MARKET TRENDS

3RD QUARTER, 2022

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

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Q3 2022 HIGHLIGHTS

Market Trends

- Builder sentiment plumets while spending growth slows (page 5-6)
- Housing Affordability keeps diving as mortgage rates soar (page 7-8)
- Housing Starts retreat as the Multi-Family sector gains share (page 9-10)
- Inventory of Homes for Sale stabilizes as sales slow (page 11-12)
- Product Prices keep diving in Q3 as demand wanes (page 13-14)
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LATEST TRENDS

Housing Indicators

Housing Starts

Home Sales

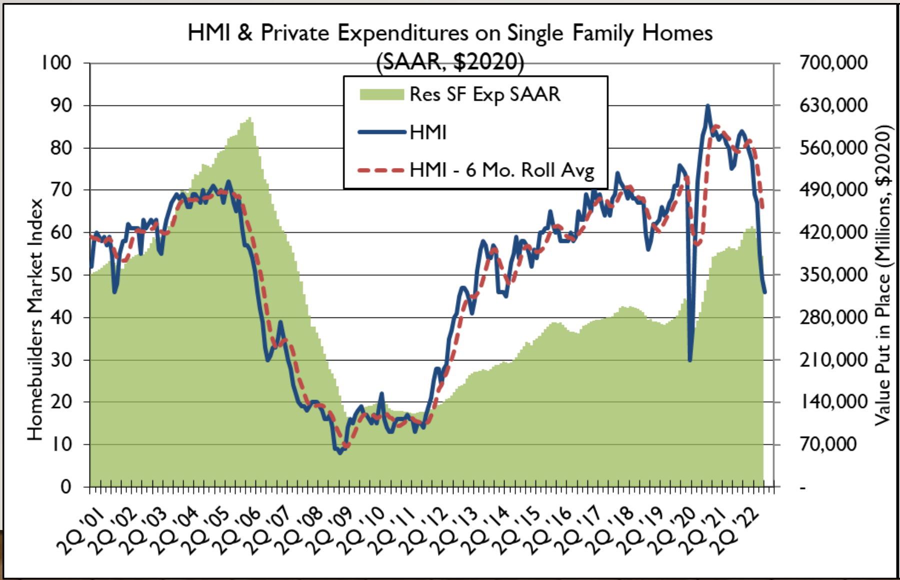
Wood Product Prices

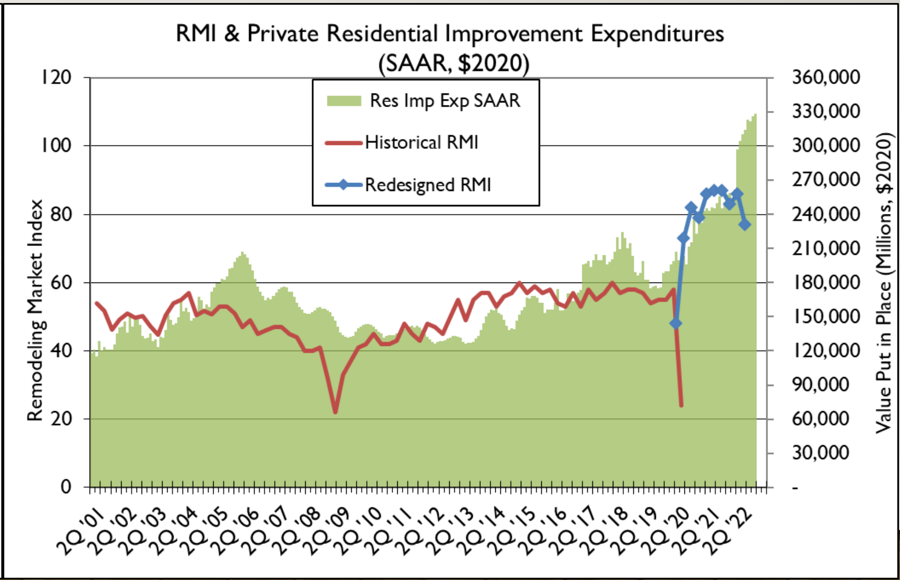
Log Prices

Timberland Values

BUILDER SENTIMENT & PRIVATE RESIDENTIAL EXPENDITURES

- **Recent Trends**: The Homebuilder Market Index (HMI) ended Q3 2022 with a reading of 46, down 13 points from the June 2022 reading and 38 points from Dec 2021. Likewise, the Remodeling Market Index (RMI) dropped to 77 in Q2 2022, down 9 points from Q1.
- YTD 2022 Real Expenditures on Single Family New Residential exceeded 2021 levels by 5.9 %, following a 29.2% gain in 2021. YTD 2022 Real Expenditures on Private Residential Improvement increased 25.7% above 2021 levels, following 2021's 15.9% increase.
- **Explanation**: Rising interest rates are dampening Homebuilder and Remodeler sentiment. Despite faltering housing starts, longer construction times plus strong remodeling activity, coupled with rising labor and material costs, continue to push expenditures higher.
- **Implication**: Declining builder confidence generally bodes poorly for near to intermediate-term housing starts. Higher construction costs risk limiting the pool of qualified buyers and cause delays in construction. A resumption of pre-pandemic consumer interests (e.g., travel, eating out), along with rising inflation and borrowing costs will likely undermine strength in remodeling activity in later quarters.
- **Expectation**: As warned in past editions, in the longer-term, construction expenditures should continue to see expenditure growth slow or even contract, as lower building material prices make their way through the distribution channels. However, rising interest rates, constrained supply of existing homes, a dearth of developed lots, scarce labor and lower contractor productivity will keep residential construction and improvement expenditures elevated.

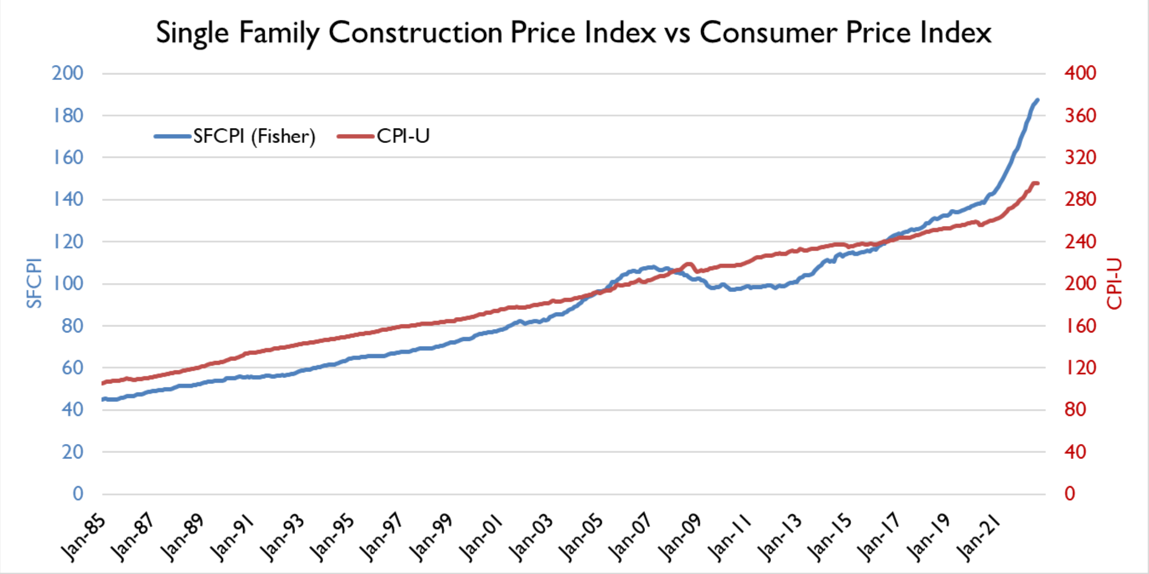




Data Sources: Census Bureau, NAHB, Dept. of Commerce Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: 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 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.
- The Single Family Construction Price Index (SFCPI), produced by the Census Bureau, 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 size or amenities.
  - Over the Past 10 years, it is clearly visible that the Single Family Construction Price Index has far outpaced overall inflation, at a pace more than 3 times as fast, increasing 89%, compared to 29% for the CPI-U index.
  - Also note that the CPI has been nearly flat the last three months, boding well for future moderation of YOY inflation figures.

