

MANAGEMENT

# GLOBAL MARKETS FOR U.S. HARDWOOD COMPONENTS

MICHAEL P. HAAS

PAUL M. SMITH

---

## ABSTRACT

U.S. hardwood dimension and flooring manufacturers (SIC 2426) were surveyed in the spring of 1995 about their 1994 operations to better understand this value-added industry in terms of demographic variables, international market position (product mix, markets served, channels used), and the importance of business relationships with domestic and international customers. More than 3/4 of the respondents were from single-site operations, and 77 percent had less than \$6 million in total sales that year. Almost one-third (30%) of the study's 505 responding firms exported hardwood components. Destination of exports by region for U.S. hardwood component products were: Europe (45% of export value), Canada (20%), and Japan (15%). The two largest end-use customers of hardwood component products in domestic and international markets were wood furniture and moulding/millwork buyers. The most common hardwood component products were mouldings and millwork, cut-to-size blanks, and hardwood flooring. Respondents indicated that red oak and hard maple were the two most popular species sold to domestic markets, while red and white oak were most often demanded by international buyers. The channel most frequently used by hardwood component producers, for both domestic and international markets, was an in-house salesforce. Business relationships with domestic customers were more long term and partnership oriented than their relationships with international customers.

---

Information about the hardwood component industry is lacking, even though hardwood component producers play an important role in the value-added chain of hardwood manufacturing. Hardwood component products represent an excellent opportunity for U.S. companies to capture more of the value of U.S. hardwoods. This would utilize more U.S. labor and encourage higher levels of investment in new technologies to manufacture these goods. In 1991, hardwood dimension producers were second only to the pallet industry as end users of hardwood lumber, accounting for nearly 14 percent of lumber consumed that year (16).

Previous international hardwood product research used secondary data to examine trade flows. Using revisions of

U.S. Department of Commerce statistics, Luppold and Thomas (17) identified key users of hardwood lumber in the Pacific Rim. Hansen et al. (11) provided estimates of hardwood lumber consumption by European countries while also identifying important species and the geographic origin of U.S. exports to Europe. Other international studies using primary data from either the hardwood manufacturer's perspective or the international buyer's position focused primarily on hardwood lumber. Hammet

and McNamara (9) provided a detailed analysis of southern hardwood lumber exports from 1980 to 1988. Armstrong et al. (4) examined the product and service needs of Canadian buyers of U.S. hardwood lumber in an effort to allow U.S. hardwood lumber exporters to better understand Canadian markets for hardwood lumber. Hammett and DeForest (8) identified the needs of southern hardwood lumber producers in reaching export markets. More recently, Ifju and Bush (12) measured the hardwood lumber industry's perception and use of export assistance programs. Studies regarding international markets for hardwood component products, however, are lacking.

Additionally, no information is available regarding business relationships that U.S. hardwood component producers form with their domestic and international buyers, even though these relationships play a very relevant role in marketing. Previous authors (6,19,20,23) suggested that exchanges between a buyer and seller are an ongoing process with many antecedents rather than a discrete transaction with no past and no future. A relationship of some sort is formed between the buyer and the seller and may be viewed as some point on a business relationship continuum (1,22,24). Other authors have suggested that business relationships geared for the long term can result in long-term stability for the buyer

---

The authors are, respectively, Project Assistant and Associate Professor, The Pennsylvania State Univ., School of Forest Resources, 308 FRL, University Park, PA 16802-4705. This paper was received for publication in February 1996. Reprint No. 8494.

©Forest Products Society 1997.

Forest Prod. J. 47(3):45-51.

and seller (18), and can lead to increased profitability over time as buyers and sellers work together to lower the cost of doing business with one another (13). Assessing the business relationships that hardwood component firms pursue with their domestic and international customers may provide insight that firms can use to compete in the marketplace.

### THE U.S. HARDWOOD COMPONENT INDUSTRY

Historically, hardwood components were manufactured by an industry known as the hardwood dimension industry. The term "hardwood dimension" reflected the fact that the industry's products were smaller boards cut to specific lengths, widths, and thicknesses. More recently however, the term "hardwood component" is replacing hardwood dimension to describe this industry and its products. Leading the way in this change is the Wood Components Manufacturer's Association (WCMA) (formerly the National Dimension Manufacturer's Association (NDMA)). This trade group represents over 100 of the largest U.S. component manufacturers and initiated the change in terminology to more accurately describe the industry's products. "Hardwood components" are wood component parts used in the construction of furniture, cabinets, millwork, and related decorative wood products. Hardwood components are generally categorized as rough components, semimachined com-

TABLE 1. — Information sources and response rates.

