

CHANGES IN WALNUT AND OTHER HARDWOOD MARKETS: 1990 TO 2010

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Abstract.—After a decade of record demand in the 1990s, production and price of hardwood lumber declined moderately between 1999 and 2005 and then plummeted between 2005 and 2009. The decline in hardwood lumber price affected all species. However, walnut was the last species to decline in price, starting in 2007, and has had the largest price increase since hitting its low point in early 2010. The most obvious factor affecting walnut lumber price is the export market. As exports of walnut lumber declined in the 1990s, walnut lumber price was surpassed by that of black cherry and hard maple. As export and domestic demand for these species began to decline in the 2000s, walnut re-emerged as the highest priced U.S. species. While lumber exports have a considerable impact on lumber price, walnut log exports appear to have even a greater impact on saw log and veneer log prices. Walnut products exported to China increased in the late 1990s, rising from less than \$0.2 million in 1996 to more than \$10.5 million in 2000. By 2007, China had become the largest export market for walnut logs and Canada had become the largest international market for walnut lumber and veneer. Exports will remain an important aspect of the walnut market if the value of the dollar continues to decrease and demand by China and other countries continues to increase.

After a decade of record demand in the 1990s, demand for hardwood lumber declined by 49 percent between 1999 and 2009 (Fig. 1). The primary causes of this reduced demand were a large increase in furniture imports from Asia that caused a reduction in domestic furniture production, a decline in housing construction that began late in 2006, and the 2009 recession (Luppold and Bumgardner 2011a,b; Luppold et al. 2012). The decline in hardwood lumber demand has been greater in appearance applications (furniture, cabinets, flooring, etc.) than in industrial applications (pallets, crossties, etc.). As a result, the proportion of lumber being consumed in appearance uses has declined from 60 percent in 2000 to 40 percent (HMR 2009, Johnson 2011). This shift in hardwood lumber

use has put extreme downward pressure on mid-grade (No. 1 common) hardwood lumber price and hardwood lumber production. As a result of these declines, hundreds of hardwood sawmills have either become idle or gone out of business (Luppold and Bumgardner 2009). Most of the decline in hardwood lumber price and production occurred after the decline in the housing market, which began in 2006 (Woodall et al. 2012).

The decline in hardwood lumber price and production since 2005 has affected all species including walnut. Changes in real (inflation adjusted) prices of No. 1 common lumber for various Appalachian species show a shared decline from their near historic highs in the mid-2000s to their lows in 2009 and 2010 (Table 1). This decline in the real price of mid-grade lumber occurred across all species and was unprecedented in the post WWII period. The declines ranged from 36 percent for hickory to 66 percent for black cherry; the decline in walnut price was in the lower third of this

