

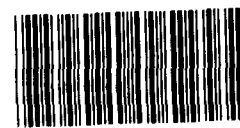
GAO

Briefing Report to the Honorable  
Norman D. Dicks, House of  
Representatives

June 1992

AGRICULTURAL  
MARKETING

Status of the Forest  
Products Industry



146908

---

---



United States  
General Accounting Office  
Washington, D.C. 20548

Resources, Community, and  
Economic Development Division

B-248184

June 23, 1992

The Honorable Norman D. Dicks  
House of Representatives

Dear Mr. Dicks:

The forest products industry is important to the U.S. economy. Annually, domestic and overseas sales of all forest products exceed \$200 billion and account for about 7 percent of the value added by production by all U.S. manufacturers. The industry employs about 1.6 million workers and provides the financial underpinning for numerous communities across the nation. New environmental constraints on the public timber supply on the Pacific Coast have raised concerns about communities in that region that rely on the forest products industry for employment and income.

This briefing report serves to formalize the information we presented to you previously. It describes changes in the forest products industry's competitive condition and sources of raw material, the effects of the changes on the Pacific Coast states, and federal efforts to assist the industry.

In summary, two indicators--increased efficiency and an expanded share of the world export market--suggest that the competitive position of the U.S. forest products industry has improved. During the past decade, the industry has become more efficient, as measured by labor productivity. Moreover, the industry has significantly expanded its export activities. In 1988 the United States became a net exporter of solid wood products, and the trade gap in pulp and paper products has been narrowing as well. However, while more processed products, such as lumber, are being sold overseas, a large proportion of the forest products being exported are those that require the least processing, such as logs, chips, and pulp.

The Pacific Coast has led U.S. production of softwood--the raw material used for most forest products--for most of the last 50 years, largely because of that region's abundant timber supply. However, the softwood industry in the South is becoming more important because that region's supply of

raw material is increasing and the costs of production are lower. At the same time, softwood timber available for harvest on the Pacific Coast is declining, in part because of extensive cutting on private lands and environmental restrictions on public lands.

As the past 12 years demonstrate, employment in the U.S. forest products industry has fluctuated in response to changes in demand for solid wood products. Employment decreases in recent years have occurred for several reasons, including weak demand at home and abroad and uncertainty about future supplies of softwood timber. Additional employment losses, as well as lower federal payments to local economies, may occur in the Pacific Coast states through 1995, as federal agencies continue to comply with environmental legislation.

Three ongoing federal programs have funded initiatives specifically designed to increase forest products exports. For fiscal year 1992, two of these, the Market Promotion Program and the Foreign Market Development Program, had a combined budget of about \$19 million for export promotion activities. For the third, a loan guarantee program commonly referred to as the GSM-102 program, about \$124 million has been allocated to guarantee foreign credit for exports. Other programs throughout the federal government are also available to the industry. For example, these programs provide general export advice and sponsor research and development programs that improve products or manufacturing technology. One-time federal efforts and state- or industry-sponsored programs are also available.

Section 1 of this briefing report discusses the industry's competitive position. Section 2 describes the changing sources of supply. Section 3 discusses the effects of change on the Pacific Coast states. Section 4 describes available federal programs. Section 5 provides our scope and methodology.

As we discussed at our briefing, we will continue to explore the appropriate role of the federal government, if any, in making the industry even more competitive in world markets. We will also examine options for mitigating the problems of timber-dependent communities in adapting to the changing conditions.

- - - - -

B-248184

In developing the information for this briefing report, we reviewed trade, industry, employment, and government data and met with officials from federal and state governments, universities, and the industry, and with other experts.

We discussed a draft of this briefing report with responsible agency officials of the State and Private Forestry and Research Divisions of the Forest Service and the Forest Products Division of the Foreign Agricultural Service, both in the U.S. Department of Agriculture. They generally agreed with the information we presented, and we incorporated their comments where appropriate.

Copies of this briefing report are being sent to the appropriate House and Senate Committees and Subcommittees; interested Members of Congress; the Secretaries of Agriculture, Commerce, and the Interior; the Director, Office of Management and Budget; and other interested parties. Copies will also be made available upon request.

Please contact me on (202) 275-5138 if you or your staff have any questions. Major contributors to this briefing report are listed in appendix I.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "John W. Harman".

John W. Harman  
Director, Food  
and Agriculture Issues

## CONTENTS

		<u>Page</u>
LETTER		1
SECTION		
1	INDUSTRY IS MAINTAINING ITS COMPETITIVE POSITION	6
	Gains in Efficiency Were Achieved	6
	Exports Are Increasingly Emphasized by the Industry	7
	Exports Are Mainly Least-Processed Products	11
2	THE SOUTH IS GROWING IN IMPORTANCE	14
	Softwood Timber Inventory Has Increased in the South	15
	Production Costs Are Lower in the South	17
3	PACIFIC COAST COMMUNITIES HAVE BEEN AND WILL BE AFFECTED BY CHANGING CONDITIONS	18
4	VARIOUS EXPORT INITIATIVES ARE AVAILABLE	23
	Other Programs	24
5	SCOPE AND METHODOLOGY	26
APPENDIX		
I	MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT	27
TABLE		
3.1	Estimated Job Losses Because of Spotted Owl Protection	21
3.2	Estimated Reductions in Federal Timber Sale Payments Because of Spotted Owl Protection	22
4.1	Federal Initiatives to Promote U.S. Solid Wood Exports	24
FIGURE		
1.1	U.S. Share of World Forest Products, 1961-89	7
1.2	Share of U.S. Solid Wood Production Exported, 1985-89	8

1.3	U.S. Imports and Exports of Solid Wood Products, 1985-89	9
1.4	U.S. Imports and Exports of Pulp and Paper Products, 1985-89	10
1.5	U.S. Solid Wood Balance of Trade, 1985-89	12
1.6	U.S. Pulp and Paper Balance of Trade, 1985-89	13
2.1	Trends in Total Hardwood and Softwood Timber Inventories, 1952-87	15
2.2	Pacific Coast Softwood Timber Inventory, 1952-87	16
2.3	Southern Softwood Timber Inventory, 1952-87	17
3.1	Employment in the U.S. Forest Products Industry, 1980-91	18
3.2	Forest Products Employment on the Pacific Coast, 1980-91	19

## Section 1

---

### Industry Is Maintaining Its Competitive Position

- Efficiency Has Increased
  - Exports Have Expanded
  - Exports Are Mainly  
Least-Processed Products
- 

To maintain its competitiveness in a changing economic environment, the U.S. forest products industry has (1) become more efficient and (2) increased its share of the world market for forest products. Export markets in particular are of increasing importance to the industry as it attempts to reduce its reliance on the U.S. market. A significant portion of exports continue to be lower-processed products such as logs, chips, and pulp.

