3 August 2023

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Q2 Market Trends-WillSonn Advisory

Please find attached your complimentary copy of WillSonn Advisory's Market Trends covering trends seen during the second quarter of 2023. I hope that the later-than-normal distribution of this quarter's material has not been disruptive.

During the second quarter, softer construction markets were evident in a number of indices, from construction spending to builder confidence, and from housing starts to (most) product prices. Affordability is once again near all-time lows, as tight home inventories keep home prices of all vintages elevated, compounded by elevated mortgage rates. Timberland markets were eerily quiet in the first half of 2023 (no discussion this quarter).

You may note the absence of a Deeper Dive this quarter – a lack of inspiration, beautiful PNW weather, and a long list of home projects are my excuses. If there is a subject you would like to see addressed in an upcoming Market Trends, please feel free to share your ideas with me.

Best Regards,

Will

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MARKET TRENDS

2ND QUARTER, 2023

The latest market trends and indices impacting the Timber and Wood Products sectors.

Compliments of WillSonn Advisory, LLC

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Q2 2023 HIGHLIGHTS

Market Trends

- Builder sentiment rebounds to positive territory, spending remains anemic (page 5-6)
- Housing Affordability tests new lows as mortgage rates rise, income lags (page 7-8)
- Total Housing Starts down YOY as the Multi-Family sector gains share (page 9-10)
- Inventory of Homes for Sale reverses course, 11% lower YOY (page 11-12)
- OSB the only major product category to improve in Q2 (page 13-14)
- Most log grades drift lower this quarter (page 15-16)
- Gross sawmill margins edge higher, South:PNW spread narrows (page 17)
- US South Timberland Sales virtually non-existent through two quarters (no chart)

About WillSonn Advisory, LLC

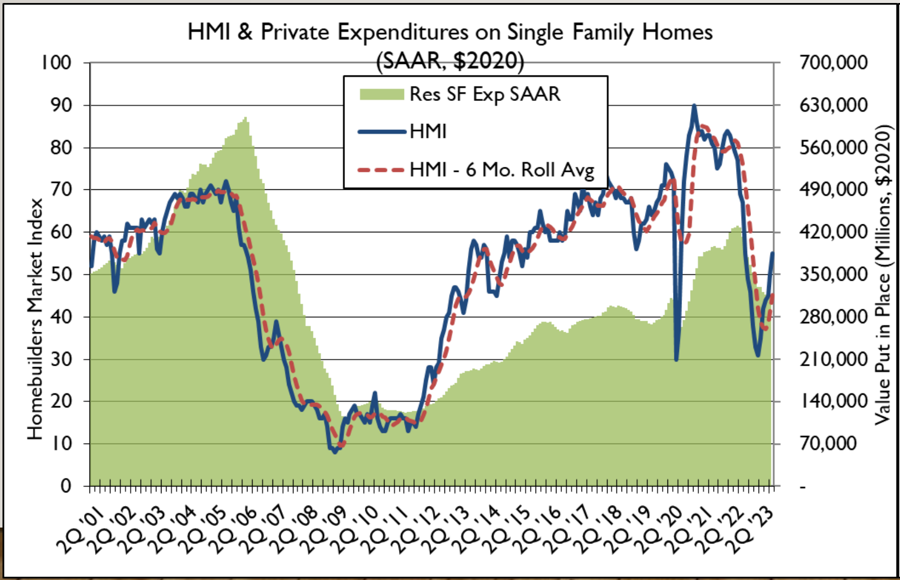
SECTION 1:

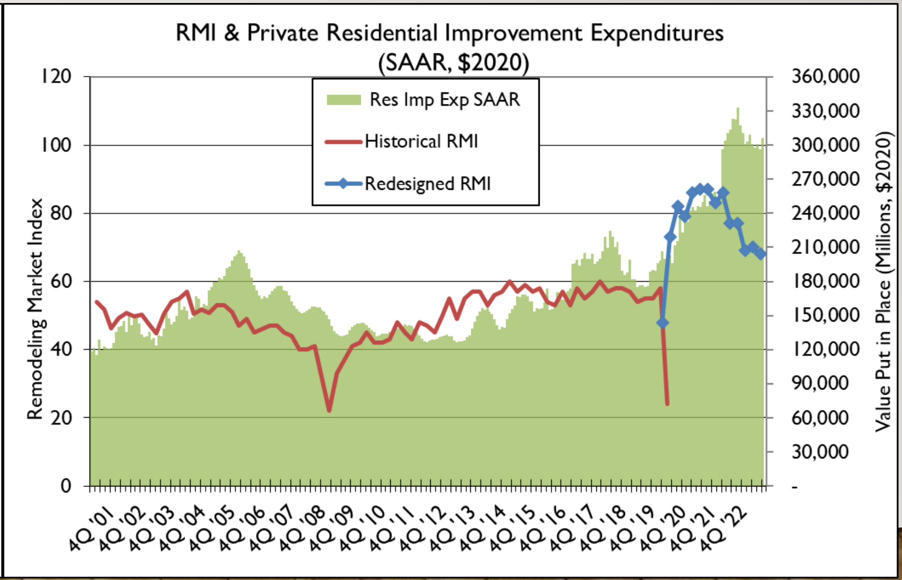
LATEST TRENDS

- Housing Indicators
- Housing Starts
- Home Sales
- Wood Product Prices
- Log Prices
- Timberland Values

BUILDER SENTIMENT & PRIVATE RESIDENTIAL EXPENDITURES

- **Recent Trends**: The Homebuilder Market Index (HMI) ended Q2 2023 with a reading of 56, up 25 points from the December 2022 reading and 21 points lower than April 2022. The Remodeling Market Index (RMI) dipped to 68 in Q2 2023.
- YTD 2023 Real Expenditures on Single Family New Residential are -18.6% below full-year 2022 expenditure levels, following flat expenditures in 2022. YTD 2023 Real Expenditures on Private Residential Improvement slid -3.8% below 2022 levels, following 2022's 24.3% increase.
- **Explanation**: Homebuilder sentiment has improved from recent lows as mortgage rates have steadied, albeit at elevated levels. Higher interest rates and declining building material costs have dampened construction expenditures, along with shorter "honey-do" lists.
- **Implication**: Improving builder confidence generally bodes well for near to intermediate-term housing starts. Higher mortgage costs risk limiting the pool of qualified buyers. As suggested last quarter, competition from pre-pandemic consumer interests (e.g., travel, eating out, a.k.a. "revenge spending"), along with elevated borrowing costs may moderate remodeling activity for a few more quarters.
- **Expectation**: Construction expenditures should steady or improve as lower building material prices make their way through the distribution channels and builder sentiment improves. However, constrained supply of existing homes for sale, a dearth of developed lots, scarce labor and lower contractor productivity will keep residential construction and improvement expenditures in check.

