



2019 Indiana Forest Products Price Report and Trend Analysis

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Survey Procedures and Response

Data are collected twice a year, but log prices change constantly. Standard appraisal techniques by those familiar with local market conditions should be used to obtain estimates of current market values for stands of timber or a large quantity of logs. Please note, because of the small number of mills reporting logging costs, “stumpage prices” estimated by deducting the average logging and hauling costs (**Table 4**) from delivered log prices must be interpreted with extreme caution and are meant to only serve as a guide. Actual stumpage values you may be offered depend on many variables such as access, terrain, time of year, etc. For more information regarding standing timber pricing, there is an annual survey of Indiana private consulting foresters available in the Indiana Woodland Steward, inwoodlands.org

Data for this survey were obtained by a direct mail and email survey to a variety of forest-product industries, including sawmills, veneer mills, concentration yards, and independent log buyers. Only firms operating in Indiana were included. The survey was conducted and analyzed by the Indiana DNR Division of Forestry (DoF). The prices reported are for logs delivered to the log yards of the reporting mills or concentration yards. Thus, prices reported may include logs shipped from other states (e.g., black cherry veneer logs from Pennsylvania and New York).

The survey was mailed to 17 firms and emailed to 30 firms. It is estimated these companies produce close to 90% of the state’s roundwood production. Electronic reminders, follow-up phone calls, and additional mailings encouraged responses.

A total of nine firms reported some useful data. Only two mills reported production data, both above 5 MMBF. Total board-foot production reported for 2018 was 30 MMBF. The figure for 2017 was 57 MMBF, compared to 70 MMBF for 2016, and 42 MMBF for 2015. The largest single-mill production reported was 20 MMBF. These annual levels are not comparable because they do not represent a statistical estimate of total production.

The price statistics by species and grade don’t include data from small custom mills, because most do not purchase logs, or they pay a fixed price for all species and grades of pallet-grade logs. They are, however, the primary source of data on the cost of custom sawing and pallet logs. The custom sawing costs reported in **Table 4** do not reflect the operating cost of large mills.

Hardwood Market Comments

Grade lumber markets are unsettled for a number of species that are key to the Appalachian region. Among them are ash, cherry, walnut, and, most importantly, red oak. By no coincidence, these are the species that had become most dependent on Chinese business, with sales volumes contracting by more than 50% from the peak levels of 2017 and early 2018. Exporters to China are trying, in effect, to push large volumes of these species into a market that does not need much of these species. As a result, reports of highly distressed pricing are now commonplace for orders destined for China. Domestic demand for grade lumber is flat, overall, with poplar, soft maple, and hard maple moving the best.

Premium Species¹

Many in the forest-products industry look at red oak as an economic indicator species in the hardwood industry. In many cases, the status of the red oak market carries over to the entire hardwood market, with pricing typically cycling with the general domestic economy and housing. China's appetite for red oak is greatly diminished. Sagging housing markets along with overall softer economic conditions in that country are largely responsible for the falloff in demand, although higher tariffs are not helping the situation. All grades and thicknesses are being affected, though impacts to Fas and #1C sales are especially acute due to the lack of market diversity for those grades. Domestic markets for kiln-dried red oak, while steady, are unable to absorb volumes displaced by reduced Chinese demand. Sawmills are moving some green Fas and #1F red oak to end users and distribution yards along with 4/4 and 5/4 #1C to flooring factories. However, they are struggling to generate orders from concentration yards without substantial price concessions. Drier weather and increasing lumber production have buyers for residential and truck trailer flooring factories feeling more optimistic about meeting #2A and #3A red oak inventory objectives sometime this summer. For now, however, many do not have enough raw material to meaningfully expand finished goods production even as markets are demanding that.

Reports about this species vary based on the grade in question. In general, sellers are having little or no difficulty moving the upper and lower grades but greater difficulty moving #1C. This is especially true for kiln-dried white oak. While Fas and #2A sales to other international and domestic markets are largely compensating for contracted shipments to China, this is not the case for #1C. Green 4/4 white oak production is picking up, and sawmills are adjusting prices as necessary to keep it all moving. April was the second strongest month on record for U.S. exports of white oak lumber, with volume of 28.6 MMBF second only to June 1997 (31.4 MMBF). Year to date 2018 shipments through April were 9% ahead of last year's record pace. Exporters indicate no letup in white oak sales in June. Worldwide markets for 4/4 #1C are especially vibrant, with 4/4 Fas and 5/4 #1C close behind. White oak lumber exports fell in May and were down 15% year-to-date, due mostly to lower Chinese purchasing. Monthly white oak log exports, however, have risen steadily in 2019. Meanwhile, green lumber sales are brisk to exporting concentration yards, as are 4/4 and 5/4 #2A and #3A shipments to residential and truck trailer flooring plants.

Sawmills have reduced production of this species amid the ongoing slump in Chinese demand. Moreover, a number of exporters have brought kiln-dried walnut inventories back down to manageable levels using aggressive pricing in the Chinese market. These actions have mitigated, though not altogether stopped, erosion in prices. Meanwhile, demand for walnut is generally flat in the U.S. and in foreign markets other than China.

The dramatic downturn in Chinese purchasing, coupled with the ongoing slump in domestic demand, has created a challenging business environment for cherry producers. Small quantities are moving domestically and to export

¹ Comments sourced from Hardwood Review Weekly and Hardwood Market Report

markets but orders for large quantities have nearly stopped. Supplies are exceeding buyers' needs despite concerted efforts by yards and mills to reduce production.

