

Appalachian Hardwood Product Exports – An Analysis of the Current Chinese Market

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Abstract

Two mail surveys of Appalachian hardwood product exporters and Chinese importers were conducted in 2008 to analyze the export practices for Appalachian hardwood products and the status of the current Chinese market. Results showed that approximately 11.4 million board feet (MMBF, Doyle scale) of hardwood logs and 145.3 MMBF hardwood lumber were exported to China by the US respondents in 2007. Approximately 37.14 percent of the respondents who exported hardwood products to China exported red oak logs, followed by white oak, black walnut, black cherry, and hard (sugar) maple. The top species of hardwood lumber exported to China were: red oak, white oak, yellow poplar, black walnut, hickory, cherry, hard maple, and soft maple. The Appalachian hardwood logs entered the markets largely in east and north central China, whereas the hardwood lumber importers were mainly distributed in east, south, and north central China. Respondents in the U.S. indicated that transportation freight costs and payments are the limiting factors when considering expanding business overseas. The continued decreasing hardwood price has put more pressure on hardwood products exporters to maintain profit margins. Due to the current economic downturn, hardwood production in the Appalachian hardwood region has declined by more than 40 percent. Exports of hardwood products to China will be affected to some extent. China, however, is still regarded as an important overseas market in the near future.

Keywords: hardwood products, exports, survey, Appalachian region, Chinese market.

Introduction

Wood products are an important internationally traded commodity that can significantly affect the balance of trade of many countries (Peck 2002). The U.S. is the world's foremost manufacturer of forest-related products and accounts for about one quarter of the world's total production (SCFC 2009). Exports of US hardwood lumber, logs, and veneer expanded to \$2.68 billion in 2007, which relates to a 22 percent increase from \$2.19 billion in 2003 (US Department of Agriculture [USDA] 2009). China has emerged as the second-largest export market for US hardwood products, trailing only Canada. Additionally, the value of forest products exported to China has doubled over the past 5 years. In 2007, the major hardwood products (i.e., logs and lumber) exported to China was valued at \$442 million, accounting for 77 percent of total forest products exports to China. The proportions of hardwood products exported to China (by value) were 39 percent hardwood lumber, 33 percent hardwood logs, and 5 percent hardwood veneer (USDA 2009). China's demand for imported wood products, specifically the increase of imported US forest products, was stimulated largely by China's booming housing market, nationwide logging ban on natural forests, and reduced tariff on forest products. As a result, China has become an important marketplace for US forest product exporters.

Most of the US hardwood resource and industry is located in the eastern states. The Appalachian region has more than 65.4 million acres of hardwood timber resources and is responsible for more than 55 percent of the hardwood lumber produced in the eastern United States (US Department of Commerce [USDC], Bureau of the Census 2005). Hardwood sawmills in the Appalachian region range in capacity from less than 100,000 board feet to more than 50 MMBF per year (Luppold 1995, Luppold et al. 2000). The decline of US housing market—and thus a dramatic fall in wood products demand—has forced hardwood producers to cut manufacturing by more than 40 percent. Remaining viable and competitive, given the current declining market, has become a major concern for hardwood industry. A better understanding of Appalachian hardwood producers' current export practices is necessary to expand hardwood trade between the Appalachian region and China.

The objectives of this paper are to (1) investigate current exports of Appalachian hardwood products to the Chinese market, (2) examine potential and existing trade barriers between US producers and Chinese customers, and (3) discuss some ongoing issues related to the hardwood industry in the Appalachian region.

Methods

Two formal mail surveys of US Appalachian hardwood exporters and Chinese importers were conducted to gather specific market information in hardwood exports and imports. The surveys were designed using Dillman's tailored design method (Dillman 2000). The mailing list of Appalachian hardwood exporters was obtained from the American Hardwood Export Council (AHEC 2008), the National Hardwood Lumber Association (NHLA 2008), and other state

agencies. The contact information of the Chinese importers was provided by the China Timber Distribution Association in China (CTDA 2007), one of the most important nationwide organizations in the wood industry.