Information source	Dun and Bradstreet	Harris Publishing	Miller Publishing	Total <sup>a</sup>
Population A				
Total sample size	317	393	213	923
No. of undeliverables	45	2	2	49
No. of responses	63	109	73	245
Response rate (%)	23.2	30.3	34.6	28.0
Population B				
Total sample size	311	385	270	966
No. of undeliverables	39	4	4	47
No. of responses	80	90	90	260
Response rate (%)	29.4	23.6	33.8	28.3

<sup>a</sup> Differences in the sample sizes of populations A and B are the result of corrections made to the populations after their separation into two groups. The populations were adjusted to remove firms that produced dimension from only softwoods, firms that were out of business, or firms that were otherwise unqualified.

ponents, or fully machined components<sup>1</sup>. Hardwood component buyers benefit with decreased transportation costs, higher yields, lower capital investment, less waste (and disposal), reduced inventory, reduced labor costs, and improved cost control (15).

### PRIMARY MARKETS FOR HARDWOOD COMPONENTS

Previously, most of the published information regarding global markets for U.S. hardwood components came from the WCMA. Exports of hardwood dimension and component parts have increased by over 10 percent annually over the past 5 years and are expected to exceed \$275 million in 1997 (14). Domestically, the U.S. furniture industry has been the largest end user of hardwood component products. In 1994, the U.S. furniture industry consumed 41 percent of all hardwood component production (15). The second largest consumer of hardwood components is the cabinet industry. Hardwood component usage by cabinetmakers grew during the 1980s and early 1990s. However, the subsequent recession and decline in housing starts brought that percentage down to 26 percent in 1994. The third largest market for hardwood component parts is the building products industry. Consumption of hardwood components for building products grew 600 percent, increasing from 4 percent of the hardwood components produced in 1984 to 24 percent in 1994. The last major end-use market for hardwood components is the decorative/specialty items market. Hardwood component use for decorative/specialty

items has nearly doubled since 1984, growing from 5 to 9 percent (15).

### METHODS

#### SAMPLING

This study used a sample frame of all U.S. companies that listed Standard Industrial Classification (SIC) code 2426, *Hardwood Dimension and Flooring*, as either a primary or secondary product of their operations. A comprehensive list of 3,684 firms that manufacture hardwood component products was assembled from the following sources: Harris Publishing's 1994 Pennsylvania Industrial Directory, Dun and Bradstreet's 1994 Industrial Listings, and Miller Publishing's 1995 Wood Dimension and Components Buyers Guide.

It has been suggested, but not quantified in the literature, that less than half of all hardwood components come from independent mills whose principal product is hardwood components (SIC 2426) and that the remaining component production comes from firms with component or "rough" mills that feed other parts of their operations. This study included only those firms who indicated that hardwood components (SIC 2426) was their primary business, or 46.7 percent of the 3,684 firms in our database.

A survey instrument was developed that included questions regarding demand and markets for hardwood components as well as questions to measure business relationship characteristics. Feedback from a pretest with managers of hardwood component firms revealed that many business owners would not complete the questionnaire because it was too long. Therefore, in an effort to

<sup>1</sup> Rough components include cut-to-size blanks that are cut to specific thicknesses, widths, and lengths and are rough surfaced on two or more sides to a nominal thickness. This class of hardwood components is the most basic and most widespread of all hardwood component products. A recent study indicated that 56 percent of firms buying wood component parts from outside sources purchase cut-to-size blanks (3). Rough components that undergo further manufacturing but are not completely machined are called semimachined components. Semimachined components include parts that have been machined with one or any combination of the following operations: edge gluing, finish surfacing, moulding, turning, tenoning, flat sanding, equalizing, trimming, or mitering. Semimachined component parts are generally contracted for on a job-by-job, client-by-client basis. As such, many different types of products are made from semimachined components. The last class of hardwood component parts are termed fully machined components. This class represents wood component parts that are machined and ready for assembly. No additional work is needed prior to assembly, save a polish sanding prior to painting or staining. Like semimachined components, fully machined components parts are custom-made products.

maximize response rates, the sample frame of 3,684 firms was divided into 2 equal populations of 1,842 firms on an  $n^{\text{th}}$  name basis. This permitted administering half of the questionnaire to each population. Following this separation, firms that did not list hardwood components (SIC 2426) as their primary business activity were removed from each population. Population A received a business relationships survey, while population B received the demand and markets survey. Further, we decided to retain key demographics questions in both questionnaires as length permitted. Therefore, results reflect populations A and B for some questions while others reflect only population A or B. For example, questions regarding total sales have 505 respondents (populations A and B), while questions regarding hardwood component products and markets have 245 respondents (population B only), and business relationship questions have 260 respondents (population A only). Data regarding information sources, response rates, and sample sizes are listed in **Table 1**.

