was down \$0.24/ton (-3%). Relative to full year 2019, PST and CNS prices are down 6-7% while PPW prices are off 12%. Q3 typically sees further price slippage, and 2020 was not an exception, with an active hurricane season exacerbating a challenging and persistent supply/demand situation. Q4 prices typically see only modest gains.

The Random Lengths SYP Lumber Composite, adjusted for lumber recovery, was up 75% in Q3 '20 compared to Q2 '20, and are now 106% above full year 2019 prices.

Sawtimber to Pulpwood price ratios remain tight, averaging 2.8:1 in Q3, up modestly from the 2.5:1 ratio of the last few years. Unfortunately, the improved ratio comes from weaker pulpwood prices rather than stronger sawtimber prices. 2.8:1 is well below the bellwether ratio of >4:1, a level not seen since mid-2008!

My view that SYP sawtimber prices will remain under pressure for an extended period has not changed. The combination of modest housing starts, increased plantation productivity, and incremental improvements in mill recoveries will work against significant gains in southern log prices. **See this quarter's Deeper Dive for more discussion**



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

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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. The difference between the two regions is the “spread.”

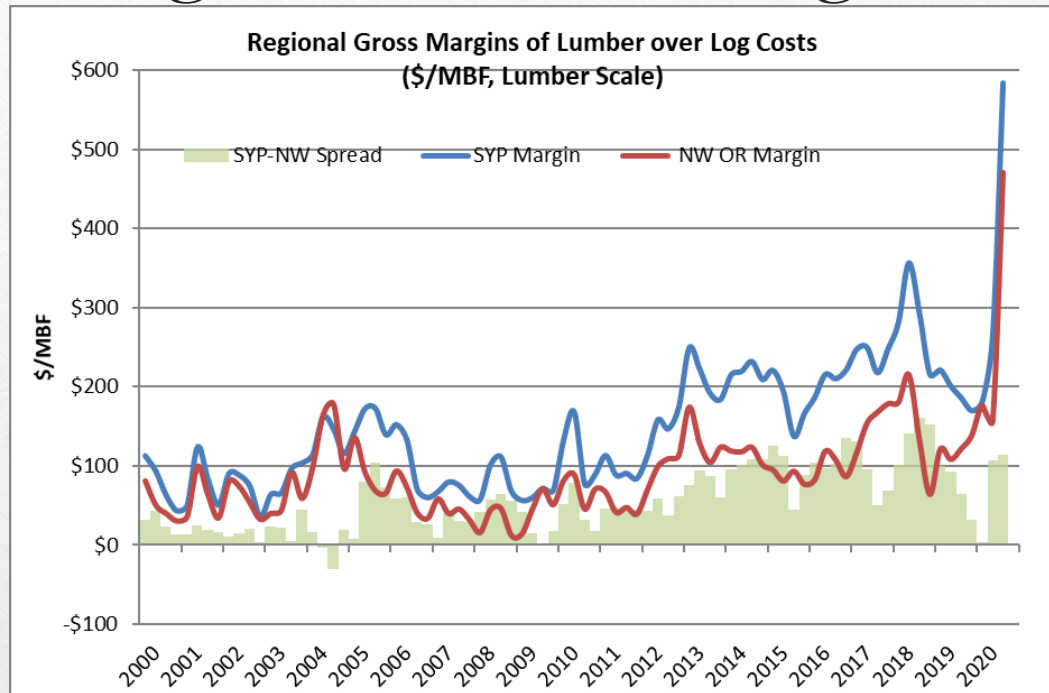
The gross margin spread between Southern and PNW sawmills notched a second quarter in 2020 above \$100/MBF in the third quarter at \$114/MBF, up from an average spread in 2019 of \$72/MBF. Gross margins moved in step this quarter, from \$156/MBF to \$470/MBF in the PNW, and from \$263/MBF to \$584/MBF in the South. Southern sawmills have enjoyed gross margins over \$200/MBF in 22 of the last 31 quarters since 2013, while PNW mill gross margins hit that mark only twice.

