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**EMBARGOES ON AND OFF:
Some Effects of Ending the Export Ban
on Federal Logs and
Halting Exports of State-Owned Logs**

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EMBARGOES ON AND OFF: SOME EFFECTS OF
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ABSTRACT

Congress is considering two legislative changes affecting softwood log exports from the West. One would drop the ban on exports from Federal lands. The other would permit States to embargo exports of logs from State-owned lands.

Lifting the ban on federal log exports would increase exports about ten percent, or about 430 million board feet (bd. ft.) annually. High-grade (oldgrowth) shipments would increase about 630 million bd. ft., while lower-graded log exports would decline about 200 million bd. ft.

Halting exports from State-owned lands would suppress log exports about ten percent. High-grade log exports would decline to a rate of about 400 million bd. ft. per year, with little change in lower-grade shipments.

Upper-grade log prices would change significantly under either proposal. Under the first plan, export prices of high-grade logs would drop about \$100 per thousand bd. ft. (Mbf), with domestic logs in these grades rising about \$100 per Mbf within the region. Price effects on lower grades would be negligible. If exports of State logs were halted, export prices of high-grade logs would rise about \$150 per Mbf; domestic log prices in the same grades would decrease by about \$50 per Mbf, and lower-grade log prices would be largely unaffected.

Direct employment in the timber industry would decline by about 375 persons under the federal-log plan; it would increase by about 700 positions with the State-log proposal.

Some economic effects would take years to be felt fully. Either policy might induce early speculative demand that would fade. Changes in mill capacity would occur to meet declining (federal-log policy) or rising (State-log plan) demand for high-grade lumber and veneer. In addition, either plan would change product lines and, perhaps, marketing channels.

INTRODUCTION

The 101st Congress is considering two measures that would greatly affect the timber economy of the Douglas fir region. One, proposed by the Administration, would terminate the longstanding ban on exports of unprocessed logs from federal lands in the West. The other, the "DeFazio bill", would allow States to legislate constraints on export of unprocessed timber from State-owned lands. Estimated here are the effects of each proposal on export and domestic log prices, production and shipments, and employment in the Douglas fir region.

A partial export embargo was placed on federal softwood logs in 1968 by the Administration and legislated as the "Morse Amendment" to the Foreign Assistance Act of 1968. Since 1973, a near-total ban has been appended to the annual Department of the Interior and Related Agencies appropriations act. The ban relates specifically to federal lands west of the 100th meridian. Its reference to the contiguous States excludes Alaska. There, the USDA Forest Service has elected to embargo most log exports from National Forests.

The proposal to lift the ban on federal log exports (here called the federal-log plan) was discussed at GATT sessions during the summer of 1988. Advanced as an element of free trade and a means of increasing federal revenues, the plan became public in January, 1989, as part of the Administration's appropriations bill for fiscal year 1990, which begins in October, 1989.

Oregon, Alaska, California and Idaho regulated export of their own public timber until such statutes were effectively overturned by a 1984 federal court decision concerning Alaska (Hines 1987). The DeFazio bill, which would restore the regulatory option to the States, is here called the State-log plan. Presented to Congress in 1987, it has been advocated primarily as a means of increasing domestic wood products employment in the West. State-owned timberlands are especially significant in Washington, Oregon and Alaska. At present, most softwood log exports from the contiguous western States originate in western Washington and western Oregon (the Douglas fir region), although strong markets draw export logs from as far as the Rocky Mountain States. This analysis was confined to the Douglas fir region.

METHOD

The procedure involved extension of existing theory, estimation of supply and demand relationships in the domestic market, and counterpart export supply and offshore demand interactions. Technical particulars including the underlying theory and econometric work are provided elsewhere (Flora and McGinnis 1989a).

Early in the analysis, it was recognized that distinction must be made between high-grade (oldgrowth) and lower-grade logs. There is a significant difference in prices between export and domestic logs in the upper grades, while for lower-grade logs the export premium is blurred after adjustments for log quality and other factors are taken into account.¹ Too, federal and State-owned lands now account for most of the oldgrowth timber harvested in the region, making high grades the focus of both proposals.

Three time frames were recognized in the analysis. The first is the period between announcement of the proposals and their enactment. In the case of the State-log plan, the period could vary by State as legislatures deal with the matter with varying degrees of urgency. The second period pertains especially to the federal-log plan. There would be a time, perhaps a year, in which speculative demand would arise from uncertainty about the tenure of the policy. In addition, inventories would be enlarged at each stage in the export process; this is the economist's "accelerator principle". During this period, the part of the domestic industry that is dependent on high-grade timber would adjust its capacity by closing mills or shifting to products less dependent on high-grade logs.

