14 October 2019

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Please find attached the Third Quarter edition of my Market Trends Update. In general, the underpinnings of the timber industry were mixed; elevated builder sentiment, good housing affordability and stable home inventories on the one hand, weaker construction spending, flaccid housing starts, and declining home sizes on the other. Product prices were flat to down, at lower levels, which contributed to softer log prices from coast to coast, not unusual in the Summer quarter. Timberland transactions picked up in the third quarter, as it often does, but the volume remains modest. In this quarter's Deep Dive, I take an updated look at the cost of housing relative to rent, and dive deeper into the issue by age group.

I hope you had a great Summer, and that prospects for the Fall are good. I look forward to staying in touch, and welcome any questions or comments you may have with regard to the Market Trends.

Best Regards,

Will

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Market Trends

3rd Quarter, 2019

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

Q3 2019 Highlights

Market Trends

- Builder sentiment and construction expenditures move in opposite directions (page 4)
- Affordability drifts higher as interest rates move lower (page 5)
- 3rd Quarter Housing Starts improve, though YTD still lags 2018's pace (page 6)
- Year-over-Year Housing Inventory levels decline, Stage of construction steady (page 7)
- Lumber and OSB prices stabilize, Plywood moves lower in the 3rd Quarter (page 8)
- PNW and Southern Log Prices weaken for a second quarter (page 9-10)
- Mill margins move lower in the South, its advantage dips to $65/MBF in Q3 (page 11)
- US Timberland Sales pick up in Q3, with ~$500 million in the pipeline (page 12)

In Depth Coverage

- Trends in Family Income and New Home Costs by Age Group (page 14-16)

About WillSonn Advisory, LLC

Section 1: Latest Trends

Builder Sentiment & Private Residential Expenditures

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

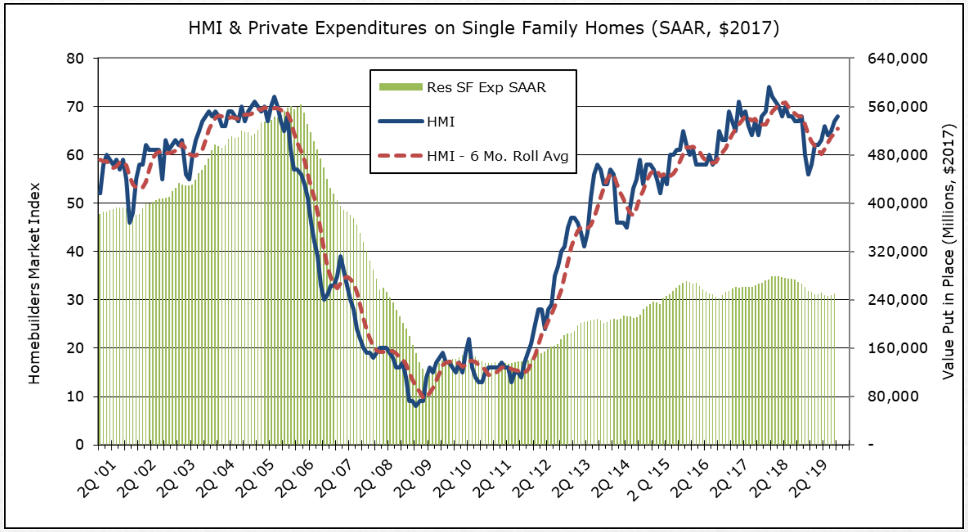
The HMI continued its recovery in the 3rd quarter, posting a score of 68 in September after a 64 reading in June, still well below the peak of 74 in December 2017. The 6-month rolling average settled at 66 in September, up 3 points from last quarter.

The RMI recovered modestly, registering 55 in Q2 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.

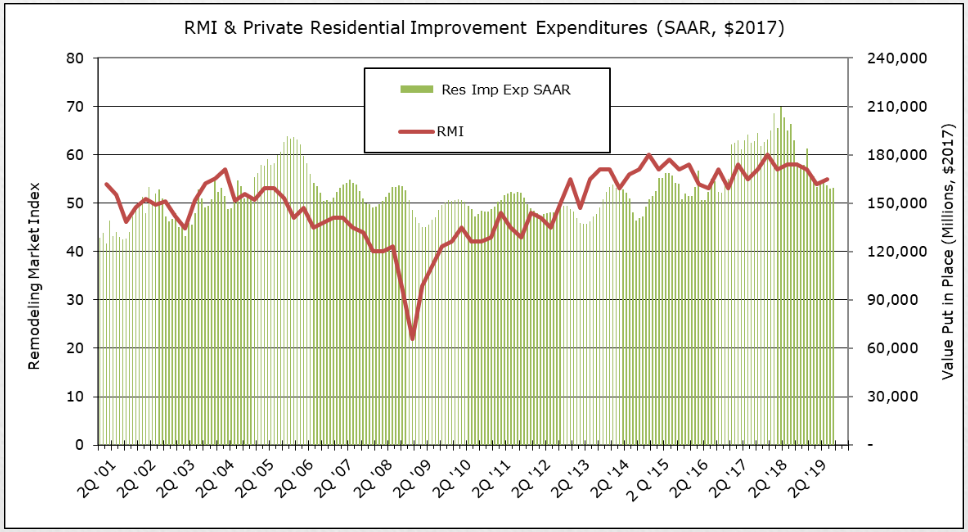
Private Expenditures on Single Family Housing (in constant 2017 dollars, SAAR) **through the first eight months dropped -8.3% below the 2018 levels. Private Residential Improvement Expenditures dropped even further, -15.2% below 2018 levels.** Despite falling interest rates (see the bottom chart on the next page), declining home size, rising home prices, and scarce contractor availability have had a dampening effect on residential expenditures.

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

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



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



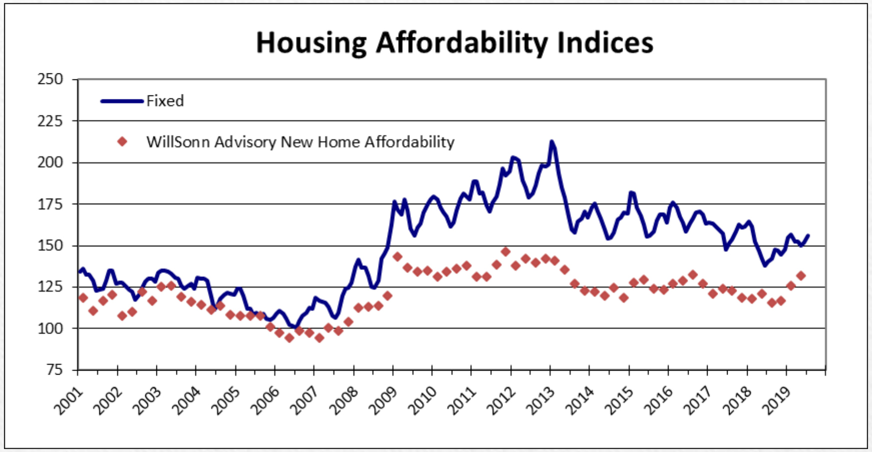
Affordability

The National Association of Realtors (**NAR**) **Housing Affordability Index** ("HAI", top chart) has been on an upward trend since last June, **registering 156 in July**, but the pattern of declining affordability since 2012, peak-to-peak, and trough-to-trough, continues.