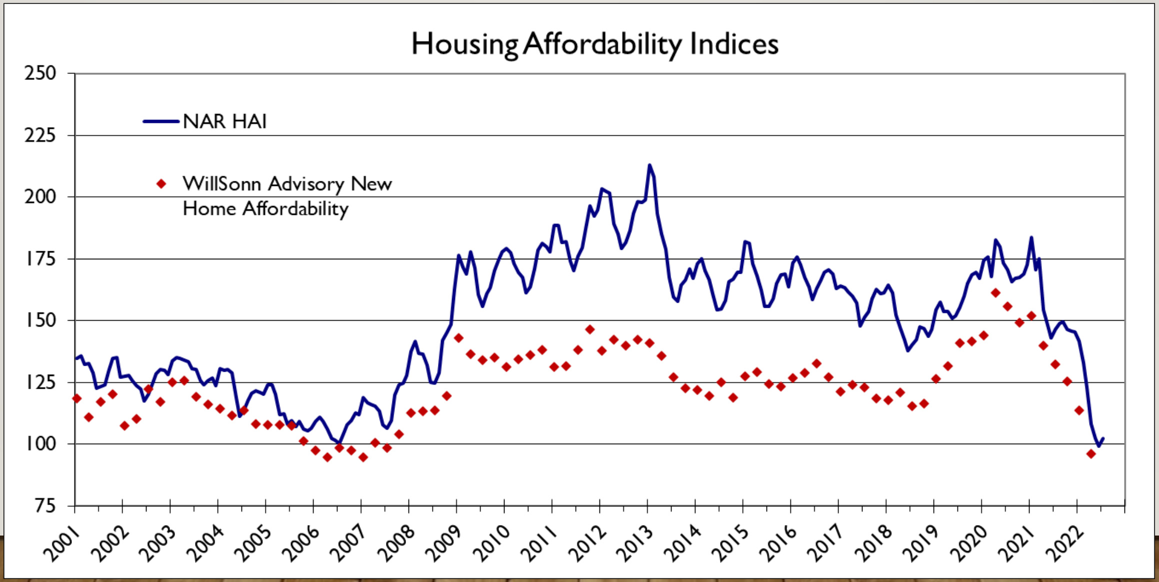


Data Sources: Census Bureau, FRED website

Charts & Analysis: WillSonn Advisory

HOUSING AFFORDABILITY

- **Recent Trends**: The Housing Affordability Index ("HAI") (blue line) has fallen from 186 in January 2021, to 99 in June 2022, a level not seen since 1990. The New Home Affordability (red diamonds), plummeted to 96 in Q2 '22.
- **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, rising mortgage rates, 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 .19). 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 push 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.

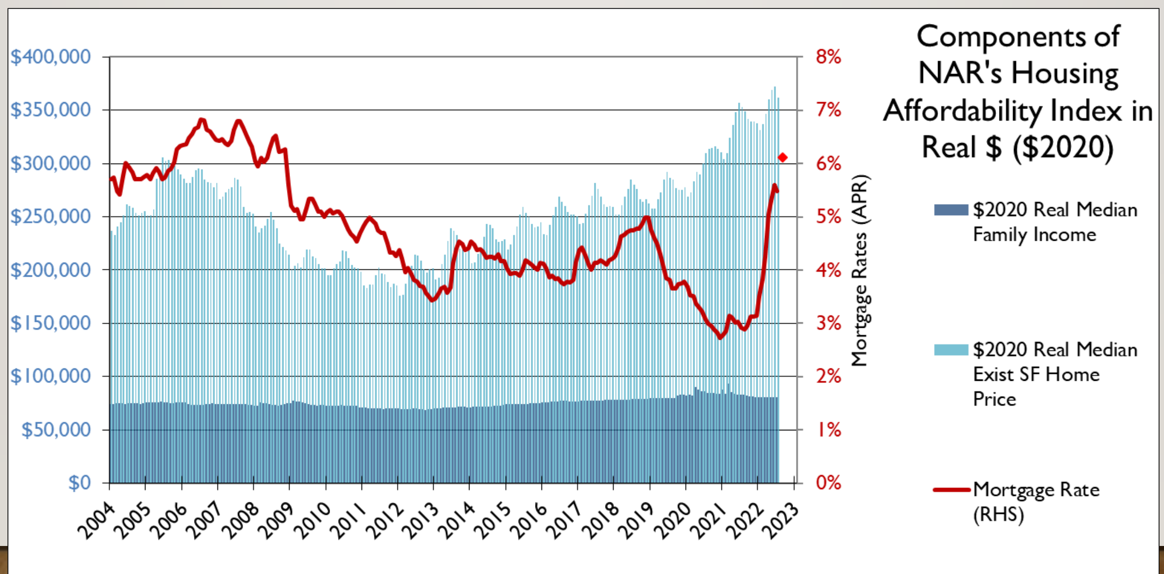


Data Sources: NAR, Census Bureau,, Dept. of Commerce

Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: HOUSING AFFORDABILITY

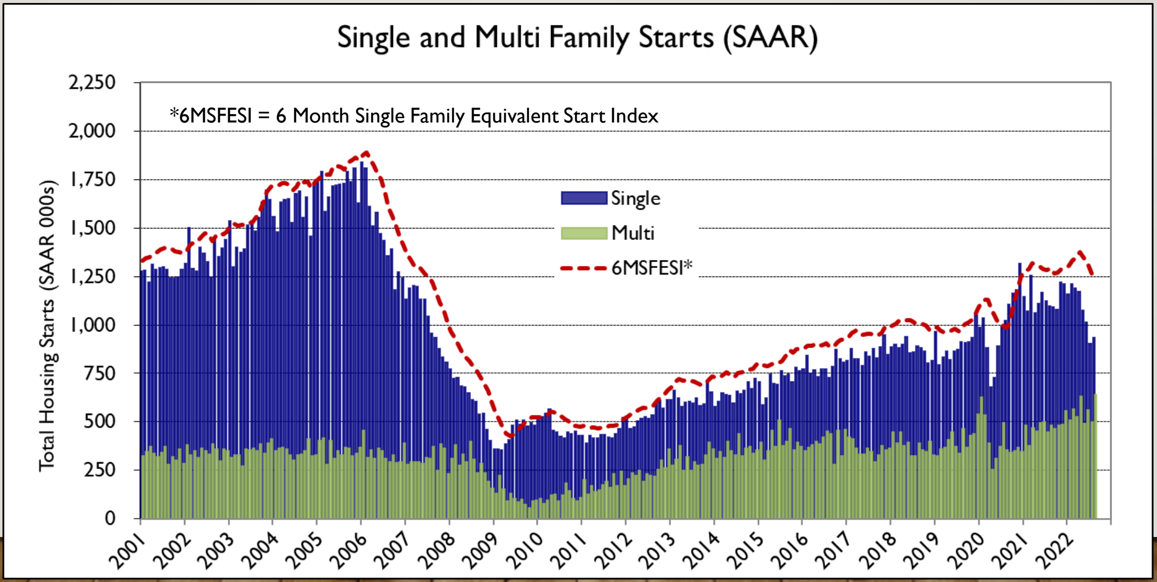
- The National Association of Realtors' Housing Affordability Index ("HAI") is based on three inputs: list prices of existing homes for sale, 30-year fixed mortgage rates and median family income. WillSonn Advisory's New Home Affordability uses the actual sales price of new homes, with the same income 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, so far in 2022 compared to 2021, median home prices are up 5.2% while real Median Family Income has fallen -4.2%. With YTD mortgage rates 57% higher, Mortgage Payments for the costlier median priced home are now 48% higher than 2021, eating up an increasing proportion of family income. All of this has resulted in a much lower Affordability Index.
- In July 2022, mortgage rates averaged 5.48%, 256 basis point higher than July 2021. 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 6.11% in September, 2022.



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

HOUSING STARTS

- **Recent Trends:** YTD Housing Starts have registered 1.635 million units, compared to 2021's total of 1.61 million units. Single Family Starts are down (-4.7%) while Multi Family Starts are up 15.5%, compared to 2021. August's preliminary reading of 1.575 million units is well below the revised April mark of 1.805 million units.
  - 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. August's 1,232,000 unit reading represents 65% of the 2006 peak of 1.9 million SFES's.
- **Explanation**: Higher home prices alone were a threat to sustained gains in Housing Starts. Now, with rising interest rates and high inflation more than offsetting Family Income gains, aspiring homeowners are being forced to remain in the rental market, shifting the market from single to multi-family construction (and pushing rents even higher).
- **Implication**: Housing Starts account for 30%-40% of wood usage, so as housing goes, so goes lumber and panel demand.
- **Expectation**: With the chance of a recession on the horizon, Housing starts are expected to remain under pressure over the next few quarters. In the longer-term, we can expect housing to continue to improve as the housing deficit is replenished and as existing home availability remains tight. Gains may also be tempered by limits on construction labor, developed lots, and tight lending standards.

