

# DECLINE IN THE U.S. FURNITURE INDUSTRY: A CASE STUDY OF THE IMPACTS TO THE HARDWOOD LUMBER SUPPLY CHAIN

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## ABSTRACT

Traditionally, the wood household furniture industry has accounted for a sizeable portion of total hardwood lumber use in the United States. However, for more than a decade, imports have gained an increasing share of the hardwood furniture market, and lumber consumption by this industry has declined dramatically in the last 5 years. We used a case study methodology to investigate the impacts of this decline on the hardwood lumber supply chain. Eleven companies within the hardwood lumber supply chain were chosen as cases: 3 furniture manufacturers, 5 primary producers, and 3 components manufacturers. Seven core questions were asked during each interview and primary producers were asked two additional questions. Questions ranged from the impact of lean manufacturing techniques to the effects "green" certification may have on the industry. Furniture manufacturers appeared to be more optimistic regarding the future of the domestic furniture industry compared to the primary and components manufacturers. Furniture market declines have been quickly replaced by the cabinet and solid wood flooring sectors; however, the supply chain must continue to strategically develop new markets in the event of a housing sector slow down.

*Keywords:* Furniture industry, hardwood markets.

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## INTRODUCTION

The United States furniture-manufacturing sector has suffered from increasing imports over the last decade (Fig. 1). Domestic market shares have been impacted by increased globalization, lowered transportation costs, a robust U.S. economy, and lower labor and environmental costs in other parts of the world (Buehlmann and Schuler 2002; Bumgardner et al. 2004). This situation has left domestic manufacturers little choice but to enter the import business themselves, through outsourcing production. By 2004, at least 54% of the wood household furniture consumed in the United States was imported (Anonymous 2005a). As a result, U.S. furniture manufacturers have closed domestic plants and shifted the focus of their activities to import components or complete lines of furniture (Buehlmann and Schuler 2002).

While the impact of imports on the U.S. residential wood furniture market has been especially pronounced, wood office furniture, uphol-

stered furniture, and kitchen cabinet imports have also increased (Buehlmann et al. 2004). Likewise, domestic furniture manufacturers' investment in technology to increase productivity and lower costs as well as efforts to improve innovations proved to be insufficient. The viability of the domestic wood furniture industry is important to many entities including employees, suppliers, forest owners, and state and local officials, to name a few (Bumgardner et al. 2004; Buehlmann 2005).

Recently, increased attention has been focused on improving domestic competitiveness in the secondary wood industries (Hoff et al. 1997; Buehlmann and Schuler 2002; Buehlmann 2004; Schuler and Buehlmann 2003). Some companies have initiated strategies with a goal of increasing their competitiveness in this rapidly changing marketplace (Morse 2002; Buehlmann and Schuler 2004). While a lot of attention has been given to ways the domestic furniture industry could strengthen their competitive advantage, much less focus has been given to the hardwood