Data were collected by mail survey using the Total Design Method (5). A survey booklet and cover letter were mailed to a contact person at each firm. A reminder postcard was mailed 1 week after the first mailing. Thereafter, at 14-day intervals, a second and third copy of the questionnaire, along with reminder letters, were sent to nonrespondents. The overall survey effort produced 505 usable questionnaires out of an adjusted population of 1,793 firms, making the adjusted response rate 28.2 percent. This response rate is typical of industrial surveys that target small- and medium-sized enterprises (21-23).

#### NONRESPONSE BIAS

Potential nonresponse bias was measured using two different methods. First, early respondents were compared to respondents who returned surveys after follow-up efforts. This was based on previous work suggesting that respondents who respond to follow-up appeals are more like nonrespondents (7). Questionnaires were tracked by a reference number, and comparisons were made between first-mailing respondents and respondents to the second and third mailings. First-mailing respondents supplied just over 50 percent of the usable questionnaires, while the balance of ques-

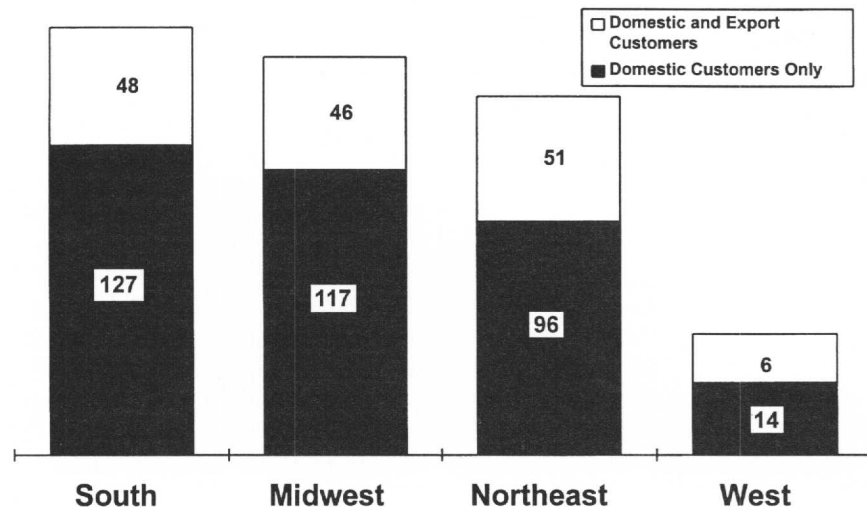


Figure 1. — Customer base breakdown of respondents by region ( $n = 505$ ).

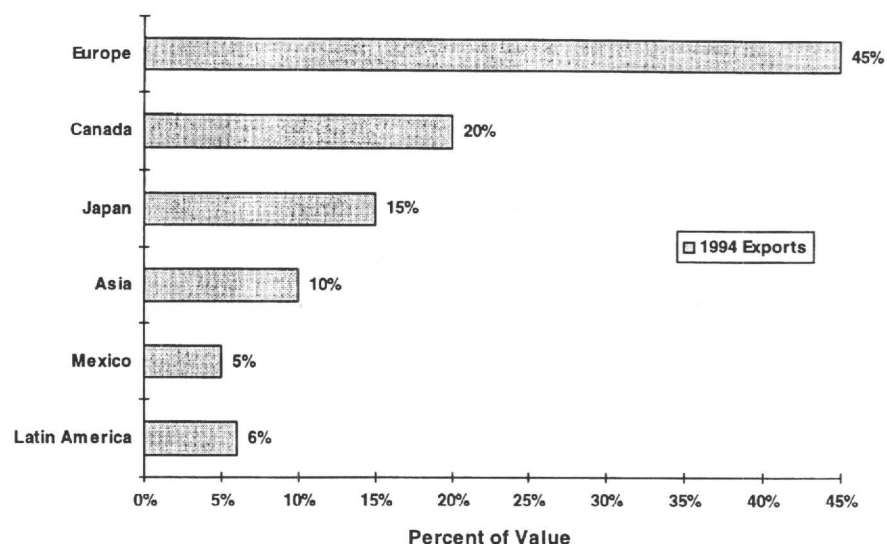


Figure 2. — Export markets for hardwood components in 1994 ( $n = 117$ ).

