



Timber and Energy Prices

The development of new technologies such as fracking has resulted in a significant jump in the US production of oil and natural gas and some changes in energy markets. According to US Department of Energy data, natural gas production is up about 30% in 10 years, crude oil production is up about 40% and oil imports have dropped nearly 60% since 2006.

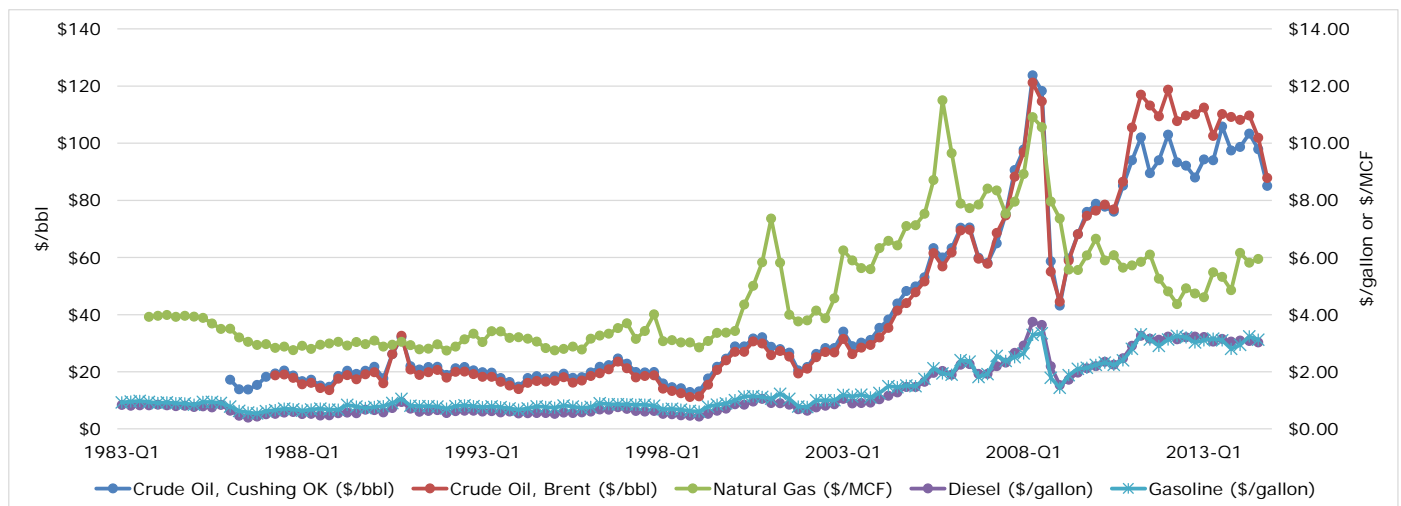
US energy prices have responded to that surge in domestic production. Figure 1 shows average US prices for natural gas, diesel and gasoline. Crude oil prices are shown for US (Cushing) and European (Brent) price points. (The US crude price averaged \$15/barrel less than the Brent price from the beginning of 2011 through the end of 2013.) Natural gas prices have been dropping since 2008. Petroleum prices have really only been dropping since the beginning of 2014, but they have been relatively level since late 2010.

Correlation coefficients for the five price series are shown in Table 1. Prices for the four petroleum-based products are all very strongly correlated with each other, but natural gas shows a weaker correlation.

So big increases in domestically-produced oil and gas have pushed prices down. Has this done anything to, or for, timber prices?

There are certainly some indirect impacts we should expect. Lower gasoline prices mean consumers have more to spend, so demand for wood-based products should increase and that should cause timber prices to rise. The cost of moving freight including lumber and paper, whether by road or rail, should decrease and that should lower the cost of forest products to the consumer, again increasing demand. But is there a more direct impact of energy prices on timber prices?