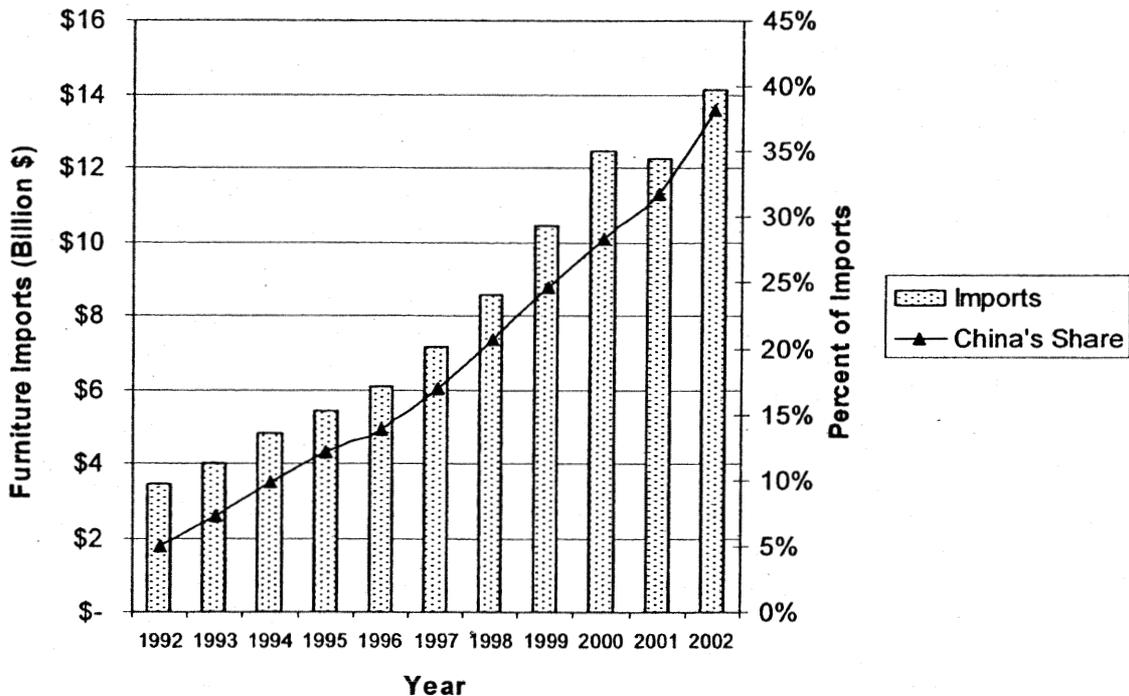


FIG. 1. Total United States furniture imports 1992–2002 (source: Buehlmann et al. 2004)

supply chain that has traditionally supplied this manufacturing sector.

The decline in the domestic furniture manufacturing sector has impacted domestic hardwood consumption. In 1999, the furniture industry consumed 2.6 billion board feet (6.1 million M<sup>3</sup>) of hardwood lumber. In 2003, hardwood lumber consumption by this industry sector was 1.6 billion board feet (3.8 million M<sup>3</sup>) (Anonymous 2005a, Fig. 2). This represents a decline of 1 billion board feet (2.4 million M<sup>3</sup>) (38% of the 1999 consumption), which is more than the total annual hardwood production of West Virginia. This magnitude of decline will have significant impacts on the hardwood supply chain, including the hardwood forests. To assess the consequences of this development, meetings with executives of primary and secondary hardwood products manufacturers in the eastern United States were held in 2004. At the core of those discussions were issues related to the furniture industry downturn and its impact on the hardwood supply chain—from log supply to final product. The discussion also tried to capture the outlook of these executives on the future of the hardwood supply chain and strategies to assure the survival of a profitable hardwood industry located in the eastern U.S.

#### METHODS

This is a case study on the impact of declining domestic furniture manufacturing on the hard-

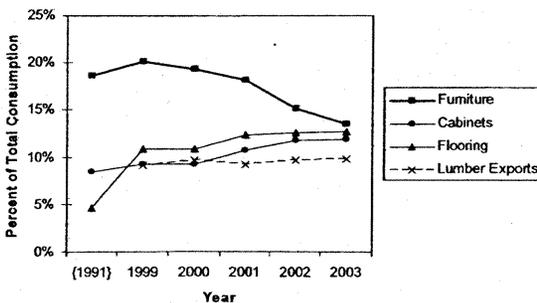


Fig. 2. Consumption expressed as a percentage of total hardwood lumber purchased by United States manufacturers (Anonymous 2005a). Also includes total United States lumber exports in proportion to domestic consumption (USDA FAS Export Commodity Aggregations, Jan 21 2005, [www.fas.usda.gov](http://www.fas.usda.gov))

wood lumber supply chain. Purposeful sampling was used to gain insight from the cases chosen for this research project. Purposeful sampling is a qualitative approach that uses in-depth interviews that allow researchers to understand the targeted issues through the eyes of the respondent without incorporating a priori directions (Patton 1990; Bush et al. 1991; Goldenhar and Sweeney 1996; Bumgardner et al. 2000). Using these methods, subjects are selected deliberately because it is felt that they possess characteristics of interest to the study objectives. To address the supply chain issues, we used a stratified purposeful method, which helped to define particular characteristics of subgroups and allows comparisons of these groups. We targeted three furniture manufacturers to assess their thinking about supply chain issues, but focused our efforts on the component manufacturer and primary processing subgroups of the hardwood industry sector in the Appalachian region. Samples were selected based on their size, tenure, and standing in the wood products industry. We wanted to obtain insight on supply chain issues as seen by the top hardwood product producers in the region. Thus, this approach was chosen so that a more complete response regarding supply chain issues would be obtained versus information that would have been garnered from a traditional survey instrument.

We met with chief executive officers (CEOs), chief financial officers (CFOs), presidents, and sales managers from 3 furniture/component manufacturers, 3 primarily component manufacturers, and 5 primary producers (sawmills). Those case study cooperators were given a brief explanation about this research and reassured that the researchers were not looking for "trade-secrets," but only for the participants' general insights on the current hardwood supply chain issues. The participants also were asked to make recommendations on how to address the current problems. All of the interviewed companies had over 50 employees and sales per year ranged from a few million dollars to over \$300 million.

