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Hardwood Trade Trends: U.S. Exports

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Abstract

Between 1970 and 1986, hardwood log exports increased by 102 percent, hardwood lumber exports by 329 percent, hardwood veneer exports by 442 percent, and hardwood plywood exports by 611 percent. Much of this increase has been for white and red oak products in the European and Asian markets. The factors influencing these increases include increased cost of tropical and European hardwood products, rapid growth in European and Asian economies, and an emerging furniture industry in Taiwan. Given the ample supplies of temperate hardwood timber in the United States relative to the rest of the world, continued demand for U.S. hardwood products seems likely. However, the increase in this demand will be contingent on the value of the dollar against European and Asian currencies, growth in foreign economies, furniture production technology, and foreign consumer acceptance of substitute materials.

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In recent years, few subjects have caught the interest and imagination of the hardwood industry as hardwood products exports have. This interest was caused by the rapid increase in exports of hardwood products since the early 1970's (Fig. 1). Between 1970 and 1986, exports of hardwood logs, lumber, veneer, and plywood increased by 102, 329, 442, and 611 percent, respectively (Fig. 2). Actual

volume and value levels are shown in Tables 1 and 2. This paper presents an historic examination of the hardwood log, lumber, veneer, and plywood export trends and discusses how changes in product specifications, production techniques, and marketing procedures may influence future levels of hardwood products exports.

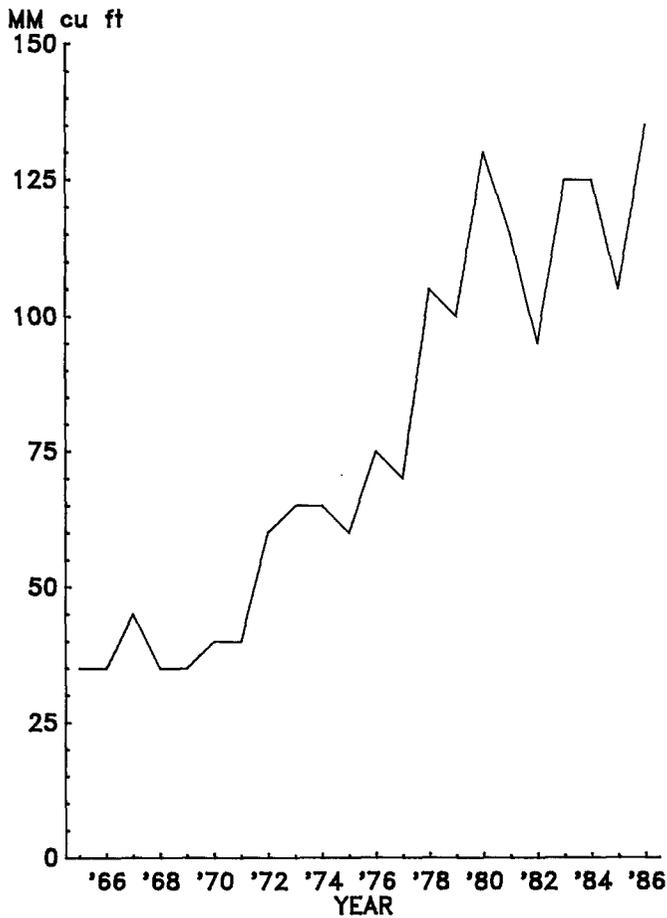


Figure 1.—Exports of hardwood products, excluding pulpwood (million cu ft, roundwood equivalent). Source: Ulrich 1950-86.