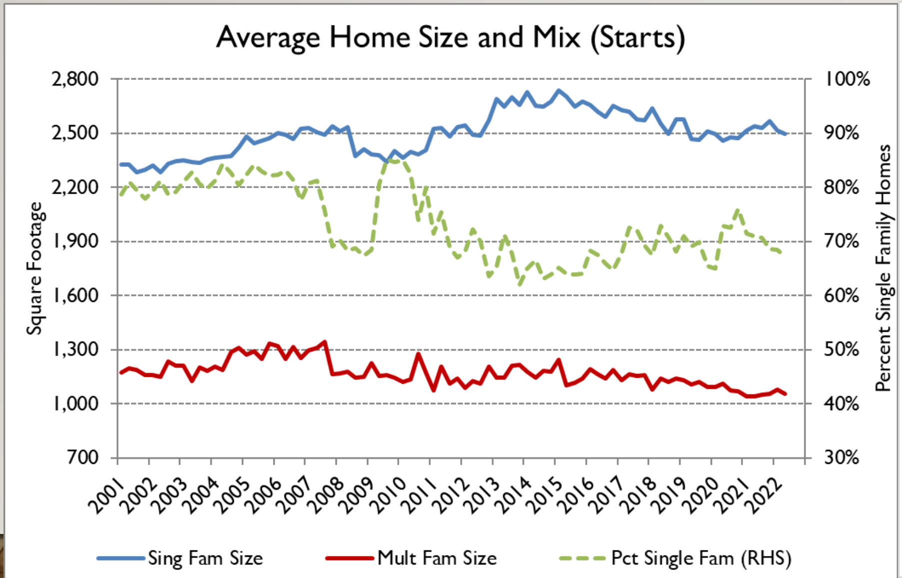


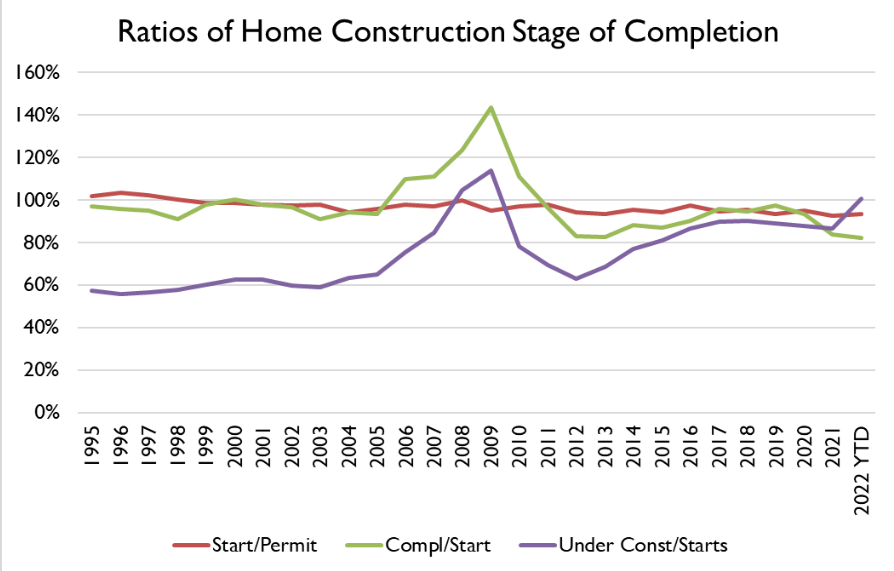
Data Source: U.S. Census Bureau
Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: HOUSING STARTS

- The size of Single-Family Home Starts through the first two quarters of 2022 have trended smaller, averaging 2,507 sq. ft., off a modest -1.2% from 2021's average of 2,538 sq. ft. The YTD average size of Multi-Family Units started in 2022 averaged 1,068 sq. ft., up 1.8% from the 2021 average of 1,049. Single Family units made up 68% of Total Starts so far in 2022, 2 points lower than 2021 and 14 points below the pre-bust average of 82%.
- 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.
- The average number of Permits increased along with Starts in 2022, with Starts averaging 93% of Permits. In the bottom right chart, you can see that the ratio of starts to permits has been declining over time, such that the old rule of thumb of ~97 Starts per 100 Permits should be reduced to 95 or lower. Also declining is the ratio of Completions to Starts (the green line), which has averaged just 82% in 2022. As noted earlier, the run up in construction material prices, along with supply chain woes and backlogged inspections has delayed many completions in 2022. Thus, the number of homes under construction relative to starts have increased.

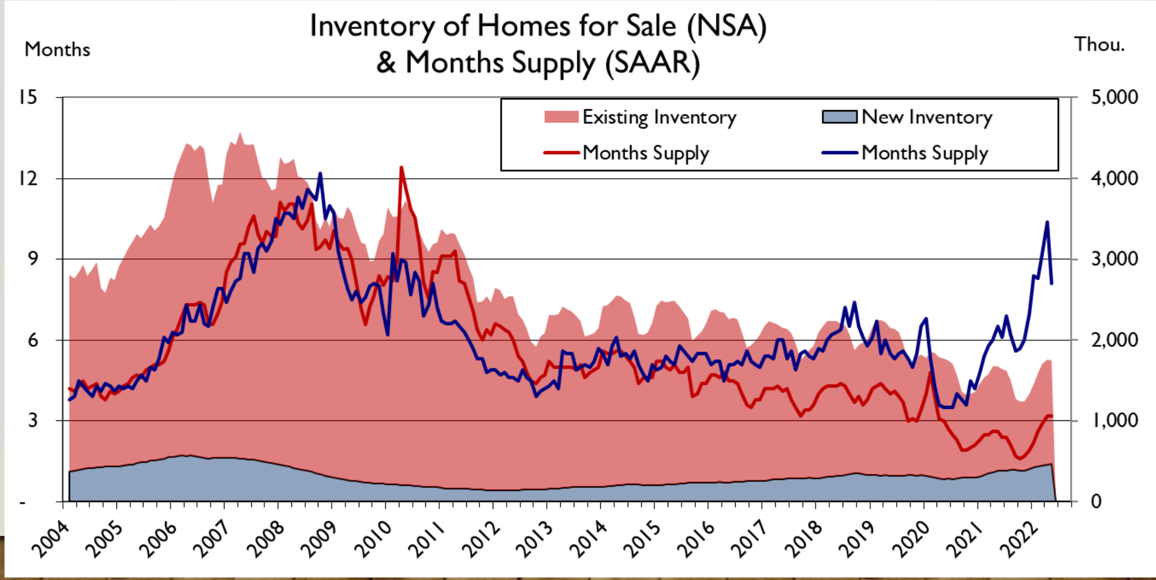
Data Source: U.S. Census Bureau Charts & Analysis: WillSonn Advisory





PACE OF HOME SALES & INVENTORIES

- **Recent Trends**: The Inventory of Homes For Sale (Existing + New) cycled higher to 1.747 million units in August, up 476,000 units from December 2021, and up 5% (77k units) from August 2021. Separately, Existing Home Inventories are down 10k units, while New Home inventories are up 87k units, compared to August 2021. At their respective current pace of sales, there are a scant 3.2 months of sales in Existing Home inventories, and a bloated 8.5 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. Rising mortgage rate are an impediment to turnover of existing homes. New home inventories have surpassed the high end of the normal range as lack of affordability have push 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 market will return to basement levels of the early 2000's when lax mortgage standards tanked the housing sector. As expected, with rising mortgage rates, we are beginning to see Existing Home inventories and new home inventories rebuild. At a minimum, a slower pace of home price growth is expected, and possibly a decline in some markets.

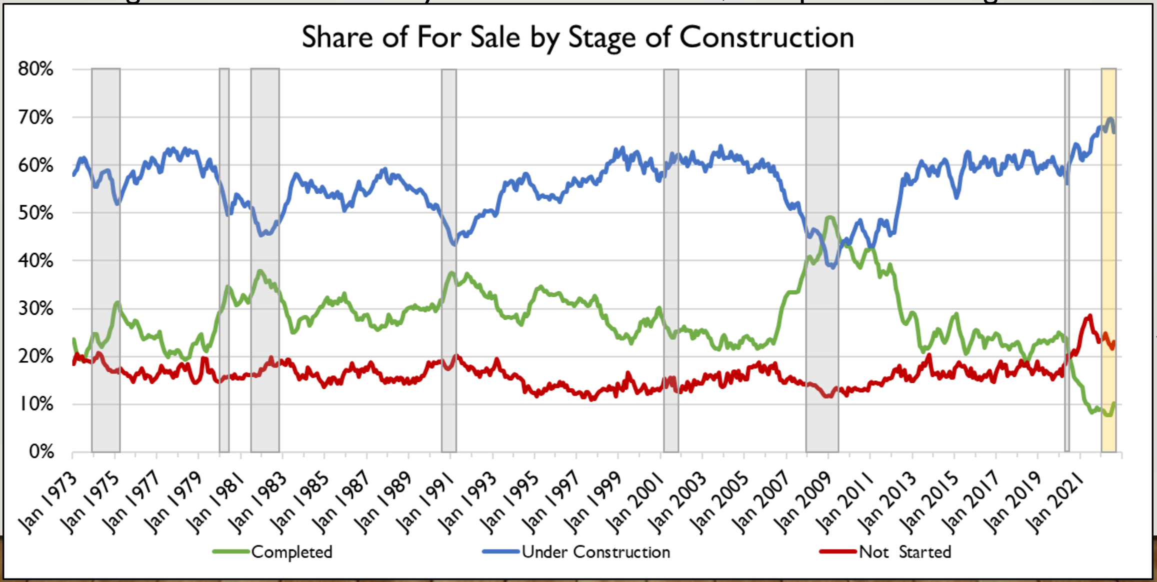


Data Source: U.S. Census Bureau, NAR

Charts & Analysis: WillSonn Advisory

BEHIND THE NUMBERS: PACE OF HOME SALES & INVENTORIES

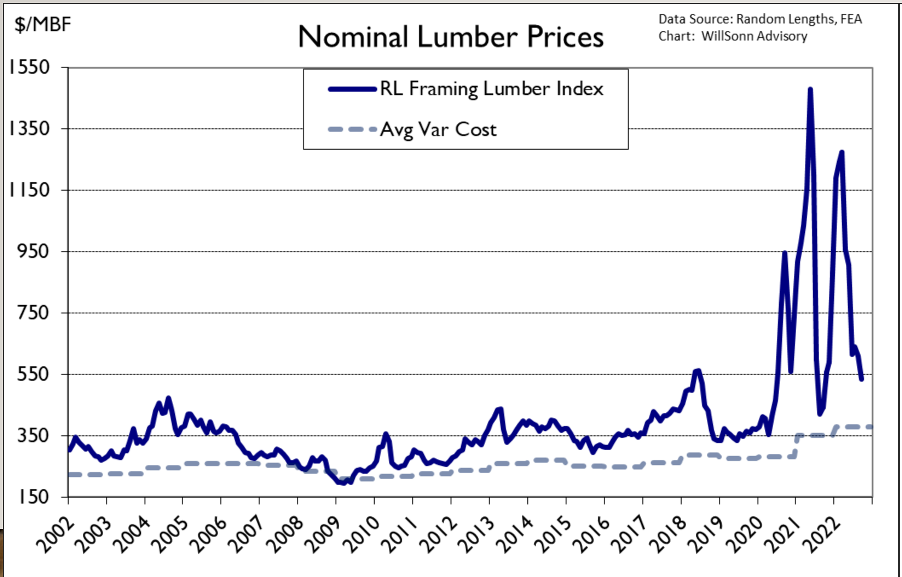
- The inventory of New and Existing homes on the prior page combines data from the National Association of Realtors ("NAR") which provides data for Existing home sales (both single and multi-family homes), and the U.S. Census Bureau, which provides data for New home sales (single family only). Inventory figures are not seasonally adjusted ("NSA"). Months Supply is derived from inventories and monthly sales volume and 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 (with a "tentative" recession added for 2022). 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 in a recession, it is certainly atypical.
- Of the 467,000 New units for sale at the end of August 2022, only 10% were Completed (near the recent 47-year low), 67% were Under Construction, and 23% had Not Yet Started (down from its recent record of 29%).
- 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. High building product prices likely delayed construction as builders passed off the risk of high material costs to buyers. At the same time, Completed homes got snatched up quickly.

