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TIR

**THE TIES THAT BIND:
U.S. HOUSING STARTS AND TIMBERLAND INVESTMENTS**
Exactly How Close are Those Ties and What is in Store for the Future?

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Introduction

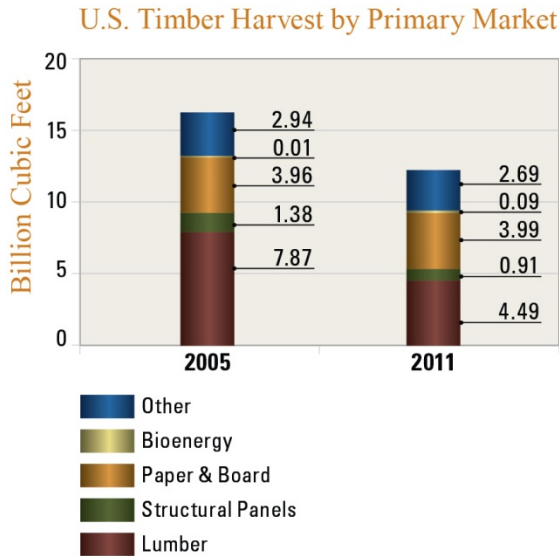


Figure 1. A breakout of the primary products made from softwood and hardwood timber harvested in the United States for 2005 and 2011. The “Other” category includes harvesting residuals and low grade timber that goes into the recovery boiler of a mill or is used as firewood for residential use. Additional uses of “Other” can include specialty products like chemicals, poles and landscaping material.

The link between new homebuilding and timberland investment is an obvious one, but the correlation between these two economic sectors is not well understood. How important is new homebuilding to timberland investment success? What has been the impact of the housing downturn on timberland investments? What other sectors of the economy consume forest products? What is the outlook for the housing market?

The purpose of this paper is to offer a perspective on the linkage that exists between the performance of the U.S. residential construction sector and U.S. timber markets. The paper places a particular emphasis on analyzing the implications of the collapse in new home construction that began in 2007.

Of course, the most pressing question timberland investors have at present is whether the current climate within the housing sector, which is experiencing a post-war low, is the *new normal*. At TIR we do not believe that is the case. We are confident that once the job market recovers, consumer confidence improves and the current backlog of unsold and foreclosed homes is reduced, the housing market will rebound. This will cause demand and pricing for construction materials to increase, which will provide timberland investors with good reasons to be very optimistic about the long-term performance of their assets.

New Home Construction and its Influence on Timber Demand



The first step in our analysis is to understand the actual role new home construction plays in U.S. timber demand.

In 2005, just prior to the collapse of the “housing bubble,” timber harvests of softwoods and hardwoods in the United States totaled roughly 16 billion cubic feet. In 2011, four years later, timber harvests had fallen to 12 billion cubic feet (Figure 1), with much of this reduction being associated with a decline in lumber production.

Timber Demand Derived from the Lumber and Panel Markets

While a large proportion of the timber harvested in the United States is used to produce lumber, timber also plays an important role in other industrial and economic



U.S. Harvest by End-Use (2005)

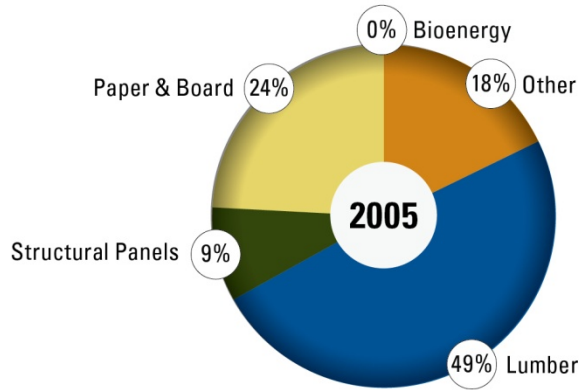


Figure 2. Source: RISI

U.S. Harvest by End-Use (2011)

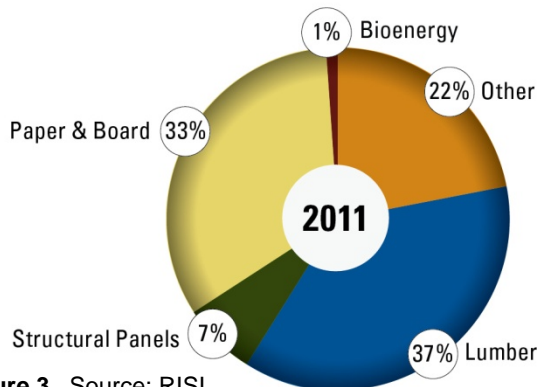


Figure 3. Source: RISI

U.S. Softwood Lumber Demand by End-Use Market

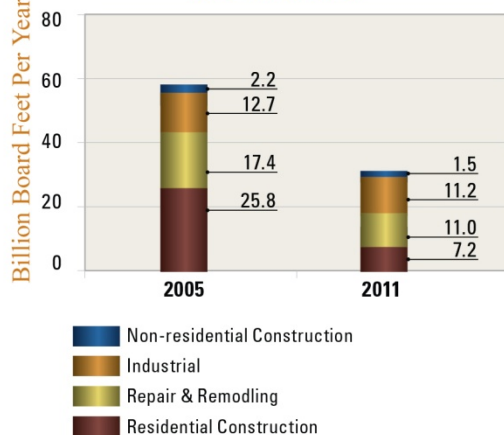


Figure 4. Source: RISI

processes. Timber is used to manufacture a variety of paper, packaging and board products and is being used increasingly in a number of bioenergy applications. For instance, a growing percentage of U.S. timber output is used to manufacture wood fuel pellets for heating applications. Wood residuals also are being employed to produce electricity through co-generation technologies that also utilize a combination of other fuel sources, including gas and coal.