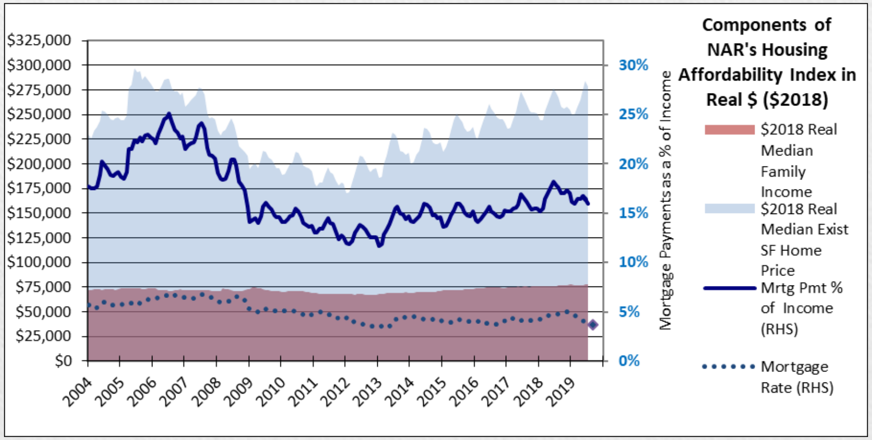
Also depicted in the top chart is my measure of new home affordability, one that incorporates the transaction price of new homes (rather than the listing price of existing homes, as used by NAR). Using NAR's family income and interest rates and Census Bureau median **new** home sale prices, I calculate a more modest **New Home Affordability Index of 132 in Q2 2019**. In 2017 and 2018, New Home Affordability drifted lower as mortgage rates increased. In the first half of 2019 as median new home size and prices declined and interest rates moderated, the Affordability of New Homes rose to its highest point since 2016

The bottom chart has been recast, displaying the movement in the three components of the NAR Affordability Index – home prices, mortgage rates and family income – in Real dollar terms. In the first seven months of 2019 compared to 2018, home prices were up 2.5% and Median Family Income was up 1.0%, while Mortgage rates declined 9.3%. As a result, Mortgage Payments, as a percent of Income declined 1.7%, resulting in the higher HAI, up 3.8% from all of 2018.

In September, mortgage rates fell to an average of 3.61% (see the purple diamond in the bottom chart), 115 bps below September 2018. Holding home price and income steady, **a 50 basis point decline in mortgage rates bumps the Affordability Index up about 10 points**.



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



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

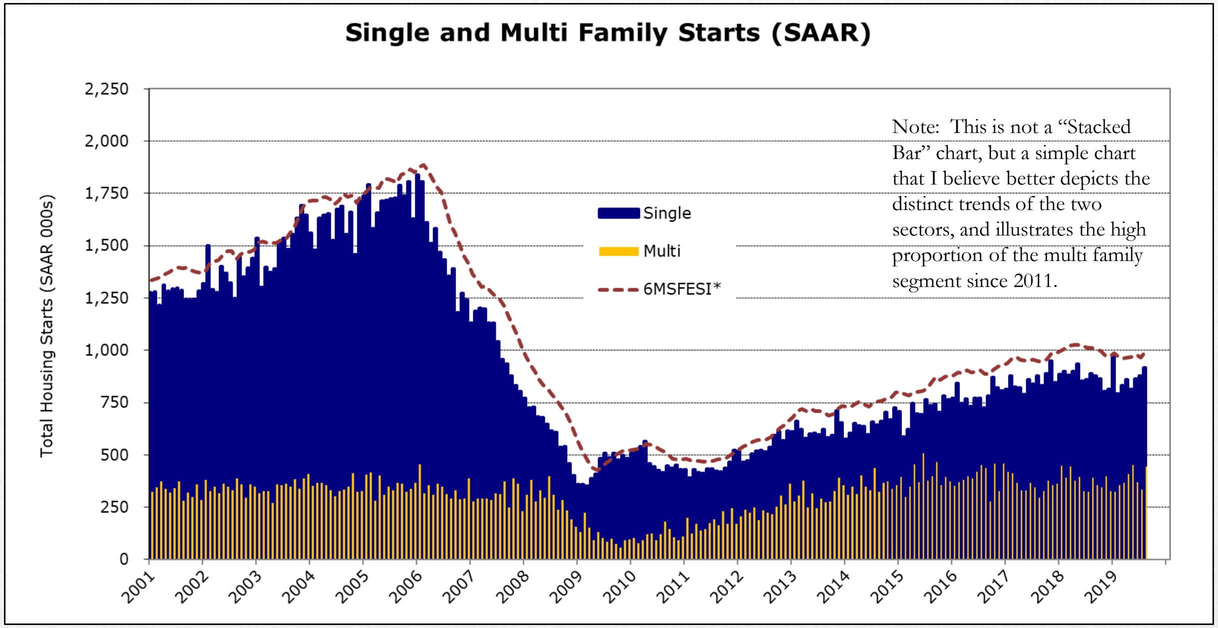
Housing Starts

Total Housing Starts registered 1.364 million units in August (SAAR), **1.6% above the 2018 pace of 1.250 million units**. This was the first month total starts exceeded 1.3 million units since May of 2018. In August, **Single Family Starts registered 919,000 units,** while Multi-Family Starts came in at 445,000 Units.

Year-to-date (SAAR), Total Housing Starts have averaged 1.248 million units, a decline of 0.1% versus full year 2018. **Single Family Starts are down -0.7%, while Multi Family Starts are up 1.7%, compared to full-year 2018.**

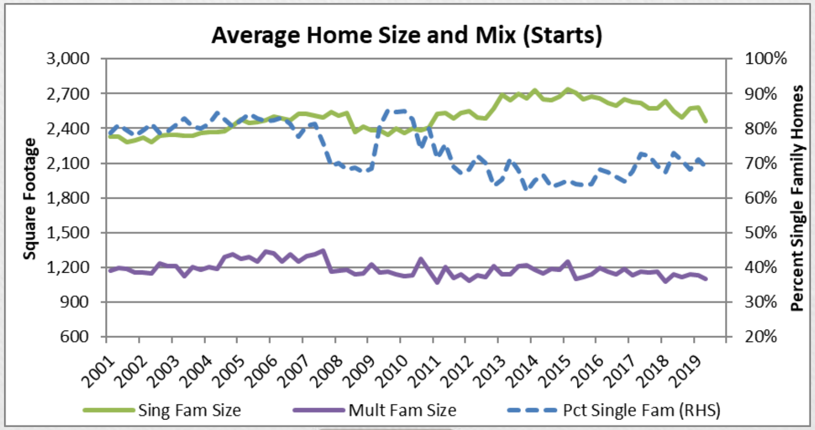
The WillSonn Advisory "6 Month Single Family Equivalent Start Index," recasts a multi-family unit into a single-family unit based on relative wood use, so a better measure of Housing Start demand for wood. After eight months above a million in early 2018, the six-month rolling average has been below 1 million for nearly a year. August's **993,000 unit reading is at 53% 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 Single-Family Home Starts in Q2 2019 averaged 2,465 sq. ft., down 3.7% from 2018's average of 2,561 sq. ft. and is the smallest since 2010. The size of Multi-Family Units started in Q2 2019 averaged 1,103 sq. ft., down 1.6% from the 2018 average of 1,120. **Single Family units made up 69% of Total Starts in Q2 2019, just below 2018's 70% figure and 13 points below the pre-bust average of 82%.**