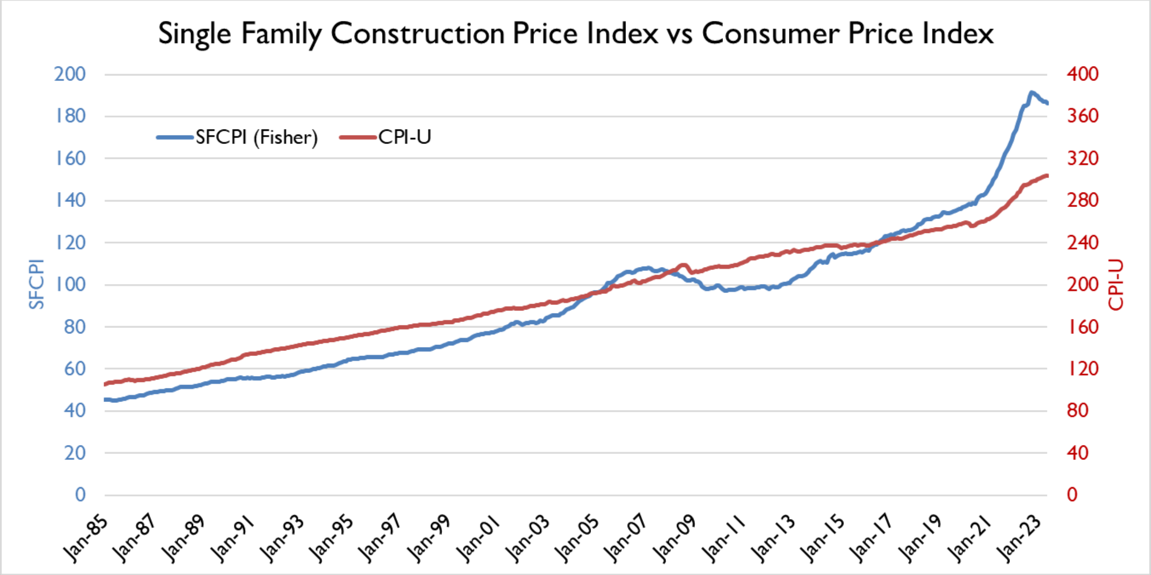




Data Sources: Census Bureau, NAHB, Dept. of Commerce   Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: BUILDER SENTIMENT & PRIVATE RESIDENTIAL EXPENDITURES

- **On the previous page**, 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). A reading over 50 indicates a prevailing positive view of conditions.
  - Note that the NAHB instituted a new RMI survey beginning in Q1 2020, such that comparisons to prior years are meaningless.
- Private Construction Expenditures depicted on Single Family Housing and Remodeling are in constant 2020 dollars, (i.e., inflation adjusted) using the Consumer Price Index – All Urban Consumers.
- **In this chart**, I show the Single Family Construction Price Index (SFCPI), produced by the Census Bureau, which reflects the cost of construction, including labor, materials, and permitting, but excludes the cost of land and other non-construction costs. This index also holds the characteristics of homes under construction constant, so it does not reflect cost changes due to increasing or decreasing house size or amenities.
  - Since 2012, it is clearly visible that the Single-Family Construction Price Index has far outpaced overall inflation, at a pace almost 3 times as fast, increasing 89%, compared to 31% for the CPI-U index.
  - Also note that the rise in inflation has slowed over the last few months, boding well for future moderation of YOY inflation figures.

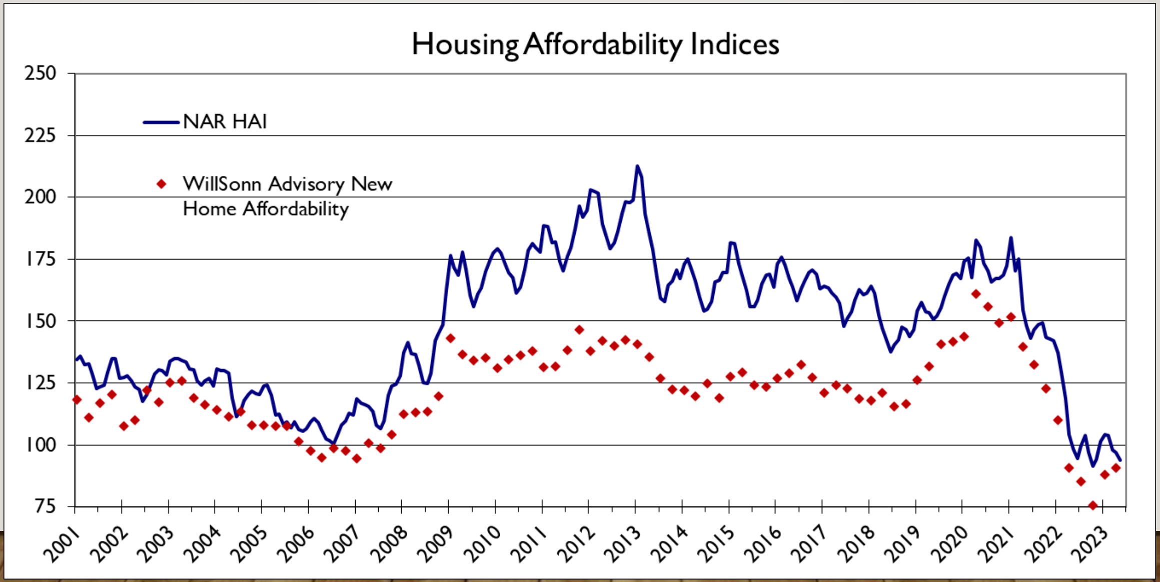


Data Sources: Census Bureau, FRED website

Charts & Analysis: WillSonn Advisory

HOUSING AFFORDABILITY

- **Recent Trends**: The Housing Affordability Index ("HAI") (blue line) has once again dropped below 100 in Q2 2023, registering 94 in May. The New Home Affordability (red diamonds) inched higher to a reading of 91 in 2Q '23, off its record low of 75 in Q4 2022.
- **Explanation**: In 2019 and 2020, mortgage rates eased and median family income accelerated, bolstering this measure of affordability, but soaring home prices in 2021and 2022, and now, elevated mortgage rates and lagging income gains, are pushing affordability lower.
    - As cautioned last year, existing home affordability was overstated in late 2020/early 2021; bidding wars pushed transaction prices above listing prices in many markets and three stimulus checks artificially (and temporarily) boosted family income figures.
- **Implication:** Over the years, there is a rather weak link between affordability and housing starts (R-squared of just .17). In fact, the highest levels of housing starts occurred when affordability was in a trough (~2006). Thus, a "fear of missing out" may have spurred some home buyers to buy sooner than later, before home ownership was forever out of reach. Easy credit back then also helped.
- **Expectation**: The battle to temper inflation will continue to keep mortgage rates higher while thin existing home inventories will keep home values elevated. Expect affordability to continue to remain under pressure in the coming months, but don't worry too much about its direct impact on housing starts. Also don't expect builders to pass along lower building material costs to buyers as lumber and OSB prices ease; rising labor costs, lot prices and permitting costs are eating away at the added margin.