Since the beginning of 2012, log export markets and declining Interior BC lumber production pushed PNW log prices to historical highs. In the South, persistent excess inventories of mature sawtimber on the stump have kept downward pressure on log prices, even as lumber prices improved. The net result has been that the gap between the PNW’s and South’s gross margin has swelled to an average of \$83/MBF over the last eight quarters, about 2.5x the 2000-2012 average of \$33/MBF.

As expected, the spread between the PNW and South has returned to the ~\$100/MBF level, and I expect it to remain elevated until standing sawtimber inventories are worked down in the South, which could persist for a very long time, or until expanded SYP lumber production pulls lumber prices down.

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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, WA DNR
Chart & Analysis: WillSonn Advisory

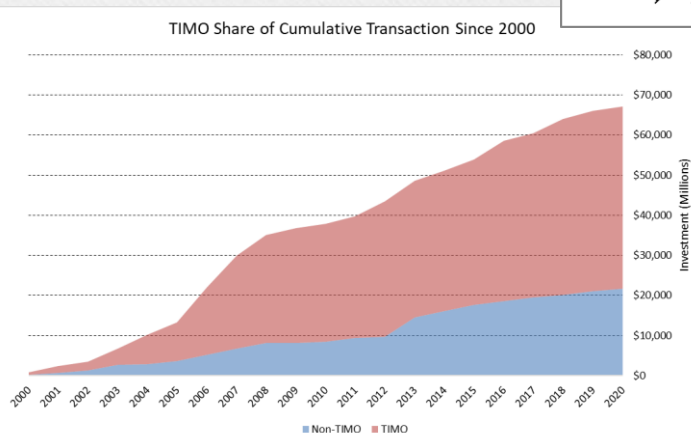
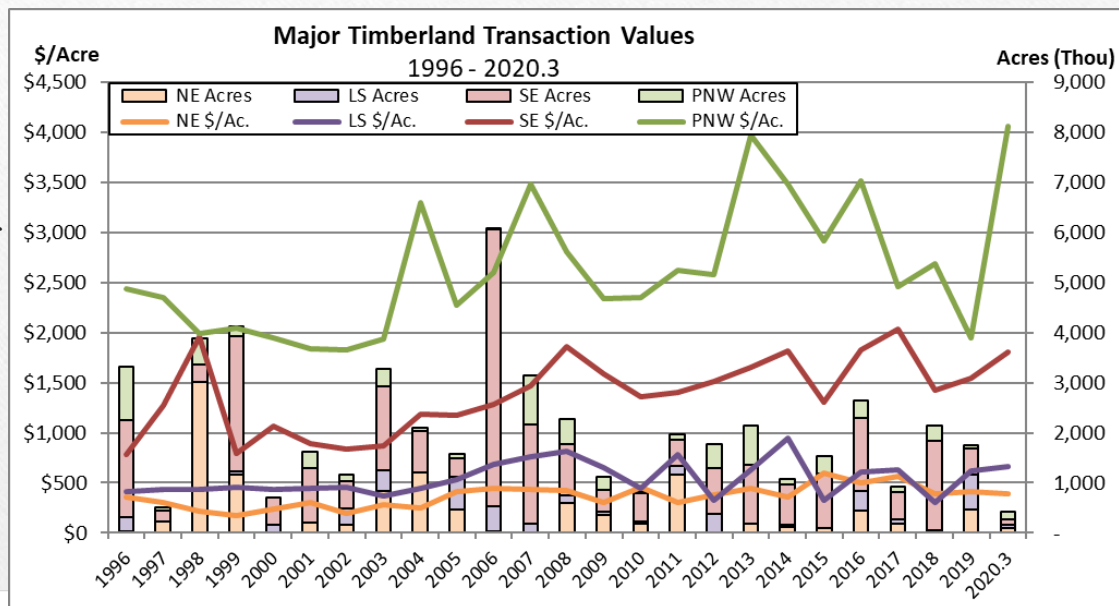
Closings and announced sales in 2019 totaled \$1.99 billion on 2.8 million acres.

Through the first nine months of 2020, (and the first six months of the pandemic) 551,000 acres have sold, for total proceeds of \$1.054 billion. Regional timberland prices have generally moved higher in 2020 and in general, remain off highs from a few years ago. Prices in the Pacific Northwest stand out as significantly higher in 2020, as average values were dominated by the acquisition of Pope Resource by Rayonier.

