

2018 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 lots 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 5**) 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.

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).

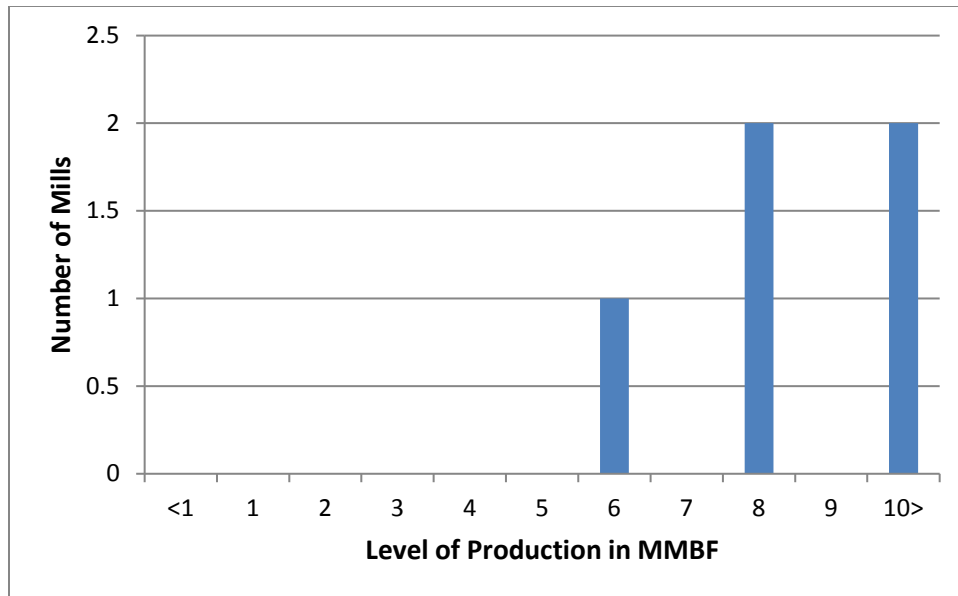
The survey was mailed to 17 firms and emailed to 31 firms. It is estimated these companies produce close to 90% of the state’s roundwood production. Electronic reminders, follow-up phone calls and additional mailings encouraged responses.

A total of 21 firms reported some useful data. Five mills reported production of 5 MMBF or greater (Figure 1). Total board-foot production reported for 2017 was 57 MMBF compared to 70 MMBF for 2016, and 42 MMBF for 2015. The largest single-mill production reported was 21 MMBF. These annual levels are not comparable because they do not represent a statistical estimate of total production. The number of companies contributing price data for each product is shown in the second and third columns in Tables 2 and 3, and in the second column in Tables 4 and 5.

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 5** do not reflect the operating cost of large mills.

This report can be used as an indication of price trends for logs of defined species and qualities. It should not be used for the appraisal of logs or standing timber (stumpage). Stumpage price averages are reported by the Indiana Association of Consulting Foresters in the Indiana Woodland Steward, **inwoodlands.org**.

Figure 1. Distribution of the five mills reporting 2017 level of production.



Hardwood Lumber Prices

Hardwood lumber prices as of January 2018 are shown in Table 1, which represents prices per thousand board feet (MBF) for green, 1-inch thick 4/4 lumber by species and grade, compiled by the Hardwood Market report out of Memphis, Tennessee. Log prices are directly tied to lumber prices because logs are delivered to mills on a continuing basis. This allows mills to base the price they pay for logs on current lumber-market prices. The link to prices paid for standing timber is less direct, depending on how far in advance of logging a stand of timber is purchased.

Premium Species ¹

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. The hardwood industry is currently riding a wave of recording-setting demand, driven by strong global and domestic economies. April 2018 lumber exports were the strongest on record. Domestic lumber demand remains strong, driven by growth in single-family housing, remodeling, and industrial markets.

April 2018 was the strongest April on record for U.S. exports of red oak lumber, according to USDA Foreign Agricultural Service data. Furthermore, total red oak exports during the first four months of 2018 were virtually identical to last year's

¹ Comments sourced from Hardwood Review Weekly and Hardwood Market Report

record volume for that period; however, Chinese demand for 4/4 #1C red oak has slowed markedly since April, with impacts extending through the supply chain to green sawmills. Most mills are able to move their green production with much difficulty. Demand for green #2A&3A and kiln-dried #2A red oak remains quite strong, as flooring plants continue to aggressively purchase lumber. FAS red oak green lumber pricing is 9% higher than what was reported in July 2017. #1C & 2A prices were 10% and 8% higher, respectfully.

International markets for white oak are energized. Reports indicate increasing Fas white oak sales to Europe and brisk #1C&Btr business to Far East and Oceanic destinations. Comments about #2A exports are mixed. Chinese and Vietnamese buyers are lowering purchase volumes and pushing back on prices, but demand is holding up well from smaller markets in that region. Meanwhile, U.S. residential and truck-trailer flooring factories are aggressively pursuing green #2A&3A white oak, with some buying kiln-dried stock to fill gaps in supply. Sawmills also have solid order files for green #1C&Btr white oak from exporting concentration yards. White oak lumber pricing hasn't changed much since July 2017. Overall pricing across all grades shows white oak increasing by almost 6%. #1C and 2A pricing increased by a combined 7% while Fas lumber increased by only 3.5% since July 2017.

The market direction for walnut has shifted in the last several weeks, with changes more evident for green than kiln dried, and for the upper grades than #1C and #2A. Sawmills that were recently allocating limited supplies of green Fas&1f walnut to customers now say price concessions are necessary to maintain sales. Fas walnut lumber pricing was reported at \$3,000/MBF, the highest since January 2015. Common-grade walnut prices have followed the same trend. Green walnut lumber pricing across all grades is 20% higher than what was reported in July 2017.

Cherry markets have experienced marked improvement over the past year thanks largely in part to a very hot Chinese market. More recently, the domestic markets have seen an uptick as well. Unfortunately, for the first time in recent memory, reports about Chinese markets for cherry are not unanimously positive. Some exporters see things cooling off, noting slower Fas business and price moderation from the high sides of the ranges. That said, most still describe Chinese demand for the species in very positive terms. Meanwhile, consumption remains low domestically and in other parts of the world. Cherry lumber supplies are thin, particularly green stocks, and prices are firm. But green lumber prices across all grades of cherry are 19% higher than those reported in July 2017. Fas cherry has been priced this high since July 2014. Common-grade cherry (1C & 2A) is averaging 23% higher than what was reported in July 2017.