tionnaires was accounted for by second- and third-mailing respondents. Using a t-test, early respondents were compared with late respondents on the variables firm age, number of employees, 1994 total company sales, and percent of 1994 sales to domestic and export markets. These comparisons produced no significant differences between early and late respondents at the 0.05 level of significance. Second, a random sample of nonrespondents from the population was interviewed to assess possible differences between this group and respondents on a reduced set of variables. A fax survey

was combined with a telephone interview to collect data from 38 willing participants. Employing a t-test, responses from participants did not differ significantly from respondents in demographic variables such as firm age, number of employees, 1994 total company sales, and percent of 1994 sales to domestic and export markets at the 0.05 level of significance, thus allowing concerns over nonresponse bias to be minimized.

## RESULTS

### RESPONDENT PROFILE

Results from surveys of populations A and B (505 respondents) reveal that

the hardwood component industry is comprised mainly of small firms. In 1994, 80 percent were single-site plants, 9 percent operated at two locations, 5 percent operated at four or more locations, and 3 percent operated three locations. Nearly one-third (32.5%) of our 505 respondents were considered small (staffed with 10 or fewer full-time production and management employees), 40.3 percent were medium (11 to 49 employees), and the remaining 27.2 percent were classified as large firms (50 or more employees). The mean employment for all respondents was 59 employees, and

the median was 20 employees. Based on 1994 total sales, firms were again grouped into size classes of small (sales of \$6 million or less), medium (\$6 million to \$50 million), or large (more than \$50 million in sales). Grouping by total sales classified 77 percent of firms into the small category, 18 percent into the medium category, and 5 percent into the large category. Respondents were also grouped regionally according to U.S. geographic regions (Fig. 1). Thirty-five percent (175 firms) of respondents were located in the South, 32 percent (163 firms) were in the Midwest, 29 percent

(147 firms) were in the Northeast, and 4 percent (20 firms) were from the West.

## MARKETS AND END USERS OF HARDWOOD COMPONENTS

### EXPORT MARKETS FOR HARDWOOD COMPONENTS

Figure 2 displays export markets for hardwood components as reported by respondents in 1994. According to respondents, Europe (as a group of nations) was the leading importer of hardwood components, consuming 45 percent of all exports. Canada was the next largest importer (20%), followed by Japan (15%). Other Asian nations, such as Taiwan, the Koreans, and China imported a combined 10 percent of the 1994 hardwood component exports. Mexico and Latin America imported only small amounts of hardwood components, with imports of 6 and 4 percent, respectively.

Results from the survey reveal that the majority of hardwood component producers sell their products exclusively in domestic markets; 70 percent sold only to domestic customers in 1994, while 30 percent sold a portion of their production abroad in 1994. According to our survey population B ( $n = 260$ ) and consistent with Lawser (15), the leading domestic end user of hardwood components was the wood furniture industry, which consumed 32 percent of all component production by value in 1994 (Fig. 3). Producers of mouldings and millwork were the second largest end-user group, receiving 17 percent of all 1994 hardwood component production by value.

International end users of hardwood component products were similar to domestic end users in terms of application, except that specialty buyers (the "other" category in Fig. 3) were the second most important end-use buyer at 26 percent of the value of respondent sales in 1994. Twenty-seven percent of 1994 international hardwood component production (by value) was sold to makers of wood furniture, and mouldings and millwork firms received 17 percent of 1994 export shipments (Fig. 3).

