Forest Research Group

Forest Research Notes

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Housing Starts and Lumber Production

...and what they mean for timber growers.

One of the much-touted characteristics of timberland as an asset class is that timber can be stored on the stump when timber prices are low. The trees will continue to grow so that, when prices reach acceptable levels, there is even more volume available for harvest.

It is widely reported that sawtimber harvests have been reduced over the past few years. Sawtimber prices are down in many parts of the country (export markets on the West Coast are keeping prices more exciting), and this is largely due to decreased lumber production due to lower housing starts.

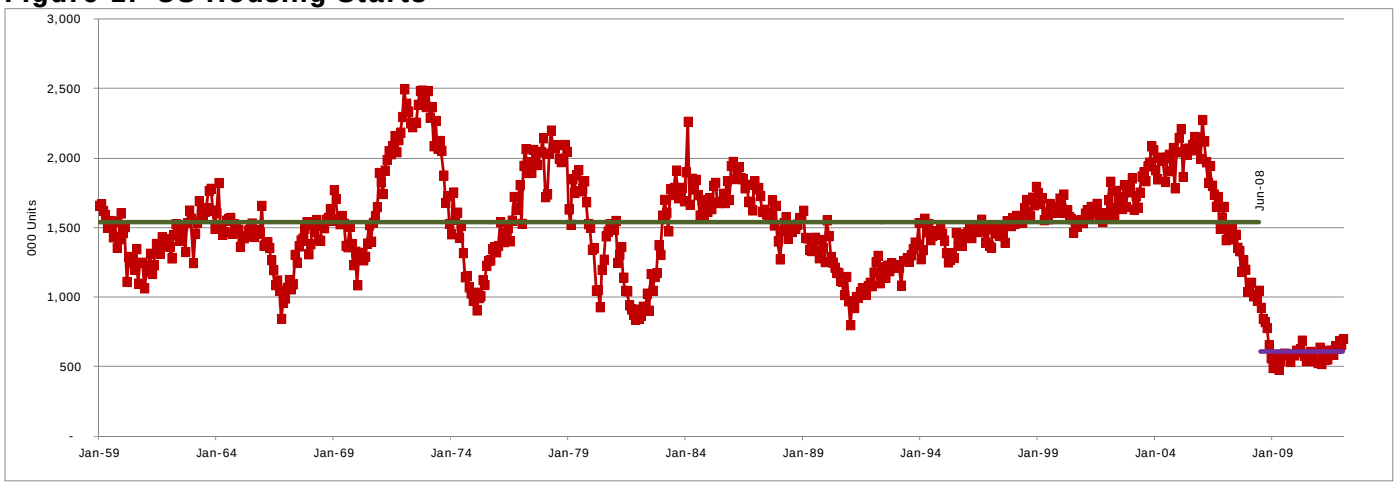
In the previous *Forest Research Notes* we discussed how low US housing starts have been for the past few years, and we will begin by reviewing some of that information, but go off in a different direction. As we said in the last issue, the average from 1959 through mid-2008 was just over 1.5 mm units per year (single- and multi-family homes), while the average since then has been just over 0.6 mm units per year (Figure 1). So housing starts have been at about 40% of the long-term average over the past four years.

Lumber Markets

Softwood lumber production has also dropped (Figure 2). And we can see that softwood lumber production is highly correlated with housing starts in all three regions for which data is reported by *Random Lengths* (Table 1).