Sawmills and sales operations have good and growing order files for hard maple. Demand is edging higher from cabinet and wood component manufacturers. Residential flooring factories and distribution yards are buying at a steady pace. Meanwhile, hard-maple production is seasonally slower. This combination of circumstances is compressing supplies and gradually lifting prices, particularly for the common grades, which are attracting the strongest interest. Production has slowed due to the hot, humid weather, and the lumber that is being produced is being shipped as fast as possible to avoid stain. Hard-maple lumber pricing compared to what was reported in July 2017 is 14.5 % higher across all grades. 1C lumber showed the largest increase at 18%.

Other Species

Sawmills, concentration yards, and distribution operations are pleased with the current pace of tulip poplar sales, apart from scattered reports of sluggish kiln-dried 5/4 Fas business. Demand is good from domestic moulding and millwork producers, and decent from furniture plants. Pallet manufacturers are purchasing sizeable volumes of poplar pallet lumber and cants. Exports are strong to a broad range of markets, led by China and Vietnam. Supply and demand are closely balanced for most items. Poplar lumber pricing hasn't changed much over the past year-and-a-half. They call poplar the "steady Eddie" of the market and comparing the pricing to what was reported in July 2017 bears this out. Across all grades of poplar lumber, pricing in only 1% higher.

Soft maple is used in a variety of applications, including cabinets, furniture, and moulding. However, manufacturers in each of these sectors have migrated some product lines away from soft maple to other hardwood species or to panel products during the last 18 to 24 months. The loss in market share has not been severe but has been large enough to make a noticeable difference in business intensity for soft maple. Prices did not change much during that period, largely because wet weather and other factors held down production. Sawmill output is now trending up; however, and prices are being affected. In fact, soft maple was the only species to show price declines since July 2017. Soft maple pricing across all grades has decreased just over 4% since the summer of 2017.

Chinese markets for ash gained considerable momentum during the last several years and remain busy today. Also, the broadly improving U.S. economy is helping to bump up domestic demand for kiln-dried ash. Concentration yards have aggressively pursued green ash and, in some areas, are now beginning to see higher receipts. Reported prices have mostly leveled off of late. Comparing ash-lumber prices to those reported in July 2017 shows steady gains, with 1C and 2A leading the way at 12%. Fas lumber gains are at 5%.

Underlying demand for hickory flooring is steady to increasing, according to the vast majority of surveyed solid wood flooring manufacturers. However, some have tightened controls on purchasing, due to the elevated risk of stain associated with seasonally warm temperatures. As such, some green lumber producers experienced slower sales of hickory this week amid what otherwise were predominantly positive comments about this species. Regardless, combined demand from flooring plants, concentration yards, and industrial timber markets is still sufficient to absorb current production. Hickory lumber prices have followed the same trend as the majority of other hardwood species showing modest gains since July 2017. Both 1C and 2A prices are 12% higher, and all grades combined are around 11% higher than in July 2017.

“Today’s” hardwood industry is in a good spot (prices across all grades and species were 6% higher than in July 2017), although there are always concerns. Profitability, finding employees, and rising log exports lead the list. Ideally, other issues, like China’s heightened log fumigation regulations, will work themselves out relatively quickly. How long with this run of good markets continue? Our crystal ball isn’t that clear but it is more likely than not that strong export and domestic markets will remain.

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 2014	July 2014	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	July 2017	Jan 2018
Ash									
FAS + Prem.	875	1,085	1,110	1,150	1,085	950	960	1,050	1,110
No. 1C	620	780	795	780	685	585	565	660	750
No. 2A	350	450	460	505	455	375	320	370	420
Basswood									
FAS + Prem.	660	695	695	695	775	795	765	765	735
No. 1C	405	430	430	430	465	460	440	440	400
No. 2A	210	230	230	230	245	245	215	215	195
Beech									
FAS	500	500	500	500	555	545	560	560	560
No. 1C	420	420	420	420	460	460	460	435	420
No. 2A	345	345	345	345	360	350	340	285	275
Cottonwood (Southern)									
FAS	670	685	705	745	765	780	780	780	780
No. 1C	470	480	500	535	545	560	560	560	575
No. 2A	240	260	260	260	260	260	260	260	260
Cherry (North Central)									
FAS + Prem.	1,345	1,540	1,520	1,495	1,265	1,210	1,210	1,420	1,595
No. 1C	775	1,050	1,035	1,015	825	775	775	770	1,025
No. 2A	455	675	660	645	475	405	405	450	570
Hickory									
FAS + Prem.	845	1,000	1,000	905	830	820	820	840	920
No. 1C	715	835	835	705	545	535	525	535	610
No. 2A	520	615	615	545	425	415	385	395	450
Hard Maple (unselected)									
FAS + Prem.	1,390	1,450	1,390	1,220	1,305	1,300	1,150	1,070	1,195
No. 1C	1,180	1,260	905	700	850	840	730	730	890
No. 2A	810	835	655	495	495	485	405	425	500
Soft Maple (unselected)									
FAS + Prem.	1,040	1,115	1,115	1,095	1,210	1,250	1,250	1,230	1,175
No. 1C	785	845	750	635	825	870	840	830	770
No. 2A	455	500	490	450	460	480	430	400	400
White Oak (plain)									
FAS + Prem.	1,295	1,410	1,410	1,340	1,440	1,570	1,715	1,615	1,675
No. 1C	845	960	920	665	710	790	960	975	1,030
No. 2A	660	660	650	485	470	480	535	525	570

Table 1. (continued)