Activity over the remaining three months of 2020 may be muted as travel restrictions and/or concerns due to Covid-19 hamper due diligence efforts and investor appetite.

By investment sector, Timberland Investment Management Organizations (“TIMOs”) have funded 69% of the acquisitions from 2016 to 2020, well above the 25% captured in the 2013-2015 period. By comparison, TIMO buyers acquired 78% of US timberlands sold (by dollar) in the previous 13 years (2000-2012).

Regional Transaction Values



NE: Northeast LS: Lake States

SE: Southeast PNW: Pacific Northwest

Not Shown: Appalachia and Inland Northwest

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

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Section 2: Deeper Dive



The Twin Peaks in Historical Planting in the US South

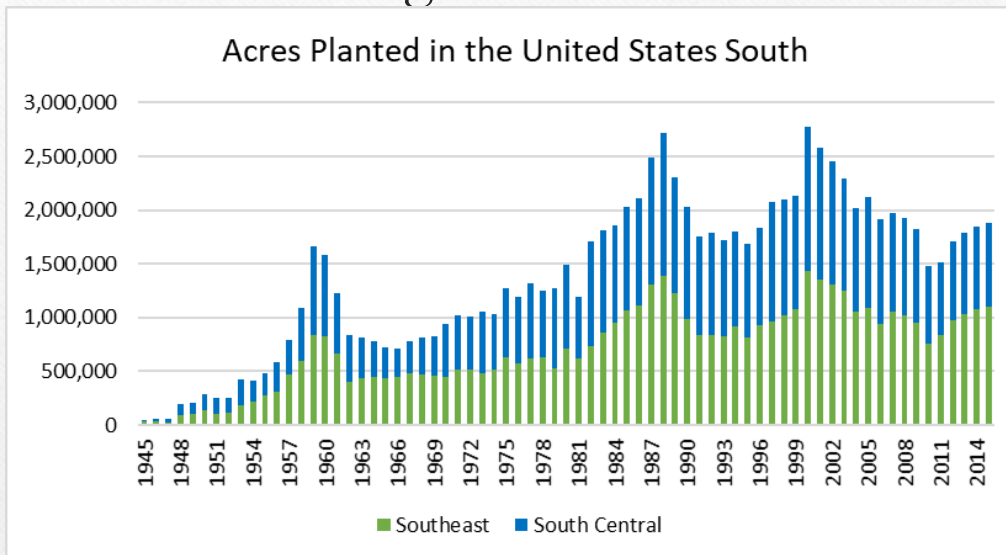
I recently revisited this analysis, using new data provided by the USFS in its anticipated update of their RPA Assessment. With additional data, I was able to update the charts and analysis. As before, I was curious about how the pattern of historical planting in the US South may have impacted southern 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 decade, questions around **the timing and degree of recovery in Southern sawtimber log pricing** continues to be on everyone's mind, both timberland owners and sawmill operators.

As the basis of my analysis, I relied on the USFS, Forest Resources of the United States, 2017, which will support the 2020 RPA Assessment. The planting data is 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.

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Source: USFS 2017 data for the 2020 RPA Assessment

Charts & Analysis: WillSonn Advisory, LLC

On the following pages, I am going to retest 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 earlier (2017) analysis are largely unchanged, and appear on Page 19. Likewise, scenario-specific assumptions regarding yields, rotation ages and grade mix, are largely unchanged from my earlier analysis, and appear on the next two pages. On the whole, I continue to believe that my assumptions are on the conservative side.

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“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. In this scenario, no gains in forest productivity or grade mix over 1970 era levels were assumed.