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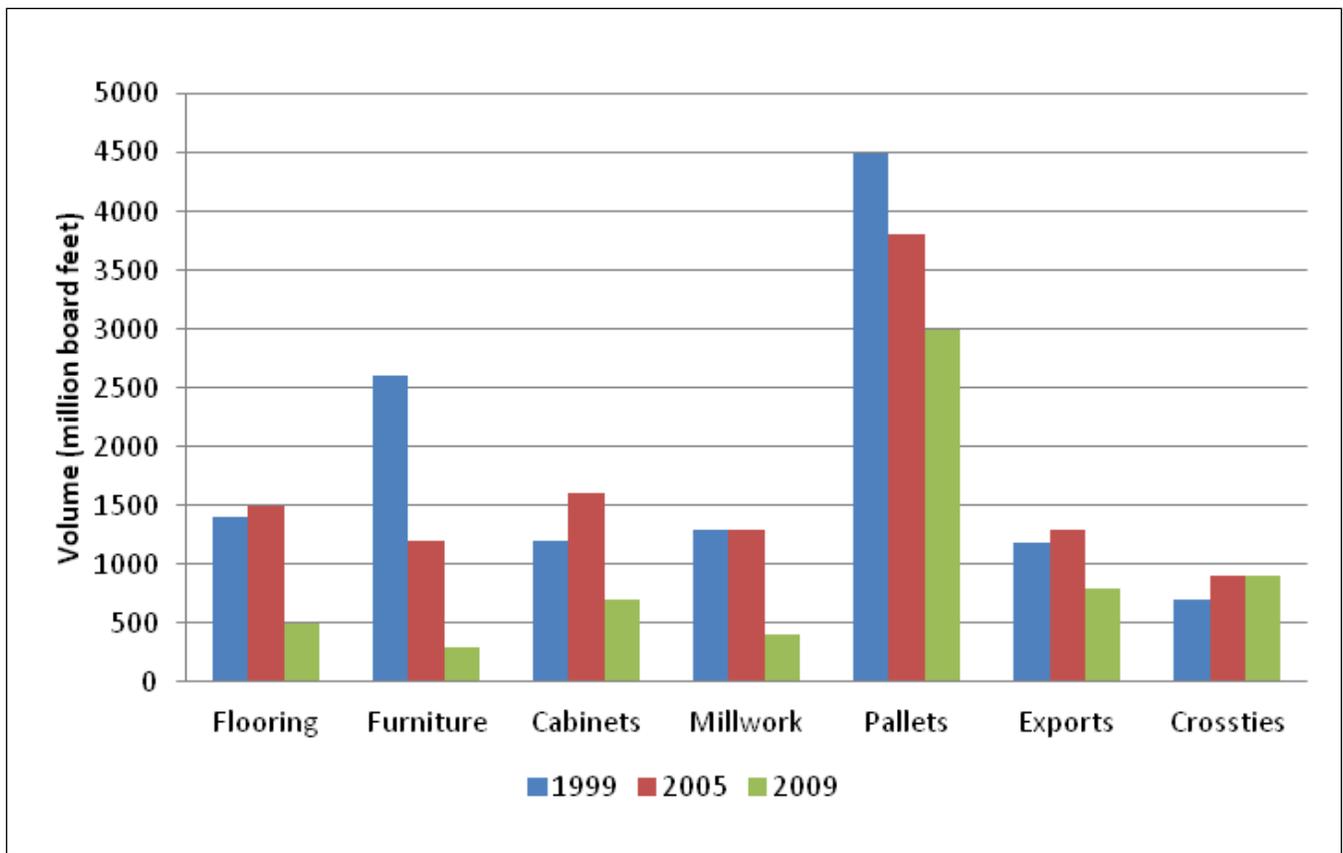


Figure 1.— Hardwood lumber consumption by major appearance grade users, industrial users, and exports in 1999, 2005, and 2009 (HMR 2009, Johnson 2011).

Table 1.—Percentage declines and subsequent recoveries in inflation-adjusted hardwood lumber prices following peak prices in 2003 to 2007 to the second quarter of 2011 for black walnut and eight other hardwoods (Luppold and Bumgardner 2010).

Species	Quarter when price peaked	Quarter with lowest price	Percent decline	Percent recovery
Ash	Fourth 2004	Third 2009	-43.3	+28.3
Black cherry	Third 2004	First 2010	-66.3	+0.7
Hickory	Third 2003	Second 2010	-37.6	+3.3
Hard maple	Third 2005	First 2010	-55.0	+5.6
Soft maple	Third 2005	Third 2009	-46.8	+4.8
Red oak	Second 2004	Third 2009	-50.6	+10.0
White oak	Second 2004	Third 2009	-47.3	+21.2
Y-poplar	Third 2003	Third 2009	-32.5	-2.3
Walnut	Fourth 2007	First 2010	-43.8	+45.2

range. What sets walnut apart from the other species is that it was the last species to descend in price and declined for only 8 quarters compared to at least 15 quarters for the other species listed in Table 1. Walnut lumber prices also have rebounded more than any other species since its low point in early 2010.

The data provided in Table 1 seem to indicate that the market factors driving the walnut lumber market may be different from the factors driving the market for other species. The most obvious of factors is that the export market for walnut has been especially strong relative to domestic production (Luppold and Bumgardner 2011a,b). The objectives of this paper are to examine the price, production, and export demand trends for walnut lumber compared to trends for black cherry and hard maple and to examine if these factors also have influenced the price of walnut logs.