### Gains in Efficiency Were Achieved

Gains in labor productivity<sup>1</sup> are one important indication of efficiency improvements for an industry. Between 1982 and 1989, the U.S. forest products industry's overall productivity increased by about the national manufacturing average increase of 35 percent.

- Labor productivity for the solid wood sector improved by about 34 percent between 1982 and 1989. The pulp and paper sector improved by 49 percent during the same period.
- The average productivity gain in the solid wood sector for the Pacific Coast<sup>2</sup> during the same period was 46 percent. Gains were highest in Washington and Oregon, where productivity improved by 60 and 58 percent, respectively.
- In the South productivity increases were lower. The average solid wood productivity increase for the top five lumber-producing states<sup>3</sup> was 24 percent.

---

<sup>1</sup>Labor productivity is defined as the real value added by employees per hour worked.

<sup>2</sup>California, Oregon, and Washington.

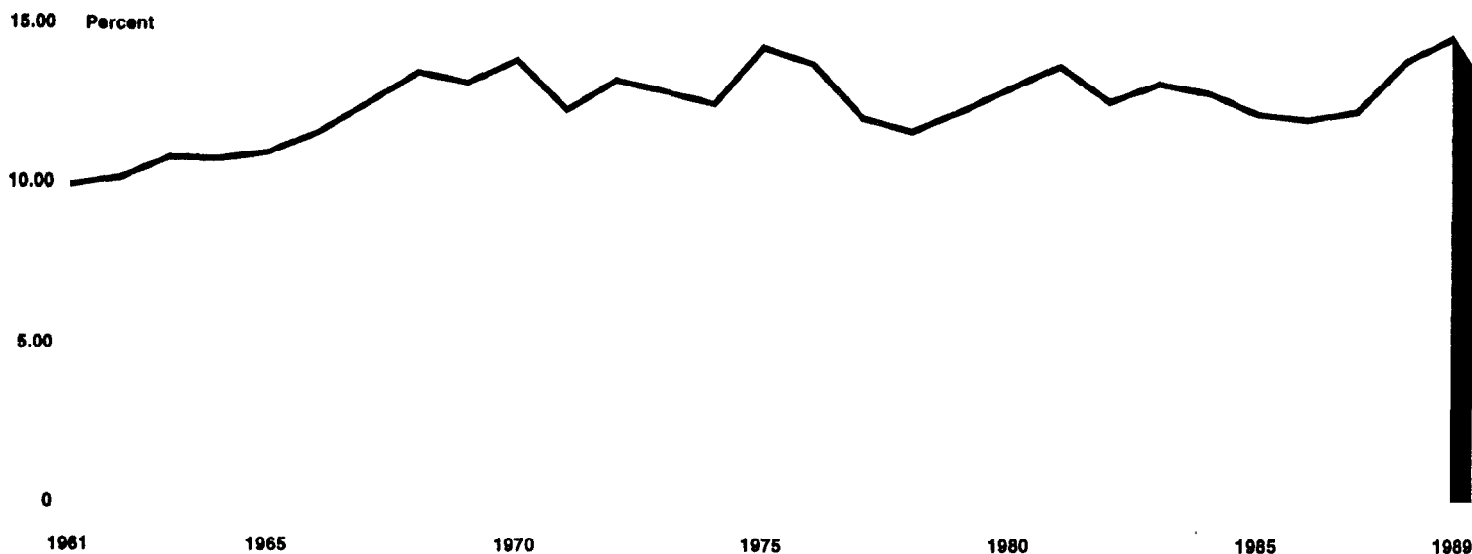
<sup>3</sup>In order of production in 1989: Georgia, Mississippi, Alabama, North Carolina, and South Carolina.



Exports Are Increasingly Emphasized  
by the Industry

In general, the U.S. forest products industry has traditionally concentrated on exporting only during downturns in U.S. demand. However, in recent years U.S. producers have expanded their export activities. Figure 1.1 shows the industry's gradual upward expansion into the world market over the last 3 decades.