During each of the interviews, we focused on steering the case study participants towards a

core set of questions shown below. However, discussions were not limited to this list.

- What can be done to support the domestic furniture manufacturing industry?
- Do you think that lean manufacturing techniques, similar to those used by the automobile industry, would help the furniture industry?
- Do you think that mass customization concepts, similar to those used by some personal computer manufacturers, would help the furniture industry?
- Have you asked your suppliers, or been asked by your buyers, to supply a more value-added product?
- Have you recently invested in technology to shorten lead times, extend your product offerings, or increase production?
- What effect has the labor force had on your business?
- Do you think that "green" certification programs will help market US wood products?

Primary and component producers were asked two additional questions relating to their industry, including:

- Have you suffered from lack of markets due to the downturn in domestic furniture manufacturing?
- Do you see exporting as a way to compensate for the loss of furniture markets?

We encouraged the participants to discuss each of these issues during the interview process. This allowed the participants to answer the core questions while at the same time discuss their ideas and possible solutions to the problem. Detailed notes were taken during each of the interviews. These were summarized according to each of the aforementioned topics.

## RESULTS

### *Questions asked of each industry sector*

*What can be done to support the domestic furniture manufacturing industry?*—Eight of the companies responded directly to this question.

Answers were quite diverse, ranging from nothing could be done to educating the sales force or obtaining tax breaks for new investments in domestic production capacity. One of the furniture manufacturers interviewed felt that little could be done, that the large furniture manufacturers were destined to be importers. Other furniture manufacturers felt that bringing the fragmented industry together was critical, and one saw the recently formed furniture coalition (Lorimor and Christianson 2003) as an encouraging first step in the right direction. Investment in new technology and placing emphasis on shortened lead times were mentioned as positive steps, ideas that were viewed critically by others. Other furniture executives felt that new technology and shortened lead times would not be sufficient to compete with imports from Southeast Asia. Education was also discussed, however, not in reference to the manufacturing labor force. Instead, one company found that it was critical to educate their sales force. Others, similar to some suppliers interviewed, felt that educating the furniture industry on the "true-costs" of importing was a must. These include the cost of late and poor-quality shipments, defective workmanship, bureaucratic complications, legal issues, cultural challenges, and trademark and copyright violations.

The primary and components industry had different views on this question. Four of the five that answered this question felt that the furniture industry would never be the same. Several of the responses indicated that they had seen the "handwriting on the wall" over 10 years ago, and had shifted their markets in preparation for a furniture industry decline. Most were optimistic and felt that the hardwood manufacturing industry is resilient and will overcome the loss of domestic furniture manufacturing. Increasing markets for hardwood flooring or the strong kitchen cabinets markets, both significant users of hardwoods, were mentioned as successful examples for overcoming the decline in hardwood usage by the residential wooden household furniture industry. One primary producer suggested that a log export ban might be useful. They felt that keeping more of value-added opportunities

domestic could help producers compete with foreign manufactures.

*Do you think that lean manufacturing techniques, similar to those used by the automobile industry, would help the furniture industry?*—Of the five respondents to this question, the majority were hesitant to think that lean manufacturing techniques could be advantageously used in the furniture industry. Disagreement existed over what exactly lean manufacturing is and how it could be used for the benefit of the domestic furniture industry.

Some felt that the adoption of lean techniques in the furniture industry would be more difficult than in the auto industry, especially if the lean initiative would encompass component suppliers. With the automobile industry, suppliers had to concentrate on only the “big three” U.S. carmakers, General Motors, Ford, and Chrysler, respectively. Conversely, the furniture industry is much more fragmented, and component suppliers would be dealing with many more companies. Likewise, it was felt that profits in the automobile industry were much greater, allowing for the higher overhead costs for initiatives like lean or just-in-time manufacturing to be offset.

Other respondents echoed the cost issue, one feeling that it would be beneficial for the furniture industry to become leaner; however, the investment associated with removing the labor component would inflate overhead costs to a point that would be detrimental. Thus, the concept may be looked at as beneficial to those surveyed, but implementation would be too costly. Some felt that the furniture industry could use similar lean manufacturing initiatives as the auto industry, but that the capital for such initiatives simply is not available. Another executive pointed out that it is hard to invest in becoming lean when you have a 30-year-old plant.

Although comparing the auto and furniture industries may not be possible, one respondent felt that the use of more standardized components could be part of leaner operations. For example, it would be advantageous for the furniture industry to team with the components industry to develop a better system of using

standard glued panels, much like those used in the cabinet industry.