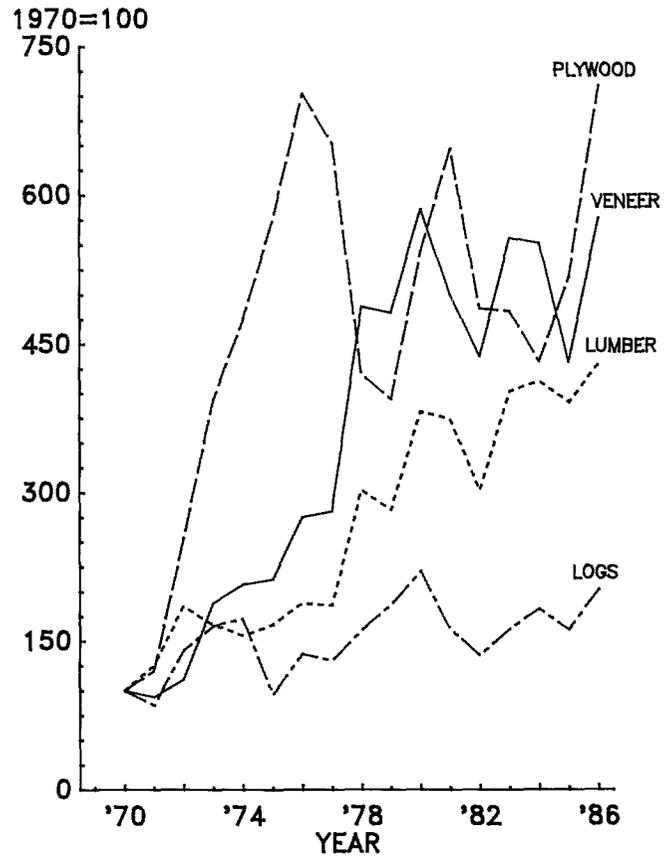


Figure 2.—Indices of hardwood products exports, 1970-86. Source: U.S. Department of Commerce, Bureau of the Census 1970-86.

Table 1—Volume of hardwood logs, lumber, veneer, and plywood exports from 1960 to 1986

Year	Logs	Lumber ¹	Veneer	Plywood
	<i>MM bf</i>		<i>MM sq ft</i>	
1960	56.0	166.9	60.2	1.8
1961	49.5	154.9	58.1	1.6
1962	69.5	131.1	64.8	1.3
1963	71.8	131.8	79.1	1.1
1964	62.2	144.1	144.6	2.0
1965	81.4	136.4	143.7	5.6
1966	75.5	154.9	110.9	7.4
1967	97.0	164.3	105.8	6.7
1968	94.9	113.5	173.8	10.0
1969	80.2	111.2	194.2	9.2
1970	68.9	127.9	183.8	8.5
1971	59.0	160.3	172.6	10.2
1972	93.9	237.2	204.3	21.5
1973	113.9	213.2	346.0	33.4
1974	118.7	198.9	380.8	40.3
1975	66.3	212.7	390.3	48.8
1976	94.3	240.5	505.8	59.7
1977	89.7	237.9	516.5	55.4
1978	110.8	387.0	897.0	35.7
1979	128.5	361.1	886.0	33.5
1980	151.8	487.5	1,077.4	46.1
1981	111.5	478.5	919.6	55.0
1982	93.2	385.9	803.6	41.3
1983	111.5	514.3	1,023.8	41.1
1984	125.6	526.8	1,014.6	36.7
1985	111.2	427.1	792.7	44.0
1986	138.9	549.0	995.8	60.4

¹ Includes lumber products, railroad cross ties, and flooring. Source: U.S. Department of Commerce, Bureau of the Census 1960-86.

Past Export Trends

Although exports of all hardwood products have increased significantly, there has been considerable variation in the products and species exported and the countries receiving exports. To highlight the similarities and differences of the export markets, we present separate discussions on changes in the log, lumber, veneer, and plywood markets.

Log Exports

In 1970, 68,905 M bf (thousand board feet) of hardwood logs and bolts were exported at an average imputed value of \$519 per M bf. Walnut logs accounted for 25 percent of the volume and 76 percent of the value, while logs included in the NEC (not elsewhere classified) group accounted for 74 percent of the volume and 23 percent of the value. The remaining 1 percent of the volume and value was made up

Table 2—Value of hardwood logs, lumber, veneer, and plywood exports from 1960 to 1986 (thousands of dollars)

Year	Logs	Lumber ¹	Veneer	Plywood
1960	13,212	25,020	2,802	474
1961	13,009	24,022	2,814	557
1962	17,121	22,231	3,535	627
1963	19,978	22,303	4,543	978
1964	17,540	24,384	7,120	790
1965	34,539	24,680	8,186	935
1966	24,439	29,504	6,823	985
1967	31,965	28,249	5,870	968
1968	42,124	22,140	8,492	1,350
1969	40,129	24,931	10,327	1,451
1970	35,798	31,387	9,737	1,220
1971	29,785	34,154	9,979	1,361
1972	42,086	74,525	12,710	2,474
1973	52,992	50,755	22,694	4,424
1974	49,499	65,275	25,755	7,058
1975	42,765	68,070	27,306	8,151
1976	65,824	90,457	34,355	10,145
1977	72,399	105,830	37,756	8,561
1978	102,823	156,881	63,121	8,303
1979	137,881	224,547	78,407	8,461
1980	129,364	271,548	106,348	12,664
1981	91,867	268,527	80,346	10,959
1982	83,905	229,003	73,051	9,468
1983	98,063	304,773	93,098	7,486
1984	100,709	299,843	82,108	7,953
1985	91,149	263,360	62,250	10,462
1986	97,265	349,981	81,763	13,355

¹ Includes lumber products, railroad cross ties, and flooring. Source: U.S. Department of Commerce, Bureau of the Census 1960-86.

of dogwood, persimmon, and lignum-vitae. In 1970, only walnut, dogwood, persimmon, and lignum-vitae log shipments were reported in labeled groups while oak, maple, cherry, birch, and all other species were lumped into the NEC group.

