

Industry & Trade Summary

Lumber, Flooring,
and Siding

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PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.¹

This report on lumber covers the period 1989 through 1993 and represents one of approximately 250 to 300 individual reports to be produced in this series during the first half of the 1990's. Listed below are the individual summary reports published to date on the agriculture and forest products sector.

<i>USITC publication number</i>	<i>Publication date</i>	<i>Title</i>
2459	November 1991	Live Sheep and Meat of Sheep
2462	November 1991	Cigarettes
2477	January 1992	Dairy Products
2478	January 1992	Oilseeds
2511	March 1992	Live Swine and Fresh, Chilled, or Frozen Pork
2520	June 1992	Poultry
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2545	November 1992	Natural Sweeteners
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2612	March 1993	Wood Pulp and Waste Paper
2615	March 1993	Citrus Fruit
2625	April 1993	Live Cattle and Fresh, Chilled or Frozen Beef and Veal
2631	May 1993	Animal and Vegetable Fats and Oils
2635	May 1993	Cocoa, Chocolate, and Confectionery
2636	May 1993	Olives
2639	June 1993	Wine and Certain Fermented Beverages
2693	November 1993	Printing and Writing Paper
2726	January 1994	Furskins
2737	March 1994	Cut Flowers
2749	March 1994	Paper Boxes and Bags
2762	April 1994	Coffee and Tea
2865	April 1995	Malt Beverages
2859	May 1995	Seeds
2875	May 1995	Certain Fresh Deciduous Fruits
2898	June 1995	Certain Miscellaneous Vegetable Substances and Products
2918	August 1995	Printed Matter

¹ The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.

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INTRODUCTION

This summary covers lumber, flooring, and siding (collectively referred to throughout this report as **lumber products**). Information is provided herein on the structure of the U.S. industry and the major foreign industries, domestic and foreign tariffs, and the competitiveness of U.S. and foreign producers in both domestic and foreign markets. Information is provided for the period 1989 through 1993.

Lumber, wood flooring (hereafter referred to as flooring), and wood siding (hereafter referred to as siding) are used throughout the world, primarily in the construction of buildings. World production of lumber products in 1993 totaled about 452 million cubic meters (table 1). The United States is the world's largest producer, accounting for 24 percent of world production in 1993. The products covered in this summary are produced from both coniferous (softwood) and deciduous (hardwood) species of trees. Lumber refers to a wide variety of products, including boards, planks, timbers, and framing products. Flooring is a generally tongued and grooved¹ piece of lumber used in constructing a floor. These products are generally remanufactured² at sites separate from primary sawmills. Siding is lumber intended for use as the exterior wall covering on a house or other building. These products are generally manufactured at the same site as the primary sawmill. As described here, lumber is used primarily as a final product, and as raw material for flooring and siding.

U.S. lumber products production totaled about 45 billion board feet (about 106 million cubic meters) in 1993. U.S. imports of these products, which totaled 16 billion board feet in 1993, fluctuated during 1989-93 mainly as a result of erratic domestic supply and demand patterns during the period. Canada is the principal source of U.S. imports of lumber products, accounting for 96 percent, by volume, of total 1993 imports. The majority of these imports are of softwood lumber, used in the housing and construction industries. U.S. exports of lumber products totaled 3.4 billion board feet in 1993. Japan, Canada, Mexico, Italy, and Germany were the principal destinations. Softwood lumber dominates U.S. exports of the products covered in this summary.

The quantity of lumber products consumed in the United States has fluctuated directly with the movements of the U.S. housing and construction

¹ Wood that is machined to have a groove on one side and a protruding tongue on the other, so that pieces fit snugly together, with the tongue of one fitting into the groove of the other.

² A process of converting a common product (for instance, lumber) to a more specialized or higher grade product (flooring, for instance) by further manufacturing.

industries in recent years. During 1989-93, U.S. consumption of these products fell from 59 billion board feet in 1989 to 52 billion board feet in 1991, before turning upward and reaching 58 billion board feet in 1993.

Description

The description and definitions used in this summary are generally accepted in the lumber products industry. Many of these can be found in the standard reference *Terms of the Trade*, (Random Lengths, Eugene OR., 1993), and in the USITC Publication, *Softwood Lumber from Canada*, (investigation No. 701-TA-312), USITC Publication 2530, July 1992. Most lumber (both domestic and imported) is classified, according to the extent or stage of manufacture, as follows:

Rough lumber—lumber just as it comes from the saw, whether in its original sawed size or edged,³ resawn,⁴ crosscut,⁵ or trimmed to smaller sizes.

Dressed lumber—lumber which has been dressed⁶ or surfaced⁷ by planing on at least one edge or face.

Worked lumber—lumber which has been matched (tongue and grooved), shiplapped⁸ or patterned.⁹

Lumber is then further classified into seven major categories:

1. Studs—lumber with little or no trimming before they are set in place. They are principally used in framing building walls.
2. Dimension—lumber from 2 inches up to but not including 5 inches thick, and is 2 inches or more in width.
3. Stress grades—lumber having assigned working stress and modulus of elasticity values in accordance with accepted basic

³ The process of cutting wood products to remove wane (bark, or the lack of wood from any cause, on the edge or corner of a piece of lumber) and other defects to produce square edges.

⁴ A piece of lumber sawn along its horizontal axis.

⁵ To cut with a saw across the grain.

⁶ Lumber that has been processed through a planing machine for the purpose of attaining a smooth surface and uniformity of size on at least one side or edge.

⁷ Refers to lumber that has been dressed by a planing machine for the purpose of attaining smoothness of surface and uniformity of size. Surfacing may be done on one side or edge, or all sides.

⁸ Lumber that has been worked to make a rabbeted (a rectangular cut in which two surfaces are cut on the edge, parallel with the grain) joint on each edge so that pieces may be fitted together snugly for increased strength and stability.

⁹ Any of a number of standard shapes, molds, or configurations to which lumber is machined.

Table 1
World lumber production, by types and by major countries, 1989-93

(Thousand cubic meters)

Type and country	1989	1990	1991	1992	1993 ¹
Softwood:²					
United States	85,050	84,520	78,260	80,972	78,200
Former Soviet Union	91,800	92,000	66,300	52,000	50,000
Canada	58,000	53,702	51,037	55,512	59,000
Japan	27,098	26,421	25,075	24,423	24,500
Sweden	11,264	11,798	11,250	11,928	12,000
Germany	11,793	12,384	11,599	11,866	12,000
China	16,362	15,050	11,798	11,452	11,500
All other	77,653	77,467	72,652	72,833	78,800
Total	379,020	373,342	327,971	320,986	326,000
Hardwood:³					
United States	19,025	25,300	24,103	26,456	28,000
India	14,960	14,960	14,960	14,960	14,960
Former Soviet Union	13,000	13,000	13,000	13,000	12,000
Brazil	9,795	9,256	10,037	10,037	9,100
Malaysia	8,207	8,780	8,924	9,300	9,000
Indonesia	10,238	9,008	8,500	8,300	8,000
China	8,815	8,110	8,723	7,865	7,800
All other	44,025	43,643	40,674	38,997	37,140
Total	128,065	132,057	128,921	128,915	126,000
Total, lumber:					
United States	104,075	109,820	102,363	107,428	106,200
Former Soviet Union	104,800	105,000	79,300	65,000	62,000
Canada	59,245	54,906	52,040	56,318	59,900
Japan	30,542	29,781	28,264	27,529	28,000
China	25,177	23,160	20,521	19,317	19,300
Brazil	18,179	17,179	18,628	18,628	19,500
India	17,460	17,460	17,460	17,460	17,460
All other	147,607	148,093	138,316	138,221	139,640
Grand total	507,085	505,399	456,892	449,900	452,000

¹ Estimated by the staff of the USITC from United Nations, U.S. Department of Agriculture, Foreign Agricultural Service and individual country data.

² Coniferous.

³ Non-coniferous.

Source: Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

principles of strength grading and meeting the provisions of the American Lumber Standards for Softwood Lumber.¹⁰

4. Timbers—lumber at least 5 inches in least dimension.
5. Boards—lumber less than 2 inches in nominal thickness and 1 inch or more in width.
6. Selects—high-quality lumber graded for appearance.
7. Shop—lumber that is graded for the number and sizes of cuttings that can be used for the manufacture of other products.

Lumber is classified according to its moisture content as green or dried.¹¹ More than half the weight

¹⁰ These standards are published by the U.S. Department of Commerce in cooperation with manufacturers, distributors, and users.

¹¹ Generally, lumber with a moisture content of 19 percent or less is considered dried.

of green lumber is often moisture. Some lumber is used green (that is, Douglas-fir), because various characteristics of the wood make such use easier or more economical. However, to prevent warping, most lumber is seasoned by being dried before retail sale.

Flooring is mostly classified in Superior and Prime grades, and is produced either as vertical grain¹² or flat grain.¹³ It is further categorized into strip,¹⁴

¹² Flooring that is sawn at approximately right angles to the annual growth rings so that the rings form an angle of 45 degrees or more with the surface of the piece.

¹³ Flooring that is sawn so that the annual growth rings form an angle of less than 45 degrees or more with the surface of the piece.

¹⁴ Strip flooring is made both tongue and grooved, and square edged in random lengths, with a minimum length of 9 inches. The most common measurement for tongue and grooved is a width of 2-1/2 inches and a thickness of 3/4 inch. Square edged strips are usually 5/16 inch thick, with widths ranging from 1-1/3 to 2 inches.

plank,¹⁵ and block¹⁶ flooring. The majority of flooring is hardwood because of its wearing quality, resiliency, and natural grain. Oak (*Quercus* spp.) is abundant in the United States, and it is the predominant species used for hardwood flooring.

The three principal kinds of wood siding are bevel,¹⁷ drop,¹⁸ and vertical.¹⁹ Generally siding is classified either as select or as common, with other divisions within each of these classifications. Bevel siding is manufactured almost entirely from select grades; drop and vertical siding are manufactured from either select or common grades.

Although the *Harmonized Tariff Schedule of the United States (HTS)* uses metric units, lumber is primarily measured and sold in the North American market by the board foot, a three-dimensional unit described as—

The quantity of lumber contained in, or derived (by drying, dressing, or working, or any combination of these processes) from, a piece of rough green lumber 1 inch in thickness, 12 inches in width, and 12 inches in length, or the equivalent of such piece in other dimensions.²⁰

In addition, the *American Lumber Standards for Softwood Lumber* sets forth recommended minimum measurements for dressed lumber. Those standards for example, call for a rough 2-inch by 4-inch piece of lumber no less than a minimum of 1-1/2 inches by

3-1/2 inches when dressed. Flooring and siding are sold by the square foot, linear foot,²¹ or cubic foot.

Similar sets of standards have been established for hardwood lumber in *Rules for Measurement and Inspection of Hardwood Lumber*, published by the National Hardwood Lumber Association. Although these standards apply to much of the hardwood lumber produced in the United States, many regions of the country have their own “standards” for grading hardwood lumber.

Normally, most hardwood lumber is sold from the producing mill in rough condition, making dressed specifications somewhat less important for hardwood lumber than for softwood lumber. Much of the hardwood lumber produced is dimension stock used for furniture.

Lumber is graded at the sawmill on characteristics that affect its strength, durability, utility, or appearance. Some common defects that lower the grade are knots, splits, shake (separation of annual rings), wane (bark or lack of wood on corner or edge), and pitch pockets. Standard rules for grading lumber are published by lumber manufacturing or marketing organizations; they vary with geographic regions and species of lumber.

Uses

Softwood lumber is readily workable, has a high strength-to-weight ratio, and is moderately durable; hence, it is widely used in the construction, shipping, and manufacturing industries. In 1993, 83 percent of the U.S. consumption of softwood lumber was used in construction as shown in the tabulation on the following page.

In years of few housing starts, the share of softwood lumber consumed by new housing construction may drop somewhat, with its share accounted for by increased repair and remodeling.

