Please find attached the latest edition of my quarterly Market Trends. In addition to my regular progression through each segment of the industry, I have dedicated a few pages to this quarter’s Deeper Dive, Corporate Timberland EBITDA Performance. I hope you find all of the material interesting and informative, as I strive to provide each of my current and prospective clients, as well as my friends, with the most up-to-date information and meaningful insights each quarter. I welcome your feedback, positive or negative, and look forward to catching up with you in the near-future.

Very Best Regards,

Will

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President, Forest Products Society; President, WoodEMA i.a.
Market Trends

2nd Quarter, 2018

Perspectives on the latest market trends and indices impacting the Timber and Wood Products sectors, compliments of WillSonn Advisory, LLC
Q2 2018 Highlights

Market Trends

• Builder sentiment remains high, improvement expenditures strong (page 4)
• Affordability drifts towards 10-year lows (page 5)
• New home inventories grow as Existing home inventories tighten (page 6)
• Multi-family Starts outpacing Single-family nearly 3:1 in YTD gains (page 7)
• Building Products producers party like its 2004 (page 8)
• PNW Log Prices take a breather, Southern log prices drift lower (page 9-10)
• Mill margins balloon, South advantage soars to $140/MBF in Q2 (page 11)
• YTD 2018 Timberland sales volume exceeds all of 2017 (page 12)

In Depth Coverage

• Corporate Timberland EBITDA Performance (page 14-22)

In Case You Missed It

• US Headship Rates trending lower across all age groups (page 24)
Section 1: Latest Trends
NAHB’s Homebuilder Market Index (HMI) and Remodeling Market Index (RMI) are measures of home builder and remodeling contractor sentiment.

The HMI continued to moderate through the 2nd quarter, posting a score of 68 in June, down from a revised 74 in December. The 6-month rolling average registered 70, down a point from last quarter. High building product prices and chronic labor tightness may be taking some of the shine off of the otherwise positive outlook.

The RMI gave up its 3 point gain from Q1, posting a reading of 57 in Q2. As reported last quarter, the NAHB data suggests that average home tenure has increased from ~6 years (from 1987 through 2008) to ~10 years in three of the last four survey years.

Private Expenditures on Single Family Housing (in constant dollars, SAAR) has improved at a 5.5% pace YTD in 2018, a modest improvement over the 3.8% registered in 2017. The gain in Private Residential Improvement Expenditures YTD kept pace at 5.1% over 2017 levels, though this was well off the torrid gains of 17.6% we saw in 2017.

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 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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Affordability

The National Association of Realtors (NAR) Affordability Index (top chart) took its typical winter plunge, registering 146 in April, the lowest reading since late 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 118 in Q2 2018. New Home affordability has started to show some signs of decline in the first half of 2018, primarily due to rising mortgage rates.

In the bottom chart, I’ve displayed the movement in the three components of the Affordability Index – home price, mortgage rates and family income. For the first four months of 2018, compared to the first four month of 2017, home prices are up 6% and Mortgage rates are up 5%, but Median Family Income is up just 3% resulting in a lower HAI, down 5% from last year. Holding home price and income steady, a 50 basis point change in mortgage rates reduces the Affordability Index 10 points.

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.
Home Sales and Construction Trends

The Inventory of Homes For Sale (Existing + New) totaled 2,184 million units in May, up 394,000 units from December ’17, but down 91,000 units from May, 2017. Separately, Existing Home Inventories are down 120,000 units, while New Home inventories are up 29,000 units, compared to May, 2017.

At their respective current pace of sales, there are 4.1 months of sales in Existing Home inventories, and 4.6 months of sales in New Home inventories. New homes for sale are at their highest level since April of 2009. Of the 298,000 units for sale at the end of May, 20%, are Completed, 60% are Under Construction, and 19% have Not Yet Started.

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.

Monthly 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.