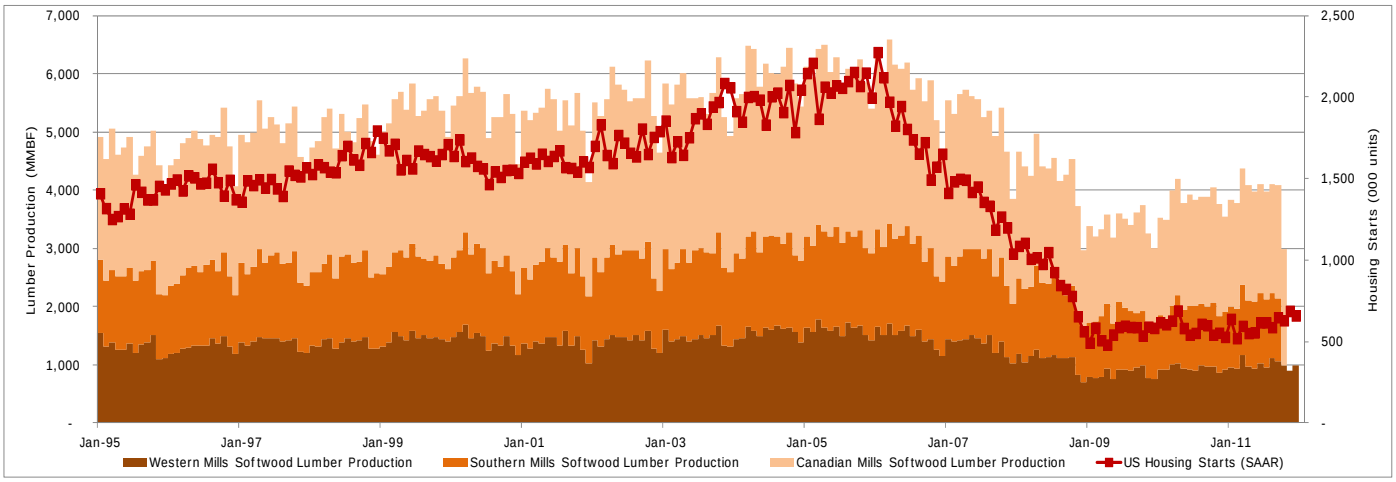
But housing starts have fallen much further than lumber production. Figure 2 shows (over a shorter time period) that while housing starts are at 40 percent (or less) of the long-term average, lumber production is at 65-80 percent of the long-term average, depending on the region and the time period chosen.

Figure 1. US Housing Starts



Source: US Census Bureau

Figure 2. US Housing Starts and North American Softwood Lumber Production



Source: US Census Bureau, Random Lengths

Table 1. Correlation Coefficients for Housing Starts and Lumber Production, Monthly Data January 1995- September 2011

	Western Mills Softwood Lumber Production	Southern Mills Softwood Lumber Production	Canadian Mills Softwood Lumber Production	US Housing Starts (SAAR)	US Housing Starts (NSA)
Western Mills Softwood Lumber Production	1.0000	0.8989	0.8858	0.8789	0.8974
Southern Mills Softwood Lumber Production	0.8989	1.0000	0.8375	0.7833	0.8676
Canadian Mills Softwood Lumber Production	0.8858	0.8375	1.0000	0.8391	0.8306
US Housing Starts (SAAR)	0.8789	0.7833	0.8391	1.0000	0.9154
US Housing Starts (NSA)	0.8974	0.8676	0.8306	0.9154	1.0000

Table 2. Changes in Housing Starts and Lumber Production

	US Housing Starts (SAAR)	Western Mills Softwood Lumber Production	Southern Mills Softwood Lumber Production	Canadian Mills Softwood Lumber Production
	000 units	MMBF		
Average Jan-95 to Dec-07	1,653	1,428	1,393	2,554
Average Jan-08 to Present	661	969	1,085	1,823
% of Long-term	40.0%	67.8%	77.9%	71.4%
% Change	-60.0%	-32.2%	-22.1%	-28.6%
Average Jan-95 to Jun-08	1,630	1,418	1,390	2,536
Average Jul-08 to Present	608	944	1,052	1,787
% of Long-term	37.3%	66.6%	75.7%	70.4%
% Change	-62.7%	-33.4%	-24.3%	-29.6%
Average Jan-95 to Dec-08	1,599	1,403	1,380	2,514
Average Jan-09 to Present	582	933	1,038	1,767
% of Long-term	36.4%	66.5%	75.2%	70.3%
% Change	-63.6%	-33.5%	-24.8%	-29.7%