Figure 1.1: U.S. Share of World Forest Products Market, 1961-89

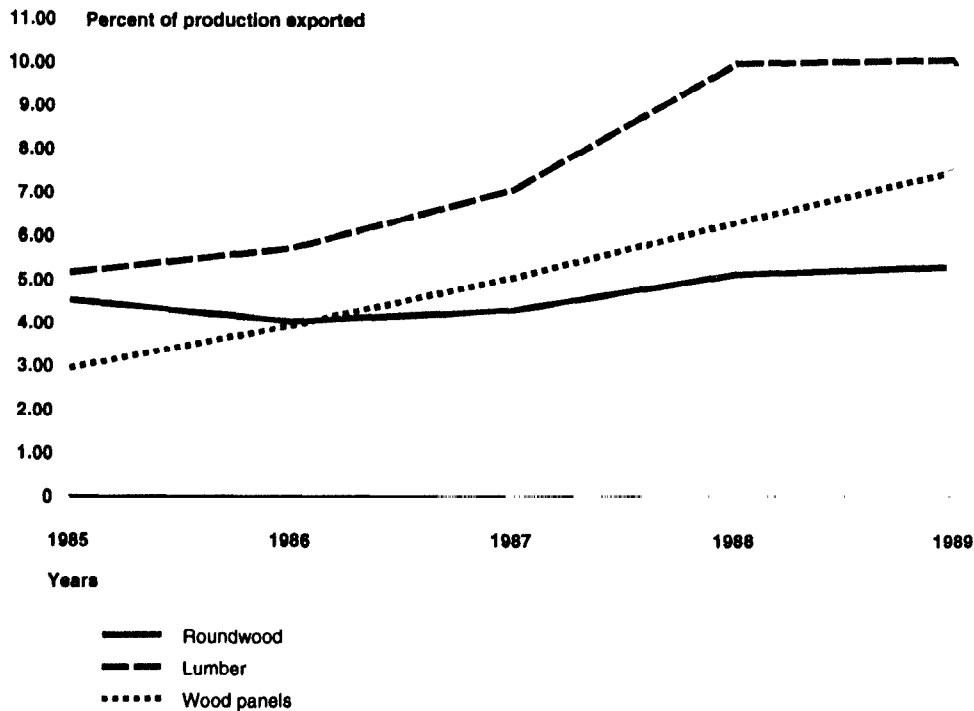


Note: U.S. share of the world market consists of U.S. forest products exports as a percentage of world imports, net of U.S. imports.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

Figure 1.2 shows the increasing share of solid wood production being exported: Between 1985 and 1989, the percent of roundwood, lumber, and panel production being exported increased by 18, 96, and 157 percent, respectively.<sup>4</sup>

Figure 1.2: Share of U.S. Solid Wood Production Exported, 1985-89



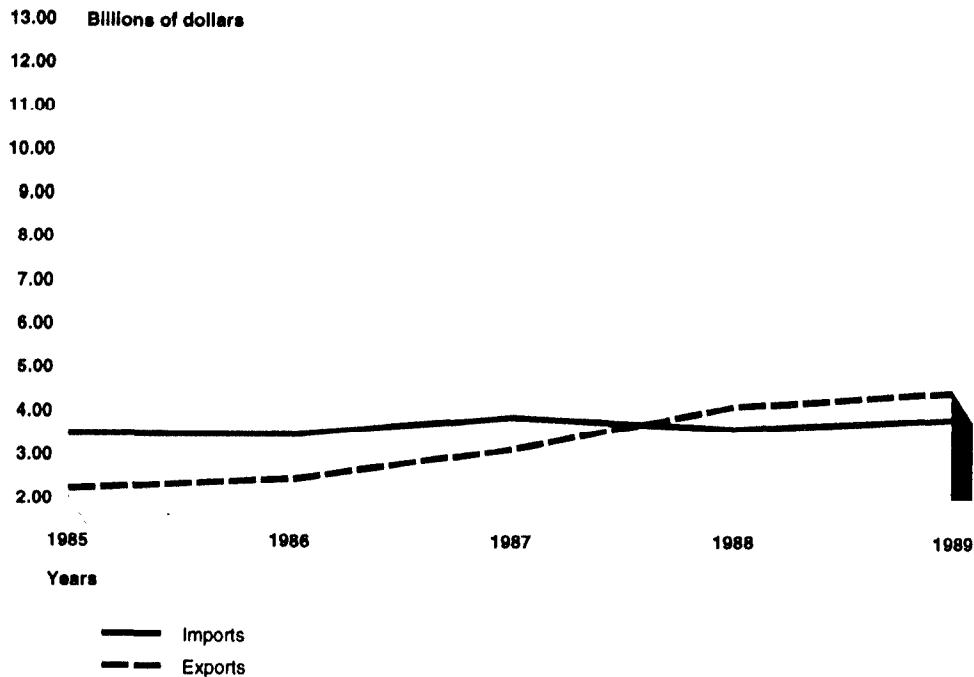
Note: The share of solid wood production exported consists of solid wood exports divided by total solid wood production.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

<sup>4</sup>The term "roundwood" includes all products designated as roundwood in the Food and Agriculture Organization data base. The majority of products in this category are sawlogs and veneer logs; other roundwood products, such as fuelwood, pulpwood, and wood chips, are included as well. Similarly, "lumber" includes products designated as sawnwood and sleepers, such as planks, boards, and beams. "Panels" includes veneer sheets, plywood, and particle board.

Figures 1.3 and 1.4 show imports and exports of solid wood and pulp and paper products, respectively, between 1985 and 1989.

Figure 1.3: U.S. Imports and Exports of Solid Wood Products, 1985-89

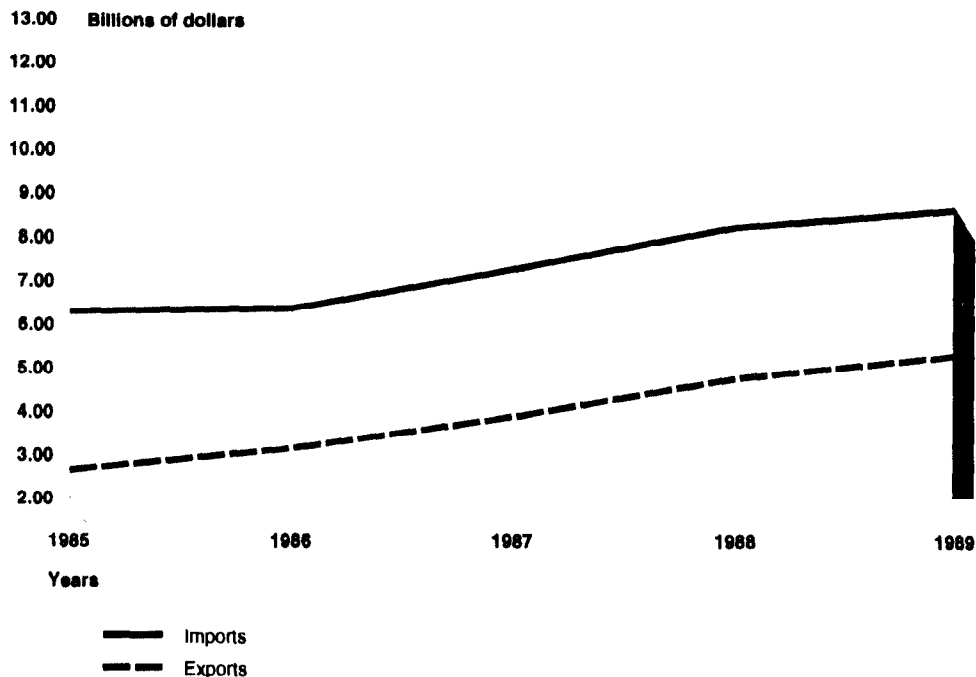


Notes: According to U.S. Foreign Agricultural Service data, the solid wood trade surplus continued in 1990.