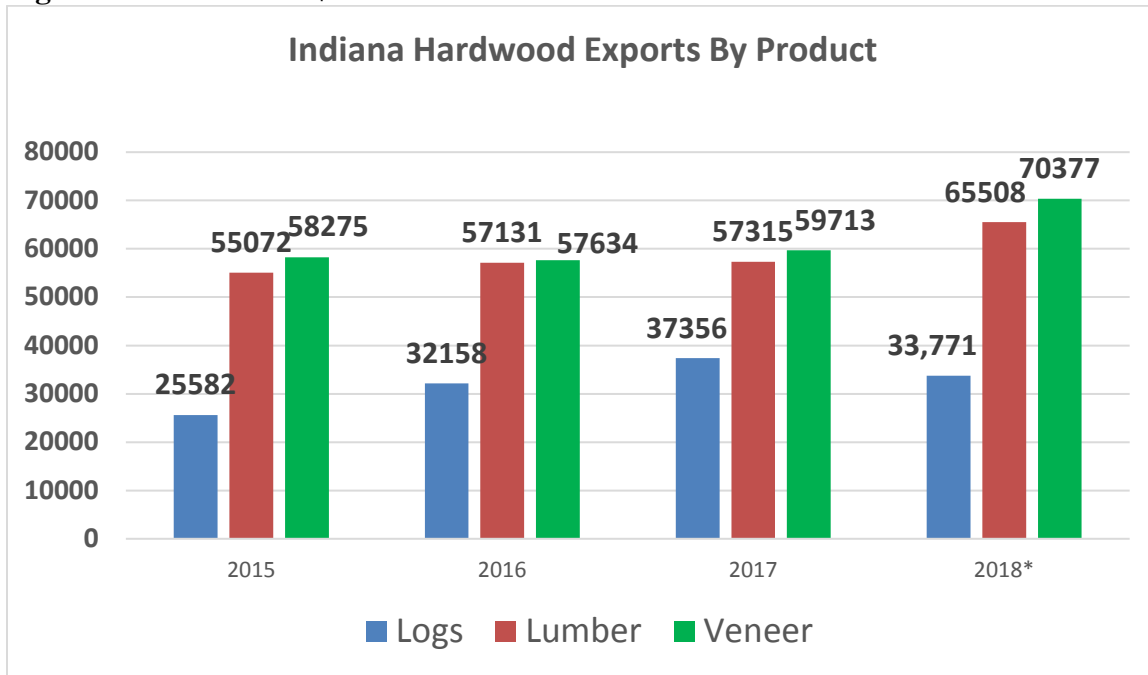
Lumber/Grade	Jan 2014	July 2014	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	July 2017	Jan 2018
Red Oak (plain)									
FAS + Prem.	1,370	1,335	1,145	935	1,040	1,030	1,160	1,080	1,190
No. 1C	860	930	795	550	610	665	785	795	885
No. 2A	700	700	690	500	485	500	540	530	575
Yellow Poplar									
FAS + Prem.	775	830	830	830	830	830	830	830	830
No. 1C	505	545	545	535	515	475	435	435	435
No. 2A	355	385	385	385	365	335	275	265	275
Sycamore (Southern plain)									
FAS	455	455	455	455	455	455	455	455	460
No. 1C	435	435	435	435	435	435	435	435	440
No. 2A	375	375	375	375	375	375	360	360	360
Black Walnut									
FAS	2,325	2,890	3,040	2,575	2,425	2,515	2,515	2,600	3,000
No. 1C	1,235	1,590	1,645	1,310	1,270	1,270	1,270	1,400	1,750
No. 2A	730	990	1,035	745	730	715	715	765	1,060

Exports

Indiana's exports of primary hardwood products (log, lumber, veneer) continues to be an important part of overall industry sales. Log exports from Indiana have decreased 15% in the first quarter of 2018 compared to those of 2017. Comparatively, Indiana lumber exports in the first quarter are up 34%, and Indiana veneer exports are up 26%. China is the largest importer of Indiana's logs in the first quarter, followed by Japan, Taiwan and Vietnam. China imported more than seven times the amount of its next closest competitor, Japan. China is also the largest importer of Indiana's lumber in the first quarter of 2018, followed by Canada, Japan, Vietnam and the U.K. Again, China dwarfs the next largest importer, Canada, by more than 2.5 times. The largest importer of Indiana veneer is Canada, followed by Spain, Germany, Portugal and Belgium. Here, Canada is the dominant importer, with more than 3.5 times the next largest importer, Spain.

Figure #1 below compares Indiana’s primary hardwood products by year.

Figure #1- Thousands \$



US Census Bureau’s Hardwood Export Statistics – 2015-2017, *estimate: 2018 Q1 annualized

Logs

China, Vietnam and the U.K. are the three largest importers of hardwood logs from Indiana in 2017. U.S. Census Bureau’s Hardwood Export Statistics show that Indiana exported \$37 million worth of logs to the world in 2017. Using \$2,500/m’ for an average this is approximately 14.8 million board feet (BF), enough to supply a large sawmill or two medium mills.

China is by far the largest importer at \$25.4 million in 2017, an increase of +14% from 2016. More than 20 countries compete to purchase logs from Indiana.

Figure #2 table shows log export totals by country for 2015 - 2017. Data are from the U.S. Census Bureau.

Figure #2 – Indiana Log Exports by Country Destination in U.S \$

Country	2015	2016	2017
World Total	25,582,120	32,158,310	37,355,618
China	15,014,522	21,850,169	25,413,877
Vietnam	1,682,531	2,282,769	2,472,637
United Kingdom	591,358	1,204,895	2,241,457
Taiwan	1,091,157	1,093,096	1,293,331
Japan	1,175,936	1,039,441	1,100,108
Korea, South	762,800	747,848	867,340
India	740,115	526,045	769,127

Pakistan	264,000	266,900	662,450
Portugal	436,342	334,381	415,089
Germany	1,336,328	1,300,205	415,042
Italy	592,789	539,708	387,356
Turkey	420,000	137,406	369,768
Hong Kong	50,030	12,635	303,744
Egypt	110,698		149,089
Indonesia	69,996	199,538	128,700
Spain		171,606	119,306
New Zealand	620,227	60,823	58,714
Ireland		50,000	55,500
Qatar			45,505
Estonia		13,450	34,179
Argentina			25,000
Lebanon			20,271
Canada	9,778	42,897	8,028
Czech Republic	310,750	32,000	
Denmark	136,106		
Lithuania	75,451	14,500	
Malaysia	43,944	49,875	
Thailand	19,044	22,904	
France	14,418	75,147	
Singapore	13,800	10,565	
Slovenia		34,703	
Belgium		20,487	
Saudi Arabia		12,368	
Netherlands		11,949	

Lumber

Indiana's lumber exports in 2017 were \$57 million, relatively little changed from 2016. China, as stated earlier, is Indiana's largest export market and nearly 2.5 times as large as the next-largest market, Canada, based on figures from 2017. Vietnam continues to slowly gain ground due to its need for the #1C and #2C grades mostly used in home furnishings and kitchen-cabinet construction.