So housing starts are down 60 percent, but lumber production is down only 25-30 percent. Where is all that lumber going? It is going into other traditional uses. New US housing only accounts for a little over 40 percent of the softwood lumber consumed in the country. Just over 20 percent of softwood lumber is used to repair and renovate existing homes. The other third of the softwood lumber consumed in the US goes to a variety of uses, including non-residential construction and packaging. Consumption for these uses has declined during the recent/current recession, but this has been offset to some degree by exports. Lumber exports to China have grown exponentially, though almost all of that is from the West.

Our analysis (not shown here) indicates that a decrease in consumption of roughly 15-20 percent in other traditional uses, along with the decrease in consumption of about 60 percent in new housing and a surge in exports would account for the 25-30 percent drop in softwood lumber production over the past 3.5 years.

Log Markets: How Much is Being Stored on the Stump?

The volume that is stored on the stump is important because it represents an increase in available supply when housing starts recover. In many markets, such an increase in the available supply would force prices down. But because timber can be stored on the stump (and can continue to be stored as housing starts increase) we expect this surplus to keep prices at low levels for an extended period, rather than push them down. In other words, sawtimber prices will not fall as housing starts recover, but they will recover well after housing starts recover.

So how much is being stored? What volume of logs is required to produce a given volume of lumber? A precise answer is complicated, because the volume of lumber produced from a log depends on the log scale being used and the size of the log.

But we can take a shortcut. If lumber production is down 25-30 percent, then the sawlog harvest must also be down 25-30 percent (ignoring any increase in log exports). If the sawlog harvest has been 25-30 percent below "normal" over the past 3.5 years, then there must be about a year's worth of softwood sawtimber stored on the stump in the US (Table 3).

Table 3. Years of Timber Stored on the Stump

Average Log and Lumber Production Decrease Since Jul-08	Years of Decreased Production	Years of Timber Stored on the Stump Since Jul-08
25%	3.5	0.875
30%		1.050

