



9 January 2017



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Please find attached the latest edition of my quarterly Market Trends. By and large, markets picked up modestly in most regions and sectors of our industry in the fourth quarter, with the notable exception of SYP timber prices. In addition to updated charts and commentary, I've also included three new "deep dives" this quarter, some of which I hope you find interesting.

Best Wishes in 2017,

Will

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Market Trends

4th Quarter, 2016

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



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Section 1: Current Trends



Builder Sentiment

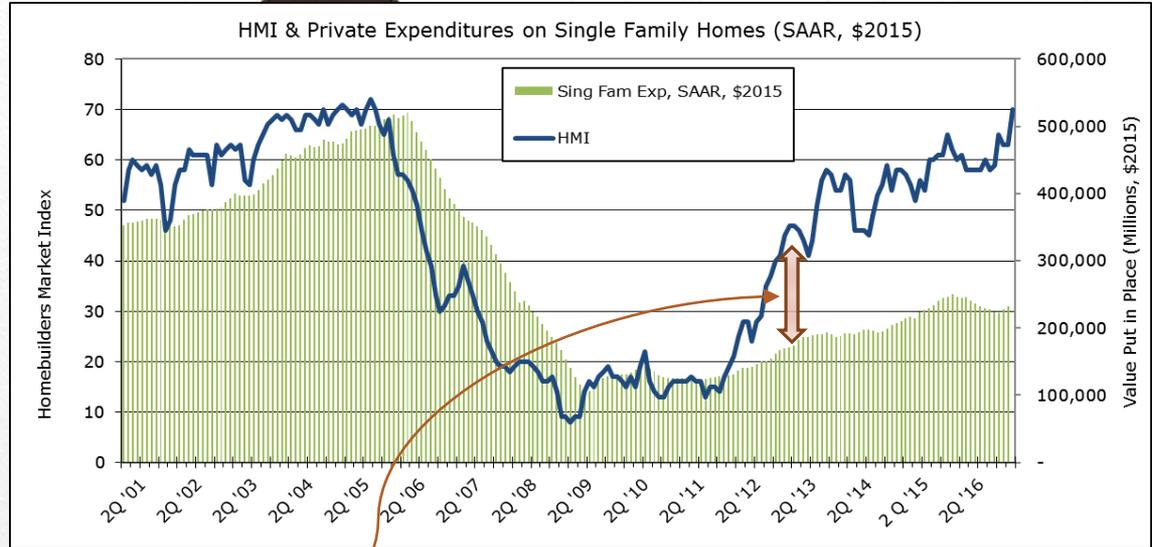
NAHB's **Homebuilder Market Index (HMI)** and **Remodeling Market Index (RMI)** are measures of home builder and remodeling contractor sentiment.

The 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 **HMI** leaped to 70 in December, after dropping to 63 in the previous two months, on par with levels prior to the crash. Historically, the HMI appeared to be a good leading indicator of Private Expenditures on Single Family Housing, but the correlation evaporated during the 2011-12 period, when homebuilders' perception far outpaced reality. Notice the gap on the top chart. The two time series appear to be moving more in step since 2013; however, the gap persists.

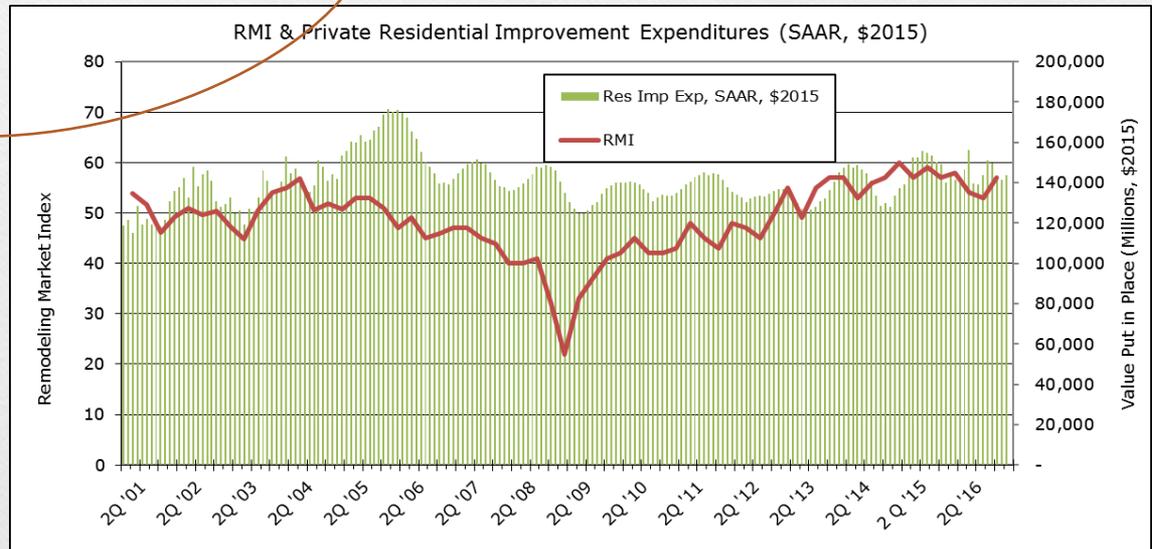
The **RMI** rebounded in the third quarter, rising four points to 57, coming off its lowest level of the past three years in the second quarter. You will notice that improvement expenditures, in real dollars, have been much steadier, compared to new home construction expenditures, even during periods of plummeting Remodeler sentiment.

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



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

Charts & Analysis: WillSonn Advisory



Affordability

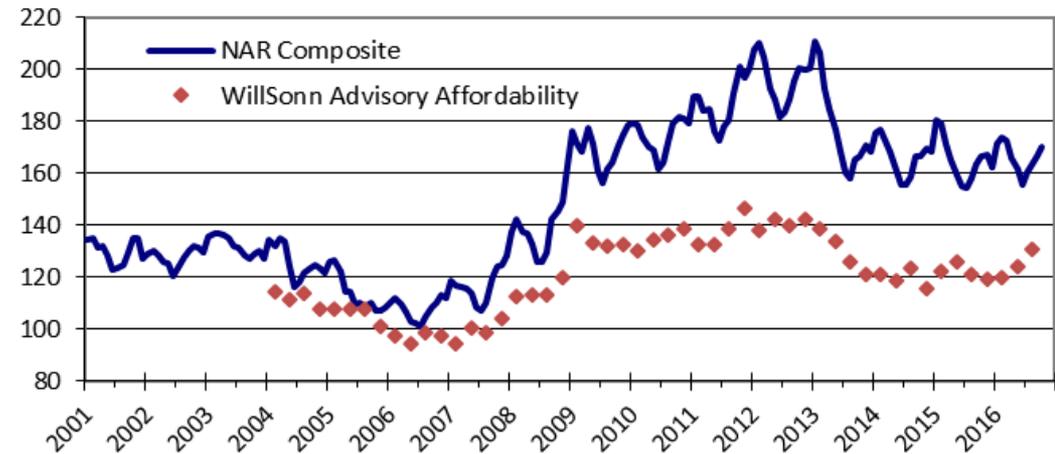
With a reading of **170 in October**, the monthly NAR Affordability Index (top right) is also encouraging, as it continues to hover in the 150-180 range (before the GFC, cyclical peaks were ~140). A reading of 100 means that a family with median income would need to spend fully 25% of its monthly income on a mortgage to purchase the median priced 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.

Last Quarter, I introduced an alternative measure of affordability, one that incorporates the transaction price (rather than list price) of both new and existing homes (not just existing homes). Because the price differential between new and existing homes grew from ~10% prior to the housing bust, to over 30% the past six years, NAR's measure of "affordability" has been materially overstated, in my view. Using NAR's household income and interest rates and my home prices, I calculate an index of 131 in Q3 2016 (versus NAR's 163). Adding mortgage insurance, and the cost of home ownership (insurance, property taxes, etc.) would pull affordability even lower.

When you dig into the three components of the NAR Affordability Index, (bottom chart) you can see that low interest rates have been key to current high affordability readings. Also note that today's existing home prices exceed those of the pre-bust period.