### HARDWOOD COMPONENT PRODUCT MIX

Figure 4 illustrates the hardwood component product mix of respondents in domestic and international markets by value in 1994. For domestic sales, respondents indicated that mouldings and millwork were the most commonly sold product, comprising 22 percent of the

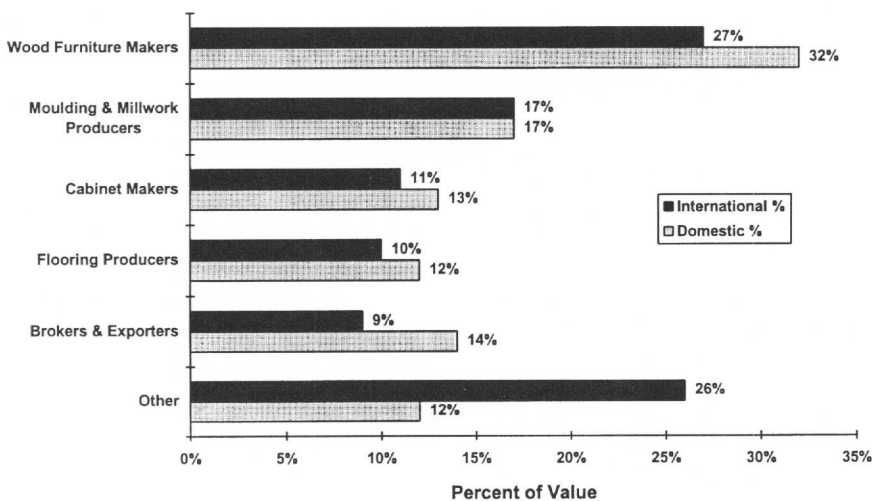


Figure 3. — Domestic and international end users of hardwood components in 1994 (domestic  $n = 252$ , international  $n = 66$ ).

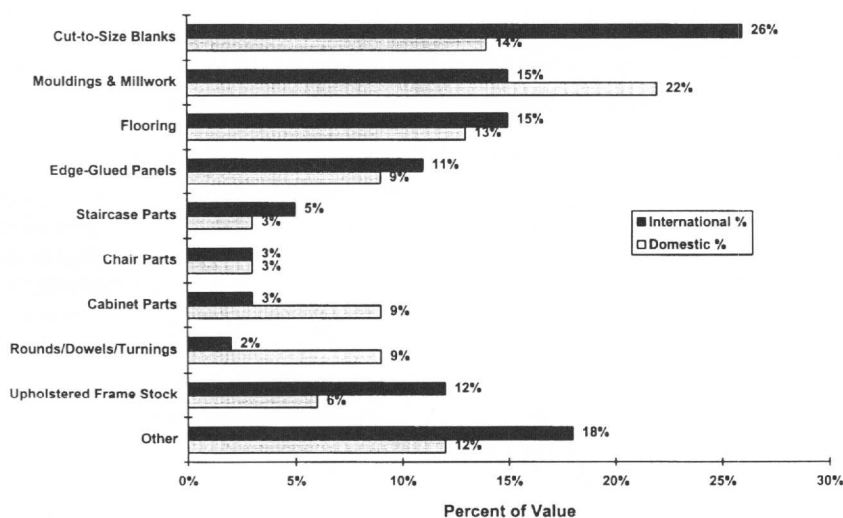


Figure 4. — 1994 hardwood component product mix in domestic and international markets (domestic  $n = 249$ , international  $n = 80$ ).

value of hardwood component shipments. The second most commonly sold product was cut-to-size blanks (14%). Next came hardwood flooring (13%), followed by miscellaneous specialty parts (12%). The remainder of the 1994 domestic product mix by value included: edge-glued panels (9%); solid rounds, dowels, and turnings (9%); cabinet parts (9%); upholstered furniture frame stock (6%); chair parts (3%); and staircase parts (3%).

The mix of hardwood component products in international markets differed from the mix of products in domestic markets (Fig. 4). Cut-to-size blanks was the product most commonly sold in 1994 (26%). Miscellaneous specialty parts was the second most commonly sold product (18%). These specialty parts represent parts that are used in a wide variety of applications from tool handles, toy parts, and door parts, to boat parts and others. Next in line were moulding and millwork and hardwood flooring, each accounting for 15 percent of the value of hardwood component exports. Following these were edge-glued panels (11%); staircase parts (5%); cabinet parts (3%); chair parts (3%); solid rounds, dowels, and turnings (2%), and upholstered furniture frame stock (2%).