The values for imports include the cost of insurance and freight. Exports are valued free-on-board.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

Figure 1.4: U.S. Imports and Exports of Pulp and Paper Products, 1985-89



Notes: The term "pulp" includes all products designated as pulp in the Food and Agriculture Organization data base. Examples include mechanical, semi-chemical, chemical, and dissolving wood pulp. Similarly, "paper" includes all products designated as paper and paperboard, such as newsprint, printing and writing paper, and other paper and paperboard.

According to Department of Commerce data, the pulp and paper trade deficit continued to decrease during 1990 and 1991.

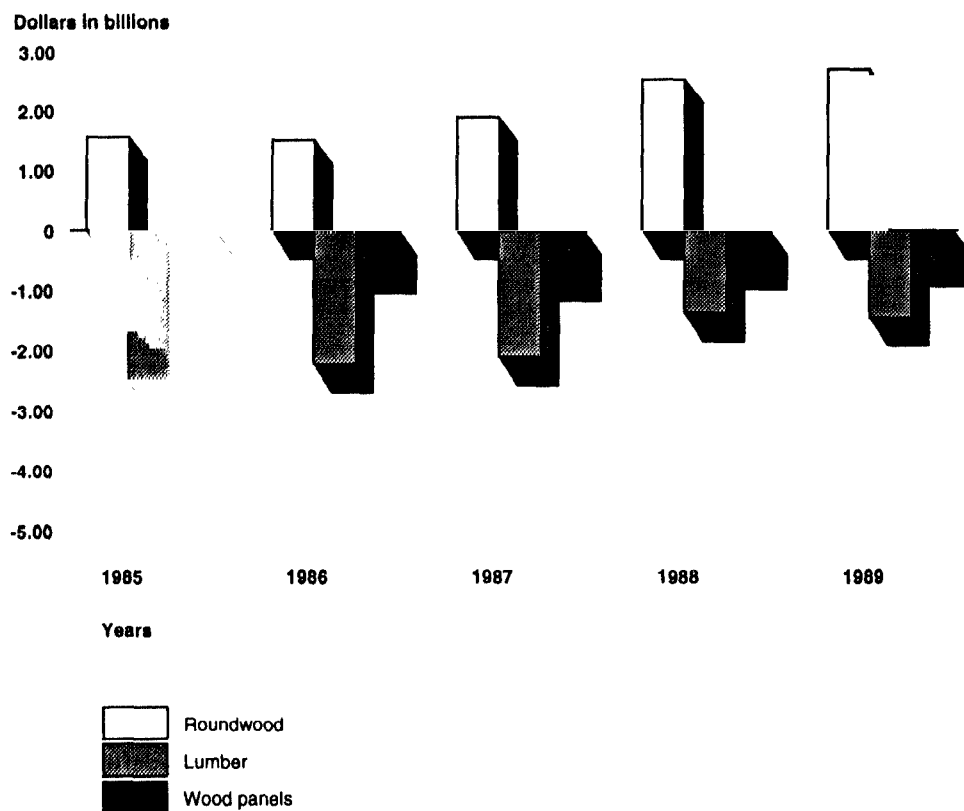
The values for imports include the cost of insurance and freight. Exports are valued free-on-board.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

### Exports Are Mainly Least-Processed Products

While U.S. exports of processed solid wood and paper products have increased steadily during this decade, a significant portion of the exports continues to be the products that require the least processing. For example, in 1989 roundwood and pulp--the least-processed products in each sector--accounted for 50 and 53 percent of the value of solid wood exports and pulp and paper exports, respectively. This occurs, in part, because the United States has a comparative advantage in the quantity of raw material over many other countries. Figures 1.5 and 1.6 show that roundwood and pulp are the only forest products for which there is a trade surplus.

Figure 1.5: U.S. Solid Wood Balance of Trade, 1985-89



Notes: Balance of trade is defined as exports less imports.

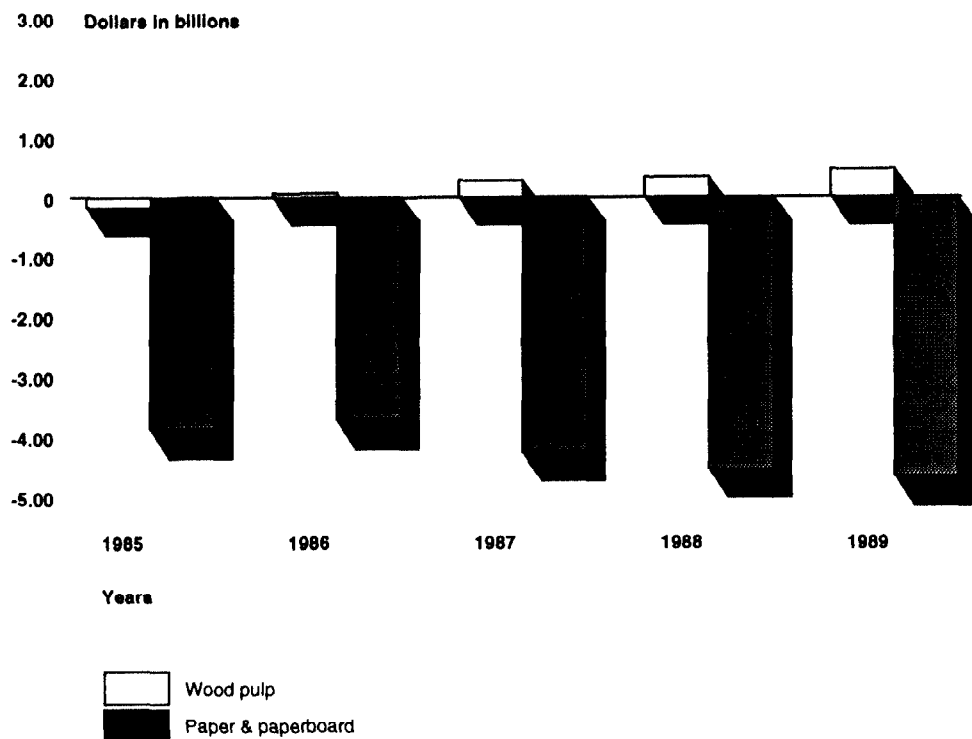
According to U.S. Foreign Agricultural Service data compiled through November 1991, roundwood continued to be the only solid wood products category with a trade surplus.