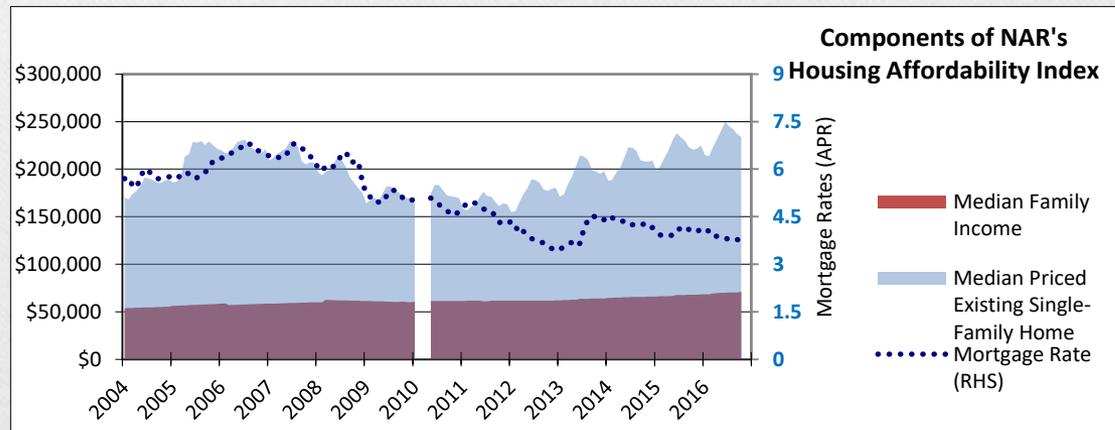
Going forward, growth in household income appears to be gaining momentum as the US reaches full employment, but impending hikes in mortgage interest rates will tend to offset. Other headwinds affecting a household's ability to purchase a home include persistently tight lending standards, growing student debt loads born by first-time homebuyers, and the lack of a non-Agency Residential Mortgage Backed Securities market to free up lender balance sheets.

Housing Affordability Indices



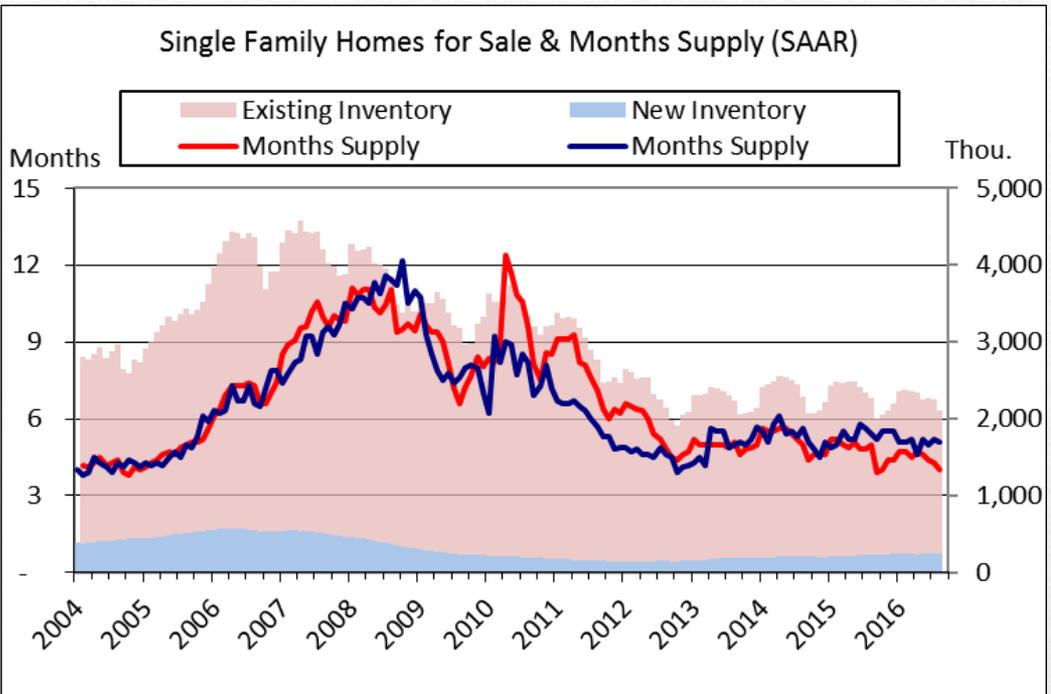
Data Sources: NAR, Census Bureau, Dept. of Commerce

Charts & Analysis: WillSonn Advisory

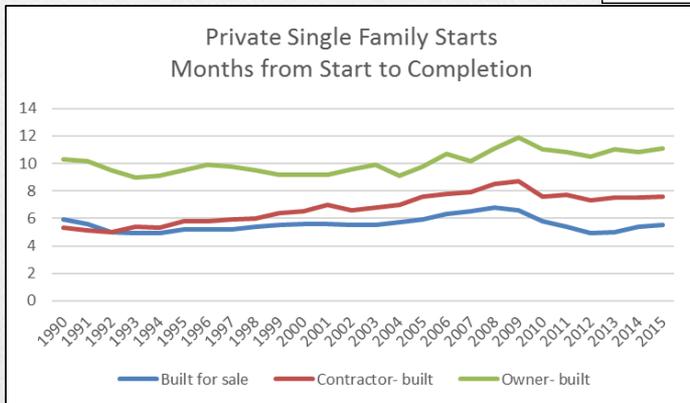


The Pace of Home Sales and Construction

Total Single Family home inventories (New + Existing) totaled 2.103 million units in November, up 108,000 units from December '15, but **169,000 lower than last November**. At the current pace of sales, there are **5.1 months of sales in existing home inventories and 4.0 months of new homes in inventory**, versus a normal 4-4.5 months supply prior to 2006. The low absolute level of existing homes for sale has contributed to the higher home prices discussed earlier. While the inventory of new homes has slowly been improving, it remains very tight. It should also be noted that "New Homes For Sale" includes not only completed construction, but also homes under construction and homes not yet started if listed for sale by the builder. For further discussion of the New Home Sales figures, please see the Deeper Dives section.



Data Source: U.S. Census Bureau, NAR
Charts & Analysis: WillSonn Advisory



The Pace of home Construction varies by who builds the home, but all segments have come off the 2009 peaks. In the chart to the left, we can see that **the average time for construction of homes Built for Sale has been relatively stable, averaging 5.6 months**, whereas homes built for the owner is taking more time. Contractor Built homes (where a contractor was hired as General Contractor ("GC") by the Owner) averaged 7.6 months in 2015, start to finish, 1.5 months longer than its average in the early 1990's. Where the Owner acted as GC, average construction time was 11.1 months in 2015, also 1.5 months longer than its average of the early 1990's. For the last five years, homes Built for Sale made up 72% of all homes constructed, homes built for the landowner by a Contractor made up 15%, and Owners built 7% of the homes. The remaining 5% of homes were constructed as rental properties.

Housing Starts

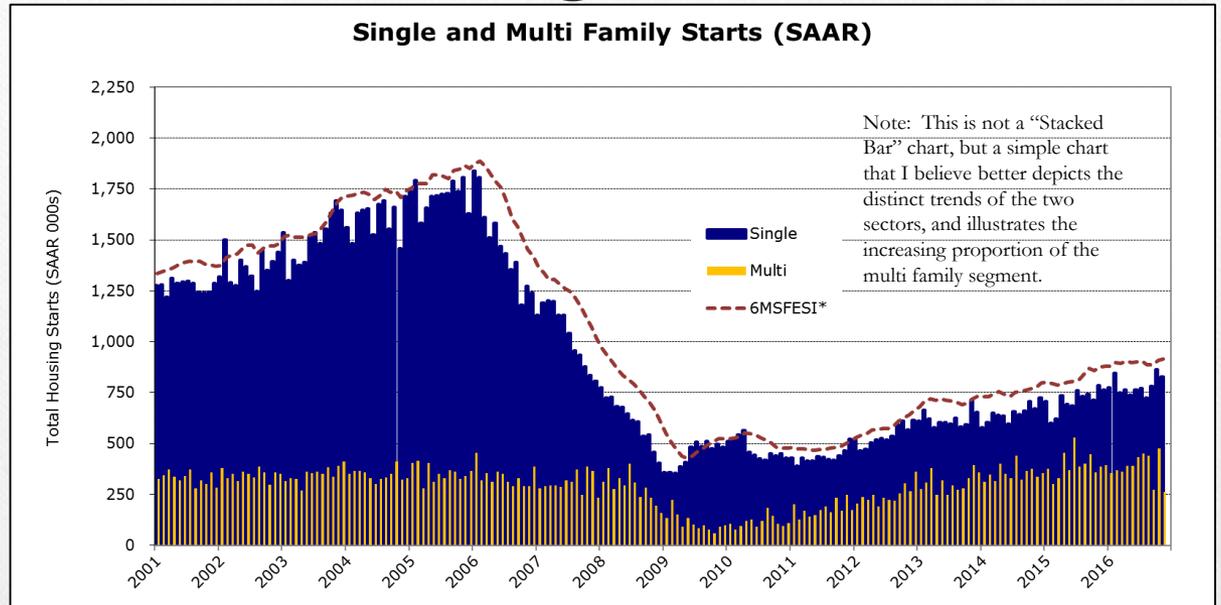
Total Housing Starts registered 1.090 million units in November (SAAR), down modestly from the 2015 pace of 1.112 million units. In November, **Single Family Starts** registered a decent 828,000 units, while Multi-Family Units came in at a weaker 262,000 Units. For the first eleven months as a whole, Housing Starts averaged 1.163 (SAAR), just 5% above 2015.