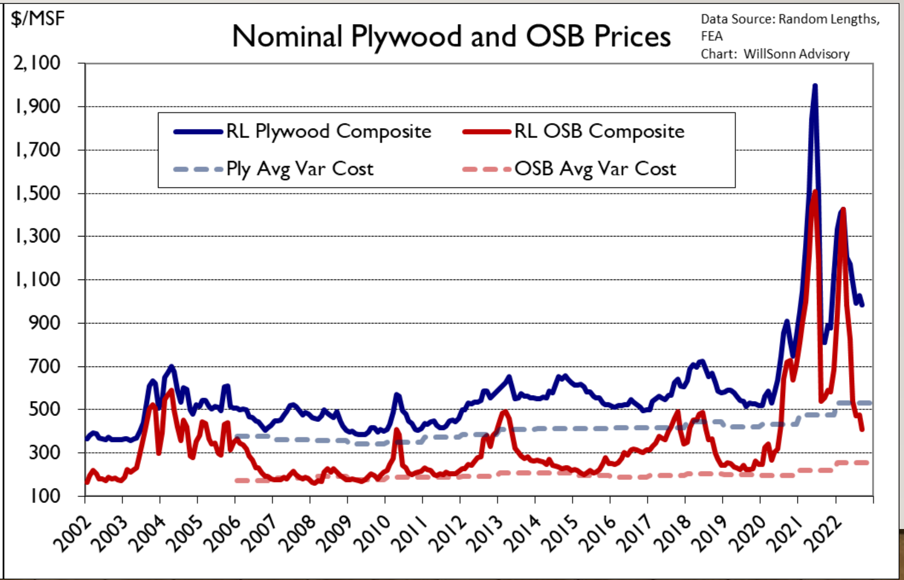


Data Source: U.S. Census Bureau, NAR
Charts & Analysis: WillSonn Advisory

WOOD PRODUCT PRICES

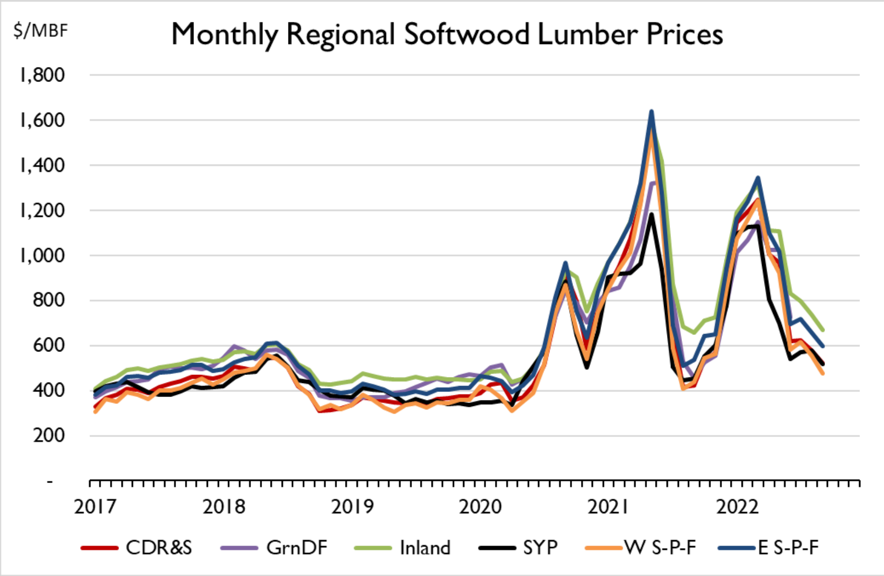
- **Recent Trends**: The Random Length Framing Lumber Composite Index in Q3 2022 lost another -28% from Q2 to register -30% below Full Year 2021 prices. Panel prices reversed course as well. Plywood pricing was down another -13% in Q3 from Q2, -18% below FY 2021. OSB prices snk another -29% in Q3 below Q2 prices, down -51% from FY 2021 prices. While off from recent peaks, prices for most products remain at or above peaks prior to the pandemic.
- **Explanation**: Extreme price volatility in building products have materialized as manufacturers, construction and transportation sectors have wrestled with periodic labor tightness, rising labor and fuel costs, covid-related work absences and spot capacity closures for multiple quarters. As the nation navigated through new strains of the virus, changes in safety protocols, the "great resignation" and a desire to return to normalcy (including a return to the office), demand and supply for wood products has ebbed and flowed wildly.
- **Implication**: As predicted, when building material prices became excessive, some buyers delayed, downsized or abandoned projects, reducing demand and thus price. Historically, high prices 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. Supply-chain woes are also adding to price volatility.
- **Expectation**: As prices moderate and supply improves, builder and DIY demand should stabilize. It was hoped that vaccinations would also ease labor constraints, allowing for higher production and easing of transportation bottlenecks. But with multiple waves of covid variants, and still-high fuel prices and inflation, not to mention a declining stock market, it's hard to know when volatility will moderate.

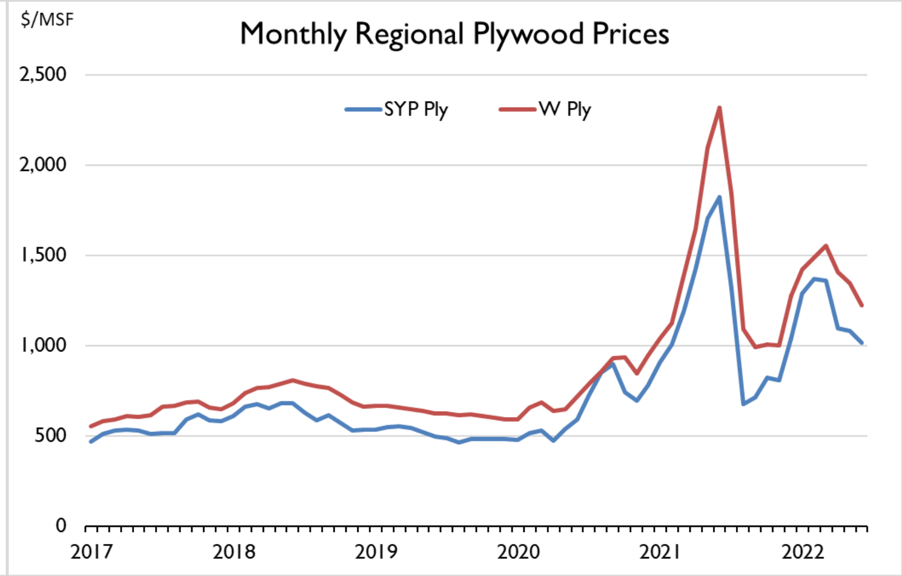




BEHIND THE NUMBERS: WOOD PRODUCT PRICES

- Once again, all regions shared in the pain of retreating product prices during the third quarter of 2022.
- Regionally in Q3 2022 relative to Q2 2022
  - West Coast lumber mills saw a -34% decline in Coastal Dry Random & Stud ("CDR&S") prices and a -26% decline in Green DF prices. CDR&S is now -58% below its March 2022 peak, Green DF off -54%.
  - Inland sawmills saw prices retreat -28%, now -49% below its March 2022 peak.
  - Southern Yellow Pine ("SYP") sawmills saw prices sank -19% in Q3 after outpacing other regions in Q2, now -54% below its March 2022 peak.
  - Canadian components of the Random Lengths Framing Composite Index saw S-P-F prices lose -34% and -30% in the West and the East, respectively. Western SPF prices are off -62% in September, while Eastern SPF is off -56%, from their March 2022 peaks.
- Third quarter plywood prices were also lower in both regions, though not so dramatically as lumber and OSB. Southern Plywood prices were down -14% and Western Plywood was off -12% in the third quarter relative to the second. The South is off -34% from March, while western plywood is off -27% from March 2022.