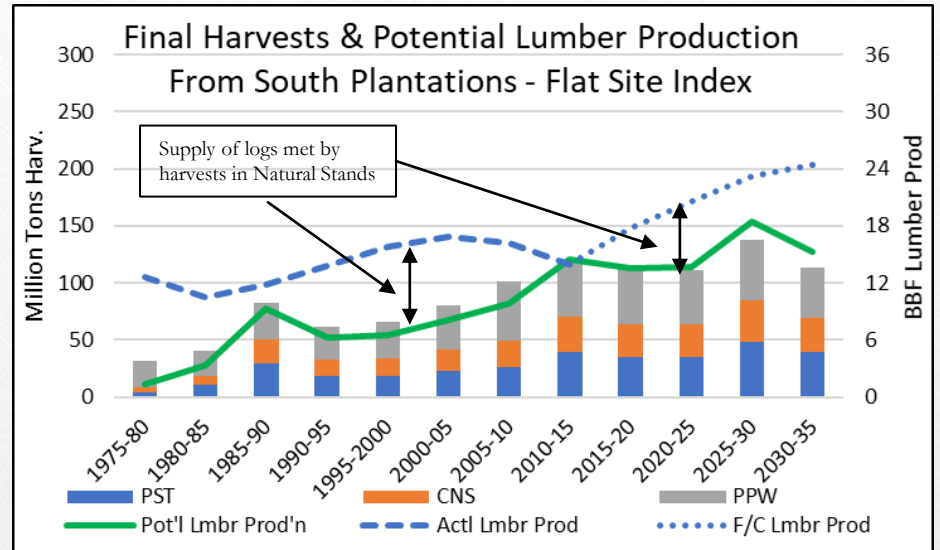
Prior to 2010, the supply of sawlogs from plantations (“Potential Lumber Production”) was unable to meet annual sawmill needs (“Actual Lumber Production”), with the shortfall being met by harvesting in Natural stands and by drawing down inventories of mature timber, which together supplied logs for ~7 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 led 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 ~7 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

WillSonn Advisory, LLC



Charts & Analysis: WillSonn Advisory, LLC

Assumptions about stands planted in the year:	Sawtimber			Pulpwood		
	PST	CNS	PPW	PST	CNS	PPW
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		
Grade from 1950 planting	45%	27%	28%	0%	11%	89%
Grade from 1970 planting	40%	29%	31%	0%	11%	89%
Grade from 1990 planting	40%	29%	31%	0%	11%	89%
Grade from 2010 planting	40%	29%	31%	0%	11%	89%

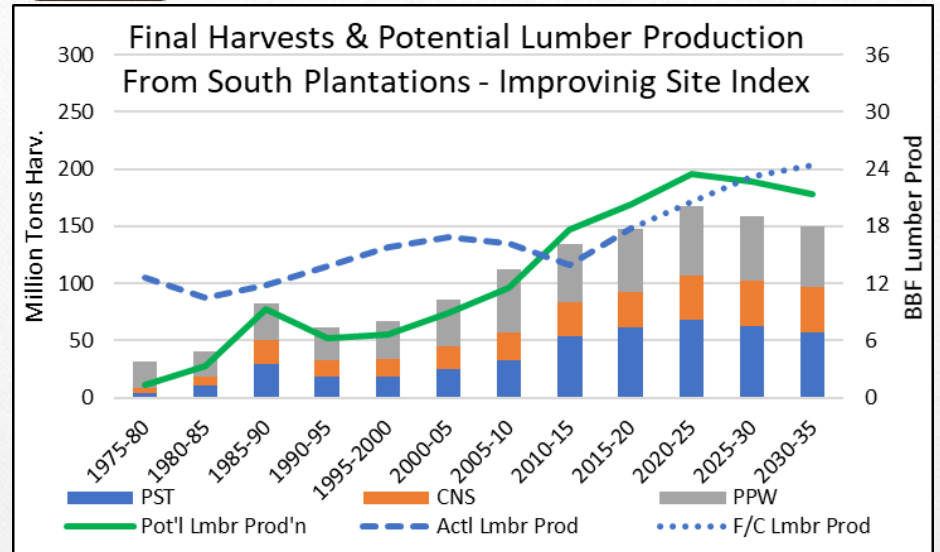
“Improving Site Index” Scenario

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 yield and grade mix assumptions, **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, disappointing 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...



