11 July 2019

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

Dear Recipients, I have received positive feedback from many of you regarding the information provided quarterly by Mr. Sonnenfeld. I ask that you consider WillSonn Advisory for your consulting needs. Will is a long-time friend and colleague for the past 36 years since our days together at Plum Creek Timber Co. (purchased by Weyerhaeuser Co.) And no, I do not receive a finder's fee! ☺ Regards, Rich

I hope you are doing well, and your Summer is off to a good start. All is well with my family and here at WillSonn Advisory.

Please find attached the 2nd Quarter Market Trends Update. Housing and construction continue to face a number of headwinds as we enter the second half of the year, though builder sentiment would suggest otherwise. Wood products and western timber prices have retrenched after last year's runup in values, while Southern log prices continue to languish near 25-year lows. Timberland markets remain shallow.

In this quarter's Deep Dives, I take a look at residential construction cost trends and pent-up housing demand. I hope you find the market updates, as well as the deep dives, interesting, and as always, look forward to your comments.

Best Regards,

Will

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Please support our timber industry, reduce your carbon footprint, and conserve the earth's natural resources by purchasing products made from wood: America's great renewable, recyclable and sustainable resource.

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Market Trends

2nd Quarter, 2019

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

Q2 2019 Highlights

Market Trends

- Builder sentiment remains positive and construction expenditures decline (page 4)
- Affordability continues to drift lower as interest rates move up (page 5)
- 2nd Quarter Housing Starts disappoint again, continue to lag 2018's pace(page 6)
- Year-over-Year Housing Inventory levels are up marginally, new home premiums are lower (page 7)
- Lumber, Plywood and OSB prices move lower in the 2nd Quarter (page 8)
- PNW and Southern Log Prices weaken after the winter bump (page 9-10)
- Mill margins move lower, South advantage dips to $93/MBF in Q2 (page 11)
- US Timberland Sales are limited (page 12)

In Depth Coverage

- US Construction Cost Trends (page 14)
- Two Measures to Gauge Pent-up Demand in Housing (page 15)

In Case You Missed It

- Construction Job Openings Fall Back in May – NAHB (page 17)

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 inch up in the 2nd quarter, posting a score of 64 in June after a 66 reading in May, still well below the peak of 74 in December 2017. The 6-month rolling average settled at 63 in June, up 2 points from last quarter.

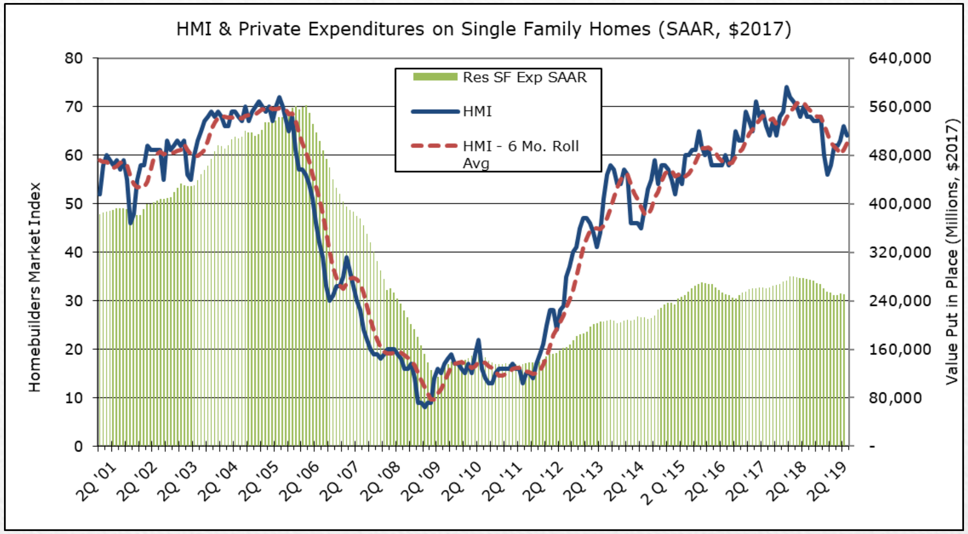
The RMI continued to weaken, registering 54 in Q1 2019. As reported last year, the NAHB data suggests that average home tenure has increased from ~6 years (from 1987 through 2008) to ~10 years in three of the last four survey years.

Private Expenditures on Single Family Housing (in constant 2017 dollars, SAAR) **through the first five months dropped -7.8% below the 2018 levels**. **Private Residential Improvement Expenditures dropped even further, -15.9% below 2018 levels.** Rising interest rates early in the year, along with rising home prices and scarce contractor availability would have a dampening effect on improvement expenditures. With recent declines in mortgage rates, expenditures should improve.

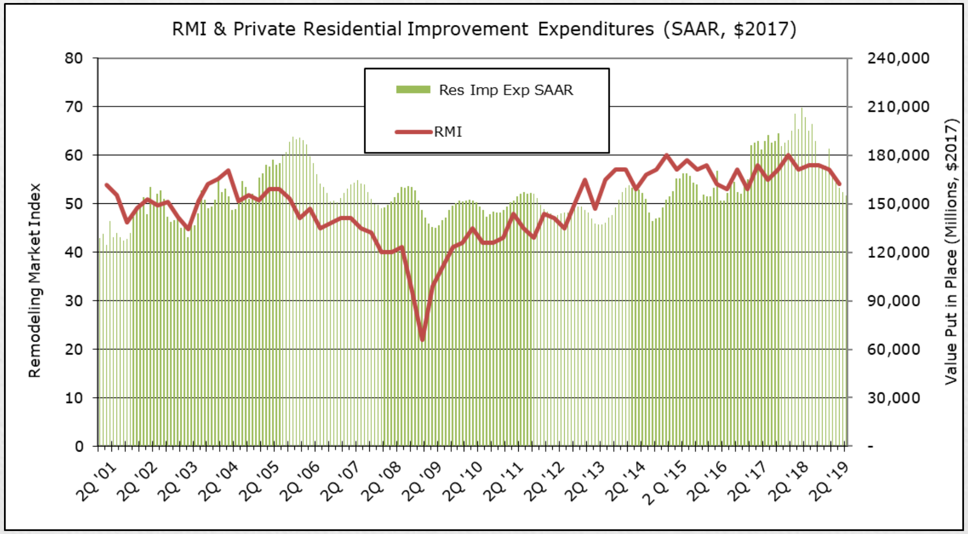
The monthly HMI and quarterly RMI are dispersion indices, measuring the proportion of respondents who have a positive versus negative view (neutral responses are ignored in the calculation). While ***a reading over 50 indicates a prevailing positive view of current and future conditions****, it says 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.

