Forest Research Group

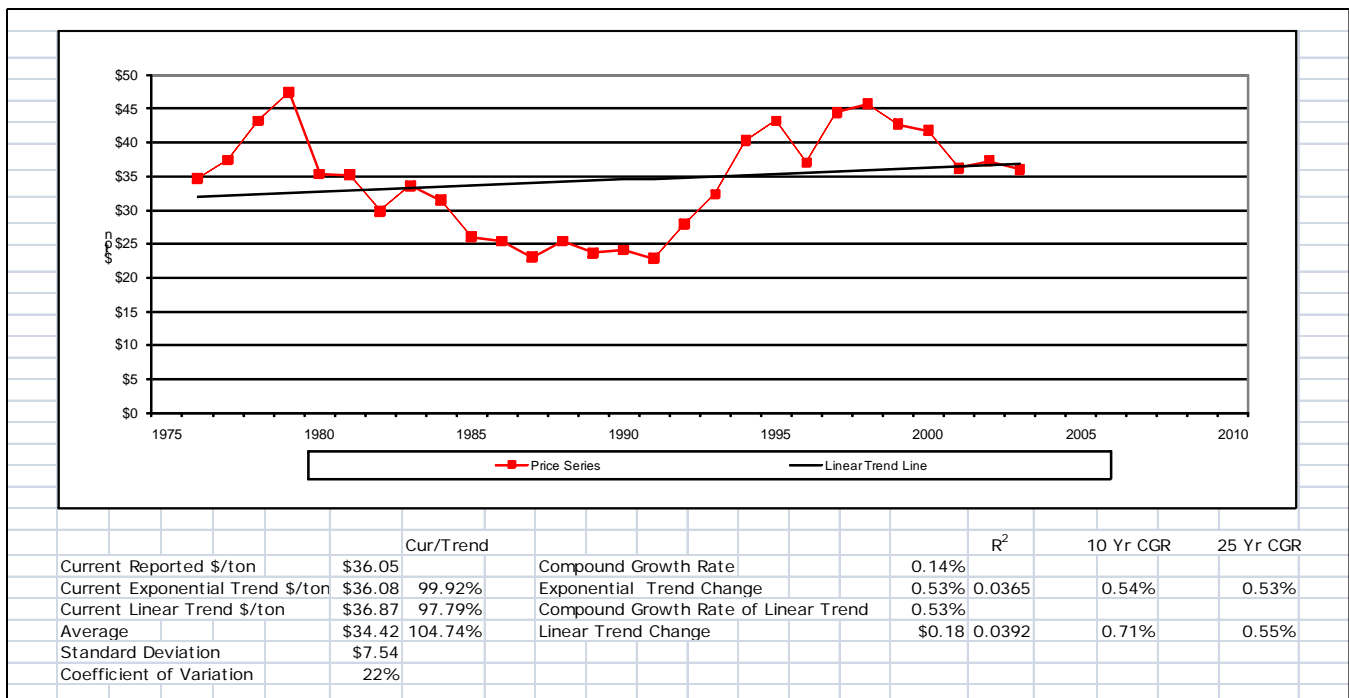
Southern Pine Sawtimber Price Trends -- Update

The first Forest Research Note to examine southern pine sawtimber prices was published for the second quarter of 2004 (Volume 1, Number 2), over 6 years ago. Since then, US housing starts have collapsed and the US economy has gone through what some have called The Great Recession. What has happened to southern pine sawtimber prices over the past 6 years?

Why is southern pine sawtimber important? First, pine sawtimber is a major component of timberland in the region. Second, southern pine sawtimber is a major component of the world's timber supply. The US South produces roughly half of the softwood lumber produced in the US. Since the US produced roughly 15% of the