Charts & Analysis: WillSonn Advisory, LLC

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	PPW	PST	CNS	PPW
Grade from 1950 planting		45%	27%	28%	0%	11%	89%
Grade from 1970 planting		40%	29%	31%	0%	11%	89%
Grade from 1990 planting		52%	22%	26%	0%	15%	85%
Grade from 2010 planting		42%	29%	29%	0%	15%	85%

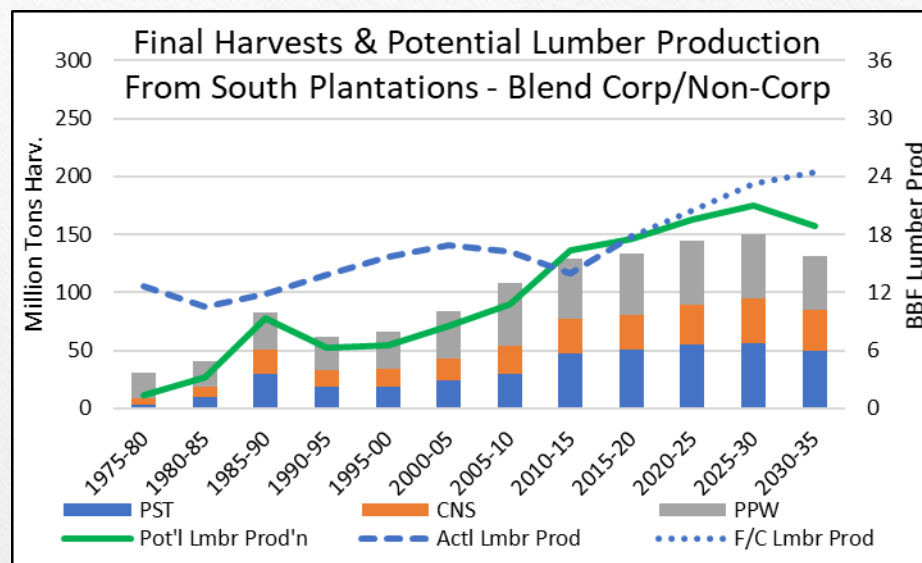
“Blended Corporate/Non-Corporate” Scenario

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 any 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 in one of my other 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 pupmills). To convert tons of logs to MBF, I assumed 7.5 tons/MBF Scribner. One revision made to my 2017 analysis was to gradually increase the Lumber Recovery Factor over time, from 1.45 in the 1975-80 period to 1.85 in the 2030-35 period (it is ~1.80 today)