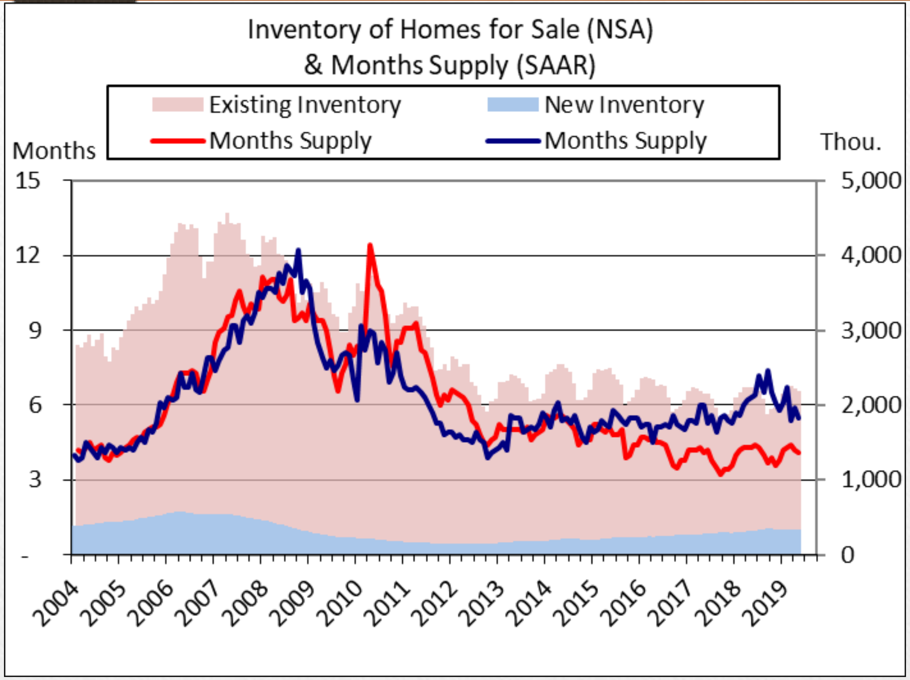
Home Sales Trends

The Inventory of Homes For Sale (Existing + New) totaled 2.188 million units in August, up 310,000 units from December 2018, and down 44,000 units from August 2018. Separately, Existing Home Inventories are up 6,000 units, while New Home inventories are down 50,000 units, compared to August 2018.

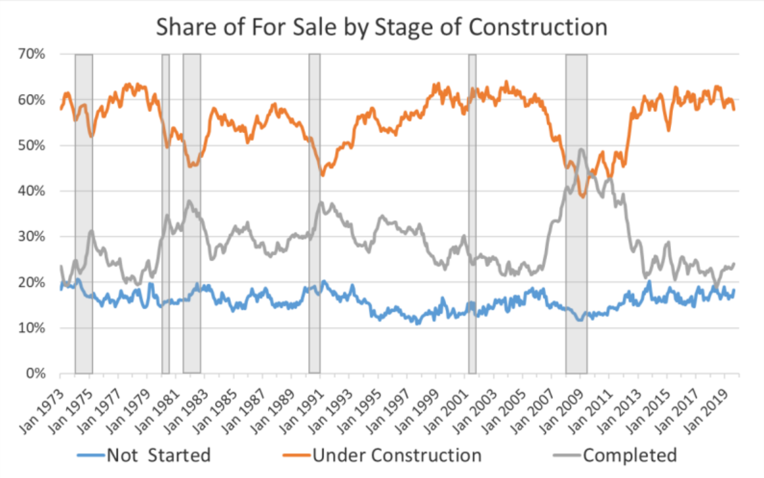
At their respective current pace of sales, there are 4.1 months of sales in Existing Home inventories, and 5.5 months of sales in New Home inventories. Relative to historical levels, Existing Home inventories are normal while New Home inventories are somewhat elevated.

Of the 328,000 New units for sale at the end of August, 24% are Completed, 58% are Under Construction, and 18% 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, I've plotted the share of homes for sale, by stage of construction going back to 1973. Also shown on the chart are the US recessions, in grey bars. What I notice in this chart is that since 1980, a US recession is proceeded by a buildup in the share of Completed Homes for Sale, when it hits or exceeds 30%. What I also see is that the longer the recession, the more pronounced the shift in share of Completed Homes. These patterns are mirrored by a decline in the share of Under Construction; the sale of homes mid-way through construction slowed so that builders got stuck with more completed homes on hand. Makes sense.

To be sure, I am not suggesting that the Share of Completed Homes for Sale should be used as a predictor of a recession in the US. All I am suggesting is that <u>viewing this one component of one industry, and based on historical patterns</u>, it doesn't raise a yellow flag that a recession is imminent in the near-term.

Wood Product Prices

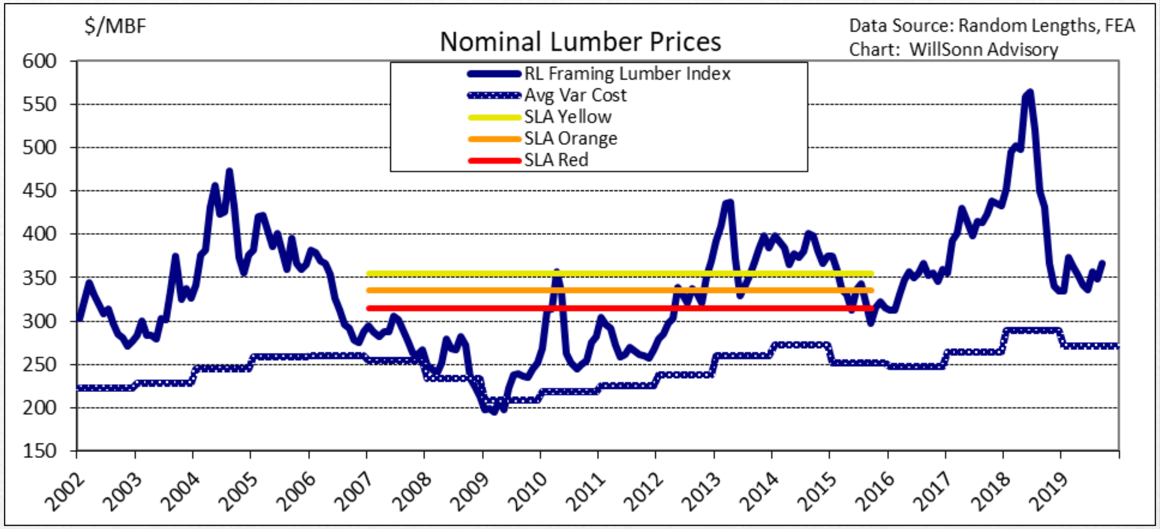
In the first nine months of 2019, while Single Family Housing Starts were down -0.1% and Residential Improvement Spending was down -15.2%, North American lumber production was down an estimated -5.6%. Despite these cuts in production, wood product prices remained soft through the third quarter.