Figure 1. Prices for Natural Gas and Petroleum Products (nominal \$)



Source: US Department of Energy

Table 1. Correlation Coefficients for Natural Gas and Petroleum Products

	Crude Oil, Cushing OK (\$/bbl)	Crude Oil, Brent (\$/bbl)	Natural Gas (\$/MCF)	Diesel (\$/gallon)	Gasoline (\$/gallon)
Crude Oil, Cushing OK (\$/bbl)	1.0000	0.9920	0.6976	0.9937	0.9885
Crude Oil, Brent (\$/bbl)		1.0000	0.6251	0.9949	0.9919
Natural Gas (\$/MCF)			1.0000	0.6940	0.6822
Diesel (\$/gallon)				1.0000	0.9934
Gasoline (\$/gallon)					1.0000

A more direct impact would be in the cost of harvesting the forest and transporting logs to processing facilities, both of which have become machinery- and diesel fuel-intensive.

In the following charts and discussion we focus on diesel because it is a very commonly used fuel in logging equipment and trucks. (And the very strong correlation among the petroleum products indicates it may not matter very much which one we use anyway.)

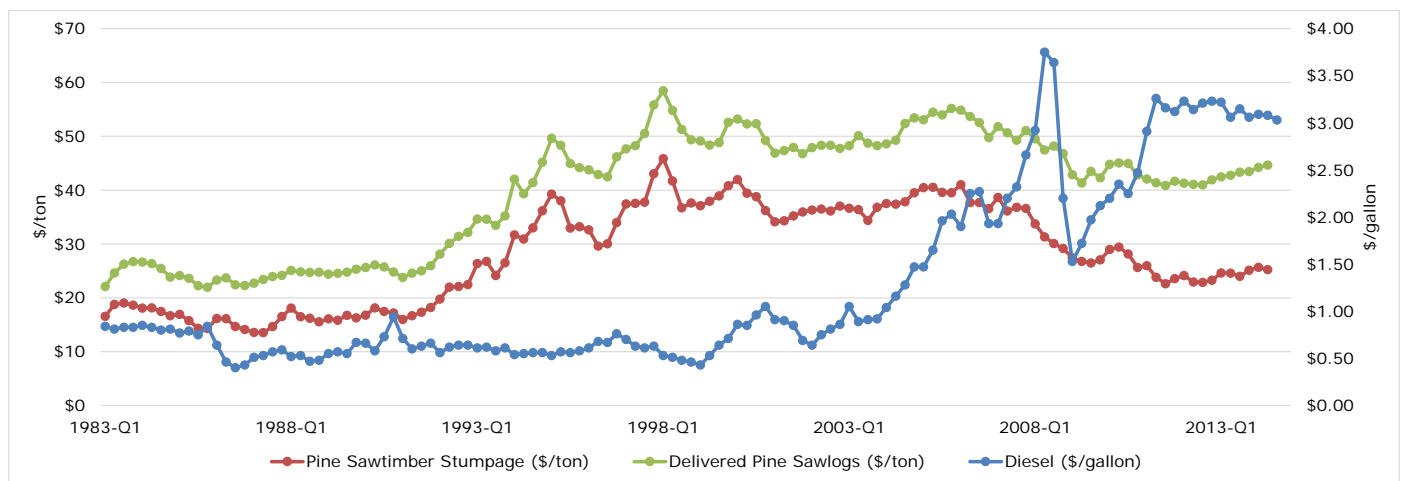
Southern Pine Sawtimber and Diesel

Figure 2 shows Southwide sawtimber stumpage and delivered prices and diesel prices and Table 2 shows the related correlation coefficients. There appears to be no relationship between diesel and sawtimber stumpage prices (correlation = 0.09).

The correlation between delivered logs and diesel is stronger (0.35). This is not too surprising, since a portion of the difference between a tree standing in the forest and a log at the mill is the fuel required to get a tree from the forest to the mill. But, note that, in spite of what the correlation coefficient indicates, the delivered sawlog price has been increasing for that past two years as diesel prices have fallen.

When we first looked at this chart, we thought the delivered pine log prices were rising faster than the stumpage price. But the stumpage price is up 12 percent since the third quarter of 2011 (its recent low), while the delivered price is up only 9 percent. This means more of the increase in the delivered price is being passed on to landowners than is being kept by loggers and truckers.