Approximately 1,800 companies in the Appalachian hardwood region (Figure 1a) were selected as potential hardwood products exporters. The surveys were conducted in 2008, and the data collected were from 2007. The questions were designed to get answers related to concerns about conducting business overseas, annual production capacity, China's market share, volume and species of hardwood products exported to China, the grading rules used, categories of Chinese buyers, any potential business barriers, and future trends.

Fifty Chinese companies were surveyed, which represented approximately 8% of the members of the CTDA. The sampled companies are larger and have import/export experience; therefore, the data obtained from the survey can reflect the US hardwood products purchased in China to a limited extent. A stratified random-sampling method was used. The population was divided into five subpopulations (regions) and random samples were taken of each region based on the proportion of the size of the stratum of the entire population. The five regions were: East China (Shanghai, Zhejiang, Jiangsu, and Shandong provinces), North Central China (Beijing, Hebei, and Tianjin), South China (Guangdong and Fujian provinces), Northeast China (Liaoning, Jilin, and Heilongjiang provinces), and West China (Guizhou, Yunnan, and Guangxi) (Figure 1b). The total sample size of the survey was 50: East China (22), South China (15), North Central China (6), Northeast China (4), and West China (3).

Results

Response rate. In the U.S., two hundred fifty-five responses were received, of which 241 surveys were usable. Two hundred sixteen surveys were returned undeliverable, which reduced the sample size to 1,584. Therefore, the adjusted response rate was 15 percent. Of the respondents, 28 percent reported that they exported hardwood products, and 13 percent and 25 percent of the respondents exported hardwood logs and hardwood lumber, respectively, in 2007. These responses were used in the following analysis.

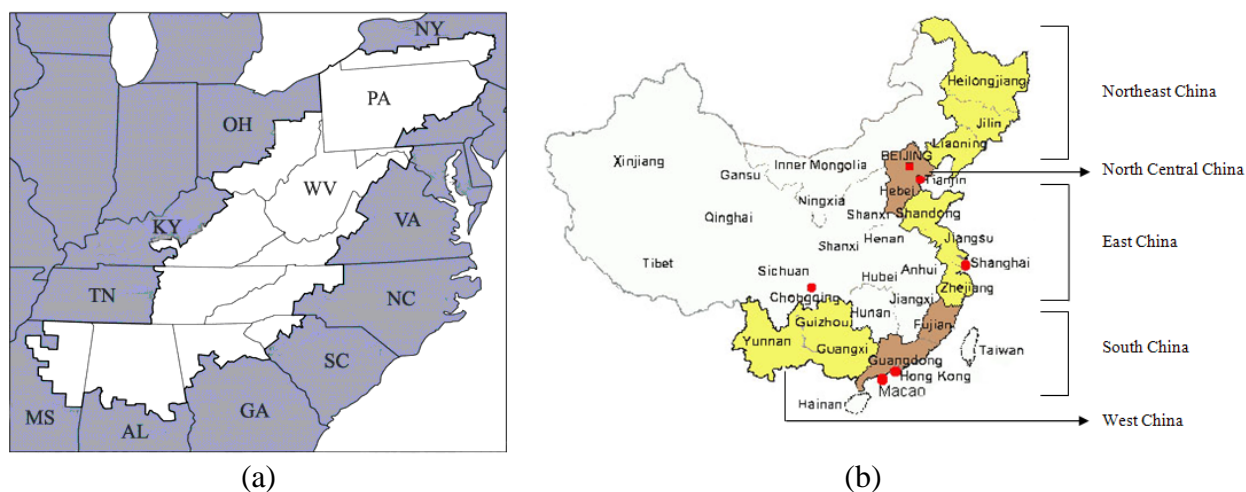


Figure 1: Study area: (a) Appalachian region, U.S. and (b) China.