WillSonn Advisory, LLC



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



Affordability

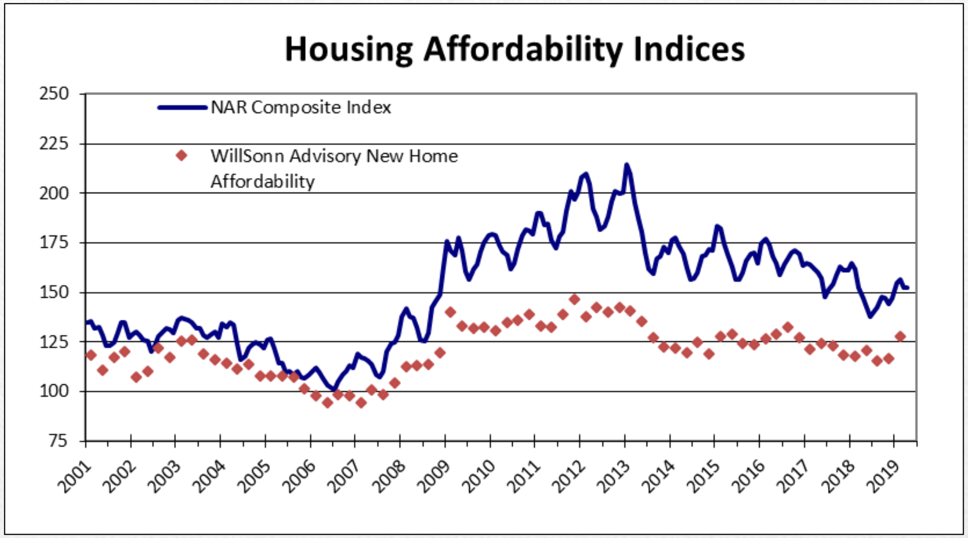
The National Association of Realtors (NAR) Affordability Index (top chart) has been on an upward trend since last June, registering 152 in April, but the pattern of lower affordability since 2015, peak-to-peak, and trough-to-trough, continues.

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 more modest **New Home Affordability Index of 125 in Q1 2019**. New Home affordability has drifted lower over the past two years due primarily to rising mortgage rates, but moved higher in Q1 with lower median new home prices.

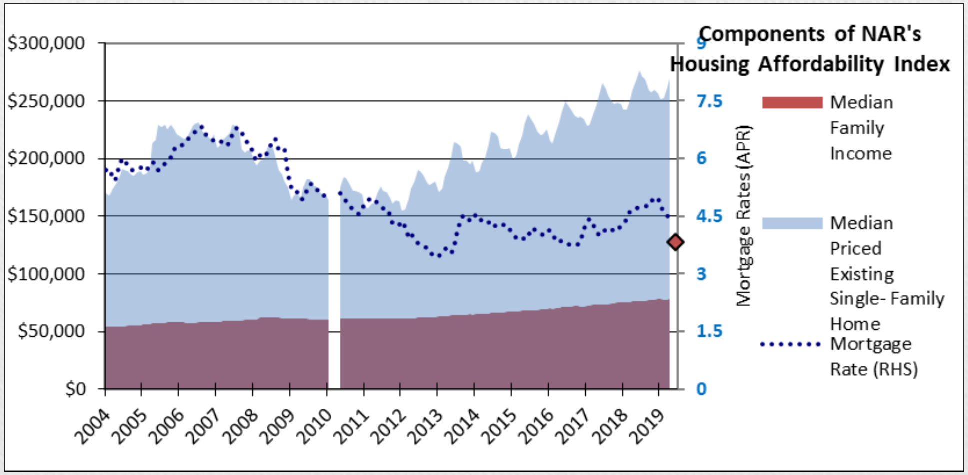
In the bottom chart, I've displayed the movement in the three components of the NAR Affordability Index – home prices, mortgage rates and family income. In the first four months of 2019, compared to 2018, home prices were down 0.4% and Mortgage rates were down 4.2%, while Median Family Income was up 1.8% resulting in a lower HAI, down 6.8% from last year.

In June, mortgage rates fell to an average of 3.8% (see the red diamond in the bottom chart), 50 bps below April. Holding home price and income steady, **a 50 basis point decline in mortgage rates bumps the Affordability Index about 10 points higher**. Look for a rise in affordability in the coming HAI releases.

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.



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



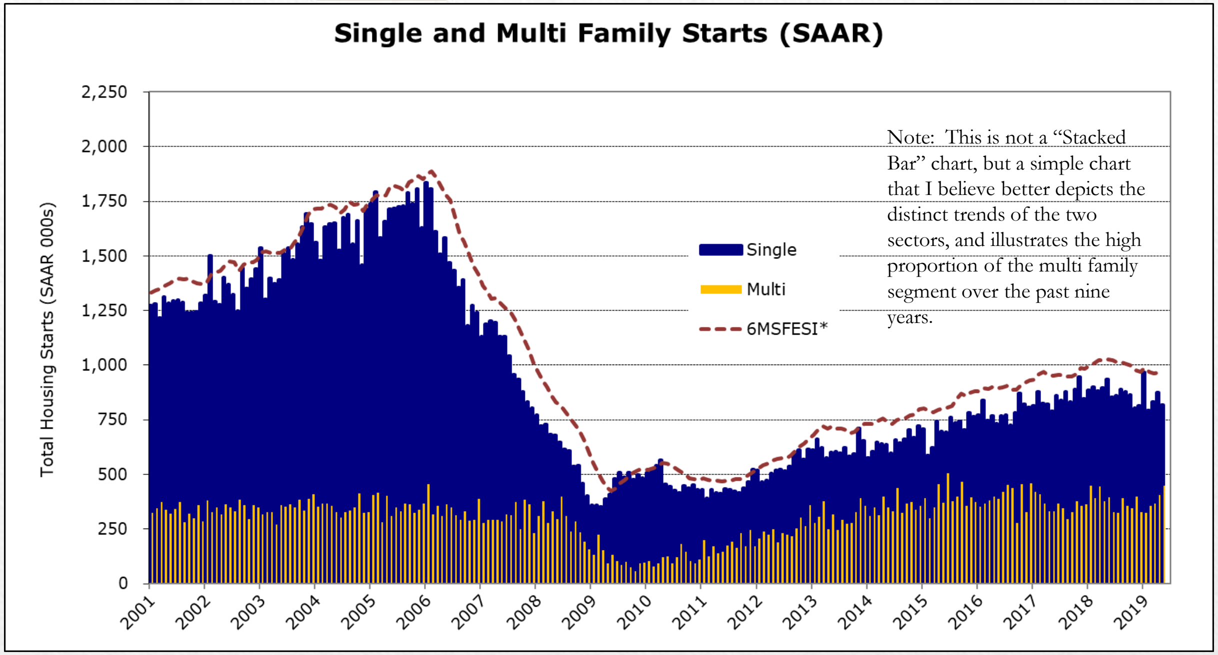
Housing Starts

Total Housing Starts registered 1.269 million units in May (SAAR), **1.6% above the 2018 pace of 1.250 million units.** In May, **Single Family Starts registered 820,000 units,** while Multi-Family Starts came in at 436,000 Units.