*Do you think that mass customization concepts, similar to those used by some personal computer manufacturers, would help the furniture industry?*—This question was widely discussed by furniture manufacturers, but received only scant attention from the industry’s suppliers. Respondents felt that implementing mass customization concepts is harder with furniture manufacturers since styles and sizes change too much and too frequently. Also, it was feared that there are too many different component parts and it thus is not economically feasible to mass customize furniture. It was also hypothesized that mass customization was not possible because it was too costly to implement and companies wouldn’t be able to get their costs down to competitive levels.

One furniture company interviewed had tried a general customization approach. They offered 20 variations of a small desk unit; however, their retailers did not like the idea and subsequent trials were dropped. For retailers, the complexity of working with the customers to customize the furniture was too cumbersome, and their additional effort was not rewarded by higher prices. This executive pointed out that mass customized furniture is difficult to justify as long as the price is the buyers’ most critical decision-making factor. Furthermore, for mass customization to work, close cooperation with retailers is absolutely necessary. Retailers have to be willing to train their sales personnel to assure that customers get accurate and complete advice. Such training is expensive, and many retailers are therefore not eager to participate.

Another company interviewed is offering mass customized furniture made to order. In this particular case, the outside of the case is standardized, but customers can select a variety of different interior combinations. The program has been successful for several years, and the company is currently working on lowering the lead-time from 8 to 6 weeks. Also, the company is working on a computer program that will support the dealers in advising customers about options available for a given product. This should

enable retail personnel to give more encompassing and accurate information to customers, thereby create higher customer satisfaction.

Responses to this question suggest the growing importance of a "team approach"—suppliers working with manufacturers and retailers so that a mass customization process can be achieved. A more collaborative relationship among these parties may be the key to mass customization and other value adding opportunities in the future.

*Have you asked your suppliers, or been asked by your buyers, to supply a more value-added product? Or have you started manufacturing a more value-added product?*—All eleven companies responded to this series of questions. All but one had started "moving up the food chain," e.g. adding more value to their products or demanding more such products from their suppliers. Methods varied by industry from investing in dry kilns, to producing furniture instead of components, to expanding product offerings into the growing Chinese furniture markets.

The furniture industry executives put large emphasis on the need for reliable component suppliers selling reasonably priced and qualitatively consistent components to the industry. One company actually pursued an outsourcing strategy to become more of an assembly operation. However, this move has not been without problems. Working with their suppliers to furnish more components was challenging in terms of quality, lead-time, and cost. The company felt as though they needed a better priced, better quality, and a timelier delivered product than what they were receiving. They had lost three suppliers in the last two years, citing mainly problems with lead times. Finding new suppliers to fill voids was very challenging. In the end, the outsourcing strategy was reversed and components are now made again in-house and some are imported. One executive also pointed out that some of the components they buy domestically are actually made offshore, but the domestic company selling the product maintains inventory and shipping facilities in the U.S. This way, short lead times and assured quality at reasonable prices can be achieved. Other furniture re-

spondents shared these views, one suggesting that they were constantly looking for a local supplier producing low cost, high quality, high volume components. In general, furniture industry executives are actively looking for domestic suppliers to produce more of their components needed. The executives are also asking their existing suppliers to do more of the component work.

Suppliers to the furniture industry were somewhat interested in producing more components; however, they felt that they could not do so without a firm commitment from a buyer. In one case, where a supplier actually bought a component facility from a furniture manufacturer, demand dropped so much that the facility had to be closed. Domestic component suppliers also worry that their customers will switch to foreign suppliers should such a switch offer cost advantages, thereby obliterating the supplier's investment.

*Have you recently invested in technology to shorten lead times, extend your product offerings, or increase production?*—Six of the eleven companies interviewed answered this question. Four of these had actively been investing in new technology. Technology investments ranged from primary breakdown and drying modifications to investments in state-of-the-art CAD and CNC router technology. One respondent echoed a phrase used before, that "technology is seductive" and dangerous when the additional costs from technology investments do not lead to enough added revenues and net profits. Companies must know their costs before investing, otherwise technology can sometimes be a trap. Two of the respondents had not been investing in new equipment, one citing that it had been at least 10 years since technologies had been upgraded. Conversely, the most technology-oriented company in our sample stated that while technology is expensive and challenging to implement, pay-offs are significant. The company thus relies on state-of-the-art equipment and is highly computerized. Recently, the company doubled its production capacity, while at the same time only added one new employee to its labor pool.