Lumber of different species or from different regions is generally interchangeable. However, for some uses, a specific species is frequently preferred because of its particular characteristics—for example, redwood and western red cedar for home exterior siding, southern yellow pine (syp) for treated wood applications, white pine for moldings, and oak for flooring.²² With respect to lumber for new house framing, species preference is somewhat regional. West coast builders prefer Douglas-fir and ponderosa pine. Northeastern and Southern builders often

¹⁵ Plank flooring is similar to strip, but generally wider, with the edges sometimes beveled (1/16 inch) in addition to being tongue and grooved. Typical dimensions for plank flooring are 3/4 inch thick with a width between 3 and 8 inches.

¹⁶ Block flooring is squares of wood, each with tongues and grooves, and fitted tightly together. Sometimes these blocks are patterned with a particular design of inlaid wood; this is known as parquet flooring. Generally, each block is 9-inches by 9-inches square, with a thickness between 15/32 and 25/32 of an inch.

¹⁷ A board that has been resawn diagonally to be used to clad the exterior of a building. Bevel siding is usually 3/16 inch thick on the narrow edge, 7/16 inch on the butt edge, and 5-1/2 or 7-1/2 inches wide.

¹⁸ Drop siding, which is generally less expensive than bevel, is manufactured in a variety of patterns. However, the most common utilize the shiplap or tongue and groove joint. It is generally standardized at either 25/32 inch or 3/4 inch in thickness, and either 4, 6, or 8 inches wide.

¹⁹ Vertical siding is generally sold in one of three forms—(1) as square-edged boards to be used with battens (a narrow strip of wood used to cover the joints of boards; this pattern is referred to as board and batten, or battenboard), (2) tongue and grooved boards, or (3) shiplapped boards.

²⁰ In this report, units are generally specified in tables and tabular presentations in mbf (thousand board feet) and mmbf (million board feet).

²¹ A measurement of length, equal to the actual length of a piece of flooring or siding. Thus a piece of flooring or siding 12 feet long contains 12 linear feet. The width and thickness of the piece are not considered in this type of measurement.

²² U.S. International Trade Commission, *Softwood Lumber from Canada* (investigation no. 701-TA-312 (final)), USITC publication 2530, July 1992.

End uses	Percentage distribution of U.S. consumption				
	1989	1990	1991	1992	1993
Construction:					
New residential (new housing)	34	33	32	36	38
Repair and remodeling	31	34	33	32	31
Nonresidential	15	16	16	14	14
All other	20	18	19	18	17
Total	100	100	100	100	100

Source: Western Wood Products Association, *1993 Statistical Yearbook of the Western Lumber Industry*, p. 31.

purchase spruce-pine-fir²³ for framing and millwork, because it accepts paint and stain better and is easier to work with. Southern yellow pine is preferred for trusses and load-bearing construction because of its high-strength qualities.

U.S. INDUSTRY PROFILE

Industry Structure

The structure of the lumber products industry in the United States is illustrated in figure 1. The Standard Industrial Classification (SIC) categories for the production of these products are 2421, Sawmills and planing mills, general; and 2426, Hardwood dimension and flooring mills.

Figure 2 shows the production process for a typical sawmill. The process begins in the storage yard, where the logs are sorted by species and size prior to entering the mill. At the log deck, the bark is removed and logs are cut to appropriate lengths. The logs are then transferred to the first sawing center within the mill, the primary breakdown area, where they are sawn or chipped²⁴ into rough sizes known as cants or slabs. These primary products are then transferred to the secondary breakdown area. Here the cants and slabs are resawn into suitable thicknesses, widths, and lengths. The lumber is then sorted by thickness, width and length in preparation for drying in kilns. After drying, the lumber is planed to ensure a smooth surface. Finally, planed material is packaged into loads for shipment to wholesalers, retailers, and consumers.²⁵

²³ Species that are grouped for production and marketing because they possess similar characteristics.

²⁴ The log is passed between circular drums with raised cutting blades. The rotating drums remove nearly uniform chips and produce a roughly squared cant.

²⁵ Not all lumber is planed at the first mill. Some is sold "rough" for use in certain construction where appearance is not a driving factor and for remanufacturing—involving further processing of rough lumber to a more specialized or higher grade.

In the United States, lumber and siding is produced mainly from softwood, but flooring is predominantly from hardwood. The end-market for softwood lumber, flooring and siding is mainly construction (83 percent in 1993).²⁶

Number of Firms and Concentration

Although there are large corporations with high volumes of production, most lumber producers are small firms. In 1992, the largest producer accounted for 7 percent of total U.S. production, the 5 largest producers accounted for 21 percent, and the 20 largest firms accounted for 39 percent.²⁷ The number of establishments producing lumber during 1977-92 is shown in the following tabulation:

Year	Establishments
1977	8,344
1982	7,105
1987	6,569
1992	6,883

Source: U.S. Department of Commerce, *Census of Manufactures*, 1992.

The number of mills declined by over 20 percent during the period 1977-87, but increased between 1987 and 1992 in response to increased construction activity and increased production in the Southern region of the United States. The overall decline in the number of mills since 1977 is attributable in large part to the concentration of production in larger more efficient mills.

²⁶ Western Wood Products Association, *1993 Statistical Yearbook of the Western Lumber Industry*, p. 31.

²⁷ Forest Industries, 1993-94 North American Factbook, (San Francisco: Miller Freeman Inc., 1993).

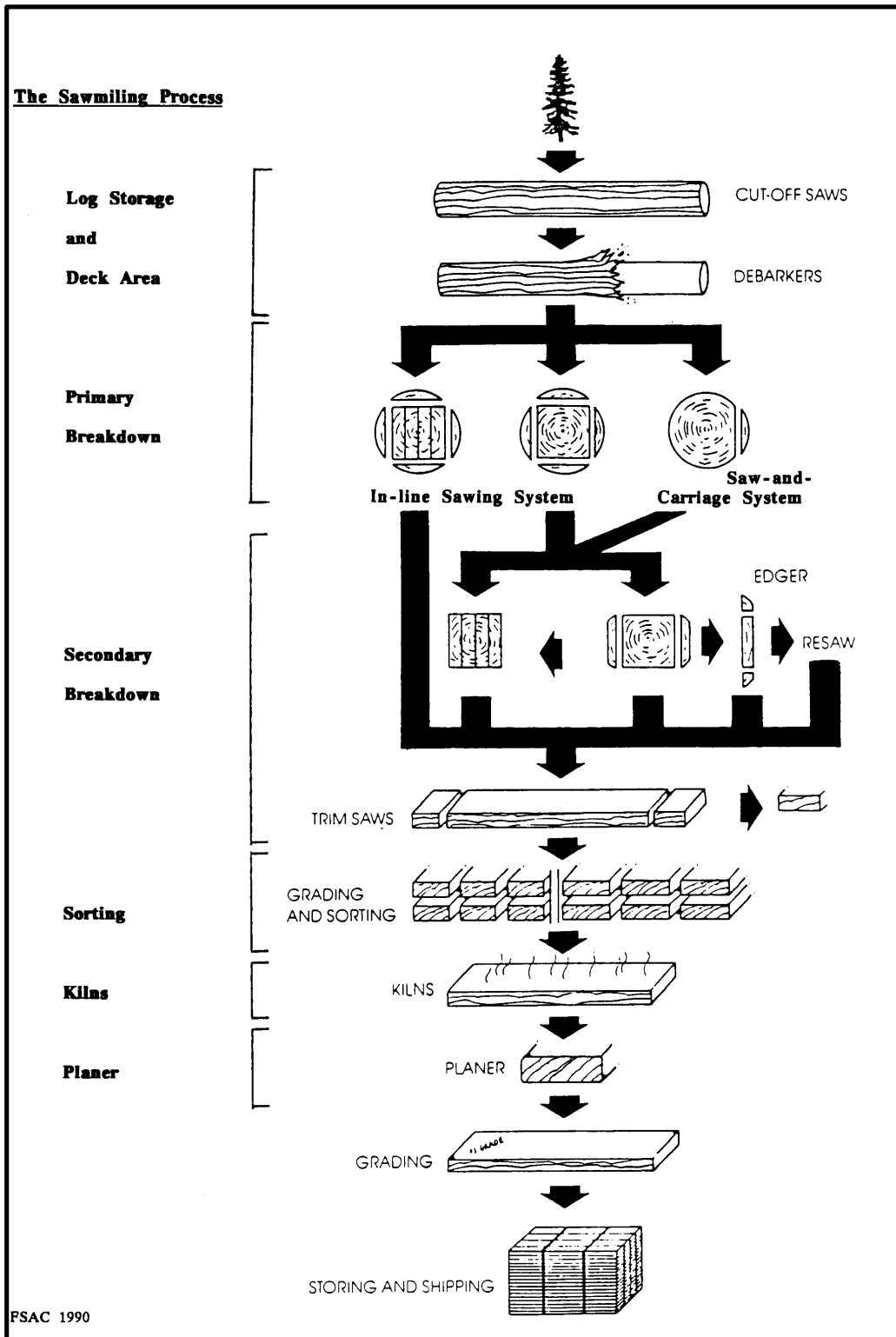
Figure 1
U.S. lumber, flooring, and siding industry: Principal raw materials, producer types, major products, and principal consumers

U.S. lumber, flooring, and siding industry			
Principal raw materials	Producer types	Major products	Principal consumers
<ul style="list-style-type: none"> • Logs • Lumber 	<ul style="list-style-type: none"> • Sawmills • Planing mills • Remanufacturers¹ 	<ul style="list-style-type: none"> • Lumber • Flooring • Siding 	<ul style="list-style-type: none"> • Wholesalers/distribution centers • Retailers • Construction Housing Commercial

¹ A mill that converts a common product (e.g., lumber) to a more specialized (e.g., flooring) or higher value (e.g., shop lumber) product by further manufacturing.

Source: Prepared by the staff of USITC, based on information supplied by the Western Wood Products Association.

Figure 2
The sawmilling process



Source: The Forest Sector Advisory Council. Reprinted with permission.

Employment

During 1987-92, total employment in the U.S. lumber products industry declined irregularly from 178,000 to about 167,000, or by 6 percent (see the following tabulation):²⁸

Year	All employees	Production workers
1987	178,000	155,300
1988	180,900	156,900
1989	172,900	151,500
1990	168,200	150,500
1991	155,600	139,000
1992	167,000	143,000

Source: U.S. Department of Commerce, *Census of Manufactures*, 1992.

Production worker employment fell by 8 percent during this same period. These declines resulted mainly from decreased construction activity and the related economic impact on the lumber products industry. The majority of these production workers are employed in softwood lumber manufacturing.²⁹ Hardwood products are much more specialized and are produced in mills with far fewer workers and yearly output. The following tabulation shows the employment of production workers in each of the sawmill and hardwood dimension sectors during 1989-92:

Sector	1989	1990	1991	1992
	Thousands			
Sawmills and planing mills	125.5	124.5	116.1	118.3
Hardwood dimension and flooring	26.0	26.0	22.9	24.7

Source: U.S. Department of Commerce, *Census of Manufactures*, 1992.

Geographic Distribution

Producing mills are found throughout the United States, although most production is in the West and the South. The distribution of mills in 1992, by regions and selected States, is shown in the following tabulation:³⁰

²⁸ Included in SIC category 2421.

²⁹ U.S. Department of Commerce, *1992 Census of Manufactures, Logging, Sawmills and Planing Mills (Preliminary)*, Aug. 1994.

³⁰ Estimated from *Annual Lumber Review and Buyers Guide*, Forest Industries, Miller Freeman Publications,

Region and State	Establishments
North ¹	1,750
Maine	200
South ²	3,800
North Carolina and South Carolina	1,000
Georgia, Alabama, and Mississippi	1,800
Texas and Arkansas	270
West ³	1,520
Oregon	480
California	300
Washington	270
Idaho and Montana	280

¹ Connecticut, Illinois, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, Wisconsin, and Vermont.

² Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

³ Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, South Dakota, Utah, Washington, and Wyoming.

