

2017 Indiana Forest Products Price Report and Trend Analysis

June 2017



Contributors: Jeffrey Settle, Forest Resource Information; Chris Gonso, Ecosystem Services Specialist for the Indiana Department of Natural Resources, Division of Forestry; and Mike Seidl, Hardwoods Program Manager for the Indiana State Department of Agriculture

Survey Procedures and Response

Data is 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 is meant to serve only 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 was obtained by a direct mail survey to a variety of forest product businesses 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 Division of Forestry. 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 in from other states (e.g. black cherry veneer logs from Pennsylvania and New York).

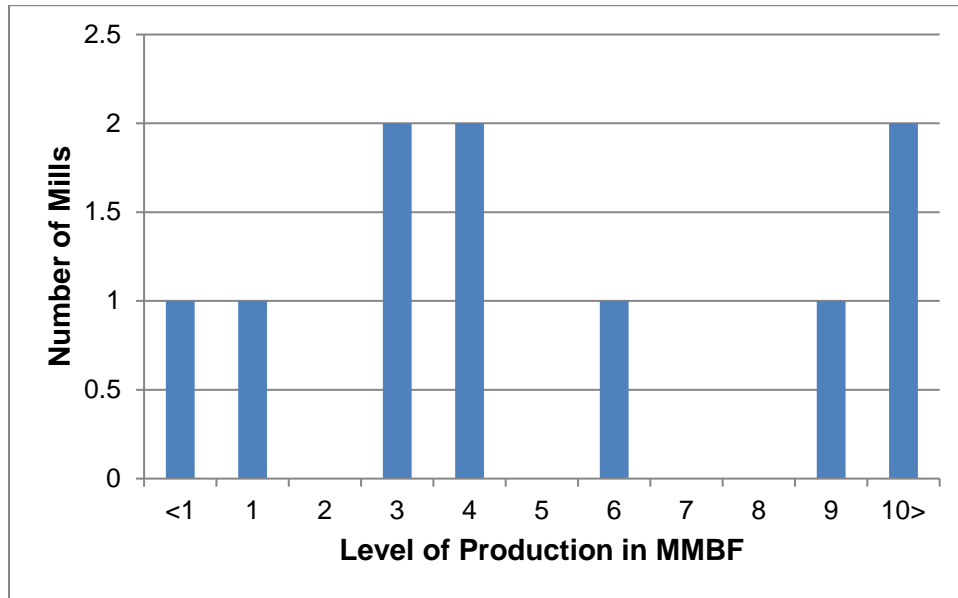
The survey was mailed to 21 firms and emailed to 32 firms. It is estimated these companies produce close to 90 percent of the state’s roundwood production. Electronic reminders, follow-up phone calls and additional mailings encouraged responses.

Seventeen firms reported some useful data. Eight mills reported producing 1 million board feet (MMBF) or more (Figure 1). Four mills reported production of 5 MMBF or greater. Total board-foot production reported for 2016 was 70 MMBF compared to 42 MMBF for 2015, and 64 MMBF for 2014. The largest single mill production reported was 20 MMBF. These annual levels are not comparable since they do not represent a statistical estimate of total production. The number of industry 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, www.inwoodlands.org.

Figure 1. Distribution of the 10 mills reporting 2016 level of production.



Hardwood Lumber Prices

Hardwood lumber prices as of January 2017 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 in Memphis, TN. Log prices are tied to lumber prices since 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

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.

Decent domestic and excellent Chinese demand kept most red oak prices rising early in 2017, with KD increases generally outpacing green, adding to producer margins. Contacts who projected strong global red oak demand through spring are now extending those projections into summer. As a result, KD #1/Btr red oak prices will be firm to a bit higher in the next few months. Although Asian demand remains strong, some of the largest year-to-date percentage increases for red oak have been to European and Middle Eastern countries, which should help mitigate a summer slowdown. Pricing for green upper grade (FAS&FIF), red oak lumber, with a \$200 premium peaked at \$1,310 per thousand board feet (MBF) in summer 2004. Prices for FAS lumber spiraled downward mid-year 2012, at which time the price of FAS lumber gradually rose to \$1,370 in January 2014. From that time on, prices for FAS red oak dropped to a price of \$935 MBF and then began to climb to \$1,160 MBF in January of this year. May 2017 pricing is at \$1,110 MBF. The premium applies when a buyer and a manufacturer negotiate a price for the purchase of lumber consisting of all 1FIF&Btr or Select & Better grades.

Many hardwood species and perhaps the industry in general have been kept afloat by export markets. European demand for white oak didn't wane in 2016, despite a stronger U.S. dollar. White Oak volume declines to the U.K. and Spain in 2017, meanwhile, have been largely offset by increases to Germany and Italy. Stronger exports to China will combine with limited lumber production, due to ongoing competition for white oak logs, to limit price declines in uppers, while keeping common-grade prices steady to rising. FAS prices for green white oak have been on the rise since January 2013. FAS pricing has increased more than 38 percent since early 2013 to a current price of \$1,655 MBF. Number 1 and 2C white oak are averaging around \$975 MBF and \$525 MBF respectively.

Walnut exports remained fairly consistent in 2014 and 2015, then trended higher in 2016. China surpassed Canada as the top global market for walnut in 2015, accounting for 28 percent of U.S. exports. China's share of U.S. walnut exports rose to 39 percent in 2016, though KD 4/4 #2/Btr prices trended lower. China's share rose to 41 percent year-to-date through February and #1 and #2 Common prices have risen 7-11 percent over the last six months. An increase in log exports and growing demand for walnut lumber will make it more likely producers receive their higher asking prices. FAS pricing for green walnut have leveled off since a high of \$3,040 MBF in January 2015 to a current price of \$2,515 MBF.

Cherry markets have experienced marked improvement over the past year thanks in large part to a hot Chinese market. More recently, the domestic markets have seen an uptick as well. Green pricing (across all grades) has risen almost 8 percent since January 2016. U.S. consumer demand for the darker colored wood is still lagging but markets are significantly improved. Cherry, considered a "dog" by many producers just a year ago, has found increased interest in existing markets, as well as new markets in China and Vietnam, which has lifted prices off the floor even as domestic interest among cabinet manufacturers had waned considerably. Asian demand should remain strong into summer as long as prices don't continue to increase at the same pace; rising cherry exports have been closely correlated with low prices.

Hard maple markets have been in a slump since July 2014. FAS pricing has dropped 25 percent since that time. Number 1C pricing has dropped significantly since July 2014 (45 percent), and #2A prices have decreased almost 50 percent. It appears, however, that interest in hard maple is rising now, as cabinet manufacturers report strong sales with more hard maple in the species mix. Rising demand in China should continue to firm hard maple prices in summer.

Other Species

Poplar exports rose 21 percent in 2016 after falling 31 percent in 2015. Through February 2017, poplar exports were up 19 percent, including 33 percent and 32 percent year-to-date gains to top markets China and Vietnam. The export increase, however, has done little to impact upper-grade poplar prices. FAS pricing for poplar has been steady since July 2014. Current FAS pricing is \$840 MBF, only a \$10 MBF increase. Common grade poplar pricing has been a little more volatile with #1C prices 20 percent lower and #2A prices 31 percent lower since July 2014. Poplar production has increased, but should remain largely in line with increased demand from domestic moulding and millwork markets.

Soft maple's shine has come off quickly in 2017. Since the start of the year, prevailing KD upper-grade soft maple prices have fallen \$85 in the Appalachia area, which is the result of overinflated inventories and some shifting in manufacturer preference back to hard maple. Stronger volumes to China helped push soft maple prices higher last year, and, if the trend repeats in 2017, stronger summer shipments should limit additional price declines. Green lumber pricing for FAS been steady since January 2016 and common grade soft maple pricing has decreased an average of almost 10 percent during the same time period.