The primary wood products that go into new home construction are solid dimensional lumber and structural panels. Lumber is used to make framing and structural supports, or studs. In addition, advanced engineered wood products like laminated veneer lumber (LVL), wood I-joists, Glulam (glue laminated lumber) and cross-laminated timber (CLT) also are used for a variety of framing applications. Structural panels, which primarily serve as underlayment for floors and sheathing for walls and roofs. These two products also are used extensively in both residential and non-residential construction to produce the forms required to pour concrete foundations.

In 2005, 57 percent of the timber harvested in the United States was used to produce lumber and structural panels (Figure 2). More recently, and specifically as of year-end 2011, as the rate of new home construction fell below levels that had not been seen in decades, the ratio dropped to 44 percent (Figure 3).

Other Markets for Wood-Based Building Products

While residential construction plays a leading role in lumber and structural panel demand dynamics, it is not the only driver. Other major end-use markets include the home repair and remodeling sector and the industrial and non-residential construction sector. Altogether, the housing market accounted for 44 percent of the softwood lumber market and 50 percent of the combined plywood and OSB markets in 2005 (Figures 4 and 5). In the wake of the real estate downturn, these numbers have declined to 23 and 29 percent respectively.

In contrast to softwood lumber, supply and demand dynamics for hardwood lumber are harder to deconstruct. Unlike softwood lumber, hardwood lumber is not used for building and structural framing applications. Rather, it is typically utilized to produce interior finishing treatments, such as flooring, cabinetry,

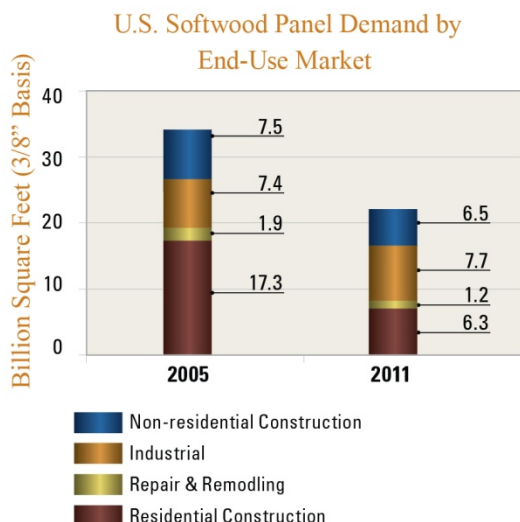


Figure 5. Source: RISI

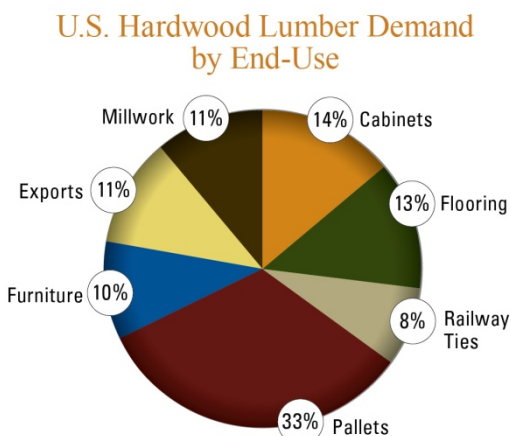


Figure 6. Source: Hardwood Market Report

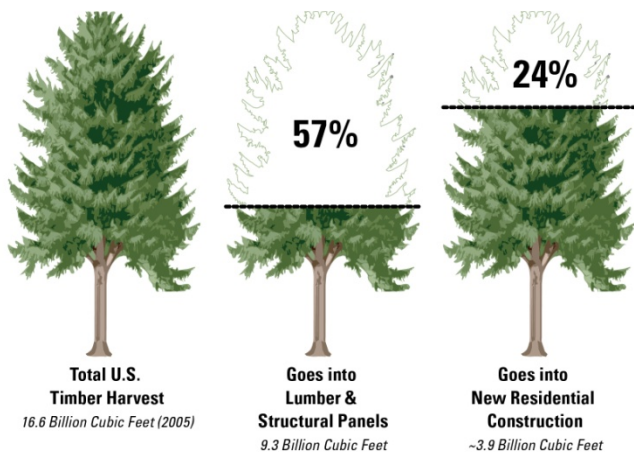


Figure 7. The effective share, by volume, of the U.S. timber harvest in 2005 that went into the production of lumber and structural panels and then to new residential construction, prior to the housing downturn of 2007. By 2011, the ratio of residential construction to total harvest had fallen closer to 10 percent.

doors, window frames, staircases, stair railings and baseboards. About one-third of all hardwood lumber goes into millwork like cabinets and flooring (Figure 6). Between one-half and two-thirds of that total is estimated to be used in new homes, with the balance being absorbed by the repair and remodeling and non-residential construction markets.