The third period, to which the quantitative part of the analysis was oriented, was defined as the time after capacity adjustments, here and abroad, would be completed and log markets would have stabilized at new price and flow levels.

¹The export premium is attributable to differences in quality within grades; additional transport, sorting, grading, and other handling costs involved in export preparation; and a continuity element reflecting the fact that a larger share of high-grade logs are sold under long-term arrangements rather than in spot markets (Flora and McGinnis 1989b).

The offshore market for high-grade logs, prior to any policy change, is illustrated with supply and demand curves in figure 1. Each curve was based on an equation relating log volumes to log prices. Shapes of the curves were governed by price elasticity² estimates developed in previous studies (Flora et al 1988, Flora and McGinnis in press, Flora and Vlosky 1986). Positions of the curves (the equations' intercepts) were keyed to log prices, production and exports reported for 1988. The intersection of the initial supply and demand curves determines the estimated average export log price and export shipments for this grade group.

The State-log plan would shift the export supply curve leftward, with a new intersection associated with lower export volumes and scarcity-induced higher prices. A rightward shift would be generated by the federal-log plan, yielding lower export prices and larger export volumes.

Another difference between the plans is that the State-log plan would increase the difference between domestic and export log prices. The federal-log plan, on the other hand, would eliminate the partitioning of the market between federal and nonfederal logs and a common price would develop for domestic and export high-grade logs, indicated by the rightward intersection in figure 1.

Not shown for either plan are companion supply and demand curves for the domestic market. The State-log plan's leftward shift in export supplies would be mirrored in increased supplies to onshore purchasers, resulting in lower prices there. The federal-log plan would, on the other hand, tighten supplies to domestic mills and raise domestic log (and stumpage) prices, a result consistent with industry expectations that stumpage prices would rise while export log prices would decline.

The interaction between upper and lower grade log demands overseas is not well-understood; however it appears that expanded foreign imports of high-grade logs would produce an offsetting decline in lower-grade imports. Changes in lower-grade log purchases would be spread among the several supplying countries--Canada, Chile, New Zealand, the U.S.S.R., and the United States--with the U.S. share an estimated 30 percent. Under the federal-log plan, the U.S. logs "released" from the export market would, it was assumed, move into

²Elasticity is the percentage change in log volume (supplied or purchased) associated with a one-percent change in the average log price. At any price-volume point in fig. 1 or 2, rotating the supply or demand curve through that point will raise the elasticity as the curve flattens.

domestic mills, partially replacing the high-grade logs bid away by exporters. Flows in the opposite direction would pertain to the State-log plan.

In figure 2 the circumstances of lower-grade logs in the export market are shown for the federal-log plan. The decline in offshore demand is shown as a leftward shift in the demand curve. Coincident with that would be a decrease in U.S. export supplies as U.S. mills partially replace high-grade logs with lower grades. That would produce a leftward shift in the supply curve. On balance, then, there would be a decline in exports but little change in prices, as indicated by the relative positions of the 1988 and federal-plan supply-demand intersections.

The State-log plan would decrease lower-grade log exports, relative to 1988, to be greeted by higher offshore demand as high-grade supplies decline. The result, not shown in figure 2, would be a leftward shift of supply and a rightward shift of demand, resulting in almost no change in export volumes and a minor increase in lower-grade log prices.

1988 was a peak year among a series of record years. The market changes estimated here might well be obscured by, say, a cyclic decline in U.S. wood products demand, that would likely be accompanied by impaired markets overseas (Flora et al 1988).

Supply and demand curves are never known with certainty, and estimates of them vary widely. We consider our results to be especially sensitive to the nature of offshore demand for high grades. To illustrate that sensitivity we repeated the analysis using a different but plausible export demand curve.

Employment changes were estimated using the difference in direct employment involved in export versus processing for lumber and plywood. A differential of 3.5 person-years per million bd. ft. was estimated from earlier studies (Darr 1975; U.S. Department of Agriculture, Forest Service 1988). That is a smaller difference than has been used in previous studies because both domestic processing and export have become more labor-efficient in recent years, with milling having gained more.