Markets that absorbed higher hard maple production in winter and spring have slowed somewhat in summer. During the first half of 2019, the balance between overall supply and demand for this species gradually shifted from minor scarcity to modest surplus. Contacts attribute this shift to two primary factors. First, hard maple production was unusually high during the first several months of the year. Significantly lower 2019 shipments to Canada, China, Mexico, and Japan have more than negated large percentage increases to each of the next five largest markets. Hard maple exports to China have trended higher since December, which, along with steady domestic flooring demand, will support #2 Com prices. #1 Com prices will cool with seasonally slower fall cabinet demand. Second, end users have not had to replenish inventories as rapidly as expected due to competition from alternative materials. Hard maple business is not bad, but neither is it as brisk as earlier in the year, nor are prices as firm.

Other Species

The complexion of poplar markets is noticeably different from 30 days ago. Demand has been and still is decent. However, production and available supplies have rapidly advanced and drawn even with or overtaken demand. Consequently, poplar prices have trended down the last few weeks.

Markets for soft maple have lost some momentum but are still performing well compared to most species. While total demand for soft maple has not changed much in recent months, production has increased, pushing supply slightly ahead of demand. The upper grades are attracting more attention than the common grades and are not overabundant. However, #1C and #2A inventories are a bit bloated for some sales organizations.

At present, Chinese demand for U.S. hardwoods – including ash – is low. Combined ash shipments to the next 10 largest export destinations were up 19% on the year through May, but China still consumes nearly three times as much as all of those countries combined. Ash lumber exports were down 20% year-over-year through May, thanks to a 31% decline from China, though monthly volumes to China were slightly stronger (+3%) during the first five months of 2019 than during the last five months of 2018. Rising log exports, lower lumber production, and steady shipments to China should slow price erosion. Trends in ash sales tend to parallel China's market performance because China is the leading market destination for the species. This is especially true for #1C and #2A, which are the grades of ash most widely used in China. Meanwhile, contacts report slower domestic demand for ash relative to earlier this year.

Slightly stronger spring demand for graded hickory lumber has faded, and mills have resumed selling logs; selling their lumber as mill run; and/or pushing hickory into low-grade products. Kiln-dried markets are steady, with increased prices. Steady export volumes of hickory logs are also being reported. Most of the domestic lumber use is from the flooring sector. Hickory exports have trended higher in 2019, reaching an 18-month high in May after trending lower much of last year. Year-over-year shipments to Mexico and China, the two largest markets, were down year-over-year through May 2019, and it will take larger demand from both to lift prices, especially with domestic demand muted.

Table 1. Hardwood lumber prices, dollars per 1,000 board feet (MBF), 1-inch-thick (4/4) Appalachian market area unless otherwise indicated. Source: *Hardwood Market Report*, P.O. Box 2633, Memphis, TN 38088-2633

Lumber/Grade	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	July 2017	Jan 2018	July 2018	Jan 2019
Ash									
FAS + Prem.	1,110	1,150	1,085	950	960	1,050	1,110	1,285	1,130
No. 1C	795	780	685	585	565	660	750	900	740
No. 2A	460	505	455	375	320	370	420	540	425
Basswood									
FAS + Prem.	695	695	775	795	765	765	735	735	710
No. 1C	430	430	465	460	440	440	400	400	390
No. 2A	230	230	245	245	215	215	195	205	215
Beech									
FAS	500	500	555	545	560	560	560	575	575
No. 1C	420	420	460	460	460	435	420	435	435
No. 2A	345	345	360	350	340	285	275	290	290
Cottonwood (Southern)									
FAS	705	745	765	780	780	780	780	780	780
No. 1C	500	535	545	560	560	560	575	575	575
No. 2A	260	260	260	260	260	260	260	260	260
Cherry (North Central)									
FAS + Prem.	1,520	1,495	1,265	1,210	1,210	1,420	1,595	1,815	1,370
No. 1C	1,035	1,015	825	775	775	770	1,025	1,200	820
No. 2A	660	645	475	405	405	450	570	685	430
Hickory									
FAS + Prem.	1,000	905	830	820	820	840	920	960	865
No. 1C	835	705	545	535	525	535	610	630	560
No. 2A	615	545	425	415	385	395	450	450	415
Hard Maple (unselected)									
FAS + Prem.	1,390	1,220	1,305	1,300	1,150	1,070	1,195	1,210	1,190
No. 1C	905	700	850	840	730	730	890	960	960
No. 2A	655	495	495	485	405	425	500	610	630
Soft Maple (unselected)									
FAS + Prem.	1,115	1,095	1,210	1,250	1,250	1,230	1,175	1,150	1,110
No. 1C	750	635	825	870	840	830	770	770	775
No. 2A	490	450	460	480	430	400	400	400	415
White Oak (plain)									
FAS + Prem.	1,410	1,340	1,440	1,570	1,715	1,615	1,675	1,800	1,700
No. 1C	920	665	710	790	960	975	1,030	1,140	1,000
No. 2A	650	485	470	480	535	525	570	660	630
Red Oak (plain)									
FAS + Prem.	1,145	935	1,040	1,030	1,160	1,080	1,190	1,145	990
No. 1C	795	550	610	665	785	795	885	845	675
No. 2A	690	500	485	500	540	530	575	665	625