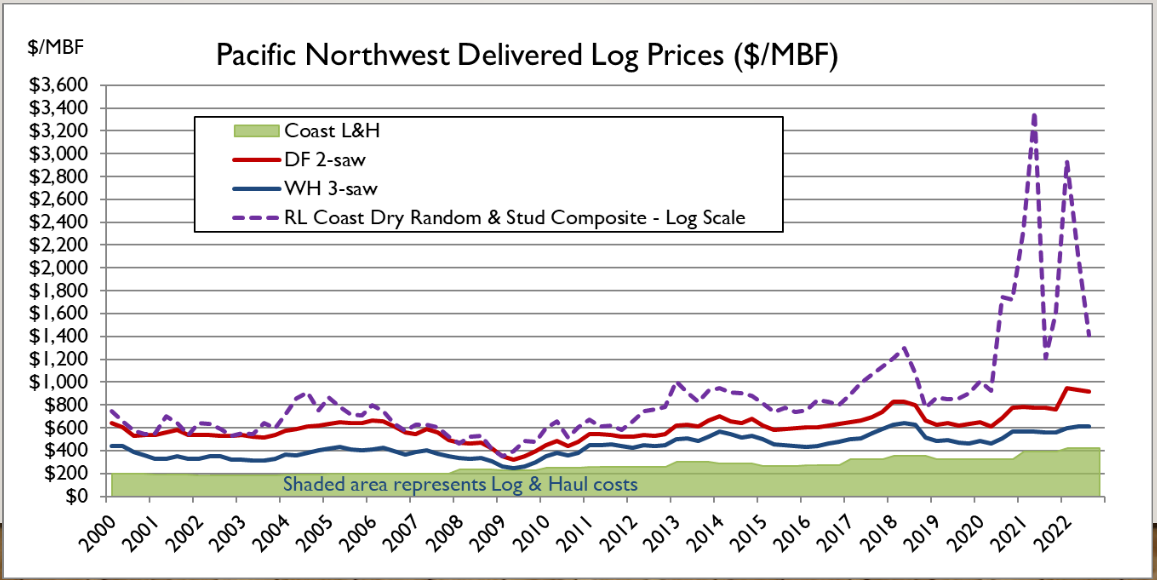




PNW LOG PRICES

- **Recent Trends**: Delivered log prices inched lower again in the third quarter with Douglas-fir 2saw prices off -1% (sitting 19% above 2021 levels) while western hemlock 3saw log prices were flat (9% above 2021 levels). Over the past 10 years, 1st quarter DF log prices have typically gain 1% while WH prices slip -1%, so this quarter's movement were not so unusual.
- After adjustments for changes in lumber recovery, the Random Lengths Coast Dry Random & Stud Composite price (on a log scale) lost another $700+/MBF (34%) during the third quarter.
- **Explanation**: With high end-use demand in the midst of constrained production, western mill throughput of logs has been only modestly higher. Extensive fires throughout the West in 2020 and 2021 resulted in extensive salvage operations in 2021. Robust lumber prices combined with constrained logging capacity continues to provide log sellers considerable pricing leverage in 2022.
- **Implication**: Simply put, mills have been forced to pay higher log prices in order to capture record lumber prices during the 2022 building season.
- **Expectation**: Fourth quarter price movement is usually mixed, with DF 2saw gaining $12/MBF and WH 3saw holding steady, over the past 10 years. Supply chains will likely remain choppy as access in the forest is limited in the short-term. Log & Haul costs are expected to remain elevated in 2022 due to tight labor and high diesel prices. With two quarters of moderating lumber prices behind us, a slow down in home construction gains in the making, and a relatively mild fire season, a retreat in western log price is expected.

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.

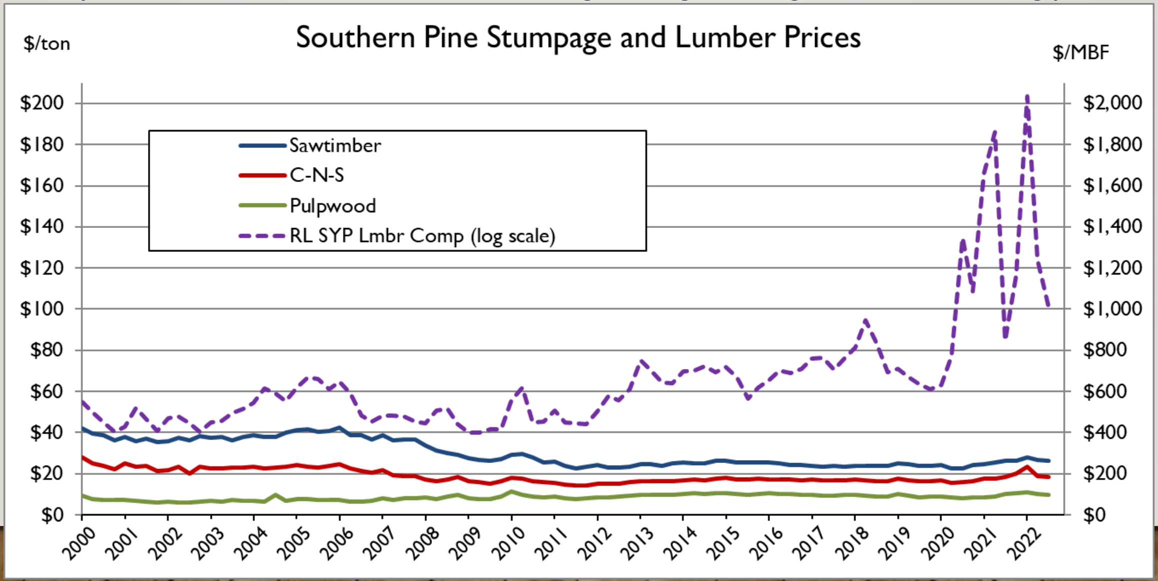


Data Source: Oregon DOF, WA DNR, Random Lengths, FEA, Log Lines

Charts & Analysis: WillSonn Advisory

SOUTHERN PINE LOG PRICES

- **Recent Trends:** Third quarter Southern Yellow Pine stumpage prices drifted lower in each grade, with the biggest movement again in Chip-n-Saw. SYP Sawtimber prices slipped $0.49/ton in Q3 (-2%), Chip-n-saw stumpage prices dropped $0.56/ton (-3%) and pine pulpwood shed $0.36/ton (-4%). Relative to full year 2021, Q3 PST price is up 2%, CNS is flat and PPW is up 1%.
- The Random Lengths SYP Lumber Composite, adjusted for lumber mill recovery, dove $231/MBF, or 19% in Q3 '22 compared to Q2 '22, now registering 27% below full year 2021's extraordinary prices (2021 was 44% above 2020 prices and more than double 2019).
- **Explanation**: Q3 prices typically see prices move sideways -$0.15 to +$0.05 per ton price as dry Summer weather allows good logging access, so 2022's downward movement was a bit worse for all grades. Continued declines in lumber prices and still-high diesel prices helped drive net stumpage values lower. Despite record growth in lumber production, sawlogs remain plentiful in the US South.
- **Implication**: Moving in tandem, Sawtimber to Pulpwood price ratios remained at 2.7:1 in Q3, on par with the 2.5:1 ratio of the last few years. With ratios below 4:1, landowners are less incented to grow sawtimber.
- **Expectation**: Q4 prices typically see prices move up a quarter to half dollar per ton as wetter Fall weather dampens logging access. Even though Q1 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

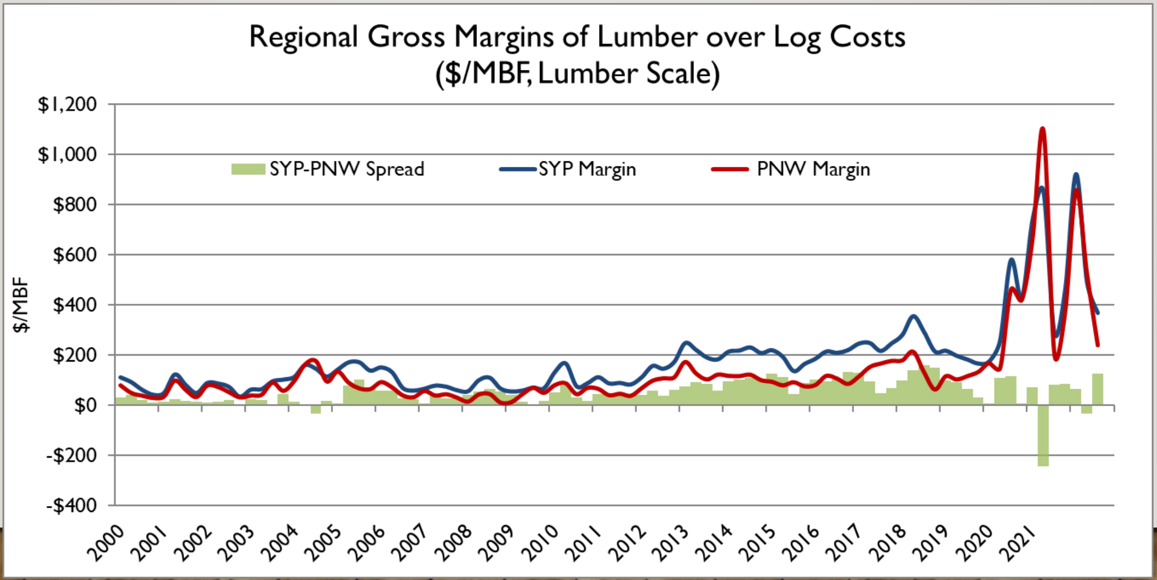
REGIONAL GROSS MARGINS

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 returned to normal in Q3 to $128/MBF in favor of the South, vs. a Northwest advantage of $33/MBF in Q2. The $128/MBF spread compares to an average spread in 2020 of $60/MBF enjoyed by southern mills. Margins in volatile 2021 were at parity (on average). Gross margins contracted this quarter, from $527/MBF to $241/MBF in the PNW, and from $494/MBF to $369/MBF in the South. Since 2013, Southern sawmills have enjoyed gross margins over $200/MBF in 29 of the last 39 quarters, while PNW mill gross margins hit that mark only ten times.
- **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 log prices, even as lumber prices improved. Both regions saw gross margins expand (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 $50 to $100/MBF range when lumber markets settle down, 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