Year-to-date (SAAR), Total Housing Starts have averaged 1.238 million units, a decline of 0.9% versus full year 2018. **Single Family Starts are down -1.7%, while Multi Family Starts are up 1.4%, compared to full-year 2018.**

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 eight months above a million in mid 2018, the six-month rolling average retreated in October. At **973,000 units in May, SFE's are at 51% of the 2006 peak of 1.9 million SFES's.**

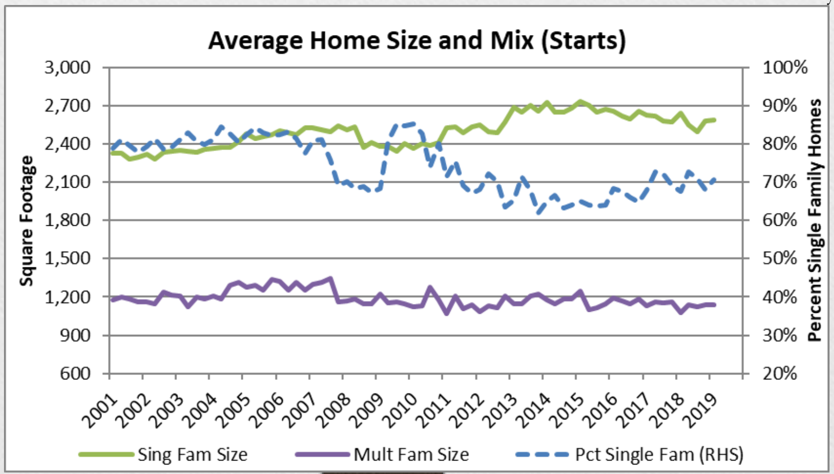
Multi-family units use approximately 2/3 as much wood per square foot compared to a Single Family Unit, and since Multi-Family Units are about half the size of Single Family homes, I count them as a 1/3 single family equivalent.



*6MSFESI = 6 Month Single Family Equivalent Start Index

Data Source: U.S. Census Bureau

Charts & Analysis: WillSonn Advisory



The size of the Single Family Home Starts in Q1 2019 averaged 2,584 sq. ft., up 0.9% from 2018's average of 2,561 sq. ft. The size of Multi-Family Units started in Q1 2019 averaged 1,137 sq. ft., up 1.5% from the 2018 average of 1,120. **Single Family units made up 71% of Total Starts in Q1 2019, on par with 2018.**

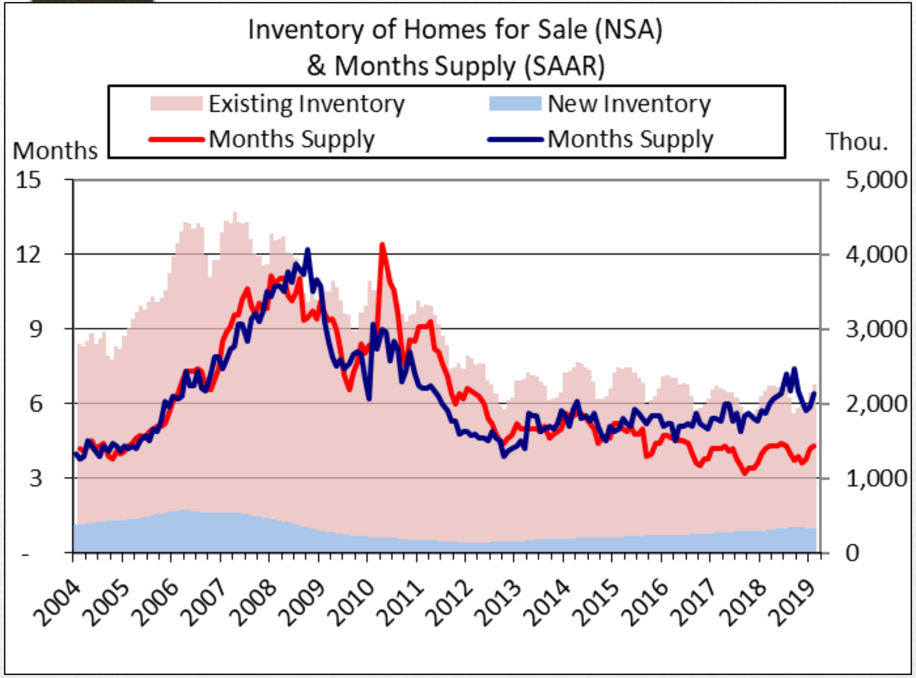
Home Sales Trends

The Inventory of Homes For Sale (Existing + New) totaled 2.252 million units in February, up 374,000 units from December '18, and up 83,000 units from May, 2018. Separately, Existing Home Inventories are up 50,000 units, while New Home inventories are up 33,000 units, compared to May 2018.

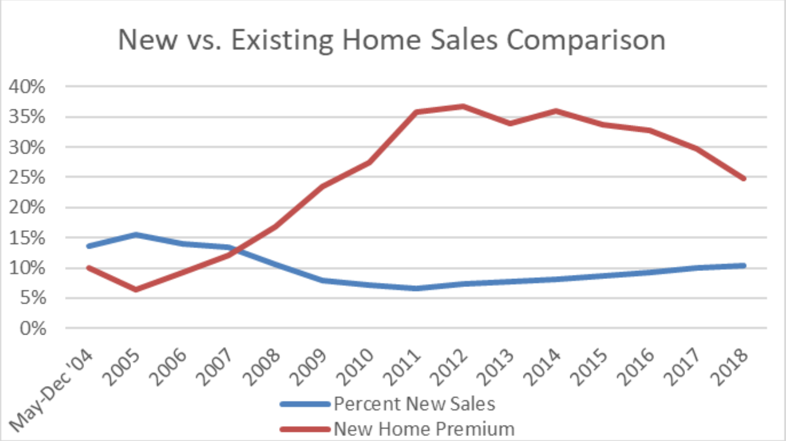
At their respective current pace of sales, there are 4.3 months of sales in Existing Home inventories, and 6.4 months of sales in New Home inventories (high by "normal" historical standards).

Of the 332,000 New units for sale at the end of May, 23% are Completed, 58% are Under Construction, and 19% have 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, you can see that New Homes have been priced at a 25% or greater premium to existing homes for the past nine years, though trending down as the average size of new home starts receded. This new-home premium was likely a key driver in higher R&R spending seen over the past few years, as existing homeowners faced an outsized premium to trade up and move to a new home. Because existing homeowners stayed put, lower inventories of existing homes were available to the first-time homebuyers, which in turn, contributed to the rise in existing home prices (supply constraint driven).

As a percentage of total home sales, New homes have been slowly improving, reaching 10% in 2017 and 2018. While markedly improved from 2011, new home sales remain well below their pre-housing-bust level of 15% of total home sales.