Nearly 62 percent of the volume and 14 percent of the value of the hardwood logs exported in 1970 were shipped to Canada—97 percent of these were in the NEC group. The imputed price of log shipments to Canada reported in the NEC category was \$90 per M bf. This price indicates that the majority of logs shipped to Canada in 1970 were sawlogs.

The other major importer of U.S. logs in 1970 was West Germany with 15 percent of the volume and 36 percent of the value. Walnut logs accounted for 66 percent of these shipments with an imputed price of \$1,769 per M bf. The other 34 percent of logs shipped to West Germany was classified in the NEC category at an imputed price of \$566 per M bf. In 1970, the value of a prime Ohio walnut veneer log ranged from \$1,255 to \$1,921 per M bf, while the price of prime Ohio white oak veneer logs ranged from \$148 to \$238 per M bf (Ohio Agricultural Statistics Service 1987). These prices indicate that logs shipped to West Germany were veneer logs.

In 1973, exports of hardwood logs passed 100 MM bf (million board feet). Although Canada was still the largest market for domestic hardwood logs, its share of the export market dropped to 57 percent while West Germany's share of the export market increased to 20 percent. Since 1973, exports to all European nations have made up 28 percent of the log shipments. Figure 3 contrasts exports to Canada,

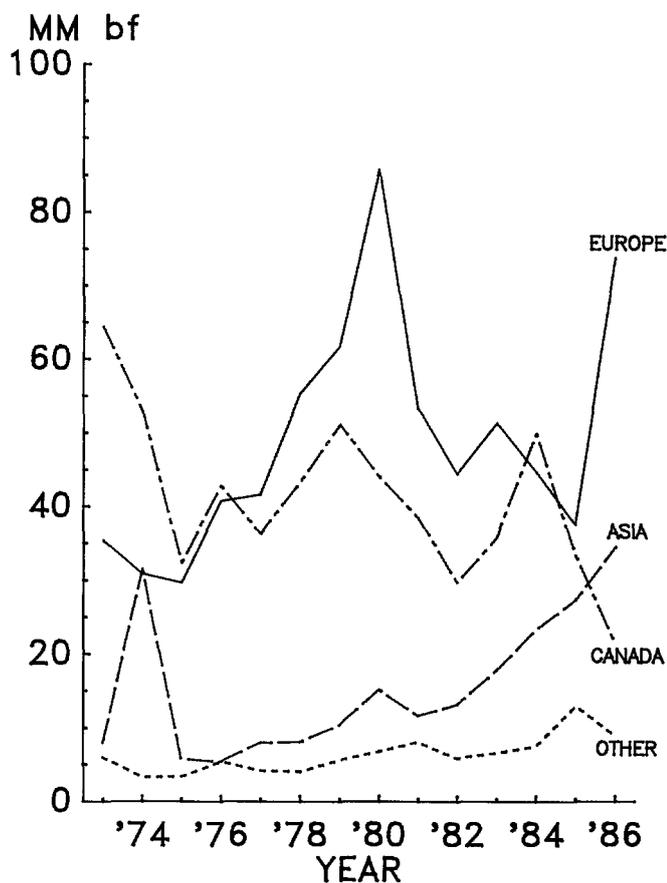


Figure 3.—Quantity of hardwood logs shipped to Europe, Asia, Canada, and all other countries, 1973-86. Source: U.S. Department of Commerce, Bureau of the Census 1973-86.

Europe, Asia, and all other countries for the years 1973 through 1986. Exports to Europe surpassed exports to Canada in 1978 and have remained relatively high since.

Although Figure 3 shows some interesting trends, a look at dollar values of exports shows a different picture. The dollar value of exports shown in Figure 4 demonstrates the importance to the European market. Exports to Europe consistently represent 50 to 75 percent of total exports on a dollar value basis. The major European importer has been West Germany, and the major species imported has been white oak. In 1979, white oak exports to West Germany made up 17 percent of the physical volume and 26 percent of the dollar value of hardwood log exports.