New Home Construction and Total U.S. Timber Harvest

To summarize what we have learned so far, historically and in very broad terms, about one-half of the timber harvested in the United States each year is used to manufacture building products and approximately one-half of that total is used in new home construction. Taken as a whole, the new home construction sector usually has absorbed roughly one-fourth of the combined harvest of softwood and hardwood timber in the United States. This was true even during the height of the last housing cycle (Figure 7). Since then, and specifically as of year-end 2011, the amount of U.S. timber utilized for new home construction had fallen less than 10 percent. Consequently, while new home building in the U.S. plays a significant role in shaping timber markets, it is not the sole or dominant force. The repair and renovation sector, the commercial and industrial sectors and the paper, packaging and furniture sectors also are major drivers of timber demand and pricing dynamics in the United States.

The Housing Sector's Impact on Timber Markets

The housing sector's influence on U.S. timber markets is undoubtedly substantial, but other market forces carry weight as well. When we plot completed, new residential units against domestic wood demand on an annual basis, as is shown in Figure 8, we see some patterns and disparities. As new home construction rose throughout the 1990s and into the early 2000s, total U.S. timber harvest effectively remained flat. This was due to the fact that much of the increased demand for wood used in construction was met by imports, largely from Canada. However, when the housing sector dropped precipitously in 2007, domestic timber usage declined as well. This drop coincided with a severe recession in the United States so the reduction in wood use during that period was not entirely attributable to housing because other wood-consuming sectors of the economy also were under pressure.

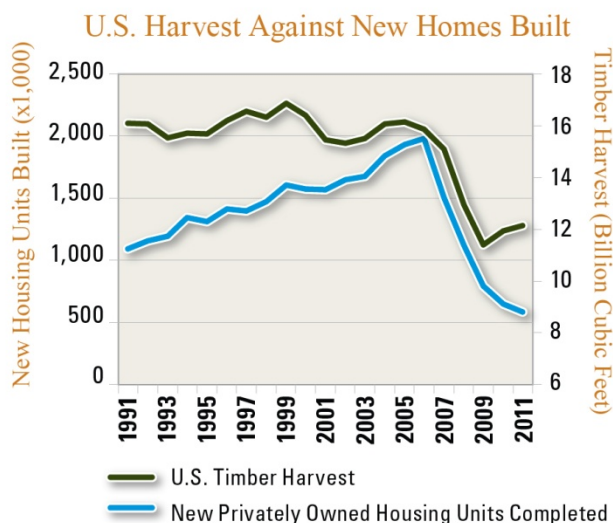


Figure 8. Sources: U.S. Commerce Dept., RISI

More recently, and specifically since 2010, there has been another divergence between housing and timber trends. Strong exports of lumber and logs to Pacific Rim markets, including China, recently has helped push up timber output while housing has continued to weaken. Furthermore, the paper and packaging sector recovered faster than the housing sector following the recession, which, in turn, increased demand for small diameter timber (pulpwood).

To better understand the divergent trends between levels of domestic timber harvest and home construction, we need to recognize that the timber market consists of a range of log products, which are sold for a variety of uses. In general terms, there are four major log categories: softwood sawtimber, softwood pulpwood, hardwood sawtimber and hardwood pulpwood. The sawtimber grade consists of logs large enough to be cut into solid dimensional lumber. The pulpwood grade is comprised of smaller diameter logs that are too small to be used for the production of solid lumber, but that can be chipped, flaked and processed to produce paper and composite board products, among other things. Of these four products, softwood sawtimber is the only one that is strongly affected by rates of new home construction. Table 1 illustrates this point by showing that prices for Southern pine sawtimber (pine is a type of softwood) are positively correlated with housing starts. By comparison, other log products show a negative relationship. The strong link between softwood sawtimber demand and housing starts can be observed in the chart in Figure 9.

Table 1. Statistical correlation of quarterly standing timber prices in the U.S. South and national seasonally adjusted housing starts of 10 years (1992-2011). 1.0 is perfect positive correlation; 0 is no correlation and -1.0 is perfect negative correlation. Source: Timber Mart-South

Log Grade	Correlation with U.S. Housing Starts
Pine Sawtimber	0.91
Hardwood Sawtimber	-0.39
Pine Pulpwood	-0.77
Hardwood Pulpwood	-0.54

New Home Construction and Timberland Returns

So how does the housing market’s performance impact timberland returns? As we have seen, new home construction accounts for almost half of the softwood lumber and structural panel markets and one-quarter of the whole U.S. timber harvest. Among the four major log types, only one category, softwood sawlogs, is heavily dependent upon housing. In that context, it is no surprise that the results are mixed. As is shown in Figure 10, which plots the performance of the NCREIF Timberland Index against U.S. Housing Starts, there is a lot of “noise” between timberland returns and the housing sector. When we closely analyze the comparison, we see sharp downturns in residential construction in 1989 and 2008. These events were, in turn, followed by sliding timberland returns. On the other