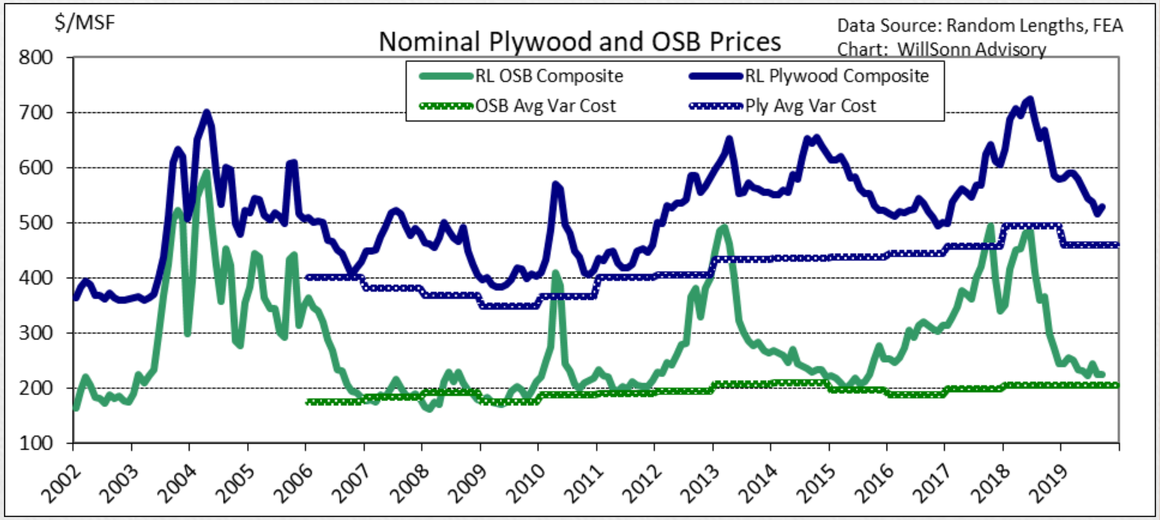
Lumber prices in Q3 2019 recovered its Q2 loss and gained 4% in the quarter, 22% below full year 2018 prices and 24% below Q3 2018 prices. Regionally in Q3 relative to Q2 2019, West Coast lumber mills saw a 1% gain in Dry Dimension and a 13% slide in Green DF prices, Inland mills saw prices move up 1% as well, while Southern sawmills saw prices contract another -5%. Canadian components of the Random Lengths Framing Composite Index saw S-P-F prices gain 5% and 1% in the West and the East, respectively.

Plywood pricing slipped another -6% in Q3 from Q2, to a level -20% below FY 2018 levels. Third quarter movements were uneven regionally, with the Southern Plywood prices -8% lower and Western Plywood down -3% for the quarter.

OSB prices in Q3 inched up 1% to break a two-quarter skid, to remain -40% below FY 2018 prices. No fun there.

According to FEA, variable costs for Lumber are expected to moderate in 2019, down 6%. Plywood is also expected to see a decline in variable costs in 2019, down 7%, while OSB variable costs are expected to remain flat. Not much help for OSB on the cost side.





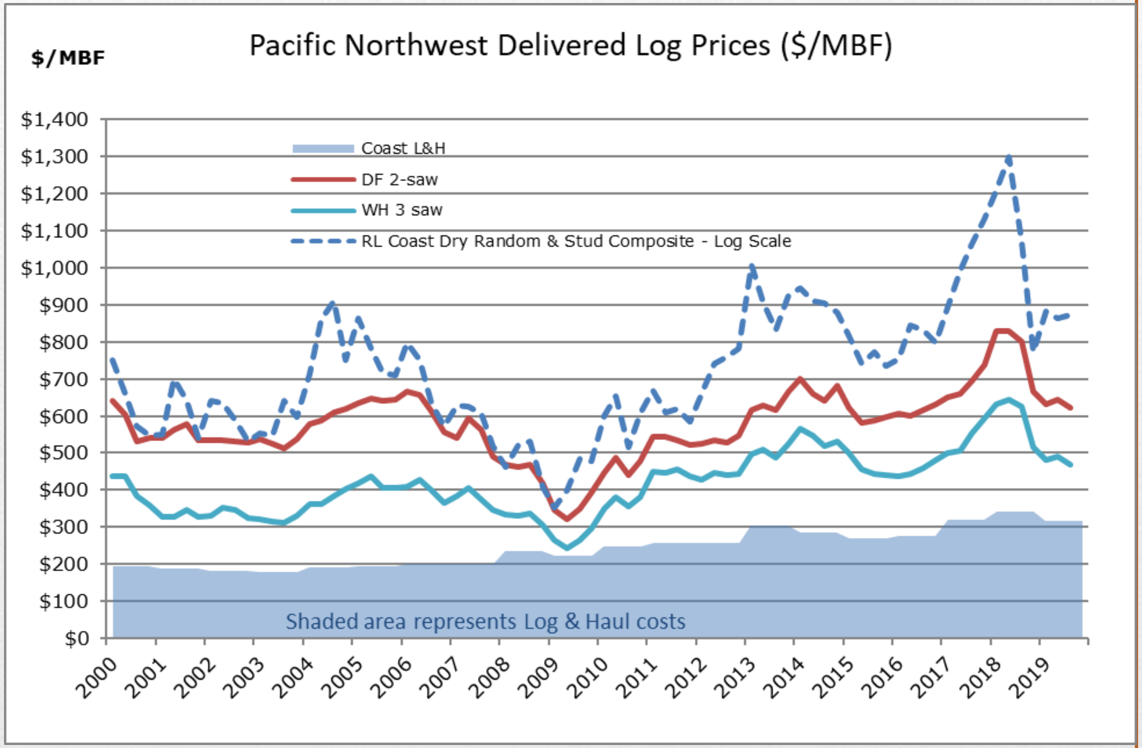
PNW Log Prices

The sharp -33% 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. Chinese tariffs have also dampened log markets in recent months.