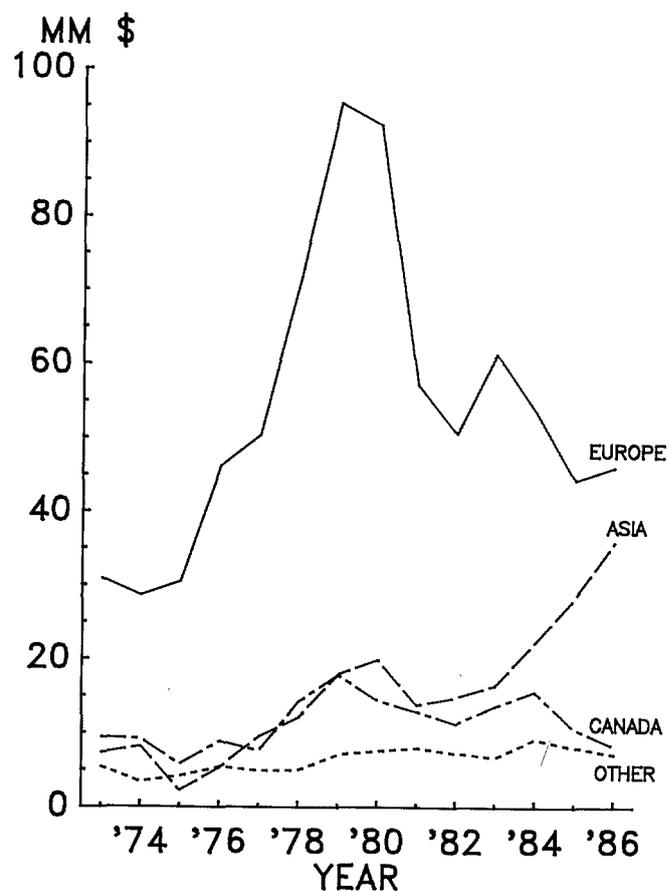


Figure 4.—Value of hardwood logs shipped to Europe, Asia, Canada, and all other countries. Source: U.S. Department of Commerce, Bureau of the Census 1960-86.

Even though exports to Europe dominate the U.S. log export market, exports to Asia have recently increased. The increase in Asian demand initially resulted from increased exports to Japan in the late 1970's. These shipments seem to help satisfy internal demands for temperate hardwood material within Japan. In 1986, the average imputed price of logs shipped to Japan was \$1,341 per M bf; 56 percent of these shipments were in the NEC category. Even though in 1986 this category included all species other than oak, maple, birch, and walnut, the majority of the NEC shipments probably were paulownia.

Although Japan is a major purchaser of U.S. logs, the bulk of the increased exports to Asia in the 1980's went to Taiwan. Between 1980 and 1986, exports to Taiwan increased by nearly 956 percent. The imputed price of these shipments has hovered around \$810 per M bf. With the price of a high-grade oak sawlog at \$519 per M bf in 1986 (Ohio Agricultural Statistics Service 1987), the imputed price of Taiwan exports is between the price of high-grade sawlogs and lower grade veneer logs. Since most of the exports to Taiwan seem to include lower priced southern rather than northern or Appalachian oak, the \$810 price probably includes more veneer logs than sawlogs. The shipments to Taiwan satisfied the demands of secondary processors who exported the products back to the United States and to Canada, Europe, and Japan.

Lumber Exports

In 1970, 128 MM bf of hardwood lumber were exported at an average imputed value of \$249 per M bf. Oak lumber accounted for 30 percent of the volume and 25 percent of the value, while walnut accounted for 5 percent of the volume and 10 percent of the value. Species included in the NEC group made up the remaining 65 percent of the value and volume. Species included in this classification were poplar, gum, and cherry.

Over half of the total lumber exported and 78 percent of the oak lumber exported in 1970 went to Canada. The average value of the oak exported to Canada was \$165 per M bf, which corresponds closely with the price of 1C (No. 1 Common) oak during that year. As with log exports, little can be said about the shipment of lumber under the NEC classification other than it had an average price of \$250 per M bf.

Although there had been a surge in hardwood exports during the mid- and late-1950's, this surge was not sustained in the early 1960's and was mainly confined to species classified in the NEC category. In the early 1970's, hardwood exports expanded rapidly (Luppold 1984). Although this growth was across all species groups, the greatest growth was in oak shipments. By 1984, red oak comprised 40 percent and white oak comprised 15 percent of the shipments.

The growth in hardwood exports, although sustained in size, has not necessarily remained constant with respect to importing country. Perhaps the most noticeable jump occurred in 1972, which resulted from a large increase in oak shipments to Canada and maple shipments to Japan. Although the maple shipments were the result of Japan's boom period in bowling alley construction, the increase in Canadian shipments was somewhat of a mystery since the average imputed price of \$190 per M bf was somewhere between the prices of 1C and FAS (First-and-Seconds) oak at that time (Lemsky 1972-78).