Figure #3 table shows Indiana's lumber exports by country destination for the last three years. Data are from the U.S. Census Bureau.

Figure #3 – Indiana Lumber Exports by Country Destination in U.S. \$

Country	2015	2016	2017
World total	55,071,923	57,130,909	57,315,561
China	16,178,568	18,508,123	25,484,595
Canada	6,962,064	7,872,397	10,826,349
Japan	13,730,621	12,976,440	8,567,844

Vietnam	1,152,002	3,182,507	4,044,399
Turkey	1,058,856	640,359	1,407,057
United Kingdom	811,758	836,563	1,255,128
Spain	1,989,261	1,006,037	1,108,291
Mexico	8,728,129	8,377,639	752,957
Germany	718,778	484,333	631,257
Italy	927,612	737,411	335,048
Estonia	162,790	285,898	319,008
Pakistan	266,199	253,715	298,855
Egypt	365,508	98,470	260,705
New Zealand	19,862	266,857	255,800
Malaysia	114,543	33,274	233,352
Taiwan	299,983	56,613	229,665
Indonesia	68,424	133,067	211,654
Thailand	42,167	107,690	209,400
Denmark	231,600	55,642	177,005
Guatemala	302,015	88,346	133,671
Korea, South	127,367	235,358	97,973
Israel			82,355
Russia	42,489	63,448	73,027
British Virgin Islands			49,187
Greece	115,375		43,865
El Salvador	20,660	75,396	40,121
Australia	15,000	65,985	28,859
Ireland			26,350
Mauritius			25,000
Hong Kong	30,900	32,682	24,871
France			24,298
India	51,261	30,000	19,000
Portugal	45,686	28,850	17,155
South Africa	35,134	27,593	13,944
Argentina			7,516
Malta	142,285		
Lebanon	71,203	119,490	
Saudi Arabia	70,488		
Lithuania	65,044		
Netherlands	23,575	58,206	
Singapore	22,069	12,345	
Belgium	19,389	115,937	
Bermuda	12,217		
Jordan	11,831	20,405	
Trinidad and Tobago	10,710		
Czech Republic	8,500		
Sweden		157,964	
Bahamas		43,742	
United Arab Emirates		26,174	

Bulgaria		10,000	
Philippines		3,400	
Kuwait		2,553	

Veneer

Veneer demand remains firm. First-quarter 2018 veneer exports are above 2017 numbers by 26%. The outlook is for veneer, 4SC, 3SC and stave logs to remain strong through 2018.

Figure #4 table shows Indiana's veneer exports by country destination for the last three years. Data are from the U.S. Census Bureau.

Figure #4 – Indiana Veneer Exports by Country Destination in US \$

Country	2015	2016	2017
World Total	58,275,422	57,634,305	59,713,094
Canada	17,842,402	15,788,962	19,988,686
Spain	4,465,053	6,547,639	6,892,941
Germany	6,126,277	6,744,586	4,897,237
Portugal	2,265,506	2,568,448	3,380,513
China	3,627,961	3,023,389	2,839,379
Belgium	1,509,061	1,411,603	2,535,051
Italy	736,423	1,207,485	2,066,671
Lithuania	857,744	2,304,666	2,052,758
South Africa	2,453,495	3,068,000	1,905,452
Malaysia	2,139,317	2,547,792	1,774,613
Austria	2,518,464	2,344,088	1,262,522
United Kingdom	2,110,443	1,614,432	981,917
Vietnam	321,181	633,494	974,082
Romania	355,696	55,102	759,172
Australia	815,865	772,019	736,318
Indonesia	584,658	529,839	714,109
Turkey	1,629,224	829,876	700,267
Mexico	1,345,812	1,078,171	558,634
Brazil	1,005,832	814,968	539,386
Greece		291,154	464,510
Israel	437,806	145,380	451,886
Japan	597,889	561,547	435,778
India	173,136	173,949	429,733
United Arab Emirates	624,900	800,658	406,410
Taiwan	100,581	226,686	355,055
Estonia			350,749
Morocco			193,197
Egypt	1,509,002	736,626	190,232
Singapore	118,938	140,298	183,082
Uzbekistan			114,766
Honduras			114,010

Finland	162,033	201,611	108,562
Ireland	248,123	200,071	103,671
Netherlands	35,284	3,500	88,975
Guatemala	11,137		38,166
Korea, South			35,431
Bulgaria		28,213	31,990
Czech Republic	288,198	34,161	22,702
Latvia	27,327		22,332
Switzerland	121,660	5,625	12,149
France	912,680	169,357	
Thailand		18,084	
New Zealand		4,041	
Lebanon	94,619		
Russia	84,359		
Ukraine	17,336		

Compared to other states, Indiana remains an important player in wood-products exports from the United States, even with significant distance to east- and west-coast ports. Indiana retains the top spot for the fourth year in a row for veneer exports. Over the past 10 years, Indiana has had the top spot in veneer exports for eight years, with Pennsylvania exporting just slightly more value in 2012 and 2013. For log exports, Indiana ranks 18th among other states, and for lumber exports Indiana ranks 22nd based on 2017 figures.

Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices was slightly higher than those who reported in the 2017 spring report (Table 2). Sawlog prices for the premium species (specifically black walnut and white oak) were up significantly from the 2017 spring report. Black walnut prices were up across all grades by 37%. White oak log prices were up as well by 18% compared to the 2017 spring report. From an overall standpoint, prices were up for every species except softwood (pine and cedar). Overall, across all species and grades, prices were up 19% from the 2017 spring price report.

Premium Species

White oak sawlog prices were up across all grades. Grades #1 and 2 saw the biggest jump, with prices 28% and 20% higher, respectively. Prime log prices were up 14%, while #3 grade logs experienced the smallest increase at almost 4%. White oak sawlog prices were down across all grades. Prime sawlog prices were off 3.5%, grades 1-3 white oak sawlogs were down an average of almost 5%. Demand from overseas buyers for white oak logs is extremely strong. Stave log demand, while steady, is not quite what it was a year ago.