A 54 percent increase in ash log exports year-to-date through February worked to keep lumber availability an issue for both buyers and sellers. As a result, KD 4/4 ash prices over the last six months, averaged across all regions, have risen 3 percent for the uppers, 10 percent for #1 Common, and 6 percent for #2 Common. Green ash price increases over the same time period have been even more pronounced. Ash exports in January were the second strongest on record. And, it appears growing interest in ash in Europe and the Middle East will work to keep demand and prices steady, even if shipments to China slow in summer. Ash FAS pricing was down from July 2015 levels but recently has been on the rebound, gaining \$0.30 MBF since April and almost 10 percent higher than in July 2016. Number 1C prices have gained 10 percent as well since July 2016, but #2A pricing has dropped \$15 MBF.

Hickory's domestic markets have been somewhat dormant for several years. Hickory exports, however, saw somewhat of a rebound in 2016. That increased global interest in hickory has continued into 2017, with combined January-February volumes the strongest since October-November 2014. Kiln-dried 4/4 FAS/IF hickory prices have been rising since January. Export strength will keep short-term hickory prices from falling, but mills will want longer-term price stability before considering the uptick anything more than temporary. Green lumber pricing for all grades has fallen slightly since January 2016 (minus 4 percent).

Table 1. Hardwood lumber prices, dollars per one-thousand 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 2013	July 2013	Jan 2014	July 2014	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	May 2017
Ash										
FAS + Prem.	845	845	875	1,085	1,110	1,150	1,085	950	960	1,040
No. 1C	585	585	620	780	795	780	685	585	565	650
No. 2A	360	350	350	450	460	505	455	375	320	360
Basswood										
FAS + Prem.	630	645	660	695	695	695	775	795	765	765
No. 1C	345	385	405	430	430	430	465	460	440	440
No. 2A	190	210	210	230	230	230	245	245	215	215
Beech										
FAS	500	500	500	500	500	500	555	545	560	560
No. 1C	420	420	420	420	420	420	460	460	460	460
No. 2A	345	345	345	345	345	345	360	350	340	325
Cottonwood (Southern)										
FAS	635	635	670	685	705	745	765	780	780	780
No. 1C	435	435	470	480	500	535	545	560	560	560
No. 2A	240	255	240	260	260	260	260	260	260	260
Cherry (North Central)										
FAS + Prem.	1,335	1,345	1,345	1,540	1,520	1,495	1,265	1,210	1,210	1,335
No. 1C	705	780	775	1,050	1,035	1,015	825	775	775	830
No. 2A	375	445	455	675	660	645	475	405	405	415
Hickory										
FAS + Prem.	720	775	845	1,000	1,000	905	830	820	820	820
No. 1C	595	660	715	835	835	705	545	535	525	525
No. 2A	445	480	520	615	615	545	425	415	385	385
Hard Maple (unselected)										
FAS + Prem.	1,075	1,305	1,390	1,450	1,390	1,220	1,305	1,300	1,150	1,080
No. 1C	790	1,000	1,180	1,260	905	700	850	840	730	700
No. 2A	550	685	810	835	655	495	495	485	405	415
Soft Maple (unselected)										
FAS + Prem.	940	1,000	1,040	1,115	1,115	1,095	1,210	1,250	1,250	1,230
No. 1C	650	710	785	845	750	635	825	870	840	790
No. 2A	340	360	455	500	490	450	460	480	430	375
White Oak (plain)										
FAS + Prem.	1,015	1,055	1,295	1,410	1,410	1,340	1,440	1,570	1,715	1,655
No. 1C	575	695	845	960	920	665	710	790	960	975
No. 2A	475	620	660	660	650	485	470	480	535	525
Red Oak (plain)										
FAS + Prem.	880	1,045	1,370	1,335	1,145	935	1,040	1,030	1,160	1,110
No. 1C	570	690	860	930	795	550	610	665	785	795
No. 2A	495	650	700	700	690	500	485	500	540	530

Table 1 (continued)

Lumber/Grade	Jan 2013	July 2013	Jan 2014	July 2014	Jan 2015	July 2015	Jan 2016	July 2016	Jan 2017	May 2017
FAS + Prem.	760	775	775	830	830	830	830	830	830	840
No. 1C	490	505	505	545	545	535	515	475	435	435
No. 2A	330	340	355	385	385	385	365	335	275	265
Sycamore (Southern plain)										
FAS	455	455	455	455	455	455	455	455	455	455
No. 1C	435	435	435	435	435	435	435	435	435	435
No. 2A	375	375	375	375	375	375	375	375	360	360
Black Walnut										
FAS	1,795	1,815	2,325	2,890	3,040	2,575	2,425	2,515	2,515	2,515
No. 1C	875	875	1,235	1,590	1,645	1,310	1,270	1,270	1,270	1,340
No. 2A	475	475	730	990	1,035	745	730	715	715	765

Exports

North American Hardwood Species Outlook

Contacts are generally optimistic that 2017 will be another good year for the hardwood industry. Several key economic indicators reveal decent tailwinds as we head into summer.

U.S. hardwood lumber exports set a record in 2016, finishing slightly above the previous record set in 2014, and 11 percent above 2015. In 2016, only alder, hard maple and soft maple exports were lower than the year before. In 2017, exports were 7 percent stronger through February, and only alder shipments were lower year-to-date. Shipments to Asia, Europe and Latin American were up year-to-date through February. Shipments to China, the largest export market, will likely remain strong through summer, as many contacts are booked 1-2 months out. (*Hardwood Review*)

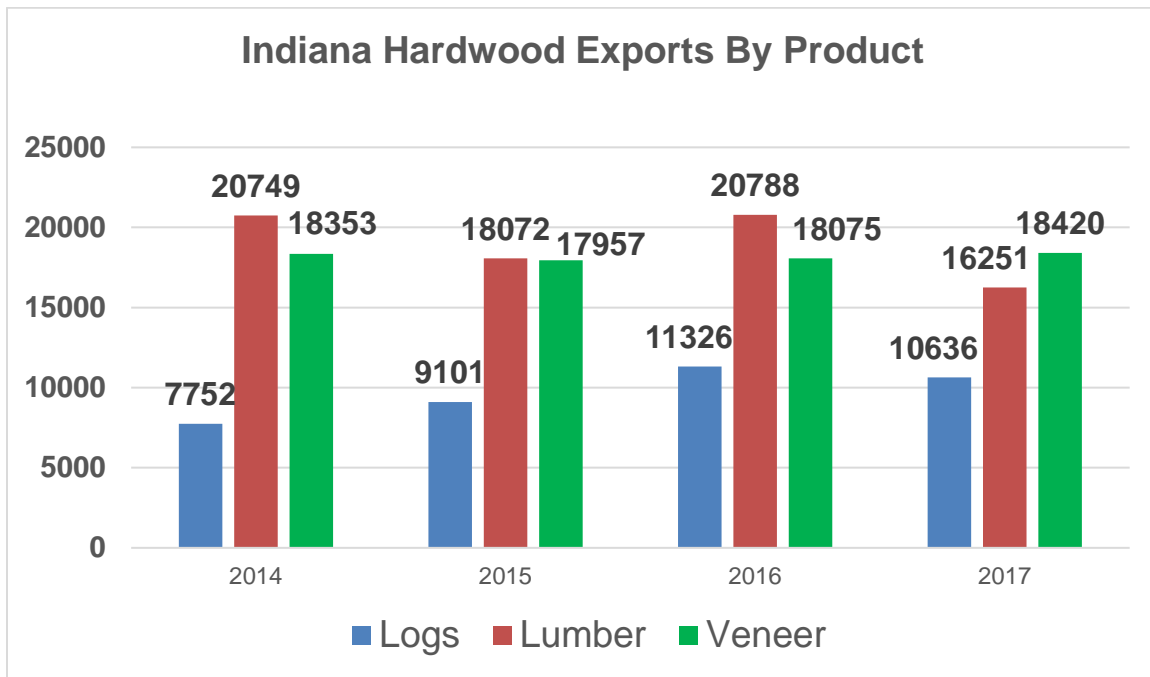
Indiana's primary exports of hardwood products (log, lumber, veneer) continue to be a viable part of the overall hardwood sales. Lumber and logs for the first quarter this year have decreased 6 percent and 28 percent respectively, with veneer up 2 percent. China, Canada, Japan and Vietnam are four of Indiana's largest hardwood importers of logs and lumber the first quarter in 2017. China reigns as Indiana's largest overall market, ranking first in log and lumber imports and falling one spot to fifth in veneer. Canada, Spain, Germany and Portugal comprise the top four markets for veneer exports. Vietnam continues to develop in our market in both logs and lumber. Mexico is the big surprise the first quarter of 2017, showing significant reductions in lumber purchased at a decrease of 800 percent.

