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Will Low Prices for Large Logs Mean Shorter Rotations on Private Forestlands?

By Larry Mason

In 1989, federal judge, William Dwyer, granted an injunction that brought the harvest of federal forests west of the Cascade Mountains to a halt. The "Spotted Owl Wars" had begun. In an area where timber had been the largest industry for more than one hundred years, mills started closing. From 1989-1993, with the injunction in effect, 242 mills closed and 30,000 mill and wood industry jobs were lost in the northwest. In 1993, President Clinton launched his Northwest Forest Plan with assurances of sustainable harvest from federal forests in the region. But by 2000, mill closures increased by 3-fold and the number of jobs lost doubled (Paul F. Ehinger & Associates, Eugene, Oregon). The mills that survived retooled for small diameter logs available from the commercial thinnings and second growth harvests occurring largely on private industrial forests. Today few mills want to purchase logs much over 20 inches in diameter. This fact sheet offers a cursory examination of how Douglas-fir log price adjustments in the Puget Sound area over this period (1989-2001) have influenced present value calculations and may contribute to forest management decisions that shorten rotation ages.

In 1989, Log Lines, a log price reporting service in Mount Vernon, WA, reported average domestic Douglas-fir log prices for the year by grade for the Puget Sound region. In a similar report in October of 2001, Log Lines again issued prices. A notable difference is that in 2001 no prices are reported for the higher-grade larger logs in the Puget Sound region. 2001 price reports come at a time when small forest landowners are reporting difficultly selling larger diameter

Douglas fir	1989	89 adj '01	2001
#1peeler	970	1484	485
#2peeler	889	1358	485
#3peeler	671	1028	485
#1sawmill	671	1028	485
Special Mill	485	742	485
#2sawmill	317	485	485
#3sawmill	271	415	425
#4sawmill	300	380	380
chipsaw	170	260	396
pulp	135	206	78

Figure. 1.Log Prices 1989, 1989 adjusted, and 2001

logs. To compare such pricing differences, it is necessary to account for adjustments in the economy such as inflation. In other words, the 1989 prices need to be converted to 2001 dollars. This is accomplished by adjusting the 1989 grade prices proportionally to a price anchor of a #2 saw log in 2001. The table (Figure. 1.) displays the 1989 listed prices by grade, the 1989 prices adjusted to the 2001 # 2 saw log price, and the 2001 listed prices by grade. For this evaluation, the 2001 # 2 saw log price is assigned to the higher grades for that year. All prices are reported in dollars per thousand board feet ($/MBF). Undoubtedly, more astute log sellers may find better market opportunities than these local market prices reflect. For example, price reports from the Willamette Valley in Oregon indicate that premiums for higher-grade larger logs are still available in that area. However, these premiums are $200 to $300 per MBF lower by grade than the prices reflected by the revised 1989 schedule. Further erosion to premiums results when Washington log sellers must discount Oregon prices to absorb transportation costs.

Another manifestation of shifts in log demand is the increased relative value of small diameter saw material. Notice that in 2001 not only did large logs lose premium value compared to 1989 but "chip and saw" increased in value substantially, reflecting a larger demand for this small saw material in 2001. At the same time, however, pulp values dropped significantly as paper making infrastructure in the region declined and world markets in general appeared oversupplied. The objective of this examination, however, is not to declare price absolutes but to better understand how policy driven log shortages over the last twelve years may have caused adjustments in the manufacturing sector that influence forest management decisions and investments.

