

C I N T R A F O R

Working Paper 55

[Back to Publications List](#)

Washington's Forest Sector: Growth Trends and their Sources

Guy C. Robertson and Bruce R. Lippke. 1996

Executive Summary

Harvest Declines and Revenue Growth

In spite of sharp declines in harvest volumes in the 1990s, Washington State's forest products sector continues to generate substantial income for the state and its inhabitants. At approximately 4.1 billion board feet, Washington State's 1994 timber harvest was 33% lower than the 1965-94 annual average of 6.1 billion board feet and was the lowest level reported during the 1965-94 time period. Total business revenue generated by the state's wood products sector in 1994 was approximately \$9.1 billion (revenues reported in real 1994 dollars). In contrast to the harvest volume, this revenue figure exceeded the 1960-94 annual average of \$8.3 billion by 9%. The state's forest products sector generated, on average, a total of \$2,196 revenue per thousand board feet (Mbf) harvested in 1994--the highest figure ever recorded. While this record level is the partial result of sharp increases in real wood product prices due to recent supply constraints, trend analysis shows that growth in revenues per harvest volume prior to 1990 was also relatively robust. While yearly growth for the 1965-94 period was estimated to be 2%, that for the 1965-89 period was estimated at 1.7%. Washington State forest product firms have been successful at garnering increased revenues using fewer raw material inputs. This has been very important in mitigating at least some of the impact of recent harvest declines in the region.

Increases in the Real Price of Wood Products

The purpose of this report is to identify the primary sources of revenue growth for the Washington State wood products sector. While increases in the real price of wood products has certainly been important in the last few years, they should not be overemphasized in the explanation of long-term revenue growth. Indeed, the trendline for Washington wood products prices (weighted by 1965 product shares) is essentially flat, and, in spite of sharp price increases since 1991, current levels are well below peaks occurring in the late 1970s. Structural change, particularly a shift to greater secondary manufacturing, and increases in product recovery from log inputs are more important in explaining increases in revenue generated per unit volume of harvest.

Secondary Manufacturing

Total revenue from secondary manufacturing was \$2.6 billion in 1994, 142% higher than the 1965 level, with much of the increase occurring in the last ten years. Similarly, secondary manufacturing's share of total wood product sector revenues increased from 17% to 29% over this same 29-year period. While many secondary manufactured products require clear wood or other high quality characteristics, raw material inputs comprise a relatively smaller proportion of total product value, and the industry is less dependent upon the gross volume of harvest than lumber, paper or log exports. As a result, the strong performance of secondary manufacturing in both domestic and export markets represents a particularly promising adaptation to decreased harvests.

Exports

Another source from which Washington State producers have been able to generate increasing returns from a declining raw material base is the increase of exports, thus taking advantage of the export premiums associated with the trade in logs, lumber and other wood products. Log exports have constituted a major business since the early 1970s, fluctuating between \$1.0 and \$2.5 billion since that time. 1994 log exports

totaled \$1.4 billion, a level slightly higher than the 1965-94 average but significantly less than the \$2.5 billion record high in 1979 or the recent peak of \$1.7 billion in 1988. Lumber exports were slower to develop and remain less significant than log exports. The record level of \$494 million was reached in 1988. Since that time, the percentage decline in lumber exports has exceeded that in log exports, with 1994 lumber export revenues falling to \$365 million. Japan remains the most important foreign consumer of Washington State wood products. The Japan wood trade began with a heavy emphasis on high-quality old-growth logs but, more recently, has shifted to mostly second-growth products. Given that recent harvest restrictions fall most heavily upon these higher log grades, it is not surprising that exports of both logs and lumber have been in decline since 1990 in spite of rising prices. In contrast to log and lumber exports, exports of secondary manufactured goods have more than doubled since 1989, and, at \$232 million, 1994 revenues for this group of products are rapidly approaching those of lumber exports.

Efficiency Gains in Raw Material Conversion

Efficiency gains in the conversion of wood raw materials to final products has been another important contributor to Washington wood products manufacturers' increasing revenues in spite of declining wood inputs. Lumber overrun (a measure of the amount of lumber produced from a given unit of log input) is estimated to have increased approximately 27% since 1960, and the increase in the amount of pulp produced from a unit of log input is estimated to have increased 35% since 1970. Likewise, efficiencies in plywood production (a significantly reduced part of Washington State's wood product mix) are estimated at 40% since 1960. Taken together, this means that the wood products sector requires approximately one third fewer logs to produce the same volume of output relative to the 1960s.

Timber Prices

Declining supply, increasing conversion efficiency, and greater export premiums could all be cited as reasons for rising timber prices (or "stumpage prices"). At \$441/Mbf, 1994 stumpage prices were over four times the 1965 level and close to three times the 1986 level. The price that log buyers can pay for timber reflects the price they receive for products sold less processing costs--a residual price. Due to the nature of the stumpage price as a residual price and the volatility of wood products markets in general, the high variance in stumpage prices is not surprising. In particular, the sharp increases in stumpage prices since the late 1980s provide ample evidence of increasing supply constraints and conform with general observations about recent market developments. Prior to 1989, the positive trend in the price of timber was more directly related to other value increases in the use of wood.

Employment and Productivity

Direct employment in the wood products sector peaked at 72 thousand workers in 1978. Since that time employment has declined to 54 thousand workers, with most of this fall occurring during the severe recession in the wood products industries in the early to mid 1980s. Though falling employment is expected from declining harvests and from increased labor productivity, shrinkage in the labor force was significantly less than the fall in harvest. Contrary to expectations given productivity increases, the total number of employees per Mbf of timber harvested shows no discernible trend. The most important factor underlying this is the increase in secondary manufacturing and similar value-added activities which use more labor per unit volume of log input. Total 1994 Washington State employment (direct, indirect and induced) generated by the wood products sector is estimated at 194 thousand employees. Technology gains are usually associated with increased capital intensity (i.e., more machinery per employee) and thereby more purchases of outside goods and services. This will result in increased indirect employment partially offsetting losses in direct employment. Evidence suggests that the ratio of total employment to direct employment in the wood products sector has increased approximately 6% over the last decade.

Conclusion

Washington State wood products producers have made steady gains over the last three decades in the amount of revenue generated per unit of resource harvested. These gains have helped to mitigate the impacts of recent harvest declines and belie the image of the wood products sector as an overly mature or dying industry. While real price increases in wood products have been partially responsible for revenue

increases, especially in the last few years, increases in secondary manufacturing and exports have been more important in the long run. Because secondary manufacturing is both more labor intensive and less reliant upon gross volumes of timber harvest, expansion in this product category represents a particularly promising development. The traditional export categories of logs and lumber have relied more heavily upon the availability of high quality stumpage, particularly old-growth. The maintenance and further expansion of revenues in these categories will depend upon the management of the state's second-growth forests and marketing efforts to gain increased foreign acceptance of products produced from them.

Full Report \$20.00: [To Ordering Instructions](#)

Back to [Publications List](#)