Of the 50 Chinese firms surveyed, 48 questionnaires were returned, a response rate of 96 percent. Of 46 firms that purchased hardwood products in 2007, a majority were located in the East and South China, accounting for 46 and 30 percent of the total, respectively. This is partly because of sufficient production capacity and ease of access to imported hardwood products. The purchasers located in the North Central, Northeast, and West China, were 13, 9, and 2 percent, respectively.

Production capacity of Appalachian hardwood producers. The surveyed hardwood exporters selling to China (n = 44) were divided into five groups based on annual production capacity. Approximately 43 percent of the respondents produced more than 10 MMBF (large scale) of hardwood lumber. Nine, 11, and 11 percent of the respondents produced 7.5 to 10 MMBF (medium to large), 5 to 7.5 MMBF (medium), and 2.5 to 5 MMBF (medium to small) of hardwood lumber, respectively. Fourteen percent of the respondents were small-scale exporters and produced less than 2.5 MMBF of hardwood lumber annually. The remaining 12 percent of respondent companies did not reveal their annual production. We found no statistically significant difference between annual production capacity and their export proportions (Table 1). The export proportion for the large-scale producers varied from 5 to 95 percent. For the medium to large producers, the export proportion ranged from 35 to 75 percent. Most of the large-scale hardwood product producers exported 20 to 40 percent of their total production to international markets. On average, approximately 31 percent of their exports went to China (n=16, SD = 18%).

Table 1: Export proportion and lumber product (grade and species) mix by annual production capacity (n=30)*.

	Production capacity (MMBF)				
	Large (>10) (n=16)	Medium-large (7.5-10) (n=4)	Medium (5-7.5) (n=4)	Medium-small (2.5-5) (n=4)	Small (<2.5) (n=2)
Export proportion (%)					
Minimum	5	35	2	20	40

Mean	27	49	28	59	40
Maximum	95	75	70	85	40
Species exported (%)					
Ash	19	0	25	0	50
Black cherry	44	25	0	25	0
Black walnut	38	50	25	50	50
Hard maple	25	50	25	0	0
Hickory	31	50	0	50	0
Red oak	88	75	75	50	50
Soft maple	19	50	25	0	0
White oak	88	50	50	75	50
Yellow poplar	75	100	50	75	50

* The exporters who didn't reveal the export proportion and product mix were not included.

Hardwood products exported by volume. The total US hardwood log exports, excluding alder, to China in 2007 was approximately 84 MMBF (assuming 1MBF = 4.59 m³; USDA 2009). According to the survey results, approximately 11.4 MMBF of Appalachian hardwood logs were exported to China by the respondents in 2007. During the same period, the U.S. exported about 242 MMBF of lumber to China, of which 87 percent was temperate hardwood lumber (88% of the total lumber exported in terms of value; USDA 2009). The total surveyed volume of Appalachian hardwood lumber exported to China was 145.3 MMBF, accounting for 69 percent of the total US hardwood lumber exports to China. Figure 2 shows percentages of hardwood logs and lumber exported to China by states within the Appalachian region. West Virginia, Ohio, and Virginia were the top three hardwood logs exporting states, respectively, to the Chinese market. West Virginia was also the largest hardwood lumber exporting state to the Chinese market, followed by Virginia and Mississippi, respectively. In terms of value-added wood products (i.e., lumber, plywood, veneer, wood containers, flooring and trusses, manufactured homes, and prefabricated wood buildings, etc.) exported to China, West Virginia ranked fifth in the Appalachian region, following North Carolina, Virginia, Georgia, and New York (USDC 2009).