DATA

Price trends for black walnut, black cherry, and hard maple lumber during the last two decades were developed from the annual Hardwood Market Reports (HMR 1990 to 2011). Price trends for walnut veneer and saw logs are based on data supplied by Hoover (2011). Relative production of walnut, cherry, and

maple was developed from annual reports by the U.S. Department of Commerce (USDC 1991 to 2011). All export statistics came from a report prepared by the U.S. Department of Agriculture, Foreign Agricultural Service (USDA FAS 2011).

CHANGES IN LUMBER MARKETS 1990 TO 2011

Walnut lumber has traditionally been the highest priced U.S. hardwood species that is traded at any significant volume excluding limited sales of Hawaiian koa, lignum vitae, and American chestnut. The place of walnut in the U.S. hardwood lumber market began to decline in the early 1990s as the nominal (reported market price) remained constant while inflation caused the real price to decrease (Fig. 2). Meanwhile, the real price of black cherry and hard maple began to increase in 1992. In 1995, walnut lumber prices began to decrease in nominal terms as did the price of hard maple. The decline in walnut price was especially acute in the higher (FAS) grade. The price of black cherry continued to increase, surpassing walnut lumber price in 1993. Unlike walnut, the price of hard maple lumber began to rebound in 1996 and exceeded walnut price in 1997.

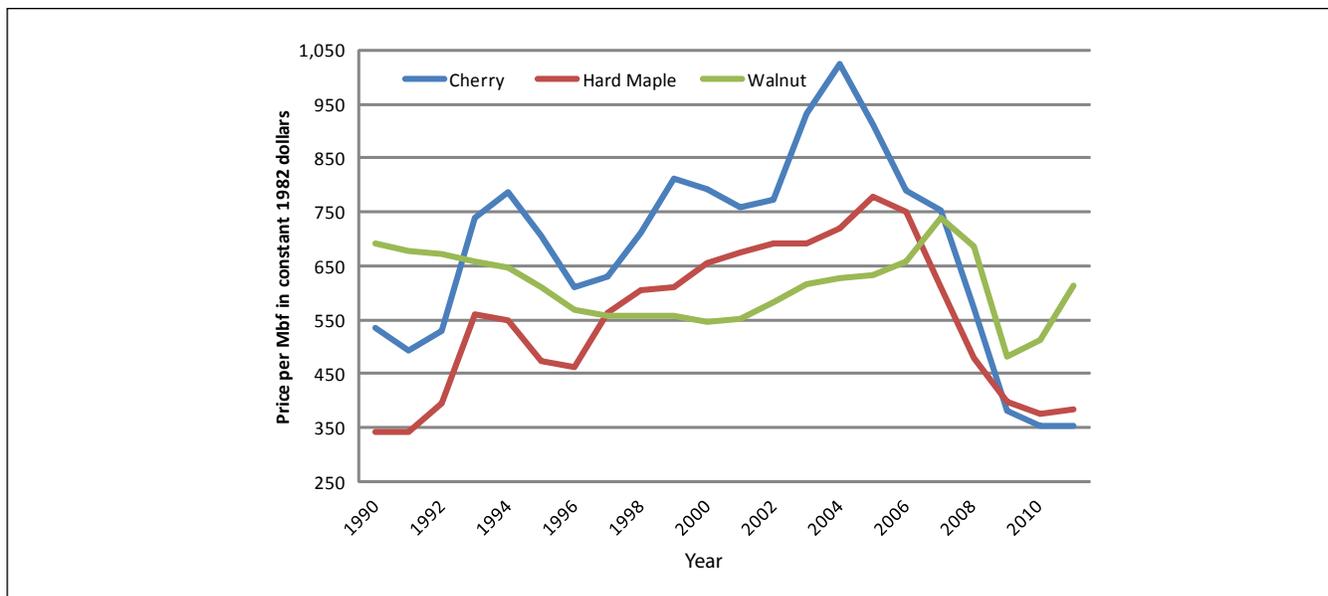


Figure 2.—Price for No. 1 common lumber for walnut, cherry, and hard maple in constant 1982 dollars per thousand board feet, 1990 to first half of 2011 (HMR 1990 to 2011, USDL 2011).