Figure 2. Pine Sawtimber and Diesel Prices (nominal \$)

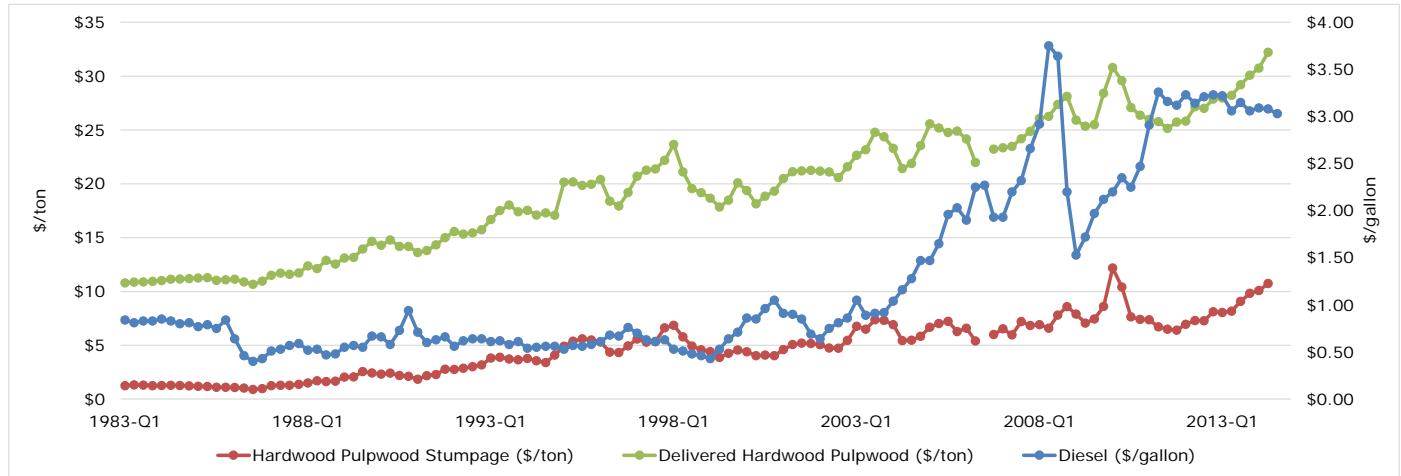


Source: US Department of Energy, Timber Mart-South

Table 2. Correlation Coefficients for Diesel and Pine Sawtimber

	Diesel (\$/gallon)	Pine Sawtimber Stumpage (\$/ton)	Delivered Pine Sawlogs (\$/ton)
Diesel (\$/gallon)	1.0000	0.0898	0.3483
Pine Sawtimber Stumpage (\$/ton)		1.0000	0.9552
Delivered Pine Sawlogs (\$/ton)			1.0000

Figure 3. Hardwood Pulpwood and Diesel Prices (nominal \$)



Source: US Department of Energy, Timber Mart-South

Table 3. Correlation Coefficients for Diesel and Hardwood Pulpwood

	Diesel (\$/gallon)	Hardwood Pulpwood	Delivered Hardwood
Diesel (\$/gallon)	1.0000	0.7206	0.7669
Hardwood Pulpwood Stumpage (\$/ton)		1.0000	0.9849
Delivered Hardwood Pulpwood (\$/ton)			1.0000

Hardwood Pulpwood and Diesel

Figure 3 shows hardwood pulpwood and diesel prices. The correlations here (Table 3) are much stronger than those for diesel and pine sawtimber (Table 2)—but again, pulpwood prices have been rising over the past couple of years as diesel prices have fallen.

Some of the increase in the pulpwood price is energy related, not because of changing fuel prices, but because some of this material is delivered to pellet plants, where it is made into wood pellets that are shipped to Europe. That demand has pulled pulpwood prices up.