By 1973, the Japanese dropped out of the bowling alley market, causing maple exports to drop sharply. Oak exports to Canada continued to increase and increased volumes of oak were being shipped also to Great Britain, Spain, West Germany, and Belgium. The recession of 1974 and 1975 caused exports to dip slightly, but by 1976, the export market began to recover with large increases in Belgium and Dutch demand. In 1977, the European market started to show strong growth (Fig. 5). By 1978, dollar value of ship-

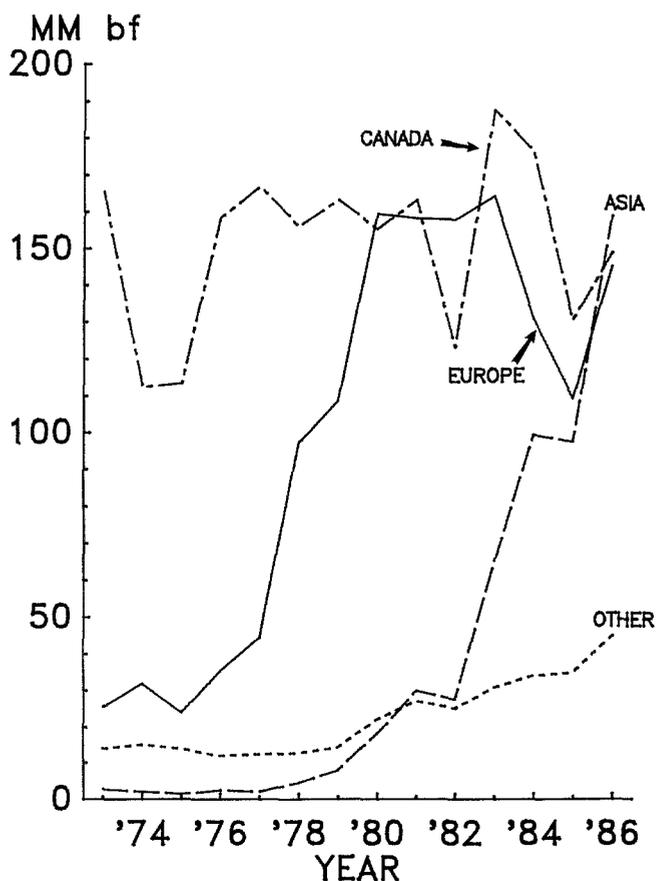


Figure 5.—Quantity of hardwood lumber shipped to Europe, Asia, Canada, and all other countries, 1973-86. Source: U.S. Department of Commerce, Bureau of the Census 1973-86.

ments to Europe surpassed dollar value of shipments to Canada. By 1980, volume of shipments to Europe was on a par with volume of shipments to Canada.

The major European buyers for U.S. oak during this period were West Germany, Belgium, Netherlands, and France. The major species being exported to these countries were the red and white oaks. The average imputed value of shipments to Europe in the late 1970's ranged between \$750 and \$850 per M bf. This was the range of kiln-dried FAS as reported by Anderson Tully Lumber Company in the *Hardwood Market Report* (Lemsky 1972-78). Exports to Canada during this period ran a little higher than 1C prices, indicating some FAS shipments to Canada or much of the 1C was kiln dried. Import statistics from Europe showing significant volumes of oak being shipped from Canada, coupled with the fact that very little oak is grown in Canada, indicates that some of the exports to Canada were later shipped to Europe. Potential reasons for these transshipments include lower transportation costs out of Canadian ports and business ties between Canada and Europe.

The strong growth in European demand for U.S. oak seems to have originated from a rapid price increase in the two dominant European hardwoods, oak and beech (Fig. 6). The relatively low price of U.S. oak and the apparent ample supplies became attractive. However, European buyers had reservations about using red oak because of its color variation. With the aid of American finishing procedures, the Europeans learned to use red oak and American suppliers started meeting the needs of European buyers.

After 1980, exports to Europe began to moderate with a decline in European economic growth, while exports to Asia began to grow. In 1978, only 1 percent of lumber exports were destined for Japan and only a trace for Taiwan. By 1986, 12 percent of lumber exports were destined for Japan and 18 percent for Taiwan.

In 1986, exports to Japan totaled 61 MM bf. Although white and red oaks were originally the major species exported to Japan in the 1978 to 1982 growth years, the oaks do not dominate currently. In 1986, 63 percent of the exports to Japan were listed in the "other" category. Most of this "other" lumber seemed to be red alder produced in the Pacific Northwest. As with the log market, most of the lumber being shipped to Japan is for internal use by the furniture industry. United States species seem to be used as substitutes for the more expensive Japanese hardwood (Araman 1986).