We see mixed results the first quarter on lumber, logs and veneer exports. The strong dollar continues to be an impairment to exports but has given up some of its strength the past months. Saw-log markets seem to remain steady with most veneer suppliers and importers out for the summer. Prices especially in white oak and walnut have remained firm, giving the veneer manufactures little or no wiggle room on pricing. Lumber is a mixed bag depending on whom you talk, with most companies selling the key lumber species they rely on. China drives this market more than any one country (45 percent of the top five countries) and they are slowly on the rebound which has added to the lumber demand.

Veneer is probably the big surprise showing a small increase the first quarter in 2017. Canada and Portugal were the drivers for this increase up 26 percent and 83 percent respectively. The Portugal increase can somewhat be explained as an importer from this country has set up a distribution center in Indianapolis and is shipping direct to their customers.

Figure 2 below compares Indiana’s primary hardwood products by year. The numbers reflect the first quarter of each year to make the comparisons equivalent. Log and lumber exports for 2017 have decreased by 6 percent and 28 percent respectively when comparing 2016 shipments. Veneer is up marginally over 2016.

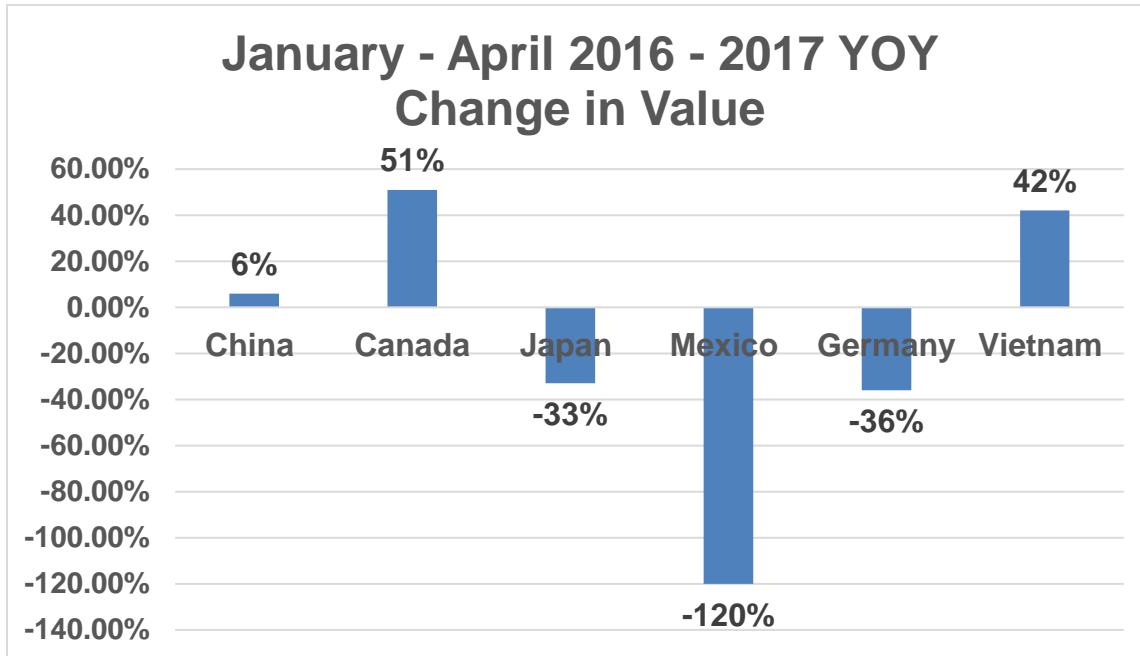
Figure 2. Thousands \$



U.S. Census Bureau’s Hardwood Export Statistics, January–April 2017

Figure 3 below compares Indiana’s top individual (logs, lumber & veneer) markets in 2016 to the current gain or loss in value by percentage for the first quarter in 2017. The chart below reveals three of Indiana’s major export markets, Japan and Mexico and Germany with declines at 33 percent, 800 percent (actual) and 36 percent respectively. The remaining markets, China, Canada and Vietnam all exhibiting positive numbers.

Figure 3. Gain or Loss



U.S. Census Bureau’s Hardwood Export Statistics, January–April 2017

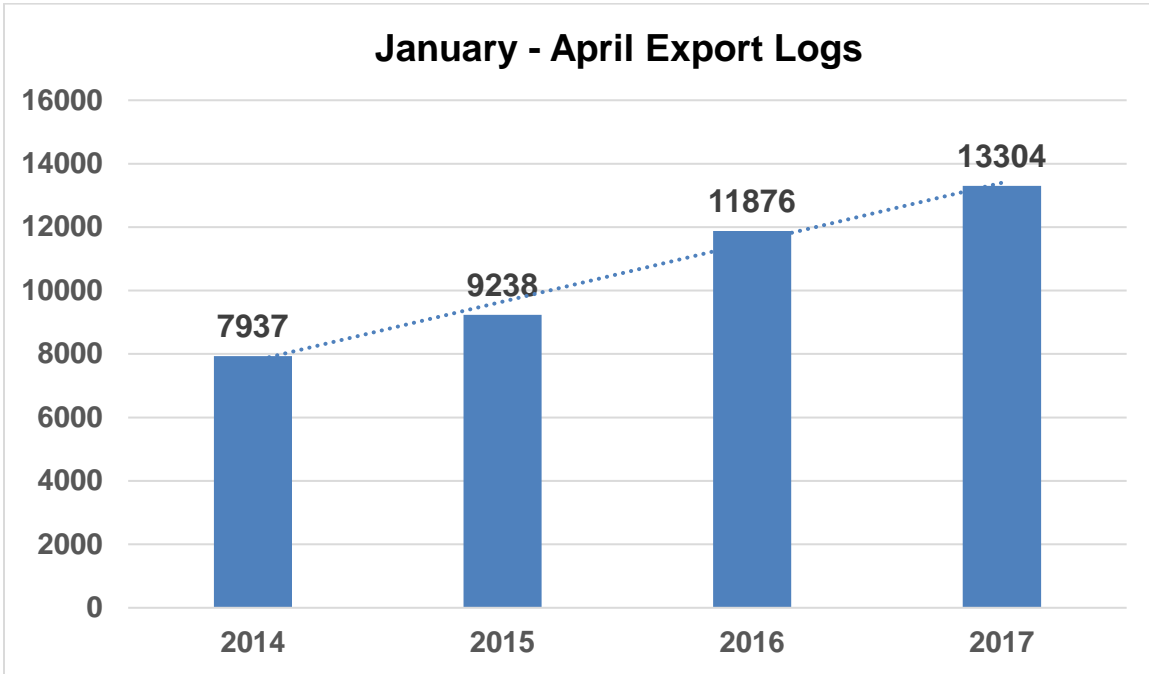
Logs

China, Vietnam and Japan are the three largest importers of hardwood logs from Indiana in 2017. U.S. Census Bureau’s Hardwood Export Statistics show that Indiana exported \$32 million dollars’ worth of logs to the world in 2016. Using \$2500/m’ for an average this is approximately 12.8 million board feet (BF) enough to supply a large sawmill or two medium mills.