Comparing Housing Starts with Southern Pine Sawtimber Prices

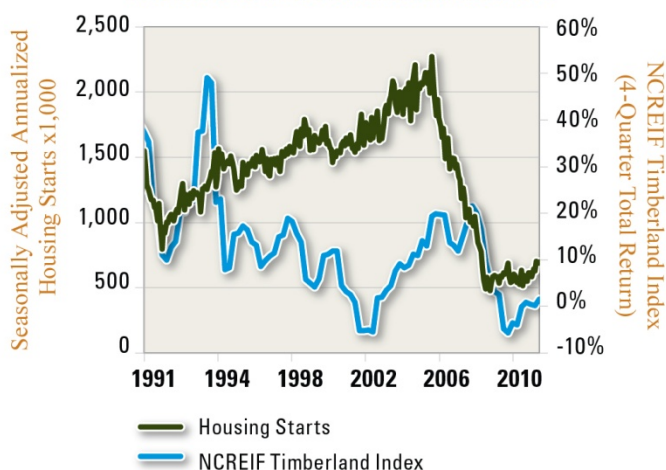


hand, there also are many periods when the performance of the housing sector appears to have had very little impact on the performance of the timberland asset class. For instance, in the mid-to-late 1990s, housing starts rose. However, timberland returns fell correspondingly. In those instances, other factors outside of the performance of the real estate market, such as demand for timber within the pulp and paper sectors and the health of the rural land market, carried more weight. Overall, the statistical correlation between annual housing starts and the NCREIF Timberland Index is a fairly low 0.14.

Figure 9. Sources: U.S. Commerce Dept., Timber Mart-South

The Continued Weakness in Housing Demand

Housing Starts & 4-Quarter NCREIF Timberland Index Returns



Even though the linkage that exists between timber markets and timberland investments has varied, housing remains a *de facto* bellwether for the forest products sector. It is hard to argue that a substantial recovery within timber markets is unlikely to occur until the housing market shows signs of a sustainable recovery. For those interested in the performance of the timberland asset class, this begs the question: Why has the housing market remained depressed for so long?

Low mortgage rates and average real home prices that have reached levels not seen in decades has made housing more affordable than it has been in years. However, demand for homes continues to show significant weakness. In fact, average rates of new home construction have remained below one million starts for four years running.

There are three primary reasons for this market softness. First, despite an environment characterized by falling home prices, many would-be buyers are hesitant to jump into the market because of its instability and lack of predictability. In addition, many existing home owners owe more on their mortgages than their current homes are worth. As a result, the influence of a very large and traditionally reliable segment of the housing market, those who wish to “trade up,” has been significantly

Figure 10. Sources: U.S. Commerce Dept., NCREIF



diminished. When viewed together, these two factors have helped make the cycle of falling home prices self-reinforcing. A second issue slowing the recovery of the residential real estate market is persistently high unemployment. At the time of this writing, the U.S. unemployment rate has stayed above 8.0 percent for more than three years running. By comparison, the post-war U.S. average has been lower than 6.0 percent. Weak job growth has kept many individuals and families from purchasing new homes. It also has created higher foreclosure rates, which has fostered a housing glut. A third factor in the slow recovery of the housing market has been the tight credit environment. On the demand side, potential home buyers face very stringent loan conditions from mortgage lenders. Banks often demand significant down payments on residential mortgages and many U.S. households lack sufficient savings or equity in their current homes to meet these requirements. On the supply side, home builders often face tight credit guidelines. In fact, in many regions of the country it has even become difficult for established builders to obtain financing for their new construction projects. Undoubtedly, banks have been wary about underwriting construction loans for builders when home prices continue to fall and show no concrete signs of bottoming out.

Long-Term Basis for a Recovery

Current, realized demand for housing is affected by near-term market factors such as interest rates, foreclosure rates, home prices and levels of consumer confidence.

Despite the challenges described above, there is little reason to believe that the current, depressed state of the housing market is permanent. In fact, a strong case can be made that housing will make a full recovery. To understand this point of view, we need to analyze and separate realized demand for housing from underlying demand.

Current, realized demand for housing is affected by near-term market factors such as interest rates, foreclosure rates, home prices and levels of consumer confidence. Fundamental, or underlying, demand for housing, however, is driven by long-term trends that eventually express themselves after such near-term market factors play themselves out. What this means is that, eventually, the excess inventory currently plaguing the U.S. housing market will be eliminated. In short, the overhang of foreclosed and distressed homes will be absorbed and employment rates will recover, spurring additional home purchasing. At that point in the recovery cycle, the factors that drive underlying demand

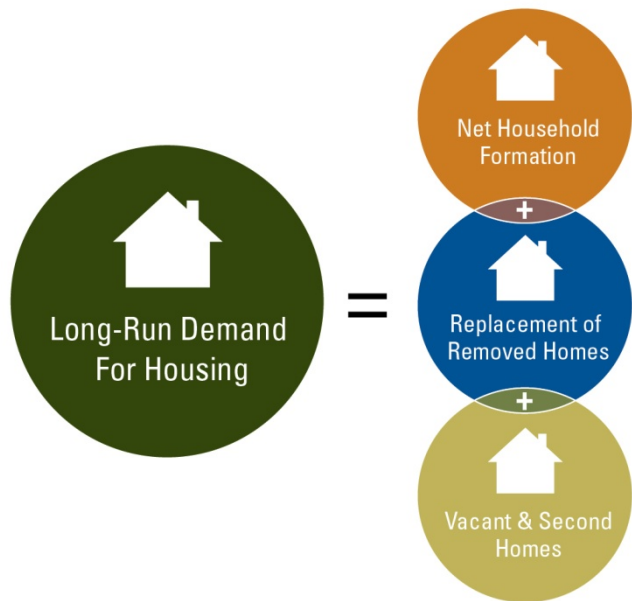


Figure 11. Equation determining the fundamental, long-run demand for housing, which is composed of net household formation, replacement of removed homes and vacant and second homes

for new housing will emerge. Underlying demand is the sum of three different factors as are defined in the equation in Figure 11.