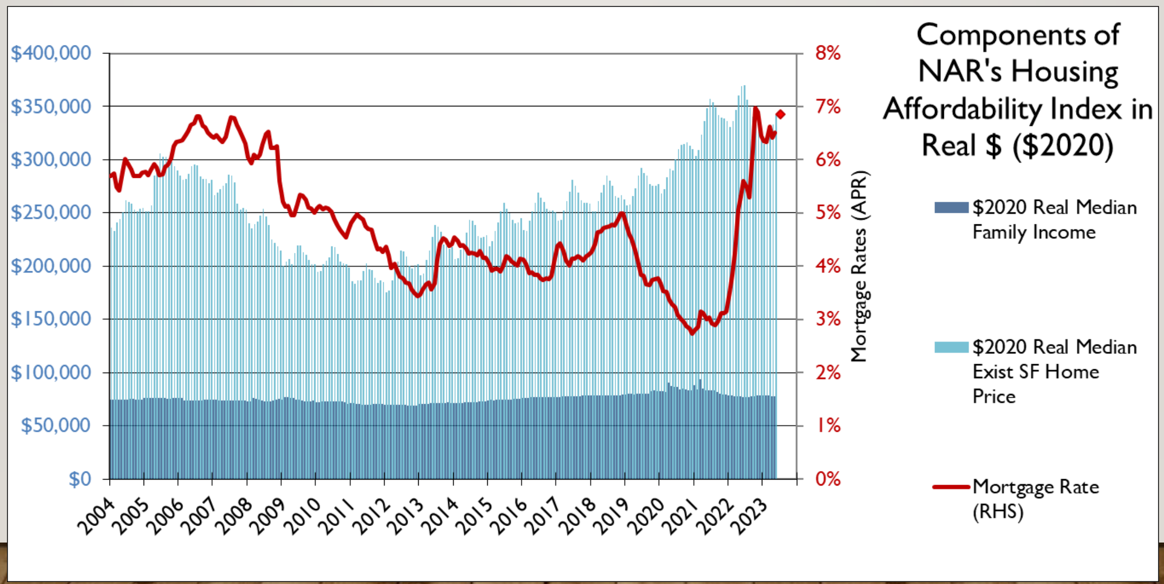


Data Sources: NAR, Census Bureau,, Dept. of Commerce

Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: HOUSING AFFORDABILITY

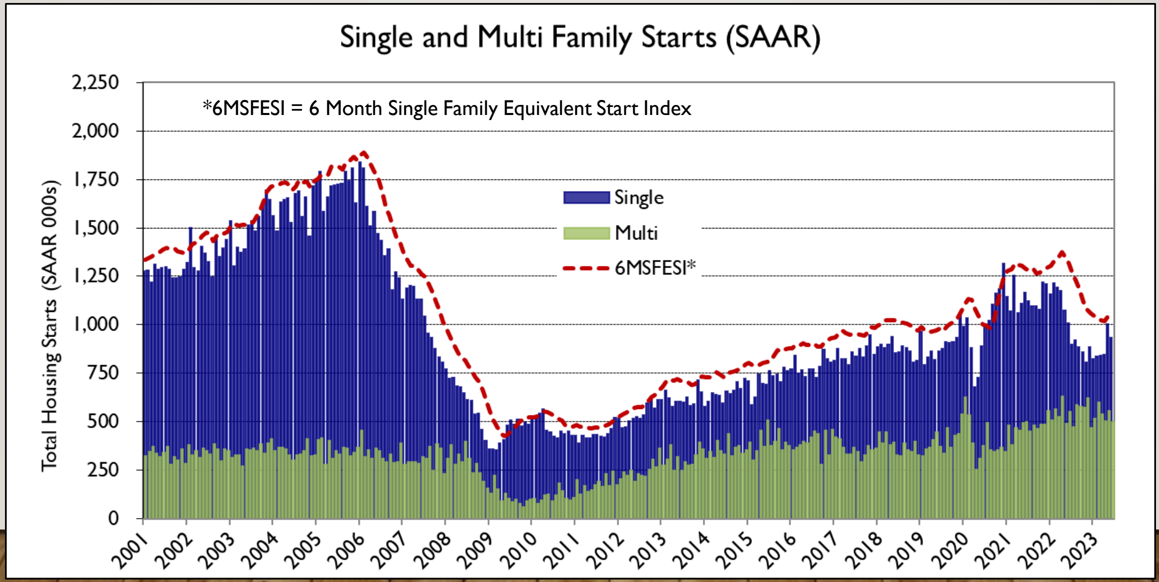
- **On the previous page**, the National Association of Realtors' Housing Affordability Index ("HAI") is based on three inputs: list prices of existing homes for sale, 30-year fixed mortgage rates and median family income. WillSonn Advisory's New Home Affordability uses the actual sales price of new homes, with the same income and mortgage rate figures as the HAI.
    - 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.
- **The chart below** displays the movement in the three components of the NAR Affordability Index – home prices, mortgage rates and family income – in Real dollar ($2020) terms. Adjusted for inflation, YTD 2023 compared to 2022, median real home prices declined 5.5% while real Median Family Income gained 0.5%. But with average mortgage rates 20% higher, Mortgage Payments for the median priced home was 12% higher than 2022, eating up an increasing proportion of family income. All of this resulted in a flagging Affordability Index.
- In May 2023, mortgage rates averaged 6.51%, 120 basis point higher than May 2022. Holding home price and income steady, a 50-basis point increase in mortgage rates drives the Affordability Index down about 10 points. 30-year Fixed Rate Mortgages averaged 6.84% in July 2023, so another decline in affordability is expected in the near-term.



Data Sources: NAR, FRED website
Charts & Analysis: WillSonn Advisory

HOUSING STARTS

- **Recent Trends:** First half 2023 Housing Starts registered 1.416 million units, compared to 2022's total of 1.554 million units. Single Family Starts were down -12% while Multi Family Starts were down -2%, compared to 2022. June's preliminary reading of 1.43 million units is well below the recent peak of 1.805 million units registered in April 2022.
  - 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's demand for wood. June's 1,058,000 unit reading represents 56% of the 2006 peak of 1.9 million SFES's.
- **Explanation**: Higher home prices alone were a threat to sustained gains in Housing Starts. Coupled with elevated interest rates, Family Income gains have been more than offset, keeping aspiring homeowners in the rental market and shifting the market from single to multi-family construction (and pushing rents higher).
- **Implication**: Housing Starts typically account for 30%-40% of wood usage, so as housing goes, so goes lumber and panel demand.
- **Expectation**: With a recession looking less likely and/or severe, Housing starts are expected to slowly improve over the next few quarters. In the longer-term, we can expect housing to continue to gain steam as the housing deficit is replenished and as existing home availability remains tight. Gains may be tempered by limits on construction labor and developed lots, and tight lending standards.