China is by far the largest importer at \$21.8 million dollars in 2016 or an increase of more than 45 percent from 2015. Red oak, black walnut, ash and some white oak veneer along with 3SC & 2SC (side’s clear) saw logs remain the core for China. More than 20 countries compete to purchase logs from Indiana that include cherry, hard maple, ash, hickory and tulip poplar. The first quarter of this year log prices have remained steady in most species from historic highs in 2016. The normal seasonal slowdowns in the veneer market along with fragile economies globally and the continued strength of the U.S. dollar are the primary reasons for this change.

Figure 4 compares Indiana's export totals for logs thru the first quarter of 2014 to 2017.

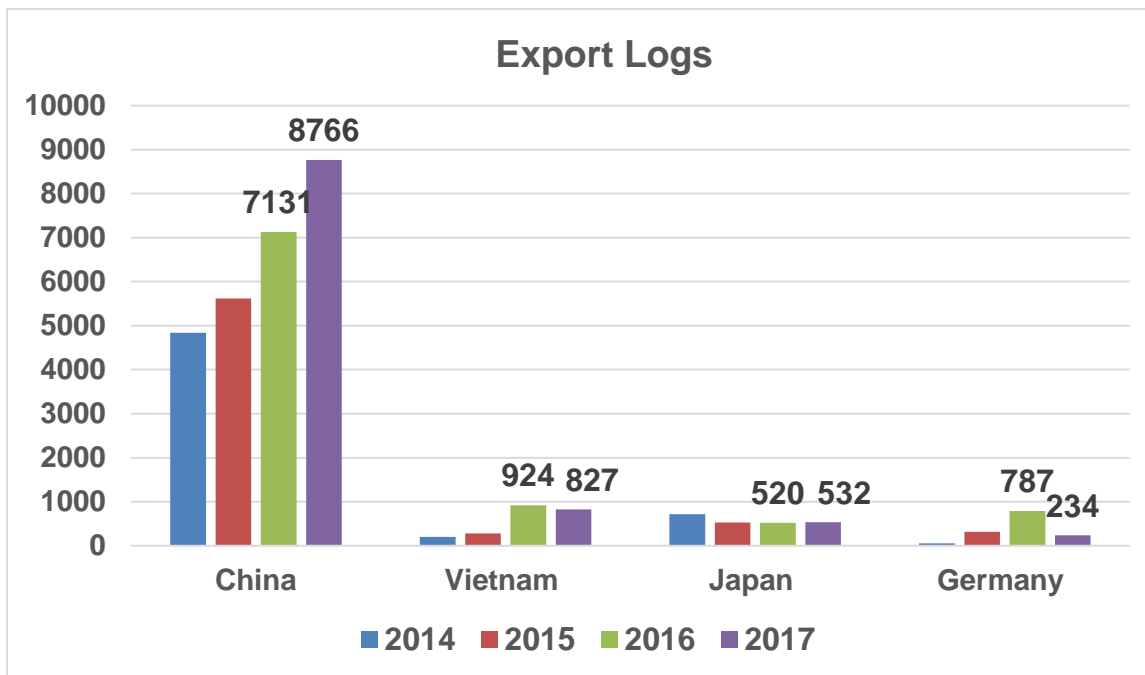
Figure 4. Thousands \$



U.S. Census Bureau's Hardwood Export Statistics, January–April 2017

Figure 5 compares log export totals for the first quarter of 2014 thru 2017 from the top four countries importing from Indiana.

Figure 5. Thousands \$



U.S. Census Bureau’s Hardwood Export Statistics, January–April 2017

Lumber

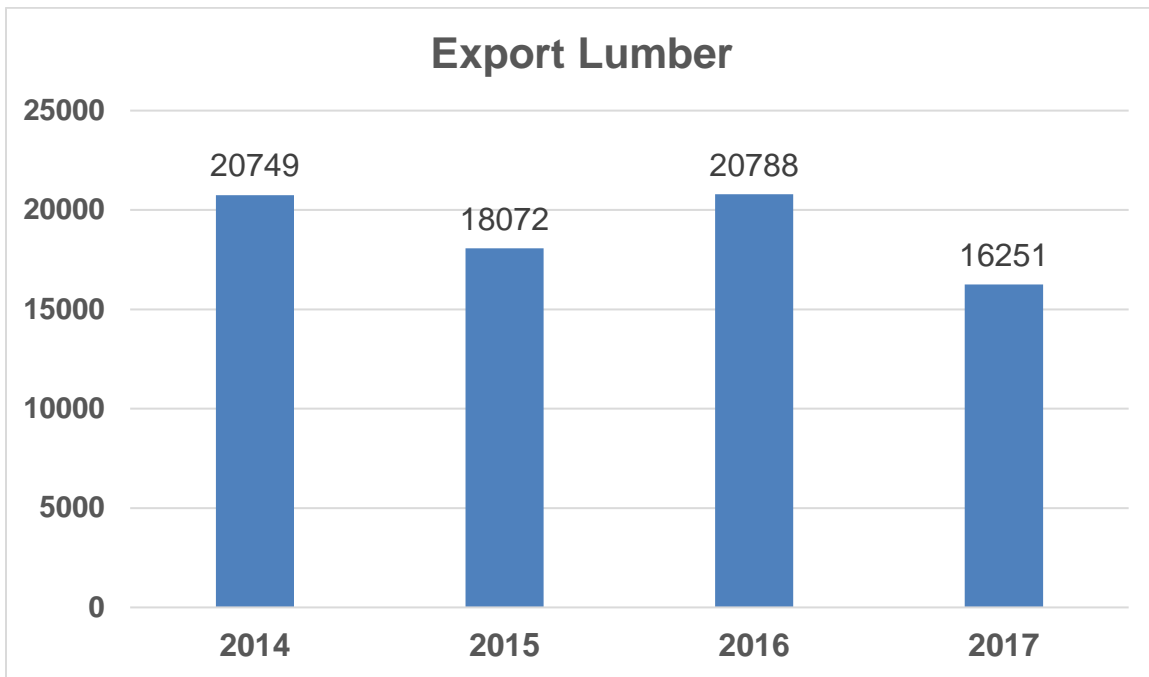
Indiana’s hardwood export market has experienced an adjustment period over the past several years but is still in a strong position globally. In the first quarter of 2017, lumber exports have plunged 28 percent, a substantial drop from the first quarter in 2016. China, our number one market, was off 6 percent. Japan was down 38 percent, and Mexico was a complete disaster at minus 800 percent.

Indiana’s lumber exports in 2016 were \$57 million, an increase of 3.5 percent over 2015. At the current pace, 2017 lumber exports are looking to have a down year unless they begin to show positive signs in the second quarter. Not good news for Indiana exporters as lumber comprises approximately 40 percent of the export market.

China as stated earlier is Indiana’s largest export market and is followed closely by Japan, Canada, Vietnam and Mexico making up the top five markets. 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 6 compares Indiana's export totals for lumber thru the first quarter of 2014 to 2017.