U.S. production of softwood lumber is concentrated in the West, where the remaining old-growth and large tracts of high-quality timber are, and in the South, where there are extensive tree plantations of merchantable southern yellow pine. These regions accounted for 51 percent and 44 percent, respectively, of U.S. softwood lumber production in 1993. The highest concentrations of large mills are also in these regions; in 1993, about 300 mills each produced 25 million board feet or more in the West, as did 175 mills in the South, compared with 14 mills in the North. Hardwood lumber, flooring and siding production is concentrated east of the Mississippi River. In 1993, the South accounted for 57 percent, and the North 37 percent of such production. Figure 3 shows U.S. softwood and hardwood lumber production by region for 1993.

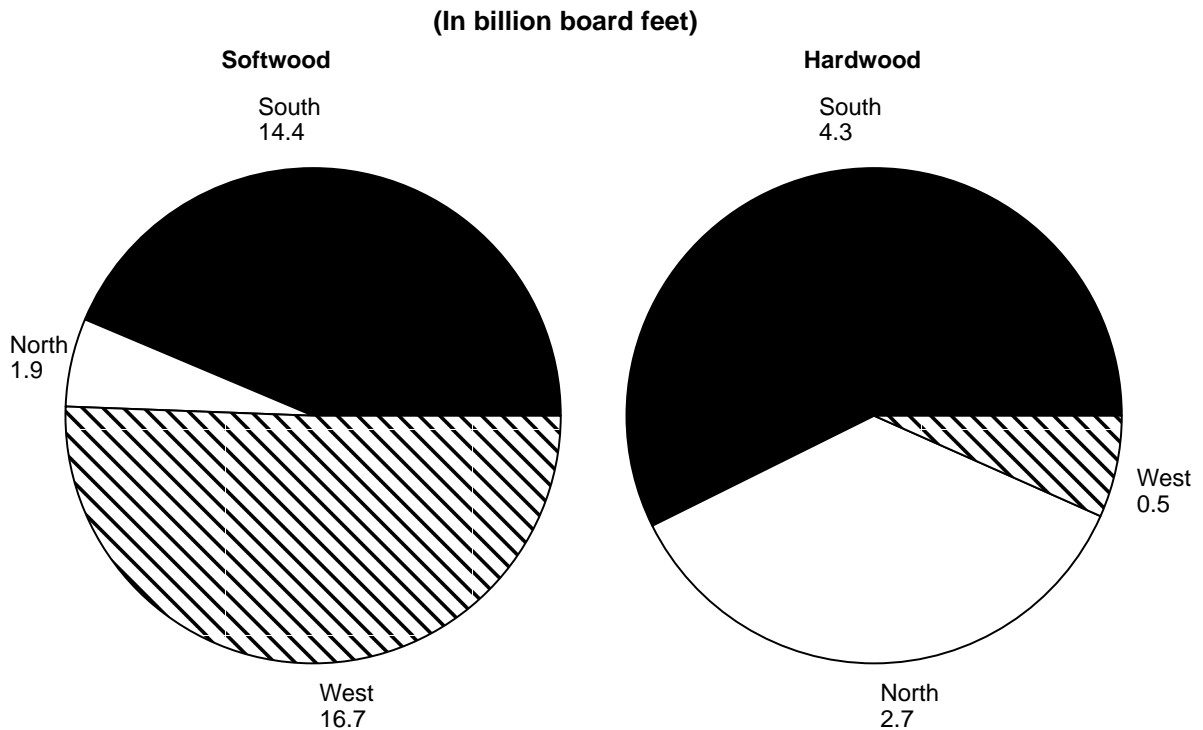
Labor Skill Levels and Productivity

Labor required to produce lumber products ranges widely from unskilled to skilled. Many older, smaller mills, continue to rely heavily on unskilled hand labor. In the tabulation on the following page, value added per hour by production workers in the sawmill and hardwood dimension industry is compared with selected other industries as an indication of productivity.

³⁰—Continued

San Francisco, July 1993, and annual mill counts for the Western Wood Products Association (WWPA) and Southern Forest Products Association (SFPA).

Figure 3
Lumber: U.S. production by region, 1993



Source: Compiled from official statistics of the U.S. Department of Commerce.

	Man hours worked	Value added	Value added per hour worked
	(Million)	(Million dollars)	
Logging	131.4	5,113.4	\$38.91
Sawmills	249.6	7,795.2	31.23
Hardwood dimension . . .	49.9	994.3	19.93
Softwood plywood	28.1	2,176.4	34.22

Source: U.S. Department of Commerce, *1992 Census of Manufactures, Logging, Sawmills and Planing Mills (Preliminary)*, Aug. 1994.

The average value added per hour for lumber products industry (sawmills) is lower than that of other wood products processing industries. In fact, the sawmills and hardwood dimension sectors add less value than firms in the logging sector, which, despite trends toward more mechanization, continue to send many loggers into the woods with chainsaws. The low value-added in the hardwood dimension industry

reflects the small size of these producers, and labor intensity of their operations.

Vertical and Horizontal Integration

The degree of vertical and horizontal integration of firms in the U.S. lumber products industry varies considerably by firm, region, and product focus. In general, the degree of vertical integration in the industry is low, as most producers of lumber products purchase raw materials (for instance, timber, lumber) from sources outside their operations and market their finished products through intermediaries.³¹ This is particularly true for softwood lumber producers in the Pacific Northwest. Hardwood lumber producers, particularly in the eastern portion of the United States, rely more on privately owned timber for raw material supplies than their counterparts in the West who buy

³¹ Approximately 10 percent of the consumed timber comes from land owned by the forest industry. The majority of this timber is controlled by enterprises that are also large paper manufacturers.

timber from government owned lands.³² Most larger firms are horizontally integrated and produce a wide variety of forest products, including lumber products, plywood, and paper. Smaller mills generally produce a narrower range of products, and some, only a single product.

Integration With Foreign Suppliers and Foreign Investment

Firms are both privately held and publicly traded, and are generally U.S. owned, although there is some ownership by Canadian firms. In addition, some U.S. producers are also major producers in Canada and Southeast Asia.³³ U.S. producers of lumber products are closely linked with Canadian producers in supplying the North American market; more than one-quarter of U.S. consumption is produced in Canada.

Marketing Methods and Channels of Distribution

Lumber products producers distribute through a variety of market channels. A number of factors such as market location, transportation costs, and general building practices and preferences can play a role in the particular market channel used. In general, the more specialized the product, the fewer the levels in the distribution chain. On the other hand, commodity-oriented products such as spruce-pine-fir dimension lumber and boards tend to have longer channels of distribution. Producers distribute through a variety of marketing channels: direct sales to manufacturers, direct sales to retailers, sales through stocking wholesalers, sales through brokers or office wholesalers, sales to buying groups, and sales through wholly owned distributors. A description of these market channels follows:

Sales direct to manufacturers—These are generally industrial account sales to manufacturer customers who produce products such as pallets, crates, furniture and manufactured housing. They generally buy in large volume and thus can take advantage of the efficiencies of buying mill direct.

Sales direct to retailers—This channel is used by mills of all sizes. Small mills typically stock local retail lumber yards in this manner. Similarly, large producers can ship directly to large buyers such as home center and building

supply chains. These same mills may also sell a portion of their lumber through wholesalers.

Sales through stocking wholesalers—In this instance, mills will sell to wholesalers who actually take title and possession of the lumber, and resell to small retailers and builders.

Sales through brokers or office wholesalers—In this case, the mills sell to brokers or office wholesalers who operate strictly as intermediaries between the mill and the buyer. They arrange “back-to-back” sales, which are also done occasionally by stocking wholesalers, whereby the lumber is shipped directly from the producer to the customer. The broker/wholesaler takes possession on paper, but does not take physical possession.

Sales to buying groups—Buying groups are similar to wholesalers except that their customers are actually part owners, somewhat in the sense of a co-operative. Buying groups often purchase a full range of construction material products for their owners, running the gamut from wood products to plumbing supplies. Other buying groups deal only in the buying and selling of wood products. While buying groups do not buy as much lumber as mainstream lumber wholesalers, their volume is significant in the industry.

Sales through wholly owned distribution systems—A number of the integrated forest products manufacturers operate their own distribution systems. These systems operate in two ways: Some sell only their own products; others sell products of other producers as well.

Pricing Practices

Producers and importers normally sell the majority of their lumber products in the U.S. market on a spot basis. Contract sales usually account for only 1 to 5 percent of total sales. U.S. producers quote prices on both a delivered and an f.o.b. mill basis, with neither type of sales arrangement predominant. A large number of domestic producers often respond to customer specifications at the time of the order and will sell in whatever manner the purchaser requests. Importers also sell on both a delivered and an f.o.b. basis, but most are on a delivered sales basis.³⁴

Over the longer term, lumber product prices tend to rise and fall with the level of new construction activity. Prices are affected by seasonal factors, tending to rise in the spring when the overall level of construction increases due to the resumption of construction in cold climate areas. During a period of rapid growth in

³² U.S. Department of Agriculture, Forest Service, *Forest Resources of the United States, 1992*, General Technical Report RM-234, (Ft. Collins, CO, 1994).

³³ Forest Industries, *North American Factbook, 1993-94*, (San Francisco, Miller Freeman Inc., 1993).

³⁴ USITC, *Softwood Lumber from Canada*, USITC publication 2530, p. A-73.

housing starts, prices can surge by 20-30 percent in a few months, and can fluctuate considerably even from day to day. Other factors such as transportation disruptions can lead to short term price surges. Access to timber supplies, competition among different species within a particular region, and weather in the cutting/milling areas also affect prices.³⁵ Domestic mills and importers most often negotiate selling prices with customers based on these factors, as well as on published prices³⁶ and inventories, the size of a particular order, and demand in export markets. Prices also differ substantially depending on the species, grades and dimensions, and final consumer.

Government Programs and Policies

The forestry and the forest products industry is affected by a number of Federal and State programs and policies. These include policies regarding the sale of standing timber on public lands, tax policies (including depletion allowances for timber cutting and local property taxes based on land use), trade promotion programs, and environmental policies.³⁷

The most important of these programs and policies to the lumber products industry is Federal and State policies regarding the sale of standing timber. The U.S. Government and State governments control significant acreage of timberland from which they offer standing timber for sale (stumpage). The principal Federal Government land-administering and timber selling agencies are the U.S. Department of Agriculture (USDA) Forest Service, and the Department of Interior's Bureau of Land Management. The acreage administered in 1992 by these and other Government entities and agencies are shown in the following table:

Agency	Timberland (thousand acres)
Forest Service	84,661
Bureau of Land Management	5,754
Other federal agencies	6,239
State Governments	27,356
Counties and municipalities	7,484
Total	131,494

Source: U.S. Department of Agriculture, Forest Service, *Forest Resources of the United States, 1992, General Technical Report RM-234*, (Ft. Collins, CO, 1994).

³⁵ Ibid., p. A-86.

³⁶ Such prices are published weekly, monthly, quarterly, and annually in such publications as *Random Lengths*, *Crow's*, *Madison's*, and *Hardwood Market Report*. These publications publish price reports for a wide range of forest products in the North American and off-shore markets. Prices are gathered through weekly pricing surveys with buyers and sellers throughout the United States.

³⁷ See Special Factors Affecting the Industry.

The above acreage represents about 27 percent of all timberland in the United States. In the Western States, where about 61 percent of the forest acreage is on public land, timber from public lands has historically accounted for a significant percentage of the timber processed by the forest products industry. Many mills in the West are entirely dependent on timber cut on public lands.

Since 1990, Federal law has restricted the export of unprocessed timber from Federal and State lands west of the 100th meridian (State lands in Alaska are exempted).³⁸ For a period of years prior to 1990, exports of logs from Federal lands were subject to a quota.

Federal and many State Governments have a variety of programs to promote the export of processed wood products. These include trade information programs, financial grants for trade promotion, low interest loans and loan guarantees, assistance in finding overseas markets, and assistance in identifying potential overseas buyers.