Western lumber prices (with about a one-quarter lag) remain the primary driver in West Coast log pricing. Third quarter log prices were 20%-22% below full-year 2018 prices, and were off 25%-27% from the peak in the second quarter of 2018 (compared to a 33% decline in lumber prices Q2 '18 to Q3 '19). During Q3, **Douglas-fir 2saw and western hemlock 3saw log prices retreated -3% and -5% during the quarter, respectively.** As Fall weather arrives in Q4, log prices typically move up $20-$40/MBF.

After adjustments for lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) gained $11/MBF in Q3, 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

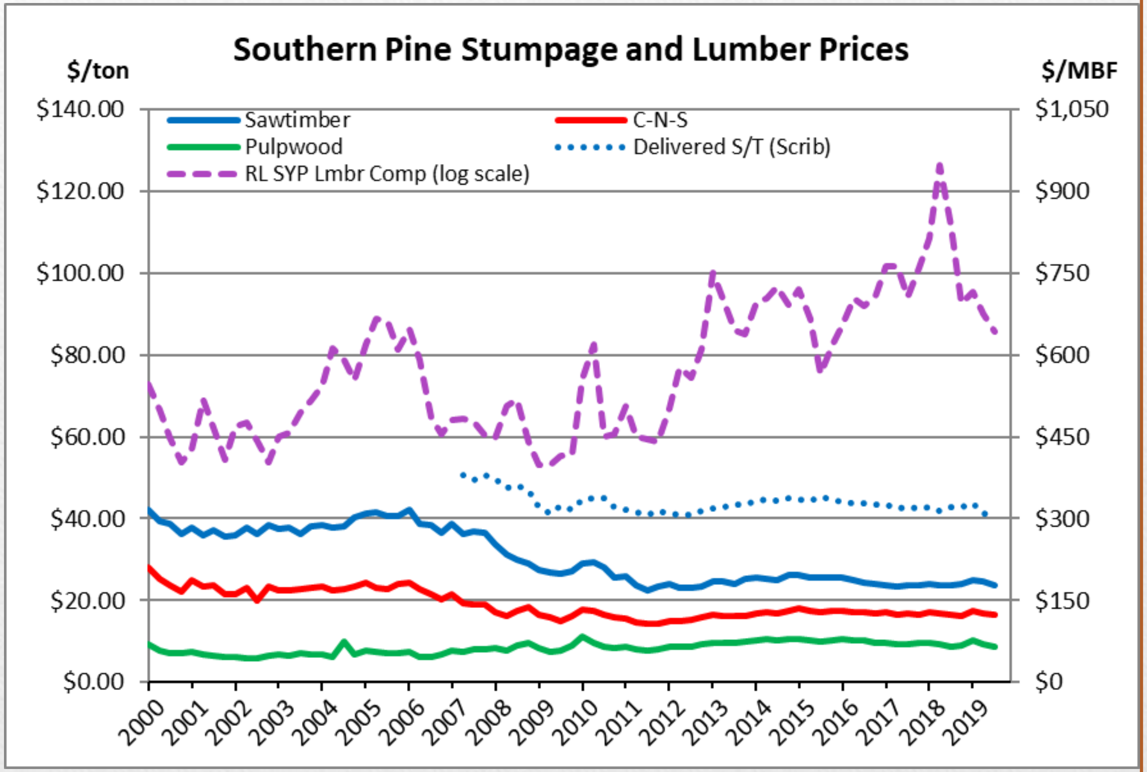
Southern Pine Log Prices

Third Quarter Southern Yellow Pine stumpage prices continued to retreat across the board driven by favorable weather and softer lumber prices. SYP Sawtimber prices lost $0.92/ton in the third quarter (-4%), notching a second quarter of declines. Chip-n-saw stumpage prices were down $0.19/ton (-1%) and pine pulpwood was down $0.59/ton (-6%) in the third quarter. The Q1 gains in all three grades of more than $1/ton (an increase not seen in 10 years) was short lived, as YOY gains have been completely erased. With wetter weather coming, I look for a modest uptick in prices in the coming quarter.

The Random Lengths SYP Lumber Composite, adjusted for lumber recovery, was down 5% in Q3 compared to Q2 '19, now 22% 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 an extended period. Flaccid 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 could help reduce the backlog, further gains in plantation productivity and improved mill recoveries will likely keep a cap on log prices for a number of years.



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

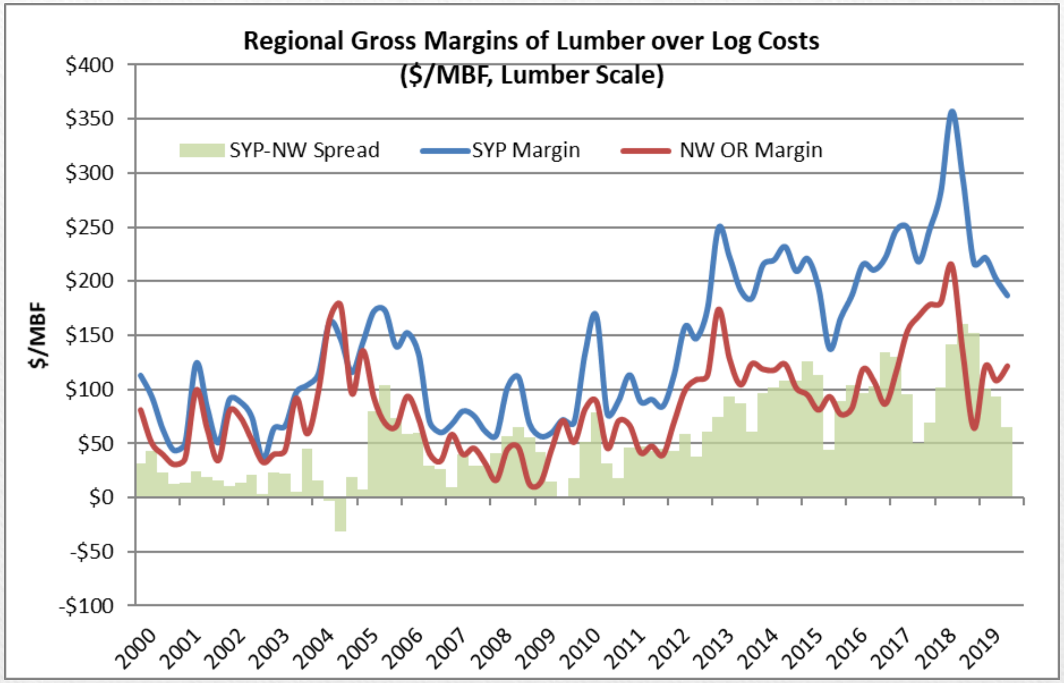
Regional Gross Margins

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 narrowed in the third quarter to $65/MBF, down from an average spread in 2018 of $139/MBF. Gross margins moved in opposite directions this quarter, from $109/MBF to $122/MBF in the PNW, and from $202/MBF to $187/MBF in the South. This was the South's first dip below $200/MBF in 3.5 years. Still, southern sawmills have enjoyed gross margins over $200/MBF in 20 of the last 27 quarters since 2013, 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 $111/MBF over the last eight quarters, more than 3x the 2000-2013 average of $33/MBF.