Total Housing Starts are on track to hit about 1.165 million units in 2016. If underlying demand runs at 1.5 million units per year, that puts **the current net backlog of Housing Starts at 3.96 million units**. Between 2000 and 2006, a surplus of just over 2 million units were built. Since then, a shortfall of just over 6 million units has accumulated.

My Single Family Equivalent Start Index, which recasts a multi family unit into a single family unit based on relative wood use, averaged **916,000 units** over the previous six months, still less than 50% of peak levels in early 2006, but improving. 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.

Average Single Family Home size again slipped lower in the third quarter of 2016, averaging **2,602 sq ft**, 3.3% smaller than 2015's average of 2,691 sq ft, but still 10.8% larger than homes started in the 2009-10 period. Multi-Family Units averaged **1,146 sq ft** in the third quarter, down 0.5% from 2015's average of 1,152 sq ft, and down 1.0% from the average for Multi-family units during the 2009-10 period.

Single and Multi Family Starts (SAAR)

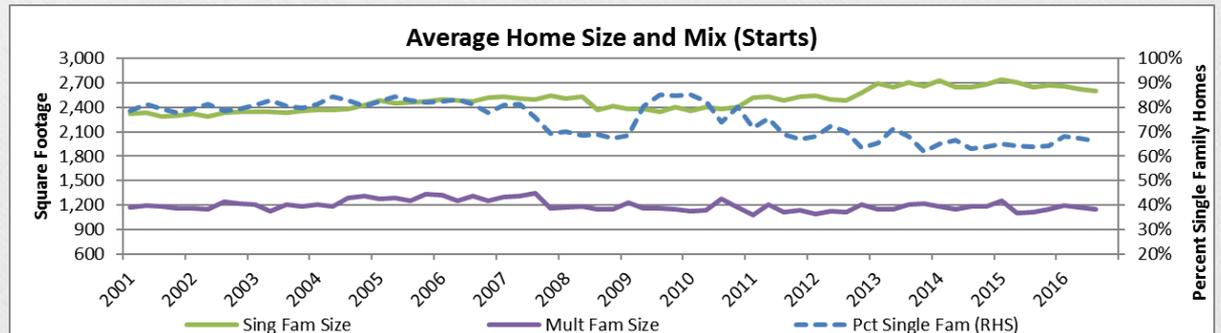


*6MSFESI = 6 Month Single Family Equivalent Start Index

Data Source: U.S. Census Bureau

Charts & Analysis: WillSonn Advisory

Average Home Size and Mix (Starts)



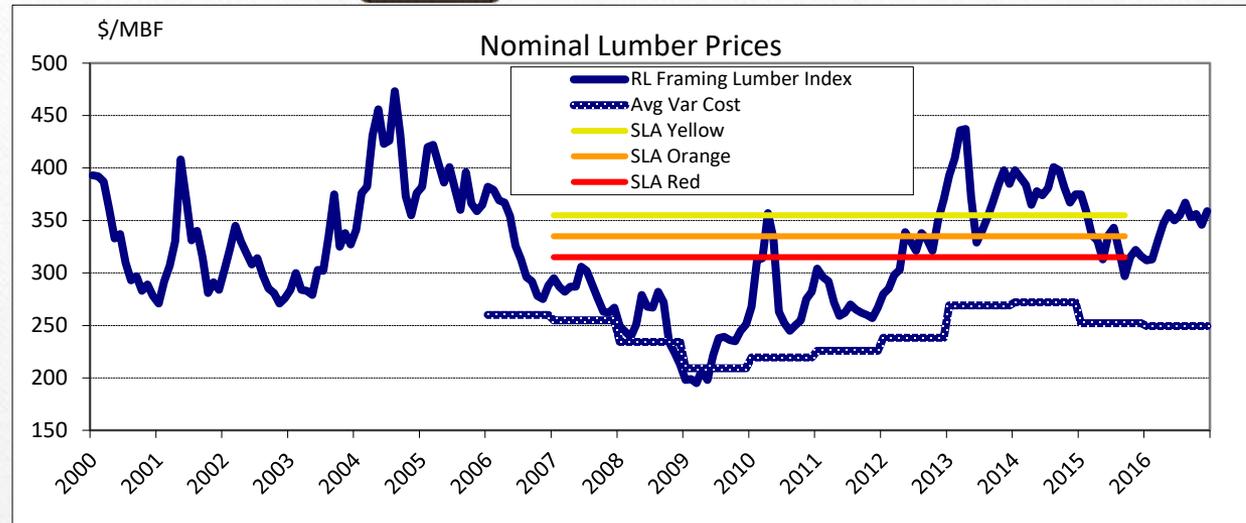
Wood Product Prices

In the fourth quarter of 2016, Lumber prices edged lower, off 1% from the third quarter, but 7% above full year 2015 prices. For the full year, Lumber prices were 5% above 2015. Variable costs are expected to have eased slightly in 2016.

Regionally for the full year, West Coast lumber mills saw 5% higher prices, the Inland region was flat, and Southern mills saw a 7% increase in lumber prices. In 2017, FEA is expecting prices to improve in all regions of the US and Canada, though the South will have more modest price gains.

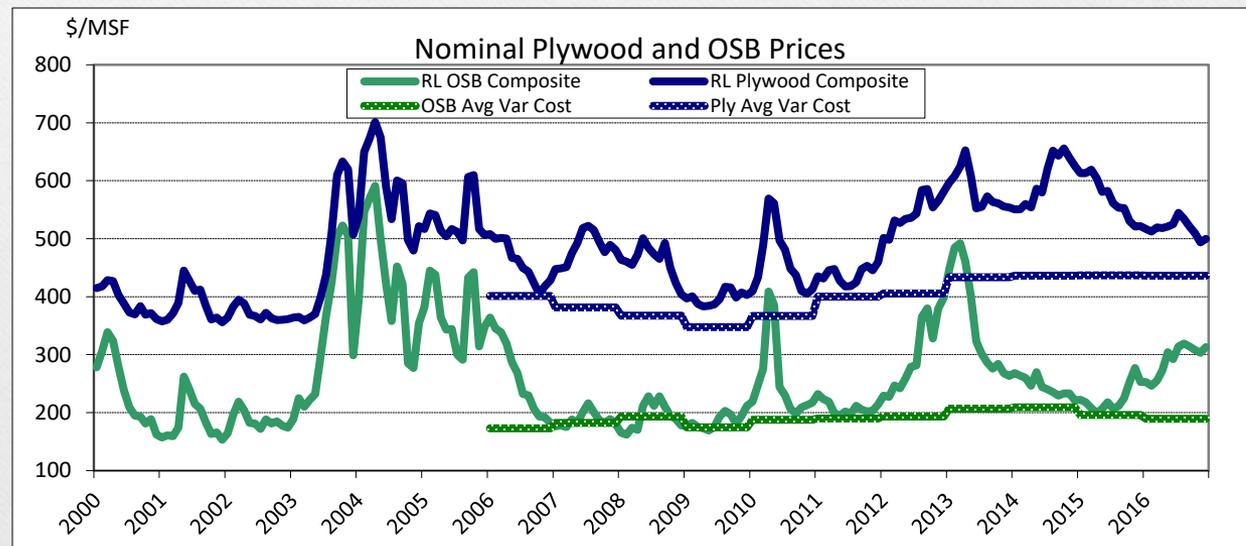
Plywood slipped 6% in the fourth quarter from third quarter prices, and registered a full year decline of 9% from FY 2015 levels. Fourth quarter slides were comparable between Western and Southern producers, while Full Year declines were more pronounced in the South (11% vs 6% in the West). OSB slipped 2% in the fourth quarter from the third quarter, but for the full year, were up 30%. FEA expects to see some modest gains in plywood prices in 2017, while OSB prices are expected to be flat to down slightly.