#### SPECIES MIX IN DOMESTIC AND INTERNATIONAL MARKETS

The mix of species used in hardwood components in domestic and international markets is detailed in Figure 5. Respondents selling to domestic markets indicated that hardwood components made from red oak accounted for 35 percent of the value of hardwood components sold in 1994. Following red oak was hard maple (16%). Another significant species used in making hardwood components parts was yellow-poplar (12%). Filling out the species used for hardwood components in domestic markets were white oak (10%), cherry (6%), ash (5%), and hickory (3%). International buyers of hardwood components chose similar species. Red oak comprised 28 percent of all hardwood component exports, while white oak comprised 22 percent. Respondents indicated that hard maple and yellow-poplar were also popular export species (12% and 10%, respectively). Other species of importance in export markets were ash (9%), hickory (8%), and cherry (3%).

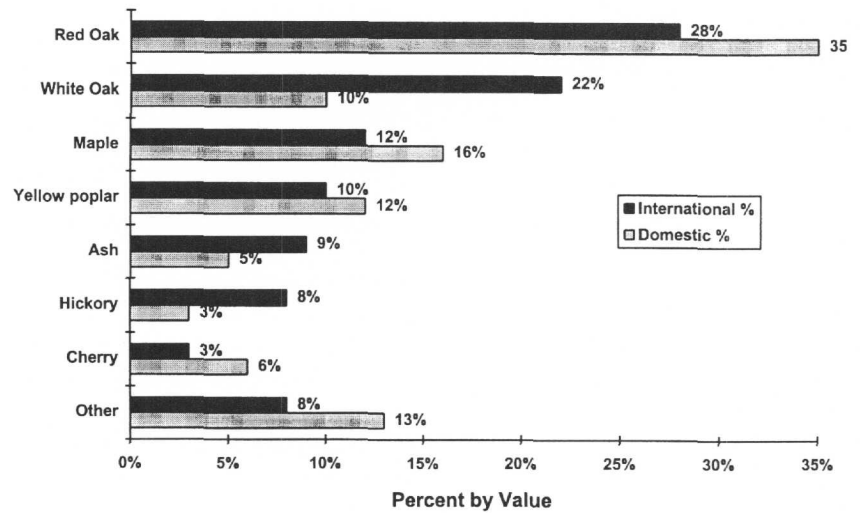


Figure 5. — 1994 hardwood component species mix in domestic and international markets (domestic  $n = 250$ , international  $n = 65$ ).

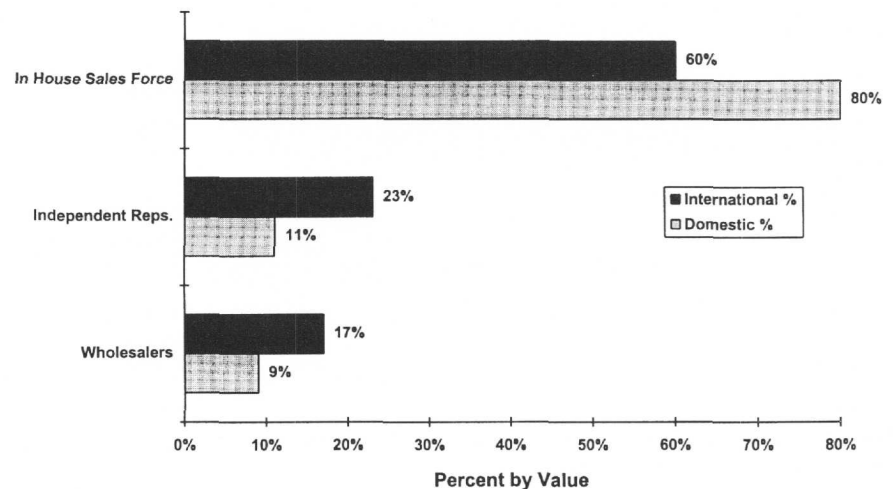


Figure 6. — Channels of distribution utilized for sales of hardwood components to domestic and international markets in 1994 (domestic  $n = 249$ , international  $n = 71$ ).

#### CHANNELS OF DISTRIBUTION

Respondents also indicated the channels of distribution they utilize in selling their products (Fig. 6). In both domestic and international markets, hardwood component firms rely primarily on in-house salesforces to reach customers: 80 percent of sales to domestic customers and 60 percent of sales to international customers were made by an in-house salesforce. In domestic markets, hardwood component firms used independent sales representatives (who do not take title to the goods) for 11 percent of sales, while independent sales repre-

sentatives were used to make 23 percent of sales to export markets. Last, hardwood component manufacturers also used wholesalers (who do take title to the goods) to sell product in 1994. Wholesalers were the channel used for 9 percent of domestic sales and 17 percent of international sales.