Section 3: In Case You Missed It



Employment Growth Slows in September

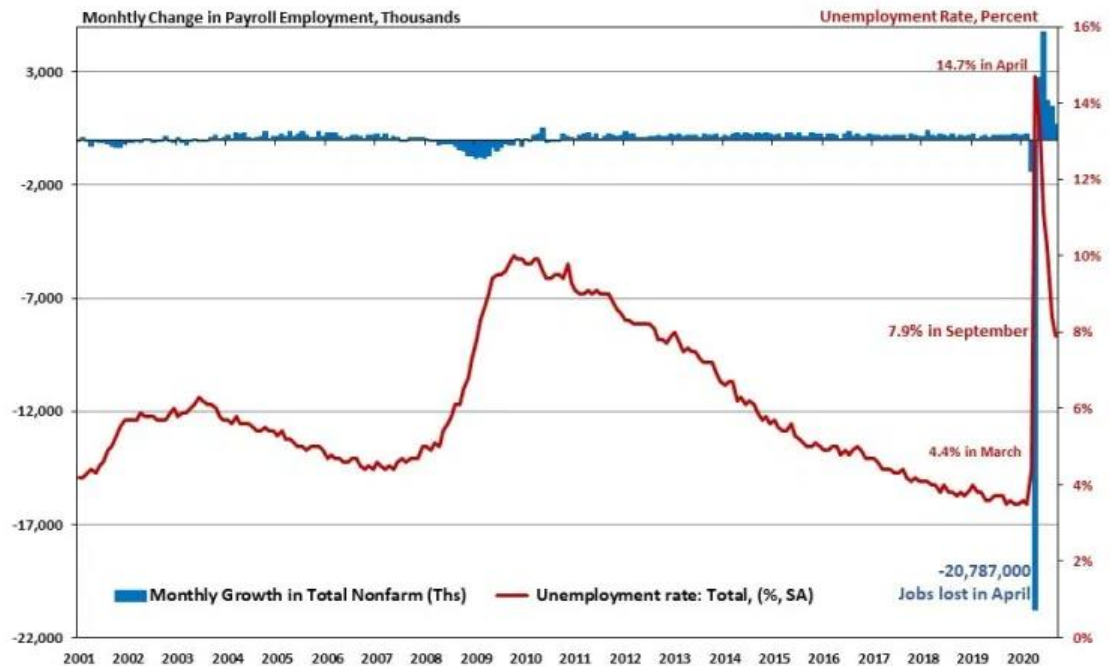
BY JING FU ON OCTOBER 2, 2020

Employment growth slowed in September. Total payroll employment rose by 661,000 and the unemployment rate fell to 7.9% for the month. The U.S. labor market continues to recover from the COVID-19 crisis, but admittedly now at a slower pace.

Residential construction employment rose by 22,100 in September to 2.9 million as housing remains a bright spot. Total construction industry (both residential and nonresidential) employment remained at 7.2 million in September. Nonresidential construction employment rose by 7,400, after two consecutive declines.

The 661,000 monthly gain reported in the Employment Situation Summary for September decelerated after a 1.5 million pickup in August. This was the first month below a one million gain, after four consecutive months above that mark. The previous two months' gains were revised higher. The July increase was revised up by 27,000 from 1,734,000 to 1,761,000, and the August increase was revised up by 118,000 from 1,371,000 to 1,489,000.

Figure 1. Monthly Change in Payroll Employment and Unemployment Rate



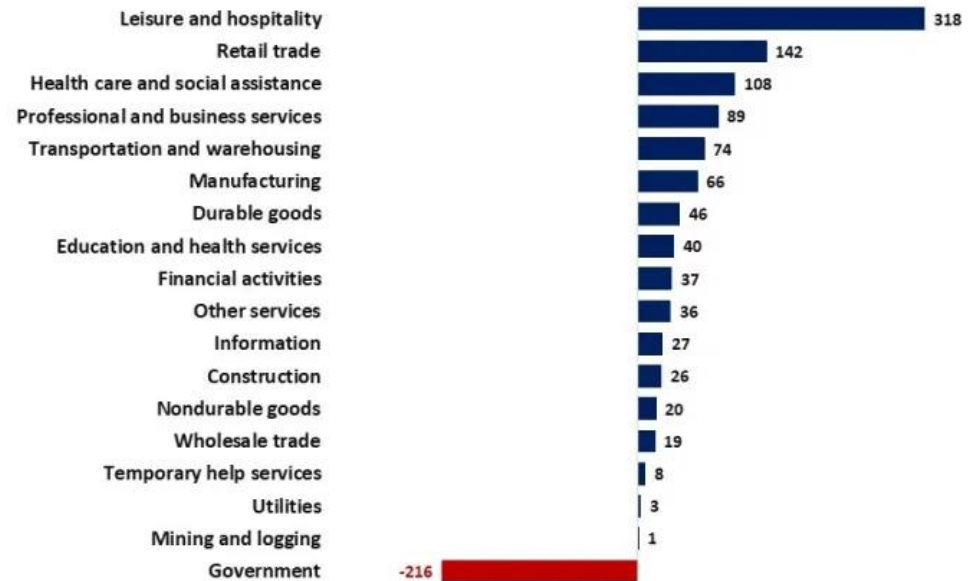
Source: Bureau of Labor Statistics.

After the economy lost 22.1 million jobs in March and April due to the impact of the COVID-19 pandemic and efforts to contain it, about 11.4 million jobs have been created in the past five months, indicating the economy is recovering from the COVID-19 pandemic gradually. In September, total nonfarm employment was 10.7 million lower than its February level.

Meanwhile, the unemployment rate declined by 0.5 percentage point to 7.9% in September. The number of unemployed persons declined by 1.0 million to 12.6 million. Both of them have declined for five consecutive months. The labor force participation rate, the proportion of the population either looking for a job or already with a job, declined by 0.3 percentage point to 61.4% in September and 2.0 percentage points lower than in February.