Wood Product Prices

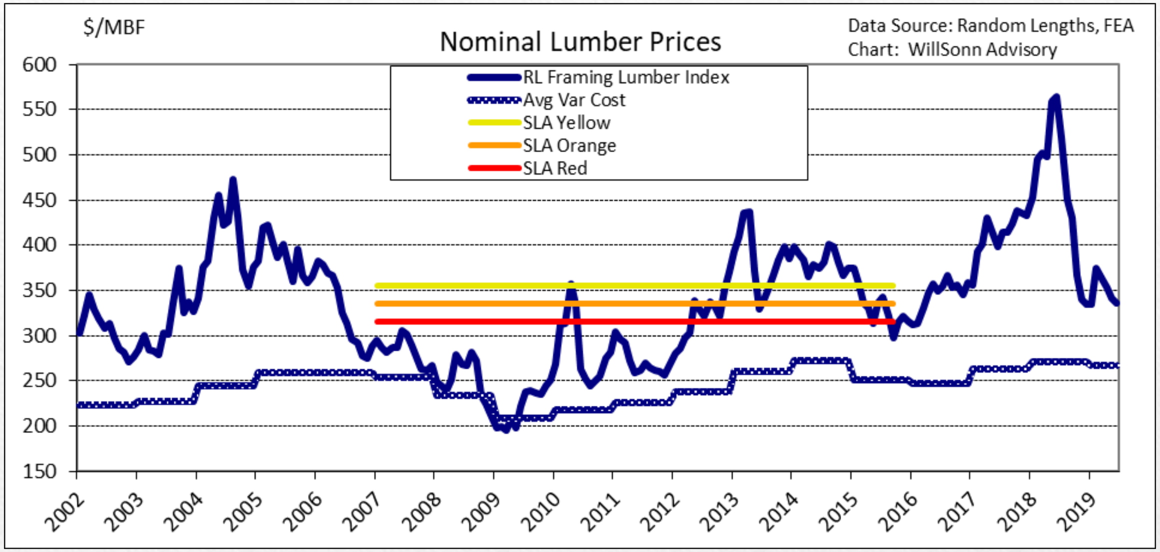
In the first five months of 2019, while Single Family Housing Starts were down -1.7% and Residential Improvement Spending was down -15.9%, North American lumber production was down -3.5% through April, the latest month for which figures were available. Despite these cuts in production, wood product prices remained soft in the second quarter.

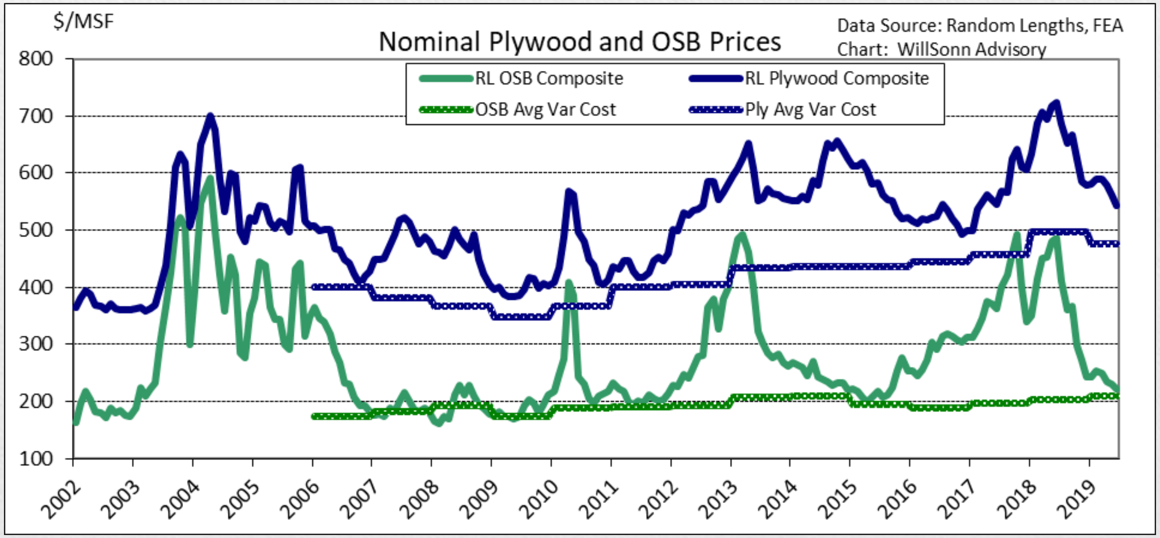
Lumber prices in Q2 2019 gave up its Q1 gain and retreated -4%, fully -25% below full year 2018 prices and -36% below Q2 2018 prices. Regionally in Q2 relative to Q1 2019, West Coast lumber mills saw a -2% dip in Dry Dimension and a -3% slide in Green DF, Inland mills saw prices move down -2% as well, while Southern sawmills saw prices contract -6%. Canadian components of the Random Lengths Framing Composite Index saw S-P-F prices retreat -10% and -6% in the West and the East, respectively.

Plywood pricing slipped -4% in Q2 from Q1, and now sits -15% below FY 2018 levels. Second quarter movements were even regionally, with the Southern Plywood off -5% and Western Plywood down 4% for the quarter.

OSB prices in Q2 moved -8% for the second quarter in a row, and 40% below FY 2018 prices.

According to FEA, variable costs for Lumber are expected to moderate in 2019, down 1%. Plywood is also expected to see a decline in variable costs in 2019, down 4%, while OSB variable costs are expected to rise 3%. Not much help on the cost side.





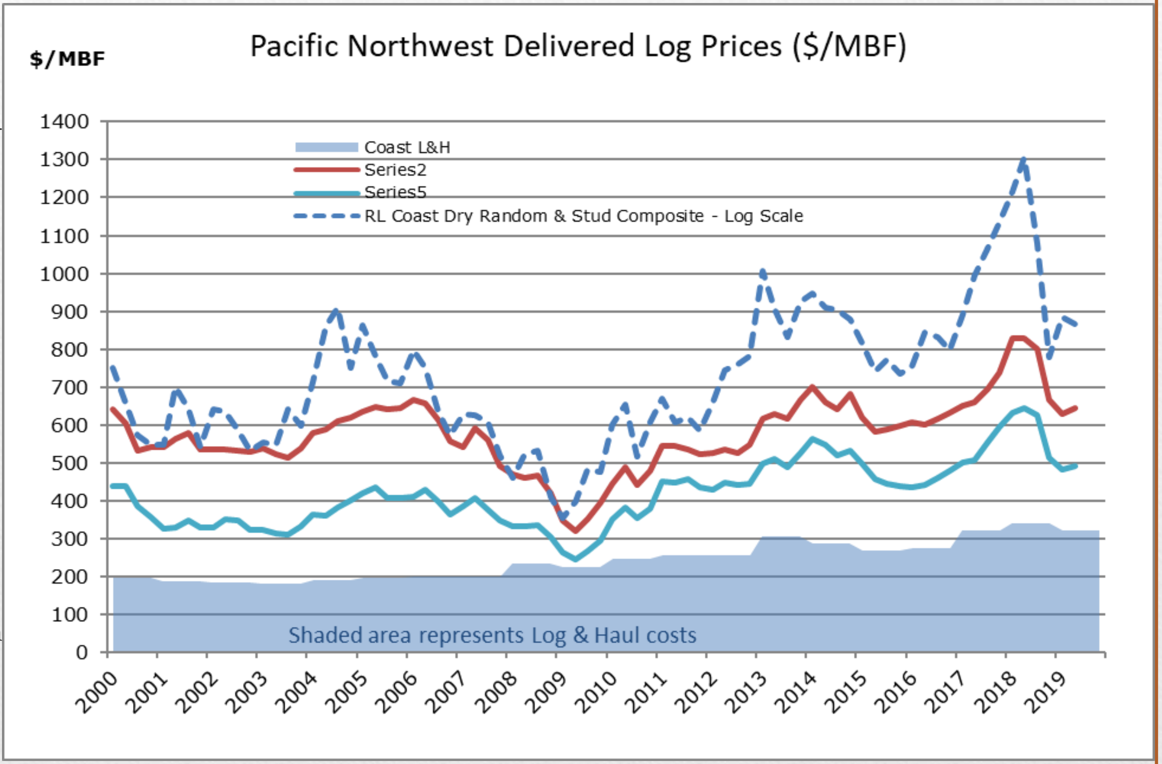
PNW Log Prices

The sharp -34% decline in western lumber prices since Q2 2018 followed a 57% increase over the prior two years (Q2 '16 to Q2 '18), giving all the price gains back. Lumber prices in 2017 and early 2018 were simply unsustainable, forcing builders to delay starts in H2 2018.