#### BUSINESS RELATIONSHIPS

When asked to rate their level of agreement (1 = strongly disagree, 3 = neither agree nor disagree, and 5 = strongly agree) with the statement, "Our customers are important to us because they are our partners in a long-term rela-

TABLE 2. — Long-term orientation of relationship by geographic region served. Respondents ranked their agreement with the statement: *Our customers are important to us because they are our partners in a long-term relationship.*

	Geographic region of customer				F statistic <sup>b</sup>	Probability <i>p</i> <sup>c</sup>
	Japan ( <i>n</i> = 32)	Asia (excluding Japan) ( <i>n</i> = 28)	Europe ( <i>n</i> = 36)	Latin America ( <i>n</i> = 20)		
Mean level of agreement <sup>a</sup>	2.40	2.17	3.30	2.10	27.95	.0000

<sup>a</sup> Rating scale: 1 = strongly disagree, 3 = neither disagree nor agree, and 5 = strongly agree.

<sup>b</sup> Analysis of variance (ANOVA) techniques were used to test the hypothesis of no differences between region means.

<sup>c</sup> A Duncan's Multiple Range Test, with  $\alpha = .05$ , was used to test the equality of group means. The United States and Canada significantly differed from all other regions. Europe significantly differed from Japan, Asia (excluding Japan), and Latin America.

tionship," hardwood component firms seemed more likely to view some customers as partners in long-term relationships than others. This selectivity appears to be influenced by the geographic region of the customer, as seen in **Table 2**. Analysis of variance (ANOVA) procedures were used to test the hypothesis that geographic region had no effect on the level of agreement with the partnership statement. The ANOVA techniques, however, revealed differences between a producer's level of agreement by the region served at the .05 level of significance.

A Duncan's Multiple Range Test (DMRT) with  $\alpha = .05$  level of significance, found a difference in the mean level of agreement by region of customer served (**Table 2**). The DMRT shows that hardwood component producers are more likely to view domestic customers as partners as compared to their foreign customers and further, they appear more likely to form long-term relationships with European customers versus other foreign customers from Latin America, Japan, and other Asian regions.

#### DISCUSSION AND CONCLUSIONS

With the predominance of small firms in the industry, it is not surprising that only 30 percent of firms exported hardwood components in 1994. Smaller firms often lack the necessary resources and skills to pursue export business. Building export business often requires hiring personnel that are devoted to marketing or sales, and many small firms do not have the capital resources to hire the necessary personnel. Previous work involving hardwood lumber producers found that firms serving export markets are typically larger in terms of number of employees and total sales than firms serving domestic markets (10). Another factor limiting exports might be the "health" of domestic housing markets in 1994.

Housing starts reached 1.45 million in 1994, their highest level since 1988 (2). With domestic markets for hardwood components growing, it is possible that hardwood component producers were concentrating on meeting demand in U.S. markets rather than in export markets. Evidence of this is the fact that mouldings and millwork were the leading hardwood components sold domestically in 1994, and this is reinforced when one considers that moulding and millwork producers were the second largest end-users of hardwood components that same year.

While domestic sales outweighed exports in 1994, experts predict that 25 percent of industry revenues will come from export markets in 2005 (15). Currently, an estimated 9 percent of revenue comes from export markets, with the largest portion of revenue coming from sales of cut-to-size blanks. As hardwood component exports grow in the future, manufacturers can expect that opportunities will increase for sales of more semimachined and fully machined components. For example, international cabinetmakers purchased 11 percent of all hardwood components sold by value in 1994, but cabinet parts constituted only 3 percent of exports that same year. This gap might suggest that cabinet manufacturers are purchasing components with less value added, such as cut-to-size blanks and edge-glued panels. However, as foreign cabinetmakers become more aware of the technical capabilities of U.S. hardwood component makers, there may be an opportunity for U.S. manufacturers to sell more value-added products, such as fully machined cabinet parts, in these markets.

This study shows that U.S. and Canadian buyers of hardwood components are viewed as longer term partners in a business relationship as compared to compo-

nent customers outside the United States and Canada. In terms of international customers, European buyers are viewed as significantly more important as partners in a long-term relationship compared to buyers from Japan, other Asian nations, or Latin America. This suggests the importance of a common culture in the formation of buyer-seller relationships.

Areas for further research may include studying specific end-use hardwood component buyers in select international markets (i.e., Canada and Japan). It would also be interesting to examine the foreign buyer's perspective of U.S. hardwood dimension suppliers in terms of their long-term commitment to the business relationship.