Demand for black walnut sawlogs is strong for the export markets, while demand is steady from domestic buyers. #2 and 3 grade walnut logs saw the largest increase at 38% and 53%, respectively. Overall, walnut log prices across all grades were 37% higher.

Red oak sawlog prices were higher across all grades, compared to the 2017 spring report. Prime sawlog prices were 18% higher while grade #1 and 2 sawlog prices averaged 24% higher. Grade # 3 sawlog prices saw the lowest increase of 3%

Black cherry sawlog prices have probably made the largest turnaround of any hardwood species. This is primarily due to what seems like an unsatisfied demand from China as well as increased demand domestically. Cherry sawlog prices were up across all grades by almost 34%. Grade #2 sawlogs saw the largest increase, at 40%, while #1 grade sawlog prices were 37% higher than what was reported in the 2017 spring report.

Hard maple sawlog prices followed the same trend as the rest of the hardwood species. Prices were higher across all grades by 24%. Prime hard maple logs saw the largest increase at 42%, while the grade sawlog increases were more moderate.

Soft maple sawlog prices were higher across all grades by almost 20%. Prime soft maple logs had the largest increase of 28.5% compared to the 2017 spring report. Grades #1- 3 sawlog prices averaged just over 16% higher.

Other Hardwood Species

The emerald ash borer continues in path of destruction across Indiana. Many experts say that within five years there will be few to no ash trees left. Landowners are trying to harvest their ash before the quality deteriorates. The export market for ash is still good. Several exporters are looking for 150-plus containers per month to meet their demand. Sawlog prices across all grades averaged 14% higher than during the spring of 2017. Grade #1 sawlogs had the largest increase, 26%. Grade #3 sawlogs were one of only three items that had a price decrease.

Tulip poplar sawlog prices were almost identical to those reported during the 2017 spring report. Prices were up across all grades by only 1%. Prime and #3 grade sawlog prices were down by 2.5% and 1%, respectively.

Softwood Logs

The price of pine sawlogs decreased by 6% to \$260 MBF, while red cedar prices were off by a reported 41%. It should be noted that only three producers reported pine and cedar pricing.

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

Species/Grade	March-18 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
White Ash									
Prime	550-800	5	5	600	700	600	700	16.7	16.7
				0.00	47.43				
No. 1	350-710	6	8	420	529	450	550	26.0	22.2
				39.58	46.65				
No. 2	250-440	6	8	314	364	300	400	15.9	33.3
				29.93	24.85				
No. 3	150-300	7	7	263	261	275	275	-0.8	0.0
				23.94	20.31				
Beech									
Prime	300-350	6	5	283	318	300	300	12.4	0.0
				16.67	11.14				
No. 1	300-340	4	7	300	306	300	300	2.0	0.0
				27.39	5.71				
No. 2	250-380	4	8	267	303	300	300	13.5	0.0
				33.33	15.21				
No. 3	250-380	6	8	267	293	300	288	9.7	-4.0
				33.33	16.77				
Cherry									
Prime	600-1000	6	6	650	850	700	850	30.8	21.4
				50.00	61.91				
No. 1	500-970	7	9	533	730	500	750	37.0	50.0
				44.10	41.63				
No. 2	400-610	7	9	370	518	350	500	40.0	42.9
				37.42	22.59				
No. 3	250-400	7	8	250	319	250	300	27.6	20.0
				28.87	18.43				
Hickory									
Prime	450-650	6	6	483	567	500		17.4	-100.0
				16.67	30.73				
No. 1	300-600	7	9	385	451	355		17.1	-100.0
				24.32	31.51				
No. 2	250-550	7	9	294	365	300		24.1	-100.0
				11.66	27.41				
No. 3	150-450	7	8	263	291	275		10.6	-100.0
				23.94	29.10				

Table 2. (continued)

Species/Grade	March-18 Range (\$/MBF)	Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
Hard Maple									
Prime	550-900	6	6	550	779	600		41.6	-100.0
				104.08	65.96				
No. 1	400-810	7	9	508	618	550		21.7	-100.0
				35.16	50.52				
No. 2	300-600	7	9	375	441	400		17.6	-100.0
				35.36	32.45				
No. 3	200-450	7	8	263	307	275		16.7	-100.0
				23.94	27.27				
Soft Maple									
Prime	400-700	6	6	383	492	400	475	28.5	18.8
				44.10	45.49				
No. 1	300-640	7	9	358	418	325	400	16.8	23.1
				32.70	36.54				
No. 2	200-400	7	9	270	331	300	350	22.6	16.7
				20.00	24.35				
No. 3	150-380	7	8	250	276	275	288	10.4	4.7
				35.36	23.06				
White Oak									
Prime	600-1250	6	5	917	1050	900	1200	14.5	33.3
				101.38	120.42				
No. 1	500-1040	7	8	617	793	600	800	28.5	33.3
				47.73	73.45				
No. 2	350-800	7	8	430	541	450	538	25.8	19.6
				51.48	51.74				
No. 3	250-600	7	7	338	350	350	300	3.6	-14.3
				37.50	47.25				
Red Oak									
Prime	600-900	6	6	650	767	650	750	18.0	15.4
				28.87	49.44				
No. 1	500-860	7	9	492	631	500	550	28.3	10.0
				16.67	45.69				
No. 2	350-700	7	9	395	476	375	440	20.5	17.3
				22.91	38.16				
No. 3	250-500	7	8	325	335	325	313	3.1	-3.7
				32.27	30.72				

Table 2. (continued)

Species/Grade	March-18 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
Tulip Poplar									
Prime	450-550	6	6	517	504	500	500	-2.5	0.0
				16.67	16.35				
No. 1	275-500	7	9	414	414	400	400	0.0	0.0
				28.21	26.72				
No. 2	230-400	7	8	300	323	300	300	7.7	0.0
				20.41	20.42				
No. 3	200-300	7	7	263	261	275	250	-0.8	-9.1
				23.94	13.20				
Black Walnut									
Prime	1200-3000	6	7	1533	1964	1500	2000	28.1	33.3
				33.33	252.77				
No. 1	1000-2500	7	9	1125	1434	1100	1400	27.5	27.3
				57.37	240.93				
No. 2	450-2250	7	9	775	1072	750	900	38.3	20.0
				55.90	178.75				
No. 3	250-2250	7	8	463	709	500	500	53.1	0.0
				37.50	232.22				
Softwood									
Pine	230-300	6	3	277	260	300	250	-6.1	-16.7
				23.33	20.82				
Red cedar	250-600	5	3	650	383	650	300	-41.1	-53.8
				650.00	109.29				

Veneer Log Prices

The number of mills reporting veneer-log prices increased slightly from the 2017 spring pricing report (Table 3). Prices were reported by both veneer mills and sawmills. Sawmills resell their veneer-quality logs to veneer mills, exporters, overseas importers and manufacturers. On occasion, sawmills may produce specialty cuts like quarter sawn with the marginal veneer logs. The variation in veneer log pricing is due to mix-veneer mills, sawmills and loggers reporting their values. This difference in values could be reduced if prices were only from veneer manufacturers.