Western lumber prices (with about a one-quarter lag) remain the primary driver in West Coast log pricing, which followed a similar pattern. Second quarter prices were 18%-19% below full-year 2018 prices, and were off 22%-24% from the peak in the second quarter of 2018 (compared to a 34% decline in lumber prices Q2 '18 to Q2 '19). During Q2, delivered prices for **Douglas-fir 2saw and western hemlock 3saw logs registered a meager 2% gain.** As weather improves in Q3, log prices should remain under pressure.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) drifted lower by $20/MBF in Q2, following a (dead-cat) bounce of $108/MBF in Q1.

Log & Haul costs increased in 2018 as higher log prices allowed harvesting on more expensive ground – but as log prices moderate in 2019, Log and Haul costs are expected to follow suit.



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

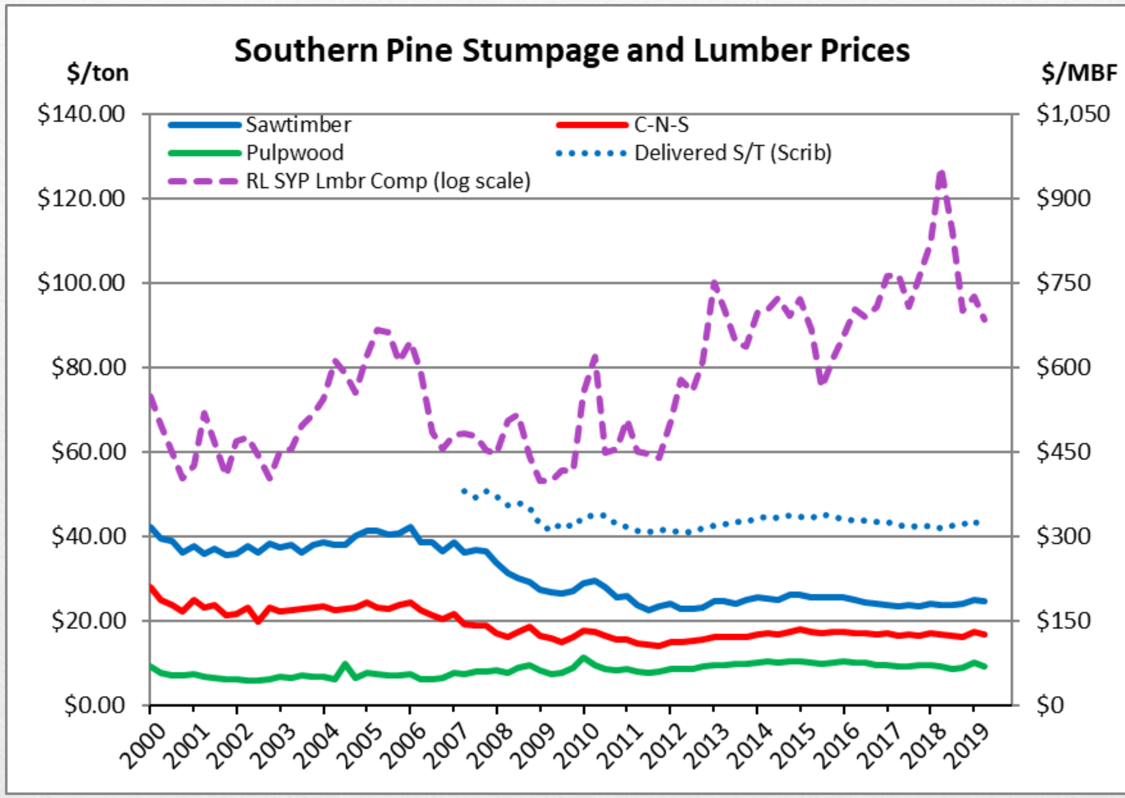
Second Quarter Southern Yellow Pine stumpage markets saw prices retreat across the board in the second quarter of 2019 as weather improved. SYP Sawtimber prices lost $0.52/ton in the second quarter, giving back half of Q1 gains. Chip-n-saw stumpage prices were down $0.78/ton and pine pulpwood was down $0.86/ton in the second quarter. The Q1 gains in all three grades of more than $1/ton had not been seen in 10 years. And Q2 weather, while better than Q1, was not particularly good. I look for further weakening in the coming quarter.

The Random Lengths SYP Lumber Composite, adjusted for lumber recovery, was down 6% in Q2 compared to Q1 '19, now 18% below full year 2018 prices

Sawtimber to Pulpwood price ratios remain tight, at a very meager 2.5:1 in the 2012-19 period, well below the bellwether ratio of 4:1, a level not seen since mid-2008!

In my view, SYP sawtimber prices will remain under pressure for a number of years. Tepid housing starts and a concurrent rise in the number of maturing plantations over the last decade has created a backlog of sawtimber on the stump. While new mills in the South can help reduce the backlog, rising plantation productivity and improved mill recoveries will likely keep a cap on log prices.