Once walnut lumber price declined, so did walnut lumber production. Because of differences in the scale of walnut, cherry, and hard maple production, it is easier to see changes in production as indexes (based on 1990 production levels) rather than raw quantities (Fig. 3). As indicated in Figure 3, walnut lumber production trended downward between 1993 and 1998 as real price declined (Fig. 2). This decline coincided with decreased walnut lumber exports. The increased walnut lumber production after 1998 coincided with an increase in lumber exports. It is impossible to determine all the factors influencing the upward trend in lumber prices in 1999, but some of the factors appear to be increased export demand, relatively low log costs, and a stable price of walnut lumber. As exports of walnut lumber continued to increase between 1998 and 2007, so did walnut lumber price and production. The USDA Foreign Agricultural Service (2011) reports a 43-percent decline in walnut lumber export between 2007 and 2009, matched by a 45-percent decline in price and a 41-percent decrease in production (Figs. 2 and 3). Although production

estimates for 2010 and onward have yet to be released, the 45-percent increase in walnut exports between the first two months of 2010 and 2011 was the primary cause of the 45-percent increase in walnut price during this period.

Black cherry lumber exports increased by 300 percent between 1990 and the peak year of 2005 while total hardwood lumber exports increased by 62 percent. Cherry exports began to rapidly decline in the mid-2000s and had dropped by 61 percent by 2009 as European demand for this species all but stopped. The rapid drop in European cherry demand followed rapid and large increases in cherry lumber prices, indications that black cherry may have priced itself out of the European market. Cherry also was the premier species for the production of high-end kitchen cabinets in the early 2000s, but this demand dropped sharply after the decline in the housing market in 2005. Although much of the domestic furniture manufacturing has moved to Asia, black cherry is still an important component of the furniture industry. According to the Appalachian