Of the three sources of underlying demand for homes, the dominant source is net household formation, which can account for as much as three-quarters of new home construction each year.

Demographics as a Driver of Household Formation

There are a variety of factors that influence net household formation, but the underlying driver is demographics. An actual household is a dwelling unit inhabited by one or more persons. In today’s environment, there are people who want to form households but who may be choosing to delay the decision, either voluntarily or involuntarily, because of the challenging economy. These people represent suppressed, underlying demand for housing. However, as the national employment picture improves and consumer confidence gains momentum, these people will emerge and become active buyers of new and existing homes.



Figure 12. Sources: U.S. Census Bureau, RISI

The long-run growth in the number of households is determined by population growth and headship rate. For the former, the chart in Figure 12 shows past and forecasted population growth for the United States from the 1970s through this decade. It is important to take note that, in recent years, the United States has added more than 2.5 million new people to its population every year – and this rate of growth is expected to persist. In terms of growth rates, this amounts to slightly less than 1.0 percent annual growth.

In a broader context, however, what matters most in terms of household formation is population growth among people of adult age. From that perspective, the United States has been adding between 2.3 and 2.4 million adults 20 years-of-age or older to the population annually since the 1990s. Furthermore, the country is expected to sustain this rate through the 2030s.

The rate at which adults form households is known as the “headship” rate. It measures how many households exist for every adult. For instance, a headship rate of 0.50 means there is a household for every two adults. Over the last 40 years, the U.S. headship rate has hovered close to 0.50 (see Figure 13).

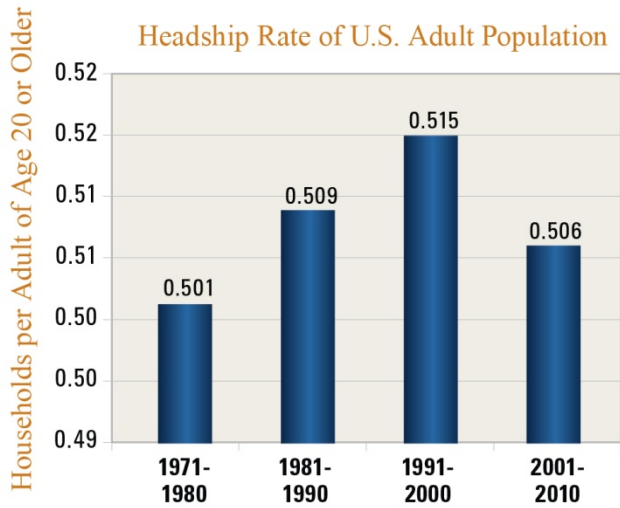


Figure 13. Source: U.S. Census Bureau

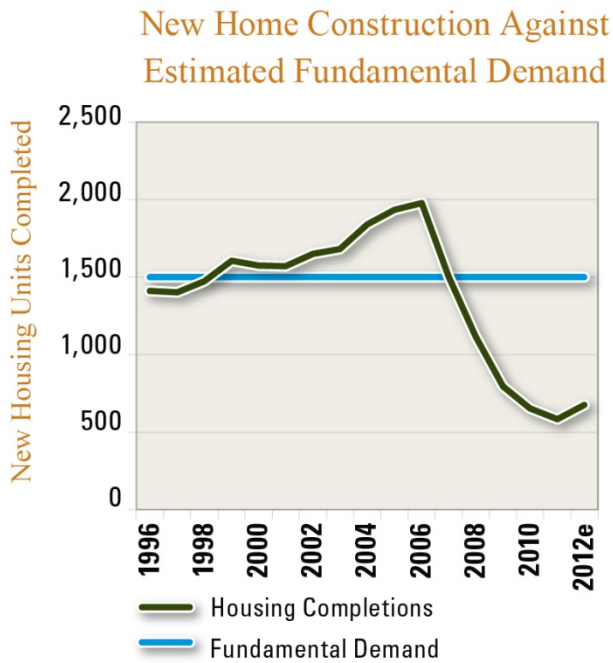


Figure 14. Sources: U.S. Commerce Dept., Forest Economic Advisors (for 2012 estimate)

When considered on a consolidated basis, adult population growth rates of approximately 2.3 million a year, and a headship rate of 0.50, infer that underlying demand for shelter in the United States is increasing at a rate of roughly 1.0 million to 1.3 million per year. In other words, the natural increase in the population, and its need for additional housing, has generated a long-term demand trend of around one million housing units per year – and this rate of increase is expected to persist into the foreseeable future. When it is not attained in any given year that typically means prospective home buyers are doing one of two things – doubling up with friends or family or delaying plans to move out of their parents’ homes. As was explained earlier, these people come to represent pent-up demand for housing and once the broader economy gains greater traction, this demand will be released.