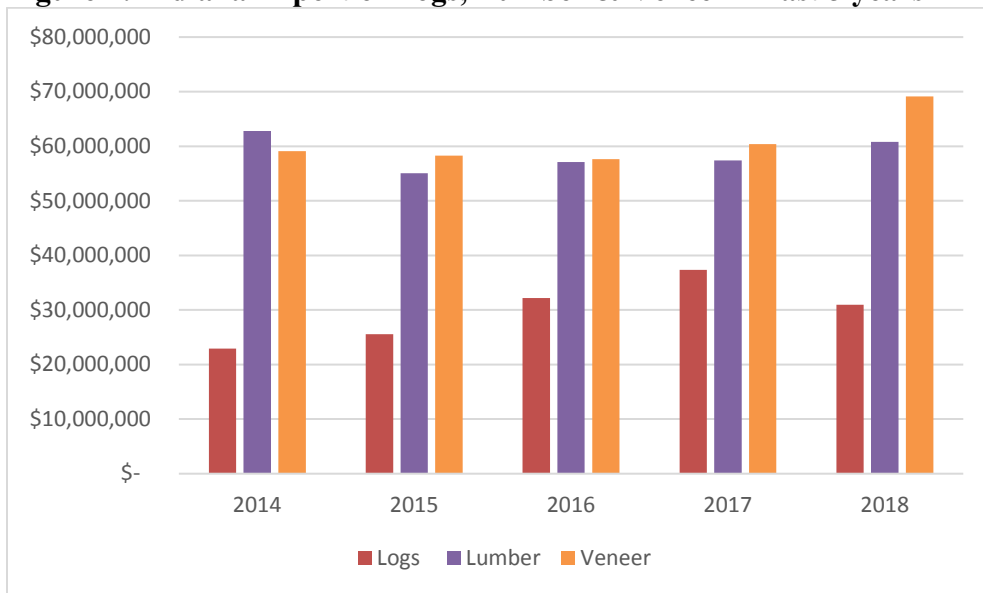
Table 1 continued

Lumber/Grade	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	July 2017	Jan 2018	July 2018	Jan 2019
Yellow Poplar									
FAS + Prem.	830	830	830	830	830	830	830	840	880
No. 1C	545	535	515	475	435	435	435	455	495
No. 2A	385	385	365	335	275	265	275	335	395
Sycamore (Southern plain)									
FAS	455	455	455	455	455	455	460	460	460
No. 1C	435	435	435	435	435	435	440	440	440
No. 2A	375	375	375	375	360	360	360	360	360
Black Walnut									
FAS	3,040	2,575	2,425	2,515	2,515	2,600	3,000	3,025	2,800
No. 1C	1,645	1,310	1,270	1,270	1,270	1,400	1,750	1,960	1,775
No. 2A	1,035	745	730	715	715	765	1,060	1,235	1,075

Export

Indiana’s export of hardwood products continue to be an important part of overall hardwood sales. According to data from the U.S. Census Bureau, log exports declined, primarily to Asia and China specifically, likely due to tariffs imposed as part of U.S.–China trade dispute. Lumber exports increased slightly and there was a modest increase in veneer exports by comparison. In 2018, Indiana exported slightly more than \$30 million of logs, \$60 million of lumber and almost \$70 million of veneer.

Figure 1: Indiana Export of Logs, Lumber & Veneer – Last 5 years

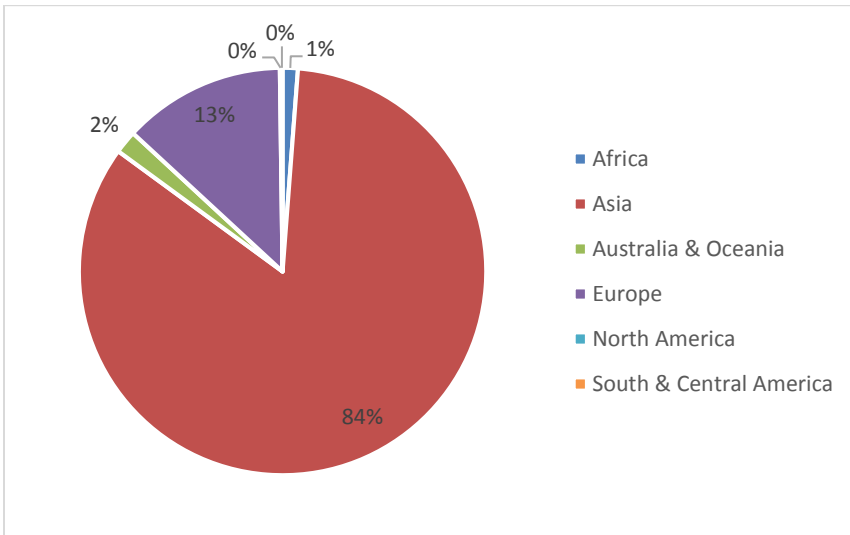


Data from the U.S. Census Bureau⁽¹⁾

Logs

As stated above, Indiana log exports declined in 2018 for the first time in five years. The decline was about 17% from 2017 levels. Indiana log exports totaled \$30,932,951 in 2018. The destination of logs exported remained dominated by Asia (China) at 84% in 2018 but this is down from 89% in 2017. Europe increased 2% to 13% of log exports in 2018. This does not reflect an increase in sales to Europe, which were mostly flat from last year but is an impact of the total value in log shipments to Asia, which fell by 21%. By country, the top five markets were China (60%), Vietnam (7%), United Kingdom (6%), Taiwan (4%), and Japan (4%). Indiana shipped logs to 29 different countries in 2018.