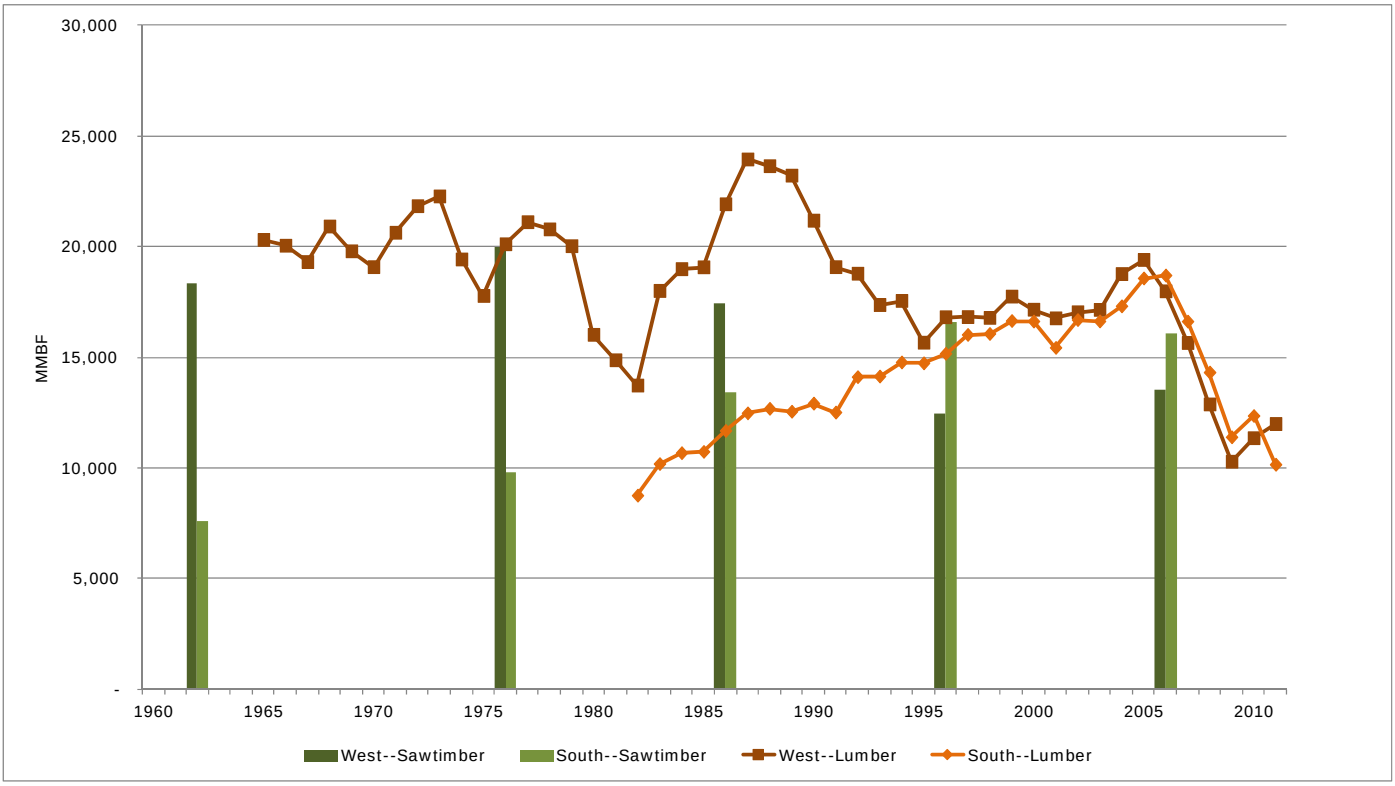
This is a lower number than we expected: we heard estimates a year or two ago of 1-1.5 years of stored timber at that time, and we've heard of harvest reductions of as much as 80 percent in some regions.

But the volume of timber stored on the stump will continue to grow for some time, because it will take a few years for housing starts to reach their long-term average. Most forecasts don't have starts getting to that level until after 2013, and maybe not until 2015.

Figure 3 shows lumber and sawtimber production for the South and West as reported by the US Forest Service. (Data on timber harvests are often not available on an annual or more frequent basis.)

This graph suggests there is another question to answer: what is the "normal" harvest for the South? The West has spent most of the last 40 years producing between 15 and 20 BBF of softwood lumber every year. (The surge in production in the last 1980s was largely due to exports.) But the South saw steady increases in sawtimber harvests from 1960 through 1995. The southern lumber production data don't go back to 1960, but we can see that lumber production increased between 1980 and 2005. Can southern lumber production increase beyond the levels it reached in 2005, or has it reached its upper limit?

Figure 3. Softwood Lumber and Log Production Volumes



Sources: USDA Forest Service

Summary

US housing starts are down more than 60 percent from their long-term average, but softwood lumber production is down only 25-30 percent. This means the volume of softwood sawtimber being stored on the stump is less than suggested by the very low housing starts rate. Consumption by other applications has not fallen as much (as housing starts) and exports to China have increased sharply.

We conclude that there is at least a year's worth of sawtimber harvest that has been postponed, and we may see up to another year added in the next three years as housing starts struggle to rcover.

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Events

Yale University's Global Institute of Sustainable Forestry will be offering a one-week session:

Forestry and the Global Environment: Challenges of Managing and Conserving Forests in the 21st Century
New Haven, CT USA
March 18 - 12, 2012

I will be helping Lloyd Irland lead a discussion on the economics of and markets for timber, wood-based energy, carbon and ecosystem services as one segment of the session. For more information, visit the web site at:

http://environment.yale.edu/gisf/mid-career-courses/executive-education-in-forestry-program/