Special Factors Affecting the Industry

Transportation costs

Transportation costs account for a significant percentage of the final delivered price of lumber products. It is estimated that transportation costs account for between 5 and 20 percent of the total delivered cost. Shipments are made predominantly by truck and rail, and in a few limited instances, by barge. The mode of transportation usually depends on the distance between the distribution center of the mill or the importer and the site of purchaser; shipments over longer distances are often made by rail, but shipments over shorter distances are more commonly made by truck. Most producers and importers reported that the majority of sales are to customers more than 100 miles from their mills or storage facilities, and a substantial proportion of these sales are to customers more than 500 miles away.³⁹

³⁸ Federal Forest Resource Conservation and Shortage Relief Act of 1990, 16 U.S.C. 620. Forests west of the 100th meridian are in the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, South Dakota, Utah, Washington, and Wyoming.

³⁹ USITC, *Softwood Lumber from Canada*, USITC publication 2530, p. A-76. The USITC staff estimated that freight charges not differentiating by the mode of shipment, ranged from \$5 to \$20 per mbf for shipments within a 100-mile radius, \$15 to \$35 per mbf for shipments within a 100-500 mile radius, and \$30 to \$100 per mbf for shipments farther than 500 miles from a supplier's mill or storage facility.

Environmental concerns

Laws and regulations aimed at protecting endangered species have in some instances curtailed logging on Federal and State lands and generally restricted the supply of logs for lumber products. The most significant curtailment in logging has been on public lands in the western United States.

In 1990, the U.S. Fish and Wildlife Service listed the northern spotted owl, which inhabits the forests of Washington, Oregon and California, as a threatened species entitled to the full protection of the Endangered Species Act.⁴⁰ In 1991, an injunction was issued against all national forest timber sales in Western Oregon and Washington until the USDA Forest Service adopted a scientifically credible plan for protecting the owl. The injunction, issued by the U.S. District Court of Seattle, temporarily halted logging on 66,000 acres of Federal lands in the three States.⁴¹ The injunction significantly reduced the volume of timber available to western mills. Although the injunction was lifted in the summer of 1994, government timber sales have fallen greatly,⁴² and are not expected to approach former levels.⁴³ To a lesser extent, regulations to protect other endangered species, such as the red cockaded woodpecker in the Southeast, have also halted logging on some lands.

Consumer Characteristics and Other Factors Affecting Demand

Consumer characteristics

Consumers of lumber products include manufacturers, builders, and individuals. The primary end use of lumber products is home construction, and the major consumers are construction firms and home builders. These firms are found in all regions of the country, but they are concentrated where population is dense. Manufacturers also purchase lumber from each other. Flooring and siding manufacturers purchase lumber products for further processing, and manufacturers of furniture, containers, and truck and railcars also consume lumber to make their products. In addition, as many individual consumers purchase lumber products for home improvement and workshop (craft) projects as there are builders or manufacturers. Purchases by these consumers, although significant, are small when compared with the builders or manufacturer's purchases.⁴⁴

⁴⁰ 55 F.R. 26114-26194, June 26, 1990.

⁴¹ Forest Industries, *Judge Halts NW Timber Sales*, (San Francisco: Miller Freeman, Inc., July/Aug. 1991).

⁴² Western Wood Products Association, *Western Timber Facts*, (Portland, OR, June 1995).

⁴³ United States Department of Agriculture, Forest Service, *The 1993 RPA Timber Assessment Update*, General Technical Report RM-GTR-259, (Ft. Collins, CO, 1995).

⁴⁴ USITC, *Softwood Lumber from Canada*, pp. A73-A75.

Factors affecting demand

The demand for lumber products is related to the level of construction activity and particularly to the level of new home starts. Construction activity in turn fluctuates with the factors relating to the overall strength of the economy (for example, interest rates, personal income, and saving). When new home construction declines, repair and remodeling of existing structures tend to increase, offsetting some of the decline.

Domestic mills and importers generally concentrate their sales within certain regions of the United States (for example, the Northeast, Southeast, or Upper Midwest), or within certain market areas or local markets (for example, New York/New Jersey, or Houston, TX). The market area of a domestic mill or an importer is determined primarily by the mill location or the distribution center and the freight charges of delivering to a particular customer's facility. Consumer preferences for particular species and the level of competition from other species within certain regions can also define a supplier's market area.⁴⁵

Other products such as concrete, steel, aluminum, vinyl, composite materials, laminated veneer lumber products, and plastic can be substituted for lumber products in certain applications. However, some of these products, such as concrete and steel, are not commonly substituted for lumber products in residential construction, primarily because of the higher material and labor costs associated with their installation. Vinyl and aluminum are very competitive in residential siding applications, and steel and aluminum are increasingly being used in commercial construction because of their strength and because they meet fire code requirements.

FOREIGN INDUSTRY PROFILE

Although lumber products are manufactured throughout the world, production is especially concentrated in countries that enjoy a plentiful and economical source of timber (such as Russia, Canada, and the United States). It is estimated that more than 200 billion board feet of lumber products were produced annually worldwide during the years 1988-92.⁴⁶ Of this production, about two-thirds was from softwood species. North America⁴⁷ was the principal producing area in 1992, followed by Asia,⁴⁸

⁴⁵ Ibid.

⁴⁶ Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

⁴⁷ As used here, "North America" consists of the United States, Canada, and Mexico.

⁴⁸ As used here, "Asia" does not include the Asian areas of the former Soviet Union.

Europe, and the former Soviet Union, as shown in the following tabulation:

Area	Percent of world production		
	Total	Softwood	Hardwood
North America	37	43	22
Asia	22	14	40
Europe	18	20	12
Russia	14	16	10
South America	6	4	11
All other	3	3	5
Total	100	100	100

Source: Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

As indicated above, in 1992, North America was the leading producer of all lumber products; North America was the leading producer of softwood lumber, and was the second-leading producer of hardwood lumber. The United States accounted for nearly 65 percent of the North American production, Canada about 34 percent, and Mexico the remainder. Asia accounted for less than one-quarter of world production, with Japan, China, India, Malaysia, Indonesia, and Turkey accounting for 90 percent of the Asian share of production. Germany, Sweden, France, Austria, and Finland accounted for almost two-thirds of Europe's production. Until 1991, the former Soviet Union ranked third in production ahead of all of Europe. However, disruptions in the lumber products industry resulting from conversion to a market economy led to declines in production of 24 and 18 percent in 1991 and 1992, respectively. World production is shown in Table 1.

Canada

Canada is the third-largest producer of lumber products, after the United States and Russia, and has the second-largest forest area in the temperate zone. Softwood lumber production accounted for 98 percent of all Canadian lumber product production during the years 1989-93. Canadian lumber production in million board feet, by selected Provinces and regions for 1992 and 1993, is shown in the following tabulation:

Region/Province	1992		1993	
	Hardwood	Softwood	Hardwood	Softwood
British Columbia	12	14,139	3	14,380
Plains Provinces	1	2,117	1	2,200
Quebec	218	4,127	256	4,856
Ontario	212	1,852	187	2,265
Maritime Provinces	25	895	29	1,152
Total	467	23,130	476	24,852

Source: Statistics Canada.

The Province of British Columbia is the leading lumber products producer in Canada. In 1993, it accounted for 57 percent of total production, down from 60 percent in 1992. Quebec and Ontario together accounted for 30 percent of production in 1993, up slightly from a 27-percent share in 1992. About three-fourths of Canadian production was spruce-pine-fir, with hem-fir,⁴⁹ western red cedar, and Douglas-fir comprising the bulk of the remaining production. Spruce-pine-fir is produced in all the regions shown, while the latter three lumber types are produced in British Columbia.⁵⁰

Canada is the world's leading exporter of lumber products. Each year about 70 percent of Canada's production is exported, and over 80 percent of that is shipped to the United States.⁵¹ The tabulation on the next page shows Canada's production and exports to the United States in million board feet.

Because much of Canadian lumber production is exported to the United States, production is strongly influenced by U.S. market fluctuations. During the years 1989-91, Canadian production fell by 14 percent as U.S. housing starts fell 26 percent and the value of new construction (constant dollars) dropped by 12 percent. By 1993, Canadian production had recovered to 1989 levels, closely following a rebound in U.S. construction activity.

In 1987, Canadian exports to the United States were at a record 14.6 billion board feet, but dropped each year thereafter to 11.7 billion board feet in 1991. In 1992, and again in 1993, exports to the United States increased 14 percent.

Canada's other important export markets are Japan and the United Kingdom. Together these two countries accounted for 17 and 14 percent of Canada's exports in 1992 and 1993, respectively.⁵²

⁴⁹ A species combination used by grading agencies to designate any of various species having common characteristics. Included in this group are western hemlock, California red fir, grand fir, noble fir, Pacific silver fir, Shasta fir, and white fir.

⁵⁰ Statistics Canada, *Production, Shipments and Stocks on Hand of Sawmills, East of the Rockies*, and *British Columbia*, December 1993.

⁵¹ Statistics Canada, *Exports by Commodity*, December 1993.

⁵² *Ibid.*

Year	Production	Exports to the United States	As a share of U.S. consumption (Percent)
1989	25,184	14,156	24
1990	22,950	12,168	22
1991	21,612	11,721	23
1992	23,597	13,375	24
1993	25,327	15,211	26

Source: Statistics Canada.

Former Soviet Union

Nearly 22 percent of the world's forests are in the former Soviet Union. Russia ranks second after the United States in timber harvested, and production of lumber products. Belarus and Ukraine are the only other former Soviet Union republics other than Russia with any appreciable forest resource. Together they accounted for 2 percent of the former Soviet Union forest area. Production and export data for the lumber products industry in the former Soviet Union are shown in the following tabulation (million board feet):

Year	Production	Exports
1989	44,407	3,085
1990	44,941	2,640
1991	33,602	2,250
1992	27,542	1,321

Source: Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

The decline in the production of the former Soviet Union is due in part to disruptions attributable to the redirection of the industry toward a market economy, and the lack of capital to maintain and modernize production. Timber supplies that are sufficient to meet domestic need and export demand are becoming less accessible as timber near the sawmills is cut. Capital is scarce to build new mills near the timber supply or to develop the transportation systems to bring the timber to mill. Demand for timber is high, driven by the need for housing, but the lack of funds for housing and commercial construction and the lack of capital improvement in processing will likely keep timber production near the 1992 level for several years.⁵³

Between 1986 and 1989, exports of lumber products of the former Soviet Union were second only to those of Canada. Former Soviet Union export volume fell to third place in 1990, slightly behind that of Sweden. By 1992, the volume exported was one-half of that of 1989. Most former Soviet Union

⁵³ U.S. Department of Agriculture, Foreign Agricultural Service, *Annual Report RS4056*, Aug. 24, 1994.

exports went to former satellite countries and Western Europe. Softwood lumber makes up about 80 percent of production and 98 percent of exports. Imports are small, less than 1 percent of consumption.

In 1987 and again in early 1991, the Soviet Council of Ministers called for measures to deal with falling output in the public sectors. These decrees provide for the establishment of joint ventures to carry out productive, scientific and technical, and economic activities in industry, agriculture, construction, and other areas of the national economy.⁵⁴ The Council encouraged foreign joint ventures and privatization. A number of joint ventures in the forestry sector have already been established between privately owned Russian firms and Japanese, Austrian, and Finnish firms. In the developing market environment of Russia, these ventures present considerable risk. Because it lacks processing facilities in some timber rich regions, Russia has also entered into barter and other arrangements to export logs in return for capital equipment. Japanese companies have made such arrangements for many years, importing logs from the Russian far east. Companies from the United States⁵⁵ and Canada are currently pursuing such ventures.

Asia

Asia as a world region ranks second in all production of lumber products after North America, and is the leading producer of hardwood lumber. Japan and China with large domestic markets are the top producers and consumers in the region. Malaysia and Indonesia, with large tropical forest resources, are important producers and exporters of hardwood lumber and other hardwood products. These four countries account for two-thirds of Asia's production.

Japan

Japan is the largest producer of lumber products in Asia, and fourth largest in the world. Although the forest area has remained stable over the past 30 years,

⁵⁴ Food and Agriculture Organization of the United Nations, *International Journal of Forestry and Forest Industries*, volume 42, No. 165, 1991/92.