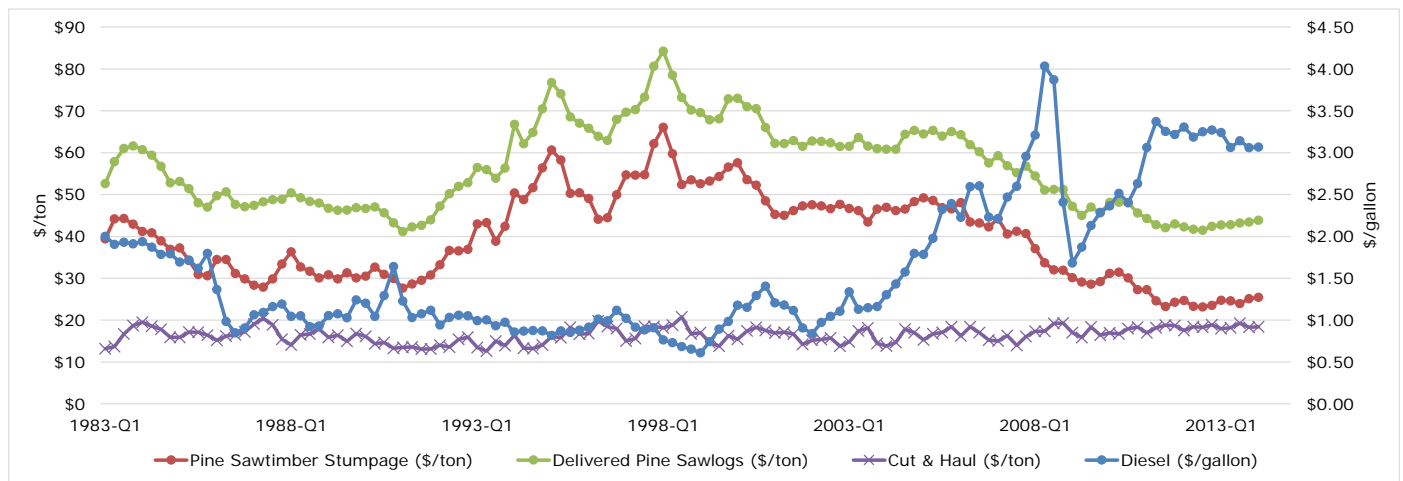
Cut and Haul “Costs” and Diesel Prices

Finally, we looked at the difference between the delivered price and the stumpage price. We are calling this difference the cut and haul cost, but that

is not exactly what it is. It is the difference between two price points and is not the actual costs involved in moving wood from the forest to the mill. In theory, this price difference also includes some profit for the loggers and truckers. (Regardless of what forest economists do in their analyses, in the real world the mill prices are not set by adding costs and a profit margin for loggers and truckers to the stumpage price, nor are stumpage prices set by subtracting those costs and profit margins from the mill price.) Cut and haul costs include more than just fuel costs (e.g., labor, insurance, depreciation), but fuel does account for 20-30 percent of all costs for loggers and truckers.

Due to space limitations we do not show all of our analysis here. The most interesting chart from our analysis (to us) is the one shown in Figure 4. Here we show real prices for stumpage and delivered logs, cut and haul costs and diesel prices.

Figure 4. Southern Pine Sawtimber Prices and Cut & Haul Costs and Diesel Prices (real \$)



Source: US Department of Energy, Timber Mart-South

Figure 4 shows that the real (inflation-adjusted, 2014 dollars) difference between delivered pine log and stumpage prices has been just about flat for the past 30 years. Diesel prices were also flat between 1986 and 2002, then rose very sharply. So loggers and truckers were getting paid about the same (in real terms) after 2002, but their fuel costs were skyrocketing.

With loggers and truckers getting paid a (nearly) flat rate, it is the landowners who have been getting the benefit of any increase in delivered prices (or the pain from decreasing delivered prices).

We don't show it here, but the inflation-adjusted hardwood pulpwood prices and cut & haul costs were generally level (with some volatility) from 1995 through 2011. The delivered and stumpage prices have been rising slowly since then, but cut and haul costs have barely moved.

Summary

Increased oil and gas production in the US has pushed energy prices down.

Since loggers and truckers are seeing lower fuel prices, their profitability must be improving slightly (even if they are still operating in the red).

Inflation-adjusted cut and haul costs have been flat, so most of any increase in delivered pine sawlog

prices paid to loggers and truckers is being passed on to landowners—except that delivered prices are inching up very slowly so there is little to pass on.

Inflation-adjusted hardwood pulpwood prices have been climbing for three years, but cut & haul rates have been flat, so all the increases in pulpwood prices have been passed on to landowners.

Increased demand has pulled hardwood pulpwood prices up, but we have not seen a similar demand-driven increase in southern pine sawtimber prices.

Finally, why would anyone want to invest a million dollars in logging equipment when they are getting paid the same as they were 30 years ago while diesel fuel costs that account for 20-30 percent of their costs have tripled (in inflation-adjusted dollars)?

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