2015 Indiana Forest Products Price Report and Trend Analysis

December 2015

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. Because of the small number of mills reporting logging costs, "stumpage prices" estimated by deducting the average logging and hauling costs (Table 4) from delivered log prices must be interpreted with extreme caution.

Data for this survey was obtained by a direct mail survey to a variety of forest product industry 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).

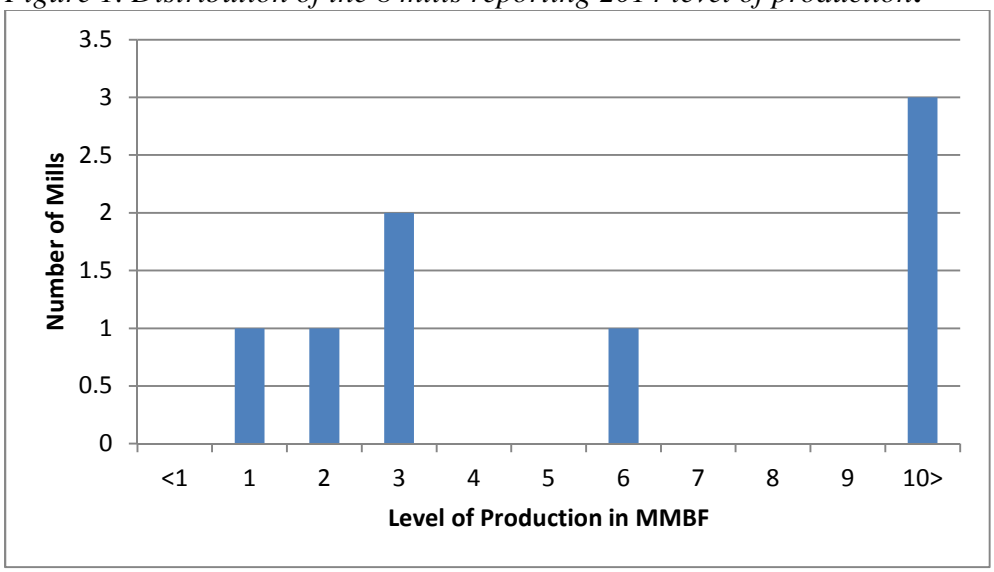
The survey was mailed to 62 firms. It is estimated these companies produce close to 85-90% of the state's roundwood production. Electronic reminders, follow-up phone calls and additional mailings got a few of those mills and operators back into the system.

19 industries 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 production reported for 2014 was 64 MMBF compared to 147 MMBF for 2013, and 151 MMBF for 2012. The largest single mill production reported was 19 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 4 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, **http://www.inwoodlands.org/**.

*Figure 1. Distribution of the 8 mills reporting 2014 level of production***.**



Hardwood Lumber Prices

Hardwood lumber prices as of December 2015 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, TN. Log prices are directly 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

According to some manufactures red oak is 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 growing export markets for red oak also continue to have a direct impact on pricing as well. Pricing for green upper grade (FAS&FIF), red oak lumber, with a $200 premium peaked at $1,310 per thousand board feet (MBF) in the summer of 2004. Continuing to fluctuate since July of 2012, red oak reached $1,145/MBF in December 2014 a + 27% increase. However, 2015 pricing for red oak has been decreasing due to lack of demand both domestically and globally and is presently $1100/MBF. Several producers express optimism that Red Oak has hit bottom and prices will stabilize soon. 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.

White oak prices are also cyclical, but the cycles are slightly more moderate than red oak's. An exception is the 42% drop in FAS plus the premium from $1,390/MBF in 2008 to $800/MBF in the summer of 2009. As of December 2015, FAS lumber pricing was $1,410/MBF, a 3% increase from May 2015. Common grade white oak pricing however was lower in December.

Black walnut is in the process of price adjustment with year to date exports of Walnut are down 7% through October. Domestic markets remain static, especially the in the distribution sector. After several weeks of price drops in 2014, walnut pricing stabilized for several weeks, but is now declining again. FAS lumber was reported at $2,810/MBF in May of 2015 and is presently $2,425/MBF.

Black cherry Sel&Btr grade in recent months continues to fall from $1,540/MBF in November 2014 to its current price of $1,310/MBF. This is due in part to production far outpacing the low consumer demand. For comparison cherry prices for Sel&Btr., in January 2013 were $1,335 per MBF.