In my view, Q3 often sees the narrowest gap during the year. I expect the spread between the PNW and South to return to the $100+/MBF level within the next couple quarters, barring an extraordinary event.



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.

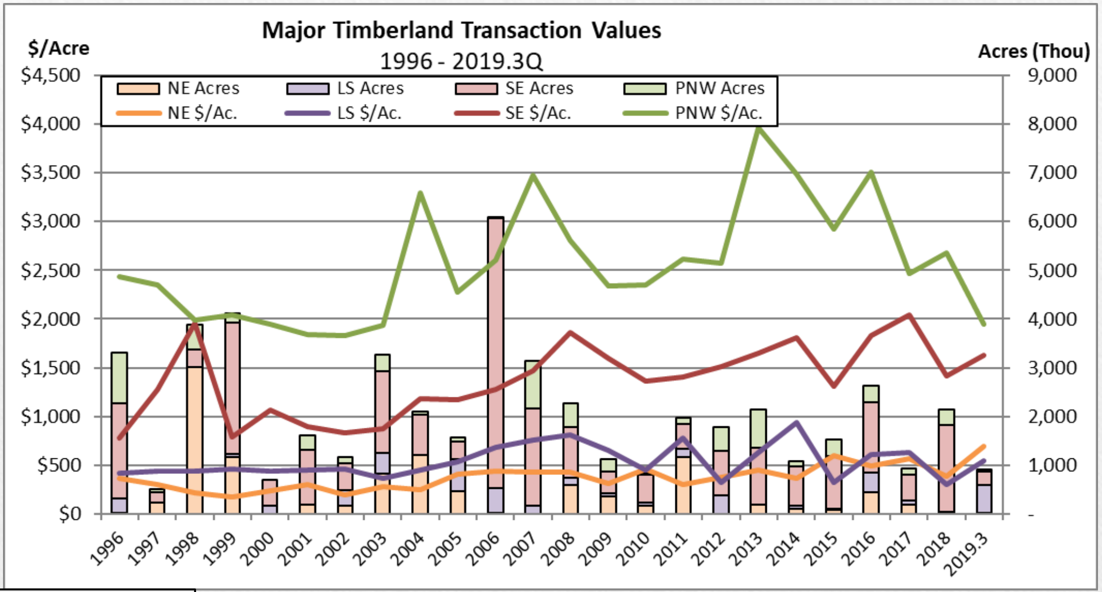
Data Sources: Timber-Mart South, Random Lengths, FEA, Oregon DOF, WA DNR
Chart & Analysis: WillSonn Advisory

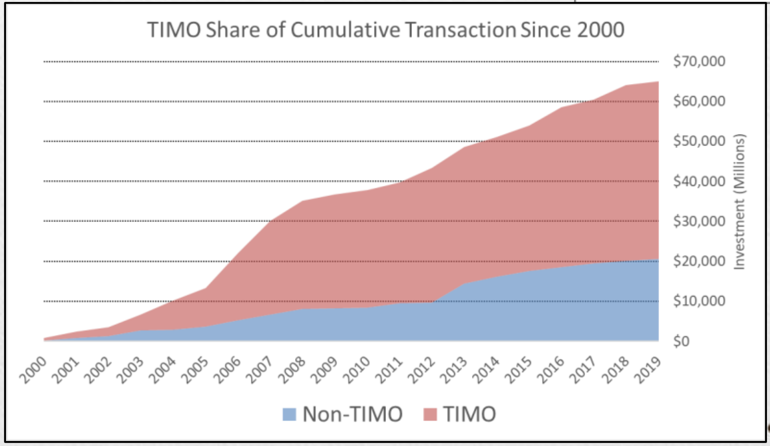
Regional Transaction Values

Closings through early September in 2019 have totaled \$1.033 billion on 1,212,000 acres, 46% of which are in the UP of Michigan, 25% of which are in Appalachia (not shown on the chart to the right), and 23% of which are in the South. According to our friends at RISI, there may be another 500,000 acres or so in the pipeline as of September. PNW values ranged from \$1,537/acre to \$4,250/acre, and in the South, from \$876/acre to \$3,400/acre.

Regional timberland prices have generally moved higher in 2019 from 2018, back to long-term average prices. 2018, as you may recall, was burdened by some larger distressed or lower-site properties. The Pacific Northwest stands out as trailing off significantly in 2019, explained by a dominant sale in the dryer southern Oregon subregion.

By investment sector, Timberland Investment Management Organizations ("TIMOs") have funded 74% of the acquisitions from 2016 to 2019, 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).





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

Rent versus Buy

The financial decision to buy a home hinges on more than the amount of the monthly mortgage payments relative to rent. Cost of ownership includes Property Taxes and Insurance, in addition to the mortgage payment. NAR's Affordability Index ignores these costs.

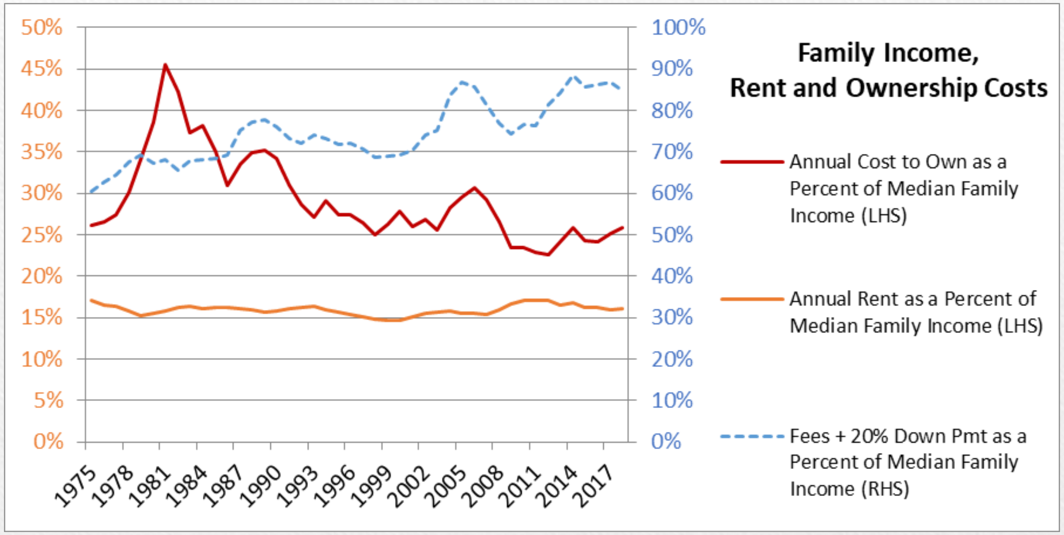
In an update of an earlier analysis, I use New Home sale prices (since it is new home construction where more lumber is used) and estimate property taxes, which I assumed to be 1% of home value, and homeowner's insurance, which I assume to be \$3.50/\$1,000, or 0.35% (both reasonable national averages, though either can vary widely by state). I have not included the cost of utilities or home maintenance, which would drive homeownership costs even higher.