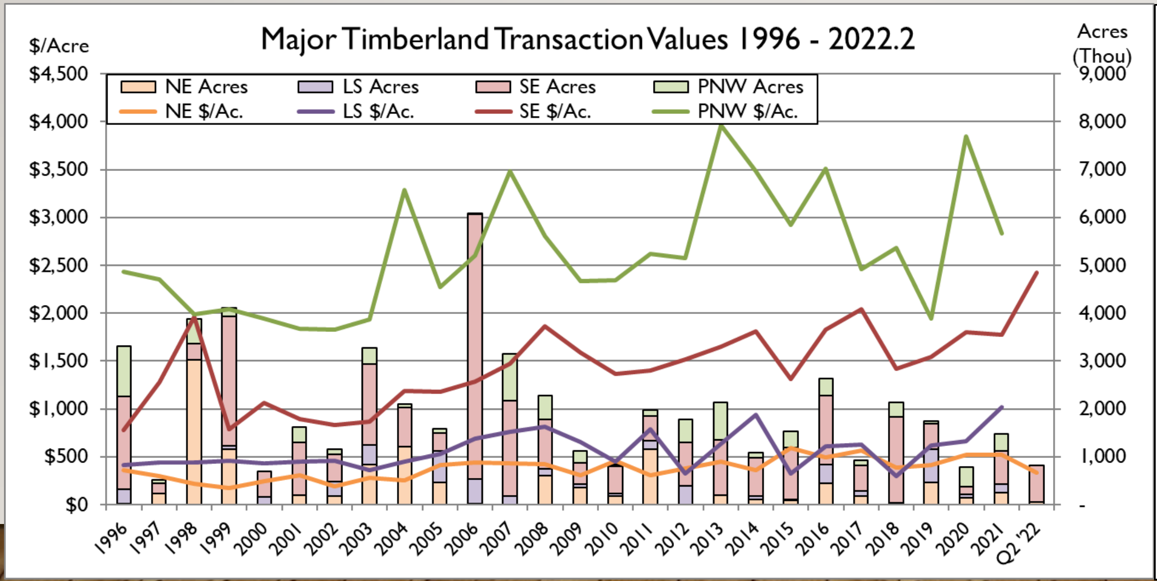


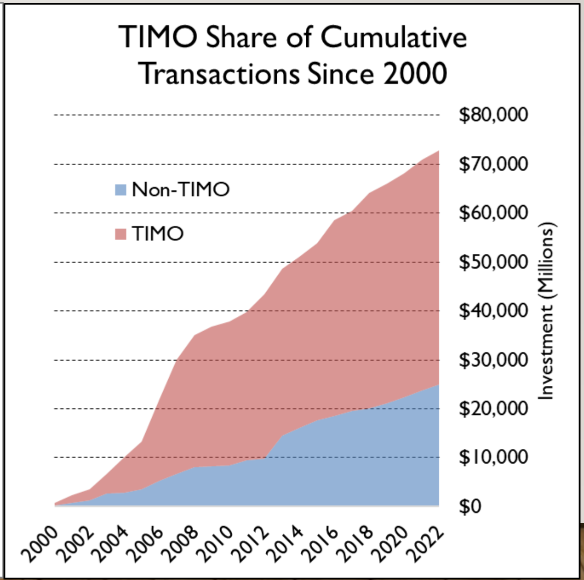
Assumptions: 67/33 weight of DF2saw and WH3saw in the PNW, and a 75/25 weight for S/T and CNS in the South (using 7.5 tons/MBF, along with FEA's estimates of Cut & Haul cost for S/T and CNS). All figures are lumber scale, and regional differences in lumber recovery factors are incorporated.

REGIONAL TIMBERLAND TRANSACTION VALUES

- **Recent Trends**: Timberland sales in 2021 totaled $2.7 B on 1,549,000 acres, with another +/- 870,000 acres sold at undisclosed values. Through the first six months of 2022, eight transactions on 866,000 acres have been substantially completed, totaling $1.9 Billion in value. Early values point towards strong timberland values for US South timberlands.
- By investment sector, Timberland Investment Management Organizations ("TIMOs") have funded 67% of the acquisitions from 2016 to 2021, well above the 25% captured in the 2013-2015 period. By comparison, TIMO buyers acquired 78% of US timberlands sold (by dollar) in the previous 13 years (2000-2012).
- **Explanation**: Five of the eight sales were in the US South, two of them over 250,000 acres each, both of which sold to vertically integrated timber REITs. One transacted using equity shares rather than cold, hard cash. The other may have included carbon values.
- **Implication**: Rising asset values during periods of rising interest rates narrow the implied equity risk premium being paid for timberlands. Since owning timberlands is obviously more risky than holding government bonds, there must be some other value component forcing valuations higher.
- **Expectation**: In the near-term, integrated producers may continue to reinvest outsized lumber profits in timberlands. Longer-term, rising borrowing costs may erode value, but could be more than offset by buyers pricing in Carbon sales to bolster valuations.

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:
2020'S COVID-19
S.W.O.T. REVIEW
AND NEW ANALYSIS

OUTLOOK FOR THE INDUSTRY FOLLOWING COVID-19

- In the second quarter of 2020, I presented a SWOT analysis to highlight where I saw some Strengths, Weaknesses, Opportunities and Threats related to Covid-19 for each of the primary subsectors of our industry; Housing, Wood Products, Timber & Timberland.
- Now, more than two years later, with most (but not all) of the concerns about the global pandemic behind us, I thought it would be interesting to assess my earlier analysis (*you will see it in italics*), see what's changed, and what new challenges there might be.
  - SWOT analysis can be a key component in the development of a comprehensive and effective strategic plan, something to be considered if it has been a while since your last effort.
- Entering the Fall of 2022, we are seeing a number of challenging conditions:
  - Russia's invasion on Ukraine is in its eighth month, disrupting the global economy, especially energy and food commodity markets, in addition to devastating the lives and economy of a sovereign democratic country. Further escalation of tensions is not out of the question. Other global hot spots include China/Taiwan, North Korea ("DPRK") and Iran.
  - The US has experienced two quarters of economic contraction (slightly falling GDP), raising the likelihood of a recession as the Federal Open Market Committee ("FOMC") aggressively raises short-term interest rates to fight persistent high inflation. The US Stock market has hit "bear" territory, registering a 20% drop from the begging of the year twice in 2022.
  - While unemployment remains at historic lows and has driven wages higher, 40-year high inflation has more than offset the gain in wages that typically accompany tight labor markets.
  - Housing remains in flux: volatile wood product prices whipsawed builders and homeowners, home prices have skyrocketed, mortgage rates have more than doubled in less than a year, and affordability has matched all-time lows.
  - Rental rates rose dramatically as young adults finally left home after the great recession. But the increase in rents (along with student debt) have prohibited many young families from building the savings needed for a down payment. To be sure, many landlords suffered along with renters during the pandemic, and their costs have certainly increased. But the confluence of rising rents, rising mortgage rates and rising home prices is profoundly challenging for many would-be home buyers.

OUTLOOK FOR THE INDUSTRY FOLLOWING COVID-19

- In Q2 2020, I stated in my introduction that there were Certain Strengths, Weaknesses, Opportunities and Threats common to each subsector:
  - **Strengths**: Most Construction and Wood Products manufacturing, along with transportation and logging, have been deemed essential services in most jurisdictions.
  - **Weaknesses**: Lenders have tightened standards on construction and land development loans, undermining construction and ultimately weakening demand for wood product and logs; Consumer sentiment has waned.
  - **Opportunities**: Recruitment of displaced workers from non-essential businesses may be possible, but most displacement has occurred in urban areas; Recent high school graduates deferring college may also provide another pool of recruits.
  - **Threats**: A second wave of Covid-19 in the Fall, particularly in conjunction with seasonal flu (and the absence of an effective vaccine) could spur another significant wave of stay-at-home orders (including schools), undercutting the availability of labor and the US economy in general.
    - While a second wave is not a certainty, the probability is certainly higher than 0%, and the effectiveness of a vaccine will not be 100%, nor will the proportion of folks who choose to take the vaccine be 100%.
- *Assessment: Strengths: the "essential service" designation was a short-lived phenomenon, hard to call it a "strength". Weaknesses: With PPP loans, Lending standards were anything but an issue, and was not a material weakness. Opportunities: While recruiting opportunities may still exist, I haven't heard of any gains achieved here. Threats: second and third waves of Covid did, in fact, occur, and with significant impacts. Indeed, with just 67.8% of the US population fully vaccinated (and an even smaller proportion boosted) and non-medical protocols (masks, social distancing) virtually abandoned, a significant portion of the population remains vulnerable. One in eight people who contract Covid experience symptoms that last at least a month.*