Other Demand Factors that Contribute to New Home Construction

While demographics are the primary drivers of long-term demand for new homes, there are two others that also are of consequence. The first is the need to replace the existing stock of older homes. There are always a certain number of older homes that need to be torn down and replaced with newer structures. Naturally, as the stock of homes grows, the rate at which older homes will need to be replaced also will increase. During the last three decades, tear-downs and rebuilds have consistently contributed 300,000 to 400,000 in new housing starts a year.

The final source of underlying housing demand is demand for vacation homes and seasonal rental units which add about 100,000 to 150,000 total units to annual housing demand.

Aggregate Underlying Demand against Housing Production

In terms of assessing housing demand, we could go through a very sophisticated model that entails using intricate demographic analyses to break down shifts in age groups and their unique headship rates over the coming years. However, sometimes taking a simpler approach is enough to demonstrate the major points of interest about true housing demand.

When we add 1.1 million in household formation to 0.35 million in replacement homes and another 0.1 million for



If it has not developed already, pent-up demand for housing will increase in the future. This, in turn, will place increased pressure on the available supply of housing that can be generated and sustained based on the current rate of residential construction.

secondary or vacant homes, total, fundamental, long-term demand for housing in the United States is around 1.5 million units per year. As Figure 14 demonstrates, total housing production has fallen well short of this level since 2008. This has helped to absorb much of the excessive inventory of homes that accumulated during the expansion of the “housing bubble” in the early-to-mid-2000s. If it has not developed already, pent-up demand for housing will increase in the future. This, in turn, will place increased pressure on the available supply of housing that can be generated and sustained based on the current rate of residential construction. According to one estimate by Forest Economic Advisors, the difference between demand and new home construction will amount to a 5.3 million-unit deficit by 2013. This projected housing deficit would eclipse the excess inventory of homes that was created during the last housing boom.

Forecasting the Housing Recovery

While it is reasonable to assume that pent-up demand created by demographic and economic growth eventually will push a recovery within the new home construction market, it is difficult to predict the timing of this recovery. However, we can proceed with some assurance that any further extension of the housing downturn will create an ever greater backlog of demand for homes, which will produce a more robust recovery at some future time.

Despite the challenges associated with predicting the timing of a housing market recovery, economists and analysts generally agree that it is likely to occur in the period between 2014 and 2015. The two leading economic research groups that serve the timber and forest products sector, RISI and Forest Economic Advisors, have projected that housing starts will break 1.0 million in 2014. Both expect new home construction will climb back to historically healthy levels of 1.4 million per year, or more, by the following year. At TIR we believe that if the U.S. economy continues to make forward progress, and national unemployment drops below 7.0 percent, it is not out of the question that annual housing starts will break 1.0 million as early as 2013.



What Can Derail an Eventual Recovery?

Turning back to one of our original questions, given that the downturn in the U.S. housing market has stretched on for more than four years, it is no surprise that some analysts and economists have drawn the conclusion that the low level of housing starts is the *new norm*. They argue that structural changes in the real estate sector will create a depressed level of new home demand for many years, if not indefinitely. We do not subscribe to this theory. Many market factors that have hurt the housing market, such as falling prices and the large backlog of homes under foreclosure, are transient and eventually will be worked out of the system. We also are confident that the ongoing build-up of pent-up demand for housing, which is based on demographics and rates of economic development, will help push the sector back to historically healthy levels.



That said, there are four potential scenarios that could cause a housing recovery to stall. In short, the housing market rebound could be derailed:

1. If population growth plummets
2. If household formation falls due to shifts in societal norms
3. If household formation remains depressed due to rising unemployment
4. If stringent credit standards prevent people from purchasing homes.

We argue, however, that none of these scenarios are a real threat to a robust housing recovery in the next few years. Our reasons are as follows...

First, population growth has a lot of inertia and does not shift dramatically. While changes in birth rates, life expectancy and immigration eventually will alter population growth over the long term, we can confidently estimate the number of people who will enter adulthood during the next decade and move into the household formation stage of their lives. A decade is sufficient time to build up underlying demand for housing.

As for headship rates, or the rate at which people actually create households, we do not believe there has been a cultural shift in the American milieu toward extended households. As was explained earlier in Figure 13, historically, the headship rate in the United



States has varied little for many decades outside of a band above 0.50 – even through periods of recession and variable housing cycles. As a result, it is reasonable to assume that once the economy gains traction, rates of household formation will continue along the historical trend line.



Although the desire to live in one's own home may not have changed, this could be a moot consideration for families that cannot purchase or rent homes because of unemployment. This third argument against an eventual housing recovery is only valid if one believes that the U.S. unemployment rate will continue to rise, which is unlikely to happen. Even if one assumes that the U.S. economy remains anemic, and that employment, in particular, remains flat, demographic growth will, nevertheless, push housing demand over the 1 million a year threshold.