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Data Source: Random Lengths, FEA

Charts & Analysis: WillSonn Advisory



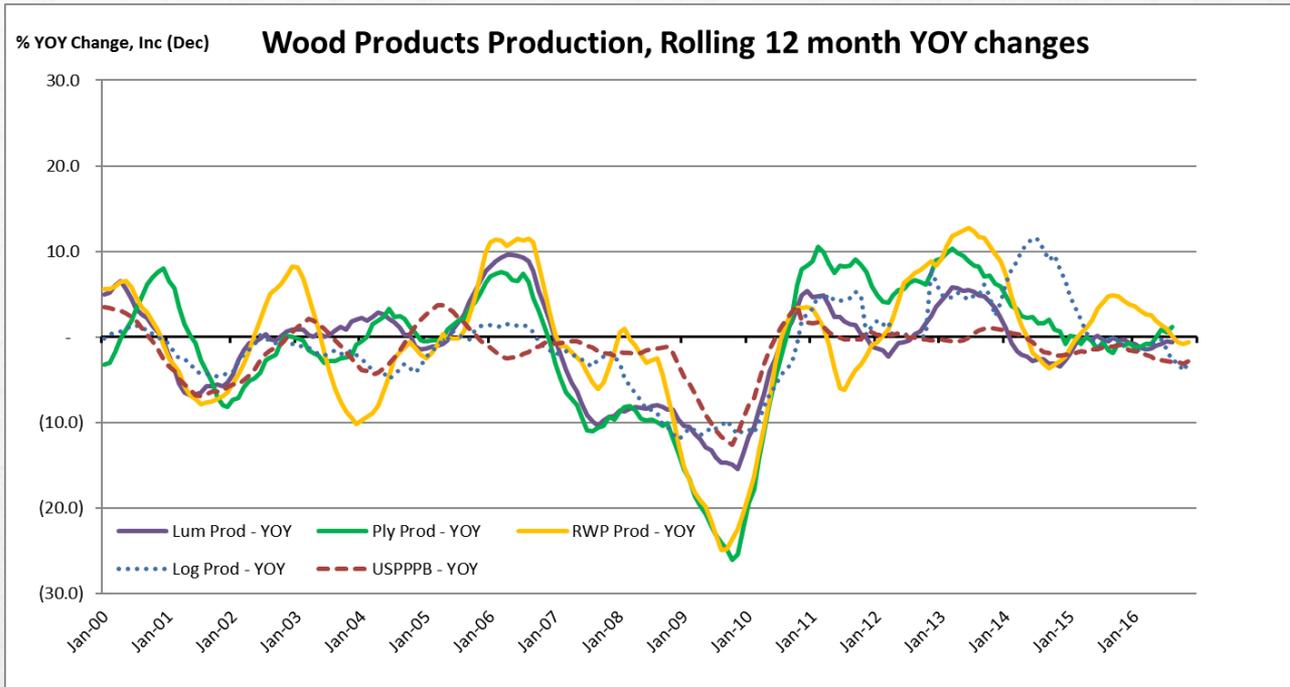
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Wood Products Production

The latest Industrial Production data published by the Federal Reserve indicates that Lumber production was down 0.4% YOY (Sep 2015 through Aug 2016), Plywood production increased 1.1% YOY (Sep 2015 through Aug 2016), and Reconstituted Wood Product production (which includes OSB) was down 0.6% (Dec 2015 through Nov 2016)

The other two production sectors on this chart, Pulp, Paper and Paperboard and Logging, both declined 2.9% YOY (Dec 2015 through Nov 2016).

This chart uses data collected by the US Census Bureau and published by the Federal Reserve. Production is based on units of production for each sector. "YOY changes" are the percent change of the most recent 12 months, compared to the 12 months preceding them. This produces a relatively smooth line where you can compare production for the last one-year period, to the year prior – a continuous (rolling) YOY comparison.



It should be noted that the WWP in December reported that US Softwood Lumber production was up 3.4% in the first nine months of 2016, compared to the same period in 2015. Apart from the differing time periods (I use 12 months rolling, whereas the WWP reports YTD figures), the Census Bureau's definition for NAICS 3211 "Sawmills & Wood Preservation" is much broader, including both softwood and hardwood sawmills, as well as wood preservation facilities. Unfortunately, monthly production data is not reported at the six digit NAICS level for lumber. Likewise, the APA – The Engineered Wood Association reported Q3 YTD (9 month) US Production increases of 0.6% for Structural Plywood and 4.3% for OSB.

Data Source: US Census Bureau, Federal Reserve Board of Governors
 Lumber: NAICS 3211 (Sawmills & Wood Preservation)
 Plywood: NAICS 321211&12 (Veneer & Plywood)
 Reconstituted Wood Products: NAICS 321219
 Pulp, Paper and Paperboard: NAICS 3221
 Logging: NAICS 1133
 Charts & Analysis: WillSonn Advisory

PNW Log Prices

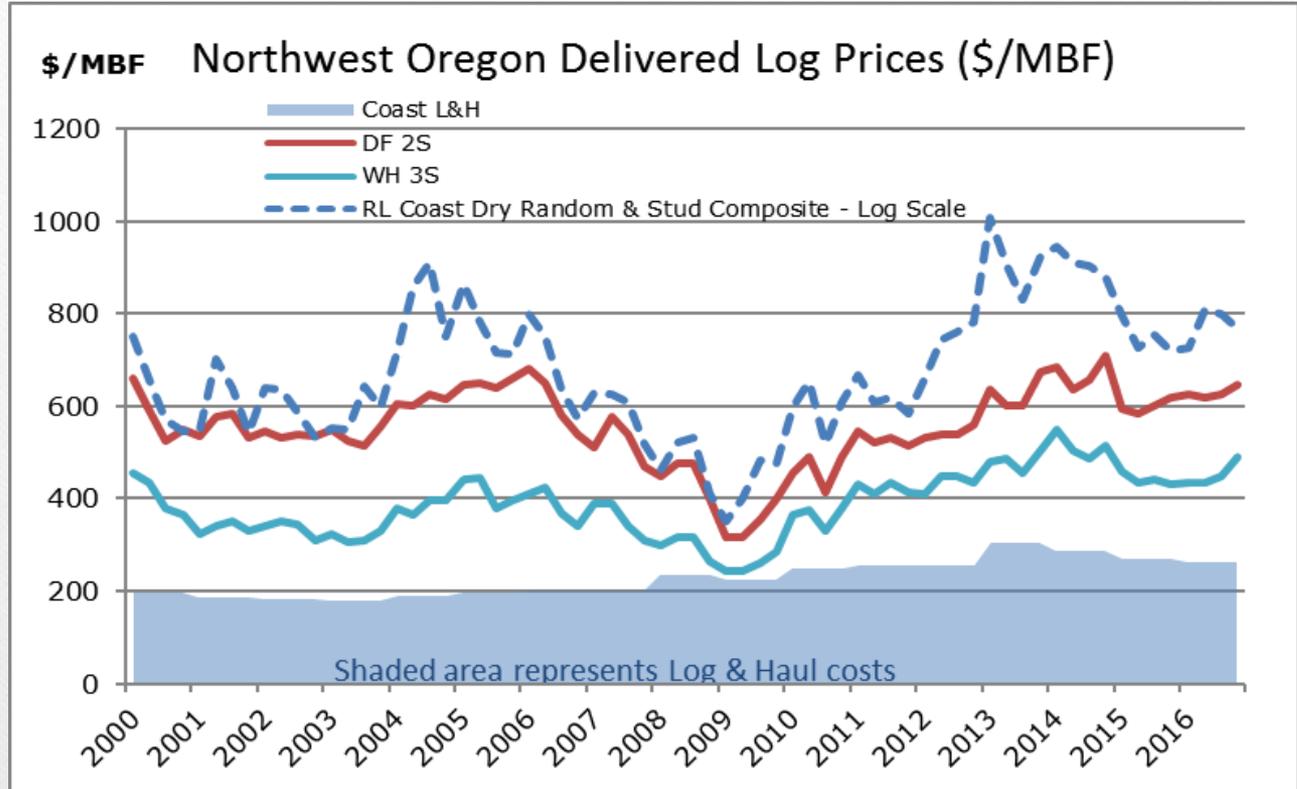
After responding to declining lumber prices and waning export demand in 2015, PNW log prices made modest gains over the course of 2016, on pace with lumber price gains.

In the fourth quarter of 2016, delivered prices for Douglas-Fir 2saw improved \$20/MBF, while Western Hemlock 3saw prices were up \$40/MBF. Compared to full year 2015, fourth quarter prices were up 8% for DF 2saw and up 11% for WH 3saw. For the full year, DF 2saw prices improved 5% and WH 3saw prices gained 3%.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) gave up \$34/MBF in the fourth quarter, but posted a 4% gain for the full year, over 2015 prices.

Converted back to the stump, DF 2saw prices for the fourth quarter were 15% higher than FY 2015 prices, while WH 3saw stumpage prices were 31% higher in Q4.

For the past three years relative to the 2004-6 period (when delivered DF log prices were comparable), higher Log and Haul costs have eroded ~\$80/MBF of net stumpage value.