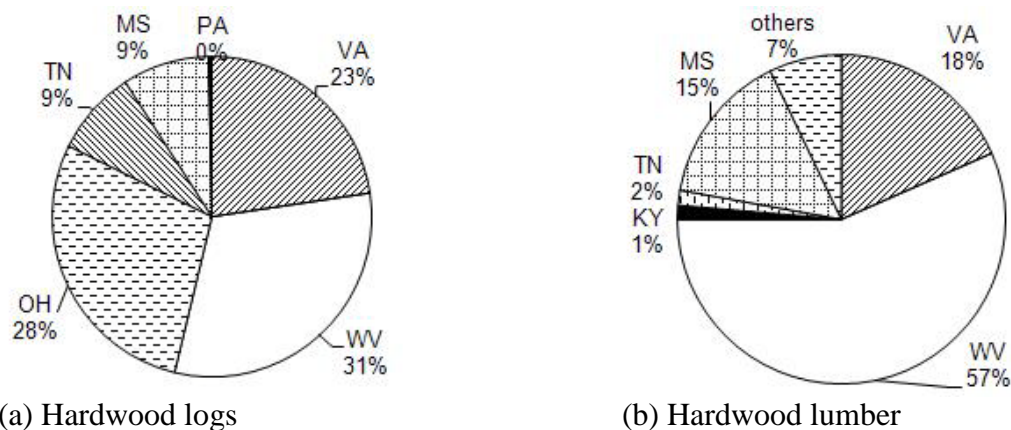


Figure 2: Hardwood logs and lumber exported to China by state.

Hardwood products exported by species. Our survey showed that red oak makes up 35 to 70 percent of total production for most hardwood producers. Various species of hardwood products are exported from the Appalachian region to China. Approximately 37 percent of the respondents exporting hardwood products to China exported red oak logs, followed by white oak (29%), black walnut (20%), black cherry (14%), and hard (sugar) maple (11%) logs. The frequency of hardwood lumber exported out of Appalachian region by species was as follows: red oak (66%), white oak (66%), yellow poplar (66%), black walnut (37%), hickory (29%), black cherry (26%), hard maple (23%), and soft maple (17%). According to the national statistics, the top 5 species of US hardwood logs exported to China (by value) were black walnut, red oak, yellow poplar, white oak, and cherry, and the top 5 hardwood lumber species were yellow poplar, red oak, western red alder, white oak, and maple (USDA 2009). The frequencies of lumber products exported, in percentage, by species and production capacity are shown in Table 1. For example, 88 percent of large-scale companies exported red oak and white oak lumber. Overall, by proportion, red oak, white oak, and yellow poplar were the major lumber species exported by the surveyed companies.

Hardwood Products Imported from the Appalachian Region. Approximately 60 percent of the Chinese respondents purchased hardwood products from the US, of which 13 (44.8%) buyers reported that their US supplier was the largest among all suppliers and accounted for more than 80 percent of the total value of imported lumber. Fifty-eight percent of the respondents purchased hardwood products from the Appalachian region.

Respondents were asked to score a variety of issues related to purchase of U.S. hardwood products on a scale of 1 (not satisfied) to 5 (very satisfied). Chinese buyers were rather satisfied with the long-term supply, various species, credit terms, and total quality of products now being provided by US suppliers. The means of these attributes were significantly different from the median value of 3 at the 5% level, simply indicating that these attributes were important to Chinese buyers. However, the ratings for price, delivery time, and transportation packaging received were lower than the previous factors (Table 2). The evaluation indicated that the Chinese hardwood products purchasers were generally satisfied with their US suppliers.

Ninety-six percent of the Chinese respondents who imported from the US purchased hardwood products from the Appalachian region. Hardwood products were also imported from the US south (21%) and West (14%). The total surveyed volumes of hardwood logs and lumber imported from the Appalachian region in 2007 were about 30 000 and 102 000 m³, respectively. The 95% confidence interval for the mean of hardwood logs imported was (2 073, 6 608) m³. The 95% confidence interval for the mean of hardwood lumber imported was (3 826, 13 636) m³.