world's softwood lumber in 2009 (UN FAO Stat), this means the South produced about 7.5% of the world's softwood lumber in 2009. (Prior to 2007, the US and South accounted for 20% and 10%, respectively, of the world's softwood lumber production.)
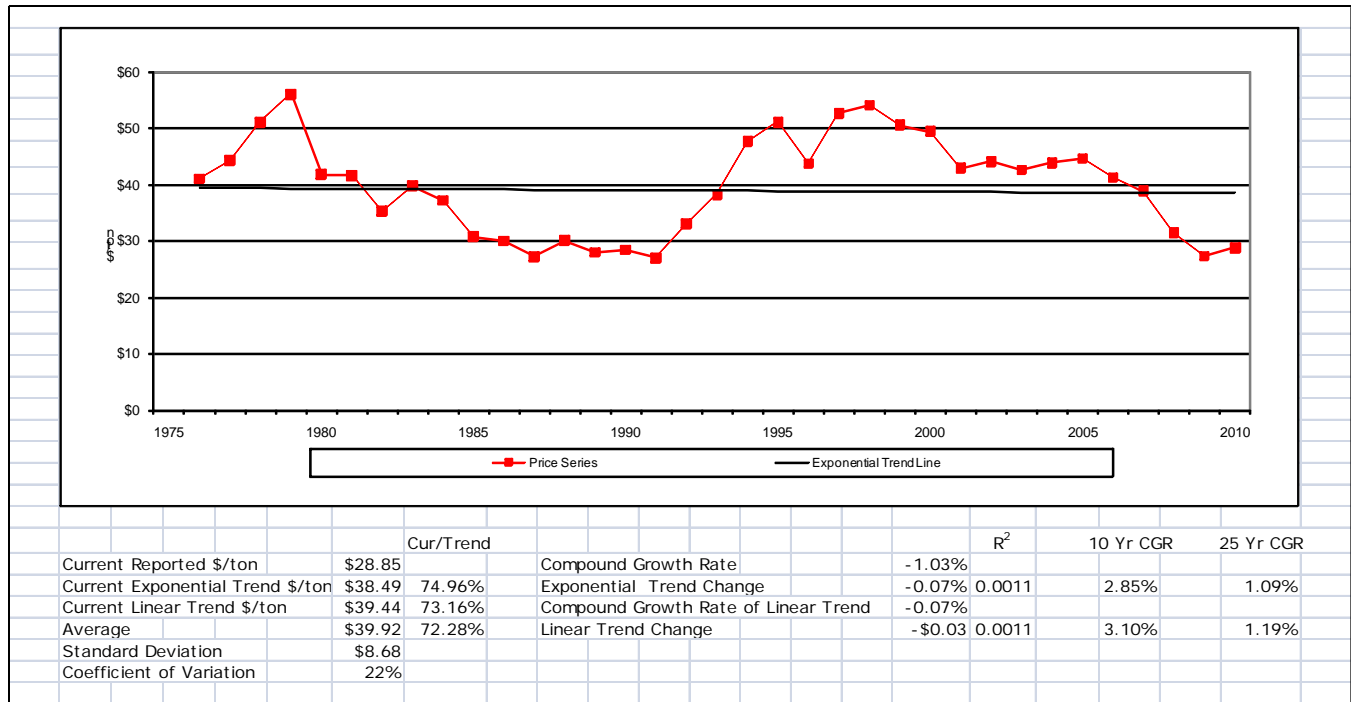
Figure 1 shows the picture six years ago. Real prices had risen sharply in the early 1990s, then leveled off and began drifting downwards in the 21st century. Back in 2003 they were still slightly above the long-term average real price. Our conclusion at that time (based on this chart and other analysis), was that we should not expect a significant increase in southern pine sawtimber prices in the near future.

Figure 1. Southwide Pine Sawtimber Prices Through 2003 (Real 2003$)

		Cur/Trend			R^2	10 Yr CGR	25 Yr CGR
Current Reported $/ton	$36.05		Compound Growth Rate	0.14%			
Current Exponential Trend $/ton	$36.08	99.92%	Exponential Trend Change	0.53%	0.0365	0.54%	0.53%
Current Linear Trend $/ton	$36.87	97.79%	Compound Growth Rate of Linear Trend	0.53%			
Average	$34.42	104.74%	Linear Trend Change	$0.18	0.0392	0.71%	0.55%
Standard Deviation	$7.54						
Coefficient of Variation	22%						

