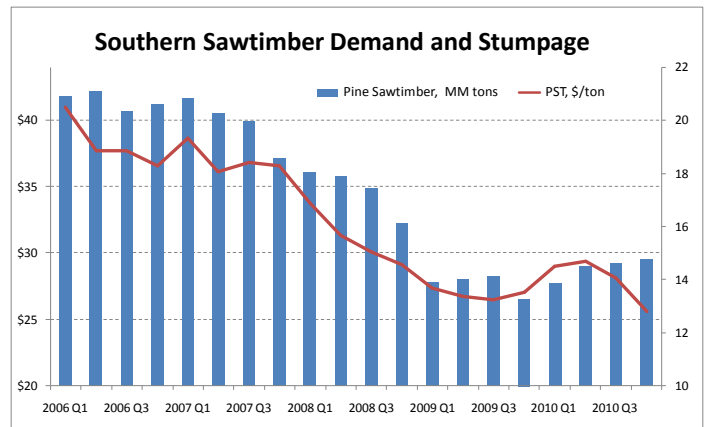




What is ForiskFORECAST

Forisk started its forecasting program in 2007. The primary idea behind the ForiskFORECAST products is to develop statistical models that establish relationships between stumpage prices and the demand for timber (as roundwood or logs). As the demand for timber is a derived demand – it does not represent the end-use product – we rely on further establishing relationships between end markets (i.e. lumber or pulp and paper products) and macroeconomic factors that drive the demand for the end products. For example, housing, represented by housing starts, is considered one of the primary drivers of demand for lumber.

Forisk’s forecasting program builds on a unique understanding of local wood markets. Our Wood Demand database provides for a superior understanding of the relationship between prices and demand by state or across regions of the US. These relationships – called “elasticities” – allow each state to individually “express” its price relationship to changes in sawtimber demand over time.

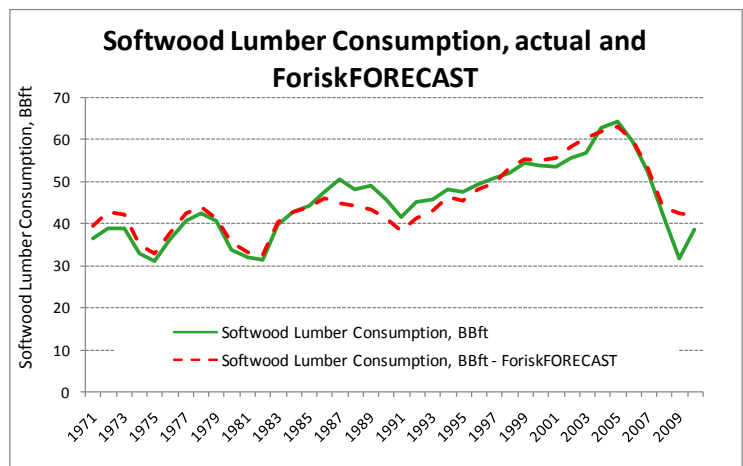


Macroeconomic models developed by Forisk’s team utilize econometric techniques to represent relationships between a set of macroeconomic variables, timber demand and end-product production. Brief stats and fitted past performances for each Forisk macro model are summarized below:

U.S. Softwood Lumber Consumption factors:

- GDP (real)
- Housing Starts (total)
- Population growth (lag)
- PPI index

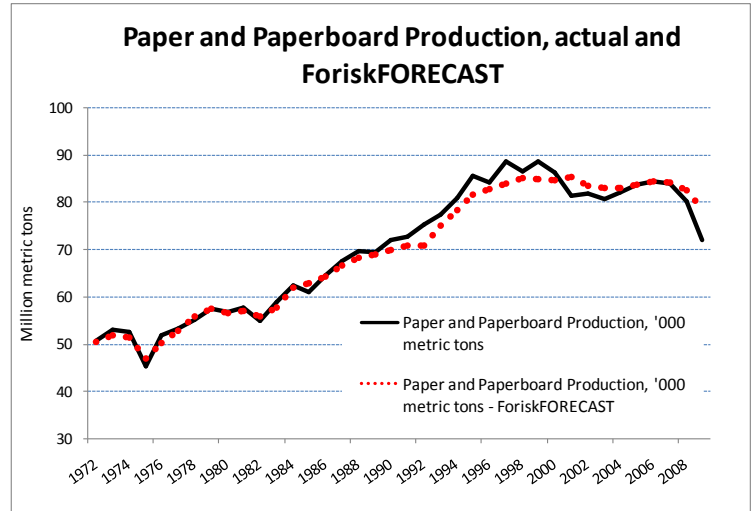
R-sqrt=0.94



U.S. Paper and Paperboard Production factors:

- GDP (real)
- Unemployment
- Inflation
- Population

R-sqrt=0.98



We believe in the transparency of our models and clarity of our assumptions. Each forecast lists assumptions about significant macro factors used in our modeling and includes a basic sensitivity analysis with respect to certain macroeconomic factors. All of our forecasting products are updated every six months with the latest information.

For detailed workshops summarizing our forecasting approach and modeling techniques please visit our [Continuing Education](#) page and check the schedule for the Forecasting Timber Prices Master class. You may also contact Dr. Tim Sydor, tsydor@forisk.com, 770-725-8447 with questions regarding our approach.

Current ForiskFORECAST products:

- [Pine Sawtimber stumpage – South, by state](#)
- [Pine Pulpwood stumpage – South, by state](#)
- [Softwood Sawtimber delivered – Pacific Northwest \(PNW\), beta-version](#)

The ForiskFORECAST - Pine Sawtimber (PST) is a set of econometric models that estimates the likely response of US softwood lumber consumption and pine sawtimber stumpage prices in the US South to changing macroeconomic factors. The ForiskFORECAST uses macroeconomic factors from the US EIA (Energy Information Administration) macro forecast as a part of its Annual Energy Outlook.

Three interdependent econometric models comprise the ForiskFORECAST - Pine Sawtimber:

Model 1: US softwood lumber consumption (BBft) is forecasted from changing macro variables that include: real GDP (in \$2000), housing starts, US population growth (1-year lag) and the Producer's Price Index (PPI).

Model 2: South-wide pine sawtimber (PST) stumpage prices (\$/ton) are forecasted from the lagged historical PST stumpage price (Timber Mart-South) and softwood lumber consumption.

Model 3: South-wide pine sawtimber (PST) stumpage prices are scaled down to individual states in the US South. State scaling includes South-wide PST stumpage prices and three elasticities. Elasticity #1 quantifies the relationship between South-wide stumpage prices and each state's PST stumpage price. Elasticity #2 quantifies the relationship between South-wide PST demand and each state's PST demand (Forisk's Wood Demand Report). Elasticity #3 quantifies the relationship between each state's PST demand and each state's PST stumpage price.

Forecast Inputs:

The ForiskFORECAST - Pine Sawtimber uses four forecasted variables, as reported in their original format. Scenarios on page two show default high and low stumpage price scenarios that apply annual multipliers to GDP and housing starts inputs of 1.1 and 0.9 for scenarios, to reflect 10% increases and 10% decreases, respectively, in the annual forecasts of these macro variables.

Forecast Outputs:

The ForiskFORECAST - Pine Sawtimber model has three primary outputs: US softwood lumber consumption (BBft), South-wide pine sawtimber stumpage prices (\$/ton) and pine sawtimber stumpage prices at the state level (\$/ton).

To purchase this product please visit our [store page](#).

The ForiskFORECAST - Pine Pulpwood (PPW) is a set of econometric models that estimates the likely response of pine pulpwood stumpage prices in the US South to changing demand factors from three pulpwood end-uses. The ForiskFORECAST uses macroeconomic factors from the US EIA (Energy Information Administration) macro forecast as a part of its Annual Energy Outlook.