⁵⁵ The Oregonian, *Sawmills hope to log in Russia*, Sept. 28, 1994.

output from these lands has increased as plantation forests have reached maturity. Japanese lumber product enterprises are small and generally operate under consignment from forest owners. More than 70 percent of lumber products consumed in Japan are produced domestically.⁵⁶ Japan's forests provide about 40 percent of the timber processed by the lumber products industry; the remaining timber processed is imported. Japan is the world's largest importer of logs. Softwood logs are imported mostly from the United States and Russia (55 and 22 percent, respectively, in 1992). New Zealand, Chile, and Canada provide most of the remainder. Malaysia supplies about 85 percent of Japan's hardwood log imports, and Papua New Guinea nearly 10 percent.⁵⁷

As in the United States, Japan's lumber product demand is highly dependent on home construction. The level of housing construction in Japan has taken swings similar to those in the United States, hitting a recent low in 1991 and then gradually recovering. Japan's lumber product production and housing starts are shown in the tabulation at the bottom of the page.

Softwood lumber production, the largest segment of this industry, exceeds hardwood lumber production by a ratio of eight to one. In the last 3 years, production of softwood lumber has fallen by 5 percent, reflecting the declining availability of domestic logs. Japan has expanded its imports of softwood logs from Russia and other countries to supplement the loss of such products from the United States and its own forests. Log imports from Russia increased 27 percent since 1991, and log imports from Chile doubled since 1989.⁵⁸

China

China is estimated by the Food and Agriculture Organization of the United Nations (FAO) to be the

⁵⁶ U.S. Department of Commerce, *The Japanese Solid Wood Products Market, Profile and Outlook*, Apr. 1989.

⁵⁷ Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

⁵⁸ Japan Lumber Journal, Oct. 20, 1994.

⁵⁹ Since there is some question about the actual production levels of forest products in China, data are not reported as official. United Nations data show China's lumber production to rank just behind Japan's while USDA Foreign Agricultural Service data show China's production to be twice that of Japan's.

world's fifth-largest producer of lumber products.⁵⁹ China's forest resources are large, but insufficient to supply the country's huge domestic demand for lumber products. China imports large quantities of wood. Most of these imports are logs for processing into lumber products, and China's sources for these logs are generally the same as Japan's.

China's wood imports are controlled by regional and central government purchasing organizations, and are heavily influenced by central planning. The major use of lumber products is in the construction industry, although lumber use is generally limited to doorways, windows, and scaffolding. Recent government-ordered cutbacks in construction,⁶⁰ have led to declines in production, log and lumber product imports, and domestic consumption. Between 1989 and 1993, lumber production and consumption each declined 23 percent. In 1992, China's log imports amounted to the equivalent of 1 billion board feet or about one-eighth of its lumber production. In 1993, imports declined to a little over 800 million board feet.⁶¹

Europe

As a whole, Europe is the third-largest producing region of lumber products. Germany, Sweden, France, Austria, and Finland are the leading producers of these products in this area.⁶² These countries have well established enterprises. Production has been fairly stable during the past few years and is expected to remain so in the near future.

Other World Producers

In South America, Brazil is by far the leading producer of lumber products, with Chile a distant second. The huge Amazon forest provides Brazil with sufficient volume to meet all its domestic requirements.⁶³ Much of the wood in this forest is inaccessible or of species not currently utilized in commercial applications.⁶⁴ Mahogany, which is used

⁶⁰ USDA, Foreign Agricultural Service, *Wood Products Trade and Foreign Markets*, Nov. 1993.

⁶¹ Ibid.

⁶² Food and Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

⁶³ U.S. Department of Agriculture, Foreign Agricultural Service, *Annual Report BR4637*, Oct. 15, 1994.

⁶⁴ Ibid.

Year	Production (<i>mmbf</i>)	Housing starts	
		Total	Wood homes <i>Hundreds</i>
1989	12,942	1,663	720
1990	12,619	1,707	728
1991	11,976	1,370	641
1992	11,665	1,403	671
1993	11,500	1,485	697

Source: Japan Lumber Journal, Oct. 31, 1994, and Food Agriculture Organization of the United Nations, *Yearbook, Forest Products*, 1992.

worldwide in furniture manufacture, is the principal species exported. Chile produces and exports softwood lumber harvested from plantations of radiata pine. In recent years, Chile has become an important residual supplier of softwood lumber demand in Japan and Europe.

U.S. TRADE MEASURES

Tariff and Nontariff Measures

The products covered in this summary are classified in the *HTS*, as follows: lumber (4407.10.00-4407.99.00, inclusive), flooring (4409.10.20 and 4409.20.25), siding (4409.10.10 and 4409.20.10), and other lumber products not elsewhere classified (4409.10.90 and 4409.20.90).⁶⁵ As described by the *HTS*, lumber is “Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or finger-jointed, of a thickness exceeding 6 mm.” Flooring, siding, and other lumber, not elsewhere classified, are described as “Wood (including strips and friezes for parquet flooring not assembled) continuously shaped (tongued, grooved, rebated, chamfered, V-jointed, beaded, molded, rounded or the like) along any of its edges or faces, whether or not planed, sanded or finger-jointed.”

Table 2 provides the import classifications for imports of lumber products in the *HTS* as well as the value of 1993 imports and exports. With the exception of softwood flooring, which has a duty rate of 3.2 percent ad valorem, all of the goods covered in this summary have rates of duty of “free” in the column 1-general (most-favored-nation) listing. Approximately 99 percent of lumber products enter the United States unconditionally free of duty. The U.S.-Canada Free-Trade Agreement (CFTA) had essentially no duty impact related to such imports. Rates of duty for most lumber products entered under column 2 (listed in general note 3(b) of the *HTS*)⁶⁶ range from 2.2¢ per square meter to \$1.70 per cubic meter; softwood flooring enters at 33.3 percent ad valorem, and hardwood flooring enters at 8 percent ad valorem. The amount of lumber products imported at the column 2 rates is negligible. Most lumber products entering the United States are subject to inspection for wood-boring insects; such insects have not been found in most products for which entry has been sought. U.S. lumber

⁶⁵ Prior to implementation of the *HTS* in 1989, imports of lumber, flooring, and siding were classified under *Tariff Schedules of the United States Annotated* as follows: lumber—202.03-202.46 (inclusive); flooring—202.56-202.60 (inclusive); siding—202.47-202.50 (inclusive); and other lumber not elsewhere classified—202.52-202.54 (inclusive).

⁶⁶ These are shown in app. A.

product imports are not subject to quotas, embargoes, or other nontariff measures.

U.S. Government Trade-Related Investigations

In July 1992 the Commission made an affirmative final determination in an investigation under the U.S. countervailing duty laws with respect to imports of softwood lumber from Canada, following notification from the U.S. Department of Commerce that it had found that such imports were subsidized.^{67 68} Commerce subsequently issued a countervailing duty order, imposing a countervailing duty of 6.51 percent ad valorem.⁶⁹ Separate Binational Panels were convened pursuant to article 1904 of the U.S.-CFTA to review the Commission and Commerce final determinations.

The panel reviewing the Commerce determination issued two decisions remanding Commerce’s determination for further analysis and explanation. Following the second panel decision, Commerce issued a negative determination,⁷⁰ that was affirmed by the panel. The panel’s decisions were subsequently the subject of an Extraordinary Challenge proceeding under the FTA. The Extraordinary Challenge Committee affirmed the panel decisions in August of 1994. Thereafter, counsel on behalf of U.S. lumber producers filed suit in the United States Court of Appeals for the District of Columbia Circuit, challenging the constitutionality of the Binational Panel review process established under the CFTA. The suit was withdrawn in December 1994 after the U.S. and Canada established a consultative process on softwood lumber. The announced purpose of the consultative process, “is to establish an ongoing dialogue to create better understanding, to resolve problems, and to try to avoid the need for future trade measures.”⁷¹

The panel reviewing the Commission determination issued three decisions remanding the determination for further analysis and explanation. The Commission issued two remand determinations, finding material injury to the domestic industry by

⁶⁷ USITC, *Softwood Lumber From Canada*, investigation No. 701-TA-312 (Final), USITC publication 2530 (July 1992).

⁶⁸ The investigation of softwood lumber imports from Canada was self-initiated by Commerce on Oct. 31, 1991. 56 F.R. 56055. Self-initiation followed the termination by Canada of the Memorandum of Understanding, signed Dec. 30, 1986, between Canada and the United States in settlement of an earlier countervailing duty investigation of softwood lumber imports.

⁶⁹ 57 F.R. 22570-22624, May 28, 1992.

⁷⁰ 59 F.R. 42029, Aug. 16, 1994.

⁷¹ Office of the United States Trade Representative Executive Office of the President, Press release 94-69, (Washington, DC, Dec. 15, 1994).

Table 2

Lumber, Flooring, and Siding: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1994; U.S. exports, 1993; and U.S. imports, 1993

HTS subheading	Brief description	Col. 1 rate of duty As of Jan. 1, 1994		U.S. exports, 1993	U.S. imports, 1993
		General	Special ¹		
<i>Thousand dollars</i>					
4407.10.00	Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or finger-jointed, of a thickness exceeding 6mm: Coniferous	Free		1,392,552	4,808,129
4407.21.00	Of the following tropical hardwoods: Dark Red Meranti, Light Red Meranti, Meranti Bakau, White Lauan, White Meranti, White Seraya, Yellow Meranti, Alan, Keruing, Ramin, Kapur, Teak, Jongkong, Merbau, Jelutung and Kempas	Free		2,651	21,780
4407.22.00	Okoumé, Obeche, Sapelli, Sipo, Acajou d'Afrique, Makoré, Iroko, Tiama, Mansonia, Ilomba, Dibétou, Limba, and Azobé	Free		53	1,063
4407.23.00	Baboén, Mahogany (<i>Swietenia</i> spp.), Imbuia and Balsa	Free		7,821	59,615
4407.91.00	Other: Of oak	Free		579,603	6,547
4407.92.00	Other: Of beech	Free		4,304	767
4407.99.00	Other: Other	Free		482,848	124,693
Wood (including strips and friezes for parquet flooring, not assembled) continuously shaped (tongued, grooved, rabated, chamfered, V-jointed, beaded, molded, rounded or the like) along any of its edges or faces, whether or not planed, sanded or finger-jointed:					
Coniferious:					
4409.10.10	Wood siding	Free		1,061	106,235
4409.10.20	Wood flooring	3.2%	Free (A,CA,E,IL,J,MX)	8,338	1,353
4409.10.90	Other (than siding, flooring, molding, or dowel rods)	Free		6,944	21,975
Nonconiferious:					
4409.20.10	Wood siding	Free		349	637
4409.20.25	Wood flooring	Free		38,507	23,903
4409.20.90	Other (than siding, flooring, molding, or dowel rods)	Free		7,431	9,061

¹ Programs under which special tariff treatment may be provided, and the corresponding symbols for such programs as they are indicated in the "Special" subcolumn, are as follows: Generalized System of Preferences (A or A*); Automotive Products Trade Act (B); Agreement on Trade in Civil Aircraft (C); North American Free-Trade Agreement: goods from Canada (CA), goods from Mexico (MX); Caribbean Basin Economic Recovery Act (E or E*); United States-Israel Free Trade Area (IL); and Andean Trade Preference Act (J or J*).

Source: U.S. exports and imports compiled from official statistics of the U.S. Department of Commerce.

reason of imports in both instances.⁷² The Commission was scheduled to issue its third remand determination on August 5, 1994. However, as a result of the Extraordinary Challenge Committee decision regarding the panel review of the Commerce determination, the Commission moved to stay the proceedings, arguing that the Commission proceedings were moot. The panel granted the Commission's motion and the stay remained in effect, pending resolution of the case challenging the constitutionality of the Binational Panel review process.

FOREIGN TRADE MEASURES

Tariffs on lumber products in the major foreign markets are generally low. U.S. lumber product exports to Canada and Mexico either currently enter those countries duty-free or will when duties are phased out under the North American Free Trade Agreement (NAFTA).