In the past 6 months hard maple has been one of the better species in the market place. Sel&Btr., hard maple reached $1,305 in July 2013 then increased to $1,365 in May of 2015 and currently is $1,245/MBF. Concurrently; the pricing level for #1C has increased by approximately 5% in the past 3 months.

Other Species

Since the summer of 2011 a low point in FIF&BTR., tulip poplar prices ($550/m'), markets have continually risen to the current price of $830/MBF. Lower grade poplar prices have increased as well with a 31% increase for #1C and a 25% increase for #2AC.

Soft maple markets continue to improve due to consumer demand for painted hardwood i.e. kitchen cabinets. In July of 2012, prices were reported at $920/MBF and have continuously risen to the current price of $1,140/MBF. #1C and #2AC pricing has also increased 11% and 27% respectively.

Ash lumber is moving at a respectable pace with a reasonable amount still being exported to China as well as the Middle East. However, continued efforts to stay ahead of the Emerald Ash Borer has increased harvesting, resulting in a temporary oversupply of product. FAS pricing has dropped from $1,170/MBF in June this year to a current price of $1085/MBF.

Beech pricing for FAS lumber increased for the first time in several years from $500/MBF to $515/MBF, not a big change but an increase just the same.

Hickory FAS pricing remains at $830/MBF, which is a 12% fall since May of this year. This drop in pricing can somewhat be explained by the sluggish demand from the flooring plants, distribution yards and kitchen cabinet manufactures.

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 2010	July 2010	Jan 2011	Jul 2011	Jan 2012	Jul 2012	Jan 2013	Sept 2013	May 2015	Dec 2015
Ash										
FAS + Prem.	715	805	785	800	800	845	845	845	1,190	1,085
No. 1C	470	580	575	575	575	585	585	585	855	685
No. 2A	320	380	360	360	360	360	360	360	520	455
Basswood										
FAS + Prem.	635	660	645	630	630	630	630	660	695	715
No. 1C	300	335	335	345	345	345	345	395	430	430
No. 2A	180	190	190	190	190	190	190	210	230	230
Beech										
FAS	500	500	500	500	500	500	500	500	500	515
No. 1C	420	420	420	420	420	420	420	420	420	430
No. 2A	345	345	345	345	345	345	345	345	345	345
Cottonwood (Southern)										
FAS	605	605	625	635	635	635	635	655	745	765
No. 1C	405	405	425	435	435	435	435	455	535	545
No. 2A	220	220	220	220	220	220	240	240	260	260
Cherry (North Central)										
FAS + Prem.	1,610	1,610	1,610	1,525	1,355	1,440	1,335	1,335	1,495	1,310
No. 1C	660	720	720	720	655	720	705	795	1,015	845
No. 2A	350	375	375	375	330	375	375	460	645	495
Hickory										
FAS + Prem.	615	640	640	655	670	720	720	800	945	830
No. 1C	500	530	530	540	560	595	595	685	740	555
No. 2A	350	405	405	405	415	445	445	500	575	435
Hard Maple (unselected)										
FAS + Prem.	1,080	1,095	995	970	1,050	1,050	1,075	1,305	1,320	1,245
No. 1C	655	710	710	705	735	750	790	1,000	780	740
No. 2A	480	545	535	535	565	555	550	685	540	495
Soft Maple (unselected)										
FAS + Prem.	880	895	835	805	845	920	940	1,000	1,095	1,140
No. 1C	535	610	595	580	595	610	650	710	650	670
No. 2A	275	320	320	320	330	330	340	360	460	450

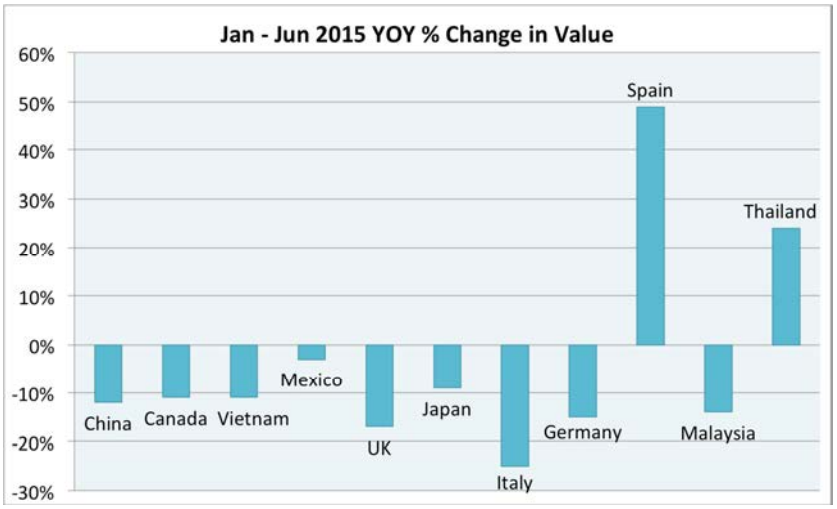
Table 1. (continued)