Figure 2: Indiana log exports to world by region, 2018

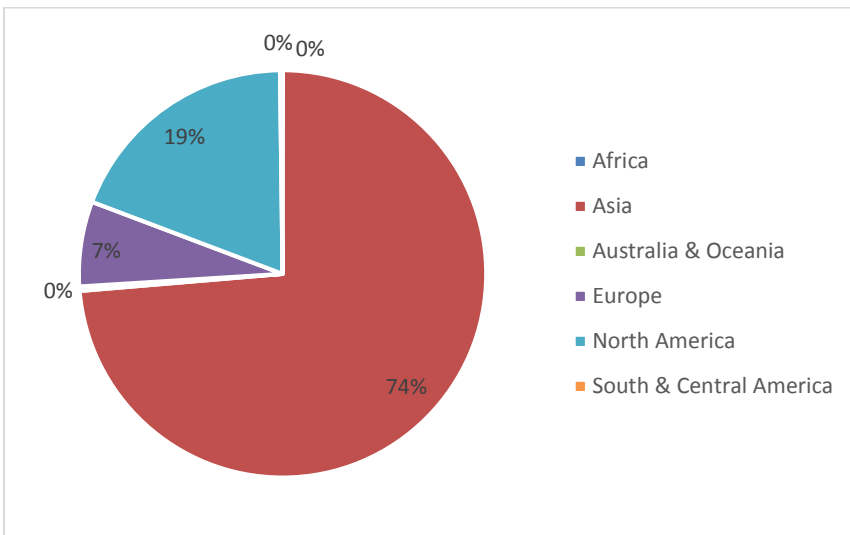


Data from the U.S. Census Bureau

Lumber

In 2018, Indiana lumber exports increased from 2017 by about 6% to \$60,777,280. Regionally, Indiana exports of lumber to Europe declined by 24% and increased to Asia by 13%. By country, China (49%), Canada (17%), Japan (14%), Vietnam (8%), United Kingdom (3%) were the top markets for the year. Indiana shipped lumber to 29 countries in 2018.

Figure 3: Indiana lumber exports to world by region, 2018

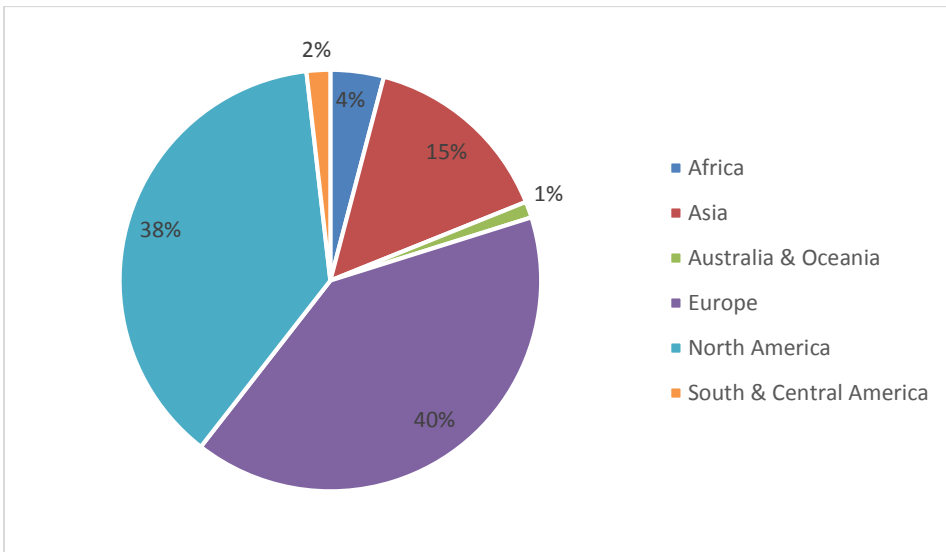


Data from the U.S. Census Bureau

Veneer

Indiana exports of veneer were up 14% in 2018 to \$69,115,689. Veneer exports are not as dominated by one region as lumber and log sectors. Regionally, the percentage of Indiana veneer sales to North America increased by about \$5 million from last year. Also significant, there was a \$1.6 million increase in sales to Asia. The other regions remained relatively flat but for a significant increase in exports to South and Central America, but the dollar value is relatively small because that region only purchases about 2% of Indiana’s veneer exports. By country, top markets were: Canada (35%), Spain (9%), Germany (7%), Portugal (6%), and Belgium (4%). Indiana shipped veneer to 42 different countries in 2018.

Figure 4: Indiana veneer exports to world by region, 2018



Data from the U.S. Census Bureau

Notes:

- (1) Data from U.S. Census Bureau, Economic Indicators Division. State Exports by HS Commodities for logs (4403), lumber (4407) and veneer (4408).

Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices was significantly lower than those that reported in the 2018 spring report (Table 2). Please remember this as you read through the data. Sawlog prices for the premium species (specifically black walnut and white oak) were down compared to the 2018 spring report. Black walnut prices were down 15% across all grades. White oak log prices were down as well but by only 4%. From an overall standpoint, soft maple and poplar were the only species with higher prices being reported. Hickory prices were less than 1% lower. All other species had lower pricing being reported. Overall, log prices were almost 4% lower than what was reported for the 2018 spring report.

Premium Species

White oak sawlog prices were down across all grades. Grades #1 and 3 saw the most significant declines of 7 and 14%, respectfully. Prime sawlog prices were the only bright spot with prices being 5% higher. Prime log prices were up 14%, while #3 grade logs experienced the smallest increase at almost 4%. Demand from overseas buyers for white oak logs is decent, but due to tariff concerns, considerably slower than a year ago. Stave log demand, while steady, is not quite what it was a year ago.

Demand for black walnut sawlogs is down for both domestic and export markets. Similar to the lumber markets, walnut sawlog prices were off by 15% across all grades. Prime sawlog prices were 2% higher while the remaining grades averaged 20% lower.

Red oak sawlog prices were significantly lower across all grades, compared to the 2018 spring report. Prime sawlog prices were 21% lower while grades #1 through #3 averaged 13% lower.