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
Housing Starts

Total Housing Starts registered 1.35 million units in May (SAAR), 12% above the 2017 pace of 1.203 million units. In May, **Single Family Starts registered 936,000 units**, while Multi-Family Units came in at 414,000 Units.

Year-to-date (SAAR), Total Housing Starts have averaged 1.317 million units, a respectable increase of 9.0% over full year 2017. **Single Family Starts are up 5.8%, while Multi Family Starts are up 15.9%, compared to 2017.**

My “6 Month Single Family Equivalent Start Index,” recasts a multi family unit into a single family unit based on relative wood use. For the fourth month in a row above a million, it averaged 1,026,000 units over the previous six months, and now sits at 54% 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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The size of the Single Family Home Starts in Q1 averaged 2,621 sq. ft., down 0.3% from 2017’s average of 2,630 sq. ft.. The size of Multi-Family Units started in Q1 averaged 1,131 sq. ft., down 2.5% from 2017 average of 1,160. **Single Family units made up 70% of Total Starts in Q1, after averaging 71% in 2017.**

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Wood Product Prices

Lumber and Plywood moved up sharply during the quarter, building on 2017 and Q1 advances, while OSB fully recovered from a Q4 retreat.

In 2017, while Single Family Housing Starts up 8.6% and Residential Improvement Spending was up 17.6%, North American lumber production was up only 2.2%. Through Q1, North American lumber production is up 0.3%, while US Housing Starts are up 9% (through May).

**Lumber prices in Q2 were up another 12% from strong first quarter prices**, and 31% above full year 2017 prices. Regionally in the second quarter relative to the previous quarter, West Coast lumber mills saw 7% higher prices for Dry Dimension and 1% lower prices for Green DF. Inland mills saw prices move up 5%, while Southern sawmills saw prices swell 16%. Canadian components of the Random Lengths Framing Composite Index saw gains of 13% in both the West and the East.

**Plywood pricing also improved for the quarter, rising 5% in Q2 from Q1 prices, and up 25% from FY 2017 levels.** Second quarter gains over Q1 favored the West; Western Ply prices moved up 10% while Southern mills posted a 3% gain.

**OSB has fully recovered from December’s retreat**, posting prices in Q2 17% above Q1 prices and 23% above FY 2017 prices (which were 32% above FY 2016).

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Skyrocketing lumber prices since the beginning of 2017, along with continued decline in the supply of logs in Interior B.C., continued to drive western log prices in Q2 '18.

In the second quarter of 2018, delivered prices for Douglas-fir 2saw took a breather, while Whitewood 3saw moved incrementally higher from Q1 prices (down 1% and up 2%, respectively). This follows full year 2017 delivered log price increases of 12% for DF 2saw and 22% for WH 3saw. Q1 and Q2 prices for both species/grade are easily record prices in Nominal Dollars, and comparable to late 1990's prices in Real Dollar terms.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) moved up another $91/MBF in the second quarter, a 7% gain over Q1 2018 prices.

Data Source: Oregon DOF, WA DNR, Random Lengths, FEA
Charts & Analysis: WillSonn Advisory
Second Quarter Southern Yellow Pine stumpage markets gave up most of their meager Q1 gains, as better weather prevailed. SYP Sawtimber prices retreated $0.30/ton in the second quarter, putting them on par with FY 2017 average price. Chip-n-saw stumpage prices were off 2% quarter over quarter and also sit even with FY 2017. The modest retreats in Q2 were in stark contrast to the Random Lengths SYP Lumber Composite, adjusted for lumber recovery, up 16% in Q2 compared to Q1 prices, and 29% above FY 2017.

Pine Pulpwood prices slipped another 3% in Q2, and stayed below $10/ton for the seventh quarter in a row. As lumber production continues to expand in the South over the next few years, mill residual supplies will increase and exert increasing downward pressure on pulpwood prices.

Sawtimber to Pulpwood price ratios remain tight, at a very meager 2.5:1 in the 2012-18 period, well below the bellwether ratio of 4:1, not seen since mid-2008!
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.”