We judged that effects of the State-log plan would be felt mostly within the Douglas fir region, especially in western Washington. The federal-log plan would involve larger timber volumes, with economic consequences that would be felt nationally. Haynes and Adams (1985) estimated such effects, which are summarized here.

A technical report, containing theory, equations and details of the analysis (Flora and McGinnis 1989a), can be obtained from

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RESULTS

The Federal-log Plan

During the first time frame, including at least the first three quarters of 1989, there will have been considerable market confusion. Uncertainty about the likelihood of passage, conflicting judgments as to whether log prices will rise or fall, and the timing of price changes are prominent among corporate concerns. It is not clear, for instance, whether the policy would be retroactive to timber parcels sold but not yet cut. Whether federal export policy for Alaska would be changed has not been known, nor British Columbia's potential reaction, if any.

The second period, involving speculative and pipeline-filling demand overseas, would presumably be characterized by continued uncertainty in the region about the likely tenure of the policy change. Meanwhile, with about one-eighth of the region's oldgrowth timber harvests about to move from domestic to offshore use, capacity and employment shifts would be underway, particularly in mills oriented to producing high-quality face veneers and premium grades of finish lumber. With changing product lines would come, perhaps, different distribution channels and marketing strategies. Certainly this period would be a time of expanded borrowing and emphasis on manufacturing flexibility lest fine tuning or major revisions of the policy come about.

We estimate that releasing the ban on export of federal logs would raise the average price of high-grade logs currently going into U.S. mills by about \$100 per Mbf. These are largely oldgrowth logs from public lands. Similar logs moving into export from nonfederal lands would, we believe, decline in price by about \$100 per Mbf. Exports of high-grade logs would increase by about 630 million bd. ft. per year, while high-grade logs moving into the domestic market would decline by about 530 million bd. ft. annually. Exports of lower-grade logs would slide by about 200 million bd. ft. per year, with a negligible price rise. The net deficit in log supplies to domestic mills would thus be about 330 million bd. ft. per year, of which 100 million bd. ft. we believe would be filled by increased lower-grade log harvests in the region. The balance of the deficit would be associated with closure of some mills and reduced production at others.

The estimated changes in employment would be a gain of 925 person-years in exporting and a reduction of 1300 in domestic processing. The net change would be a decline of 375 jobs.

Haynes' and Adams' (1985) estimates of effects across the United States include small increases in softwood lumber prices and lumber imports from Canada, small declines in U.S. lumber and plywood production, and small rises in southern timber harvests and stumpage prices there.

The State-log Plan

For this plan, the first period would end with adoption of export controls by the States. Because this analysis applied to the Douglas fir region, the relevant States are Oregon and Washington. Speculative demand could be expected as traditional offshore buyers anticipate higher prices for U.S. logs. Other foreign buyers might assume the policy would not be adopted, and continue business as usual. U.S. log users might delay purchases, expecting lower domestic log prices as a result of the plan. None of these effects were we able to quantify; together, they suggest an unstable market as expectations evolve and policy events occur.

In the longer term, the State-log plan would shrink exports of high-grade logs by about 400 million bd. ft. annually, with no offsetting change in lower-grade logs, as mentioned earlier. The domestic market would gain about 280 million bd. ft. of high-grade logs each year. The difference, about 130 million bd. ft., would constitute a decline in harvests.

Log prices would remain nearly unchanged for lower grades. Upper grades would increase in the export market about \$150 per Mbf, and decline (because of increased supplies) about \$50 per Mbf in the onshore market.

Employment would decline by about 880 persons in exporting and increase about 1580 in domestic use. The net gain would be about 700 persons.

Sensitivity Analysis

The study's results are judged to be especially sensitive to the elasticity of offshore demand for high-grade logs. It was assumed to be -2.4, in accord with econometric estimates. If the elasticity were -1.0 instead, export prices under the federal-log plan would settle to about the same level as domestic prices had been during the ban. Neither federal log prices nor agency harvest volumes would change significantly relative to the embargo years. At the lower export price, private harvests and exports might actually decline slightly despite the policy change.

CONCLUSIONS

Effects of both proposed policy changes pivot around the oldgrowth component of exports. Under both plans, there would be a marked tradeoff between domestic use and export of high-grade (oldgrowth) logs--almost one-for-one in the federal-log plan and about two domestic for every three export logs in the State-log plan.