Overall, market comments seem positive. Walnut and white oak continue to be highly sought after, primarily due to a very strong export market. Many veneer-log producers are sold out of both of these species. Whether you are support or opposed log exporting, it is a large segment of the log sales. Current more-stringent phytosanitary requirements as well as increased enforcement of those existing rules in China have slowed the log exports, but

most in the industry feel this situation will not be drawn out, long term. However, it remains to be seen how China will react to President Trump's tariffs being imposed on China. Pricing remains very competitive from the export (especially China) side. Overseas veneer companies continue to process North American veneer logs. Wood lookalikes of plastic and vinyl as well as the ability to use high-quality 3D images continues to be a major concern for the veneer business. Most consumers would have a hard time distinguishing between the lookalikes and real wood. Those manufacturers can make the plastic and vinyl look exactly like wood but with a cheaper price.

Black walnut and white oak veneer remain in steady to strong demand both domestically and internationally. In addition to the demand from the veneer markets, white oak is still sought after by stave log buyers. Black walnut veneer log prices were higher for the prime smaller diameter logs. Larger diameter prime veneer-log prices were off as much as 40%. Overall, prices for prime black walnut were 5% lower. The same trend followed for the walnut select-veneer logs. Smaller-diameter veneer-log prices were higher, while the larger diameter log prices were reported to be lower than what was reported in the 2017 spring report. Black walnut veneer-log prices (prime and select) were 9% lower than in the spring of 2017.

White oak prime veneer-log pricing was higher for this report. Prime white oak veneer-log pricing across all diameters was 14% higher, while select white oak veneer log pricing was almost 6% higher. With white oak, the larger diameter prime and select veneer-log pricing saw the biggest increases. Prime white oak veneer logs <28" saw a 44% increase in pricing, while select white oak veneer logs from 21 inches d.b.h. and higher averaged 45% higher than reported in the spring of 2017

Cherry veneer log markets continue to be very slow. The lion's share of demand for cherry is for common-grade lumber, with China as the main destination, so cherry veneer logs are just not in high demand. Prime cherry veneer log pricing was off by 57%, and the select cherry veneer log pricing was down almost 73%. It is worth noting however, that only one of two producers provided pricing information for cherry.

Red oak prime veneer-log prices rebounded significantly from those in the 2017 spring report. Prime red oak veneer-log pricing was 17% higher across all diameters, while select red oak veneer log prices were up 13.5% across all diameters. Prime red oak logs in the 24-28 d.b.h. class saw the biggest increase, 53%. Select red oak veneer logs between 24-28 d.b.h. were up 55% from the 2017 spring price report.

Veneer mills again reported significantly lower prices for hard maple. Prime veneer hard maple pricing was down an average 32%. Again, please note that only one to two producers reported pricing for hard maple veneer logs.

Table 3 Prices paid for delivered veneer logs by Indiana mills (March 2018).

Species/Grade	March-18 Range (\$/MBF)	Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
Black Walnut									
Prime									
12-13	800-5750	3	7	3,333	3,864	3,500	4,000	15.9	14.3
				166.67	575.77				
14-15	1200-6000	5	8	4,200	5,056	4,000	5,500	20.4	37.5
				514.78	562.63				
16-17	1200-8250	5	8	5,700	6,488	6,000	7,000	13.8	16.7
				969.54	799.60				
18-20	2000-10000	4	8	7,875	7,563	8,250	7,750	-4.0	-6.1
				1087.33	903.55				
21-23	3000-10500	3	5	8,500	8,400	9,000	10,000	-1.2	11.1
				2179.45	1391.04				
24-28	3000-9500	2	2	10500	6250	10500	6250	-40.5	-40.5
				4500.00	3250.00				
>28	4000-9500	2	2	11500	6750	11500	6750	-41.3	-41.3
				3500.00	2750.00				
Select									
12-13	500-3500	2	5	2350	2600	2350	3000	10.6	27.7
				150.00	556.78				
14-15	1000-5500	1	5	3000	3900	3000	4500	30.0	50.0
				0.00	857.32				
16-17	1200-7000	1	7	5000	4779	5000	5500	-4.4	10.0
				0.00	815.17				
18-20	1500-9000	1	7	6,000	6,000	6,000	7,000	0.0	16.7
				0.00	1091.09				
21-23	2000-8000	1	3	7,000	4,833	7,000	4,500	-31.0	-35.7
				0.00	1740.05				
24-28	3000-9000	1	2	12,000	6,000	12,000	6,000	-50.0	-50.0
				0.00	3000.00				
>28	4000-9000	1	2	12000	6500	12000	6500	-45.8	-45.8
				0.00	2500.00				

Table 3 (continued)