Black cherry sawlog prices were 15% lower across all grades. Prime and grade #1 cherry log prices averaged 19% lower while grades #2 and #3 averaged 12% lower. In 2018, demand was steady to good due to the strong Chinese markets. The same demand from China, now much more sluggish, is the primary reason for the lower pricing.

Hard maple sawlog prices, although lower than what was reported in the 2018 spring report, were not as significant as sawlog prices for some of the other species. Prices across all grades were 4% lower. Grade #2 prices were almost 4% higher while prime, #1 and #3 averaged 6% lower.

Soft maple was one of two species for which prices were actually higher than what was reported in 2018. Prices across all grades were 9% higher. Grades #2 and #3 had the most significant increase, with a combined average of 16% higher pricing.

Other Hardwood Species

Ash cannot catch a break. With such a high percentage of ash affected by the emerald ash borer, most remaining ash standing timber's quality is poor. Add the sluggish Chinese market, which has been the leading destination for ash products, and it should come as no surprise that ash sawlog prices were down compared to the spring of 2018. Surprisingly though, with all that is going against ash, prime and #1 sawlog pricing was slightly higher than that for 2018, but prime and #1 grade sawlog prices tumbled significantly (7% and 11% respectively).

Tulip poplar sawlog prices had the most significant increase among hardwood species. Sawlog prices across all grades were up 14%. Prime, grade #1 and #2 prices were 16% higher. Tulip poplar has been the most consistent performer across hardwood species.

Softwood Logs

It is difficult to have an accurate picture of the softwood markets because only two producers reported pricing information. Pine sawlog prices were 21% lower at \$205 MBF. Red cedar pricing, while lower, was only 2% lower than the 2018 spring report.

Table 2. Prices paid for delivered sawlogs by Indiana sawmills (March 2018)

Species/Grade	March-19 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-18	Mar-19	Mar-18	Mar-19	Mar-18	Mar-19	Mean	Median
				(\$/MBF)		(\$/MBF)			
White Ash									
Prime	600-700	5	2	700	650	700	650	-7.1	-7.1
				47.43	50.00				
No. 1	350-600	8	4	529	473	550	470	-10.6	-14.5
				46.65	60.60				
No. 2	320-400	8	4	364	368	400	375	1.1	-6.3
				24.85	19.74				
No. 3	150-300	7	3	261	267	275	300	2.3	9.1
				20.31	60.09				
Beech									
Prime	300	5	2	318	300	300	300	-5.7	0.0
				11.14	0.00				
No. 1	300-350	7	3	306	317	300	300	3.6	0.0
				5.71	16.67				
No. 2	300-350	8	3	303	317	300	300	4.6	0.0
				15.21	16.67				
No. 3	150-350	8	3	293	250	288	250	-14.7	-13.2
				16.77	100.00				
Cherry									
Prime	500-800	6	3	850	667	850	700	-21.5	-17.6
				61.91	88.19				
No. 1	400-750	9	6	730	608	750	650	-16.7	-13.3
				41.63	55.40				
No. 2	300-650	9	6	518	467	500	450	-9.8	-10.0
				22.59	51.10				
No. 3	150-350	8	4	319	275	300	300	-13.8	0.0
				18.43	43.30				

Table 2 continued

Species/Grade	March-19 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-18	Mar-19	Mar-18	Mar-19	Mar-18	Mar-19	Mean	Median
				(\$/MBF)		(\$/MBF)			
Hickory									
Prime	400-600	6	3	567	500	600	500	-11.8	-16.7
				30.73	57.74				
No. 1	350-650	9	6	451	465	450	445	3.1	-1.1
				31.51	42.33				
No. 2	350-550	9	6	365	407	350	395	11.5	12.9
				27.41	30.18				
No. 3	150-350	8	4	291	275	300	300	-5.5	0.0
				29.10	43.30				
Hard Maple									
Prime	600-800	6	3	779	733	863	800	-5.9	-7.3
				65.96	66.67				
No. 1	400-800	9	6	618	600	600	600	-2.9	0.0
				50.52	57.74				
No. 2	350-700	9	6	441	458	425	400	3.9	-5.9
				32.45	52.31				
No. 3	150-350	8	4	307	275	300	300	-10.4	0.0
				27.27	43.30				
Soft Maple									
Prime	400-600	6	3	492	500	475	500	1.6	5.3
				45.49	57.74				
No. 1	320-650	9	6	418	428	400	375	2.4	-6.3
				36.54	51.34				
No. 2	250-600	9	6	331	380	350	325	14.8	-7.1
				24.35	55.78				
No. 3	150-500	8	4	276	325	288	325	17.8	12.8
				23.06	72.17				
White Oak									
Prime	1000-1200	5	2	1050	1100	1200	11	4.8	-99.1
				120.42	100.00				
No. 1	500-800	8	5	793	740	800	800	-6.7	0.0
				73.45	60.00				
No. 2	450-650	8	5	541	535	538	500	-1.1	-7.1
				51.74	35.00				
No. 3	150-400	7	3	350	300	300	350	-14.3	16.7
				47.25	76.38				