#### LITERATURE CITED

1. Anderson, J.C. and J.A. Narus. 1991. Partnering as a focused market strategy. *California Management Review* 33(3):95-113.
2. Anonymous. 1995. After strong '94, U.S. housing starts to slip in '95. *Wood Technology* (March/April):11.
3. \_\_\_\_\_. 1994. Study links component purchases with profits. *Wood and Wood Products* (7):230-232.
4. Armstrong, J.P., T.G. Ponzurick, and W.G. Luppold. 1993. Marketing-related criteria affecting the purchase of U.S. hardwood lumber by Canadian importers. *Forest Prod. J.* 43(6):57-62.
5. Dillman, D.A. 1978. *Mail and Telephone Surveys: The Total Design Method*. John Wiley & Sons, Inc., New York.
6. Dwyer, F.R., P. Schurr, and S. Oh. 1987. Developing buyer-supplier relationships. *J. of Marketing* 51(4):11-27.
7. Fowler, F.J., Jr. 1984. *Survey Research Methods*. Sage Publications Inc., Beverly Hills, Calif.
8. Hammet, A.L., III and C.E. DeForest. 1993. Southern hardwood lumber exporters: practices and problems. *Forest Prod. J.* 43(3):9-14.
9. \_\_\_\_\_ and K.T. McNamara. 1991. Shifts in Southern wood products exports: 1980 to 1988. *Forest Prod. J.* 41(2):68-72.
10. \_\_\_\_\_, F.W. Cabbage, and W.G. Luppold. 1991. Southern Appalachian hardwood lumber manufacturers: characteristics

- of exporters and nonexporters. *Forest Prod. J.* 41(7/8):70-76.
11. Hansen, B.G., W.G. Luppold, and R.E. Thomas. 1991. Revised data on U.S. hardwood lumber export volumes to Europe, 1981 to 1990. *Northern J. of Applied Forestry* 8(4):156-160.
  12. Ifju, P.A. and R.J. Bush. 1994. Export assistance in the hardwood lumber industry: an examination of awareness, use, and perceived benefit. *Forest Prod. J.* 44(6):27-32.
  13. Kalwani, M.U. and N. Narayandas. 1995. Long-term manufacturer-supplier relationships: do they pay off for supplier firms? *J. of Marketing* 59(1):1-16.
  14. Lawser, S.V. 1996. '97 Business forecasts. *Import/Export Wood Purchasing News* 23(3):1,13.
  15. \_\_\_\_\_. 1994. Dimension industry trends. Presented at the Pennsylvania State Univ. Wood Components Manufacturer's Assoc., Marietta, Ga.
  16. Luppold, W.G. 1993. Decade of change in the hardwood industry. *In: Proc. 21st Annual Hardwood Symposium of the Hardwood Res. Council.* Memphis, Tenn.
  17. \_\_\_\_\_. and R.E. Thomas. 1991. A revised examination of hardwood lumber exports to the Pacific Rim. *Forest Prod. J.* 41(4):45-48.
  18. Lyons, T.F., A.R. Krachenberg, and J.W. Henke, Jr. 1990. Mixed motive marriages: what's next for buyer-supplier relations? *Sloan Management Review* Spring: 29-36.
  19. Macneil, I.R. 1980. *The New Social Contract, An Inquiry Into Modern Contractual Relations.* Yale Univ. Press, New Haven, Conn.
  20. \_\_\_\_\_. 1978. Contracts: adjustment of long-term economic relations under classical, neoclassical, and relational contract law. *Northwestern Univ. Law Review.* 72:854-902.
  21. Michael, J.H and P.M. Smith. 1995. Information sources used by furniture retailers: the importance of furniture markets. *Forest Prod. J.* 45(4):25-30.
  22. Smith, P.M. and R.P. Vlosky. 1994. Interorganizational information system (IOS) technology influences on international forest products business relationships. *Taiwan Forest Industries J.* 13(4):653-668.
  23. Vlosky, R.P. and P.M. Smith. 1993. Enhancing business relationships via electronic information technologies: wood products sellers and homecenter buyers. *Forest Prod. J.* 43(5):11-18.
  24. Wilson, D.T., H. Sang-Lin, and S.P. Dant. 1993. Buyer-seller relationships today. *Industrial Marketing Management* 22(4):331-338.