The values for imports include the cost of insurance and freight. Exports are valued free-on-board.

Data in 1989 dollars.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

Figure 1.6: U.S. Pulp and Paper Balance of Trade, 1985-89



Notes: Balance of trade is defined as exports less imports.

The values for imports include the cost of insurance and freight. Exports are valued free-on-board.

Data in 1989 dollars.

Source: GAO analysis of data from the Food and Agriculture Organization of the United Nations.

## Section 2

---

### The South Is Growing in Importance

- Softwood Timber Inventory Has Increased in the South
  - Production Costs Are Lower in the South
- 

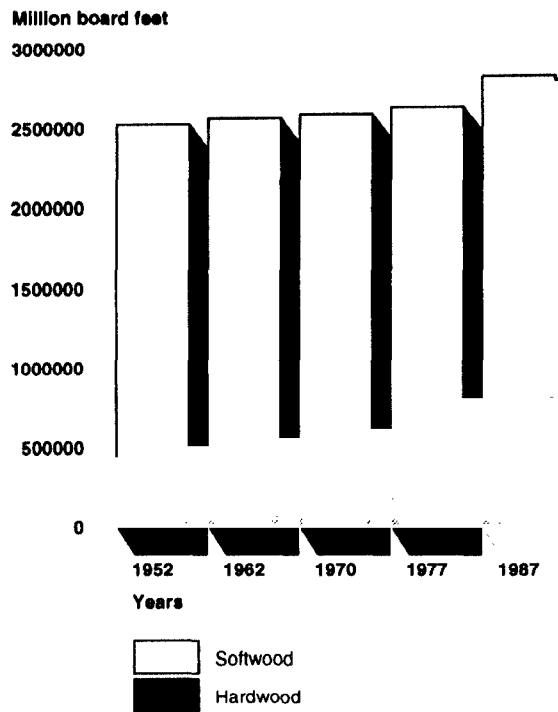
Over the past 40 years, the nation's total inventory of timber has remained fairly constant: Between 1952 and 1987, total hardwood and softwood inventories<sup>1</sup> increased from about 2,500 to 2,800 billion board feet. During that period, hardwood inventories, which are mostly in the eastern half of the United States, nearly doubled. Total softwood inventories, however, which are mainly in Pacific Coast states, Alaska, and southern states, declined slightly. Figure 2.1 shows the trends in the hardwood and softwood timber inventories.

---

<sup>1</sup>Inventory, which is measured in board feet, international 1/4-inch rule, is the total volume of live sawtimber trees less deductions for rot and other defects.



Figure 2.1: Trends in Total Hardwood and Softwood Timber Inventories, 1952-87



Source: U.S. Forest Service, Forest Statistics of the United States, 1987 (Portland, Ore.: Pacific Northwest Research Station, 1989).

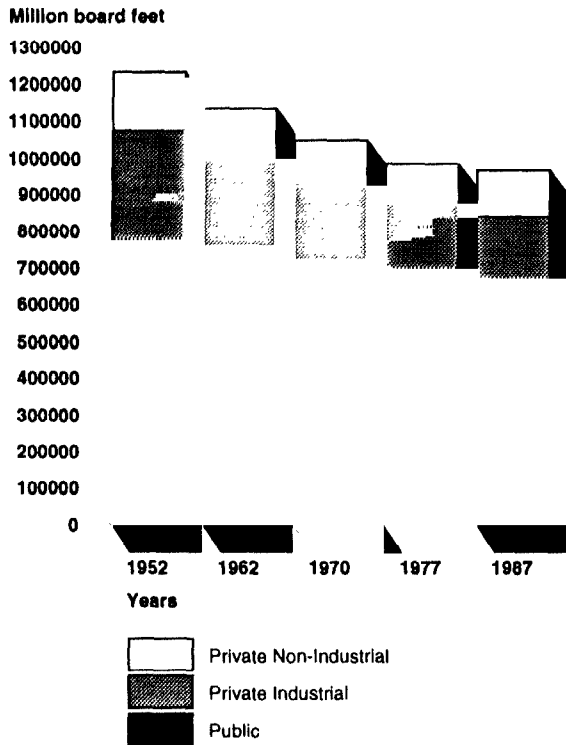
Softwood Timber Inventory Has Increased in the South

Most of the declines in the softwood timber inventory have come from the Pacific Coast, in part because of extensive cutting of large-diameter trees on industry-owned land and in part because of removals of federal lands from timber production for environmental reasons and for removals for designation as wilderness. At the same time, however, the South's<sup>2</sup> inventory of softwood timber has nearly doubled. Figure 2.2 shows the Pacific Coast's 22-percent decline in softwood timber inventory between 1952 and 1987. Figure 2.3 shows the South's 92-percent gain in

<sup>2</sup>The South includes all states in the Forest Service's South Central and Southeast regions--Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas, Florida, Georgia, North Carolina, South Carolina, and Virginia.