Table 2 continued

Species/Grade	March-19 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-18	Mar-19	Mar-18	Mar-19	Mar-18	Mar-19	Mean	Median
				(\$/MBF)		(\$/MBF)			
Red Oak									
Prime	600	6	2	767	600	750	600	-21.8	-20.0
				49.44	0.00				
No. 1	420-650	9	5	631	514	550	500	-18.5	-9.1
				45.69	37.36				
No. 2	350-550	9	5	476	430	440	400	-9.7	-9.1
				38.16	33.91				
No. 3	150-400	8	3	335	300	313	350	-10.4	11.8
				30.72	76.38				
Tulip Poplar									
Prime	500-650	6	4	504	575	500	575	14.1	15.0
				16.35	32.27				
No. 1	400-650	9	7	414	493	400	500	19.1	25.0
				26.72	33.50				
No. 2	250-550	8	6	323	375	300	375	16.1	25.0
				20.42	42.33				
No. 3	150-350	7	4	261	275	250	300	5.4	20.0
				13.20	43.30				
Black Walnut									
Prime	2000	7	1	1964	2000	2000	2000	1.8	0.0
				252.77	0.00				
No. 1	1000-1600	9	4	1434	1250	1400	1200	-12.8	-14.3
				240.93	150.00				
No. 2	700-1300	9	4	1072	913	900	825	-14.8	-8.3
				178.75	135.98				
No. 3	150-700	8	4	709	463	500	500	-34.7	0.0
				232.22	114.34				
Softwood									
Pine	60-350	3	2	260	205	250	205	-21.2	-18.0
				20.82	145.00				
Red cedar	350-400	3	2	383	375	300	375	-2.1	25.0
				109.29	25.00				

Low Grade / Residue Products

The change in prices paid for or received for various raw-wood products between the spring 2018 report and the current report are shown in **Table 3**. Once again, note the number of responses used to generate the data discussed. These are lower-quality and sometimes smaller logs purchased in batches of random species to be sawn into cants or chipped. The cants are re-sawn into boards used for pallets, blocking, dunnage or other industrial applications that have a strong market. Some mills restrict purchases to specific species or exclude specific species, depending on the markets they sell to. Low-grade or industrial markets continue to be a staple of the market. In many cases, low-grade industrial products have been able to stay steady or rise a little in price when grade lumber markets have suffered. The price for pallet and cant logs per MBF decreased by 2%. Only one producer reported low-grade logs by the ton but we feel it is an accurate number, \$43/ton. No one reported any information on chip pricing. Pricing for sawdust by the cubic yard was unchanged from 2018.

Until about the 1970s, sawdust, chips, and bark would have been burned or landfilled by many mills. They now have many more uses. Sawdust can be used to make pellets, burned as a heating source, or used as animal bedding. Wood chips are produced primarily from slabs sawn off of debarked logs and are used in mulch, wood pellets, fuel, and animal bedding. The decline in the pulp and paper industry threatens this market. Bark used for landscape mulch is now a large market. In some facilities, all or some portion of these byproducts are used to fire efficient low-emission boilers to heat dry kilns year-round and heat facilities in the winter. Attempts have been made to cogenerate electricity at mills, standalone generating plants, and biofuel facilities. Success has been limited by the low cost of electricity purchased off of the grid, the below-cost price received if sold into the grid, and the high cost to produce biofuels.

Table 3. Prices of miscellaneous products reported by Indiana mills (March 2018), free on board (fob) the producing mill

Product	No. Responses	Range	Mean		Median	
		Mar-19	Mar-18	Mar-19	Mar-18	Mar-19
Pallet logs, \$/MBF	3	60-465	324	318	320	430
Pallet logs, \$/ton	1	43	21	0	200	0
Pulpwood, \$/ton	0	0	31	0	40	0
Pulp chips, \$/ton	3	15-32	31	22	29	20
Sawdust, \$/ton	1	35	11	35	10	35
Sawdust, \$/cu. yd.	3	5-12	8	8	6	6
Bark, \$/ton	1	5	6	5	6	5
Bark, \$/cu. yd.	2	4-5	9	5	6	5
Mixed, \$/ton	0	0	0	0	0	0
Mixed, \$/cu. yd.	0	0	4	0	4	0

Custom Costs

Costs of custom services increased from the spring report in the area of sawing (per/MBF). The high cost of diesel fuel usually plays a large role in logging costs as well as sale layout, topography, access, and costs to close out sales by implementing Best Management Practices (BMPs) (Table 5). Custom-sawing costs were reported to be slightly higher at \$325/MBF, an increase from \$300 in the spring of 2018. There were very few surveys returned with logging and hauling costs. Those costs combined were \$275 MBF, which we think is a little high. Through industry contacts and other communication, a more realistic figure would probably be around \$225 MBF.

Table 4. Custom costs reported by Indiana mills (March 2018)

Product	No. Responses	Mar-19		Mean		Median	
		Range	Mar-18	Mar-19	Mar-18	Mar-19	
Sawing (\$/MBF)	4	300-350	300	325	300	325	
Sawing (\$/hour)	0	0-350	0	0	0	0	
Logging (\$/MBF)	2	150-200	875	175	875	175	
Hauling (\$/MBF)	1	100	127	100	80	100	
Distance (miles)	1	75	63	75	63	75	
\$/MBF/mile	0	0	0	0	0	0	

Timber Price Index

The delivered log prices collected in the Indiana Forest Products Price Survey are used to calculate the delivered log value of typical stands of timber. This provides trend-line information that can be used to monitor long-term prices for timber. The species and log quality weights used to calculate the index are described in previous editions of this report, available at

<https://ag.purdue.edu/fnr/Pages/extforestsprice.aspx>. The weights are based primarily on the 1967 Forest Survey of Indiana with changes made to remove basswood, cottonwood, elm, black oak and sycamore in 2014. Relative weights of species comprising an average and quality stand can be found in Table 5.