From the early 80's though 2012, the cost of owning a new home, as a percent of family income, has generally been declining, primarily due to declining interest rates. In 2012, this cost hit its low point, just 22.6%, but has since risen to 25.8% in 2018..

At the same time, the "initiation fees" required to purchase a new home (bank fees + a down payment) have been increasing as a percent of median family income, now north of 85% (assuming 20% down). This creates challenges for buyers of a new home, especially a new homeowner or those with minimal equity in their current home looking to trade up.

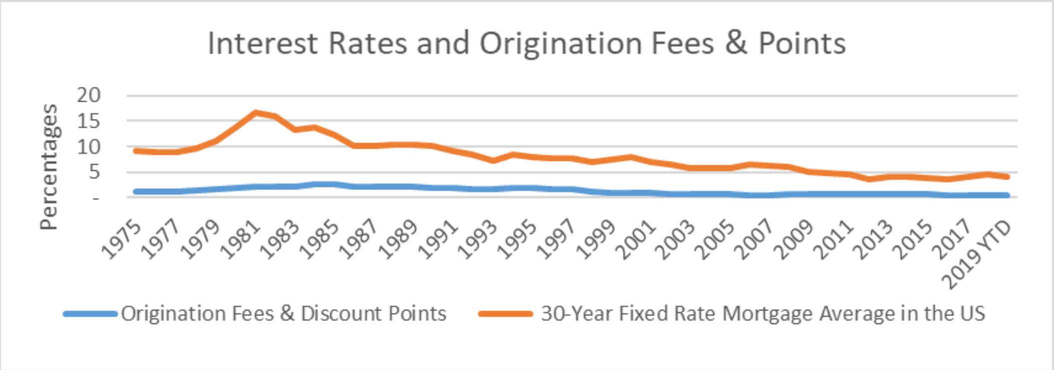
In contrast, the cost of rent has stayed relatively stable, in the range of 15-17% of Median Family Income (and 19%-21% of Median Household Income).

Note: With the doubling of the standard deduction in 2018, for many tax-payers, itemized deductions are no longer taken, erasing the marginal tax benefits of owning a home.



Data Sources: US Census Bureau Current Population Survey

Charts & Analysis: WillSonn Advisory

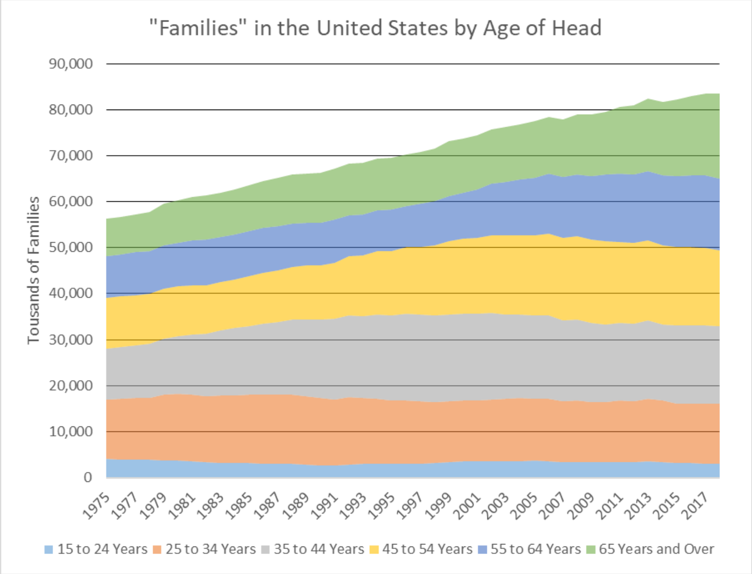


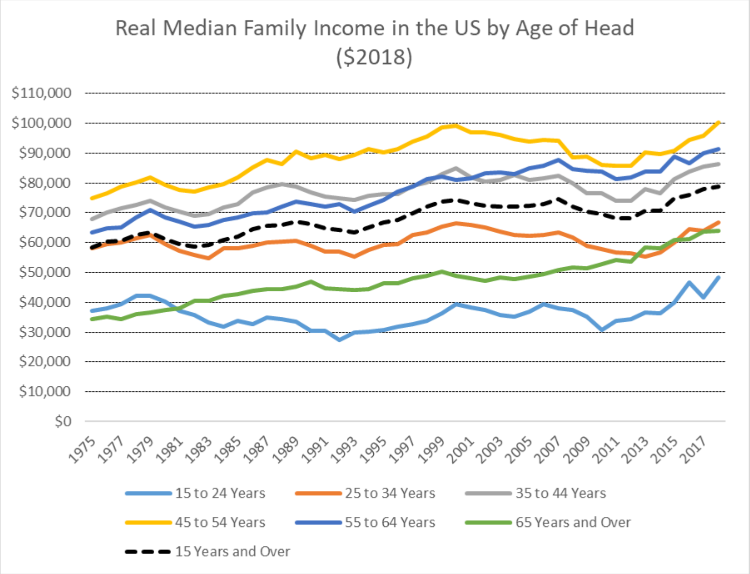
Family Count and Income by Age Group

Not often displayed are the relative number of families in the United States (left hand chart), and their relative income levels (right hand chart) over time.

Over the past two generations, the proportion of families in the 65 and older cohort has grown, while the number of younger families has drifted lower. This is due, in part, to deferred formation of "families" until later in life. Adult roommates aren't "families," they're just "households." Why does age matter? Older families tend to move less often, which means they are selling and buying replacement homes less frequently than younger families. Older families also tend to downsize to smaller homes. Looking closely, you can see the subtle movement of the Baby Boomer Bulge moving up and to the right over time. Also evident is the impact of longer life expectancies.

It's also interesting to see where each cohort sits in relative income levels. Income level for most age groups peaked around 2000, just before the dot-com bust, and most took the next 15-18 years to achieve a comparable income. The exceptions were the youngest and oldest age groups. Income in the youngest (and fewest) families has been relatively flat over the past two generations, while income growth of families 65 and older hardly skipped a beat during any of the past few recessions – pensions, social security, and 401-k's tend to be pretty recession proof, apparently.