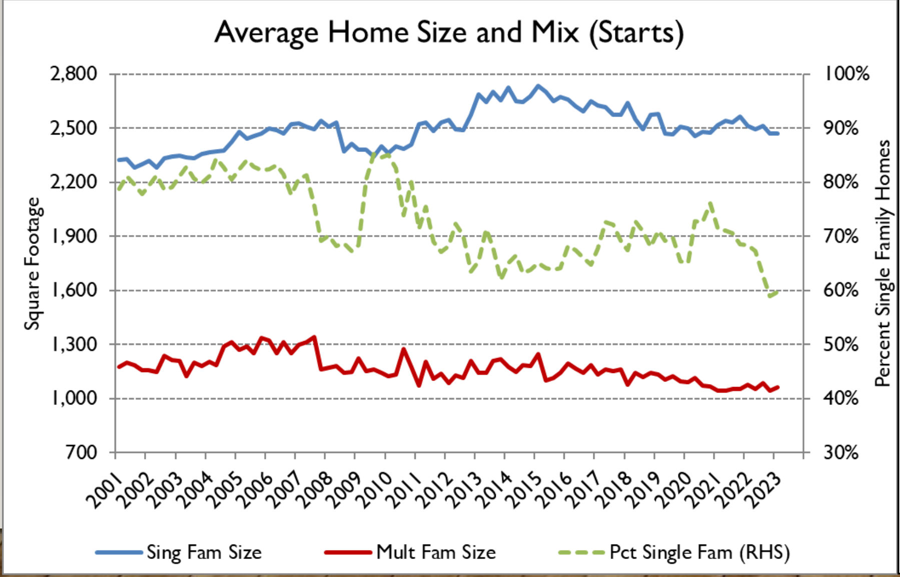


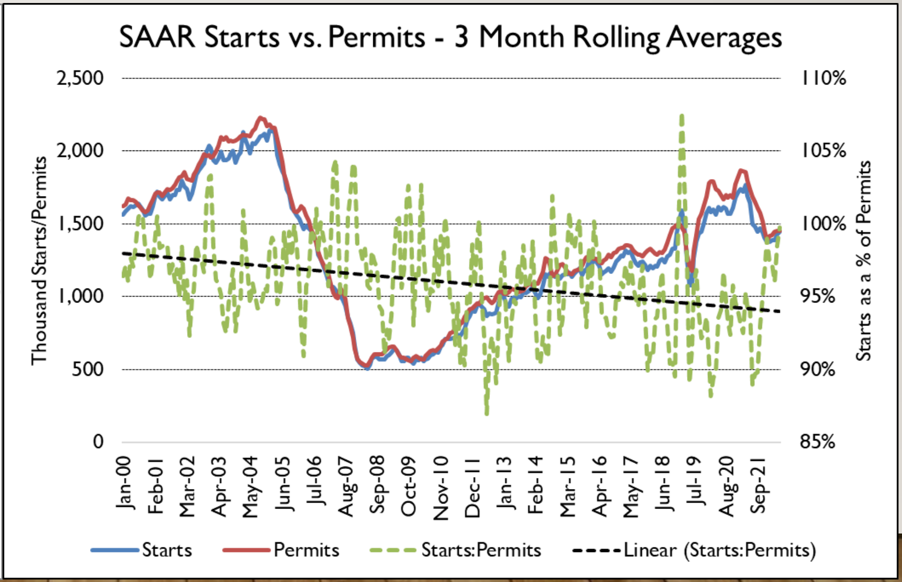
Data Source: U.S. Census Bureau
Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: HOUSING STARTS

- For the Single-Family Equivalent Start Index **on the previous page**, Multi-family units use approximately 2/3 as much wood per square foot of construction 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.
- On the **bottom left chart**, you can see that the size of Single-Family Home Starts trended smaller in 2022, averaging just under 2,500 sq. ft., off a modest -1.6% from 2021's average of 2,538 sq. ft. The average size of Multi-Family Units started in 2022 averaged 1,066 sq. ft., up 1.7% from the 2021 average of 1,049. Little has changed in Q1 2023. The share of Single Family starts has moved lower to the 60% range the last two quarters, 10 points lower than 2021 and 22 points below the pre-bust average of 82%.
- The ratio of Starts:Permits has improved in H1 2023, averaging 98%, compared to 93% in 2022. In the **bottom right chart**, you can see that the ratio had been declining over time, such that the old rule of thumb of ~97 Starts per 100 Permits came into question, suggesting 95% or lower may be more appropriate. As noted earlier, the volatility in construction material prices, along with changes in market share by stage of construction when homes are sold (see page 12) are likely behind the trend. When starts are declining, an uptick in the ratio is expected. Conversely, when starts steady themselves, I expect the ratio to drop again to the 95% range.

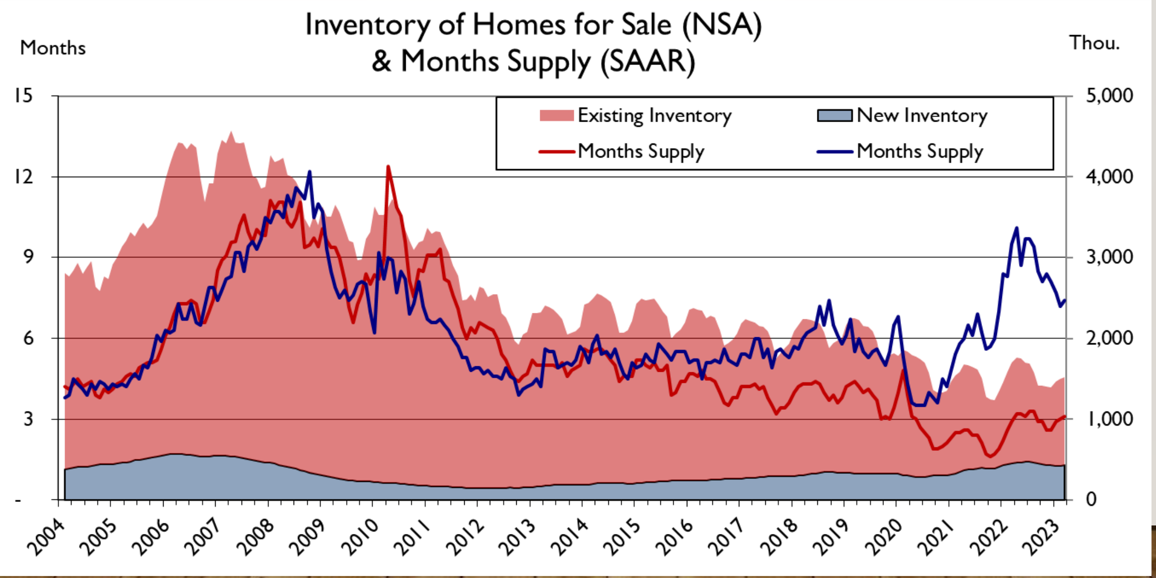
Data Source: U.S. Census Bureau Charts & Analysis: WillSonn Advisory





PACE OF HOME SALES & INVENTORIES

- **Recent Trends**: The Inventory of Homes For Sale (Existing + New) moved higher to 1.515 million units in June, up 100,000 units from December 2022, but -11% (187k units) from June 2022. Separately, Existing Home Inventories are down 170k units, while New Home inventories are down 17k units, compared to June 2022. At their respective current pace of sales, there are a scant 3.1 months of sales in Existing Home inventories, and an excessive 7.3 months of sales in New Home inventories. Five or six months is normal.
- **Explanation**: The inventory of existing homes has been suppressed as homeowners have stayed put, increasing tenure from six or seven years a generation ago, to nine or ten years today. Elevated mortgage rate are an impediment to turnover of existing homes. New home inventories have surpassed the high end of the normal range as the lack of affordability has pushed buyers to the sidelines.
- **Implication**: Tighter inventories are contributing to higher home prices, which in turn limits existing homeowners' options to purchase replacement homes, a vicious cycle. While New homes are a major user of building materials, many R&R projects occur within the first couple years of ownership, so lower Existing home turnover can have a negative effect on repair and remodel demand as well.
- **Expectation**: It is unlikely that the US housing starts will return to basement levels of the late 2000's when lax mortgage standards in the early 2000's torpedoed the housing sector. As expected, with rising mortgage rates, we are beginning to see lower levels of home sales and new home inventories rebuilding. At a minimum, a slower pace of home price growth is expected, and possibly price declines in some markets.