In 1986, over 89 MM bf of hardwood lumber were shipped to Taiwan. On a volume basis, 93 percent of the lumber was oak exports; the majority was red oak. Much of the lumber exported to Taiwan is used in the production of furniture and other hardwood products that are, in turn, exported to

the United States. Lesser quantities of these products are also being shipped to Canada, Europe, and Japan. The Taiwanese are very price conscious and buy quantities of less expensive 1C southern red oak in contrast to European and Japanese buyers who prefer Appalachian and northern oak (Araman 1986).

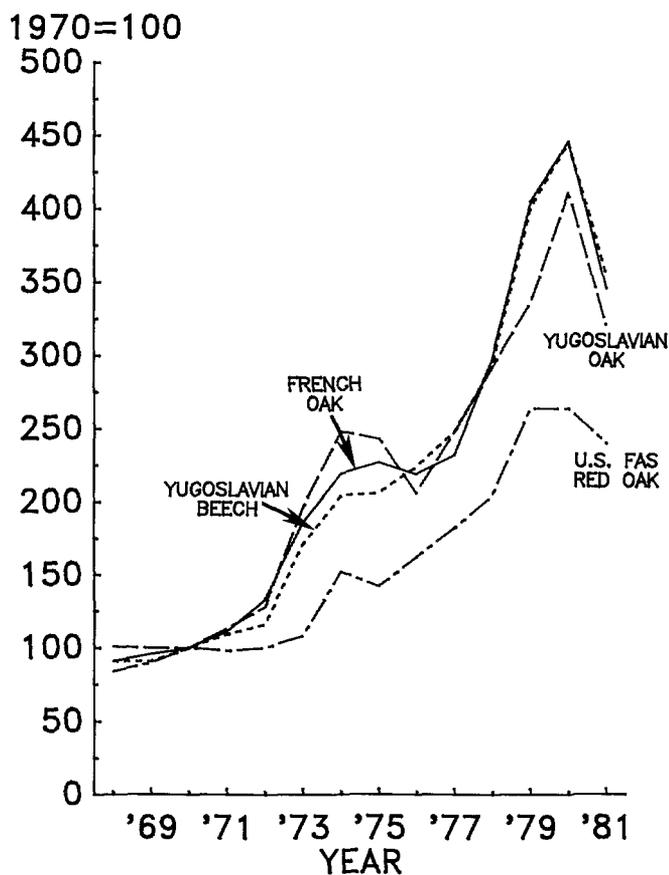


Figure 6.—Price indices (in U.S. dollars) for French oak, Yugoslavian oak, Yugoslavian beech, and U.S. red oak, 1968-81. Source: Food and Agriculture Organization of the United Nations 1982.

Veneer Exports

In 1970, 183 million square feet of hardwood veneer were exported at an average price of 5.3 cents per square foot. Walnut veneer accounted for 61 percent of the volume and 65 percent of the value. The two other veneer classifications in 1970 were fancy face and NEC. Fancy-face veneer, or highly figured material such as burl, accounted for 10 percent of the volume and 8 percent of the value, while NEC veneer accounted for 29 percent of the volume and 27 percent of the value.

The two countries receiving substantial quantities of U.S.-produced veneer in 1970 were West Germany with 53 per-

cent of the volume and 57 percent of the value, and Canada with 39 percent of the volume and 36 percent of the value. West Germany was the largest importer of walnut and NEC veneer, while Canada was the largest importer of fancy-face veneer. Nearly all the veneer exported to these countries, regardless of classification, had an imputed price of 5 to 6 cents a square foot indicating that exports consisted mainly of face veneer versus core stock veneers.

Between 1970 and 1973, veneer exports increased nearly 90 percent. Growth occurred in both the European and Canadian market; but Europe had 63 percent of the export market caused by large increases in Swiss, Austrian, Dutch, British, and Swedish demand for U.S. veneer.

Although Canada was still a major player in the veneer export market in 1973, European demand exerted more dominance as the decade progressed (Fig. 7). From 1973 to 1980, exports to Europe increased by 318 percent, and the European share of the export market increased from 63 to 85 percent. The major European user was West Germany

with 38 to 58 percent of the total export market. However, Switzerland, Great Britain, Denmark, Italy, Netherlands, and Belgium were also major importers.

With the growing demand for veneer, the species mix also changed. While the absolute volume of exported walnut veneer remained stable, the volume of oak veneer increased dramatically. By 1980, nearly 60 percent of the veneer was oak and 11 percent was walnut. As for log exports, white oak, rather than red oak, was the predominant species in the veneer export market. With the average imputed price of all exported veneer at 9 to 10 cents a square foot in 1980 and little variance with respect to species, we can assume that the majority of exported veneer was face veneer.