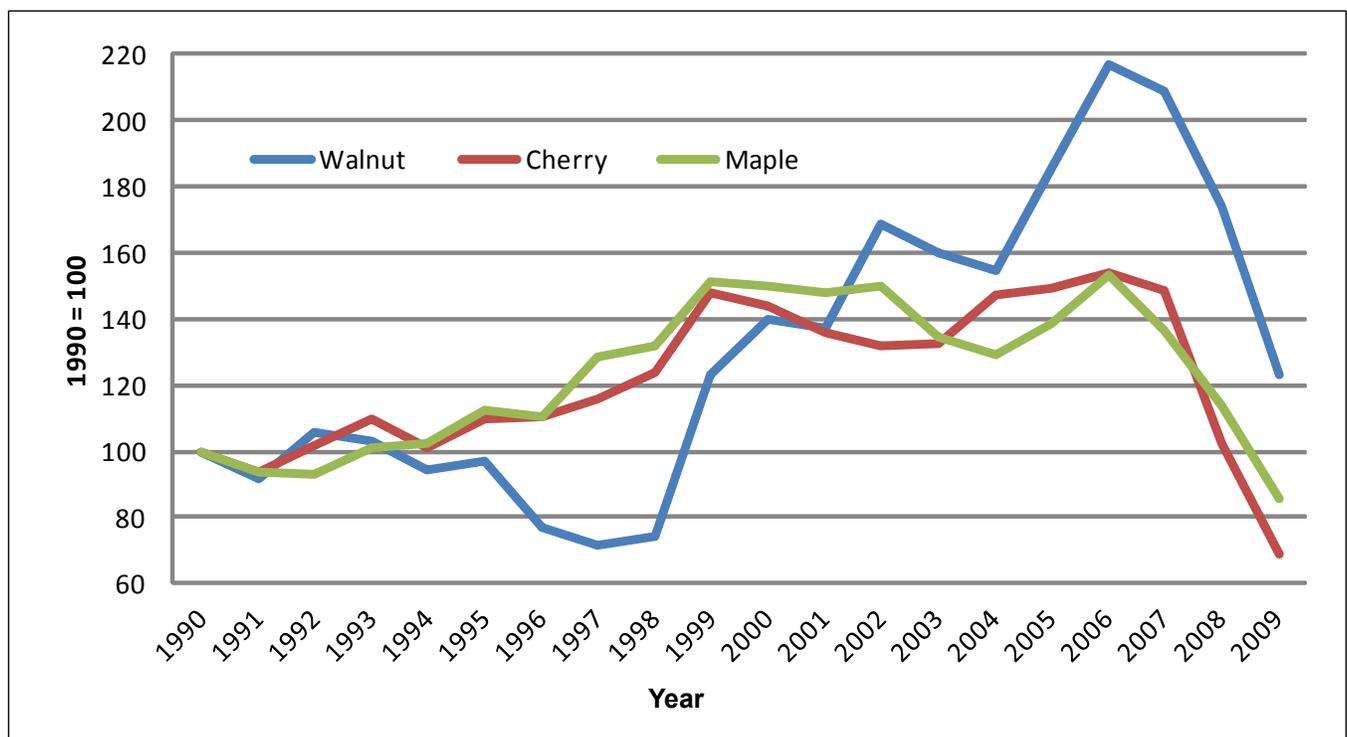


Figure 3.—Index for lumber production of walnut, black cherry, and hard maple when 1990 production equals 100 (USDC 1991 to 2010).

Hardwood Manufacturers (AHMI), cherry in recent years has ranked as the number one species featured at the High Point furniture market (AHMI 2010), although furniture sales have yet to reach levels experienced before the 2009 recession. Because of cherry's large declines in demand in domestic kitchen cabinet, domestic furniture, and export markets since 2005, it is of little wonder that cherry declined more in price than any other species listed in Table 1.

Hard maple also had a large increase in lumber exports in the late 1990s, but exports have declined since then. Between 1900 and 2000, maple (hard and soft) exports increased by more than 360 percent compared to a 53-percent increase in total lumber exports. As export demand for this species declined after 2000, domestic demand increased as this species became the most common lumber used by the kitchen cabinet industry. In recent decades, hard maple also has been reintroduced as a furniture species and was the third most featured species at the 2009 High Point furniture market. The second most featured species at this market was rubberwood, which comes from latex trees that had been taken out of production. As in the case of cherry, the decline in hard maple lumber price and subsequent declines in production are the result of declines in multiple markets.

INTERNATIONAL DEMAND FOR PRIMARY WALNUT PRODUCTS

As the previous discussion of the lumber market indicates, the production and price of walnut are heavily influenced by exports of this species. To what extent walnut lumber price and production are currently influenced by export is difficult to determine because of the ambiguities in estimates of hardwood lumber production by the U.S. Department of Commerce. In 1994, the USDC changed procedures to estimate hardwood lumber production, which included a new interpretation of data from surveyed mills and the estimated production from smaller non-surveyed mills. As a result of these changes, estimated total hardwood lumber production in 1993 increased by 47 percent and the "eastern hardwood not specified by

kind" portion of estimated production increased from 16 percent to 31 percent. Then, in 2009, the USDC stopped including estimates of "eastern hardwood not specified by kind" production. The proportion of walnut lumber production that was exported ranged from 39 to 67 percent in 2007, declined to a range of 30 to 52 percent in 2008, and rebounded to an estimated range of 38 to 64 percent in 2009. To arrive at the lower portions of these ranges, 30 percent of the walnut lumber would have to be manufactured in smaller non-surveyed mills. Because these smaller mills tend to produce ungraded lumber and industrial products, it is most likely that at least 50 percent of the walnut lumber currently produced is exported.

While walnut lumber exports have increased in recent years, the U.S. also exports significant volumes of walnut logs and veneer (Fig. 4). In most years since 1990, the value of log exports was equal to or greater than the value of lumber exports. An examination of veneer and saw log price indexes reveals a familiar pattern of price movement relative to the value of exports (Fig. 5). It appears that veneer log prices are even more sensitive to export levels than saw log prices, but a true econometric test of this hypothesis requires much more data than available. Given that walnut logs are either transformed into lumber and veneer or are exported, the information presented in Figure 4 indicates that most walnut logs currently harvested in the U.S. are exported in some form. Because of these facts, it would be useful to examine the specific regions and countries that receive exports of walnut logs, lumber, and veneer.