WHAT I SAW IN Q2 2020: HOUSING DURING COVID-19

Strengths

- Historically low interest rates are driving Affordability higher in the short-term
- Favorable demographic changes are anticipated in the intermediate-term

Weaknesses

- Low home inventories could drive home prices higher, affordability lower
- Stagnation of family income (private and government layoffs, furloughs, salary reductions) reduce household income and thus purchasing power
- Repair/Remodeling ("R&R) contractors deemed non-essential in some areas, or face reduced demand

Opportunities

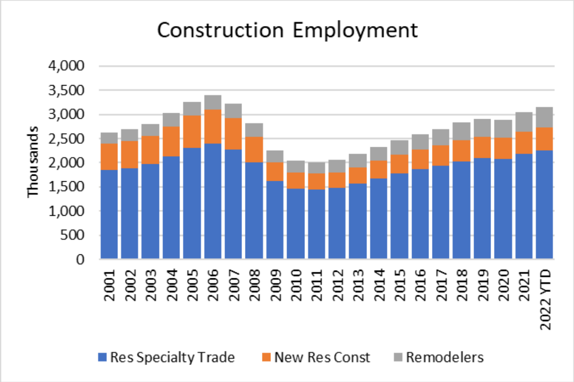
- Extended Work From Home ("WFH") flexibility could spur demand for larger homes
- A shift in demand to less densely populated locales may provide new and lower cost lot development opportunities
- Preferences for single family-homes versus multi-family could increase the share of single family starts
- R&R contractors shifting to new construction, bolstering the labor pool for housing starts

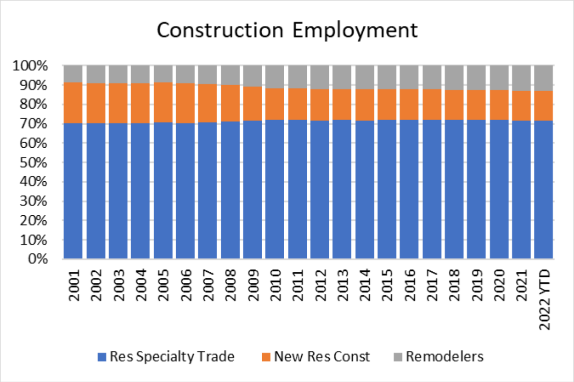
Threats

- Prolonged high unemployment levels leading to a depletion of household savings used for down payments (not captured in affordability indices) and for major renovations/additions
- Reduced state and local revenues leading to planning office layoffs, slower permitting and inspections

ASSESSMENT OF MY 2020 PANDEMIC HOUSING S.W.O.T.

- *Strengths: Interest rates certainly were low, but higher than expected increases in home prices caused affordability to drift lower. Once inflation took hold in the second half of 2021 and the FOMC started aggressively raising interest rates in 2022, housing Affordability cratered. The favorable demographics are largely intact.*
  - *Inflation was a result of rising wages and stimulus payments, pent-up consumer demand, supply chain constraints (computer chips, labor shortages, China's pandemic strategy), and the destabilizing effects of Russian aggression on the global economy, especially oil and gas.*
- *Weaknesses: Suppressed home inventories and elevated home prices have persisted and family income levels (in real terms) have actually declined. R&R contractors' status as non-essential was localized and short-lived.*
- *Opportunities: Home size did go up in 2020-21, true enough, but has since declined in 2022 as costs of construction have increased (page 10). The other suspected opportunities, namely a shift towards more single-family units and remodelers transitioning towards new home construction, were largely fleeting or unrealized. In fact, Construction employment in all sectors (residential specialty trades, new home builders and remodelers) had recovered by year-end 2020, with the number of Remodelers growing the fastest through 2022.*
- *Threats: Likewise, the threat of persistent high unemployment and reduced state and local government operating budgets went unrealized (the latter due, in large part, to federal stimulus).*





Q3 2022 HOUSING S.W.O.T.

Strengths

- Favorable demographic changes are anticipated in the intermediate-term.
- Broad employment gains in each sector of residential construction workforce (new res builders, specialty trades and remodelers) bode well for increased construction.

Weaknesses

- Low home inventories will continue to keep home prices higher.
- In the near-term, inflation is outpacing gains in household income.
- Rising mortgage rates dissuade existing homeowners who carry mortgage debt from selling and paying off existing lower-rate mortgages.

Opportunities

- A larger WFH workforce (versus pre-pandemic) may still spur demand for single family homes.
- Growth in demand for Built-for-rent single family homes as families try to build up savings for an eventual purchase.

Threats

- A hard landing from FOMC actions (i.e., a full-blown recession) would raise unemployment and erode consumer sentiment, with the potential to undermine housing starts and remodeling activity. A slow recovery in the stock market could also impact demand for housing.
- Global tensions escalate (Russia/Ukraine, China/Taiwan, DPRK, Iran, etc.) creating greater economic uncertainty in the US and globally.
- Climate change continues unabated resulting in more financial and human resources dedicated to recovery efforts (fire, more severe hurricanes, drought, rising sea levels, etc.) rather than new home construction and green infrastructure investments.

WHAT I SAW IN Q2 2020: WOOD PRODUCTS DURING COVID-19

Strengths

- Demand for wood products has surprised on the upside, which has led to more stable (or higher) prices for wood products
- Many facilities located in rural areas with lower infection levels

Weaknesses

- Certain customer sectors (office furniture, commercial construction) susceptible to changes in work habits (more work from home) affecting select wood products more than others.
- Some mills reporting trouble finding workers to resume a second shift, truckers for delivery, limiting a supply response

Opportunities

- Shift production to better fit the retail customer base
- Use period of reduced production to install/instigate manufacturing efficiencies

Threats

- Do-It-Yourself activity (and retail wood product demand) could cool as workers return to work, the list of home projects are worked down by homeowners, and/or household finances become strained

ASSESSMENT OF MY 2020 PANDEMIC WOOD PRODUCTS S.W.O.T.

- *Strengths: Boy, did I miss the effects of the pandemic on wood product prices. While prices have been higher, they have been anything but stable. However, the disruption to production may have reset the floor for commodity wood product prices – time will tell. And while the pandemic initially impacted urban areas, rural areas were soon impacted as well, disrupting production and scheduling.*
- *Weaknesses: There has been a general repatriation of domestic manufacturing, though it has more to do with global supply chain woes than WFH trends. Manufacturers have found it difficult to add workers, an emerging challenge predating the pandemic. This was, in fact, a weakness for wood product producers to fully capitalize on price run-ups.*
- *Opportunities: I haven't read much about significant shifts in product offerings to meet evolving retail demands leading to improved profits. The tapering of production in the early days of the pandemic was too short lived for broad capital improvements to happen. In addition, constrained equipment manufacturing has delayed new equipment installs at many locations, be they upgrades or new mills.*
- *Threats: The pace of R&R spending over the past couple years has exceeded my expectations, but that may be as much to do with higher prices (building products, appliances, labor) as increased volume consumption. As noted in the housing section, gains in the Remodeler workforce outpaced new home construction and the specialty trades.*

Q3 2022 WOOD PRODUCTS S.W.O.T.

Strengths

- Production levels have stabilized and capacity appears poised to meet recovering demand.
- High ocean freight and Russia's invasion of Ukraine provide something of a barrier to European product imports during periods of high product prices.

Weaknesses

- Most mills continue to report trouble finding workers to resume a second shift and truckers for delivery. Either higher labor costs or muted production responses may ensue.

Opportunities

- Install/instigate manufacturing efficiencies in order to mitigate the impacts of constrained labor availability.
- Continued growth in recognizing wood products' lower environmental impacts versus concrete and steel.

Threats

- Higher interest rates and higher costs of construction may reduce the size of new homes constructed and limit the amount of remodeling activity.
- A more severe recession could reverse the gains or prolong the stall in construction activity, undermining demand growth for wood products.

WHAT I SAW IN Q2 2020: TIMBER & TIMBERLANDS DURING COVID-19

Strengths

- Trees continue to grow, even during a pandemic, preserving value, at least to a degree (certainly better than annual crops!)

Weaknesses

- Reliance on a generally older work force more susceptible to Covid-19
- Q2 log price trends suggest the decline in wood product production has led to lower log prices

Opportunities

- Purchase of strategic assets as travel restrictions/flying reluctance leads to smaller pools of bidders

Threats

- Growing inventories on the stump could lead to softer log prices for an extended period of time
- International trade flow interruptions resulting from uneven local outbreaks and government responses could reduce export markets
- Limitations on Seasonal-worker availability (justified to preserve US jobs) could delay reforestation activities

ASSESSMENT OF MY 2020 PANDEMIC TIMBER & TIMBERLAND S.W.O.T.

- *Strengths: Timber's continued growth will always be a strength of the investment class.*
- *Weaknesses: I haven't seen any studies specific to the Logging industry suggesting that loggers contracted Covid-19 at a higher rate than other industries, but the underlying fact that Loggers have a higher proportion of older workers and a smaller proportion of younger workers remains in place. Regarding lower log prices due to a prolonged impact from Covid, my observation was soon disproved, as log prices recovered rather quickly in the face of a resumption in wood product production and construction activity.*
- *Opportunities: There is no evidence to support the hypothesis that the lull in travel in the early period of the pandemic resulted in a unique buying opportunity for any timberland buyers. While the number of acres transacted in 2020 was clearly muted, average value by region do not appear to have been suppressed.*
- *Threats: The reduction in harvesting at the onset of the pandemic (in what is normally a low production quarter) was relatively short lived, and likely had an imperceptible impact on total standing inventory, if any. Of course, other factors were in play during the last two and a half years, most notable record fire seasons out West in 2020 and 2021. Likewise, export prices for logs do not appear to have been impacted, nor were wide-spread delays in planting experienced due to immigration restrictions at the US southern border (which ended up being justified by reducing the spread of Covid rather than preserving US jobs).*

Q3 2022 TIMBER & TIMBERLANDS S.W.O.T.