The European Union (EU) allows rough-cut lumber, and some minor wood products to enter duty-free, but in 1994 imposed duties of 4-percent ad valorem on most other lumber products. The EU prohibits the importation of most green coniferous wood products. Green Douglas-fir lumber is allowed into the United Kingdom, but imports into the rest of the EU must be dried.

Japan does not impose duties on lumber. However, imports are subject to many nontariff barriers.⁷³ For example, Japanese building codes prohibit wood framed buildings of four or more stories. The U.S. has encouraged the adoption of performance standards to insure safety (during fire and earthquakes, for example) and to replace non-tariff barriers. Also, Japan reportedly subsidizes many forestry sector costs, both public and private, thus allowing domestic logs to be

⁷² USITC, *Softwood Lumber from Canada*, investigation No. 701-TA-312 (Remand), USITC publication 2689 (Oct. 1993); USITC, *Softwood Lumber from Canada*, investigation No. 701-TA-312 (Second Remand), USITC publication 2753 (Mar. 1994).

⁷³ U.S. Department of Commerce, *Japanese Solid Wood Products Market*, Apr. 1989.

obtained at artificially low prices, ensuring a price advantage over imported processed wood products.⁷⁴

Nearly all of the United States trading partners have "buy national" or "buy local" policies for government procurement. These policies do affect the export shipments to some countries, but the general effect is to remind buyers in that country to buy domestic.⁷⁵

U.S. MARKET

Consumption

The United States is the world's largest producer and consumer of lumber products. Demand for these products remained sluggish throughout 1989-91, because of the declining housing and construction activity in the United States. In 1992, new construction, influenced by lower home mortgage interest rates, led to an increase in the demand for lumber products. Subsequently, lumber production and imports increased. Construction activity continued to be strong through 1994. Lumber products consumption, housing starts, and construction spending are shown in the tabulation at the bottom of the page.

Softwood lumber accounts for about 80 percent of total consumption. U.S. house construction consumes the greatest portion of softwood lumber with changes in overall consumption generally tracking housing starts. Hardwood lumber is a smaller component of house construction since it is generally used in floors and trim. Hardwood flooring and furniture stock, however, account for about 40 percent of all hardwood lumber consumption, and have a strong influence on consumption trends. During 1989-93, housing starts and lumber products consumption exhibited a close correlation. Consumption for repair and remodeling of existing homes increased during 1989-91 and partially

⁷⁴ U.S. Department of Agriculture, *Wood Products Trade and Foreign Markets, Asian Market Profile Issue*, Nov. 1993.

⁷⁵ U.S. Trade Representative, *Foreign Trade Barriers*, 1994.

Year	Consumption ¹ (mmbf)	Housing ² starts (Thousand)	Construction ² (Million constant dollars)
1989	59,116	1,376	409,723
1990	54,356	1,193	397,658
1991	51,878	1,015	360,892
1992	56,156	1,200	385,818
1993	57,941	1,288	398,051

¹ Compiled from official statistics of the U.S. Department of Commerce, the Western Wood Products Association, the Southern Forest Products Association and the National Forest Products Association.

² Housing and construction from U.S. Department of Commerce, *Construction Review*, Summer 1994.

offset the downturn in new residential construction and related consumption. In 1991, U.S. consumption of softwood lumber was 41.9 billion board feet, down by 10.2 percent from consumption of 47.6 billion board feet in 1989 and off by 7.5 percent from 1990 consumption. By 1993, Consumption rebounded to 45.9 billion board feet (table 4). Hardwood consumption increased nearly 12 percent during 1991-93 after falling by almost 14 percent during 1989-91 (table 5).

Although most of the lumber products consumed in the United States are supplied by domestic producers, Canadian producers are important suppliers. Canada supplied about 96 percent of all such imports consumed in the United States during 1989-93. The share of imports to consumption, in terms of quantity, declined from 25 percent in 1989 to 23 percent in 1991, and then increased to 27 percent by 1993. Softwood is by far the largest component of the import share. During 1989-93, hardwood imports accounted for no more than 5 percent of hardwood consumption, and less than 1 percent of total consumption.

Production

U.S. lumber products production, which tracks consumption, fell by 10 percent from 48.7 billion board feet in 1989 to 43.6 billion board feet in 1991.

By 1993, production was up to 45.5 billion board feet, an increase of over 4 percent (see table 3).

Softwood lumber made up 72 percent of U.S. lumber products production in 1993, down from 74 percent in 1989. U.S. production of softwood lumber for 1989-93 peaked at 36.2 billion board feet in 1990, then dropped to 33.1 billion board feet in 1991, an 8.7-percent decline (table 4). Production was up slightly in 1992, but declined again in 1993 to 32.9 billion board feet, the lowest level in the period. As indicated in the tabulation below, the West produced 16.7 billion board feet, or 50.7 percent of U.S. softwood lumber production, in 1993. The South produced 14.4 billion board feet, or 43.6 percent of U.S. production; and the North produced the smallest share, 1.9 billion board feet, or 5.7 percent of U.S. production.

Region	1989	1990	1991	1992	1993
West	62	59	58	54	51
South	33	36	37	41	44
North	5	5	5	5	5
Total	100	100	100	100	100

Source: U.S. Department of Commerce, *Current Industrial Report, Lumber and Mill Stock*, Sept. 1994.

Table 3
Lumber, flooring, and siding: U.S. production, exports of domestic merchandise, imports from Canada, total imports for consumption, and apparent consumption, 1989-93

Period	Production	Exports	Total imports	Imports from Canada	Apparent consumption	Ratio (percent) of—		
						Imports to consumption	Canadian imports to consumption	Exports to production
Quantity (mmbf)								
1989	48,740	4,266	14,642	14,156	59,116	25	24	9
1990	45,699	3,837	12,494	12,168	54,356	23	22	8
1991	43,573	3,789	12,094	11,721	51,878	23	23	9
1992	45,954	3,614	13,816	13,375	56,156	25	24	8
1993	45,494	3,372	15,819	15,211	57,941	27	26	7
Value (million dollars)								
1989	18,314	2,091	3,212	3,041	19,435	17	16	11
1990	19,136	2,196	2,833	2,681	19,773	14	14	11
1991	18,139	2,278	2,793	2,621	18,653	15	14	13
1992	21,890	2,403	3,635	3,433	23,122	16	15	11
1993	(¹)	2,532	5,195	4,893	(¹)			
Unit value (dollars per mbf)								
1989	376	490	219	215	329	(²)	(²)	(²)
1990	419	572	227	220	364	(²)	(²)	(²)
1991	416	601	231	224	360	(²)	(²)	(²)
1992	476	665	263	257	412	(²)	(²)	(²)
1993	(¹)	751	328	322	(¹)	(²)	(²)	(²)

¹ Not available.

² Not meaningful.

Note.—Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce, the Western Wood Products Association, the Southern Forest Products Association and the National Forest Products Association.

Table 4
Softwood lumber: U.S. production, exports of domestic merchandise, imports from Canada, total imports for consumption, and apparent consumption, 1989-93

Period	Production	Exports	Total imports	Imports from Canada	Apparent consumption	Ratio (percent) of—		
						Imports to consumption	Canadian imports to consumption	Exports to production
Quantity (mmbf)								
1989	36,040	3,379	13,979	13,812	46,640	30	30	9
1990	36,224	2,941	12,002	11,841	45,825	26	26	8
1991	33,064	2,833	11,670	11,425	41,901	28	27	9
1992	33,704	2,613	13,365	13,075	44,456	30	29	8
1993	32,939	2,345	15,277	14,873	45,871	33	32	7
Value (million dollars)								
1989	9,011	1,404	2,872	2,839	10,479	27	27	16
1990	8,196	1,336	2,530	2,494	9,390	27	27	16
1991	7,793	1,358	2,501	2,445	8,938	28	27	17
1992	9,735	1,363	3,305	3,224	11,677	28	28	14
1993	(1)	1,393	4,808	4,650	(1)	(1)	(1)	(1)
Unit value (dollars per mbf)								
1989	250	416	193	205	225	(2)	(2)	(2)
1990	226	454	196	210	207	(2)	(2)	(2)
1991	236	479	217	214	213	(2)	(2)	(2)
1992	289	522	250	247	263	(2)	(2)	(2)
1993	(1)	594	319	315	(1)	(2)	(2)	(2)

¹ Not available.

² Not meaningful.

Note.—Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce, the Western Wood Products Association, the Southern Forest Products Association and the National Forest Products Association.

Western share of production declined each year, reflecting the reduction in supply from National Forests. Production in the south increased to fill the shortfall, especially after 1991 when U.S. demand increased. The leading species, or species groups, of softwood lumber produced in the United States are, in order of quantity produced, southern yellow pine (42 percent), Douglas-fir (21 percent), and hem-fir and ponderosa pine (9 percent each).⁷⁶

Hardwood lumber production fell from 7.5 billion board feet in 1989 to 6.8 billion board feet in 1991 (table 5). By 1993, hardwood lumber production was nearly back to the 1989 level. Ninety-four percent of hardwood lumber is produced in the North and South. Red oak accounted for 25 percent of the production in 1993. White oak, yellow poplar, and maple, accounted for 12 percent, 11 percent, and 8 percent, respectively, of the remaining production. No other species accounted for more than 5 percent of production.⁷⁷

Imports

U.S. imports of lumber products during 1989-93 ranged between a low of 12.1 billion board feet in 1991 to 15.8 billion board feet in 1993 (table 3). Canada has

traditionally been the largest supplier of such imports; Canada accounted for 96 percent of the total quantity, and 94 percent of the value of imports in 1993 (table 6). Following Canada that year were Brazil, Chile, and Mexico, each accounting for about 1 percent of the quantity imported in 1993. The value of imports of the products covered in this summary is shown in table 7.

Virtually all U.S. imports of softwood lumber come from Canada (table 8). Since 1991, however, rising demand, coupled with declining softwood lumber production, and rising prices have led to increasing imports from other sources. Imports of softwood lumber increased 31 percent and 92 percent in quantity and value, respectively, during 1991-93. The ratio of imports from Canada to apparent consumption in the United States increased each year from a low of 26 percent in 1990 to 32 percent in 1993.

Hardwood lumber imports account for about 5 percent of U.S. hardwood lumber consumption. Canada is the leading supplier of hardwood lumber and the hardwood shipped is from wood species similar to those supplied by domestic sources. The remaining hardwood lumber imports consist of tropical species not found in either Canada or the United States. The principal tropical species imported are mahogany from South American countries, and meranti (also known as

⁷⁶ U.S. Department of Commerce, *Current Industrial Report*, "Lumber Production and Mill Stock," Sept. 1994.

⁷⁷ *Ibid.*

Table 5**Hardwood lumber: U.S. production, exports of domestic merchandise, imports from Canada, total imports for consumption, and apparent consumption, 1989-93**

Period	Production	Exports	Total imports	Imports from Canada	Apparent consumption	Ratio (percent) of—		
						Imports to consumption	Canadian imports to consumption	Exports to production
Quantity (mmbf)								
1989	7,536	818	349	120	7,067	5	2	11
1990	7,242	813	232	114	6,661	3	2	11
1991	6,766	881	210	107	6,095	3	2	13
1992	7,050	931	260	153	6,379	4	2	13
1993	7,452	964	313	203	6,801	5	3	13
Value (million dollars)								
1989	3,721	643	152	45	3,230	5	1	17
1990	3,860	802	141	46	3,199	4	1	21
1991	3,746	862	142	44	3,026	5	1	23
1992	4,304	974	176	72	3,506	5	2	23
1993	(¹)	1,077	224	107	(¹)	(¹)	(¹)	(¹)
Unit value (dollars per mbf)								
1989	494	786	436	375	457	(²)	(²)	(²)
1990	533	986	608	404	480	(²)	(²)	(²)
1991	554	978	676	411	496	(²)	(²)	(²)
1992	610	1,046	677	471	550	(²)	(²)	(²)
1993	(¹)	1,117	716	527	(¹)	(²)	(²)	(²)

¹ Not available.² Not meaningful.

Note.—Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce, the Western Wood Products Association, the Southern Forest Products Association and the National Forest Products Association.