Lumber/Grade	Jan 2010	July 2010	Jan 2011	Jul 2011	Jan 2012	Jul 2012	Jan 2013	Sept 2013	May 2015	Dec 2015
White Oak (plain)										
FAS + Prem.	915	1,165	1,060	1,035	995	1,015	1,015	1,070	1,365	1,410
No. 1C	540	655	625	575	555	555	575	705	715	680
No. 2A	365	500	500	450	420	410	475	630	510	470
Red Oak (plain)										
FAS + Prem.	825	1,095	930	925	830	830	880	1,045	1,100	930
No. 1C	560	665	615	580	535	520	570	700	620	550
No. 2A	470	540	540	460	430	420	495	660	545	485
Yellow Poplar										
FAS + Prem.	620	640	550	550	590	700	760	775	830	830
No. 1C	420	470	350	360	385	445	490	505	545	525
No. 2A	310	320	270	280	300	310	330	340	385	375
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	375	375
Black Walnut										
FAS	1,800	1,995	2,105	2,155	2,070	1,815	1,795	1,905	2,810	2,425
No. 1C	765	1,040	1,125	1,160	1,075	905	875	935	1,460	1,270
No. 2A	360	620	740	770	705	505	475	530	875	730

Exports

Overall exports of US Hardwood products are down on the year in comparison to 2014, but some markets are showing growth. The largest export market, China, is importing significantly less US hardwood lumber so far this year (12%) and Vietnam a market that has shown considerable growth recently, is down 11% in lumber this year. This graph shows the top individual markets in 2014 and the current gain or loss in value by percentage so for this year. Spain and Thailand have grown considerably 49% and 24% respectively. Overall exports of US hardwood lumber are down 9% this year in comparison to 2014 totals, but it is important to note that the US is still on pace to export just over $2 billion of lumber for our second highest export total ever.

Figure 2. Key Market Change in Value (American Hardwood Export Council-2015)



