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Global Forestry Impacts of Reducing Softwood Supplies from North America

John Perez-Garcia. 1993

Executive Summary

The reduction in timber supply in the U.S. Pacific Northwest region to protect the northern spotted owl is just one of a number of similar, ongoing adjustments in timber supply globally. The rapid rise in wood product prices experienced within the last 12 months -- an increase of 100 percent--is suggestive of a substantial supply reduction rather than a cyclical housing recovery impacting demand. As such, the price adjustment in the wood products markets is forcing a permanent change in wood flow, rather than the cyclical changes associated with demand fluctuations. The reductions in timber supply will continue to impact market prices until adjustments of wood flow in world markets are complete. Many global producers will expand their production with higher wood prices. One result is that international producers benefit while consumers must pay the higher prices.

Supply reductions are not limited to U.S. Pacific Northwest regional production but also include hardwoods from the tropics, and, prospectively British Columbian products. Tropical hardwood producers are reducing their harvests to meet sustainable timber harvest targets evolving from International Tropical Timber Organization (ITTO) negotiations. These reductions do cause reactions in markets. We can expect the substitution of softwood plywood for hardwood plywood in Asian markets since there are relatively fewer alternative hardwood suppliers than softwood. Specification differences in plywood manufacturing are not easily met by North American producers, leading to a pre-disposition of this demand shift to be in logs rather than panels, although manufacturing specifications could also change over time with investments in panel plants dedicated for export markets. As for British Columbia, a provincial "fast track" study is currently underway for each forest planning unit. These studies are expected to recommend lower harvest levels in favor of changing environmental policies of the same magnitude as the spotted owl related reductions in the U.S. Pacific Northwest region.

We have utilized the CINTRA FOR Global Trade Model (CGTM) to analyze the global impacts of these supply reductions. The CGTM is a global forest sector model developed over the last decade at the International Institute for Applied Systems Analysis in Austria and the University of Washington. This model has been used most recently to understand the impacts of constraining tropical timber production in Asia in studies commissioned by the World Bank and the London Environmental Economics Center for ITTO.

This report analyzes the supply impacts on prices, who pays, who benefits, and what may be the broader environmental implications of new supplies replacing previous supply patterns through changes in international trade flows. The study also examines the implications of greater exports from Russia, the only country with a substantial inventory of mature softwoods.

Major conclusions from the analysis are:

- The cumulative impact of a 33 million cubic meter supply reduction--while only 4.5 percent of the global supply--is significant. It produces observable responses from other regions to offset the decline in harvests, including a 16 percent redirection of trade flows.

- The reduced number production in the constrained region is redistributed among major competitors around the globe. Major gains are made by higher-cost forest producers as log prices allow marginal producers to expand their production.
- Reduced product supply is substantial, leading to a 30 percent reduction in product demand by 1995 as a result of higher prices. While this analysis does not directly address the impacts of this demand reduction on non-wood product consumption, one can expect a greater use of energy-intensive non-wood substitutes to replace the loss in wood product demand.
- Over the short term, higher-cost producers harvest more area to offset the timber supply reduction. Anywhere from 1.12 to 1.61 hectares are harvested for every one hectare preserved. The range depends on estimates of timber stocking levels on the replacement hectares. The harvested area ratio increases to a range of 1.59 to 1.91 if Siberia were to expand its timber harvest levels.
- Over the longer term, these impacts are exacerbated as higher productive forest lands in the Pacific Northwest and British Columbia are replaced by less fertile forest lands. The annual loss in forest land productivity is estimated between 17 and 44 percent, depending on stock level assumptions and the response from Siberia. These annual productivity losses are cumulative and will add to the ratio of harvested to preserved area as high-volume, old growth stocks are replaced by lower-volume, second growth timber with longer rotations. In addition, these high-cost producers are likely to have limitations in their processing infrastructure, leading to additional waste both in the mill operation and at the forest harvest level.
- Consumers are the major losers. They pay \$2.5 billion dollars as a result of the timber supply reduction, Mill operators also lose. Gains by southern mills are only 20 percent of the losses to mill operators in the west. Timber producers gain \$1.4 billion dollars. These impacts are reduced substantially if Siberia expands its timber harvest levels.

Concerns over wetlands, other species preservation, federal below-cost timber sales, and sustainable harvest levels in other regions will add further strains on global wood supplies and cause a greater shift in regional timber production as other areas will respond to offset any timber supply reduction. Additional supply constraints will magnify the impacts with more wood demand shifting to non-wood substitutes.

Environmental tradeoffs may be counterproductive through increased harvest acreage. While timberland is preserved in the U.S. Pacific Northwest Westside region and British Columbia, greater areas in other producing regions are harvested to offset only 60 percent of the timber production decline. The shift from high to low productive areas may well result in new environmental problems. Non-wood substitution will increase carbon dioxide emissions, for example.

While current short-term market conditions show U.S. prices well above those implied in this analysis, economic theory and the CGTM would suggest these prices will come down as international markets adjust and international consumers absorb a portion of the cost. However, there are many reservations as to the desirability of increasing harvests in other regions, which may result in institutional constraints around the world. The process of globalization of timber shortages may become more difficult to address than is evident from historical experience.

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