Table 6**Lumber, flooring, and siding: U.S. imports for consumption, by principal sources, 1989-93**

Source	1989	1990	1991	1992	1993
Quantity (mmbf)					
Canada	14,156	12,168	11,721	13,375	15,211
Brazil	89	75	45	89	139
Chile	59	78	97	140	191
New Zealand	1	3	4	13	44
Mexico	88	69	137	126	124
All other	248	101	90	74	111
Total	14,642	12,494	12,094	13,816	15,819
Value (million dollars)					
Canada	3,041	2,681	2,621	3,433	4,893
Brazil	37	36	40	52	68
Chile	14	18	22	36	60
New Zealand	1	2	3	10	41
Mexico	18	15	29	31	38
All other	99	81	77	72	95
Total	3,212	2,833	2,793	3,635	5,196
Unit value (dollars per mbf)					
Canada	215	220	224	257	322
Brazil	435	473	895	582	488
Chile	229	228	232	256	316
New Zealand	968	795	694	847	929
Mexico	209	217	215	249	311
All other	399	802	856	973	856
Average	219	227	231	263	328

Note.—Figures may not add to totals shown due to rounding. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 7
Lumber, flooring, and siding: U.S. imports, by types, 1989-93

(Thousand dollars)

Type	1989	1990	1991	1992	1993
Lumber:					
Softwood	2,871,912	2,530,055	2,501,204	3,304,730	4,808,129
Hardwood	152,396	140,656	142,450	175,869	224,212
Total, lumber	3,024,308	2,670,711	2,643,654	3,480,599	5,032,341
Flooring:					
Softwood	1,462	1,169	1,651	1,113	1,353
Hardwood	29,463	18,485	12,904	12,862	23,903
Total, flooring	30,925	19,653	14,555	13,975	25,256
Siding:					
Softwood	142,003	120,716	115,659	114,794	106,235
Hardwood	536	340	223	356	637
Total, siding	142,539	121,055	115,882	115,151	106,872
Other lumber products	14,571	21,632	18,685	24,970	31,036
Grand total	3,212,343	2,833,052	2,792,776	3,634,695	5,195,505

Note.—Figures may not add to totals shown due to rounding.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 8
Softwood lumber: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
	Quantity (mmbf)				
Canada	13,812	11,841	11,425	13,075	14,873
Chile	51	77	93	139	187
Mexico	88	69	136	126	122
New Zealand	1	3	3	10	42
Brazil	2	3	5	10	34
All other	24	9	7	6	19
Total	13,979	12,002	11,670	13,365	15,277
	Value (million dollars)				
Canada	2,839	2,494	2,445	3,224	4,650
Chile	10	16	20	34	57
Mexico	18	15	29	31	38
New Zealand	1	2	3	9	39
Brazil	1	1	2	4	17
All other	3	2	3	3	7
Total	2,872	2,530	2,501	3,305	4,808
	Unit value (dollars per mbf)				
Canada	205	210	215	245	312
Chile	196	208	215	245	305
Mexico	205	217	213	246	311
New Zealand	965	802	833	859	932
Brazil	533	318	385	422	507
All other	125	222	429	500	368
Average	205	210	214	247	315

Note.—Figures may not add to totals shown due to rounding. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

lauan or Philippine mahogany) from East Asian countries. During 1989-93, the quantity of imported hardwood lumber followed the same pattern as softwood lumber, declining to its lowest level in the period in 1991 and then increasing in 1992 and 1993 (table 9).

The volume of hardwood lumber imported in 1993 at 313 million board feet was up nearly 50 percent from 1991. Canada's share of the quantity imported increased each year from 34 percent in 1989 to 65 percent in 1993. This increase is attributable in part to increased prices, low demand in the furniture markets (for which tropical wood, especially mahogany is imported), and export controls, such as Indonesia's export taxes.

Wood flooring imports, virtually all of which are hardwood, account for about 1 or 2 percent of U.S. wood flooring consumption. Imports of flooring took the same dip and recovery as softwood and hardwood lumber. In 1993, the volume imported was equal to that of 1989, and the value was \$6 million lower (table 10).

Wood siding imports declined in volume and value each year during 1989-93 (table 11). Over 95 percent of the siding imported is western red cedar from Canada. Such siding fills a small U.S. special market, and as such is more likely to be affected by a decline in construction than the other products covered in this summary which have alternative uses.

FOREIGN MARKETS

Foreign Market Profile

World consumption of lumber products in 1993 was estimated to be nearly 192 billion board feet.⁷⁸ North America, Europe, and Asia are the principal consuming (market) and exporting areas. However, with the exception of Canada, most of the world production is consumed in the producing country.

The principal factors affecting the demand for U.S. lumber products in foreign markets are price and availability. Both the United States and Canada enjoy an advantage over other world producers in available raw material. However, the cost of shipping these products off-shore is sometimes greater than the cost of production. Therefore, most traded items are specialty and high-grade products that are not produced, or are in limited supply, in the consuming markets. The principal foreign markets for U.S. lumber products are summarized below.

Japan

Japan is the leading foreign market for U.S. lumber products. However, Japan imports more logs than

⁷⁸ Estimated by the staff of the USITC from United Nations and individual country data.

lumber products, and for the most part produces in Japan the lumber products sold to Japanese consumers. As the flow of logs from the United States decreases, in response to high domestic demand, lumber products shipments to Japan may increase. However, Japanese are seeking to expand their presence in Russia, particularly in the Russian Far East, for the purpose of purchasing more logs and lumber products.⁷⁹

A slight upturn in Japanese housing starts in 1992 and 1993 and a continued decline in Japanese lumber product production have resulted in increased imports. Total Japanese imports of lumber products are projected to increase from 3.8 billion board feet in 1992 to 4.4 billion board feet in 1993.⁸⁰ Softwood accounted for over 80 percent of the trade.

Europe

Collectively, Europe is the second-largest consuming region of lumber products and the second-largest market for such U.S. products. The United Kingdom, Italy, and Germany are the largest importers. The construction sector has been in a decline since late 1989 as interest rates rose and the economies slowed. Imports of lumber products by the largest importing countries declined by 7 percent during 1989 to 1992.⁸¹ Lumber products imports in 1993 are projected to decline slightly.⁸² U.S. lumber products exports to Europe in 1993 varied by country and product, but generally declined. Imports from countries outside Europe could decline with the entry into the EU of exporting countries such as Sweden and Finland and after increased inter-European trade from eastern European countries.

Mexico

Mexico lacks sufficient supplies of softwood lumber to meet domestic needs and has traditionally relied on imports from the United States to fill the gap. In Mexico, lumber products, particularly softwood lumber, are primarily consumed for concrete forming, packing purposes, and furniture manufacture, as opposed to framing, which is the principal U.S. use for lumber products. Because of an increase in activity in the Mexican construction sector, demand for softwood lumber, including imported softwood lumber, has increased. The United States is Mexico's principal supplier of softwood lumber now and for the foreseeable future because of competitive prices and

⁷⁹ Japan Lumber Journal, Various issues, 1994.

⁸⁰ USDA, Foreign Agricultural Service, *Wood and Wood Products Trade and Foreign Markets*, Nov. 1993.

⁸¹ Food and Agriculture Organization of the United States, *Yearbook, Forest Products*, 1992.

⁸² USITC estimate based on data from the United Nations, U.S. Department of Agriculture, and the U.S. Department of Commerce.

Table 9
Hardwood lumber: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
Quantity (mmbf)					
Canada	120	114	107	153	203
Brazil	70	43	38	53	50
Malaysia	9	10	10	15	13
Bolivia	12	20	20	10	11
Ecuador	7	6	5	4	5
All other	131	39	30	25	31
Total	349	232	210	260	313
Value (million dollars)					
Canada	45	46	44	72	107
Brazil	36	33	37	46	47
Malaysia	7	8	8	13	13
Bolivia	12	18	23	13	16
Ecuador	4	4	3	3	4
All other	48	32	28	28	37
Total	152	141	142	176	224
Unit value (dollars per mbf)					
Canada	375	406	411	472	524
Brazil	522	762	963	868	958
Malaysia	859	840	807	887	1,060
Bolivia	985	866	1,095	1,369	1,411
Ecuador	595	571	647	778	739
All other	363	820	867	1,160	1,226
Average	437	607	677	677	715

Note.—Figures may not add to totals shown due to rounding. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 10
Wood flooring: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
Quantity (mmbf)					
Canada	6	19	12	6	7
Brazil	17	29	2	26	54
Malaysia	42	3	2	2	2
All other	24	5	13	6	24
Total	88	56	28	40	88
Value (million dollars)					
Canada	6	6	6	6	12
Brazil	1	1	1	1	3
Malaysia	9	6	3	2	3
All other	15	7	4	4	7
Total	31	20	15	14	25
Unit value (dollars per mbf)					
Canada	1,014	317	506	1,149	1,569
Brazil	59	52	831	56	54
Malaysia	204	1,495	1,992	826	1,652
All other	645	1,422	320	670	248
Average	350	351	518	345	287

Note.—Figures may not add to totals shown due to rounding. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 11
Wood siding: U.S. imports for consumption, by principal sources, 1989-93

Source	1989	1990	1991	1992	1993
Quantity (mmbf)					
Canada	202	171	161	120	102
All other	1	(¹)	1	1	1
Total	202	171	162	122	103
Value (million dollars)					
Canada	142	121	115	114	106
All other	1	(²)	(²)	1	1
Total	143	121	116	114	117
Unit value (dollars per mbf)					
Canada	704	706	715	950	1,030
All other	835	956	764	632	605
Average	704	706	716	947	1,038

¹ Less than 500 mbf.

² Less than \$500,000.

Note.—Figures may not add to totals shown due to rounding. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

advantageous location. Because NAFTA requires that Mexico phase out all its existing duties on goods imported from the United States, NAFTA is expected to have a positive effect on U.S. lumber product exports to Mexico.⁸³

Canada

Although Canada is a major producer and exporter, its closeness to the United States makes it an important export market. Canada ranked second after Japan as a market for U.S. lumber product exports during 1989-93. Hardwoods and certain softwood products not generally available in Canada account for most of the trade. Canada is covered in more detail in other sections of this summary.

U.S. Exports

The value of U.S. export shipments of lumber products rose annually from 1989 to 1993, increasing by 21 percent to \$2.5 billion (table 12). Softwood lumber accounted for 55 percent of the value and 70 percent of the quantity exported in 1993. Japan has consistently been the largest market for U.S. exports, followed by Canada, Mexico, Italy and Germany. These five countries accounted for 71 percent of the

quantity of U.S. lumber product exports in 1993 (table 13). As noted in table 3, exports accounted for a growing portion of U.S. production, reaching peaks of 9 percent in 1989 and 1991. Strong domestic demand leading to increased U.S. consumption accounted for the declining percentage share of exports in 1992 and 1993.

The quantity of softwood lumber exported declined each year during 1989-93, and exports to each of the top six markets were lower in 1993 than in 1989 (table 14). Softwood lumber exports to Japan in 1991 were 25 percent below those for 1989, and they showed only slight recovery in 1993. Hardwood lumber exports to Japan increased in the same period (table 15). Exports to most major markets were higher in 1993 than in 1989. The hardwood species exported by the United States are not available in significant volume from other lumber producing countries. Exports of wood flooring, most of which is hardwood, increased each year in the period through 1992, and then declined (table 16). A drop in exports to Canada, which accounted for 64 percent of U.S. exports in 1993, accounted for all of the decline and generally reflected poor housing demand in Canada. Exports of wood siding, almost all of which is softwood, were valued at \$1 million in 1993 (table 17). The quantity of siding exported fluctuated during 1989-93. The small volume of exports, and limited use of wood siding outside North America contribute to the erratic pattern.

⁸³ For further information, see U.S. International Trade Commission, *Potential Impact on the U.S. Economy and Selected Industries of the North American Free-Trade Agreement*, Jan. 1993, p. 32-1.