Southern Pine Log Prices



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

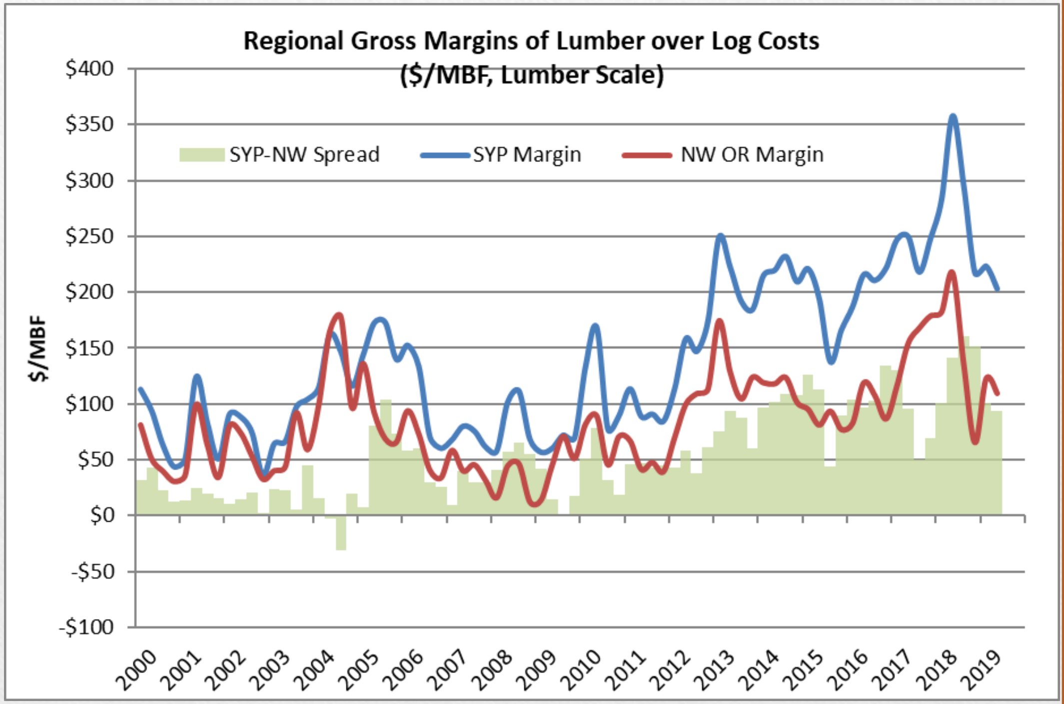
Regional Gross Margins

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 spread between Southern and PNW sawmills notched lower in Q2 to $93/MBF, down from an average spread in 2018 of $138/MBF. Gross margins narowed in both regions, from $123/MBF to $110/MBF in the PNW, and from $223/MBF to $203/MBF in the South. Southern sawmills have enjoyed gross margins over $200/MBF in 20 quarters since 2012, while PNW mill gross margins hit that mark only once.

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 $108/MBF over the last eight quarters, more than 3x the 2000-2013 average of $33/MBF.

In my view, lumber producers will continue to focus capital investments in the US South to capture outsized margins for years to come. In the Northwest, tighter timber supply and exports will keep capacity expansions to a minimum.



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

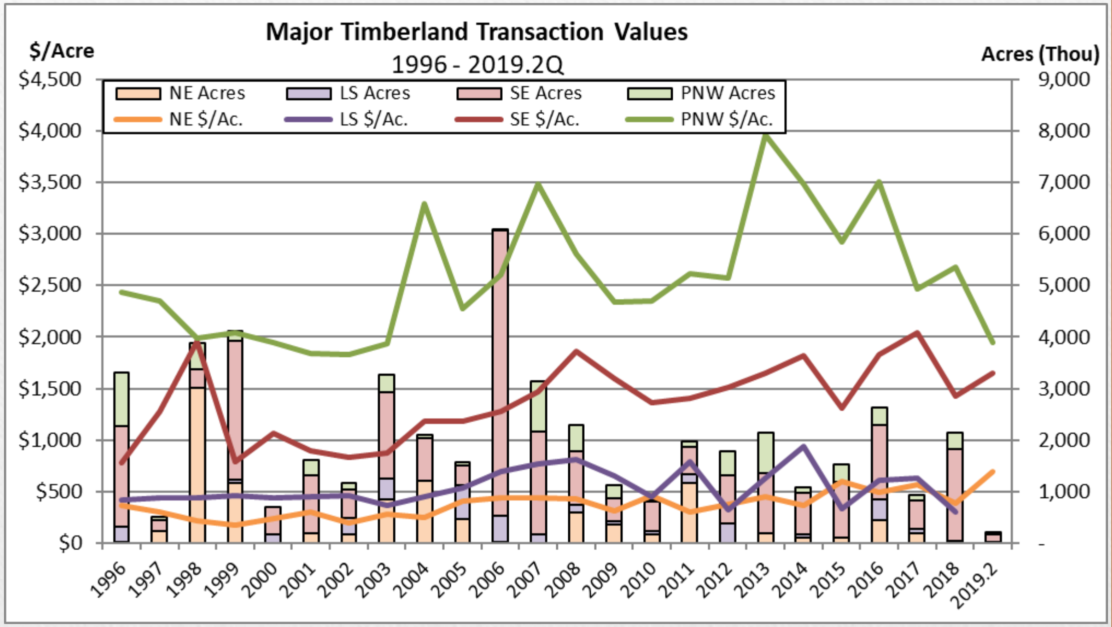
Regional Transaction Values

Closings through early June in 2019 have totaled $406 million on 310,000 acres, 43% of which are in the US South, and 33% of which are in Appalachia (not shown on the chart to the right). According to our friends at RISI, there may be another 500,000 acres or so in the pipeline as of mid-year. PNW values ranged from $1,537/acre to $4,250/acre, and in the South, from $876/acre to $3,400/acre.

Closings in 2018 totaled 2.3 million acres for $3.7 billion, an 80% increase in acres and 96% increase in proceeds over 2017 timberland sales. A single transaction, CalPERS/Campbell's sale of 1.1 million acres in Texas to CatchMark and its co-investors for $1.39 billion, made up 47% of the acres sold, and 38% of the proceeds across all regions. Absent this sale, 2018 totals were more modest at 1,222,000 acres, $2.27 billion in proceeds.

By investment sector, Timberland Investment Management Organizations ("TIMOs") funded 76% of the acquisitions from 2016 to 2018, well above the 25% captured in the 2013-15 period. By comparison, TIMO buyers acquired 78% of US timberlands sold (by dollar) in the previous 13 years (2000-2012).

Regional timberland prices were generally lower in 2018, largely due to larger, lower quality properties ("B&C" properties, as some call them). In 2018, PNW timberlands sold for as much as $8,100/acre, but Roseburg's $1,440/acre sale in northern California (54% of the region's acres) weighed down the Left Coast average. Likewise, in the South, property values reached into the $3,100 per acre range, but the $1,265 paid for the beleaguered CalPERS/Campbell properties in Texas (62% of the region's acres), was a Titanic drag on the region's average.



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

Section 2: Deeper Dive

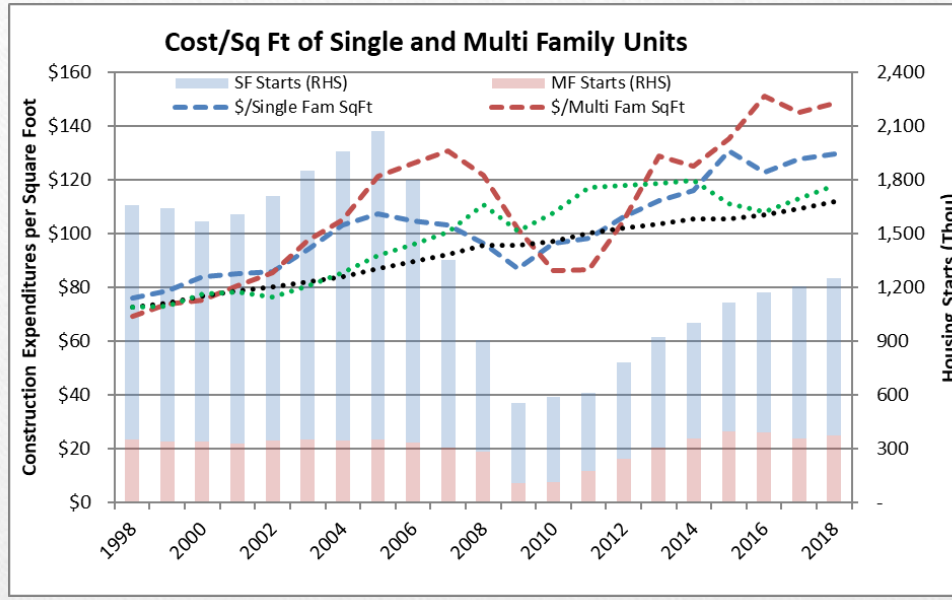
US Construction Cost Trends

US Construction costs for both Single Family and Multi-family construction increased in 2018. Using Census Bureau data for both Residential Construction Expenditures and trends in private housing construction purpose and design, WillSonn Advisory has tracked the cost of construction on a $/square foot basis. The dotted lines on the top chart represent general inflation indices, PPI (green) and CPI (black), as points of reference.