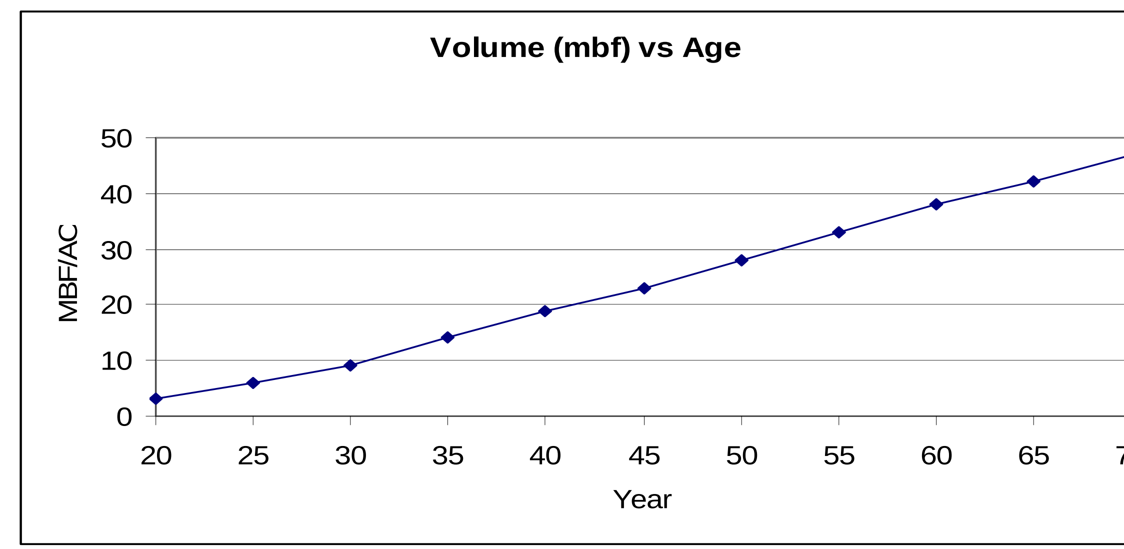

Figure. 2. Volume vs. Age

To estimate how price changes influence returns on growing stock harvested at different rotation ages, a simplified growth simulation was undertaken for one acre (site index 110) of Douglas-fir planted to 220/TPA. The forestry software program, the Landscape Management System (LMS), developed at the University of Washington, was used in conjunction with the SMC variant of the Organon growth model, developed at Oregon State University, to "grow" this virtual forest inventory forward from plantation to 70 years of age. The charts (figures. 2 & 3.) below display

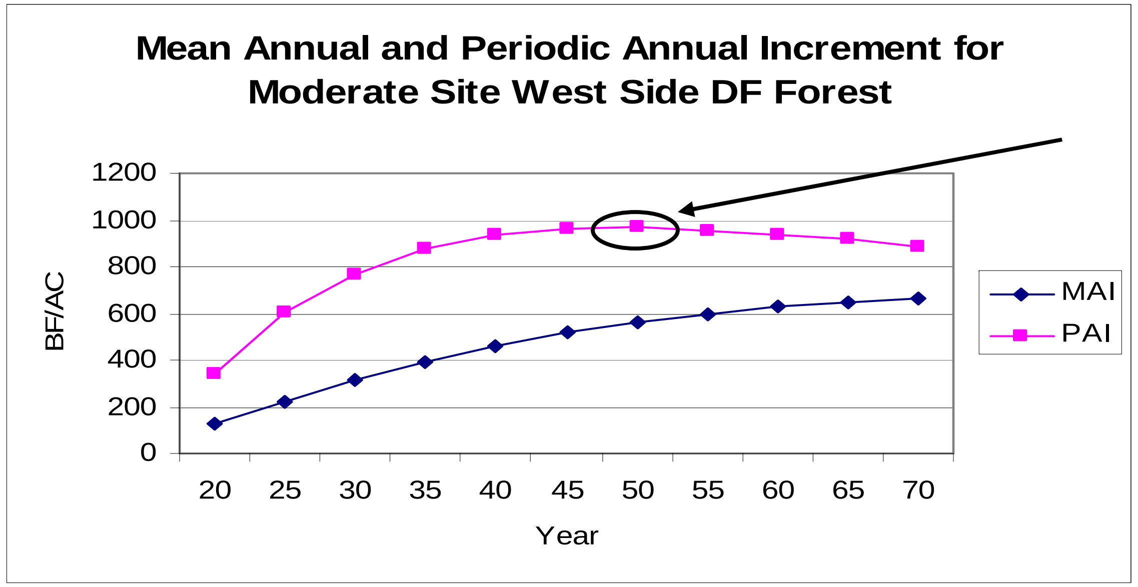

Figure. 3. Mean and Periodic Annual Increment Over Time

growth as total volume per acre and as mean and periodic annual increment vs. age. Note that culmination of periodic annual increment for this growth simulation, the point at which the annual rate of growth declines, occurs at age 50.

A series of harvest simulations were applied to each five-year growth increment. The resulting log volumes were sorted by grade and size and valued by the adjusted 1989 prices and the 2001 prices. From these tallies, a total gross log value/acre/year for all grades was calculated for both price scenarios. Total returns/acre for each time interval and pricing scenario were discounted to a present value using a 6% expected rate of return. Present values are displayed for 5 yr. increments in Figure 4.