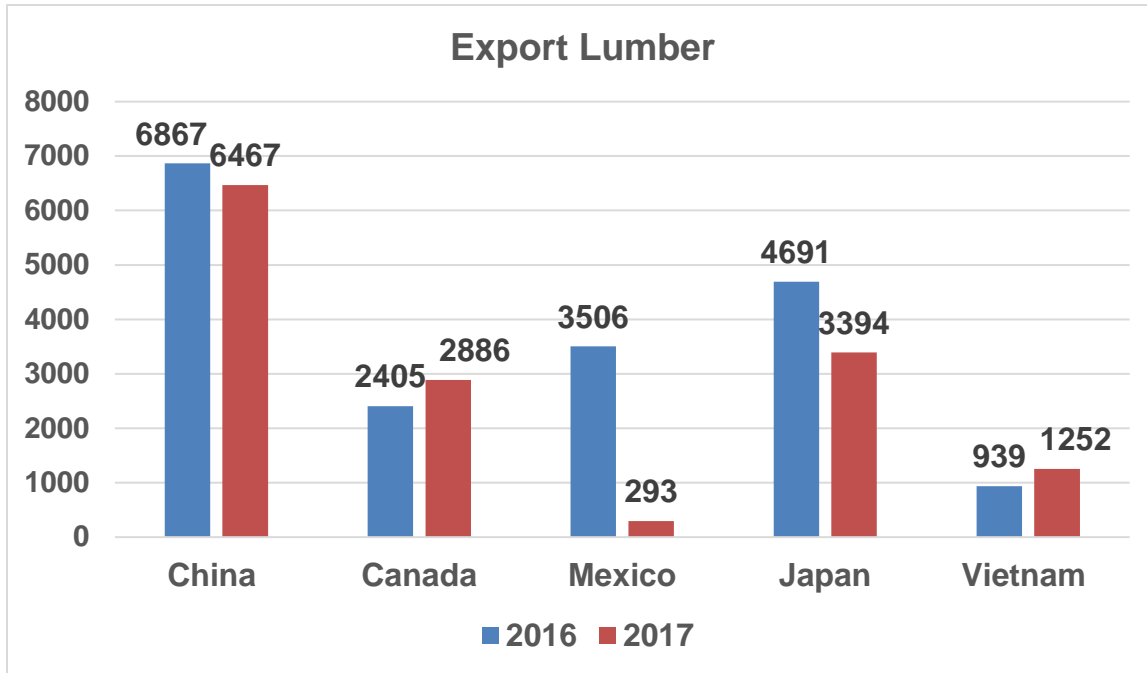
Figure 6. Thousands \$



U.S. Census Bureau's Hardwood Export Statistics, January–April 2017

Figure 7 compares lumber export totals for the first quarter of 2014 thru 2017 from the top five countries importing from Indiana.

Figure 7. Thousands \$



U.S. Census Bureau’s Hardwood Export Statistics, January–April 2017

Veneer

Veneer demand continues to remain firm, showing a small increase over the first quarter of 2016. Depending on the specie and mill, most are still running at 75-85 percent capacity. Custom cutting has become the norm for some to fill operational capacity and costs.

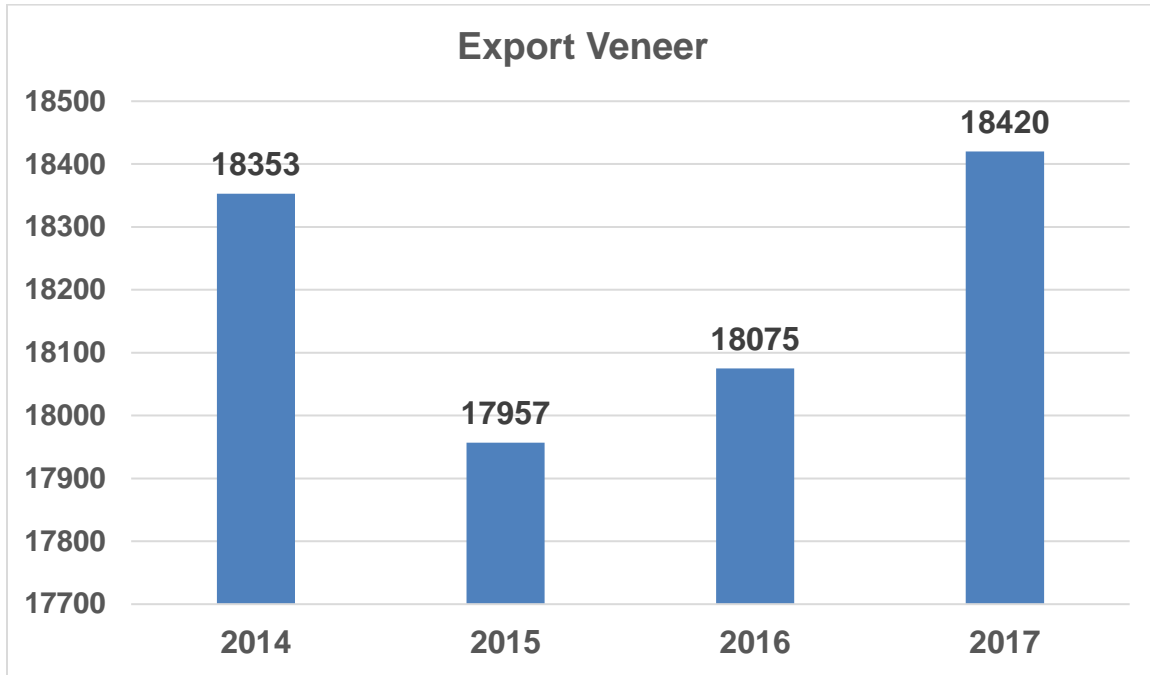
High-quality veneer log pricing remains static for most species; however, margins continue to be squeezed with volumes up slightly. Stave log supply/demand ratio is in better balance continuing the stability in pricing from the last quarter of 2016. Still, wet weather this coming fall along with the economic environment can play havoc on log pricing and volumes available.

Black walnut and white oak sliced veneer pricing remains very competitive on all grades especially the high-end “A” grades with the middle “A-B” grades making up the majority of sales. Additionally, there continues to be a good demand for riftsawn and quartersawn white oak. Hard maple, ash, cherry, hickories all remain sluggish with only the special cuts like burl, curly, quartered etc., in demand.

Presently, 2017 veneer sales should remain close to or slightly ahead of 2016 levels. The outlook for veneer, 4SC, 3SC and stave logs should continue to remain constant for 2017.

Figure 8 compares Indiana's export totals for the first quarter of 2014 to 2017.

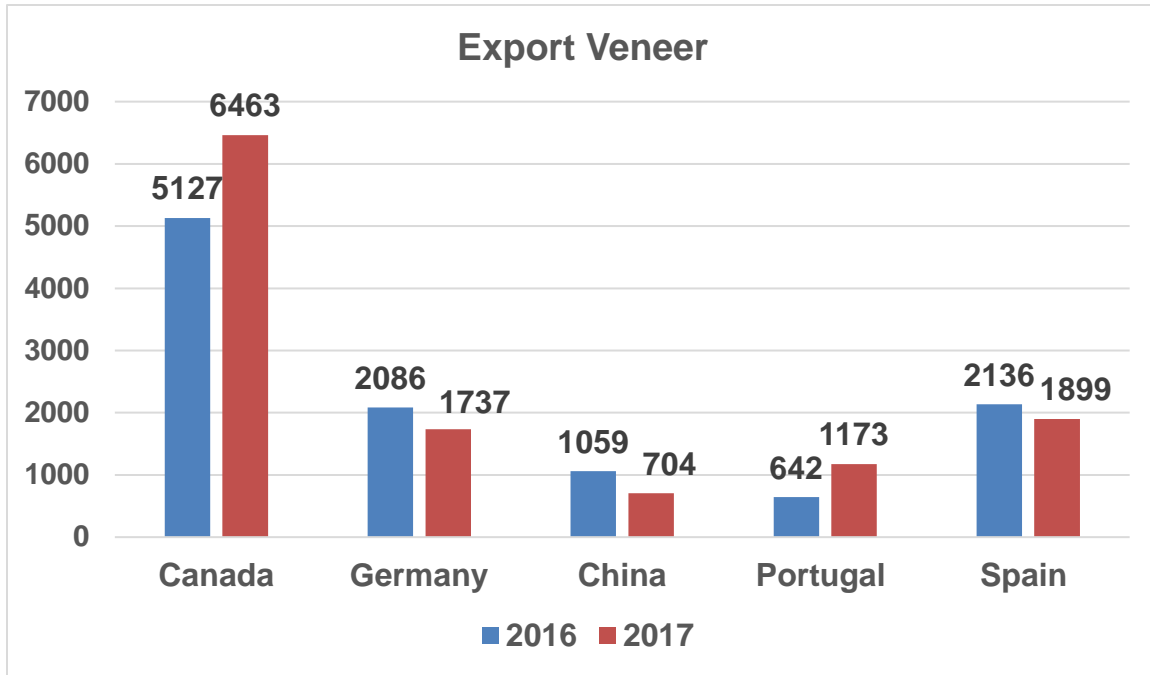
Figure 8. Thousands \$



U.S. Census Bureau's Hardwood Export Statistics, January–April 2017

Figure 9 compares veneer export totals for the first quarter of 2014 thru 2017 from the top five countries importing from Indiana.