Source: Timber Mart-South, US Department of Commerce

Figure 2. Southwide Pine Sawtimber Prices (Real 2010$)

		Cur/Trend		R^2	10 Yr CGR	25 Yr CGR
Current Reported $/ton	$28.85		Compound Growth Rate	-1.03%		
Current Exponential Trend $/ton	$38.49	74.96%	Exponential Trend Change	-0.07% 0.0011	2.85%	1.09%
Current Linear Trend $/ton	$39.44	73.16%	Compound Growth Rate of Linear Trend	-0.07%		
Average	$39.92	72.28%	Linear Trend Change	-$0.03 0.0011	3.10%	1.19%
Standard Deviation	$8.68					
Coefficient of Variation	22%					

Source: Timber Mart-South, US Department of Commerce

The conclusion we reached in 2004 appears to have been correct.

Figure 2 shows the same data series extended to the present (third quarter of 2010) and deflated using 2010 as the index base. Real prices hit a low of $27.34/ton in 2009, but this is not the lowest price ever: it is higher than the $27.28/ton in 1986 and $27.08/ton in 1991.

As explained in Vol 1 No 2, based on longer-term data available from the Louisiana Department of Agriculture and Forestry (LDAF), real prices were even slightly lower in the 1960s. So the current low prices are at "normal" low levels. The average prices in 2010 is at nearly 75% of the long-term average, up from 67% at the end of 2009. This is not *wonderful* news for timberland owners, but this is not uncharted territory--we've been here before.

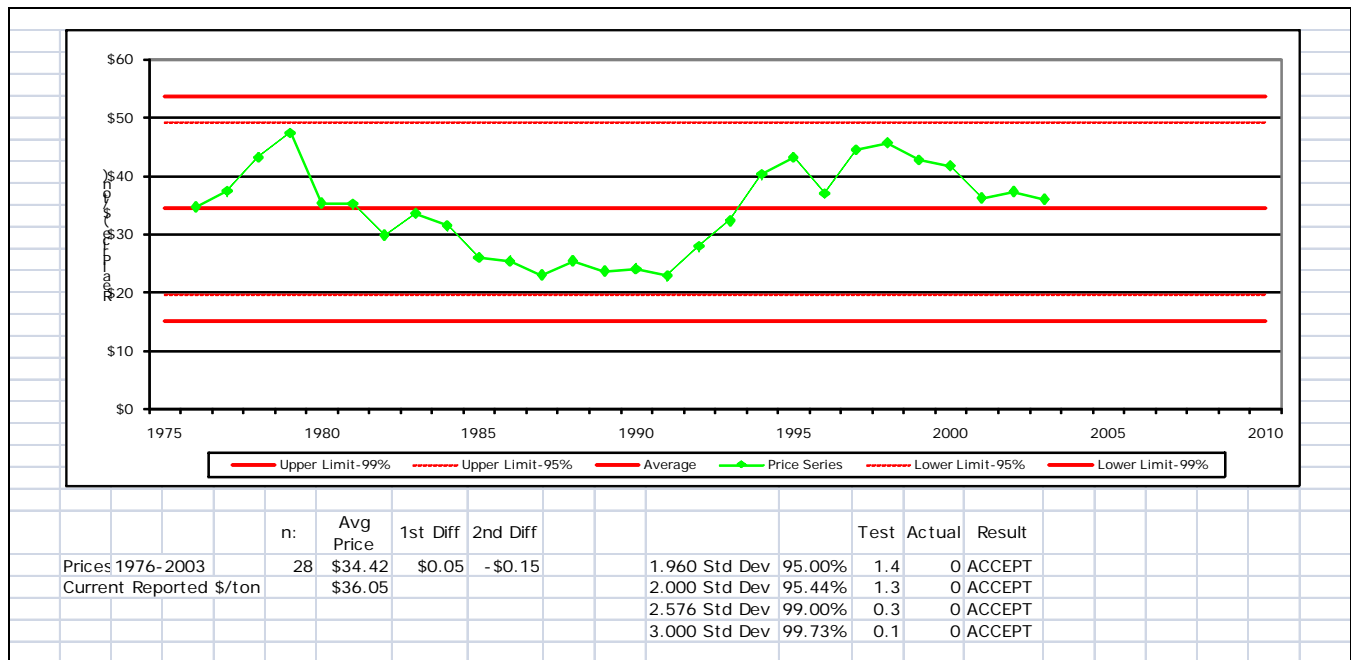While past performance is not an guarantee of future performance, the long history of this data series (and the LDAF series) suggests we could see 5 or 10 years of real price increases in the not too distant future. *History* suggests the sawtimber prices will not go any lower. (We'll update this in 5 or 6 years and see if history is correct.)