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

Southern Pine Log Prices

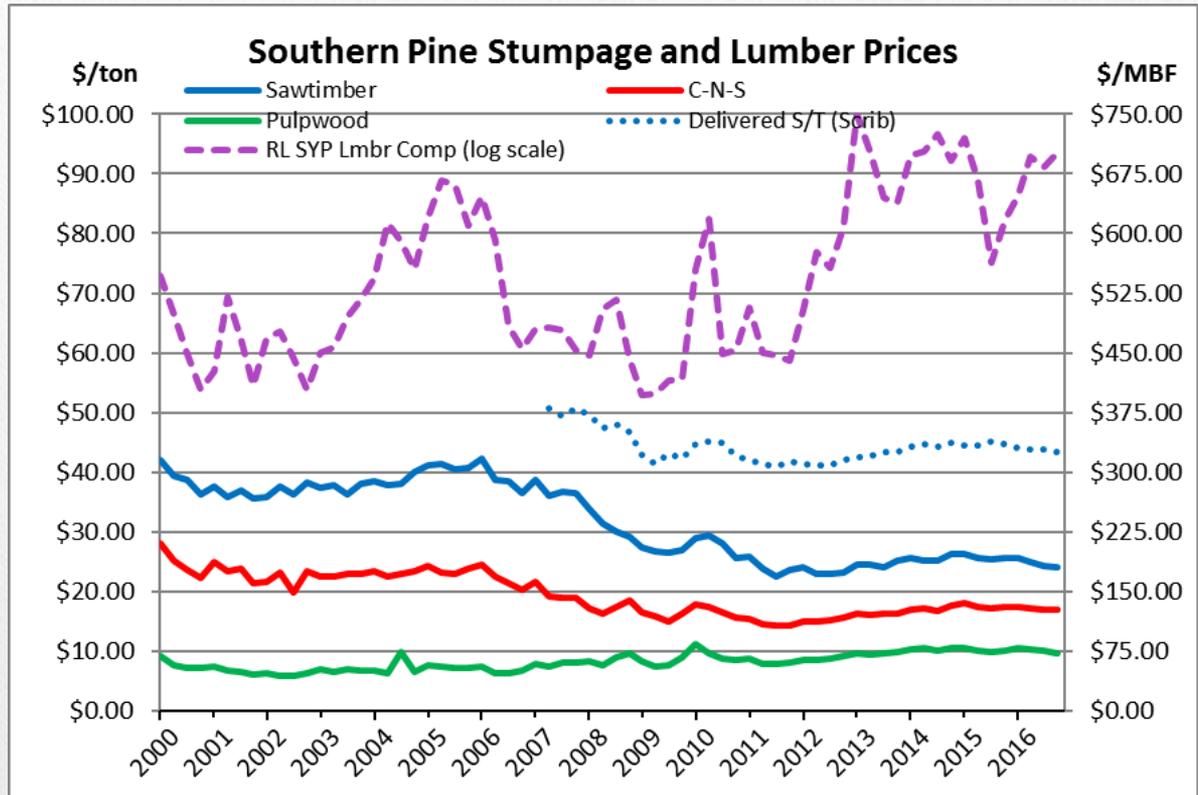
2016 Southern Yellow Pine (“SYP”) sawlog stumpage prices were 40% below their 2005 peak, and comparable to 1992 levels (pre-Northern spotted owl impact). By contrast, lumber prices (log scale) were 5% higher than 2005.

SYP sawtimber and chip-n-saw stumpage prices drifted lower for the fourth quarter in a row, coming in 6% and 3% below the dismal FY 2015 average, respectively. Concurrently, the Random Lengths SYP Lumber Composite, adjusted for lumber recovery, was up 9% in Q4 compared to the average FY 2015 price. For the year, sawtimber was down 4% and CNS was off 2%, while lumber was up 6%.

Pine Pulpwood prices slipped below \$10/ton in the fourth quarter, 5% below 2015 prices. With rising demand from pellet producers and thin residual chip supplies, full year 2016 Pine Pulpwood prices remained even with 2015.

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 2012-16 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.



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

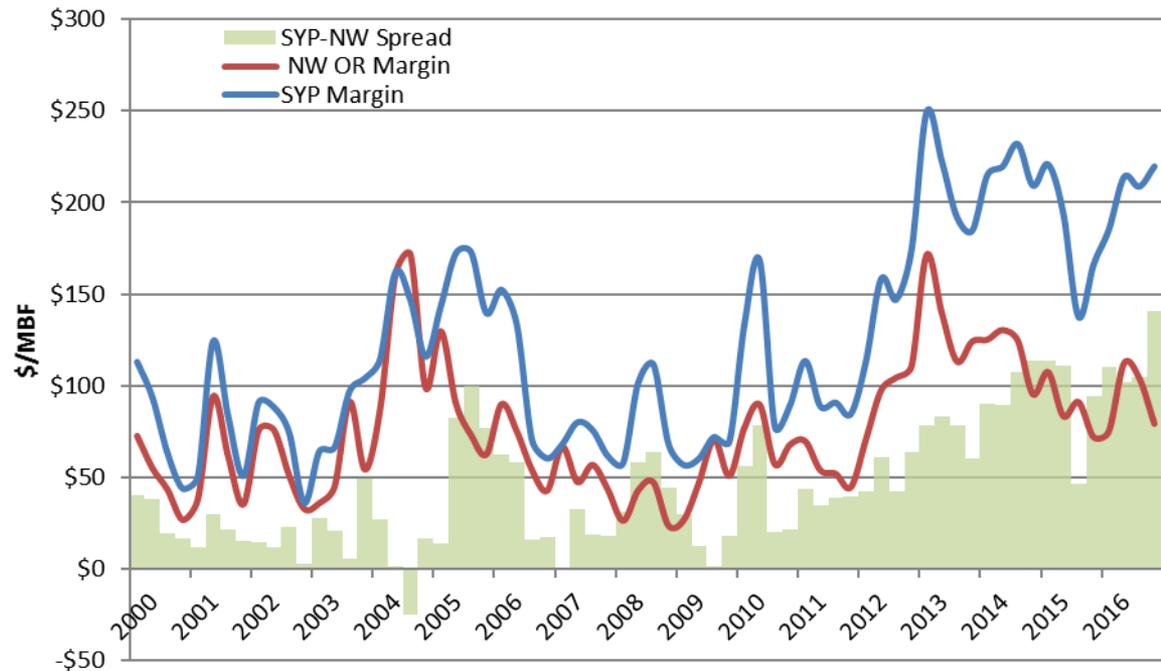
Regional Gross Margins

So what does the data on the previous two pages suggest about the relative Sawmill Gross Margins (lumber price minus delivered raw material costs) in the Northwest and South?

In this chart, the correlation between the two regions is pretty apparent (with an R-square of .65). From 2000-2011, the average spread between the regional gross margins was \$30.42/MBF. But 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 \$103/MBF in the last two year time period, more than 3x the 2000-2011 average. It's no wonder that acquisitive lumber producers, mostly Canadian, have focused their mill purchases in the South.

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.