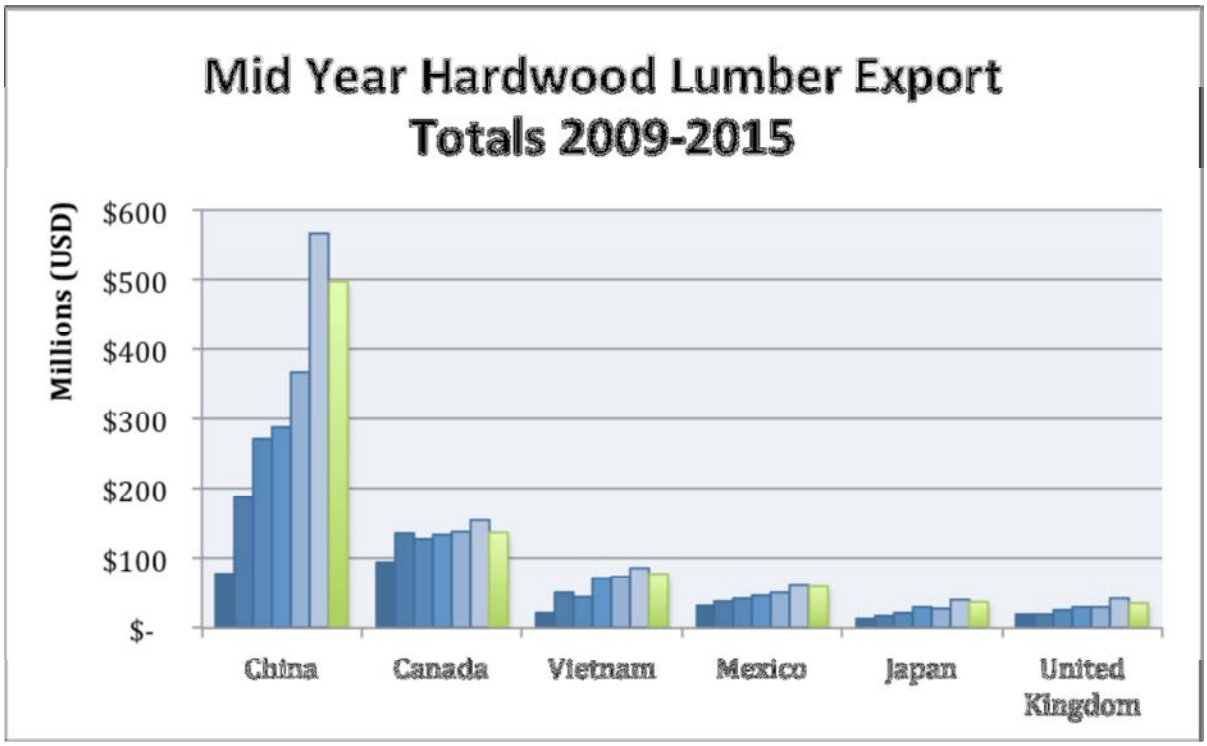
Logs

China, Canada and Vietnam remain the three largest importers of hardwood logs from the U.S. in 2014 according to USDA-FAS Hardwood Export Statistics. Over 850 million BF of logs from the U.S. were exported worldwide with the China, Canada and Vietnam making up 84% of the total. China surpassed Canada for the first time in 2014 as the largest importer in log value and in quantity. Red oak, black walnut and white oak veneer & saw logs remain the core for China with hard maple, red oak, birch and tulip poplar, red oak and white oak for Canada and Vietnam respectively. In the second quarter of this year log prices began to level off and even drop in some species from historic highs. The normal seasonal slowdowns in the veneer market along with the continued strength of the U.S. dollar are the primary reasons for this change. Additionally, Russia along with other Asian imports could increase their market share if they can overcome operational and logistic problems.

Lumber

The US hardwood export market is experiencing an adjustment period but is still in a strong position globally. Figure 2 shows the midyear export totals for US Hardwood Lumber since 2009. The current total for 2015 is marked in green. As you can see, in these markets the yearly total, though down, is still an improvement on 2013 --- and in many cases is still the second highest Jan---Jun total ever.

Figure 3. Mid-year Hardwood Lumber Export (American Hardwood Export Council-2015)



Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices decreased only slightly from the earlier survey conducted in the spring of 2015 (Table 2). Sawlog prices for the premium species (specifically black walnut and white oak) were up slightly from the spring report. Almost without exception sawlog prices for the premium species, such as black walnut and white oak have increased. Overall prices were up for most of the other species.

Premium Species

Three of the four grades of white oak sawlogs increased in price with the exception being the prime grade. With the markets being so strong for veneer, stave, and rift/quartered logs; finding larger, quality logs has become quite a challenge. Prices being paid for red oak were down significantly from the spring report.

Demand for black walnut has slowed in recent months so availability is not the issue it was several months ago. Prime black walnut logs increased 8% while the remaining 3 log grades saw lower average prices.

Black cherry sawlog prices decreased around 4% across three of the four grades, the exception being No 3 sawlogs which was 7% higher. Consumer demand for the darker finished wood has waned the past year and this is most likely the cause for lower log pricing.

Hard maple sawlog prices were generally down with the exception of the No. 3 grade sawlog. The summer and early fall months usually see less hard maple production due to the fear of stain and this may have played a large part in the price drops. Soft maple markets have been pretty steady due to strong lumber demand. Consumers are buying more painted wood materials which play very well into soft maple's hands. Prime soft maple logs averaged almost 20% higher while the average price across the 3 remaining grades was basically unchanged.

Other Hardwood Species

More and more Ash timber is being harvested in an effort to stay ahead of the Emerald Ash Borer. Production is high right now. That being said, ash sawlog prices still rose slightly (6%) compared to the spring report. The lower grade sawlogs saw significant price increases.

Tulip poplar increased across all grades except the prime grade. Normally when poplar markets are good; overproduction eventually slows the market. Poplar markets however have been one of the steadiest performers among hardwoods. Tulip poplar prices across all log grades averaged 11% higher from the spring 2015 report.