In 1981, total veneer exports dropped by 15 percent while veneer exports to Europe dropped by 27 percent. However, West German imports dropped by only 13 percent, indicating that most of the reduction in demand was from other European countries. The primary causes for this reduction appear to be increased value of the dollar relative to European currencies and an economic slowdown in Europe.

Total exports of veneer declined further during the 1982 worldwide recession but rebounded to near 1980 levels in 1983 and 1984. However, this rebound came from large increases in Canadian and Taiwanese demand for red oak veneer. The large increase in red oak veneer exports to Canada occurred concurrently with a smaller increase in red oak lumber shipments to Canada. Whether some of the increase in veneer shipments to Canada was for re-export to Taiwan is impossible to determine. Much of the red oak veneer shipped to Taiwan is shipped back to the United States and other markets in the form of furniture.

The decline in the European market coupled with the increase in the Canadian and Taiwanese markets changed the complexion of the veneer export market. Although face veneer was still the major export in 1986, imputed value of shipments dropped to 8 cents a square foot with a range of 6 cents per square foot for Canadian shipments to 8.5 cents per square foot for European shipments. The quality of the products shipped between 1980 and 1986 changed because the volume of exports dropped by 7 percent while value of exports dropped by 23 percent.

Plywood Exports

Although hardwood plywood exports are relatively small, the hardwood plywood market has shown considerable growth over the last 15 years. In 1970, 8.5 million square feet of hardwood plywood were exported. The major markets were Canada with 33 percent of the market, Great Britain 22 percent, and Mexico 14 percent. No other country had more than 5 percent of the market.

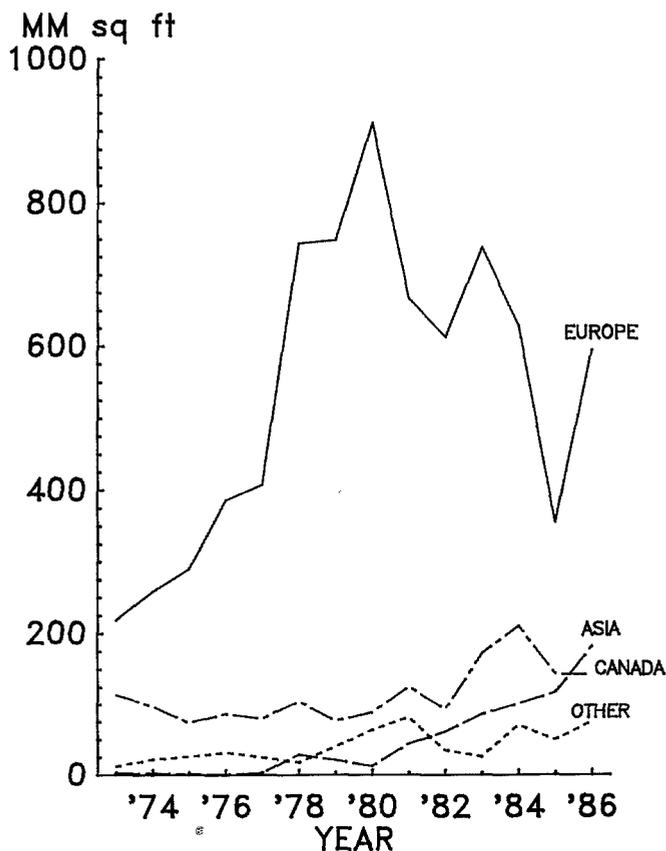


Figure 7.—Quantity of hardwood veneer shipped to Europe, Asia, Canada, and all other countries, 1973-86. Source: U.S. Department of Commerce, Bureau of the Census 1973-86.

The average price of exported hardwood plywood in 1970 was 14 cents per square foot with Mexican and Canadian shipments averaging 11 cents per square foot and shipments to Great Britain averaging 13 cents per square foot. These prices indicate that the majority of the exported plywood was thin veneer core products—probably with one good face. However, hardwood plywood is a very heterogeneous product for which there is little published price information.

By 1973, hardwood plywood exports more than tripled, with nearly all the growth resulting from an eightfold increase in Canadian demand. The market in 1973 was divided between Canada with 65 percent of the market and Mexico with 12 percent of the market. No other market had more than 4 percent. Average imputed price dropped to 13 cents per square foot with the price of exports to Canada remaining at 11 cents per square foot.