Leisure and hospitality, retail trade, health care and social assistance, and professional and business services had the significant job gains in September. Employment in government decreased by 216,000 in September, mainly reflecting the decreases in state and local government education. Employment in mining and logging barely changed in September.

Figure 2. September Employment Changes by Selected Industry (month-over-month change, in thousands)



Source: Bureau of Labor Statistics.

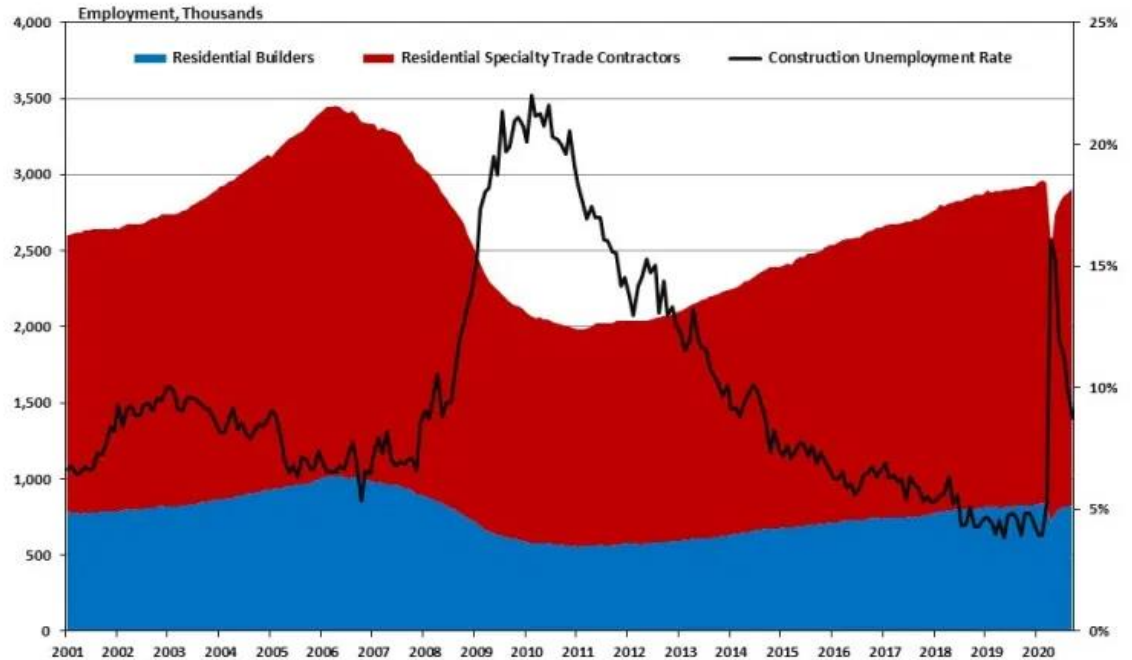
Additionally, according to the Household Survey supplemental data, which come from questions added to the Current Population Survey (CPS) since May 2020, in September, 23% of employed persons teleworked or worked at home in the last 4 weeks specifically because of the coronavirus pandemic. Meanwhile, there are 19.4 million persons reported that they had been unable to work at some point in the last 4 weeks because their employer closed or lost business due to the coronavirus pandemic. Among those who reported that they were unable to work due to pandemic related closures, 10.3% received at least some pay from their employer for the hours not worked.

Employment in the overall construction sector increased by 26,000 in September, after a revised increase of 17,000 jobs in August. The number of residential construction jobs rose by 22,100 in September, after an increase of 25,400 in August.

Residential construction employment now stands at 2.9 million in September, broken down as 827,000 builders and 2.1 million residential specialty trade contractors. The 6-month moving average of monthly job changes for residential construction is -6,767 a month, mainly reflecting the largest job loss in April. Over the last 12 months, home builders and remodelers shed 12,600 jobs on a net basis. Since the low point following the Great Recession, residential construction has gained 919,900 positions.