Finally, the fourth argument that stringent mortgage lending could choke off a housing recovery is faulty because it does not consider all forms of housing demand. Families and individuals who cannot qualify for mortgages rent their housing. As a result, the net demand for new residential construction does not change because other people buy residential units and lease them out to those who cannot afford single-family homes. That said, the shift toward renting over purchasing would impact the character of the housing market as rental stocks in the United States tend to be more multi-unit apartments rather than detached single-family homes.

In conclusion, demand for housing in the United States has been drawn historically from a strong foundation – one that is anchored by population growth and the desire of most Americans to live in their own homes. Looking ahead, we do not expect these factors to be materially impacted by cultural shifts, income growth rates or tight credit markets.



Implications of a Housing Recovery on Timber Demand

Even though we expect demand for new home construction to rebound to pre-bubble levels, we do not believe this recovery will mirror those that came before it and this could have implications for timber demand over the next decade.

Average Home Sizes are Decreasing

The new homes that are being added to the U.S. housing stock at present are smaller in size and typically have fewer amenities than those built during the housing boom of the previous decade. According to the U.S. Census Bureau, the average size of newly-built single-family homes peaked at 2,539 square feet in the fourth quarter of 2007. As of 2012, it had declined to 2,310 square feet, a drop of 5.8 percent. Current estimates suggest that the average size of new homes built in 2011 decreased by an additional three percent¹. Again, this downward trend means less lumber and paneling is required to build the average single-family home today than was the case a decade ago.

Looking ahead, however, it is safe to assume that average home sizes will increase again in the future. As Figure 15 demonstrates, since the end of World War II there has been a strong correlation between rising income levels and home sizes. This correlation weakened following the collapse of the housing market in 2007, but history demonstrates that families and individuals prefer larger homes if they can afford them. When U.S. households begin to experience sustained growth in real wages in the later stages of the ongoing economic recovery, there is strong precedent to suggest that average, single-family home sizes will grow. In fact, estimates by RISI and Forest Economic Advisors indicate that homes sizes will reach new levels over the next decade and into the early 2020s.

The Shift Toward Multi-Unit Over Single-Family Homes

Another factor that could reduce the consumption of wood in the early stages of a sustained housing recovery is the shift away from single-family, detached homes and towards multi-unit residences, such as apartments and condominiums. This is due, in part, to the large increase

Comparing Average Size of Single-Family Homes and Per Capita GDP in the U.S.

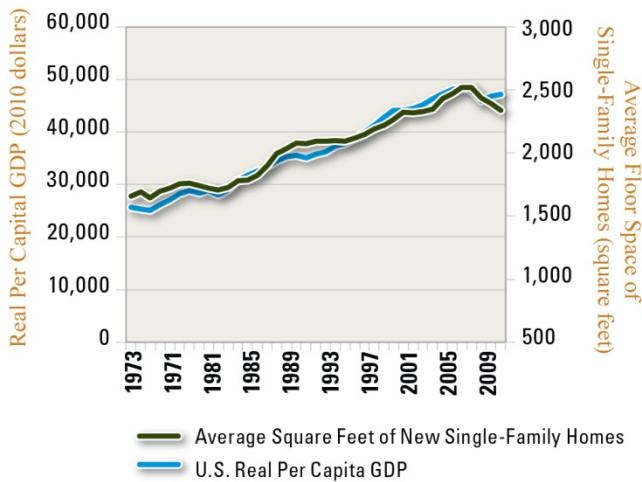


Figure 15. Sources: U.S. Labor Dept., U.S. Census Bureau

¹ RISI, *North American Timber Forest*, October 2011.



in the number of foreclosures that have taken place. Households that are displaced due to foreclosures and, or loss of income, by necessity, rent rather than purchase their housing. Rentals are more commonly made in multi-unit housing settings rather than single-family homes. This hurts timber demand because multi-unit housing projects typically require less wood than do detached, single-family homes.

Beyond the financial realities that have driven many Americans to focus on renting their housing, a shift in attitudes about the value of home ownership in an investment context also has occurred within society. While Americans still believe that owning a home is a wise financial decision, the notion that home ownership is a safe and highly desirable investment strategy has changed to some degree in the wake of the housing market collapse. It is difficult to project how this shift is likely to impact levels of long-term timber consumption, but if Americans begin to strongly gravitate toward renting, and the multi-unit housing market experiences a corresponding increase in demand, this will have an impact on timber demand fundamentals. In fact, there are hints that such a shift is already underway.

Since 2011, multi-unit construction has accounted for a larger and larger share of total housing starts. In the

Comparing Wood Use Between Single-Family & Multi-Unit

Multi-unit residences such as apartments and condominiums typically use less building materials than single-family, detached homes. How much less depends on many factors such as the square footage of living space per residence and how many units are included in each development. To get a flavor of the differences, we asked an Atlanta based home developer of the real lumber cost to build single-family and multi-unit homes during the first quarter of 2012. While this values may not fit exactly with the national average, it gives a representative view of wood usage across different types of homes. As seen in the table below, apartments can run about one-quarter or less than a large 2-story single-family home. Wood costs per square foot of living space is correspondingly about one-third less.