Figure 9. Thousands \$



U.S. Census Bureau's Hardwood Export Statistics, January–April 2017

Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices was about 8 percent lower than those who reported in the 2016 spring report (Table 2). Sawlog prices for the premium species (specifically black walnut and white oak) were down slightly from the 2016 spring report. Black walnut prices were down across all sawlog grades 3 percent, while white oak sawlogs were down 4.5 percent. From an overall standpoint, prices were down for most every other species, with ash and hard and soft maples taking the biggest hits. Tulip poplar log prices were comparable to the spring 2016 data, while red oak prices were 5 percent lower.



Premium Species

White oak sawlog prices were down across all grades. Prime sawlog prices were off 3.5 percent; grades 1-3 white oak sawlogs were down an average of almost 5 percent. Demand for stave logs, while still good, is not what it was a year ago.

Demand for black walnut sawlogs is steady. Overall walnut log pricing decreased 3 percent from the 2016 spring report. Prime logs showed the largest decrease of 8 percent.

Black cherry sawlog prices are down around 10 percent across all log grades, although prime and grade 1 log prices were combined to be only about 4 percent lower, while lower grade cherry logs were off an average of 15 percent. Consumer demand for the darker finished wood continues to hurt the cherry markets. However, there are reports of increased domestic demand for lumber and China continues to buy good volumes of lumber.

Hard maple sawlog prices were down across all grades, with prime hard maple logs taking the brunt of the hit at 31 percent. Grade sawlog prices were off around 10 percent. Recent reports though point to increased interest in hard maple. The upcoming summer months are usually not a friend of hard maple due to sticker stain concerns. If demand for lumber continues to be good, this combined with seasonally lower production, log prices may see some increases.

Soft maple markets have lost a little luster compared to 2016. Overall, soft maple log prices were off 14 percent from the spring report. Similar to hard maple, mills may bump up production to beat the potential stain issue. Most feel that even with increased production, supply and demand will remain in good balance.

Other Hardwood Species

Landowners continue to have most of their ash marked for harvest to try and stay ahead of the emerald ash borer. Although lumber prices are slightly higher, log prices have decreased just over 14 percent across all grades since the 2016 report.

Tulip poplar was the only species NOT in the red but not by much. Overall log prices were less than 1 percent higher from the 2016 spring report.

Softwood Logs

The price of pine sawlogs decreased very little (3 percent) to \$277 MBF. Red cedar prices showed a significant gain of over 62 percent to \$650 MBF. It should be noted, however, that only three producers reported pine sawlog prices and two producers reported red cedar prices.

Table 2. Prices paid for delivered sawlogs by Indiana sawmills (March 2017)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
White Ash									
Prime	600	4	3	688	600	700	600	-12.8	-14.3
				12.50	0.00				
No. 1	270-500	7	6	486	420	500	450	-13.6	-10.0
				32.21	39.58				
No. 2	220-400	6	5	375	314	375	300	-16.3	-20.0
				30.96	29.93				
No. 3	200-300	5	4	308	263	300	275	-14.6	-8.3
				25.77	23.94				
Beech									
Prime	250-300	3	3	333	283	300	300	-15.0	0.0
				33.33	16.67				
No. 1	300-400	5	5	320	300	300	300	-6.3	0.0
				20.00	27.39				
No. 2	250-400	4	3	313	267	300	300	-14.7	0.0
				31.46	33.33				
No. 3	200-400	5	3	278	267	300	300	-4.0	0.0
				34.49	33.33				
Cherry									
Prime	550-700	4	3	675	650	650	700	-3.7	7.7
				85.39	50.00				
No. 1	400-750	7	6	557	533	550	500	-4.3	-9.1
				50.51	44.10				
No. 2	260-600	6	5	427	370	400	350	-13.3	-12.5
				46.67	37.42				
No. 3	240-400	5	3	308	250	300	250	-18.8	-16.7
				30.23	28.87				

Table 2 (continued)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
Hickory									
Prime	450-500	4	3	550	483	550	500	-12.2	-9.1
				28.87	16.67				
No. 1	350-500	7	6	409	385	400	355	-5.9	-11.3
				24.92	24.32				
No. 2	250-320	6	5	337	294	335	300	-12.8	-10.4
				15.63	11.66				
No. 3	200-300	5	4	288	263	300	275	-8.7	-8.3
				19.85	23.94				
Hard Maple									
Prime	350-700	4	3	800	550	800	600	-31.3	-25.0
				0.00	104.08				
No. 1	400-600	7	6	579	508	550	550	-12.3	0.0
				39.12	35.16				
No. 2	250-450	6	5	425	375	400	400	-11.8	0.0
				35.60	35.36				
No. 3	200-300	5	4	308	263	300	275	-14.6	-8.3
				25.77	23.94				
Soft Maple									
Prime	300-450	4	3	513	383	500	400	-25.3	-20.0
				31.46	44.10				
No. 1	300-500	7	6	393	358	350	325	-8.9	-7.1
				22.96	32.70				
No. 2	200-300	6	5	317	270	300	300	-14.8	0.0
				21.08	20.00				
No. 3	150-300	5	4	276	250	250	275	-9.4	10.0
				21.56	35.36				
White Oak									
Prime	750-1100	4	3	950	917	1000	900	-3.5	-10.0
				50.00	101.38				
No. 1	500-800	7	6	657	617	600	600	-6.1	0.0
				42.86	47.73				
No. 2	300-600	6	5	467	430	450	450	-7.9	0.0
				30.73	51.48				
No. 3	250-400	5	4	340	338	300	350	-0.6	16.7
				24.49	37.50				

Table 2 (continued)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
Red Oak									
Prime	700	4	3	700	650	700	650	-7.1	-7.1
				57.74	28.87				
No. 1	425-550	7	6	514	492	500	500	-4.3	0.0
				40.04	16.67				
No. 2	350-450	6	5	404	395	375	375	-2.2	0.0
				44.92	22.91				
No. 3	250-400	5	4	348	325	300	325	-6.6	8.3
				45.87	32.27				
Tulip Poplar									
Prime	500-550	4	3	513	517	500	500	0.8	0.0
				31.46	16.67				
No. 1	350-520	7	5	386	414	400	400	7.3	0.0
				28.27	28.21				
No. 2	250-350	6	4	317	300	325	300	-5.4	-7.7
				27.89	20.41				
No. 3	200-300	5	4	266	263	250	275	-1.1	10.0
				14.00	23.94				
Black Walnut									
Prime	1500-1600	3	3	1667	1533	1500	1500	-8.0	0.0
				166.67	33.33				
No. 1	1000-1300	6	6	1133	1125	1100	1100	-0.7	0.0
				66.67	57.37				
No. 2	600-1000	5	6	790	775	800	750	-1.9	-6.3
				90.00	55.90				
No. 3	350-500	4	4	475	463	425	500	-2.5	17.6
				82.92	37.50				
Softwood									
Pine	230-300	3	3	283	277	300	300	-2.1	0.0
				16.67	23.33				
Red cedar	300-1000	2	2	400	650	400	650	62.5	62.5
				100.00	650.00				

Veneer Log Prices

The number of mills reporting veneer log prices decreased slightly from the 2016 spring 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 manufactures. 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 manufactures.

Market comments seem to be a mixed bag this spring as several report a really up and down marketplace. Walnut and white oak continue to experience good demand. Pricing remains competitive from the export side (especially China). The export log market has put a great deal of pressure on veneer mills as the international buyers are paying good prices for veneer logs. Several overseas companies are now buying North American veneer not being manufactured in the U.S. but from companies processing U.S. logs. The increased market share that wood lookalikes of plastic and vinyl has is a major concern for the veneer business. Those manufactures can make the plastic and vinyl look exactly like wood with a cheaper price tag.