Real Prices are [Still] Mean-Reverting

Note that the trendline has gone from upward-sloping to declining very, very slightly. Thirty-four years of real sawtimber prices show a flat trend, which would mean the real timber price is constant—or perhaps it is more accurate to say that real prices are cycling around a constant long-term average. Our mean-reversion analysis supports this conclusion.

Figure 3 shows what our process control charts, used for testing mean-reversion, would have looked like in 2004. (In Vol 1 No 2 we showed an analysis of the LDAF data).

Figure 3. Southwide Pine Sawtimber Prices Through 2003 (Real 2003$)--Mean Control Chart

		n:	Avg Price	1st Diff	2nd Diff			Test	Actual	Result
Prices 1976-2003		28	$34.42	$0.05	-$0.15		1.960 Std Dev 95.00%	1.4	0	ACCEPT
Current Reported $/ton			$36.05				2.000 Std Dev 95.44%	1.3	0	ACCEPT
							2.576 Std Dev 99.00%	0.3	0	ACCEPT
							3.000 Std Dev 99.73%	0.1	0	ACCEPT

In order for the price series to be mean reverting, the appropriate number of observations (prices) must fall with in the confidence intervals that represent plus-or-minus a given number of standard deviations. In Figure 3, 95% of the prices must fall between the upper and lower dotted lines if we want to be "95% sure" that the price series is mean-reverting or 99% of the prices must fall between the upper and lower solid lines if we want to be "99% sure" that the series is mean reverting. We include the results for +/- 2 standard deviations and +/- 3 standard deviations, which as you will note, are not exactly the same as 95% and 99%. In this case, no observations fall outside any of the boundaries.

Figure 4 extends the analysis from Figure 3 through to the third quarter of 2010. The series is still mean-reverting.
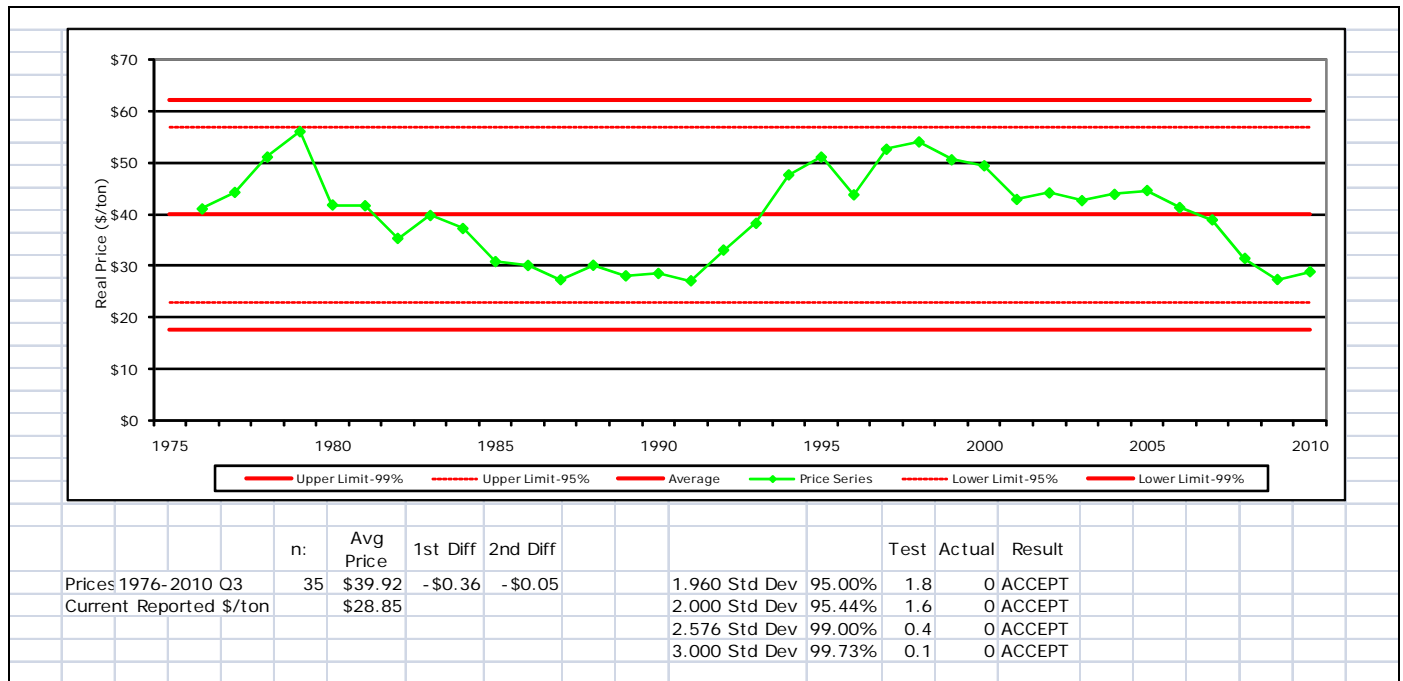
Summary