In Q2 ‘18, the spread between Southern and PNW mills expanded to $140/MBF, up from a $103/MBF spread in Q1. At a gross margin of $215/MBF, PNW sawmills and landowners have plenty to cheer about. In the South, only the sawmills are happy.

Since the beginning of 2012, log export markets and declining Interior BC lumber production have pushed PNW log prices to historical highs. In the South, growing inventories of mature sawtimber on the stump have kept downward pressure on log prices, even as lumber prices have improved. The net result has been that the gap between the PNW’s and South’s gross margin has swelled to an average of $104/MBF over the last two-year time period, about 3x the 2000-2013 average of $33/MBF.

Going forward, Lumber producers will continue to focus their capital investments in the US South to capture outsized margins. Absent some catastrophic event, it will likely be years before mill consumption works off excess standing sawtimber inventories, and we see higher log prices and reduced sawmill margins across 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.

Data Sources: Timber-Mart South, Random Lengths, FEA, Oregon DOF, WA DNR
Chart & Analysis: WillSonn Advisory
Through the second quarter of 2018, more acres and more cash has traded hands than in all of 2017. Closings year-to-date have totaled 1.6 million acres for $2.4 billion.

A single transaction, Campbell’s sale of 1.1 million acres in Texas to CatchMark and its co-investors for $1.39 billion, made up 69% of the acres sold, and 58% of the proceeds. Absent this sale, YTD totals were modest at 500,000 acres, $1 billion in proceeds.

By investment sector, Timberland Investment Management Organizations (“TIMOs”) have funded 91% of the acquisitions in 2018, well above the 41% captured over the last five years (2013-17). By comparison, TIMO buyers acquired 78% of US timberlands sold (by dollar) in the previous 13 years (2000-2012).

Regional timberland prices are all down so far this year. PNW timberlands sold for as much as $5,200/acre, but Roseburg’s $1,400/acre sale in northern California (68% of the region’s acres) weighed down the Left Coast average. Likewise, in the South, property values reached up to the $2,200 per acre range, but the $1,265 paid for the beleaguered Campbell properties (87% of the region’s acres), acted like a sinker in a stock pond.
Section 2: Deeper Dive
Corporate Timberland EBITDA Performance

• In last quarter’s Deep Dive, I compared inventory and harvest levels for publicly traded timber companies, using a number of metrics

• In the process of reviewing the public data, I noticed that a number of companies claimed superior timberland operating performance relative to their peers
  • Top chart from Weyerhaeuser
  • Bottom chart from Rayonier
  • Can they each be right?
  • What about the other regions?
  • What about the other companies?
  • Is there a better measure?

• In this quarter’s Deep Dive, I will continue my review of the publicly traded Timber REIT’s/MLP’s public disclosures and claims, test the consistency of how each company measures operating performance, and offer some observations and opinions
Financial Measures

• The most common measure of economic performance, and the one I will use, is EBITDA – Earnings Before Interest, Taxes, Depreciation [& Timber Depletion] and Amortization.
  • Unfortunately, EBITDA is a non-GAAP (Generally Accepted Accounting Principal) measure, and is therefore subject to varying applications by each company
• The first challenge was to ensure that each company’s EBITDA was aligned to include or exclude the same items, or at least understand where they may differ
  • As a guide, I thought about the Statement of Cash Flows, which separates the Operating, Investing and Financing activities of the company.
    • EBITDA is intended to focus solely on Operating activities
  • Many companies qualified their EBITDA measurement as “Adjusted EBITDA”
    • Surprisingly, what items are capitalized and which are expensed also varied
  • Land Sales were sometimes separated from timberland EBITDA measurements
    • Some may argue that Land Sales should qualify as an Operating activity, especially retail land sales that are part of a recurring stream of income and cash
    • However, the distinction between Strategic and Non-strategic Land Sales (or large versus small) varies by company, and is quite distinct from timber harvesting activities, the focus of my inquiry
    • In the end, it was easier to pull out land sales for those companies that did not do so (all of which operate in a single region), than try to add land sales back to companies that report land sales separately (who operate in different regions)
  • Other areas where companies differ is in the allocation of Selling, General and Administrative expenses
• With EBITDA in hand, it is a matter of dividing it by the acres and volumes I compiled for last quarter’s Deep Dive
In the West, Weyerhaeuser outperformed its peers in five of the last six years.