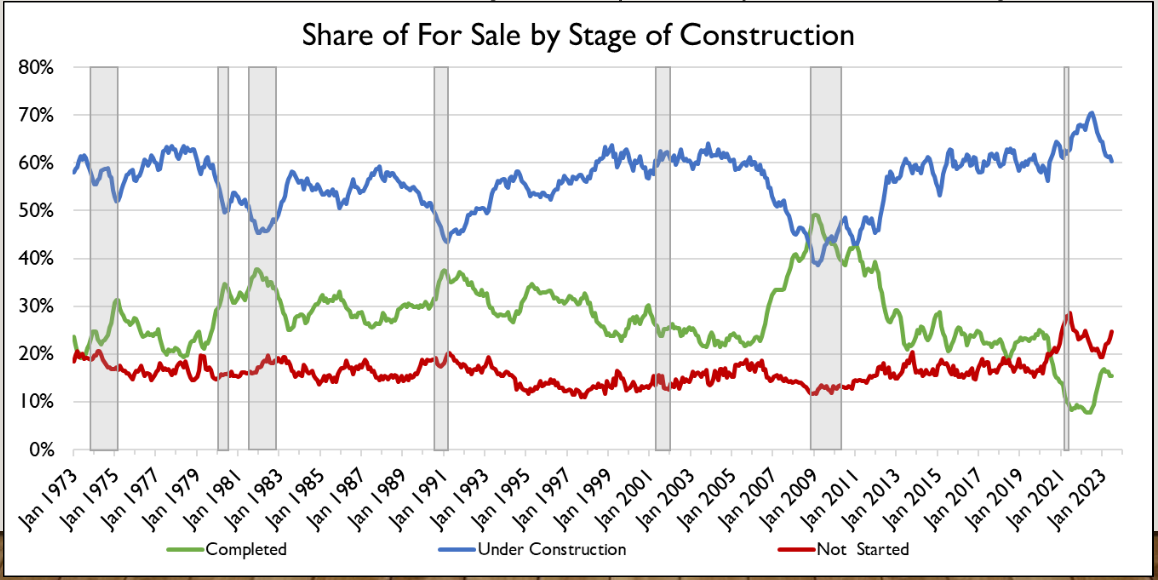


Data Source: U.S. Census Bureau, NAR

Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: PACE OF HOME SALES & INVENTORIES

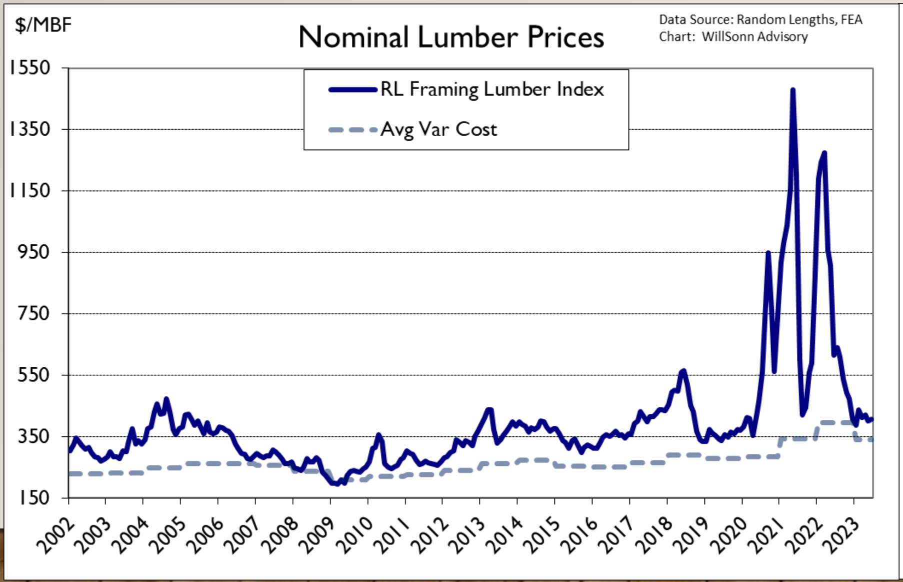
- **On the prior page, t**he inventory of New and Existing homes combines data from the National Association of Realtors ("NAR") which provides data for Existing home sales (both single and multi-family homes), and the U.S. Census Bureau, which provides data for New home sales (single family only). Inventory figures are not seasonally adjusted ("NSA"). Months Supply is derived from inventories and monthly sales volume, which are seasonally adjusted (Seasonally Adjusted Annual Rate, or "SAAR").
- **In the chart below**, I've plotted the share of New Homes for sale, by stage of construction. Also shown on the chart are the US recessions, in grey bars. What I notice in this chart is that a US recession is typically accompanied by a buildup (up to 30%+) in the share of Completed Homes for Sale and the longer the recession, the more pronounced the buildup of Completed Homes becomes. These patterns are typically mirrored by a decline in the share of homes Under Construction (as builders get stuck with more completed homes on hand). If we are entering a typical recession, Completed home shares will grow and Under Construction share will decline.
- Of the 435,000 New units for sale at the end of June 2023, only 15% were Completed (double the recent 47-year low of 8%), 60% were Under Construction, and 25% had Not Yet Started (down from its recent record of 29%, but still elevated).
- With the onset of the pandemic, and its impact on construction activity (slowed) and demand (heightened) we saw the inventory of homes Completed plummet, while the share of homes Not Yet Started climbed. Higher mortgage rates and building product prices in 2022 and 2023 drove demand for new homes lower, allowing inventory of Completed homes to begin to recover.