Three interdependent econometric models forecast end-use demand for pulpwood:

Model 1: US Paper and Paperboard production (tons) is forecasted from changing macro variables that include: real GDP (in \$2000), housing starts, US population growth, unemployment (percent), inflation (percent).

- Recovery and re-use rates are applied to model US Paper and Paperboard production from virgin fiber.
- Southern demand for pulpwood and chips is estimated to meet production requirements of paper and paperboard production from virgin fiber.

Model 2: OSB demand for pulpwood is assumed to be influenced by housing starts, and follow the estimated trend of US Lumber consumption.

Model 3: Bioenergy demand is the estimated demand for pulpwood-sized roundwood and in-woods chips from announced and operating projects in the US South that pass Forisk technology and status screens.

South-wide pine pulpwood (PPW) stumpage price is estimated using a 1-year lagged own stumpage price, changes in total South-wide demand for pulpwood and chips, changes in Southern softwood lumber production and margin changes between CPI and PPI indexes.

South-wide pine pulpwood stumpage prices are scaled down to individual states in the US South. State scaling includes South-wide PPW stumpage prices and three elasticities. Elasticity #1 quantifies the relationship between South-wide stumpage prices and each state's PPW stumpage price. Elasticity #2 quantifies the relationship between South-wide PPW demand and each state's PPW demand. Elasticity #3 quantifies the relationship between each state's PPW demand and each state's PPW stumpage price.

Forecast Outputs:

The ForiskFORECAST - Pine Pulpwood model has three demand-related outputs:

- Outlook for pulpwood demand from paper and paperboard (PPRB) facilities,
- Outlook for pulpwood demand from OSB/panel facilities,
- Outlook for pulpwood demand from bioenergy facilities.

The ForiskFORECAST - Pine Pulpwood model has two primary price outputs:

- PPW stumpage forecast - US South,
- PPW stumpage forecast - each Southern State.

To purchase this product please visit our [store page](#).

The ForiskFORECAST - Soft Sawtimber (WEST) is a set of econometric models that estimates the likely response of US softwood lumber consumption, derived production by region, and softwood delivered (pond) prices in the US West to changing macroeconomic factors. The ForiskFORECAST uses macroeconomic factors from the US EIA (Energy Information Administration) macro forecast as a part of its Annual Energy Outlook.

Three interdependent econometric models comprise the ForiskFORECAST - Soft Sawtimber (West):

Model 1: US softwood lumber consumption (BBft) is forecasted from changing macro variables that include: real GDP (in \$2000), housing starts, US population growth (1-year lag) and the Producer's Price Index (PPI).

Model 2: Softwood lumber production by region (West, South and North) is forecasted using the softwood consumption outlook from Model 1, assumptions about imports/exports, and trends of historical lumber production by region.

Model 3: Softwood delivered (pond) prices for Douglas Fir (DF) and Hemlock were forecasted using historical time series from two sources: the Oregon Department of Forestry and Wood Resources International LLC. The price outlook for each price series is based on a quarterly econometric model with three primary inputs: lagged own delivered price, Western lumber production and PPI index for fuel.

Forecast Inputs:

The ForiskFORECAST - Soft Sawtimber (West) uses four forecasted variables, as reported in their original format. Scenarios include default high and low delivered price scenarios that apply annual multipliers to GDP, housing starts and a percent of lumber imports. Default high and low scenarios model 10% increases and 10% decreases, respectively, in the annual forecasts of these macro variables and assumptions about lumber imports.

Forecast Outputs:

The ForiskFORECAST - Soft Sawtimber model has five primary outputs relating to lumber production: US softwood lumber consumption (BBft), percent of lumber imports and softwood lumber production by each of the three lumber producing regions in the US. There are also four outputs relating to delivered (pond) prices: two delivered price forecasts based on a time series from the Oregon Department of Forestry (for Douglas Fir and White Hemlock species) and two delivered price forecasts based on a time series from Wood Resources International LLC (for Douglas Fir and Hemlock-Fir species mix).

To purchase this product please visit our [store page](#).