Potlatch was at the top of the pile in 2017, quite surprising given that the “West” includes Idaho and Minnesota. PCH noted an exceptionally high proportion of redcedar in its mix in 2017.

In the South, Deltic fared the best (for a number of reasons, discussed later), with the rest of the companies pretty tightly bunched.

Potlatch’s combination with Deltic may or may not boost its relative performance, all depends on the grade mix as the cut increases.
EBITDA/Acre

- On an EBITDA/acre basis, Weyerhaeuser still commands a lead, but Potlatch and Pope switch places – makes sense given the higher stocking on the coast.
  - Rayonier's performance declined as it appropriately reduced harvest levels on its western timberlands, following years of over-cutting.
  - By this measure in the South, CatchMark has taken a leading position as it takes advantage of immediate harvest opportunities following acquisitions (see last quarter's comments regarding future harvest levels for CTT).
  - Deltic, in contrast, moved lower relative to the others, though showed solid gains in 2015-2017.
- What becomes evident is that superior performance on a EBITDA/ton basis does not translate into superior performance on an EBITDA/Acre basis. Harvesting volume per acre owned, and harvest mix (either grade or species) can have a big impact.
Weyerhaeuser (June 2018 REIT Week Presentation)

- Weyerhaeuser’s Slide 13 claimed “PERFORMANCE: #1 or #2 in all business lines,” which included manufacturing businesses as well
  - A rather shallow claim when comparing oneself to only one other timber competitor...
- Even so, by my assessment, it appears to be a valid statement in the West, but including Pope and Potlatch shows that others are closing the gap.
- The claim in the South is more tenuous in my assessment. Certainly Weyerhaeuser is not leading the pack, though their performance does appear above average.
Rayonier
(June 2018 Investor Presentation)

• Rayonier’s claim on page 19 that it holds a “Sector-Leading U.S. South” position is due to its capitalization policy, not operating excellence or superior assets.
  • More on this on the next slide…

• When RYN’s EBITDA figures are adjusted to conform to industry standards, its performance is good, not great (or sector-leading), but definitely solid
  • It also appears that RYN came up with slightly lower performances for each of their peers, versus what I estimated

• To their credit, one can easily find the information needed to make the adjustments in Rayonier’s 10-k; you just have to do it on your own…
Major differences in accounting policies unveiled

- Capitalization Policy
  - Rayonier capitalizes Property Taxes, Lease Payments, and Allocated Overhead, its standard practice for decades.
    - Granted, their DD&A is likely higher than it would be otherwise, so it is probably a wash for net income, but for EBITDA, it makes a huge difference.
  - In the South, these three items totaled $16.6 million in 2017, or 18% of what they report as Southern Timber EBITDA
  - In the West, Property taxes and Allocated Overhead totaled $2.9 million, or 9% of their reported Western EBITDA

- The allocation of Selling, General and Administrative Expense (“SG&A”) varied widely by company
  - Calculated by comparing the amount of unallocated G&A in the segment footnote to the SG&A on the Income Statement
  - On the high end, as best as I can figure out, over the past seven years (2011-2017) Weyerhaeuser allocated an average of 89% of its SG&A expense to its business segments.
    - How much of that ($397-$675 million per year) was allocated to Timberlands is unknown, but it may have been a factor in dampening their performance.
    - Despite this higher SG&A burden, their timberland segments compare well against their peers
  - On the low end, Pope and CatchMark allocate none of their SG&A.