The preference of Chinese purchasers for Appalachian hardwood products by regions was analyzed (Figure 3). Appalachian hardwood logs entered into the markets primarily in East and North Central China. Hardwood lumber importers were mainly in East, South, and North Central China. Sun et al. (2008) stated that Shanghai and Shenzhen, the main metropolitan areas in the East and South China, respectively, were the leading ports of entry for tropical and temperate hardwood lumber in 2002. The surveyed volume of hardwood logs imported was statistically

significantly different among East, South, and North Central China ($F=7.45$; $p=0.0448$). There was no significant difference for surveyed volume of hardwood lumber imported among East, South, and North Central China ($F=2.07$; $p=0.1689$). The reasons that most hardwood products were distributed to East, South, and North Central China were because of sufficient production capacity, more entry ports, and other trade and distribution related factors.

Table 2: *Evaluation of US hardwood products supplier attributes by Chinese importers.^a*

Items	Number of respondents	Mean	Standard Deviation	95% Confidence Interval for Mean
Multiple species	26	3.76**	1.05	(3.33-4.19)
Multiple grades	26	3.64**	1.25	(3.12-4.16)
Long-term supply	26	3.84**	1.14	(3.37-4.31)
Delivery time	26	3.28	0.94	(2.89-3.67)
Transportation package	26	3.36	0.99	(2.95-3.77)
Price	26	3.52**	1.05	(3.09-3.95)
Credit terms	26	3.76**	1.13	(3.29-4.23)
Product quality	26	3.72**	1.14	(3.25-4.19)
Service quality	26	3.64**	1.19	(3.15-4.13)

a 1=not important, 5=very important. ** Mean value is significantly different from median value of 3 at 5% significance level.

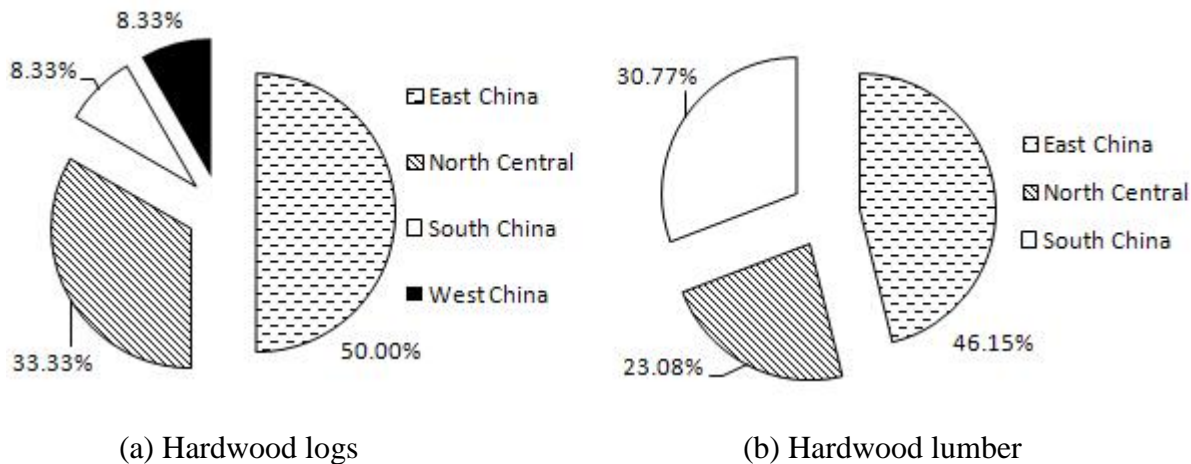


Figure 3: *Surveyed Chinese importers of Appalachian hardwood products by region.*