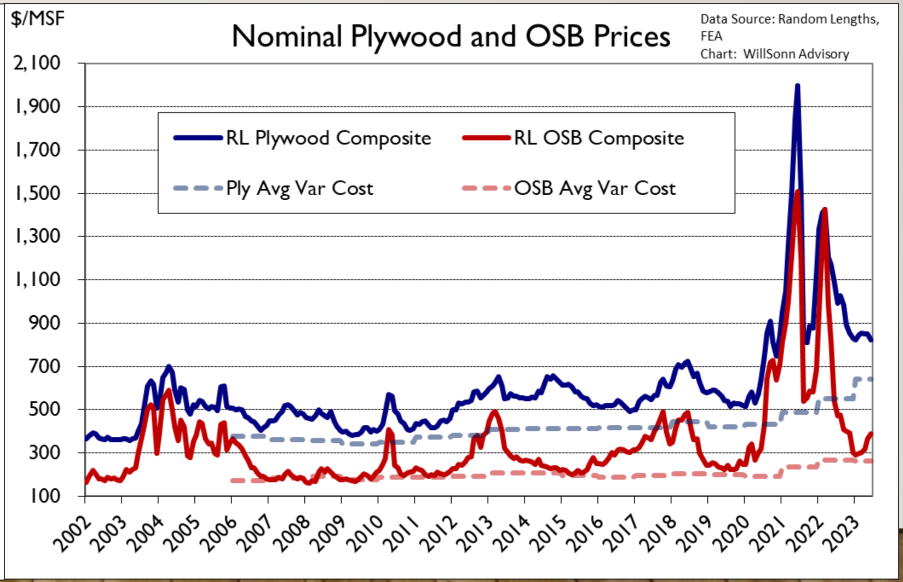


Data Source: U.S. Census Bureau, NAR
Charts & Analysis: WillSonn Advisory

WOOD PRODUCT PRICES

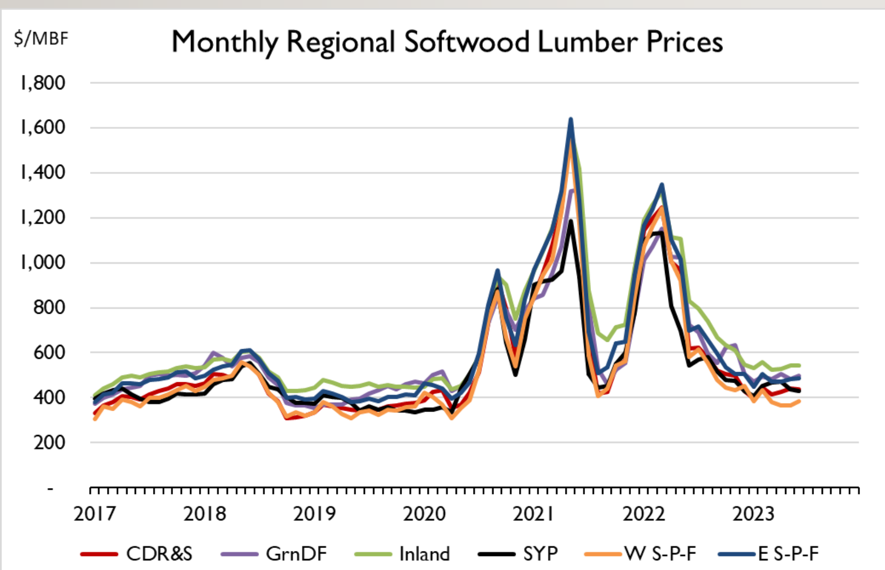
- **Recent Trends**: The Random Length Framing Lumber Composite Index in Q2 2023 was steady, slipping just -1% from Q1, though -47% below Full Year 2022 prices. Panel prices steadied as well. Q2 Plywood pricing were flat with Q1 and -24% below FY 2022. OSB prices recovered 20% in Q2 from Q1, down -49% from FY 2022 prices. Only softwood plywood remains at or above its historical peaks prior to the pandemic.
- **Explanation**: A cooling off of the housing sector has helped bring normalcy (and relative price stability) compared to the extreme price volatility seen during the pandemic when manufacturers, construction and transportation sectors wrestled with periodic labor tightness, rising labor and volatile fuel costs, covid-related work absences and spot capacity closures for multiple quarters.
- **Implication**: As predicted, when building material prices became excessive, some buyers delayed, downsized or abandoned projects, reducing demand and thus price. Historically, high prices would spur additional mill shifts, a surge in imports and substitution from non-wood materials, each of which have been muted through the Covid-19 pandemic. Rising interest rates are now having a ripple effect.
- **Expectation**: As product prices moderate and supply improves, builder and DIY demand should stabilize. It was hoped that an end to pandemic safety protocols would also ease labor constraints, allowing for higher production and easing of transportation bottlenecks. However, labor remains tight, and elevated interest rates and energy costs will suppress demand and margins for a while longer.

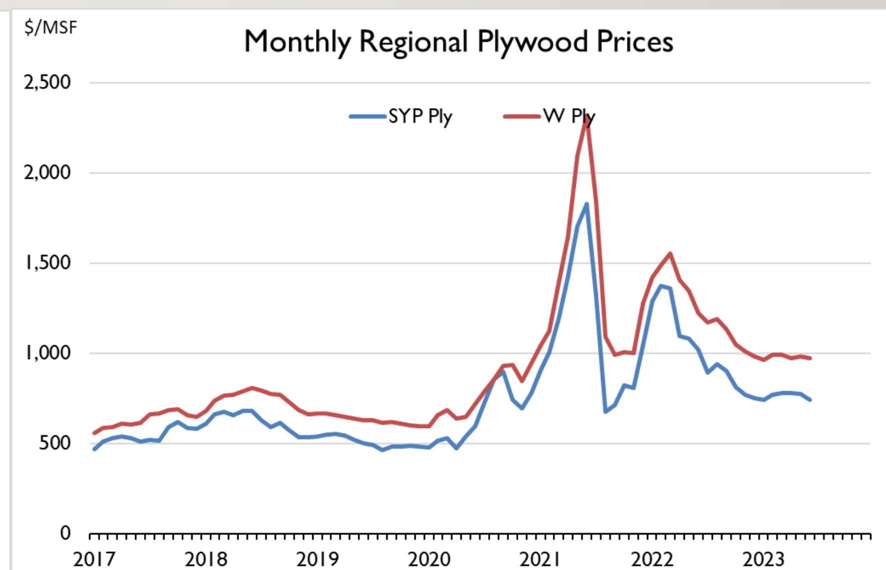




BEHIND THE NUMBERS: WOOD PRODUCT PRICES

- All US regions saw small gains in product prices during the second quarter of 2023, while Western SPF registed a decline.
- Regionally in Q2 2023 relative to Q1 2023
  - West Coast lumber mills saw a 4% gain in Coastal Dry Random & Stud (“CDR&S”) prices and a 1% bump in Green Douglas-fir prices. June CDR&S was -65% below its March 2022 peak, Green DF was off -61%.
  - Inland sawmills saw prices hold steady in Q2, where June remained -59% below its March 2022 peak.
  - Southern Yellow Pine (“SYP”) sawmills saw prices gain just 1% in Q2, as June was -62% below its March 2022 peak.
  - Canadian components of the Random Lengths Framing Composite Index saw S-P-F prices lose -7% in the West and gain 1% in the East. June 2022 Western SPF prices were off -69% while Eastern SPF was off -64%, from their March 2022 peaks.
- First quarter plywood prices held mostly steady in both regions, on par with Lumber. Southern Plywood prices were flat while Western Plywood was off just -1% in the second quarter relative to the first. In June, the South was off -46% from its February 2022 peak, while western plywood was off -37% from its March 2022 peak.