	Cost of Framing Material Used	
	Per Unit	Per Square Feet
Single Family		
1,502 square foot home on concrete slab	\$8,916	\$5.94
Two-story 3,616 square foot home with half-basement	\$31,873	\$8.81
Multi-Family		
871 sq. ft. 1-BR, 1-bath apartment in a 54-unit building	\$5,004	\$5.75
1,087 sq. ft. 2-BR, 2-bath apartment in a 24-unit building	\$6,218	\$5.72
1,485 sq. ft. 3-BR, 2-bath apartment in a 14-unit building	\$8,547	\$5.76



With regard to the actual impact the current shift to multi-unit construction is having on timber demand, it is not as dramatic as the market-share values might suggest. In actual numbers, single-family home starts are projected to grow in 2012 and for the next several years. It is just that multi-unit construction is expected to grow at a much faster rate.

past, single-family homes made up approximately two-thirds of all new, residential construction in the United States. In contrast, the multi-unit construction segment accounted for 15 to 20 percent of the total. Mobile home production made up the remainder. At the height of the last housing cycle, more than 75 percent of all new housing starts in the country were single-family homes. Over the next three or more years, some economists believe this number will dip as low as 50 percent and that multi-unit construction will grow to approximately 40 percent of the total – an effective doubling of the historical trend. Beyond the next half-decade, however, TIR believes that the balance between single-family and multi-unit home construction will settle and conform again to the previous historical trend.

With regard to the actual impact the current shift to multi-unit construction is having on timber demand, it is not as dramatic as the market-share values might suggest. In actual numbers, single-family home starts are projected to grow in 2012 and for the next several years. It is just that multi-unit construction is expected to grow at a much faster rate. However, market watchers expect this trend will begin to reverse itself in the middle of this decade and that single-family home construction eventually will reach 1.0 million units. The net effect of these trends on lumber markets is that demand will increase but at a more muted rate than otherwise might have been the case.

A Combined Multi-Market Upturn for Wood Consumption

While the shift toward smaller-sized homes and growth in the multi-unit construction sector are projected to have a negative impact on timber demand – at least in the early stages of the housing recovery – positive developments in other wood consuming sectors are expected. As the housing market strengthens, the repair and remodeling, furniture and non-residential construction sectors are likely to follow suit. The combined effect of multiple end-use wood markets growing simultaneously is likely to have an outsized impact on timber markets, in general. The repair and remodeling segment of the market is likely to be especially strong because of the large number of distressed and foreclosed homes that are expected to be sold. Such homes typically require significant renovation



and restoration by the new owners, many of whom acquire such properties for investment purposes.

When viewed through the lens we have constructed with this white paper, TIR projects that the housing recovery will help produce a strong recovery in timber prices in the United States. This will be particularly true for softwood sawtimber markets, which drive the markets for structural lumber and plywood. This recovery will be augmented by support in other end-use markets for wood, including repair and remodeling, home furnishings, paper and packaging and non-residential construction. Despite this optimism, we do not project that the recovery in timber demand will be as robust as the one experienced during the last housing boom. Again, this is primarily because single-family homes today are one-tenth smaller in square footage than before the housing downturn and because of the shift toward multi-unit home construction (apartments, condominiums and townhomes). These trends will result in a reduction in the amount of lumber and paneling consumed for every new residential unit constructed.

Conclusions



Looking ahead, the housing outlook is not as dire as some may suggest. Demographic growth between 0.9 and 1.0 percent per year is building an underlying need for more homes at a rate of around 1.0 to 1.3 million a year. In addition, the aging stock of homes in the U.S. needs to be replaced at a rate of about 300,000 homes per year. As a result, underlying demand for housing is growing at a rate of about 1.5 million units a year. With current rates of new home construction only meeting a fraction of this demand, there are reasons to be optimistic. In addition, eventual job growth and improving consumer confidence will encourage more people to purchase and rent homes. While it is difficult to predict the timing of the recovery, many economists believe that the U.S. housing market will see the rate of new homes being built climb above 1.0 million new starts per year between 2014 and 2015. This will represent a return to the historical trend. Final demand will be tempered by the fact that the new homes that are built are likely to be smaller and a larger percentage will be of the multi-unit variety rather than single-family homes. Over time, however, these trends are likely to reverse as household income rises. Should the U.S. economy falter again, this would merely add to the pent-up demand,



A weak housing market is not a definitive indication that timber markets are poor. Likewise, timberland investment performance is not driven exclusively or even primarily by the performance of the housing market.

which in turn will help fuel the market's eventual recovery.

Despite the strong influence housing has on timber markets, it is important to consider that there are many other end-use markets that consume timber. Taken in context, three-quarters of all wood harvested in the U.S. goes into uses that do not involve the construction of homes. Timberland investors should recognize that successfully investing in U.S. timberland requires a much broader perspective than an understanding of the housing market. *A weak housing market is not a definitive indication that timber markets are poor. Likewise, timberland investment performance is not driven exclusively or even primarily by the performance of the housing market.* If the goal is to build and manage a strongly performing timberland portfolio, a broad and holistic perspective is necessary. This entails understanding a host of variables beyond the rate of housing starts, including (a) rural land markets, (b) the nature of markets for forest-based, non-timber resources, (b) the biological growth characteristics of each forest targeted or owned for investment purposes, (c) the market dynamics that influence the health and viability of mills in a particular region, (d) the strength of the market infrastructure and the availability of quality forestry services in a given region, (e) and, the macro-trends that are influencing end-use wood sectors.