Future trends in hardwood exports. The U.S. respondents were asked about actions they plan to take in the coming years given the current state of domestic and foreign hardwood markets. Most respondents said that they will actively promote their products by traveling to make new contacts and serve overseas customers. Thirty-two percent of the respondents who export to China indicated that they will increase exports, 9 percent will reduce their exports, and 41

percent will remain at the same level. Some hardwood companies experiencing problems during the trading process or impacted by the domestic housing market decided to reduce production and further decrease exports. Most companies, however, chose to either increase exports or stay at an unchanged level, thus indicating that they regard China as an important oversea market in the near future. Even though export markets do not make up a large percentage of the demand for hardwood products, some manufacturers have sought out and found success in foreign markets such as China. The future purchasing by Chinese consumers was also surveyed with three options including increasing, decreasing, and unchanging. If respondents selected “decreasing,” they were encouraged to report the reasons. Results showed that 14.58 percent of hardwood purchasers will increase their purchases and 43.75 percent will stay at an unchanged level. The ever-increasing production cost was the main reason that some importers cut hardwood imports.

Discussion

China has become the second-largest consumer of US hardwoods, trailing only Canada. American hardwood products are generally more expensive than equivalent products from China, Southeast Asia, Africa, or Russia. The weak US dollar, however, can improve US wood products’ competitiveness and make them more affordable in the Chinese market. Regional differences in taste, income levels, and acceptance of foreign products must be considered when conducting business with China as well as a sound understanding of cultural differences within the country. Appalachian hardwood logs primarily enter to eastern and north-central China. Hardwood lumber importers are located mainly in eastern, southern, and north-central China. A small percentage of wealthy Chinese in these regions represents a large and growing market for US hardwood exporters.

While exports of Appalachian hardwood products to China have steadily increased in recent years, the US hardwood industry has experienced increasing expenses, decreasing prices, and soft markets for wood products. The price of red oak has dropped 31 percent from its peak value in 2005. With regard to international trading, the average red oak selling price for FAS from the Appalachian region has dropped nearly 40 percent (from \$3,776/MBF to \$2,242/MBF) over the past 4 years. Meanwhile, production costs have gone up 25 to 40 percent during the same period. A potential increase in phytosanitary certificate costs from \$50 to \$99 per container will also pose export challenges for US hardwood industries.

Freight rates increases and container shortages are increasing problems for hardwood exporters. Our study showed that 55 percent of respondents export products via East Coast ports such as Savannah, Charleston, Norfolk, and New York, while 11 percent export via West Coast ports. West Coast congestion and costly long-distance inland transportation are the main reasons that most people choose East Coast ports. Transportation cost for a hardwood sawmill located in an inland state, such as West Virginia, accounts for a large proportion of product price. While domestic housing and financial markets have slumped, many companies reported a rise in their export business that helped offset the domestic market’s downturn. Naka et al. (2009) reported that 92 percent of hardwood exporters had container-loading facilities. A shortage of shipping

containers, however, has hindered the industry's ability to get their products to market. The container shortage, coupled with rising demand, could push container pricing to a high level.

Summary and Conclusions

Our study showed that about 11.4 MMBF of hardwood logs and 145.3 MMBF of hardwood lumber were exported to China by the U.S. respondents in 2007. Approximately 37 percent of the respondents who exported to China exported red oak logs, followed by white oak, black walnut, black cherry, and hard maple. Red oak, white oak, yellow poplar, black walnut, hickory, cherry, hard maple, and soft maple were the top species of hardwood lumber exported to China. It was noticed that a majority of large companies exported red oak, white oak, and yellow-poplar lumber. Meanwhile, there was no clear trend regarding the specific grades exported by companies of different production scales. The continued decreasing hardwood price makes it difficult for Appalachian hardwood producers to maintain profit margins. Because of the current housing market, there is reason to believe hardwood exports will become increasingly important for the US hardwood industry in the near future. China continues to show strong demand for forest products because of the Chinese government's stimulus package, housing construction and decorations, existing facilities, technology improvement, and cost advantages (Wang et al. 2010). Given these factors, China has the potential to be an increasingly important export destination for Appalachian hardwood producers.

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