**Regional Margins of Lumber over Log Costs
(\$/MBF, Lumber Scale)**



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

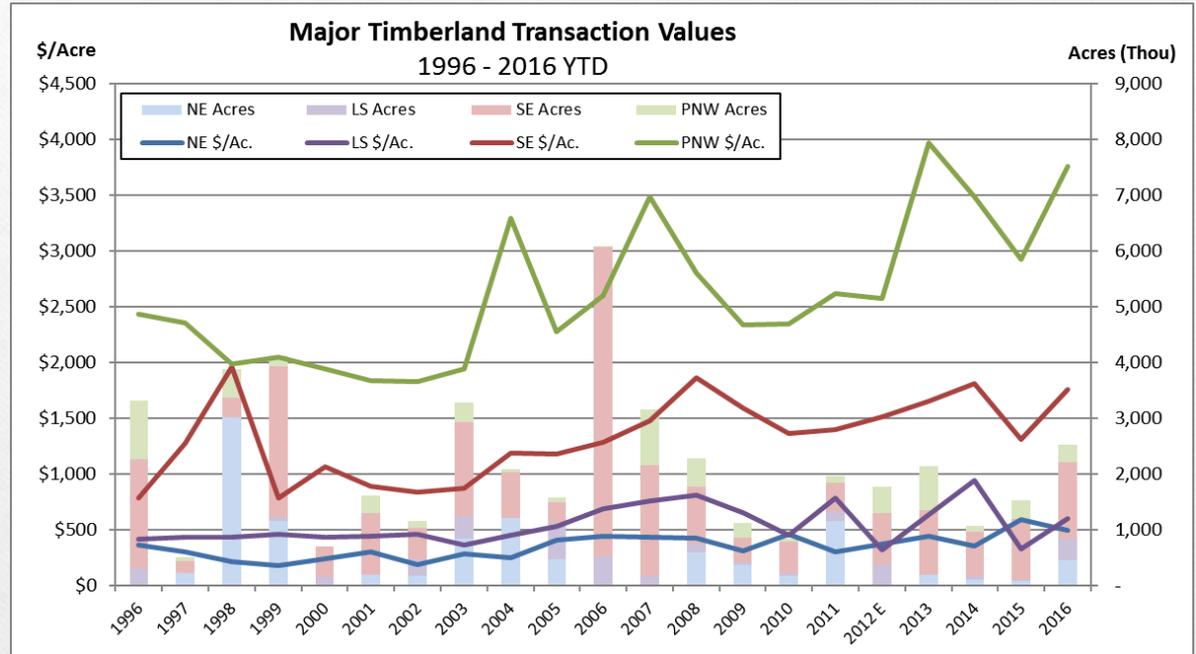
Regional Transaction Values

When all of the 2016 transaction details revealed, I expect timberland prices to finish well above 2015 averages. Compiling the announced transactions as of December, I count **more than 2.8 million acres traded hands, for a value close to \$4.4 billion**. These totals include Appalachia and Inland transactions not shown on the chart. The most notable change to Timberland markets has been the resurgence of the **TIMO buyers**, who, by my estimation, **purchased 83%** (by value) of the **timberlands in 2016**. This compares to 25% of purchases in the three years from 2013-2015. In the prior 13 years (2000-2012), TIMO's had acquired 78% of the timberlands sold. I expect to see a large volume of timberlands hitting the market in the next two years, some of which may be poorly positioned, so I won't be surprised to see lower values, a function of both increased supply and probably lower intrinsic value.

While differences in timber quality and markets make year to year comparisons tricky, it is safe to say that during the Great Recession, timberland values softened across all regions, due primarily to higher discount rates employed by buyers, and lower near-term log prices. **Furthermore, if the values bid on failed ("no-sale") offerings (more common 2009-2014) were factored in, timberland values would have been even lower.**

It is worth noting that seemingly weak 2015 timberland transaction prices were heavily influenced by "challenged" offerings (lower quality forests and/or forests in lower quality markets). A couple cases in point: in the US South, fully 65% of all timberland sold in 2015 was in Florida, at an average price of \$1,238/acre; in the PNW, 41% of the acres sold were in California, at an average value of \$1,696/acre.

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NE:Northeast LS:Lake States SE:Southeast PNW:Pacific Northwest

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

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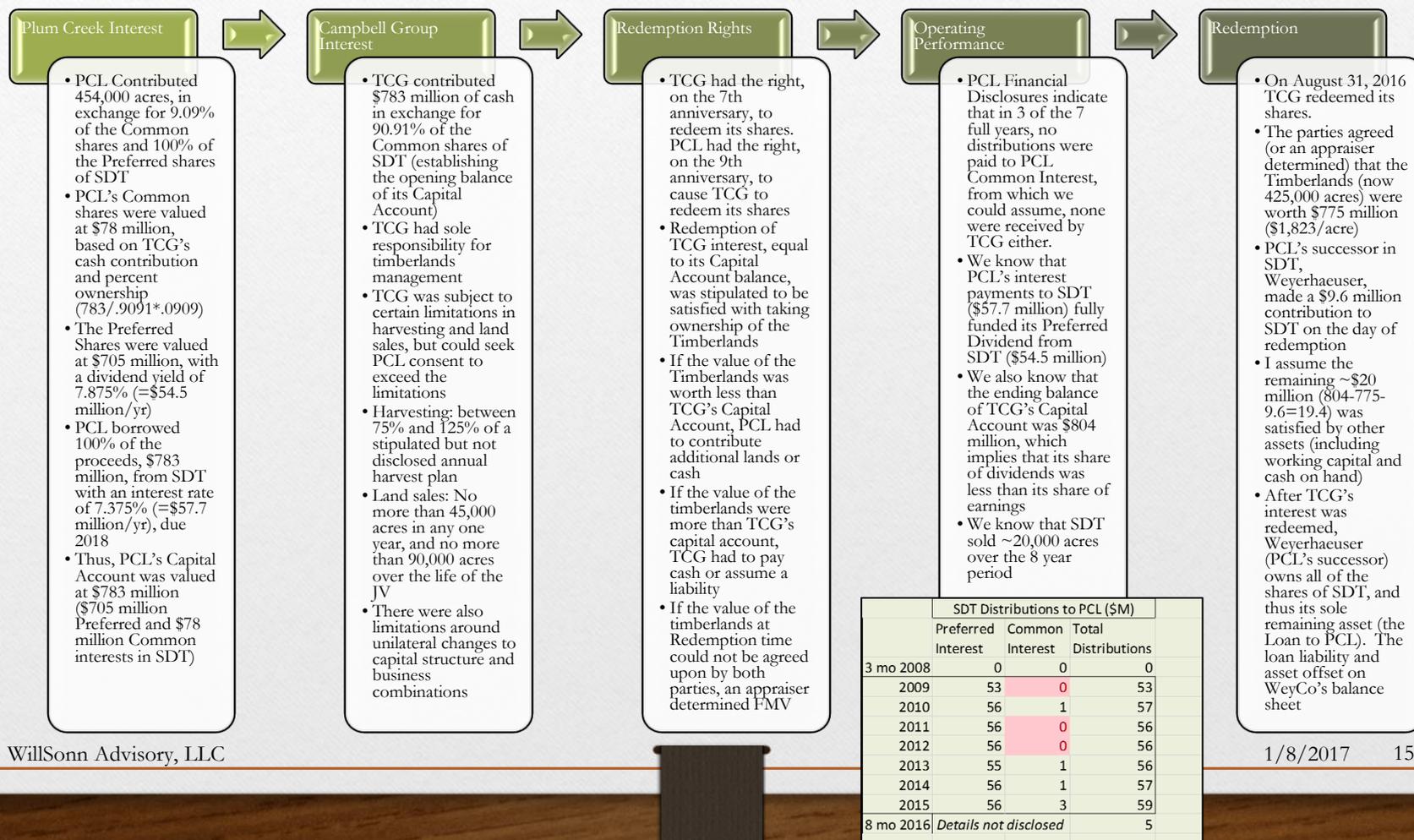


Section 2: Deeper Dives



Southern Diversified Timber, LLC Case Study

On October 1, 2008, Plum Creek (“PCL”) and The Campbell Group (“TCG”) entered into what was widely heralded as an innovative structure. The joint venture, named Southern Diversified Timber, LLC (“SDT”) was formed, and as anticipated, was recently dissolved on August 31, 2016. As I tried to understand the deal, I reviewed numerous Plum Creek and Weyerhaeuser SEC filings, and thought you might find it interesting to recap the structure, summarize the performance, and detail the recent redemption...



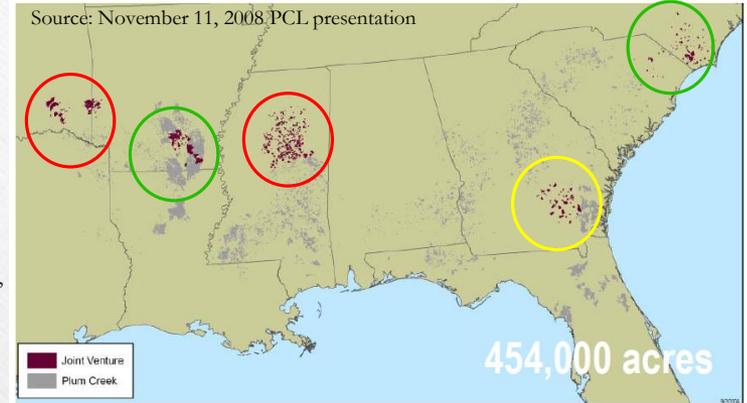
	SDT Distributions to PCL (\$M)		
	Preferred Interest	Common Interest	Total Distributions
3 mo 2008	0	0	0
2009	53	0	53
2010	56	1	57
2011	56	0	56
2012	56	0	56
2013	55	1	56
2014	56	1	57
2015	56	3	59
8 mo 2016	Details not disclosed		5

Southern Diversified Timber, LLC Case Study (Continued)

There are some additional details which add a bit more color to the transaction... and beg a few questions.