Table 12
Lumber, flooring, and siding: U.S. exports, by types, 1989-93

(Thousand dollars)

Type	1989	1990	1991	1992	1993
Lumber:					
Softwood	1,404,141	1,335,727	1,357,730	1,362,873	1,392,552
Hardwood	642,556	802,231	862,074	974,456	1,077,280
Total, lumber	2,046,697	2,137,958	2,219,804	2,337,329	2,469,832
Flooring:					
Softwood	5,169	3,424	4,026	5,600	8,338
Hardwood	13,428	29,345	32,821	41,336	38,507
Total, flooring	18,598	32,769	36,847	46,936	46,845
Siding:					
Softwood	7,294	1,423	1,151	3,117	1,061
Hardwood	586	145	172	87	349
Total, siding	7,881	1,568	1,323	3,204	1,410
Other lumber products	17,698	23,627	20,376	15,229	14,375
Grand total	2,090,873	2,195,921	2,278,350	2,402,698	2,532,461

Note.—Figures may not add to totals shown due to rounding.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 13
Lumber, flooring, and siding: U.S. exports, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
	Quantity (mmbf)				
Japan	1,633	1,306	1,245	1,124	1,190
Canada	680	689	592	610	593
Mexico	325	410	427	468	385
Italy	175	172	195	177	130
Germany	76	86	127	131	114
Taiwan	100	87	117	106	107
All other	1,277	1,087	1,086	998	853
Total	4,266	3,837	3,789	3,614	3,372
	Value (million dollars)				
Japan	707	661	647	639	774
Canada	298	398	358	381	404
Mexico	128	149	198	256	244
Italy	138	157	181	175	136
Germany	59	70	98	128	136
Taiwan	64	59	79	81	89
All other	698	702	718	743	749
Total	2,091	2,196	2,278	2,403	2,532
	Unit value (dollars per mbf)				
Japan	433	506	520	569	650
Canada	438	578	605	625	681
Mexico	391	363	464	547	634
Italy	788	913	923	989	1,046
Germany	776	814	772	977	1,193
Taiwan	640	678	675	764	832
All other	547	646	661	744	878
Average	490	572	601	665	751

Note.—Because of rounding, figures may not add to the totals shown. Unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 14
Softwood lumber: U.S. exports, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
Quantity (mmbf)					
Japan	1,461	1,147	1,088	1,004	1,063
Mexico	276	368	375	406	270
Canada	462	425	367	317	319
Australia	220	171	184	111	113
Italy	131	122	124	105	74
Spain	114	94	96	92	60
All other	715	614	599	578	446
Total	3,379	2,941	2,833	2,613	2,345
Value (million dollars)					
Japan	561	501	492	499	613
Mexico	99	122	162	209	190
Canada	163	170	160	142	131
Australia	99	84	90	59	81
Italy	100	107	110	93	67
Spain	62	62	60	62	44
All other	320	290	284	298	266
Total	1,404	1,336	1,358	1,363	1,393
Unit value (per mbf)					
Japan	384	437	452	496	576
Mexico	359	331	432	514	597
Canada	354	399	437	448	486
Australia	448	490	491	535	719
Italy	761	879	885	889	909
Spain	539	662	626	673	730
All other	448	472	474	516	597
Average	416	454	479	522	594

Note.—Because of rounding, figures may not add to the totals shown; unit values are calculated from unrounded figures.
Source: Derived by the staff of the USITC from official statistics of the U.S. Department of Commerce.

Table 15
Hardwood lumber: U.S. exports, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
Quantity (mmbf)					
Canada	184	235	199	258	299
Japan	156	125	130	109	117
Germany	40	36	46	59	64
Taiwan	86	70	95	85	82
Italy	43	50	71	71	56
Belgium	47	47	55	52	44
All other	262	248	285	297	302
Total	818	811	881	931	964
Value (million dollars)					
Canada	115	202	170	200	238
Japan	133	138	138	133	152
Germany	37	41	53	80	94
Taiwan	58	51	69	72	75
Italy	37	50	71	80	68
Belgium	43	53	63	67	64
All other	220	267	298	342	386
Total	643	802	862	974	1,077
Unit value (per mbf)					
Canada	624	861	852	774	797
Japan	853	1,104	1,062	1,215	1,298
Germany	927	1,130	1,149	1,360	1,463
Taiwan	674	730	720	842	911
Italy	875	995	999	1,127	1,214
Belgium	907	1,125	1,142	1,299	1,439
All other	839	1,077	1,046	1,152	1,278
Average	785	987	979	1,047	1,118

Note.—Because of rounding, figures may not add to the totals shown; unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 16
Wood flooring: U.S. exports, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
Quantity (thousand sq. meter)					
Canada	301	1,435	1,713	2,133	1,809
Japan	244	383	285	281	342
Mexico	18	50	73	105	82
United Kingdom	20	37	71	57	68
All other	126	273	427	471	542
Total	709	2,179	2,570	3,047	2,482
Value (million dollars)					
Canada	7	20	23	32	29
Japan	7	7	6	5	6
Mexico	(¹)	1	1	2	1
United Kingdom	1	1	1	1	1
All other	3	4	7	8	9
Total	19	33	37	47	47
Unit value (dollars per square meter)					
Canada	25	14	13	15	16
Japan	28	19	19	19	17
Mexico	23	16	14	15	15
United Kingdom	28	15	13	15	16
All other	27	16	15	16	17
Average	26	15	14	15	16

¹ less than \$500,000.

Note.—Because of rounding, figures may not add to the totals shown; unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 17
Wood siding: U.S. exports, by principal markets, 1989-93

Market	1989	1990	1991	1992	1993
Quantity (thousand square meters)					
Canada	57	4	6	5	7
Mexico	1	1	1	21	2
All other	17	10	49	11	7
Total	74	15	55	37	16
Value (million dollars)					
Canada	6	(¹)	1	1	1
Mexico	(¹)	(¹)	(¹)	1	(¹)
All other	2	1	1	1	1
Total	8	2	1	3	1
Unit value (per square meter)					
Canada	111	105	122	131	71
Mexico	106	104	106	71	99
All other	91	104	10	95	99
Average	106	104	24	86	87

¹ Less than \$500,000.

Note.—Because of rounding, figures may not add to the totals shown; unit values are calculated from unrounded figures.

Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. TRADE BALANCE

Canada is the only major trading partner with which the United States had a trade deficit for lumber products during the years 1989-93. However, nearly all U.S. imports are from Canada, and because imports from Canada are larger than total U.S. exports, the United States had a negative overall trade balance for

lumber products in each year. As has been noted, imports have increased each year since 1991. In 1993, the trade balance was a negative \$2,662 million, five times larger than it was in 1991 (table 18). U.S. exports increased in value each year as U.S. producers continued to pursue export marketing programs to offset the cyclical swings in domestic demand.

Table 18
Lumber, flooring, and siding: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries and country groups, 1989-93
(Million dollars)¹

Item	1989	1990	1991	1992	1993
U.S. exports of domestic merchandise:					
Japan	707	661	647	639	774
Canada	298	398	358	381	404
Mexico	128	149	198	256	244
Italy	138	157	181	175	136
Germany	59	70	98	128	136
Spain	91	94	97	110	85
All other	670	667	699	714	753
Total	2,091	2,196	2,278	2,403	2,532
U.S. imports for consumption:					
Japan	(2)	(2)	(2)	1	1
Canada	3,041	2,681	2,621	3,433	4,893
Mexico	18	15	29	31	38
Italy	(2)	(2)	(2)	(2)	(2)
Germany	3	2	1	1	1
Spain	(2)	0	(2)	(2)	(2)
All other	150	135	142	170	261
Total	3,212	2,833	2,793	3,635	5,194
U.S. merchandise trade balance:					
Japan	707	661	647	639	774
Canada	-2,743	-2,283	-2,263	-3,052	-4,489
Mexico	110	134	169	225	205
Italy	138	157	181	175	136
Germany	56	68	97	127	135
Spain	91	94	97	110	85
All other	520	532	557	544	492
Total	-1,121	-637	-515	-1,232	-2,662

¹ Import values are based on c.i.f. value. Export values are based on f.a.s. value, U.S. port of export.

² Less than \$500,000.

Note.—Figures may not add to the totals shown due to rounding.

Source: Compiled from official statistics of the U.S. Department of Commerce.

APPENDIX A
EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS

The *Harmonized Tariff Schedule of the United States* (HTS) replaced the *Tariff Schedules of the United States* (TSUS) effective January 1, 1989. Chapters 1 through 97 incorporate the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description and have U.S. product subdivisions at the 8-digit level. Chapters 98 and 99 contain special U.S. classifications and temporary rate provisions, respectively.

Duty rates in the *general* subcolumn of HTS column 1 are most-favored-nation (MFN) rates, many of which have been eliminated or are being reduced as concessions resulting from the Uruguay Round of Multilateral Trade Negotiations. Column 1-general duty rates apply to all countries except those enumerated in HTS general note 3(b) (Afghanistan, Azerbaijan, Cuba, Kampuchea, Laos, North Korea, and Vietnam), which are subject to the rates set forth in *column 2*. Albania, Armenia, Belarus, Bosnia, Bulgaria, the People's Republic of China, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan are accorded MFN treatment. Specified goods from designated MFN-eligible countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the *special* subcolumn of HTS column 1 or in the general notes. If eligibility for special tariff rates is not claimed or established, goods are dutiable at column 1-general rates. The HTS does not enumerate those countries as to which a total or partial embargo has been declared.

The *Generalized System of Preferences* (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 for 10 years and extended three times thereafter, applies to merchandise imported on or after January 1, 1976 and before the close of July 30, 1995. Indicated by the symbol "A" or "A*" in the special subcolumn, the GSP provides duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The *Caribbean Basin Economic Recovery Act* (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984. Indicated by the symbol "E" or "E*" in the special subcolumn, the CBERA provides duty-free entry to eligible articles, and reduced-duty treatment to certain other articles, which are the product of and imported directly from designated countries, as set forth in general note 7 to the HTS.

Free rates of duty in the special subcolumn followed by the symbol "IL" are applicable to products of Israel under the *United States-Israel Free Trade Area Implementation Act* of 1985 (IFTA), as provided in general note 8 to the HTS.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn followed by the symbol "J" or "J*" in parentheses is afforded to eligible articles the product of designated beneficiary countries under the *Andean Trade Preference Act* (ATPA), enacted as title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential or free rates of duty in the special subcolumn followed by the symbol "CA" are applicable to eligible goods of Canada, and those followed by the symbol "MX" are applicable to eligible goods of Mexico, under the *North American Free Trade Agreement*, as provided in general note 12 to the HTS, implemented effective January 1, 1994 by Presidential Proclamation 6641 of December 15, 1993.

Other special tariff treatment applies to particular *products of insular possessions* (general note 3(a)(iv)), goods covered by the *Automotive Products Trade Act* (APTA) (general note 5) and the *Agreement on Trade in Civil Aircraft* (ATCA) (general note 6), *articles imported from freely associated states* (general note 10), *pharmaceutical products* (general note 13), and *intermediate chemicals for dyes* (general note 14).

The *General Agreement on Tariffs and Trade 1994* (GATT 1994), annexed to the Agreement Establishing the World Trade Organization, replaces an earlier agreement (the GATT 1947 [61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786]) as the primary multilateral system of disciplines and principles governing international trade. Signatories' obligations under both the 1994 and 1947 agreements focus upon most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national (non-discriminatory) treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, dispute settlement, and other measures. The results of the Uruguay Round of multilateral tariff negotiations are set forth by way of separate schedules of concessions for each

participating contracting party, with the U.S. schedule designated as Schedule XX.

Officially known as "The Arrangement Regarding International Trade in Textiles," the *Multifiber Arrangement* (MFA) provides a framework for importing and exporting countries to negotiate bilateral agreements limiting textile and apparel shipments, or for importing countries to take unilateral action in the absence or violation of an agreement. These agreements establish quantitative limits on textiles and apparel of cotton, other vegetable fibers, wool, man-made fibers or silk blends in an effort to prevent or limit market disruption in the importing countries—restrictions that would otherwise be a departure from GATT provisions. The United States has bilateral agreements with many supplying countries, including the four largest suppliers: China, Hong Kong, the Republic of Korea, and Taiwan.