As with other hardwood products, hardwood plywood export demand increased rapidly during the mid-1970's. Unlike that of the other hardwood products markets, most of this increase resulted from increased Canadian demand. The best year for exports to Europe was 1977 with 14 percent of the volume and 34 percent of the value of total plywood exports. The Canadian share of the market in 1977 was 70 percent of the volume and 40 percent of the value. Although exports to Europe averaged 37 cents per square foot versus 9 cents a square foot for Canada, the sheer volume of Canadian exports dominated the market. One similarity between hardwood plywood exports in the 1970's and exports of other hardwood products was that West Germany was the largest European customer.

Although hardwood plywood exports increased substantially between 1970 and 1976, changes since 1976 have been very erratic with respect to both the overall level and the shipments to individual countries. Because information on this market is scarce, little can be said about the causes of this variation or potential future changes.

Factors Influencing Future Export Trends

Although it is relatively easy to examine past export trends, predicting future trends is difficult. Still, there are several factors that will influence future levels of exports even though they may not dominate future trade. A short discussion of factors that will likely influence future exports of the major hardwood products follows.

Logs

Even with the increase in Asian demands, the export market for U.S. logs seems to have stabilized in recent years. Several factors might reduce or increase shipments of U.S. logs in the future. A major factor that could reduce shipments would be legislation prohibiting log exportation. Although no major forest industry groups have come out in favor of such prohibitions, the complaint that we are exporting potential value-added is a common theme heard at grass-root levels and was quite loud during the late 1950's and early 1960's with respect to walnut log shipments. Factors that could increase log exports include greater economic growth in Europe and Japan and increased furniture production in Taiwan and Korea.

Another factor that will affect future demand for hardwood logs is foreign ownership of domestic veneer mills (Callahan 1985). Foreign-owned mills are heavily involved with the export market. Because of the transportation cost factor, greater veneer exports and decreased log exports will probably occur in the future.

One factor that will influence exports of not only hardwood logs but also all hardwood products is the exchange rate. The value of the dollar against foreign currencies has fluctuated widely in the last decade. The appreciation of the dollar in the early 1980's was a major cause of the decrease in European demand during this period. The decrease in the value of the dollar since 1985 is causing a rebound in this demand. The future strength of exports will be inversely proportional to the strength of the dollar against foreign currencies.

Lumber

The potential for sustained exports of hardwood lumber from the United States is high because the U.S. supply of sawtimber is growing twice as fast as it is harvested (Araman, in press). The United States is also the world's largest producer of hardwood lumber (Food and Agriculture Organization of the United Nations 1986).

One factor restricting hardwood lumber exports and the exports of all hardwood material may be a lack of export-grade material. Currently much of the exported lumber is FAS and SEL/1F. This is especially true for the European and Japanese markets. There are concerns that too much high-grade oak timber is being cut in an effort to get sufficient quantities of FAS for the export market. Even for cutting grade 1 sawlogs, the proportion of FAS and SEL/1F is small (36:6) relative to the proportion of lesser grade material. Lesser grade material must have a market before sawing logs is profitable.

Because of these problems, the level of future exports may depend on expanding the market for nonoak species or transforming 1C and 2C oak material into an exportable product (Araman 1987). Current efforts by various industry groups to introduce nonoak U.S. species to foreign buyers will help increase hardwood lumber exports in the late 1980's and early 1990's. The success of such actions may depend on supplies and prices of tropical species such as ramin and obeche and the relative level of furniture demand in Japan and Europe.

Future levels of lumber exports to Taiwan and potential exports of lumber to Korea will depend heavily on U.S. imports of furniture produced in these countries. Future furniture imports from these countries will be affected by relative cost advantages enjoyed by Asian manufacturers and U.S. trade policies with respect to furniture imports.

Veneer and Plywood

The distinction between hardwood veneer and hardwood plywood can be somewhat confusing since a piece of face veneer glued to a piece of core material and lower quality back material can constitute veneer core hardwood plywood. Many domestic and international purchasers of hardwood veneer actually produce hardwood plywood within their furniture or paneling plants as an intermediate step in the production process.

Hardwood veneer is currently more important than plywood for U.S. producers in both the domestic and international markets. This could change if Asian supplies of inexpensive lauan plywood are restricted. Because both of these products are versatile and greatly increase the square footage of surface coverage relative to the cubic feet of timber input, future demand could increase.

Specific factors that could increase U.S. exports of these products are reduced availability or increased price of tropical material, increased foreign ownership of domestic veneer slicers and plywood factories, increased consumer desire for the type of fancy-face look that veneer provides, and the increased use of veneer-wrapped parts replacing solid wood parts in furniture. One factor that could reduce veneer exports is increased use of synthetic veneer made from wood, foils, paper, or plastic.

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Presents historic trends in the export of hardwood logs, lumber, veneer, and plywood. Discusses factors that will influence future hardwood product exports.

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