Where exactly the Timberlands were located is interesting:

- Unfortunately, the exact SDT acreage distribution by state was not formally disclosed, and neither were PCL's 2008 land sales by state, so this is just an approximation.
- However, by comparing state by state ownership figures from PCL's 2007 and 2008 10-ks, and adjusting for land acquisitions (but not sales) made during 2008, we can still get a good idea of the acreage by state.
- A map of the SDT lands also provides important clues about the location of land within each state. **I have added the circles on the map, to convey the relative values of each region**
- **Oklahoma: ~20%** (very low site and poor markets); **Arkansas: ~25%**, some of which was along the OK border; **Georgia: ~20%**, all in the lower coastal plain (dominated by slash pine); **Mississippi: ~25%**, all located in the northern half of the state (lower site, lower prices); **North Carolina: ~10%**, all in the lower coastal plain, higher site land; and **South Carolina: less than 5%**, lower coastal plain, up by the NC border.
- At first blush, the headline value of \$1,725 (assuming \$783 million) seemed to be on the high side of reasonable, but after seeing where the land was actually located, as well as other facts (detailed below), the going-in valuation appears to have been quite generous.



Other facts about the Timberlands (all found in PCL disclosures):

- The timberland's **average stocking was ~7% below** PCL's average southern lands (so ~34 tons/acre, compared to PCL's average of 37 tons per acre)
- The timberlands contained **only 1% HBU/Recreation** (versus 15% for all of PCL's remaining Southern acres).
- PCL's book basis on the contributed timberlands was \$174 million.
- In 2007, PCL harvested 1.4 million tons from the 454,000 acres, and the same amount in the first nine months of 2008.
- The sawlog share of the 1.4 million tons "was slightly greater than 50%" in both years, according to PCL's 2008 10-k, better than PCL's mix on its other Southern lands

What value did TCG really pay for the timberlands?

- Assuming that PCL and TCG contributed equally to SDT, then one could conclude the timberlands were valued at \$783 million (\$1,725/acre).
- But for TCG, all they got for their \$783 was a 91% interest in the timberland's cash flows (for the next 7-9 years), so arguably, they paid something approaching $(783/.91) = \$860$ million (or 1,895/acre). How close would depend on their hurdle rate and wood flow plans.
- To be sure, when the JV wound down, TCG did get all the land, and at the end, they also got a little cash bump from Weyco... but foregoing 9% of the cash flows for the first 8 years was not immaterial, about \$6 million. My analysis, which admittedly incorporates numerous assumptions, suggests **TCG achieved a total IRR of about 1.3%**

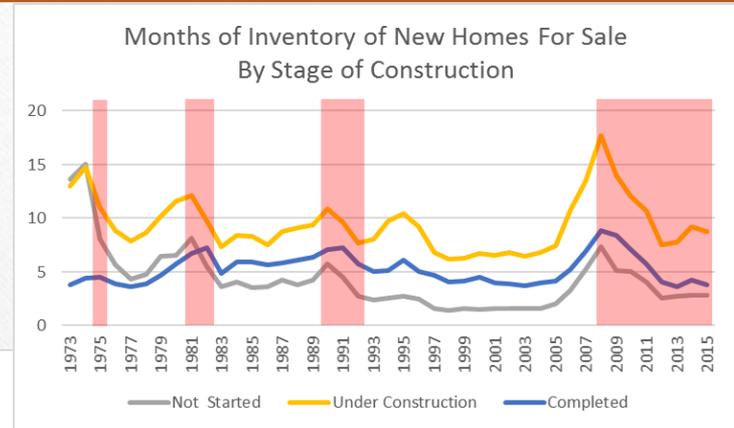
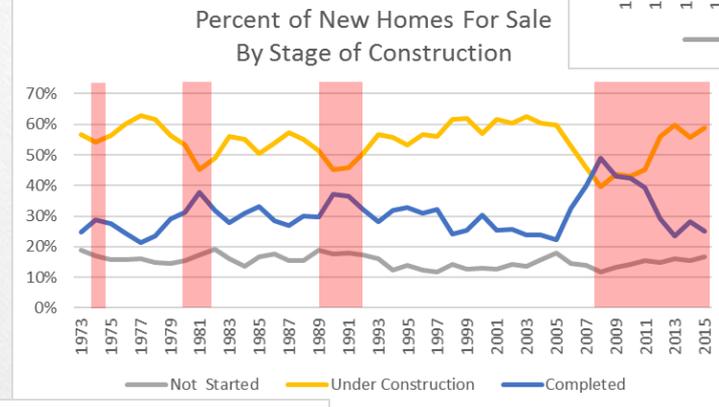
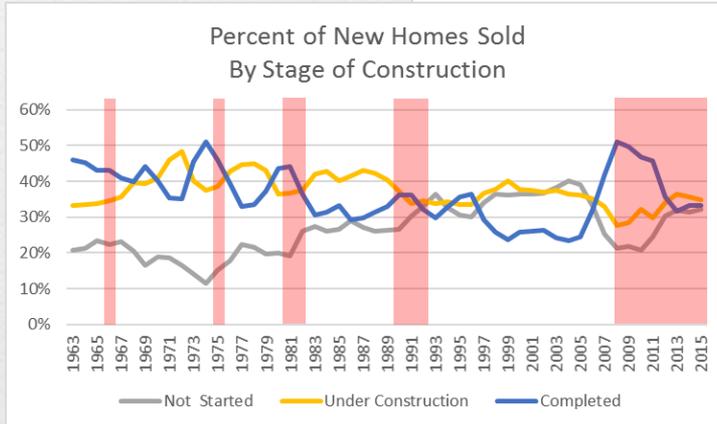
Why would PCL bother with such a convoluted structure?

- The 454,000 acres were all former Timber Company (G-P's letter stock), subject to a Built in Gains Tax through 2011 (for 10 years following the merger)
- By retaining an interest in the asset, PCL was able to avoid recognizing the transaction as a sale at the time
- By the time the JV was scheduled to unwind 7-9 years later, 2011 would be way in the rear-view mirror, and no taxes would be owed on the sale (benefit of being a REIT)
- Had a sale been recognized in 2008, the tax on the built in gain would have been ~\$100 million, according to PCL disclosures in its SEC filings
- In addition, a special distribution to shareholders would have been required, up to \$600 million (80% of which could be paid in stock), also disclosed in SEC filings
- It makes sense that if Plum Creek could avoid paying \$100 million in taxes, plus at least another \$120 million in cash distributions, the company would be way ahead, even if it had to pay some amount of money to TCG to top off the pool of assets at the time of Redemption, to equal TCG's Capital Account
- Of course, the other side of the coin is that shareholders didn't get their cash distributions, and the federal deficit is \$100 million higher than it would be otherwise.
- This did not escape the eyes of the IRS. Weyco inherited PCL's battle with the IRS, which has been ongoing since 2012. If the IRS is ultimately successful, in addition to the Built-in-Gain Taxes owed and the forced distribution to shareholders, WeyCo could be liable for interest on the \$600 million distribution, and penalties.

New Home Sales by Stage of Construction

If you recall from the prior section, New Homes Built For Sale made up 72% of new single family housing starts over the past five years, but some of these homes were still under construction, or not even started. Using Census Bureau data for each of the three Stages of Construction, I divided the number “for sale” at the end of each month, by the number “sold” each month to get a measure of the pace of sales for each, depicted in the top chart. Clearly, **additions to listings outpaced sales for each category in the years leading up to each downturn in housing.** Intuitive and very consistent. I also find it interesting that the pace of sale for homes “Under Construction” is consistently the slowest, while the pace of sales for homes “Not Started” was the fastest.

In the middle chart, you can see that From 1973 to 2006, the share of Homes For Sale by stage of construction was more consistent, and averaged 15% Not Started, 56% Under Construction, and 29% Completed. **During each housing downturn, Under Construction and Completed shares tend to converge,** and during the 2007-11 period, they were evenly split, at 43% apiece. Since 2012, US builders have largely reverted to the pre-2006 shares.



Data Source: U.S. Census Bureau
Charts & Analysis: WillSonn Advisory

Note: In these charts, I have **highlighted periods of housing downturns (<1.2 million starts)**. The length of the current downturn in housing is striking, currently 8 years, versus 1-3 years in prior downturns. Considering that the number of US Households has increased 75%, from 71 million in 1975 to over 125 million in 2015 (an increase of 1.78 million households per year over the last 30 years), I find it astounding that Total Housing Starts have been so low, for so long.

In the bottom chart, you can see that the shares of Homes Sold for each category has changed more dramatically over time. Prior to the 1980's, only about 20% of homes were sold before construction began. In the 1980's, the category shares started to converge, so that by the 1990's, the mix was about 1/3 each. During the boom years of the early 2000's, builders sold only about 1/4 of homes as Completed Homes – seemingly, more buyers wanted to get a jump on the market, or wanted to have more say in the final product. The Great Recession and housing bust changed things dramatically, with the share of Completed Homes Sold doubling. **For the past four years, the mix of sales has returned to balance, about 1/3 each.** This might suggest that builders are more successful in pre-selling a good portion of their homes prior to completion, helpful as a means of providing some cash flow during construction. It might also suggest that buyers are more willing to fork over the money prior to seeing the final product as the competition for homes gets more intense. Changes in commercial real estate and mortgage lending standards may have had an influence as well, along with other factors.