A key element of the consequences would be replacement of high-grade logs by those of lower quality, both offshore and in the domestic market. Replacement would apparently be substantial as high-grade exports expand under the federal-log plan. But, with other sources available to Pacific Rim log customers, U.S. lower-graded (mostly private) logs could not be expected to offset more than a fraction of the high-grade log exports foregone under the State-log plan.

It appears that price effects of either policy would be considerable for high-grade logs but small for lower-grade material. Thus, considering both volume and price changes, the principal impacts of these policy changes would be on oldgrowth timber and its users.

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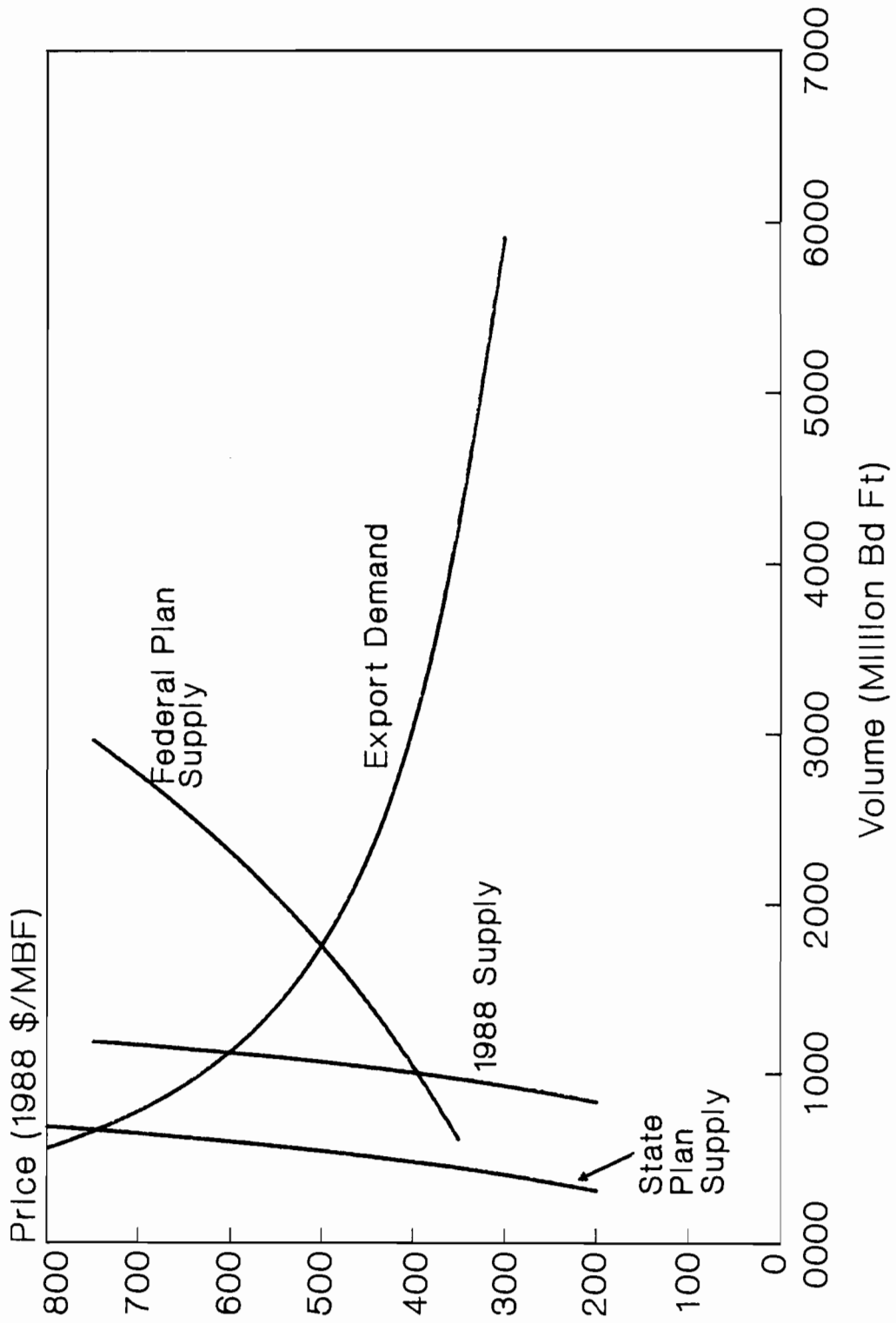
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**Fig. 1 Export Supply and Demand
High Grade Logs**



**Fig. 2 Export Supply and Demand
Lower Grade Logs**