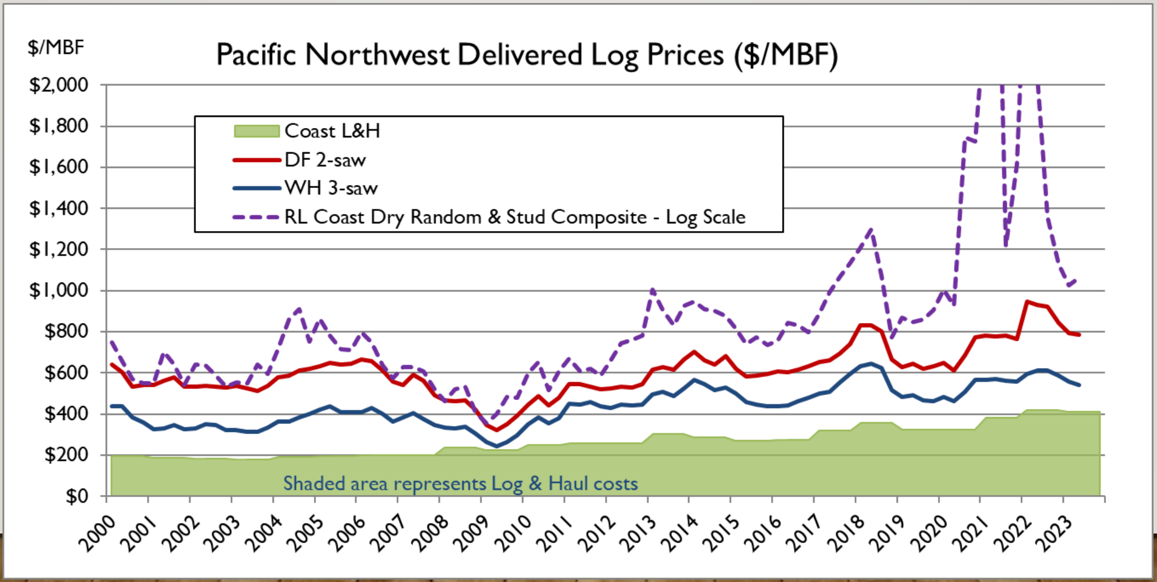




PNW LOG PRICES

- **Recent Trends**: Delivered log prices drifted lower in the second quarter with Douglas-fir 2saw prices off -2% (sitting -14% below 2022 levels) while western hemlock 3saw log prices were off -3% (10% below 2022 levels). Over the past 10 years, 2nd quarter DF log prices have typically lost -10% while WH prices gained 3%, so this quarter's movement was mixed.
- After adjustments for changes in lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) recovered $39/MBF (4%) during the second quarter.
- **Explanation**: With lower demand from housing and the R&R markets, western mill output has declined, and with it, log consumption. A muted fire season in Q2 also kept production in the woods flowing. Weaker lumber prices and more normal logging conditions are now undercutting log sellers' pricing power, though log prices remain elevated.
- **Implication**: As a result, mills have been able to keep a lid on log prices mid way through 2023.
- **Expectation**: Over the past 10 years, third quarter DF 2saw log prices usually inch up $4/MBF while WH 3saw typically see prices slip -$8/MBF. Lumber markets remain under pressure, and Log & Haul costs are expected to ease in 2023 due to reduced salvage and lower diesel prices. With five quarters of moderating lumber prices behind us, home construction still lagging, and a relatively mild fire season mid way through 2023, the retreat in western log price is expected to continue.

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

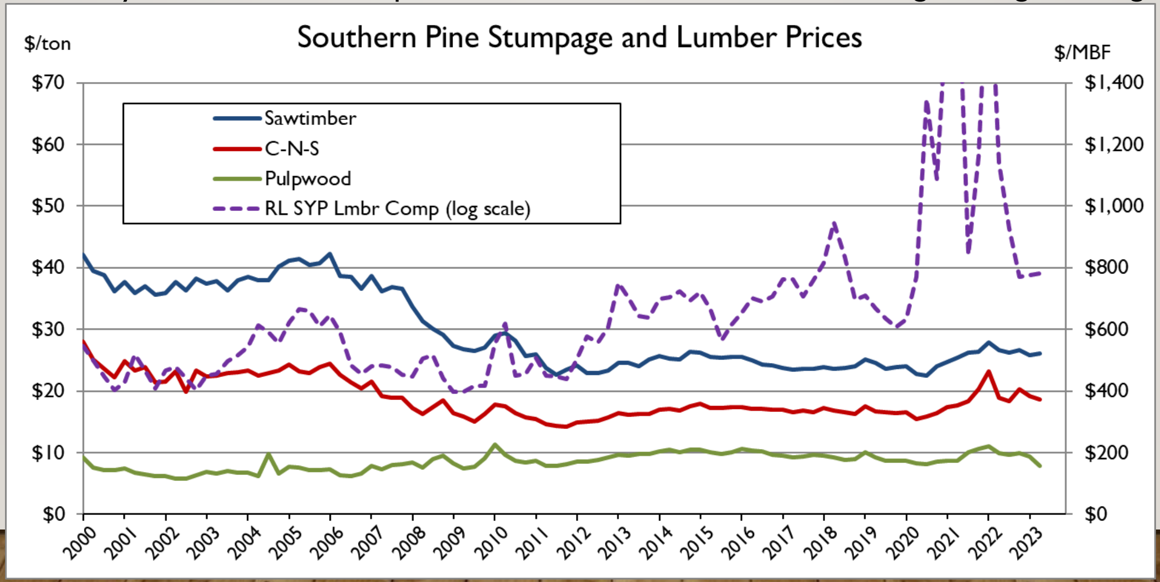


Data Source: Oregon DOF, WA DNR, Random Lengths, FEA, Log Lines

Charts & Analysis: WillSonn Advisory

SOUTHERN PINE LOG PRICES

- **Recent Trends:** Southern Yellow Pine Sawtimber prices edged higher $0.20/ton in Q4 (1%), Chip-n-saw stumpage prices pulled back $0.48/ton (-3%) and pine pulpwood gave up $1.51/ton (-16%). Relative to full year 2022, Q2 PST was down -3%, CNS was down -7%, and PPW is off -22%.
- The Random Lengths SYP Lumber Composite, adjusted for lumber mill recovery, held steady, rising $2/MBF, or 1% in Q2 '23 compared to Q1 '23, now registering 37% below full year 2022's prices.
- **Explanation**: SYP Stumpage prices typically move down $0.33 to $0.75 per ton as Spring weather opens logging access. The big story was the dramatic drop in pulpwood prices, as mounting pulp mill closures, growing sawmill residual output and declining market pulp prices converged to undercut pulpwood prices. Despite growth in southern lumber capacity, sawlogs remain plentiful in the region.
- **Implication**: Sawtimber to Pulpwood price ratios ballooned to 3.3:1 in Q1, its highest ratio since 2009, though still weak. Ratios below 4:1 undercut landowner incentives to grow sawtimber.
- **Expectation**: Q3 markets typically see prices move modestly lower, $0.02 to $0.19 per ton, as Summer logging conditions expand logging access. Even though 2022 Sawlog prices hit a 12-year high (and CNS a 15-year high), my longer-term view has not changed; SYP sawtimber prices will remain under pressure for an extended period as plentiful inventory on the stump, modest gains in housing starts, increased plantation productivity, and incremental improvements in mill recoveries all work against significant gains in southern log prices.



Data Source: Timber Mart South, Random Lengths, FEA

Charts & Analysis: WillSonn Advisory

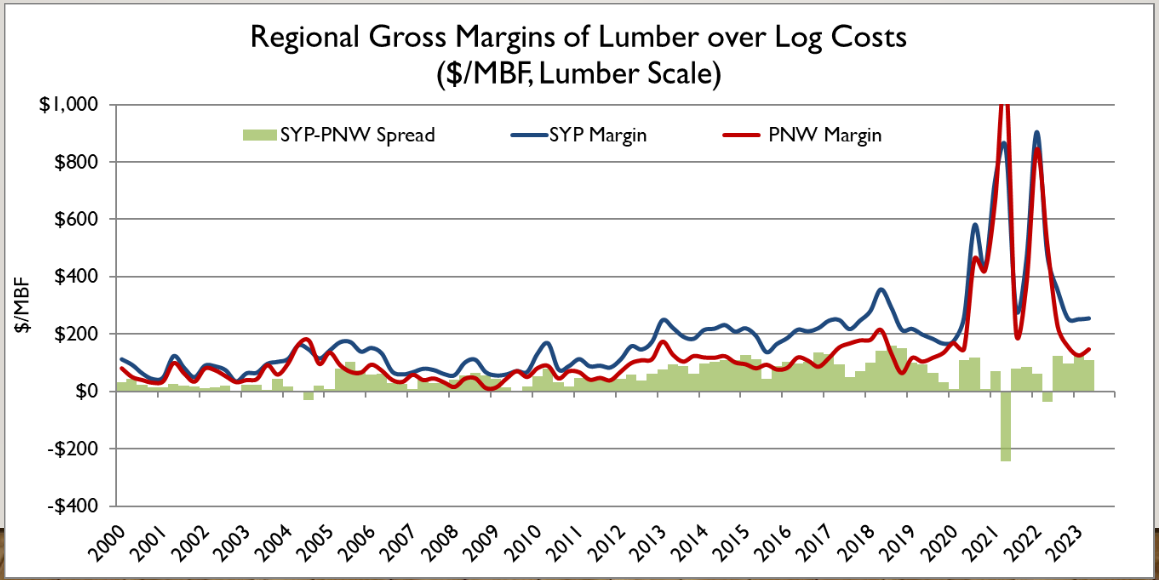
REGIONAL GROSS MARGINS

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 in margins between the two regions is the "spread."