*What effect has the labor force had on your business?*—Six of the companies responded to this question. All felt that labor issues were of utmost importance. Insufficiently educated and motivated labor was cited as making it more difficult to use a “lean” manufacturing approach. For example, it was felt that the requirements for hand-sanding and distressing were too costly when using the current labor force. The price for skilled labor to operate new technologies was also cited as restrictive. Companies had to pay more than they wanted for technologically savvy workers. One approach was to use computers and new technology as a “carrot” to attract skilled workers.

Finding skilled and motivated labor was cited as difficult by most of the companies interviewed, especially for those companies who made recent investments in new technologies. One company producing components explained that they started outsourcing all additional business beyond their current capacity since they are simply not able to attract more reliable employees to work in their plant to handle additional business. If production exceeds the company’s current capacity, human resource becomes a major problem. The company therefore voluntarily decided to give this additional business away to third parties on a case-by-case basis.

To lessen the problem with employee skills, several companies had started educational programs aimed at increasing the skill set of their employees. One company initiated a skills-based wage program. Employees, in order to move into better positions, had to pass math and other skill-related tests.

The problem with skilled labor is not only one of educating the work force, but also one of attracting young, bright people to the industry. The difficulty posed by this endeavor was reiterated by one furniture executive, who indicated that he did not recommend the wood industry to his and his colleagues’ children as a career path. In general, executives interviewed agreed that better training for their existing employees and attracting motivated individuals to the industry willing to be educated are critical issues.

*Do you think that “green” certification programs will help market U.S. wood products?*—Only five of the eleven companies addressed green certification programs during the interviews, indicating that this is not considered a crucially important issue that the industry copes with at present. Only one respondent felt that a “green” strategy might be useful for increasing domestic sales. Others felt that these programs were too costly. They had been asked to implement a certification program, but none of their buyers were willing to pay more for their certified products. One executive suggested the creation of a government-controlled certification program through, for example, the state forestry division or a similar government body. This way, he hopes, the high costs of certification could be reduced. However, this may be a dual-edged sword—customers’ taxes may have to increase to pay for government controlled certification, thus limiting their purchasing power. Questions were raised about the chain of custody control for manufacturers in offshore countries. Some executives thought that the lack of environmental restrictions and control in other countries was helping foreign manufacturers, and they were questioning if all the wood sold as certified indeed comes from certified forests.

#### *Primary industry specific questions*

*Have you suffered from a lack of markets due to the downturn in domestic furniture manufacturing?*—All five primary processors interviewed responded to this question. None felt that they had seen a downturn in their business due to the furniture industry alone. One respondent noted a business downturn in the 1999–2001 period, but did not relate this to the furniture industry. Three of the five primary processors have increased their production over the last ten years. Specifically, the companies interviewed were doing more exporting and selling to the housing-related industries.

Kitchen cabinets and flooring appeared to be the most successful domestic markets for these companies. Although one of the respondents

stated that the cabinet and flooring markets did not replace 100% of what the furniture markets were to them, companies seem to have replaced lost sales quite successfully. One survey participant mentioned problems with increasing costs for lower grade lumber, since such grades are used by several market segments, such as flooring, exports to China, and pallet stock.

Companies also looked for new business opportunities, expanding into other markets such as the log home or the custom wood door markets. One company interviewed decided in the 1980s that they would not rely on furniture markets, and had focused their efforts on finding alternative niche markets for their products.

*Do you see exporting as a way to compensate for the loss of furniture markets?—Of the five companies, four responded to this question. Three of the four felt that exporting was important to their business now more than ever. One of these stated that “exporting was a large part of their business . . . and that in the first quarter of the year they had shipped to 23 different countries.” One company also indicated that they are not only working hard to export lumber to foreign countries, but that they are actively looking at importing wood from Eastern Europe. Another respondent felt that exporting “was not a large component of our production . . . though we want to continue pursuing exports because we feel it will be an important part of our business in the future.”*