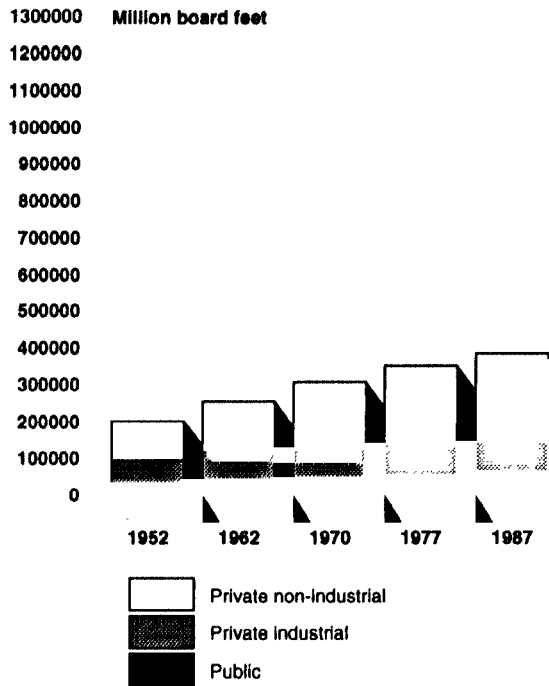
softwood timber inventory, which is mostly on privately owned, nonindustrial land, during the same period. Moreover, the amount of softwood timber available for harvest on Pacific Coast public lands will likely decline further as federal agencies continue to comply with environmental legislation, such as the Endangered Species Act of 1973 (15 U.S.C. 1531 et seq.).

Figure 2.2: Pacific Coast Softwood Timber Inventory, 1952-87



Source: U.S. Forest Service, Forest Statistics of the United States, 1987 (Portland, Ore.: Pacific Northwest Research Station, 1989).

Figure 2.3: Southern Softwood Timber Inventory, 1952-87



Source: U.S. Forest Service, Forest Statistics of the United States, 1987 (Portland, Ore.: Pacific Northwest Research Station, 1989).

Production Costs Are Lower in the South

The South has a production cost advantage over the Pacific Coast because the South has lower labor costs and flatter terrain, which affect logging costs and processing costs. For example, in 1990 the Forest Service reported that in 1985 it cost \$65 per 1,000 board feet to harvest and haul timber in the South, compared with \$115 per 1,000 board feet on the Pacific Coast. Similarly, softwood lumber processing costs were estimated to be \$89 per 1,000 board feet in the South and about \$107 per 1,000 board feet on the Pacific Coast.<sup>3</sup> The Forest Service has projected that the South will maintain this cost advantage into the next century.

<sup>3</sup>Production cost data are in 1982 dollars.

### Section 3

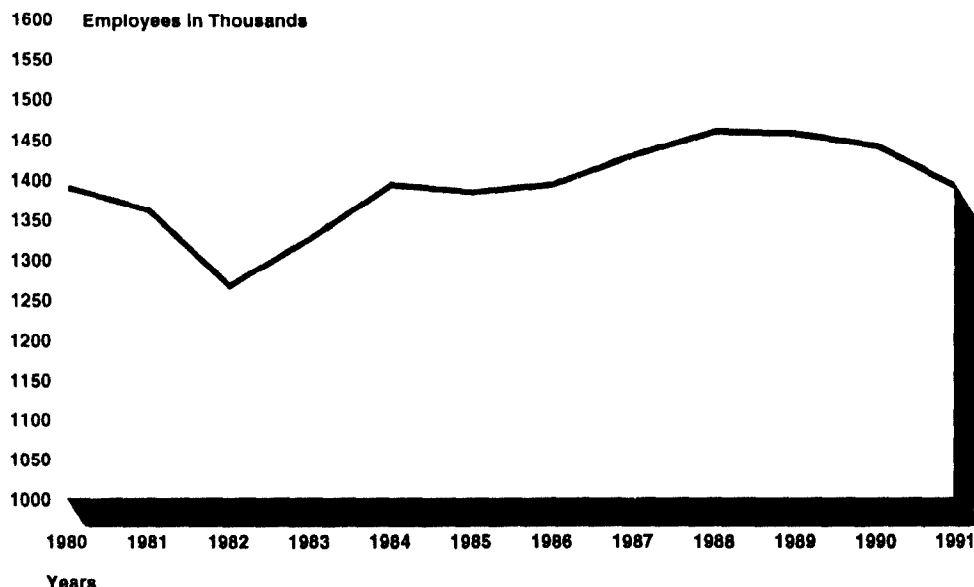
---

Pacific Coast Communities Have Been and Will Be Affected by Changing Conditions

- Region Faces Losses in Forest Products Employment
  - Public Revenues Could Decline
- 

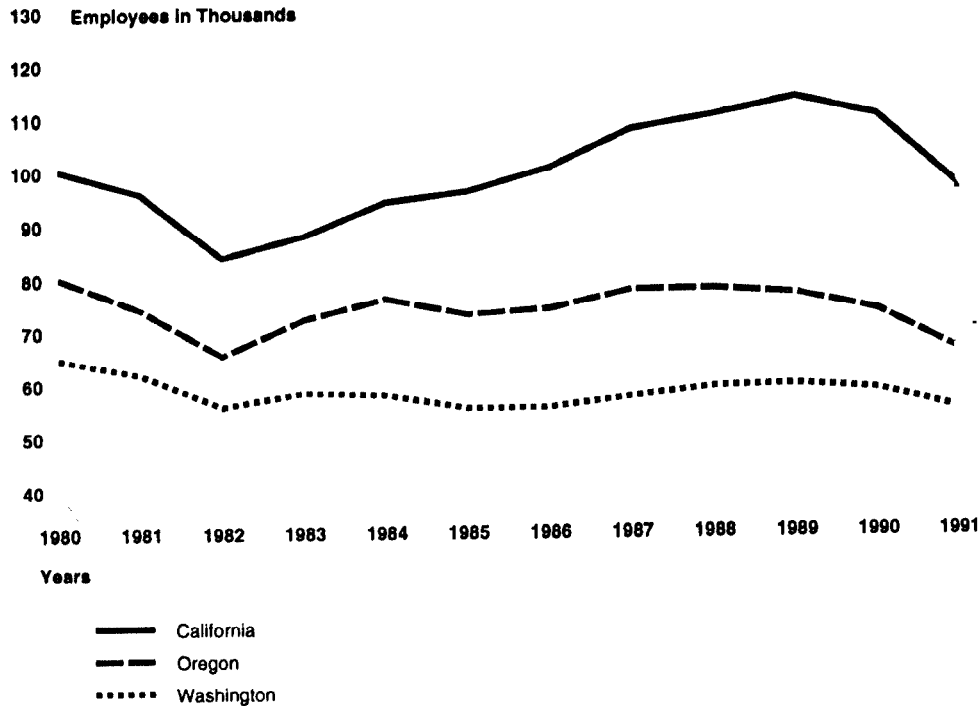
Employment in the U.S. forest products industry historically fluctuates in response to increases and decreases in the demand for wood products. This is true for the Pacific Coast region as well. Figures 3.1 and 3.2 show the variation in employment for the United States and the Pacific Coast states between 1980 and 1991. During the early 1980s, employment declined, partially in response to lower demand for wood products during the recession in the United States. However, employment increased during the latter part of the decade in response to strong growth in domestic and international markets. Since 1989, employment in the Pacific Coast region has fallen for several reasons, including weaker demand at home and abroad and uncertainty about future supplies of softwood timber.