Species/Grade	March-18 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
White Oak									
Prime									
13-14	350-2600	4	6	1,700	1,933	1,650		13.7	-100.0
				234.52	333.58				
15-17	500-3000	7	7	2,557	2,279	2,500		-10.9	-100.0
				195.92	309.73				
18-20	600-4500	7	7	2,993	2,950	3,000		-1.4	-100.0
				265.12	450.40				
21-23	4000-4500	5	3	3400	4167	3500		22.6	-100.0
				358.82	166.67				
24-28	3750-5250	5	4	3900	4625	4000		18.6	-100.0
				367.42	330.72				
>28	6000	3	1	4167	6000	4500		44.0	-100.0
				600.93					
Select									
13-14	350-2000	2	3	1,900	1,183	1,900	1,200	-37.7	-36.8
				700.00	476.39				
15-17	350-2450	2	3	2,250	1,433	2,250	1,500	-36.3	-33.3
				450.00	607.13				
18-20	500-3000	2	3	2,350	1,700	2,350	1,600	-27.7	-31.9
				350.00	723.42				
21-23	3500	2	1	2,875	3,500	2,875	3,500	21.7	21.7
				375.00					
24-28	4750	1	1	3,000	4,750	3,000	4,750	58.3	58.3
				0.00					
>28	5500	1	1	3,500	5,500	3,500	5,500	57.1	57.1
				0.00					
Black Cherry									
Prime									
12-13	400-3000	1	2	1,000	1,700	1,000	1,700	70.0	70.0
				0.00	1300.00				
14-15	400-3500	4	2	3,000	1,950	2,750	1,950	-35.0	-29.1
				935.41	1550.00				
16-17	600	4	1	3,250	600	2,750	600	-81.5	-78.2
				1163.69					
18-20	600	4	1	3,500	600	3,000	600	-82.9	-80.0
				1258.31					
21-23	600	2	1	2,400	600	2,400	600	-75.0	-75.0
				600.00					
24-28	0	2	0	2,500	0	2,500	0	-100.0	-100.0
				500.00					
>28	0	1	0	2,000	0	2,000	0	-100.0	-100.0
				0.00					

Table 3 (continued)

Species/Grade	March-18 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
Black Cherry									
Select									
12-13	350	1	1	1,000	350	1,000	350	-65.0	-65.0
				0.00					
14-15	350	1	1	1,000	350	1,000	350	-65.0	-65.0
				0.00					
16-17	400	1	1	1,000	400	1,000	400	-60.0	-60.0
				0.00					
18-20	400	1	1	1,000	400	1,000	400	-60.0	-60.0
				0.00					
21-23	400	1	1	1,000	400	1,000	400	-60.0	-60.0
				0.00					
24-28	0	1	0	1,000	0	1,000	0	-100.0	-100.0
				0.00					
>28	0	1	0	1,000	0	1,000	0	-100.0	-100.0
				0.00					
Red Oak									
Prime									
16-17	450-1750	6	4	1,167	1,325	1,150	1,550	13.5	34.8
				111.55	296.16				
18-20	600-2000	7	5	1,229	1,490	1,300	1,600	21.2	23.1
				112.79	237.91				
21-23	1500-1750	6	2	1,233	1,625	1,300	1,625	31.8	25.0
				120.19	125.00				
24-28	1500-1800	3	3	1,100	1,683	1,000	1,750	53.0	75.0
				208.17	92.80				
>28	1750	1	1	1,800	1,750	1,800	1,750	-2.8	-2.8
				0.00					
Select									
16-17	300-3250	3	4	1,900	1,663	1,400	1,550	-12.5	10.7
				818.54	606.00				
18-20	4550-1600	3	3	2,067	1,183	1,400	1,500	-42.8	7.1
				982.06	367.80				
21-23	1500-1600	2	2	1,150	1,550	1,150	1,550	34.8	34.8
				250.00	50.00				
24-28	1500-1600	1	2	1,000	1,550	1,000	15,550	55.0	1,455.0
				0.00	50.00				
>28	1600	1	1	1,200	1,600	1,200	1,600	33.3	33.3
				0.00					

Table 3 (continued)

Species/Grade	March-18 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-17	Mar-18	Mar-17	Mar-18	Mar-17	Mar-18	Mean	Median
				(\$/MBF)		(\$/MBF)			
Hard Maple									
Prime									
16–20	500-3250	5	5	2,160	2,420	2,000	2,600	12.0	30.0
				102.96	505.12				
> 20	2500-4000	5	2	2,360	3,250	2,300	3,250	37.7	41.3
				186.01	750.00				
Select									
16–20	400	1	1	2,000	400	2,000	400	-80.0	-80.0
				0.00					
> 20	0	1	0	2,000	0	2,000	0	-100.0	-100.0
				0.00					
Yellow Poplar									
Prime									
16–20	320-1000	2	4	1,000	668	1,000	675	-33.2	-32.5
				0.00	192.07				
> 20	320-1000	2	3	1,000	623	1,000	550	-37.7	-45.0
				0.00	199.69				
Select									
16–20	2500-3000	0	2	N/A	2,750	N/A	2,750	N/A	N/A
					25.00				
> 20	3000-3250	0	2	N/A	3,250	N/A	3,250	N/A	N/A
					25.00				

Miscellaneous Products

The change in prices paid for or received for various raw-wood products between the spring 2017 report and the current report are shown in **Table 4**. 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, railroad ties 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 have increased significantly since mid- to late 2017 to the present, and demand for these products is very good. It has been said many times that the pulse of the hardwood market can be measured by the low-grade/industrial markets. The price for pallet and cant logs per MBF increased by 10%. Only one producer reported pulpwood pricing, \$31/ton. Chip pricing per ton was up 26% from the 2017 spring report's figure, while sawdust pricing per ton was lower. Bark pricing per ton was \$2 lower for this report.

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 fuel 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, hog 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 4. Prices of miscellaneous products reported by Indiana mills (March 2018), free on board (fob) the producing mill.

Product	No. Responses	Range	Mean		Median	
		Mar-18	Mar-17	Mar-18	Mar-17	Mar-18
Pallet logs, \$/MBF	9	250-430	291	324	290	320
Pallet logs, \$/ton	4	45-400	36	211	36	200
Pulpwood, \$/ton	3	13-40	0	31	0	40
Pulp chips, \$/ton	6	12-60	23	31	22.5	29
Sawdust, \$/ton	3	4-20	16	11	15.6	10
Sawdust, \$/cu. yd.	3	5-12	6	8	4.3	6
Bark, \$/ton	1	6	8	6	8	6
Bark, \$/cu. yd.	5	3-22	9	9	9	6
Mixed, \$/ton	0	0	N/A	0	N/A	0
Mixed, \$/cu. yd.	1	4	N/A	4	N/A	4

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 implementing Best Management Practices (BMPs) (Table 5). Custom-sawing costs were reported to be \$300/MBF, an increase from \$286 in the spring of 2017. There were very few surveys returned with logging and hauling costs, and there was a very wide range of pricing that appeared to skew average pricing. That being said, we feel those costs are generally around \$200-\$275 MBF, based on the items first mentioned in this section.