Single Family Construction costs increased 1.7% in 2018, following a 3.9% increase in 2017 and a 6.0% decline in 2016. The 1.7% increase was well below the rise in PPI (4.4%) and CPI (2.4%) for the year.

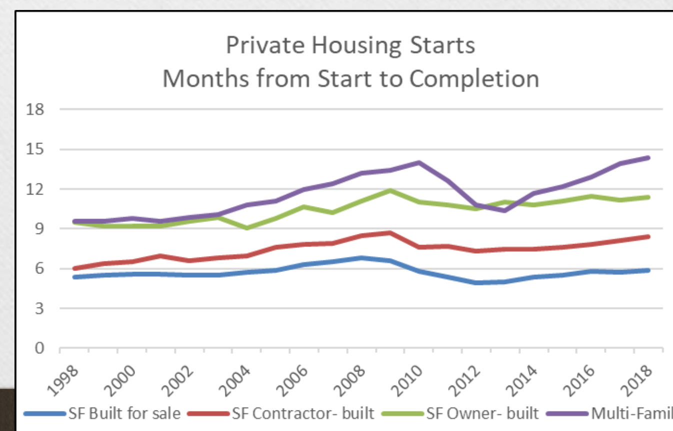
Multi-family construction costs increased 2.8% in 2018, following a 3.8% decline in 2017 and an 11.4% increase in 2016. The 2018 increase was in line with CPI. Contributing to the higher cost of multi-family construction is the longer time of construction, which drives up finance costs for builders (purple line in the bottom chart).

While Multi-family units carry a lower cost of construction per start, the smaller size of a multi-family units translates to a higher cost on a $/square foot basis.



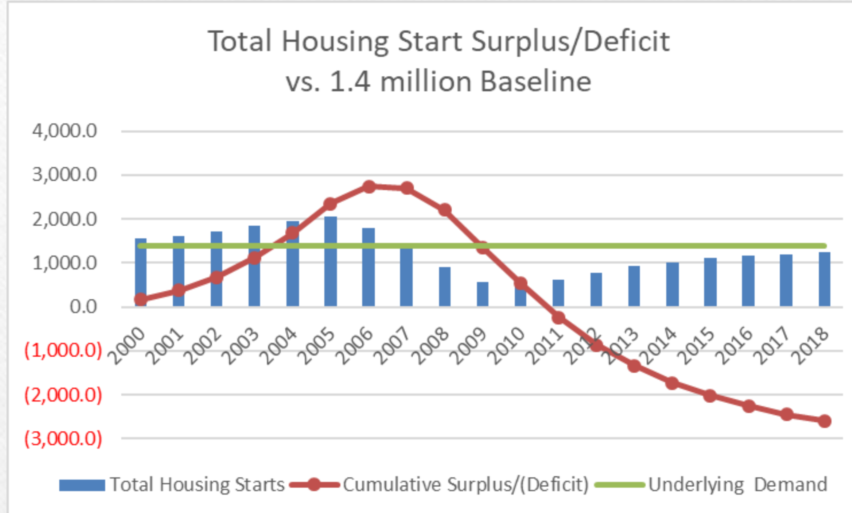
Data Sources: U.S. Census Bureau

Chart & Analysis: WillSonn Advisory

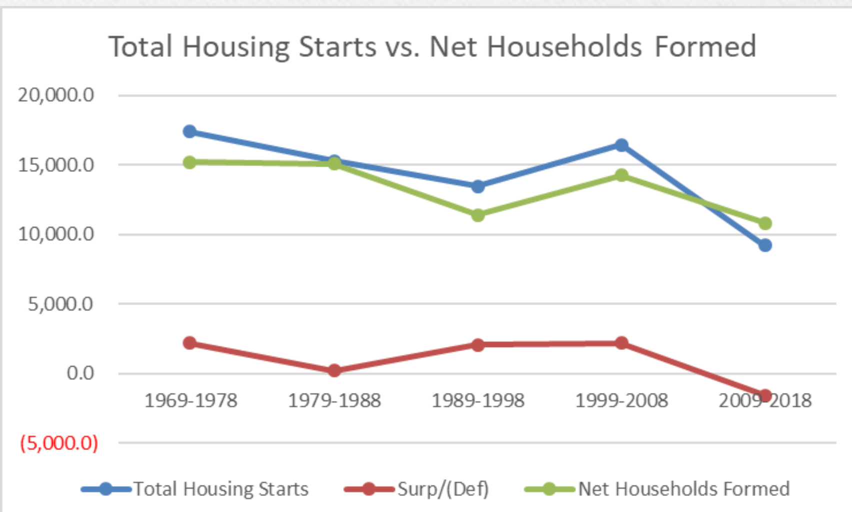


Two Measures to Gauge Pent-up Demand in Housing

Measure #1: In the chart to the right, I have compared Total Housing Starts against an assumed long-term underlying housing demand of 1.4 million units per year. This takes into account not only fundamental demographics, but also expectations around household formation rates, immigration trends, tear downs and replacements (voluntary or otherwise), and the demand for second homes. From 2000 to 2006, just over 2.7 million excess units were built. From 2007 to 2018, just over 5.3 million units were underbuilt. By 2011, the excess building (spent up demand) was satiated, and we began accumulating a backlog (pent-up demand). This puts **the current net deficit of Housing Starts at 2.6 million units**. If underlying demand is 1.5 million units per year, the deficit would be almost 4.5 million housing units.



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



Measure #2: I also took a look at how the number of US households has changed over the past five decades, and I compared that to Housing Starts. In the first four decades, Starts exceeded the net change in Households by an average of 1.6 million units per decade. In the last decade, the change in the number of households exceeded the number of housing units built, by 1.6 million units. That is a 3.2 million unit swing. Why the change? In the first four decades there was a steady increase in the vacancy rate for housing units (mostly homes for rent and for sale, but also second homes). **From the mid '70's to 2009, the vacancy rate increased from 8.4% to 14.5%. Since 2009, the vacancy rate has dropped to 12.3%. That alone is a 3.0 million unit swing.**

This juxtaposition, from a 1.6 million surplus in starts, to a 1.6 million unit deficit, may also help explain the run up in home prices that we have seen for both existing and new homes, as well as significant increases in rents. Both of these price increases reflect constraints on supply.