Table 5. Species composition of the Indiana timber price index for an average and a quality stand

Species	Average Stand	Quality Stand
<i>Veneer Species:</i>	(%)	(%)
White oak	18.0	24.9
Red oak	20.2	23.7
Hard maple	12.9	16.6
Yellow poplar	10.1	10.7
Black walnut	7.2	5.9
<i>Non-veneer species:</i>		
White ash	7.8	3.7
Beech	7.5	3.7
Black cherry	1.1	3.7
Hickory	6.3	3.7
Soft maple	9.0	3.7

The nominal (not deflated) price (columns three and six in Table 7) is a weighted average of the delivered log prices reported in the price survey. The price indexes [columns (4) and (7)] are the series of nominal prices divided by the price in 1957, the base year, multiplied by 100. Thus, the index is the percentage of the 1957 price. For example, the average price in 2019 for the average stand was 916.2% of the 1957 price. The index for a quality stand substantially decreased from 1,172% to 865.8%. This decrease may be due in part to a single company reporting prices in certain categories.

The real prices [columns (5) and (8)] are the nominal prices deflated by the producer price index for finished goods, with 1982 as the base year [Table 6, column (2)]. The real price series represents the purchasing power of dollars based on a 1982 market basket of finished producer goods. It is this real price trend that is important for evaluating long-term investments like timber and the log input cost of mills. Receiving a rate of return less than the inflation rate means that the timber owner is losing purchasing power, a negative real rate of return.

Note that each year the previous year's number is recalculated using the producer price index for finished goods for the entire year. The price index used for the current year is the last one reported for the month when the analysis is conducted, which was April this year. The index increased slightly from 2.00 for 2018 to 2.20 as of April 2019. Inflation in the 1% to 2% range is generally considered a sign of a healthy, growing economy. The change from 2018 to 2019 is about 2%.

Average Stand

The nominal weighted average price for a stand of average quality decreased from \$606.70 in 2018 to \$546 this year (Table 6, column 3 and Figure 4). Again, this series is based on delivered log prices, not stumpage prices.

The deflated, or real price decreased from \$303.30 in 2018 to \$270.20 this year. The new equation for the trend line for the 1957 to 2019 period is:

$$\text{Avg. Stand Real Price} = 201.54 + 1.65 \times T, \text{ where,}$$

T = 1 for 1957, 2 for 1958 . . . 63 for 2019

The average annual compound rate of interest required to take the linear trend line from \$200 in 1957 to \$302.90 in 2017 is 65%. Compare the gray trend line with the orange real price line in Figure 4.

Quality Stand

The nominal weighted average price for a high-quality stand decreased from \$841.30 in 2018 to \$621.50 this year. (Table 6, column six and Figure 5). The average real price series for a high-quality stand decreased from \$420.70 in 2018 to \$307.50 this year.

The average annual compound rate of increase for the trend line is 0.90% per year (Figure 5). The equation for the trend line is:

$$\text{Quality Stand Real Price} = 249.2 + 3.09 \times T, \text{ where}$$

T = 1 for 1957, 2 for 1958 . . . 63 for 2019

Again, compare the yellow trend line with the gray real price line in Figure 5.

Implications



The extent to which holding a stand of timber increases purchasing power depends on when you take ownership and when you liquidate. The 63-year period used in this analysis is much longer than the typical length of ownership. The rate of increase in the trend line doesn't include the return resulting from increase in volume per acre by physical growth, nor the potential increase in unit price as trees get larger in diameter and increase in quality. Maximizing these increases in value requires timber management.

Table 6. Weighted average actual price, price index and deflated price for an average and quality stand of timber in Indiana, 1973-2019

Year	Producer Price Index	Average Stand			Quality Stand		
		Nominal Price	Index Number	Real Price 1	Nominal Price	Index Number	Real Price 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		(\$/MBF)		(\$/MBF)	(\$/MBF)		(\$/MBF)
1973	0.46	120.9	202.8	265.1	150.1	209.1	329.3
1974	0.53	146.3	245.4	278.1	185.2	258.0	352.1
1975	0.58	136.8	229.5	235.0	183.1	255.0	314.5
1976	0.61	144.8	243.0	238.2	189.0	263.3	310.9
1977	0.65	154.3	258.9	238.4	205.7	286.6	318.0
1978	0.70	193.8	325.3	277.7	256.3	357.0	367.2
1979	0.78	215.2	361.1	277.4	284.9	396.9	367.1
1980	0.88	225.2	377.9	255.9	345.6	481.5	392.8
1981	0.96	224.3	376.4	233.4	316.1	440.4	329.0
1982	1.00	213.7	358.5	213.7	308.5	429.7	308.5