Figure 3.1: Employment in the U.S. Forest Products Industry, 1980-91



Source: GAO analysis of data from the Bureau of Labor Statistics.

Figure 3.2: Forest Products Employment on the Pacific Coast, 1980-91



Source: GAO analysis of data from the Bureau of Labor Statistics.

Since 1980 other changes affecting employment have taken place as well. As discussed in section 1, between 1982 and 1989, labor productivity increased in Oregon and Washington. The employment and productivity increases over this period suggest that the industry expanded existing or new productive capacity and updated or closed older and less efficient mills. In general, the older, less efficient mills relied on large-diameter, old growth timber, the supply of which has been reduced through cutting and environmental set-asides, as discussed in section 2.

For the future, employment levels may continue to decline in Pacific Coast states if additional public timberland is set aside for environmental reasons. As public timber is removed from commercial availability, some production facilities for forest products may be unable to obtain sufficient timber supplies, forcing them to curtail production unless they adopt other strategies, such as producing products that use wood more efficiently. The impact of further environmental restrictions on

the industry and industry employment depends, in part, on the extent to which private timberland owners offer additional timber for sale.

In addition to potential lower employment levels in the industry, some timber-dependent counties expect to receive lower federal payments for timber sales, provided in lieu of property taxes, if public timber sales are reduced in their counties. The U.S. Fish and Wildlife Service has estimated reductions in both forest products industry jobs and payments to counties between 1990 and 1995 as a result of Northern Spotted Owl protection.<sup>1</sup> Estimates of job losses are listed in table 3.1. Table 3.2 contains estimated federal payments for timber sales.

---

<sup>1</sup>Numerous studies have projected the economic impact of protecting the Northern Spotted Owl, and their results vary. The U.S. Fish and Wildlife Service, within the Department of the Interior, is the federal agency charged by law with first designating the critical habitat and subsequently overseeing a recovery plan for the owl. In designating the critical habitat in January 1992, the Service estimated losses of 32,000 jobs and \$170 million in federal payments to counties. The estimates combine Forest Service estimates for national forests and Bureau of Land Management estimates for the bureau's districts. In May 1992, the Department of the Interior released for public comment a draft recovery plan for the owl. The draft recovery plan estimated losses of 31,000 jobs and \$100 million in payments to counties. A final recovery plan is not expected before January 1993. In addition to the recovery plan, in May 1992 the Secretary of the Interior proposed for congressional consideration an alternative preservation plan that estimated losses of 15,000 jobs and \$33 million in payments to counties. Implementation of the alternative preservation plan would require new legislation.

Table 3.1: Estimated Job Losses Because of Spotted Owl Protection

<u>State</u>	<u>Estimated number of job losses through 1995<sup>a</sup></u>	<u>Percent decrease in industry employment</u>
California	4,319	56
Oregon	21,589	45
Washington	<u>6,528</u>	63
Total	<u>32,436</u>	

Note: The baseline employment figures used are the numbers of industry jobs expected given planned federal timber sales prior to the listing of the spotted owl as a threatened species. With the listing and designation of critical habitat, the estimated timber available for harvest in 1995 declined from 4,217 to 2,197 million board feet, long log scale, in the three states.

<sup>a</sup>The Fish and Wildlife Service assumes that the effects of protecting the spotted owl began in late 1990, will peak by 1995, and will lessen thereafter because of offsetting market factors.

Source: U.S. Fish and Wildlife Service, "Economic Analysis of Critical Habitat Designation Effects for the Northern Spotted Owl," Jan. 1992.

Table 3.2: Estimated Reductions in Federal Timber Sale Payments Because of Spotted Owl Protection

Dollars in millions

<u>State</u>	<u>Estimated reduction in payments through 1995<sup>a</sup></u>	<u>Percent decrease in payments to counties</u>
California	\$ 22.9	60
Oregon	122.8	31
Washington	<u>23.8</u>	60
Total	<u>\$169.5</u>	35

Notes: Revenues from federal timber sales are shared with the counties where the timber is harvested. Twenty-five percent of Forest Service gross revenues and 50 percent of Bureau of Land Management gross revenues are paid to counties to fund public services.

The baseline payment figures used are the payments expected given planned federal timber sales prior to the listing of the spotted owl as a threatened species.

<sup>a</sup>The Fish and Wildlife Service assumes that the effects of protecting the spotted owl will peak by 1995 and lessen thereafter because of offsetting market factors.

Source: U.S. Fish and Wildlife Service, "Economic Analysis of Critical Habitat Designation Effects for the Northern Spotted Owl," Jan. 1992.