Our analysis indicates that southern pine sawtimber stumpage prices are mean-reverting, with a 35-year mean of $39.92/ton (in 2010 dollars)). Those prices have held to that mean through 35 years of timber supply and demand shocks and significant changes in timber harvesting and processing technology.

In 2004, we said we should not expect a significant increase in sawtimber stumpage prices in the near future, primarily because the price then was very close to the long-term average. Now we are well below the long-term average, which suggests sawtimber prices should begin their typical upward climb for the next 5-10 years.

The question now is: When will they begin that climb? Is the slight increase we've seen in 2010 the beginning? Will the volume of timber currently being stored on the stump pour into the market and delay a

price rise for a few years? Or is the future going
to be very different than the past?

Figure 4. Southwide Pine Sawtimber Prices (Real 2010$)--Mean Control Chart

		n:	Avg Price	1st Diff	2nd Diff				Test	Actual	Result		
Prices	1976-2010 Q3	35	$39.92	-$0.36	-$0.05		1.960 Std Dev	95.00%	1.8	0	ACCEPT		
Current Reported $/ton			$28.85				2.000 Std Dev	95.44%	1.6	0	ACCEPT		
							2.576 Std Dev	99.00%	0.4	0	ACCEPT		
							3.000 Std Dev	99.73%	0.1	0	ACCEPT		

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Immediately under the chart are statistics from the
analysis. To the left are the current actual price and
the current prices calculated for the exponential and
linear trend lines. The current price in
Figure 2 is at 74.96% of the exponential trend and
73.16% of the linear trend.

To the right of the current price data is information
about the historic data and trend lines. First is the
compound growth rate for the historical prices.
Then comes data for the exponential trend line. In
this case, the trend line shows prices have grown at
a -0.07% rate, and the trend line has an R^2 of .0011.
The column "10 Yr Proj" shows that, if the
exponential trend line were continued forward for
10 years, the current actual price would have to
grow at a 2.85% real rate in order to meet the line in
10 years and at 1.09% in order to meet the
exponential trend line in 25 years. Immediately
below the exponential trend data is similar
information about the linear trend line.

Explanation of the Price Trend Chart and Statistics

Exponential and linear trend lines for each series
are calculated using Microsoft Excel's LogEst and
LinEst functions. The trend line with the strongest
R^2 is then plotted on the chart. In
Figure 2, the exponential trend line happens to have
the strongest R^2. Note, however, that often the
"strongest" R^2 is very weak, indicating the trend line
is a very poor fit to the data