In 1990, 63 percent of the value of walnut products (lumber, logs, and veneer) was shipped to Germany, Korea, Japan, and Italy, but each of these countries imported a different mix of walnut products (Table 2). Italy was the most important market for walnut logs, Japan was the largest market for walnut lumber, and Germany was the largest market for walnut veneer. Germany also was the most important single market for walnut products in 1990 with an 18-percent market share.

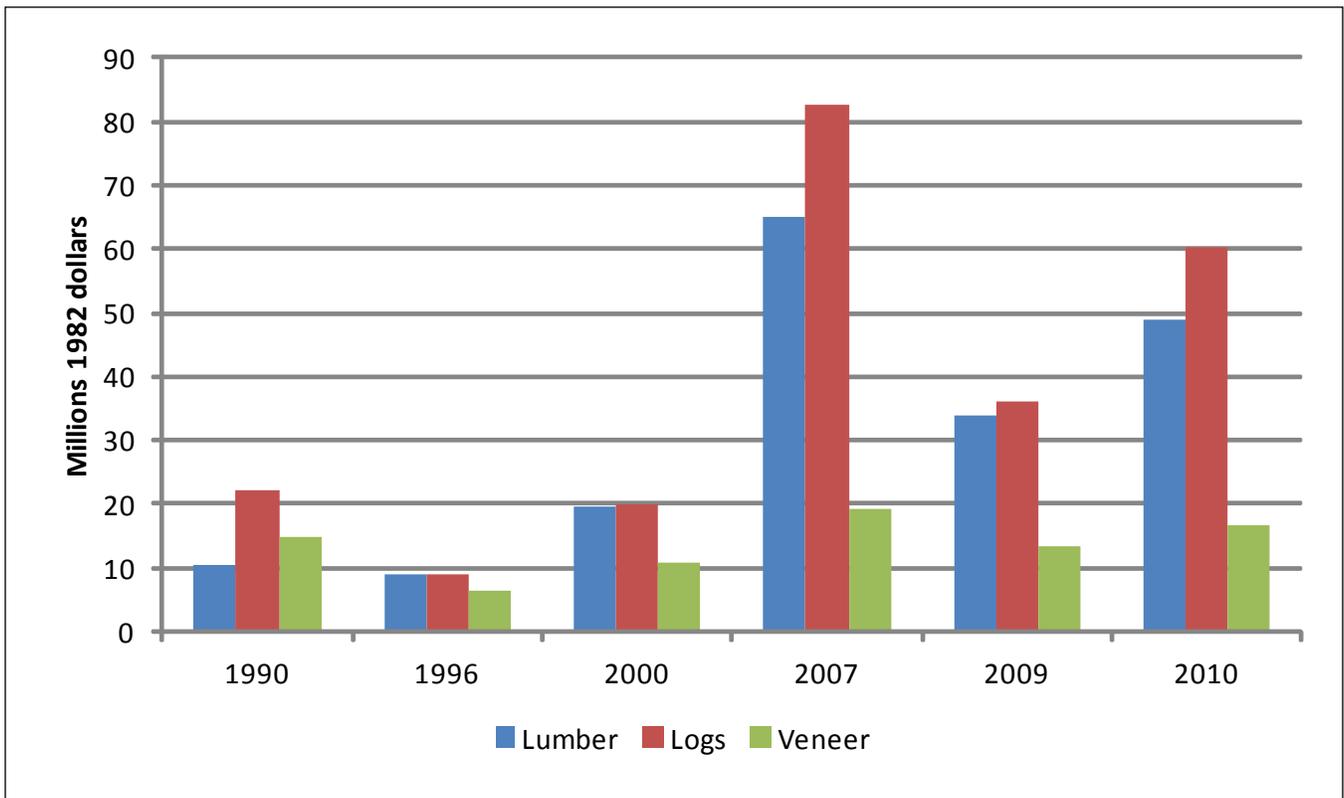


Figure 4.—Value of walnut exports for lumber, log, and veneer in constant 1982 dollars in 1990, 1996, 2000, 2007, 2009, and 2010 (USDA FAS 2011, USDL 2011).