Recalling that the culmination of the periodic annual increment occurred at 50 years, the present value simulations indicate that financial returns decline after 45 years with 1989 prices and after 40 years with 2001 prices. Using the 2001 prices, if harvest is delayed until 60 years there is a 27% loss in present value, and if harvest is delayed until 70 years there is a 50% loss in present value relative to the maximum return on 2001 prices (harvest in 40 years).

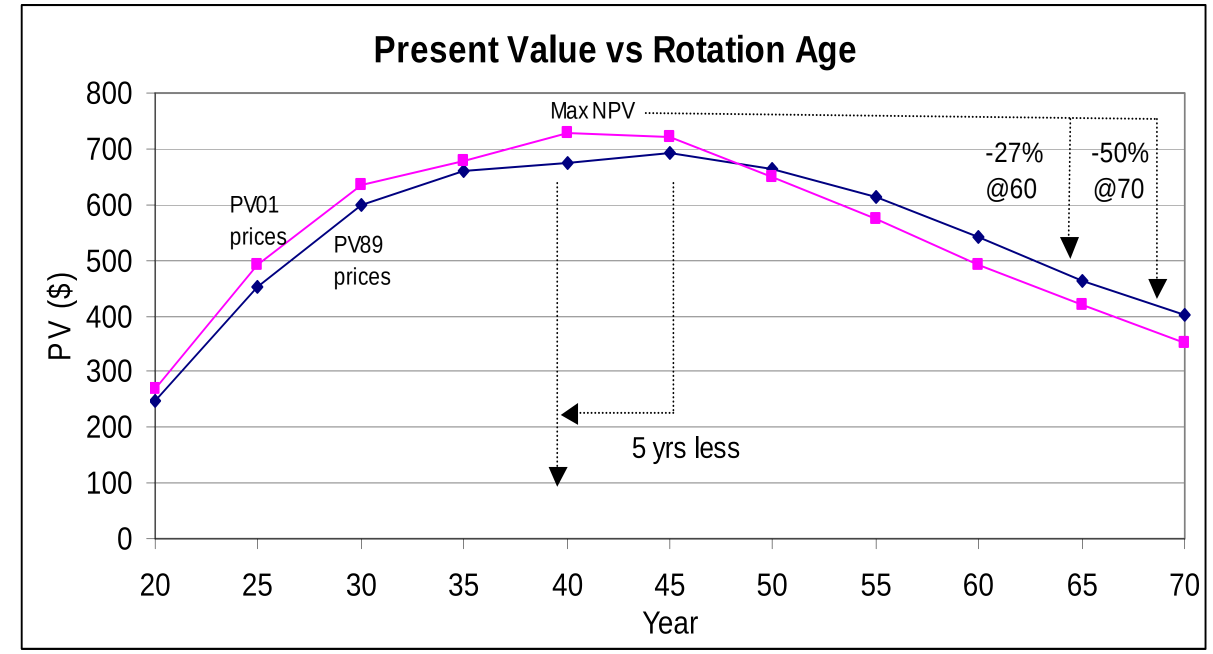

Figure. 4. Present Value vs. Rotation Age.

Conclusion

There has long been an historic debate about what harvest age is most desirable. Many have argued that a tree farmer wishing to maximize fiber production would harvest at the culmination of periodic annual increment, in this case age 50. Others argued that if trees were grown past culmination of periodic annual increment that losses in earning potential associated with slowing growth would be compensated by increases in grade and associated price premiums. This is clearly not the case if premium prices are not available for large logs. To the contrary, this simulation could indicate that the market response to log availability changes over the past twelve years has been a price adjustment that rewards landowners managing for shorter rotations. Further, with the 2001 price schedule large log premiums disappear but the “chip and saw” price increases from 54% of a #2 price in 1989 to 82% of a #2 price in 2001. These market adjustments come against a backdrop of landowner complaints of fears that if they grow their trees beyond a certain age or structural condition that governmental restrictions to protect older forests may impose additional harvest constraints in the form of habitat set-asides or widened riparian buffers. It appears that policy changes over the last twelve years, ostensibly designed to protect older forests, may have inspired market responses that are likely to result in management decisions that shorten rather than lengthen harvest rotations on private forestlands in the Douglas-fir zone of the Pacific Northwest.

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