Data Sources: US Census Bureau Current Population Survey

Charts & Analysis: WillSonn Advisory

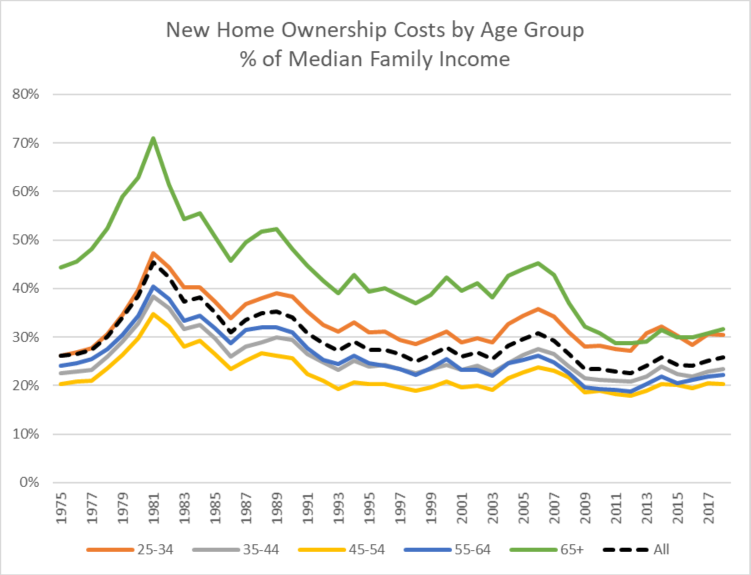
Homeownership costs by Age Group

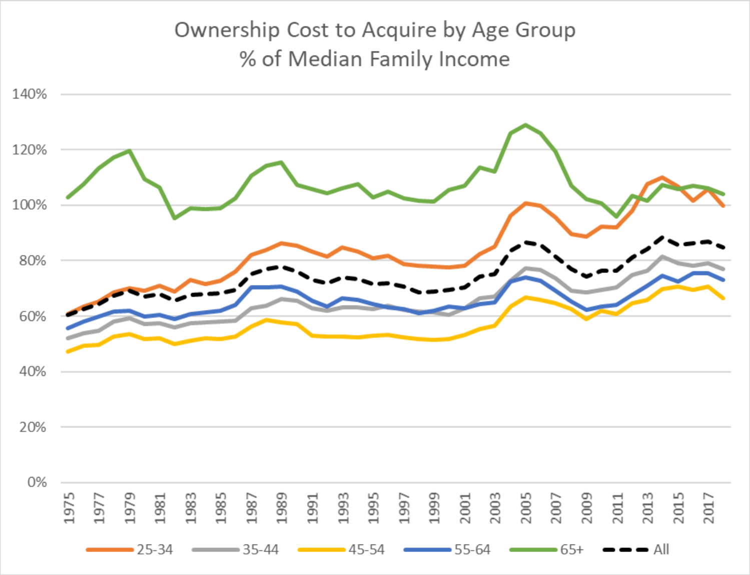
With the added granularity of Median Family Income by the age of the head of families (replicating the analysis from two pages earlier) suggests that while ownership costs (mortgage + property tax + insurance) as a percent of family income for all age groups has improved since the early 1980's, for the last 25 years it has improved the most for the 65+ age group and has been stagnant for the 45-54 and 25-34 age groups. The 35-44 and 55-64 year age groups have seen modest improvements over the same period.

Looking at the cost of entry into home ownership (20% down + origination), the oldest age group would need to have a full year's income to enter new homeownership, but as a group, they also tend to have the most equity in their existing homes. For families in their prime home buying years, the cost to acquire a new home is generally in the 70%-80% range.

So while financing costs of home ownership are certainly favorable today, entry into a new home is more challenging. With median rent in the 15% to 17% range for a family with median income, renting remain a more affordable option, especially for younger families also carrying student debt, which stood at $1.6 trillion outstanding (2Q 2019), more than triple the $500 billion in 2006 *source: Fed Reserve Student Loans Owned and Securitized, Outstanding*).

According to the National Association of Realtors, in 2017, 14% of homes purchased were new homes. For buyers 36 and younger, only 11% purchased a new home, while 21% of buyers over 70 purchased a new home (*2017 NAR Home Buyer and Seller Generational Trends)*





Data Sources: US Census Bureau Current Population Survey

Charts & Analysis: WillSonn Advisory

Section 3: 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

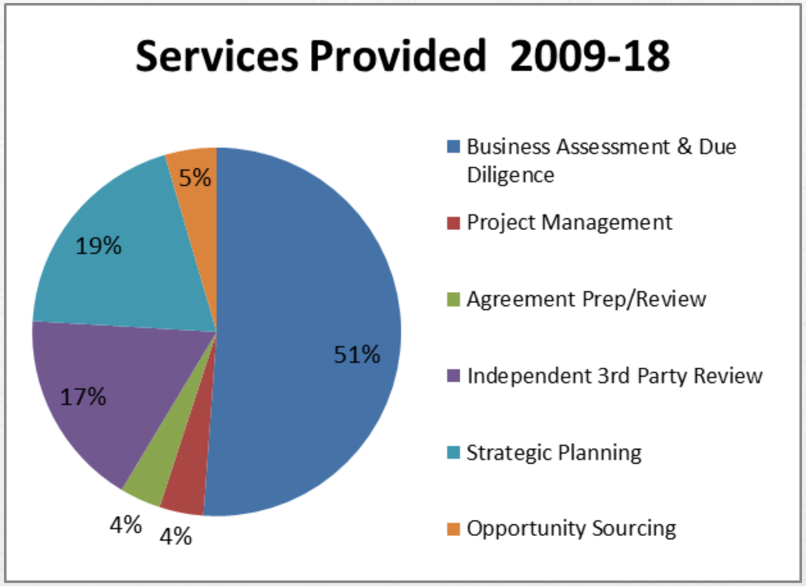
- Strategic Plan Process Design, Facilitation and Documentation
- Company Specific Price, Supply and/or Demand Forecast Development
- Contingency Plan Development and Monitoring
- Financial Planning and Capital Restructuring
- Work-out Strategy Development
- Capital Investment Assessments

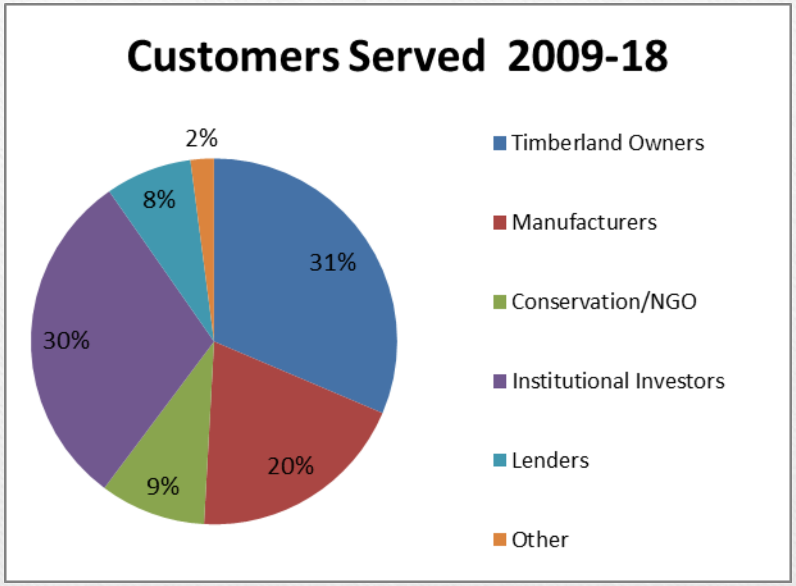
Strategic Planning & Business Restructuring Services

- 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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