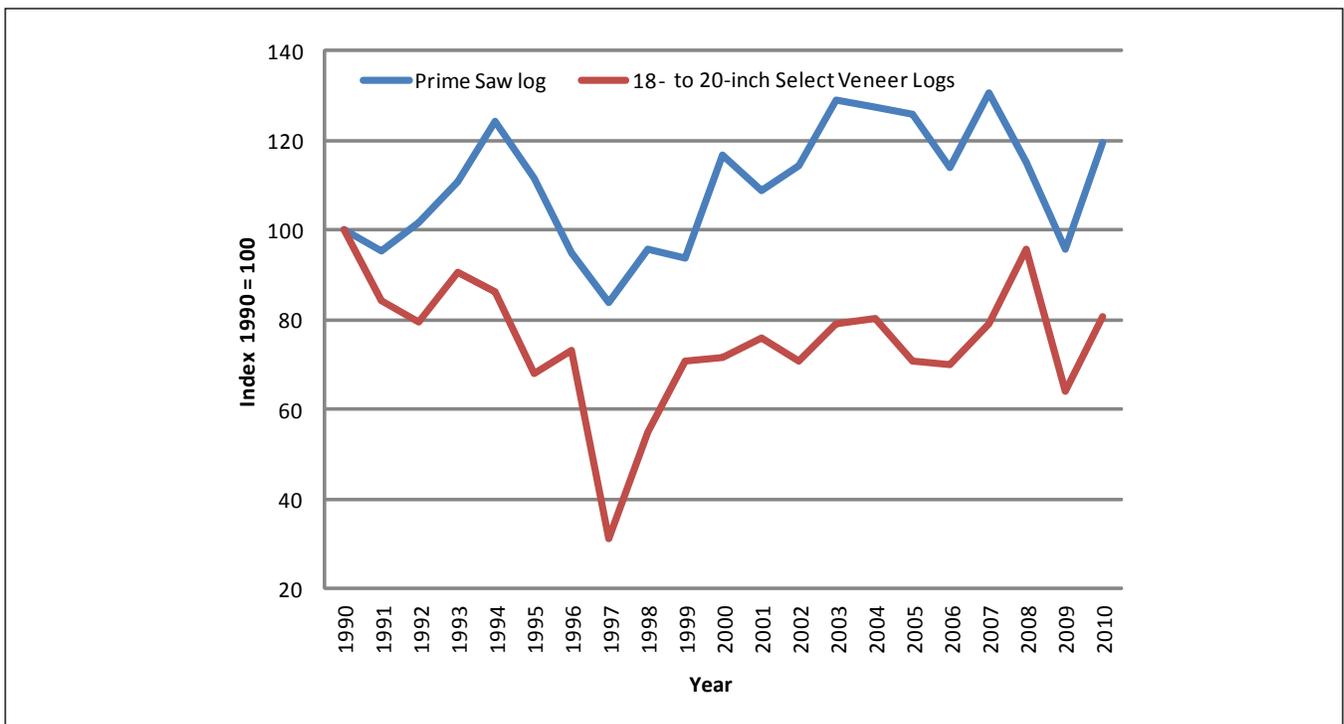


Figure 5.—Index of price for Indiana prime walnut saw logs, and 18- to 20-inch select grade walnut veneer logs, 1990 to 2010 (Hoover 2011, USDL 2011).

Table 2.—Top export markets and percent of market for walnut logs, lumber, and veneer for 1990, 1995, 2000, 2007, and 2010 by value in constant 1982 dollars (USDA FAS 2011, USDL 2011).