In September, the unemployment rate for construction workers dropped to 8.7% on a seasonally adjusted basis, from 9.9% in August. After hit 16.1% in April due to the impact of the COVID-19 pandemic, the unemployment rate for construction workers has been trending downward for the past five months.

Figure 3. Residential Construction Employment and Unemployment Rate



Source: Bureau of Labor Statistics.

Note: As pointed out in previous Deep Dives, note that Residential Construction employment, at 2.9 million, is above 2001-04 employment levels, a period during which annual housing starts averaged 1.78 million units, suggesting lower productivity




Section 4:
About
WillSonn
Advisory, LLC



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



<h3>Sectors</h3>	<ul style="list-style-type: none">• Timber, Manufacturing, Bioenergy• Private Industry & Institutional Investment• Corporate Lending• Consulting• Domestic and International
<h3>Experience</h3>	<ul style="list-style-type: none">• Mergers, Acquisitions & Divestitures• Timberland Operations• Finance & Planning, Financial Reporting• Loan Origination & Underwriting• Operations Support
<h3>Expertise</h3>	<ul style="list-style-type: none">• Strategic Planning• Asset Valuations and Due Diligence• Project Management• Contract Negotiations• Budgeting & Forecasting

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



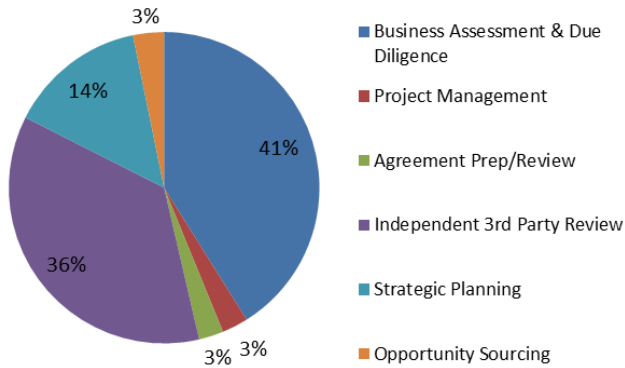
- Validate Acquisition Valuations & Due Diligence Procedures
- Evaluate Existing or Proposed Agreements or Easements
- Interpret Annual Management Plans & Appraisals
- Examine Proposed Transfers of Ownership
- Review Divestiture Timing & Strategies
- Track Investment Performance

Institutional Investor Services

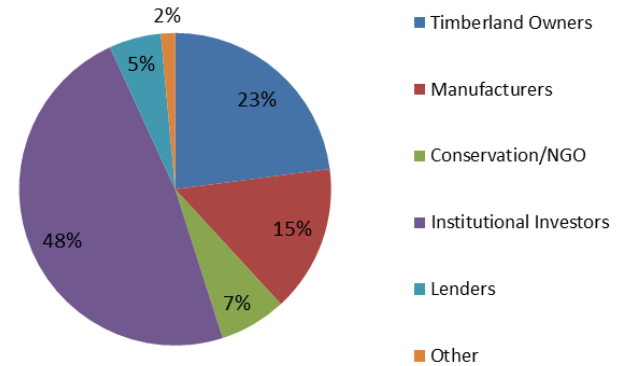


Engagement Profiles

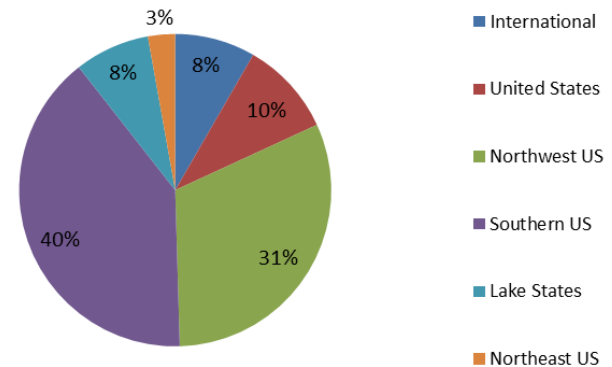
Services Provided 2009-19



Customers Served 2009-19



Regions Covered 2009-19



Since 2009, Will Sonnenfeld has been pleased to provide a broad range of consulting services to dozens of clients across the full spectrum of industry sectors in all regions of the US and abroad.

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

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