#### DISCUSSION

Results from this case study suggest that the decline in the U.S. furniture industry has not initiated a large disruption of the hardwood supply chain in the Appalachian region, at least until now. Declines in hardwood consumption by the furniture industry seem to have been replaced by higher demand in other markets. In particular, the flooring and kitchen cabinet markets increased demand for hardwood lumber by 1 and 2 billion board feet (2.4 and 4.8 million M<sup>3</sup>), respectively, in the 1999 to 2003 time frame (Anonymous 2005a, Fig. 2). These increases more than offset the decline from the

furniture manufacturers. However, there is evidence that the new buyers of hardwood lumber no longer prefer the same lumber species and grades as did the furniture manufacturers. The majority of the hardwoods consumed by furniture markets are concentrated in one species—red oak (27% of the species consumed, Meyer et al. 1992), and one grade (1 Common, Wiedenbeck et al. 2003). One executive pointed out that, “. . . lower grade hardwoods are nowadays in much higher demand, as the Asian buyers, the flooring manufacturers, the pallet producers and even some domestic furniture manufacturers are buying 3A Common grades, a quality that was previously much less demanded.” If low-grade lumber prices are compared between January 2000 and 2005 for red oak, black cherry, hard maple, soft maple, and yellow-poplar, the average price increase of #1 common and #2A common lumber is 10% and 15%, respectively. Prices for FAS graded lumber of the same species has only increased by 7% during the same period. Since lower grade lumber has increased at a greater rate, it is likely that added competition has made procurement of lower-grade hardwoods more challenging (Anonymous 2000, 2005c). Traditionally, margins have been higher for lower-grade hardwoods; thus increased competition for this resource could have a large affect on profits. Likewise, the shift from furniture manufacturers to flooring and exports as markets for Appalachian hardwoods contributed to declining profitability.

Overall, furniture manufacturers appeared to be more optimistic about the future of domestic furniture production than were the primary and components manufacturers. The furniture manufacturers, while acknowledging the magnitude of the challenge, cited several of the survival strategies that have been defined in the literature as potential solutions including lean manufacturing techniques, mass customization, and/or reinvestment in technology (Schuler and Buehlmann 2003). However, lean manufacturing techniques were not seen as a viable solution by itself, nor was there much optimism for mass customization technologies. Most felt that the industry was too fragmented and that styles and profits were

such that these strategies would be hard to implement and even harder to make them pay off. Investments in technology were seen as important and were made when necessary. However, these investments were made with a high level of caution. Nonetheless, responses from this study and others (Bumgardner et al. 2004) indicate that the secondary wood products industry is generally committed to strengthening domestic manufacturing.

While this commitment to domestic furniture manufacturing is encouraging, there was another troublesome problem unearthed in one of the interviews. The only executive interviewed who was absolutely positive about his company's future prospects and who predicted a strong future for domestic furniture manufacturing, indicated that he is not relying on domestic hardwoods for his production. He characterized the domestic hardwood lumber on the market as too expensive and of only average quality. He instead relies on hardwood lumber bought in global markets from a variety of source countries. North American hardwood suppliers should take careful note of competing international hardwood producers. It appears that the product that domestic hardwood suppliers thought to be unique may face serious competition from abroad in the future. In 2004 alone, hardwood lumber imports were over 15% higher than those in 2003, at an estimated 772 million board feet (1.8 million M<sup>3</sup>). Some feel that the recent increase in imports is not cyclical, that these changes may be a permanent market switch (Anonymous 2005b).

Primary and components manufacturers interviewed, on average, had a more pessimistic outlook on the future of domestic furniture manufacturing. When faced with the loss of the domestic furniture industry, hardwood lumber and component producers had only one real option—to find a replacement market for the production previously targeted for the furniture industry. Although the hardwood sawmilling industry is highly fragmented (Luppold 1995), many had the initiative to focus on new market opportunities instead of relying solely on the furniture manufacturing sector markets. The current wave of consolidation sweeping the hardwood saw-

mill industry (Luppold 1995, 1996; Bowe et al. 2001) may, at least partially, be better able to uncover and target new markets, some in foreign countries.

Clearly, a portion of the market shifts happening during this period (away from furniture to flooring, kitchen cabinets and exports) can be attributed more to changes in growth of industries rather than the initiative of primary hardwood lumber and components producers. As the furniture industry began to decline domestically, the U.S. housing market was in the middle of an unprecedented long-term period of growth. Several respondents felt that declines in the furniture industry were predicted years before they actually occurred. It may have been a lucky coincidence that the strong flooring and cabinet markets provided a timely outlet for their hardwood production. Although total eastern United States hardwood production has been declining during the past 5 years, production of solid wood flooring and wood cabinets has increased steadily (Anonymous 2005a, Fig. 2), thus providing a replacement market for hardwood producers who lost volumes sold to the furniture industry. It is no surprise then that if you compare the relationship in consumption of hardwood lumber by the furniture, cabinet, and flooring sectors, the share of consumption by the flooring and cabinet sectors has steadily increased (Fig. 2). By 2002, consumption by both the flooring and cabinet sectors almost equaled that of the total hardwood lumber consumed by the furniture industry. Therefore, continued demand for hardwood flooring and kitchen cabinets, fueled by a strong housing market over the last twenty years (Schuler et al. 2001), has given primary and components manufacturers the ability to shift their market emphasis towards new home and remodeling construction.