Table 5. Custom costs reported by Indiana mills (March 2018)

Product	No. Responses	Mar-18	Mean		Median	
		Range	Mar-17	Mar-18	Mar-17	Mar-18
Sawing (\$/MBF)	3	250-350	286	300	275	300
Sawing (\$/hour)	0	0	N/A	0	N/A	0
Logging (\$/MBF)	2	250-1500	N/A	875	N/A	875
Hauling (\$/MBF)	3	50-250	N/A	127	N/A	80
Distance (miles)	4	25-100	40	63	40	63
\$/MBF/mile	0	0	N/A	0	N/A	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. The relative weights of species in an average and quality stand can be found in Table 6.

Table 6. 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 3 and 6 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 2018 for the average stand was 1016.5 percent of the 1957 price. The index for a quality stand increased slightly from 1091 percent to 1166 percent.

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: April this year. The index increased slightly from 1.91 for 2017 to 2.00 as of April 2018. Inflation in the 1 to 2 percent range is generally considered a sign of a healthy, growing economy. The change from 2017 to 2018 is about 2 percent.

Average Stand

The nominal weighted average price for a stand of average quality increased from \$519.7 in 2017 to \$605.8 this year (Table 7, column three and Figure 4). Again, this series is based on delivered log prices, not stumpage prices.

The deflated, or real price increased from \$271.70 in 2017 to \$302.90 this year. The new equation for the trend line for the 1957 to 2018 period is,

$$\text{Avg. Stand Real Price} = 200.35 + 1.71 \times T, \text{ where,}$$

$$T = 1 \text{ for } 1957, 2 \text{ for } 1958 \dots 62 \text{ for } 2018$$

The average annual compound rate of interest required to take the linear trend line from \$200 in 1957 to \$302.90 in 2017 is 67 percent. Compare the green trend line with the red real price line in Figure 4.

Quality Stand

The nominal weighted average price for a high-quality stand increased from \$783.3 in 2017 to \$837.2 this year. (Table 7, column 6 and Figure 5). The average real price series for a high-quality stand increased from \$409.5 in 2017 to \$418.6 this year.

The average annual compound rate of increase for the trend line is 0.96% per year (Figure 5). The equation for the trend line is,

$$\text{Quality Stand Real Price} = 244.7 + 3.31 \times T, \text{ where}$$

$$T = 1 \text{ for } 1957, 2 \text{ for } 1958 \dots 62 \text{ for } 2018$$

Again, compare the green trend line with the red 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 62-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 7. Weighted average actual price, price index and deflated price for an average and quality stand of timber in Indiana, 1973-2018.

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	605.8	1016.5	302.9	837.2	1166.2	418.6

Figure 4. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2018.

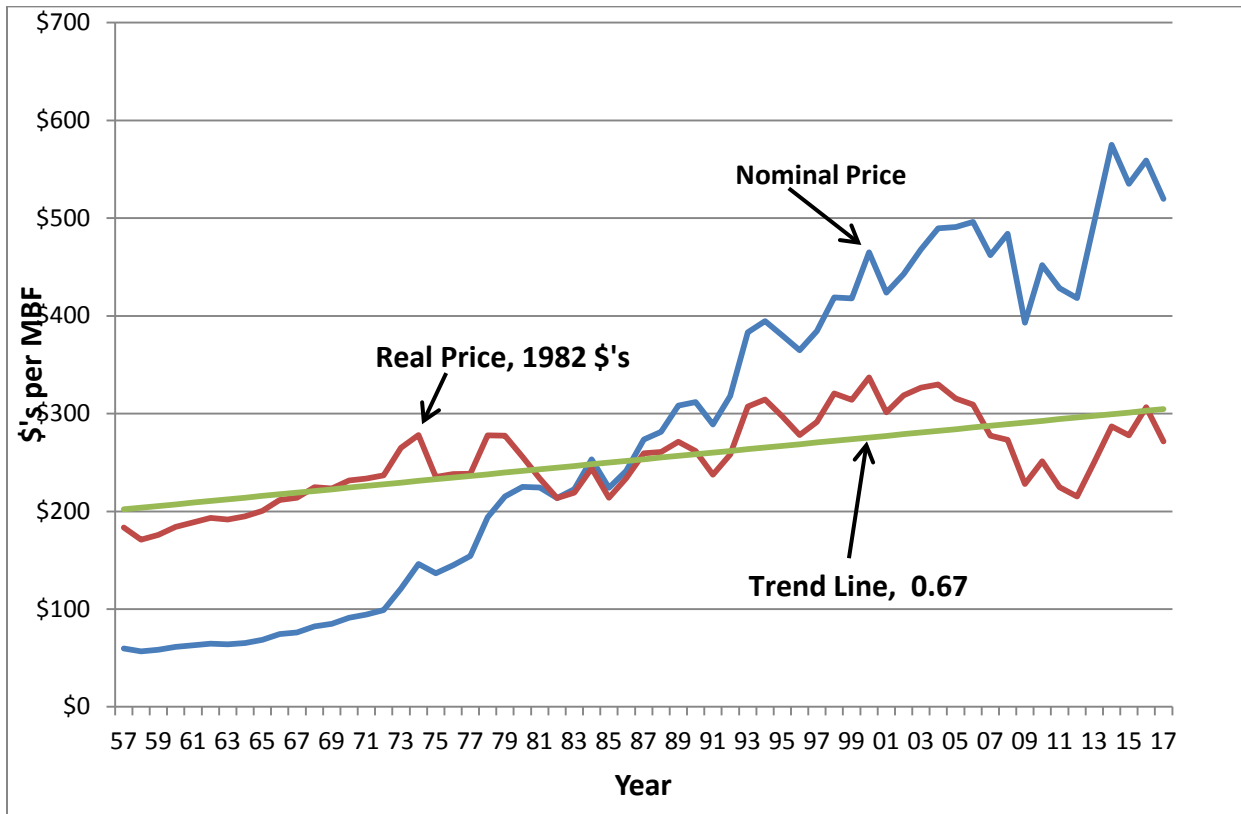


Figure 5. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2018.