1983	1.02	222.7	373.6	219.2	327.6	456.3	322.4
1984	1.04	253.2	424.9	244.2	359.4	500.6	346.6
1985	1.05	223.9	375.8	213.9	301.6	420.1	288.0
1986	1.03	241.5	405.2	234.0	349.2	486.5	338.4
1987	1.05	273.5	459.0	259.5	370.0	515.5	351.1
1988	1.08	281.5	472.3	260.6	386.2	538.0	357.6
1989	1.14	308.1	517.0	271.2	456.0	635.2	401.4
1990	1.19	311.8	523.3	261.6	447.2	622.9	375.1
1991	1.22	289.0	484.9	237.5	405.1	564.3	332.8
1992	1.23	318.1	533.8	258.2	470.8	655.9	382.2
1993	1.25	383.3	643.1	307.4	553.6	771.2	443.9
1994	1.26	394.7	662.2	314.5	570.2	794.3	454.3
1995	1.28	379.9	637.4	297.0	504.2	702.3	394.2
1996	1.31	364.9	612.4	277.9	562.0	782.9	428.0
1997	1.32	384.4	645.0	291.6	499.6	695.9	379.1
1998	1.31	418.9	702.9	320.5	557.9	777.1	426.8
1999	1.33	417.8	701.1	314.2	589.4	821.1	443.2
2000	1.38	465.1	780.4	337.0	701.7	977.5	508.5
2001	1.41	423.8	711.1	301.2	607.0	845.6	431.4
2002	1.39	442.8	743.1	318.8	629.6	877.1	453.3
2003	1.43	467.9	785.1	326.5	635.0	884.6	443.1
2004	1.49	489.6	821.5	329.7	703.9	980.5	474.0
2005	1.56	491.0	823.8	315.3	703.4	979.8	451.8
2006	1.60	496.0	832.3	309.3	731.5	1019.1	456.1
2007	1.67	462.1	775.5	277.4	630.6	878.4	378.5
2008	1.77	484.0	812.1	273.3	732.9	1020.9	413.8
2009	1.73	393.1	659.7	227.9	576.7	803.3	334.3
2010	1.80	451.8	758.1	251.3	659.7	919.0	366.9
2011	1.91	428.3	718.7	224.8	620.2	864.0	325.6
2012	1.94	418.1	701.5	215.3	548.1	763.6	282.3
2013	1.98	496.5	833.1	250.6	755.5	1052.4	381.4
2014	2.01	575.1	965.0	286.8	825.9	1150.5	411.9
2015	1.93	535.1	897.9	277.7	722.9	1007.0	375.1
2016	1.82	559.0	938.1	306.5	822.7	1146.0	451.0
2017	1.91	519.7	872.1	271.7	783.3	1091.1	409.5
2018	2.00	606.7	1018.0	303.3	841.3	1172.0	420.7
2019	2.02	546.0	916.2	270.2	621.5	865.8	307.5

Figure 5. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2019.

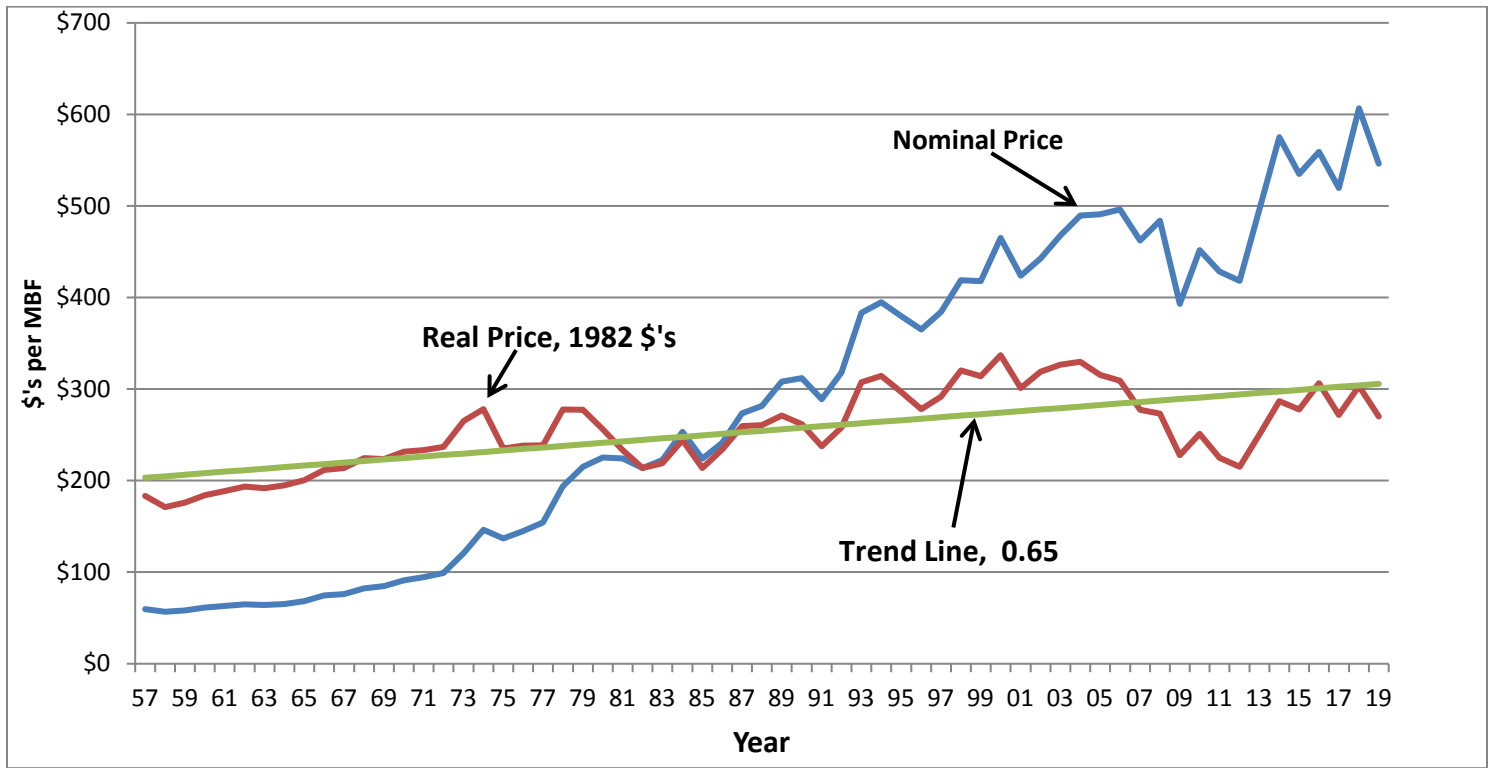


Figure 6. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2019.