## Section 4

---

### Various Export Initiatives Are Available

- Some Federal Programs Have Forest Products Initiatives
  - Industry Has Access to Other Programs
- 

The federal government has numerous programs designed to promote agricultural exports. Three of them, which are administered by the U.S. Department of Agriculture, currently have funded initiatives to increase exports of solid wood products: the Market Promotion Program, the Foreign Market Development Program,<sup>1</sup> and the GSM-102 export credit guarantee program. In addition, solid wood exports have in past years been promoted under two other initiatives--the P.L. 480 program<sup>2</sup> and the National Marketing Initiative. Since 1980,<sup>3</sup> \$53 million has been spent and over \$1 billion in loans has been guaranteed through these efforts to promote forest products exports. An additional \$19 million for promotion activities and \$124 million in loans was allocated for the initiatives for fiscal year 1992. The majority of the funding and activities are through the Market Promotion Program. Details about major program activities and funding are in table 4.1. There are no federal activities for marketing pulp and paper exports; however, since 1988, GSM-102 has been allowed to be used to guarantee pulp exports.

---

<sup>1</sup>The Foreign Market Development Program is often referred to as the Cooperator Program.

<sup>2</sup>P.L. 480 is the name commonly used for the Agricultural Trade Development and Assistance Act of 1954. It is also sometimes called the Food for Peace Program. P.L. 480 is administered jointly by the Agency for International Development and the U.S. Department of Agriculture.

<sup>3</sup>The first federal spending specifically for promoting forest products was in 1980 through the Cooperator Program.

Table 4.1: Federal Initiatives to Promote U.S. Solid Wood Exports

<u>Program</u>	<u>Activities</u>	<u>Funding</u>
Market Promotion Program <sup>a</sup>	Generic promotion of all types of solid wood products, mainly through demonstration projects illustrating the uses of products meeting U.S. specifications in typical U.S. applications, such as "2 x 4" housing. Also promotes through market studies, technical seminars and publications, and trade shows, as well as by providing information to U.S. producers on international standards and specifications.	\$30 million since its inception in 1986; \$16.3 million budgeted for 1992.
Foreign Market Development Program	Provides generic promotion through activities such as advertising in foreign industry publications, representing the U.S. industry at trade shows, and lobbying foreign agencies to accept U.S. solid wood products.	\$13.9 million since program began in 1980; \$2.8 million budgeted for 1992.
GSM-102	Provides short-term export credit guarantees for sales of forest products to foreign buyers.	\$1 billion in loan guarantees since 1983; \$123.5 million in guarantees allocated for fiscal year 1992.

<sup>a</sup>In 1990, the Market Promotion Program replaced the Targeted Export Assistance Program as part of the Food, Agriculture, Conservation, and Trade Act. The Targeted Export Assistance Program, created in 1985, promoted exports of U.S. agricultural products that had been adversely affected by unfair foreign trading practices. With the Market Promotion Program, program coverage was extended to all commodities.

#### Other Programs

Numerous other programs--sponsored by federal and state governments, the industry, or private sources--are available that promote forest products exports in various ways. Some federal agencies provide promotion assistance as part of their overall mission. For example, the Forest Service, through its Forest

Products Laboratory in Madison, Wisconsin, develops new product technology and makes the results of that research available to the forest products industry through a technology transfer program. According to program officials, oriented strand board, a type of wood-based panel used in building construction, is one product that the laboratory developed and the industry has successfully sold both in this country and abroad. Other federal programs include the Bureau of Indian Affairs' assistance to tribes seeking to sell forest products overseas, market information and assistance that the Departments of Agriculture and Commerce provided through their overseas offices, and the Small Business Administration's and the Export-Import Bank's loan guarantees.

Nonfederal sources of export assistance are also available to the forest products industry. According to a study by Virginia's Office of International Marketing, all state governments dedicate staff to agricultural export marketing activities, and nine have officials located in foreign markets for that purpose. In addition, the Forest Service's 1988 National Marketing Initiative Plan was a 1-year program with the objective of expanding trade opportunities for forest products through projects implemented by state foresters' offices. The Washington State International Trade Fair, a private, nonprofit corporation run by private and public business leaders, sponsors Washington business expansion overseas through trade exhibitions. The "Economic Services Forecast" newsletter published by the Western Wood Products Association, an industry group representing lumber producers in western states, provides information on softwood log and lumber exports.

## Section 5

---

### Scope and Methodology

---

In developing the information contained in this report, we

- spoke with officials from the Forest Service and the Foreign Agricultural Service of the U.S. Department of Agriculture; the Bureau of Land Management, the Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service of the Department of the Interior; the Department of Commerce; the Small Business Administration; state government and cooperative state/industry/academic agencies in Oregon, Virginia, and Washington; forest and agricultural economists at the University of California-Berkeley, the University of Washington, the University of Wisconsin, and the Virginia Polytechnical Institute and State University; the National Forest Products Association; Western Wood Products Association; the American Paper Institute; the Wilderness Society; and individual producers and consultants; and
- analyzed data compiled by the Forest Service, the Department of Commerce, and the Foreign Agricultural Service. In addition, we analyzed U.S. Fish and Wildlife Service data on the effects of critical habitat designation of the Northern Spotted Owl, the Bureau of Labor Statistics' industry employment data, and the Food and Agriculture Organization of the United Nations' world trade data contained in that agency's automated "AGROSTAT" data base. We used the AGROSTAT data base because it is a comprehensive, consistently compiled source of worldwide trade data. We did not independently verify the accuracy of these data sources.

Our work was performed between October 1990 and May 1992.

MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT

Resources, Community, and Economic Development Division,  
Washington, D.C.

Thomas E. Slomba, Assistant Director  
Karla Springer-Hamilton, Assignment Manager  
Timothy J. Guinane, Economist  
Henry Hoppler, Senior Evaluator  
Carol Herrnstadt Shulman, Reports Analyst

(150900)



---

### Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

U.S. General Accounting Office  
P.O. Box 6015  
Gaithersburg, MD 20877

Orders may also be placed by calling (202) 275-6241.

---

**United States  
General Accounting Office  
Washington, D.C. 20548**

**Official Business  
Penalty for Private Use \$300**

**First-Class Mail  
Postage & Fees Paid  
GAO  
Permit No. G100**

---