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Recognizing the Risks of Inventories & Cruise Compilers, Growth & Yield Models, and LP Harvest Schedulers



Inventories & Cruise Compilers

- Cruising is the process of collecting tree measurements in order to estimate forest inventory volumes
- A Cruise Compiler converts tree measurements into tree volumes, and then merchandizes the tree into log grades
- Tree volumes are a function of tree diameter, height and taper, and defined merchandizing specifications
- Growth Models (see the next panel) are used to grow stands from the date cruised to the inventory reporting date
- **RISKS:**
- Some cruises don't measure many heights, and most do not measure taper (usually assumed, often using default values), but both are critical to estimating volume
- Volume estimates rarely allow for breakage or hidden defect (which reduces volume and undermines grade recovery)
- Cruise Compilers assume optimum merchandizing of every tree, rarely (never?) achieved in practice
- Merchandizing Specifications are often over-simplified, sometimes incomplete, and occasionally erroneous
- Sampling intensity may be low on some cruises (such as those done during an acquisition), increasing the possible risk of an error in the volume estimate
- More errors are introduced by the use of G&Y models increase as cruises become dated, and consequently so does the risk of an inaccurate inventory estimate



Growth & Yield Models

- Growth & Yield ("G&Y") Models project future volumes by growing tree diameters and heights, and assuming some level of tree mortality
- Most Growth Models are based on empirical studies compiled and analyzed by consortiums of cooperating entities
- Most often, data is collected on permanent growth plots maintained by cooperators
- Many G&Y models currently in use were developed more than 20 years ago, not taking into account changes in modern forest management
- **RISKS:**
- Permanent growth plots may not reflect the realities of what occurs on the rest of the forest if treated differently (fenced off from grazing, not thinned or fertilized, etc.)
- Some Permanent Growth Plots may have been discarded due to fire, insect or disease damage – but this is reality – thus understating mortality, a common problem
- Some G&Y models are based on measurements of trees up to a certain age, and then extrapolated to accommodate for longer rotations – very dangerous
- Few G&Y models are capable of modeling intermediate harvest or silvicultural treatments
- During "growth," some critical tree level data may be discarded, such as defect records, or is static, such as grade data
- As a result, G&Y models typically project "ideal" growth rates



LP Harvest Schedulers

- A Linear Programming Harvest Model provides a harvest solution for a forest in order to achieve the optimum outcome, however that is defined
- The person running the LP model condenses existing inventory data, develops G&Y tables for defined management regimes and forest types, imposes known or anticipated constraints on harvest levels, and must specify the goals of the LP model
- LP models must also have a price forecast, if the goal is financial in nature
- **RISKS:**
- All of the risks associated with the two previous panels carry over to the LP Model (garbage in, garbage out)
- Stands are often lumped together in order to accelerate computer processing and reduce set-up time. This can lead to crude results if not done carefully.
- If goals and constraints to harvesting are not adequately or accurately defined, annual harvest levels may be overestimated and ignore practical realities of operations
- LP models have perfect knowledge, a defined future, and static goals – none of which the forester has at the time harvesting decisions are made, and which change over time.
- Spatial constraints, such as adjacent stand green-up requirements, are rarely modeled
- LP modelling is an iterative process, sometimes truncated by tight acquisition timelines, forcing "good enough" results



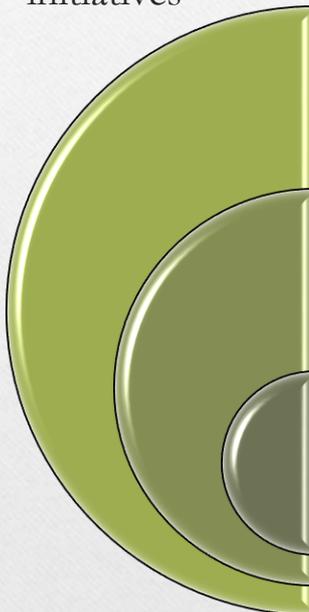
Section 3:
About
WillSonn
Advisory, LLC



WillSonn Advisory

Critical Experience for Critical Endeavors

WillSonn Advisory provides 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

William Sonnenfeld Profile

As Principal at WillSonn Advisory, Will Sonnenfeld brings more than thirty years of extensive industry training, experience and perspective, with a commitment to providing his customers with timely, impactful and cost effective consulting services

- Principal, WillSonn Advisory, LLC, a consulting practice active in 2009-10, 2011-12, and 2016. A profile of engagements and services appear on the following pages.
- Senior VP at Brookfield Timberlands Management, responsible for deal sourcing, asset valuation, and managing due diligence efforts, with a primary focus on timberland acquisitions in North America, 2012-2015
- Senior VP at The St. Joe Company, responsible for all forestry operations, contract negotiations, and rural land sales covering 575,000 acres of timberlands, managing a team of 25 foresters, land sales professionals and support staff, 2010-2011
- Senior VP in GE's Corporate Lending Group, focused on providing various capital structure solutions to new and prospective Timber and Wood Products customers, 2006-2009
- Director of Acquisitions and Divestitures at Plum Creek Timber, 1996-2006
 - Acquired more than 2.8 million acres, sold more than 800,000 acres, managing all aspects of strategic timberland acquisitions and divestitures, including deal sourcing, due diligence and negotiations
 - Also held positions in Corporate Planning, Inventory & GIS, and Financial Reporting from 1988-1995
- Forester with Temple-Inland from 1984-1986
- BSc, Forestry ('83), MBA, Finance ('88), CPA ('94-'01)



Brookfield



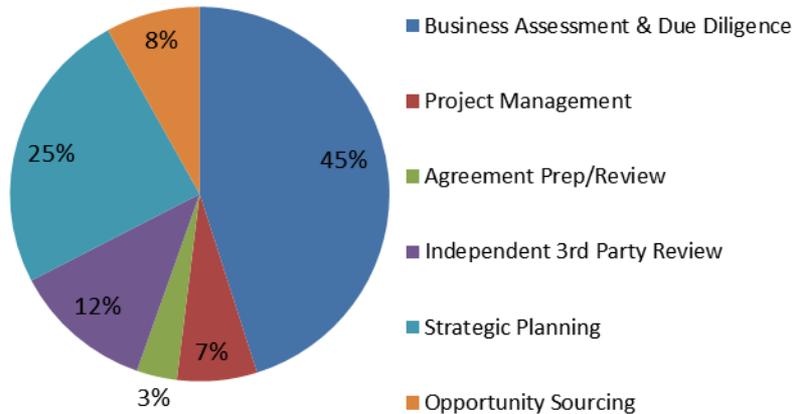
PlumCreek

TempleInland

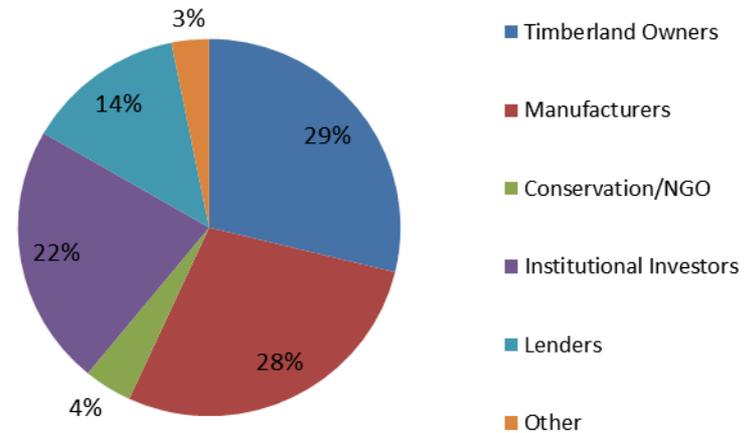


Engagement Profile

Services Provided 2009-16



Customers Served 2009-16



In between full-time senior positions at Brookfield, St Joe, and GE, Will Sonnenfeld has been pleased to provide a broad range of consulting services to dozens of clients, who come from all corners of the Timberland and Wood Products space.

WillSonn Advisory Services

- Timberland & Mill Valuations
- Acquisition “Post Mortem” Audits
- Conversion of Acquisition Pro Forma to Lender Financial Projections
- Acquisitions and Operational Due Diligence
- Development of Company Enterprise Valuations
- Incorporating Economic Forecasts into Business Plans

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
- 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



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

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