- **Recent Trend:** The gross margin spread between Southern and PNW sawmills remained at new-normal levels in Q2 at $108/MBF in favor of the South, down from $126/MBF in Q1. The $108/MBF spread compares to an average spread in 2022 of $62MBF enjoyed by southern mills. Margins in volatile 2021 were at parity (on average). Gross margins expanded this quarter, from $126/MBF to $147/MBF in the PNW, and from $252/MBF to $256/MBF in the South. Over the past 10 years, Southern sawmills have enjoyed gross margins over $200/MBF in more than 75% of the quarters, while PNW mill gross margins hit that mark less than 25% of the time.
- **Explanation**: Since 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 sawtimber prices, even as lumber prices improved. Both regions saw gross margins balloon (twice!) during the pandemic-fueled run-ups in lumber prices.
- **Implication**: Manufacturing capital investments will continue to favor the US South as its margin advantage persists.
- **Expectation**: I expect the spread between the PNW and South to settle in the $100/MBF range as lumber markets stabilize, in favor of the South. These spreads will persist until standing sawtimber inventories are worked down in the South over the next several years, or until expanded SYP lumber production pulls lumber prices down.

Data Sources: Timber-Mart South, Random Lengths, FEA, Oregon DOF, WA DNR

Chart & Analysis: WillSonn Advisory



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.

SECTION 2:

ABOUT WILLSONN ADVISORY, LLC

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 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
- Independent Review of Harvest Flow Projections and Processes
- Prepare Offering Memorandums and Prospectuses

Project Management Services

- Fiber/Log Supply Agreements
- Purchase & Sale Agreements
- Timber Deeds and Leases
- Conservation Easements & Carbon Projects
- Service and Offtake Agreements
- Joint Ventures & Partnerships
- Contract Negotiating Strategies

Contract Structuring and Negotiation Services

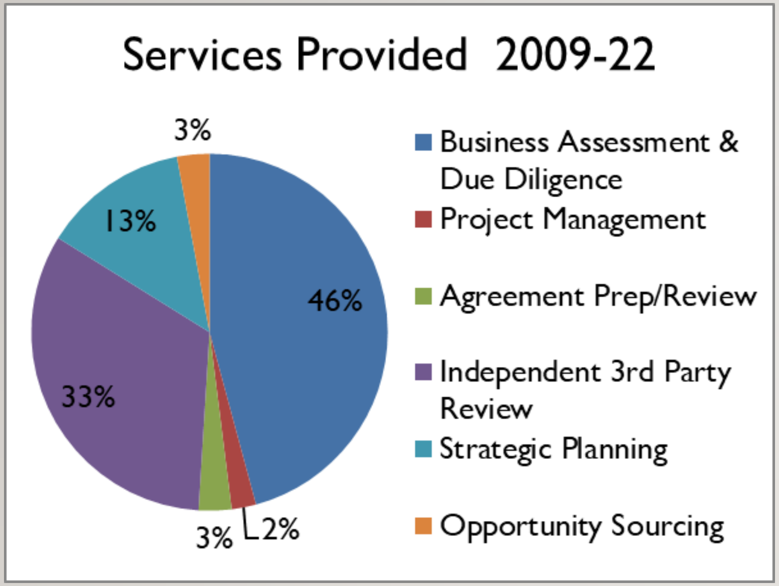
- Strategic Plan Process Design, Facilitation and Documentation
- Company Specific Price, Supply and/or Demand Forecast Development
- Contingency Plan Development and Monitoring
- Financial Planning and Capital Restructuring
- Work-out Strategy Development
- Capital Investment Assessments

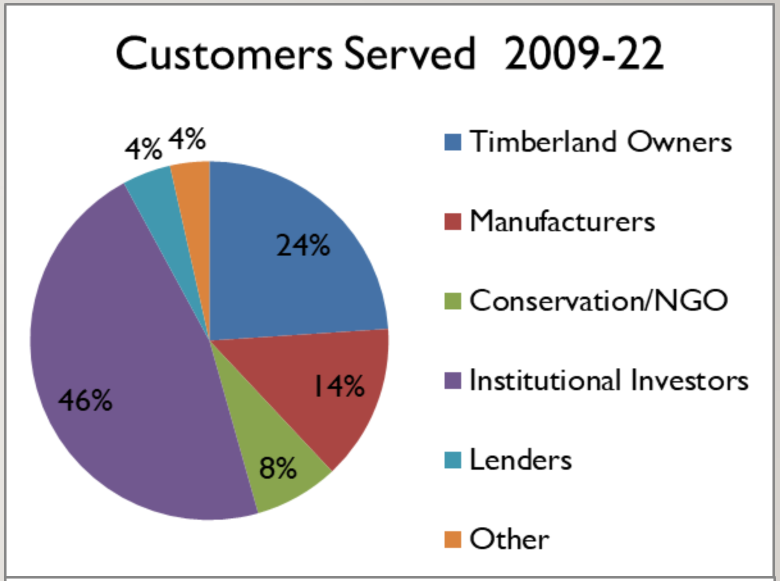
Strategic Planning & Business Restructuring Services

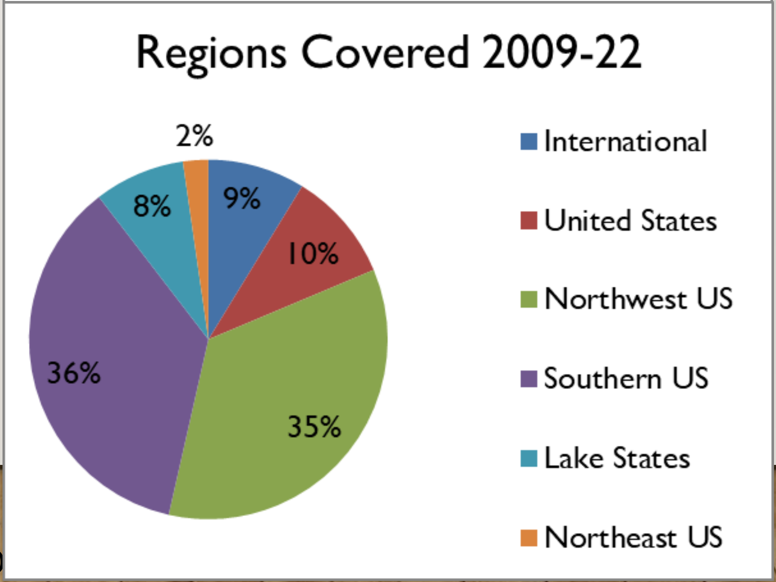
- Validate Acquisition Valuations & Due Diligence Procedures
- Evaluate Existing or Proposed Agreements or Easements
- Interpret Annual Management Plans & Appraisals
- Examine Proposed Transfers of Ownership
- Review Divestiture Timing & Strategies
- Track Investment Performance

Institutional Investor Services

ENGAGEMENT PROFILES







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

I look forward to receiving any comments or questions you may have and would welcome the opportunity to serve your consulting needs.

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