While the market switch towards flooring and kitchen cabinets couldn't have come at a better time for primary hardwood lumber and component producers, one may argue that this may not be the best long-term strategy. The combination of furniture, flooring, millwork, and cabinet sectors, represents about 50% of total hardwood consumption (Anonymous 2005a). While furni-

ture, flooring, and cabinet production are all linked to the housing market, a new home construction or remodeling slow-down may have a vast influence on the flooring and cabinet markets. The primary and components industry may not be prepared if the housing industry slows, particularly if it slows dramatically. Such a scenario may not be too unlikely, especially in light of recent and ongoing money supply tightening by the Federal Reserve (Anonymous 2004c; Beckner 2004) and the potential of inflated house prices in the U.S. (Anonymous 2004a; Anonymous 2004b; Fisher 2005). Likewise, increasing pressure from foreign importers on the cabinet and solid wood flooring sectors could further weaken these markets. While there is little evidence of increased competition from importers on cabinets—imported cabinets had less than a 5% market share in 2002 (Buehlmann et al. 2004)—solid wood flooring imports have increased. From the period of 1999 to 2003, solid wood flooring imports increased from 10.9 to 14.5 million square meters, or by 33% (Fig. 3). This is increasingly troublesome, because the producers we interviewed had developed few alternative markets to kitchen cabinets and flooring other than exporting.

Companies that we spoke with during the interview process felt that exporting was becoming a more important part of their business. Hardwood lumber exports have remained relatively stable since 1999. Total exports have av-

eraged approximately 1 billion board feet (2.4 million  $M^3$ ), and red oak lumber exports have averaged approximately 240 million board feet (566,000  $M^3$ ) per year between 1999 and 2003 (Fig. 4). Thus, drops in consumption by the domestic furniture industry have not necessarily been offset by increases in exports. However, log exports have increased approximately 20% (from 486 to 587 million board feet) (1.1 to 1.4 million  $M^3$ ) between 1999 and 2003 (Fig. 5). An increase in log exports puts upwards pressure on logs and may further hinder the competitiveness of hardwood lumber producers since many value-adding opportunities are lost when hardwood logs are shipped to foreign manufacturers. Hardwood lumber producers are generally responsible for procuring the logs and therefore reaping the benefits of export logs sales, either by themselves or by export brokers. Thus value-adding opportunities may shift more towards lower grade logs, which are cheaper, but have a better profit margin.

#### CONCLUSIONS

To date, declines in hardwood consumption by domestic furniture manufacturers have not overly impacted the hardwood supply chain participants interviewed in this study. Primary hardwood lumber and component producers were able to shift their sales lost to domestic furniture manufacturers to flooring, kitchen cabinet, and export markets. Although this market shift has been a positive development, imports are nibbling away on some of those markets. Also, worries exist about the continued strength of the current housing market, which is largely responsible for much of the growth of hardwood lumber by the flooring and kitchen cabinet industries. Most of the primary companies interviewed felt that the continued explorations of new markets, adding more value to their products, and the continued exploration of export markets, are essential for their success into the future.

Little hope was shown for a renewal of the U.S. furniture manufacturing industry. Primary

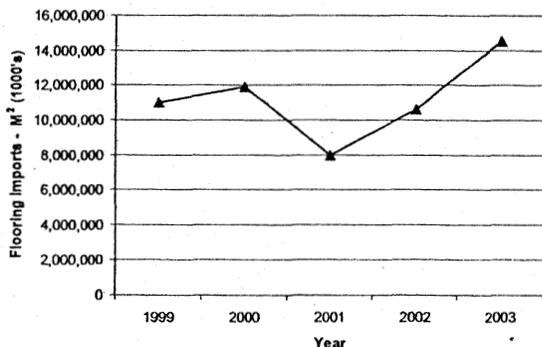


FIG. 3. United States solid wood flooring imports from 1999–2003. Source-USDA FAS Export Commodity Aggregations, Jan 21 2005, [www.fas.usda.gov](http://www.fas.usda.gov)