Black walnut and white oak veneer remain in demand both domestically and internationally. Black walnut veneer log prices were generally higher, especially prime in the larger diameter logs (24" +) which were around 12 percent higher than in the spring of 2016. Most all of the "select" grade walnut prices were higher. Keep in mind however that there were very responses for the select grade logs.

White oak prime veneer log pricing was very close to what prices were in the spring of 2016. Prime-grade white oak logs with a small end diameter of 15-20 showed the largest increase (almost 7 percent). Select white oak veneer logs were up significantly across all diameters.

Cherry veneer log markets are very slow and pricing reflected the sluggish markets with prices down significantly.

Red oak prime veneer log prices were down an average of 13 percent, conversely, red oak select veneer logs were up an average of 13 percent.

Veneer mills reported significantly lower prices for hard maple. Prime veneer hard maple logs were off almost 32 percent while select veneer logs were down an average of 27 percent.

Table 3. Prices paid for delivered veneer logs by Indiana mills (March 2017)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
Black Walnut									
Prime									
12-13	3000-3500	6	3	3,542	3,333	3,750	35	-5.9	-99.1
				367.52	166.67				
14-15	3000-6000	6	5	4,333	4,200	4,000	4,000	-3.1	0.0
				247.21	514.78				
16-17	3000-8000	6	5	5,792	5,700	5,750	6,000	-1.6	4.3
				245.09	969.54				
18-20	5000-10000	6	4	7,417	7,875	7,250	8,250	6.2	13.8
				238.63	1087.33				
21-23	4500-12000	5	3	9,300	8,500	10,000	9,000	-8.6	-10.0
				538.52	2179.45				
24-28	6000-15000	2	2	9500	10500	9500	10500	10.5	10.5
				0.00	4500.00				
>28	8000-15000	2	2	10000	11500	10000	11500	15.0	15.0
				0.00	3500.00				
Select									
12-13	2200-2500	2	2	2000	2350	2000	2350	17.5	17.5
				0.00	150.00				
14-15	3000	2	1	3500	3000	3500	3000	-14.3	-14.3
				0.00	0.00				
16-17	5000	2	1	4500	5000	4500	5000	11.1	11.1
				0.00	0.00				
18-20	6000	3	1	5,067	6,000	6,000	6,000	18.4	0.0
				933.33	0.00				
21-23	7000	3	1	5,167	7,000	6,000	7,000	35.5	16.7
				833.33	0.00				
24-28	12000	3	1	5,667	12,000	6,500	12,000	111.8	84.6
				833.33	0.00				
>28	12000	2	1	6500	12000	6500	12000	84.6	84.6
				0.00					

Table 3 (continued)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
White Oak									
Prime									
13-14	1200-2300	4	4	1,925	1,700	1,850	1,650	-11.7	-10.8
				143.61	234.52				
15-17	2000-3250	4	7	2,400	2,557	2,400	2,500	6.5	4.2
				57.74	195.92				
18-20	2000-4000	4	7	2,800	2,993	2,750	3,000	6.9	9.1
				70.71	265.12				
21-23	2250-4250	3	5	3500	3400	3500	3500	-2.9	0.0
				0.00	358.82				
24-28	2500-4500	3	5	4000	3900	4000	4000	-2.5	0.0
				0.00	367.42				
>28	3000-5000	2	3	4000	4167	4000	4500	4.2	12.5
				0.00	600.93				
Select									
13-14	1200-2600	2	2	1,400	1,900	1,400	1,900	35.7	35.7
				0.00	700.00				
15-17	1800-2700	2	2	1,800	2,250	1,800	2,250	25.0	25.0
				0.00	450.00				
18-20	2000-2700	2	2	2,000	2,350	2,000	2,350	17.5	17.5
				0.00	350.00				
21-23	2500-3250	2	2	2,500	2,875	2,500	2,875	15.0	15.0
				0.00	375.00				
24-28	3000	2	1	2,750	3,000	2,750	3,000	9.1	9.1
				0.00	0.00				
>28	3500	2	1	2,750	3,500	2,750	3,500	27.3	27.3
				0.00	0.00				
Black Cherry									
Prime									
12-13	1000	2	1	3,000	1,000	3,000	1,000	-66.7	-66.7
				0.00	0.00				
14-15	1000-5500	2	4	3,500	3,000	3,500	2,750	-14.3	-21.4
				0.00	935.41				
16-17	1000-6500	2	4	4,000	3,250	4,000	2,750	-18.8	-31.3
				0.00	1163.69				
18-20	1000-7000	2	4	4,500	3,500	4,500	3,000	-22.2	-33.3
				0.00	1258.31				
21-23	1800-3000	2	2	4,500	2,400	4,500	2,400	-46.7	-46.7
				0.00	600.00				
24-28	2000-3000	2	2	5,000	2,500	5,000	2,500	-50.0	-50.0
				0.00	500.00				
>28	2000	2	1	5,000	2,000	5,000	2,000	-60.0	-60.0
				0.00	0.00				

Table 3 (continued)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
Select									
12-13	1000	2	1	2,000	1,000	2,000	1,000	-50.0	-50.0
				0.00	0.00				
14-15	1000	2	1	2,500	1,000	2,500	1,000	-60.0	-60.0
				0.00	0.00				
16-17	1000	2	1	3,000	1,000	3,000	1,000	-66.7	-66.7
				0.00	0.00				
18-20	1000	2	1	2,500	1,000	3,000	1,000	-60.0	-66.7
				500.00	0.00				
21-23	1000	2	1	3,000	1,000	3,000	1,000	-66.7	-66.7
				0.00	0.00				
24-28	1000	2	1	3,000	1,000	3,000	1,000	-66.7	-66.7
				0.00	0.00				
>28	1000	2	1	3,000	1,000	3,000	1,000	-66.7	-66.7
				0.00	0.00				
Red Oak									
Prime									
16-17	800-1500	5	6	1,460	1,167	1,500	1,150	-20.1	-23.3
				74.83	111.55				
18-20	800-1600	5	7	1,460	1,229	1,500	1,300	-15.8	-13.3
				74.83	112.79				
21-23	800-1600	4	6	1,450	1,233	1,500	1,300	-15.0	-13.3
				95.74	120.19				
24-28	800-1500	3	3	1,467	1,100	1,600	1,000	-25.0	-37.5
				133.33	208.17				
>28	1800	2	1	1,600	1,800	1,600	1,800	12.5	12.5
				0.00	0.00				
Select									
16-17	800-3500	2	3	1,300	1,900	1,300	1,400	46.2	7.7
				0.00	818.54				
18-20	800-4000	2	3	1,300	2,067	1,300	1,400	59.0	7.7
				0.00	982.06				
21-23	900-1400	2	2	1,300	1,150	1,300	1,150	-11.5	-11.5
				0.00	250.00				
24-28	1000	2	1	1,300	1,000	1,300	1,000	-23.1	-23.1
				0.00	0.00				
>28	1200	2	1	1,300	1,200	1,300	1,200	-7.7	-7.7
				0.00	0.00				

Table 3 (continued)

Species/Grade	March-17 Range (\$/MBF)	No. Responses		Mean (s.e.) ¹		Median		Change (%)	
		Mar-16	Mar-17	Mar-16	Mar-17	Mar-16	Mar-17	Mean	Median
				(\$/MBF)		(\$/MBF)			
Hard Maple									
Prime									
16-20	2000-2500	5	5	3,050	2,160	3,250	2,000	-29.2	-38.5
				348.21	102.96				
> 20	2000-3000	4	5	3,613	2,360	3,850	2,300	-34.7	-40.3
				416.02	186.01				
Select									
16-20	2000	2	1	3,000	2,000	3,000	2,000	-33.3	-33.3
				0.00	0.00				
> 20	2000	2	1	3,500	2,000	3,500	2,000	-42.9	-42.9
				0.00	0.00				
Yellow Poplar									
Prime									
16-20	1000	3	2	733	1,000	650		36.4	-100.0
				83.33	0.00				
> 20	1000	4	2	733	1,000	650		36.4	-100.0
				83.33	0.00				
Select									
16-20	N/A	0	0	N/A	N/A	N/A	N/A	#####	#####
> 20	N/A	0	0	N/A	N/A	N/A	N/A	#####	#####

Miscellaneous Products

The change in prices paid for or received for various raw-wood products between the spring 2016 report and the current report (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. The price for pallet and cant logs increased slightly. Bark prices were consistent with the 2016 spring report while sawdust prices were lower.