Section 3: In Case You Missed It…

Construction Job Openings Fall Back in May

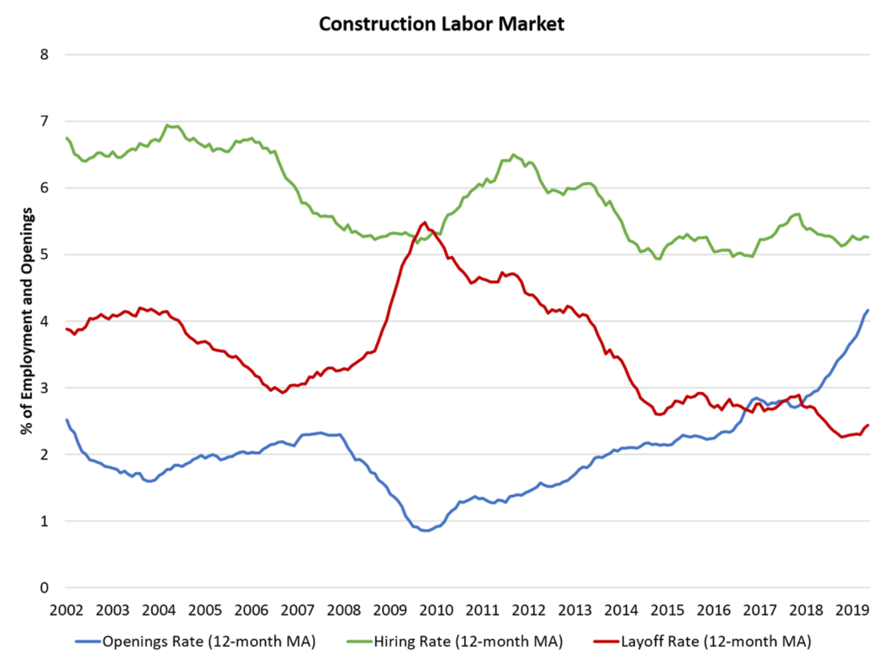
NAHB: BY ROBERT DIETZ *ON* JULY 9, 2019

Data from the BLS Job Openings and Labor Turnover Survey (JOLTS) indicate that construction job openings declined in May off a cycle high count in April. The estimated number of job openings in the construction sector fell back to 369,000 after reaching a post-Great Recession high of 434,000 in April. The decline occurred with a somewhat elevated level of layoffs in the sector. The May 2019 count of unfilled jobs still represents a year-over-year gain relative to the 279,000 estimated unfilled construction jobs in May 2018.

The open position rate (job openings as a percentage of total employment plus current job openings) declined to 4.7% in May, after reaching a cycle high of 5.5% in April. On a smoothed, twelve-month moving average basis, the open position rate for the construction sector increased to 4.2%. The peak (smoothed) rate during the building boom prior to the recession was just below 2.7%. For the current cycle, the sector has been above that rate since October 2016.

The overall trend for open construction jobs has been increasing since the end of the Great Recession. This matches survey data revealing that access to labor remains a top business challenge for builders. However, more modest growth rates for housing construction for 2019 and 2020 are likely to place downward pressure on construction job openings in future data releases. That is, 2019 may be the year in which the job openings rate for construction levels off, albeit at elevated levels. This would nonetheless be a continuing sign for the need for additional worker recruitment into the industry.

The construction sector hiring rate, as measured on a twelve-month moving average basis, cooled to 5.4% in May. The twelve-month moving average for layoffs increased to 2.4%, after somewhat elevated levels of construction layoffs in April and May (the highest counts since the end of 2016).



WillSonn Advisory's view: What isn't shown is the rate of voluntary departures, when workers simply quit. With the twelve-month average of opening elevated, construction labor costs will continue to impact new home construction costs in the coming months. And with flat hiring rates, meaningful acceleration in housing starts are hampered.

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

Sectors

- Timber, Manufacturing, Bioenergy
- Private Industry & Institutional Investment
- Corporate Lending
- Consulting
- Domestic and International

Experience

- Mergers, Acquisitions & Divestitures
- Timberland Operations
- Finance & Planning, Financial Reporting
- Loan Origination & Underwriting
- Operations Support

Expertise

- 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

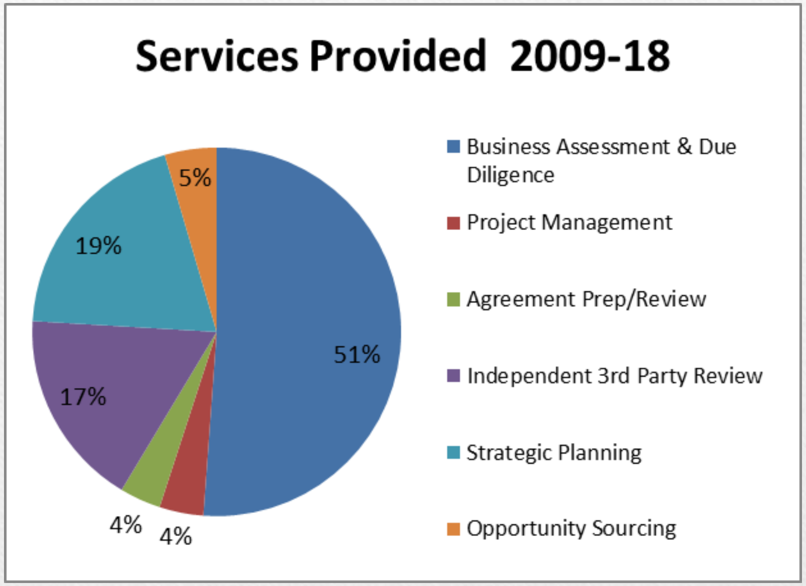
- Strategic Plan Process Design, Facilitation and Documentation
- Company Specific Price, Supply and/or Demand Forecast Development
- Contingency Plan Development and Monitoring
- Financial Planning and Capital Restructuring
- Work-out Strategy Development
- Capital Investment Assessments

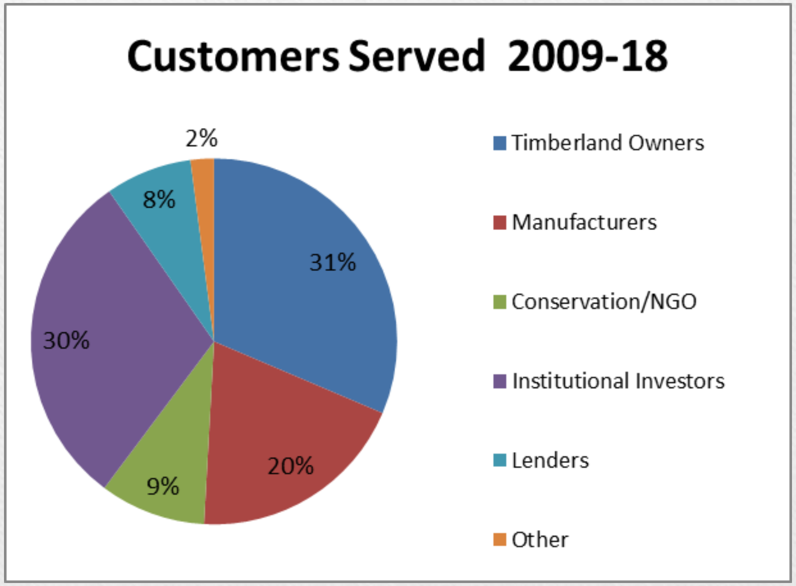
Strategic Planning & Business Restructuring Services

- 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 Profile





Since early 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.

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

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