Year	Rank	Log		Lumber		Veneer	
		Country	Percent	Country	Percent	Country	Percent
1990	1	Italy	21.6	Japan	25.7	Germany	23.6
	2	Germany	20.6	Canada	17.1	Canada	17.0
	3	Korea	17.4	Korea	16.5	Korea	16.7
	4	Japan	12.4	Italy	14.6	U.K.	12.9
	5	Spain	8.1	Germany	5.6	Japan	9.9
1995	1	Italy	34.8	Italy	31.7	Germany	21.6
	2	U.K.	14.9	Canada	16.0	Canada	18.1
	3	Switzerland	12.6	Japan	15.7	Korea	18.0
	4	Korea	9.1	Spain	7.0	Italy	9.7
	5	Canada	9.0	Taiwan	6.9	Egypt	9.1
2000	1	Italy	21.9	Canada	24.5	Germany	31.2
	2	China/HK	20.0	China/HK	14.3	Canada	26.8
	3	Spain	15.9	Japan	11.4	Spain	6.2
	4	Switzerland	9.0	Italy	10.4	China/HK	5.9
	5	Canada	6.9	Taiwan	10.4	Italy	4.3
2007	1	China/HK	44.8	Canada	35.7	Canada	35.4
	2	Italy	10.8	China/HK	10.3	Germany	18.3
	3	Germany	10.8	Japan	9.0	China/HK	16.3
	4	Canada	6.7	Germany	5.0	Spain	5.5
	5	Japan	5.2	U.K.	4.7	Italy	4.9
2010	1	China/HK	46.7	Canada	28.7	Canada	32.8
	2	Germany	11.9	China/HK	18.6	Germany	16.9
	3	Italy	8.1	Germany	9.9	Spain	8.4
	4	Japan	5.6	Japan	8.6	China/HK	5.8
	5	U.K.	4.3	U.K.	5.6	Italy	3.7

In the middle and late 1990s, exports of logs and veneer declined by 59 and 57 percent, respectively (Fig. 4). The decline in log exports was largely due to declines in German and Korean demand while the decline in veneer exports was caused by declines in German, Korean, and Italian demand. These declines in European and Asian demand for logs and veneer caused walnut saw log prices to decline moderately and walnut veneer log prices to decline by more than 50 percent (Fig. 5).

The value of walnut product exports rebounded slightly by 2000, exceeding 1990 levels but with one new element: exports to China and Hong Kong. Exports of walnut products to China increased in the late 1990s, rising from less than \$0.2 million in 1996 to more than \$10.5 million in 2000. As a result, China became second only to Canada as the most important

market for combined walnut products in 2000. China's share of the walnut export market may even be greater than what is shown in Table 2. The transshipment of hardwood products through Canada has been documented (Luppold 1992) and a significant amount of lumber and veneer exported to Canada may be reshipped to China. By 2007, China had become the largest market for walnut logs and Canada had become the largest market for walnut lumber and veneer. Overall, China accounted for more than 28 percent of the walnut product exports by value in 2007 and Canada counted for an additional 21 percent. Both these markets declined during the 2009 worldwide recession but re-emerged in 2010 and are continuing to grow in 2011. Germany also has increased imports of hardwood logs and veneer in the current century and by 2010 was the second overall market for U.S. walnut products after China.

CONCLUSIONS

Walnut lumber has traditionally been the highest priced U.S. hardwood species; however, the real price of walnut declined in the middle to late 1990s while the price of black cherry and hard maple surpassed that of walnut. The decline in walnut lumber prices was associated with a decline in exports. Between the late 1990s and 2008, exports of walnut surged while exports and domestic consumption of black cherry and maple declined. A 43-percent decline in walnut lumber exports between 2007 and 2009 was matched by a 45-percent decline in price and a 41-percent decrease in production. In contrast, the 45-percent increase in walnut exports between the first two months of 2010 and 2011 was the primary cause of the 45-percent increase in walnut price during this period.

The influence of exports on walnut lumber price and production during the last decade is undeniable. The proportion of domestic walnut lumber production could have been as high as 64 percent in 2009. Although lumber exports have a considerable impact on price and production, walnut log exports appear to have an even greater impact on saw log and veneer log prices. It appears that the majority of currently harvested walnut logs are either exported as logs or processed into lumber and veneer and then exported. Exports of walnut products to China increased exponentially in the 1990s, reaching more than \$10.5 million by 2000, making China second only to Canada as the most important market for combined walnut products. By 2007, China had become the largest market for walnut logs while Canada remained the largest market for walnut lumber and veneer. In the 2000s, Germany also increased imports of hardwood logs and veneer and by 2010 was the second overall market for U.S. walnut products after China. Exports will remain an important aspect of the walnut market if the value of the dollar continues to decrease and demand by China and other countries continues to increase.

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