Strengths

- Trees continue to grow, even during a recession, preserving value, at least to a degree.
- Investors appear to require minimal returns on investments, embracing the perceived counter-cyclical nature of timberland valuations, thus providing support for robust timberland values.
- Timber values historically tied to product prices, which may have reset floors during the pandemic.

Weaknesses

- Reliance on a generally older work force with little back fill prospects with younger workers.
- Timberlands will aways be subject to extreme weather/climate events, which are likely to increase in severity, if not frequency, as climate change intensifies.

Opportunities

- The sale of carbon offsets to provide an additional cash flow stream, despite the controversies surrounding the practice.

Threats

- A prolonged and/or severe drop in wood product demand could result in an accumulation of timber on the stump, and thus softer log prices for an extended period of time.
- Regional disputes (China/Taiwan, DPRK/Japan and South Korea) could disrupt log export markets.
- Regulatory oversight and tightening of carbon markets could reduce the number of offsets sold, relative to underwriting assumptions.

STRATEGIC PLANNING

A thorough and comprehensive Strategic Plan is more than a five-year budget. It is an internal planning process that assesses both internal and external factors affecting an organization's performance, formulates specific strategies and tactics to achieve its most critical goals, then assigns responsibility for implementation and monitoring. This focuses the organization's resources on the most impactful areas, and tracks and adapts to changes in the environment in which it operates. Bringing in an experienced, outside advisor like WillSonn Advisory can help facilitate discussions among staff, keep the process on track, and document the plan for management. Please call if you are interested in exploring this further.

Assess Your Business Environment	Self Assessment	Competitors	Suppliers	Customers	Environmental & Regulatory
Identify Critical Objectives	Brainstorm Potential Objectives	Select Central Objective(s)	Select Business Unit Objectives	Prioritize and Sequence	
Conduct a S.W.O.T. Analysis	Strengths	Weaknesses	Opportunities	Threats	
Develop Strategies & Tactics	Address Critical Objectives	Take advantage of Strengths	Capitalize on Opportunities	Shore up Weaknesses	Mitigate Threats
Monitor and Measure	Assign Responsibility	Establish deadlines and benchmarks	Monitor the Environment	Measure the Effectiveness of Strategies	Modify/Adapt Strategies and Tactics

SECTION 3:

IN CASE YOU MISSED IT

JOHN OLIVER EVISCERATES FOREST CARBON OFFSET SCHEMES

- In late August, John Oliver devoted the main portion of his weekly show to forest-based carbon offsets. You can see a replay of it by following this hyperlink: https://www.youtube.com/watch?v=6p8zAbFKpW0
  - John Oliver's show, "Last Week Tonight" airs each Sunday on HBO, and explores a number of current topics, from politics to the environment to social issues.
  - While admittedly he brings a liberal bias to the majority of his segments, (not to mention a fair amount of profanity – don't say I didn't warn you), the views he expressed on forest-based carbon offsets were, in my view, fair criticisms, regardless of one's politics.
- Just as you have read in my Deeper Dives over the past year, Mr. Oliver discussed the lack of Additionality for the vast majority of carbon projects.
  - In addition (though, without using the technical terms), he also pointed out instances of the lack of permanence (citing NCX's 1-year offset scheme and forests that subsequently burn) and talked about inadequate accounting for leakage (when a harvest on one acre simply results in a harvest somewhere else).
  - Mr. Oliver also pointed out the potential conflicts of interest of the various carbon registries, where the carbon registries are paid by the carbon project owners; if their protocols are too demanding, they wouldn't have any "approved" projects, and thus no revenues. Independence and regulations, as with public accounting, are needed.
  - Finally, he points out (as have I) that allowing the sale of ineffectual carbon offsets does actual harm to the environment since it allows the emitter to (falsely) claim that they have reduced their emissions, rather than reducing their own emissions, and redirects carbon mitigation funds away from truly meaningful (and more expensive) projects.
- So, why is John Oliver's segment worth mentioning?
  - While there have been a number of "exposés" over the past few years, in Bloomberg, the Wall Street Journal, and other publications, John Oliver's show simply expands the audience to which the failings of forest-based carbon offsets have now been told. You might even get a chuckle or two out of it.

SECTION 4:

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

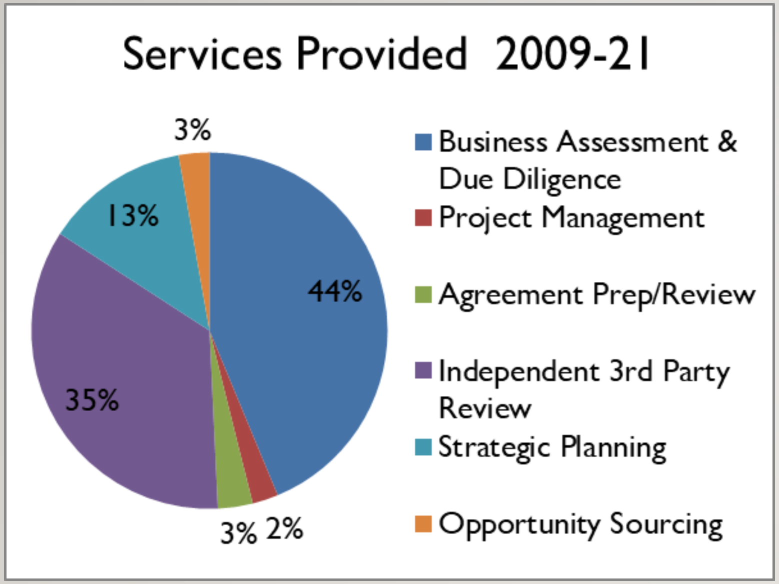
- Strategic Plan Process Design, Facilitation and Documentation
- Company Specific Price, Supply and/or Demand Forecast Development
- Contingency Plan Development and Monitoring
- Financial Planning and Capital Restructuring
- Work-out Strategy Development
- Capital Investment Assessments

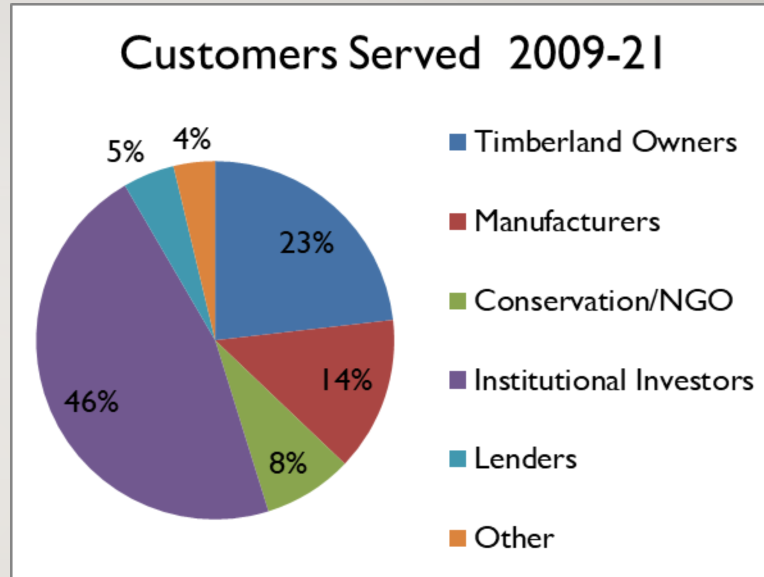
Strategic Planning & Business Restructuring Services

- 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

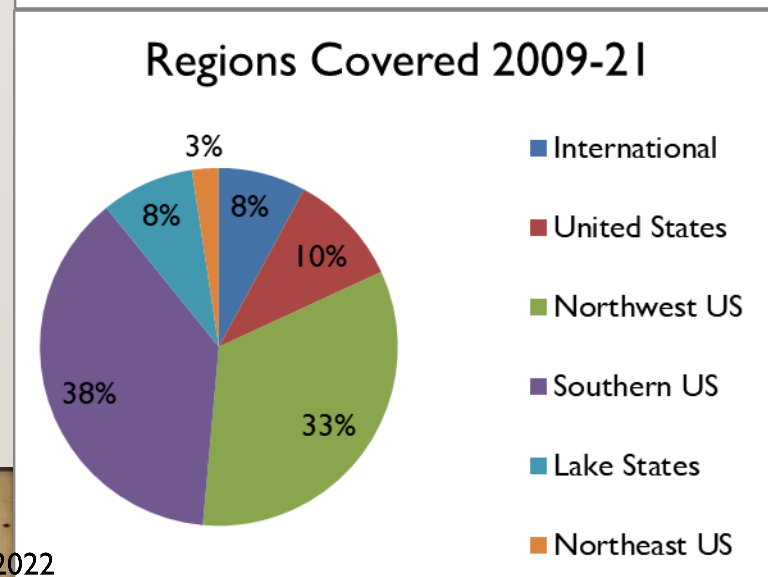
Institutional Investor Services

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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