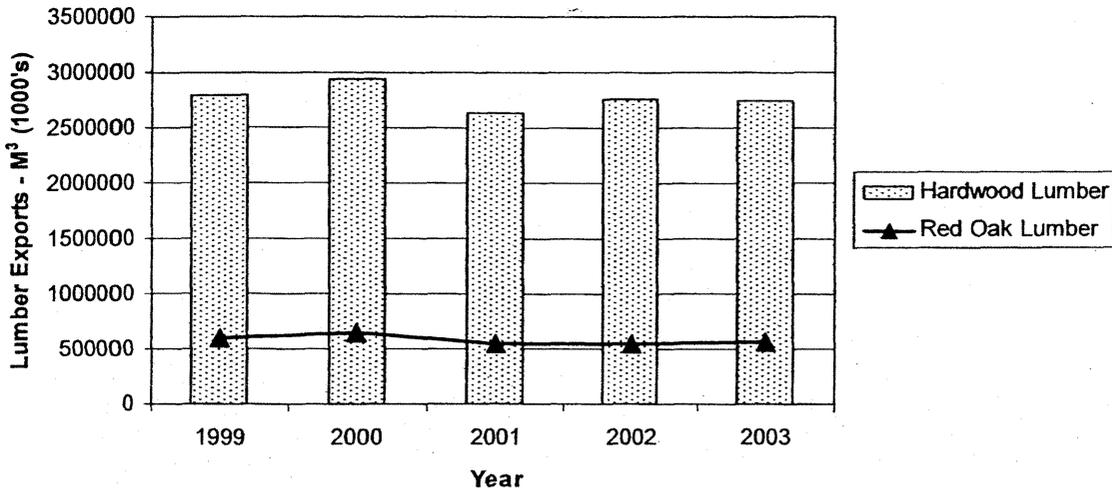


FIG. 4. Total and red oak hardwood lumber exports from the United States for the period of 1999 through 2003. Source-USDA FAS Export Commodity Aggregations, Jan 21 2005, [www.fas.usda.gov](http://www.fas.usda.gov)

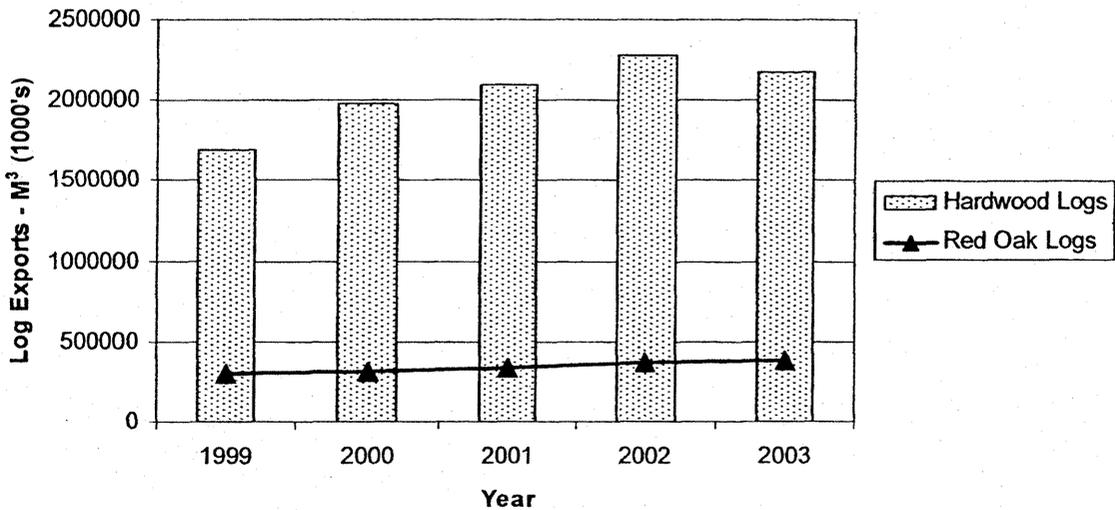


FIG. 5. Total and red oak hardwood log exports from the United States for the period of 1999 through 2003. Source-USDA FAS Export Commodity Aggregations, Jan 21 2005, [www.fas.usda.gov](http://www.fas.usda.gov)

processors had a more negative view of the future of this industry segment than did the furniture executives. In general, it was felt that the U.S. furniture manufacturing industry is too fragmented, produces a product that is too commoditized, changes models too frequently, and has too narrow profit margins to be able to rejuvenate itself and once again become a strong customer of North American hardwood lumber.

The U.S. hardwood supply chain, as it

appears, will have to carefully chart its future business strategies to assure continued success. However, with the current consolidation making progress, companies in the future should also be better able to approach larger, more costly to develop markets domestically and abroad. Thus, while globalization has made success more difficult to come by, the U.S. hardwood supply chain is adapting to these challenges.

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