- The Others: Deltic – 7%  Potlatch – 24%
  - Plum Creek – 42%  Rayonier – 40%
Conclusions

• Can they each be right?
  • It appears that Weyerhaeuser is mostly right, but should include more of its peers in their comparisons
  • Rayonier is not right – their capitalization policy is out of line with the rest of the industry, and their EBITDA measures must be adjusted to make them comparable to their peers
• Which is the better measure?
  • In my opinion, EBITDA/Acre is the better measure, since it reflects not only the grade and species mix, but the harvest yield as well, and does it on a standard unit – an acre
  • I may be biased, but when I think about the value of a company, I start with the value of its timberlands. EBITDA/Acre tells me more about how much the land is worth.
• Higher EBITDA/ton does not always result in higher EBITDA/acre
  • Deltic faced challenging pulpwood markets in Arkansas for years. The resulting heavy-to-sawtimber mix but lower harvest sent divergent signals.
  • Ditto for Potlatch, and its West/North operations (Idaho and Minnesota) – strong mix but lower harvest yields
  • I wish I could have broken the Potlatch data out, but limited disclosure prevented me from doing so
• Which leads me to my final point: Accounting Policies and Financial Reporting matter.
  • If I have made any errors or oversights, it was due to inconsistent, limited or confounding financial disclosures
  • Weyerhaeuser’s financial information was the absolute most difficult to work with
    • Yes, it is a big company, and yes, there were some big changes (segment sales, major acquisitions), but changes to their accounting/disclosure made it that more difficult to track
  • While Rayonier’s capitalization policy is not conventional, at least they have sufficient disclosure to make the adjustments.
    • That said, if transparency is truly important to Rayonier, they should make the adjustment when comparing themselves to their peers
  • Potlatch has a lot of room to improve its disclosures.
    • I encourage the management team at PotlatchDeltic to adopt Deltic’s more informative and transparent format going forward. It is what shareholders (the owners of the company) deserve.
Data sources

- Weyerhaeuser: June 2018 REIT Week Presentation, 2013, 2015 and 2017 10-k’s
- Plum Creek: 2012-2015 10-k
- Rayonier: June 2018 REIT Investor Presentation, 2012-2017 10-k’s
- CatchMark Timber Trust: 2012-2017 10-k’s
- Pope Resources: May 2018 Investor Presentation, 2012-2017 10-k
- Deltic Timber: 2012-2016 10k, ‘Q4 2017 Earnings release
- Potlatch: June 2018 REIT Week Presentation, March 2017 Investor Presentation, 2012-2017 10-k’s
Section 3: In Case You Missed It…
Excerpts from an NAHB post: The growing tendency of 25-34 year olds to stay with parents, relatives or share housing with unrelated housemates means that the number of young adults starting their own households has been declining. As chart to the left shows, the headship rates (the share of people who are household heads) for young adults ages 24-35 remained relatively stable from 1990 to 2000, with close to 46% of young adults leading their own households. Even by 2006, the headship rate for this age group stayed in the same range with just a small drop that could be attributed to a switch in the data sources from the decennial census to ACS.

It has been suggested that the young adults merely postpone the decision to lead their own households, and what was the typical household-forming behavior in your late 20s a decade or two ago now happens in your late 30s. Unfortunately, as of 2016, there is little evidence to support this hypothesis, as the household formation rates for the 35-44 year old group continued to decline as well.

In fact, the decrease in headship rates is a universal phenomenon with all age groups registering declines since 2000 (see figure below). However, the deterioration in headship rates is most pronounced for the 25-34 age group and they remain accountable for the largest number of households that never formed.
Section 4:
About WillSonn Advisory, LLC
WillSonn Advisory Services

**Business Assessments & Due Diligence 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

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- Capital Investment Assessments

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- Evaluate Existing or Proposed Agreements or Easements
- Interpret Annual Management Plans & Appraisals
- Examine Proposed Transfers of Ownership
- Review Divestiture Timing & Strategies
- Track Investment Performance
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.

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