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. The decline in the pulp and paper industry is a threat to 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. Success has been limited by the low cost of electricity purchased off of the grid, 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 2017), free on board (fob) the producing mill.

	No. Responses	Range	Mean		Median	
		Mar-17	Mar-16	Mar-17	Mar-16	Mar-17
Pallet logs, \$/MBF	6	200-390	285	291	300	290
Pallet logs, \$/ton	2	35-37	43	36	43	36
Pulpwood, \$/ton	0	0	35	0	35	0
Pulp chips, \$/ton	6	12-34.4	26	23	27	22.5
Sawdust, \$/ton	4	8-25	22	16	23.7	15.6
Sawdust, \$/cu. yd.	4	2.5-13	10	6	10	4.3
Bark, \$/ton	2	6-10	6	8	6.25	8
Bark, \$/cu. yd.	7	3-23	11	9	5	9
Mixed, \$/ton	0	N/A	N/A	N/A	N/A	N/A
Mixed, \$/cu. yd.	0	N/A	N/A	N/A	N/A	N/A

Custom Costs

Costs of custom services increased from the spring report in the areas of sawing and logging (per/MBF). The high cost of diesel fuel usually plays a large role in logging costs as well as sale layout and costs to close out sales implementing Best Management Practices (BMPs) (Table 5). There were no surveys returned with logging and hauling costs. However, we feel those costs are generally around \$200-220 MBF.

Table 5. Custom costs reported by Indiana mills (March 2017)

	No. Respons	Mar-17	Mean		Median	
		Range	Mar-16	Mar-17	Mar-16	Mar-17
Sawing (\$/MBF)	4	195-400	313	286	300	275
Sawing (\$/hour)	0	0	150	N/A	150	N/A
Logging (\$/MBF)	0	0	209	N/A	212	N/A
Hauling (\$/MBF)	0	0	55	N/A	55	N/A
Distance (miles)	2	30-50	50	40	50	40
\$/MBF/mile	0	N/A	N/A	N/A	N/A	N/A

Indiana 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 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 (Table 7, columns 3 and 6) is a weighted average of the delivered log prices reported in the price survey. The price indexes (Table 7, 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 2017 for the average stand was 872.1 percent of the 1957 price. The index for a quality stand decreased slightly from 1146 percent to 1091 percent.

The real prices (Table 7, 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's 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: March this year. The index increased slightly from 1.83 for

2016 to 1.91 as of March 2017. Inflation in the 1- to 2-percent range is generally considered a sign of a healthy, growing economy. The change from 2016 to 2017 is about 2 percent.

Average Stand

The nominal weighted average price for a stand of average quality decreased from \$559 in 2016 to \$519.70 this year (Table 7, column 3; and Figure 10). Again, this series is based on delivered log prices, not stumpage prices.

The deflated, or real price decreased from \$306.50 in 2016 to \$271.69 this year. The new equation for the trend line for the 1957 to 2017 period is,

$$\text{Avg. Stand Real Price} = 200.24 + 1.71 \times T, \text{ where,}$$

$$T = 1 \text{ for } 1957, 2 \text{ for } 1958 \dots 61 \text{ for } 2017$$

The average annual compound rate of interest required to take the linear trend line from \$201 in 1957 to \$271.69 in 2017 is 0.68 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 decreased from \$822.70 in 2016 to \$783.30 this year. (Table 7, column 6; and Figure 11). The average real price series for a high-quality stand decreased from \$451 in 2016 to \$409.50 this year.

The average annual compound rate of increase for the trend line is 0.98 percent per year (Figure 11). The equation for the trend line is,

$$\text{Quality Stand Real Price} = 243.6 + 3.36 \times T, \text{ where}$$

$$T = 1 \text{ for } 1957, 2 \text{ for } 1958 \dots 61 \text{ for } 2017$$

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 61-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, 1973-2017.

Year	Producer Price Index	Average Stand			Quality Stand		
		Nominal	Index	Real	Nominal	Index	Real
		Price	Number	Price 1	Price	Number	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

Figure 10. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2017.

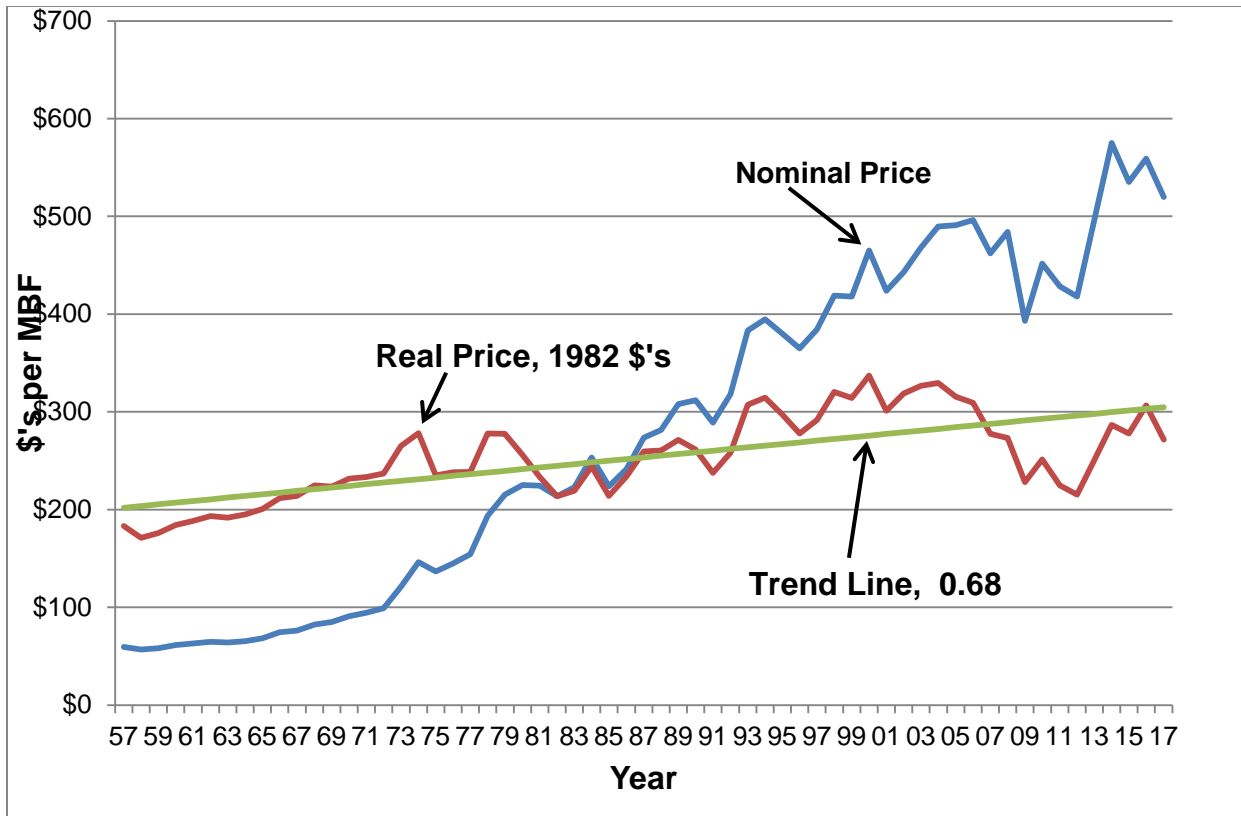


Figure 11. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2017.