Softwood Logs

The price of pine sawlogs decreased slightly to $220/MBF. However, red cedar decreased 38% to $317/MBF. Four producers reported pine sawlog prices and three producers reported red cedar prices.

Table 2. Prices paid for delivered sawlogs by Indiana sawmills (October 2015).

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
White Ash									
Prime	400 - 700	7	4	579	588	600	625	1.6	4.2
				(31.57)	(65.75)				
No. 1	300 - 700	9	8	456	481	450	475	5.5	5.6
				(24.22)	(44.26)				
No. 2	250 - 600	9	7	350	375	350	350	7.1	0.0
				(18.63)	(41.90)				
No. 3	150 - 550	9	6	271	300	300	300	10.7	0.0
				(13.79)	(46.55)				
Beech									
Prime	300 - 350	6	4	298	325	300	325	9.1	8.3
				(14.24)	(14.43)				
No. 1	160 - 300	5	5	274	262	280	300	-4.4	7.1
				(12.49)	(27.28)				
No. 2	150 - 300	6	5	262	232	290	250	-11.5	-13.8
				(24.28)	(32.77)				
No. 3	150 - 300	5	6	244	235	250	250	-3.7	0.0
				(25.81)	(29.86)				
Cherry									
Prime	600 - 800	7	4	771	700	800	700	-9.2	-12.5
				(56.54)	(40.82)				
No. 1	400 - 750	9	8	600	556	650	550	-7.3	-15.4
				(44.10)	(35.90)				
No. 2	350 - 500	9	7	444	418	450	400	-5.9	-11.1
				(29.40)	(23.60)				
No. 3	250 - 450	9	6	287	308	300	300	7.3	0.0
				(8.54)	(30.05)				
Hickory									
Prime	450 - 600	7	4	543	538	600	550	-0.9	-8.3
				(31.68)	(37.50)				
No. 1	350 - 550	9	8	444	419	450	400	-5.6	-11.1
				(24.22)	(26.62)				
No. 2	250 - 500	9	7	342	354	350	350	3.5	0.0
				(18.39)	(30.09)				
No. 3	150 - 450	9	6	276	292	300	300	5.8	0.0
				(17.32)	(39.62)				

Table 2. (continued)

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
Hard Maple									
Prime	500 - 800	7	4	700	700	700	750	0.0	7.1
				(61.72)	(70.71)				
No. 1	400 - 750	9	8	594	563	600	575	-5.2	-4.2
				(41.20)	(41.99)				
No. 2	300 - 650	9	7	444	425	450	400	-4.3	-11.2
				(30.56)	(41.90)				
No. 3	200 - 550	9	6	295	325	300	300	10.2	0.0
				(18.10)	(49.58)				
Soft Maple									
Prime	400 - 600	7	4	407	488	400	475	19.9	18.8
				(33.50)	(42.70)				
No. 1	300 - 450	9	8	361	369	350	350	2.2	0.0
				(23.24)	(16.19)				
No. 2	200 - 400	9	7	298	307	300	300	3.0	0.0
				(18.77)	(22.96)				
No. 3	150 - 300	9	6	263	258	280	275	-1.9	-1.8
				(16.41)	(23.86)				
White Oak									
Prime	600 - 1100	7	4	850	825	800	800	-2.9	0.0
				(87.97)	(103.08)				
No. 1	500 - 900	7	8	657	663	600	625	0.9	4.2
				(68.51)	(52.40)				
No. 2	350 - 750	7	7	450	482	400	450	7.1	12.5
				(55.63)	(54.20)				
No. 3	250 - 650	7	7	319	350	300	300	9.7	0.0
				(24.63)	(53.45)				
Red Oak									
Prime	550 - 700	7	4	693	613	700	600	-11.5	-14.3
				(22.96)	(31.46)				
No. 1	400 - 550	9	8	572	478	600	500	-16.4	-16.7
				(23.73)	(18.56)				
No. 2	300 - 450	9	7	450	379	450	375	-15.8	-16.7
				(21.65)	(22.11)				
No. 3	200 - 400	9	6	296	308	300	300	4.1	0.0
				(10.27)	(27.13)				

Table 2. (continued)

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
Tulip Poplar									
Prime	450 - 600	7	4	511	525	500	525	2.7	5.0
				(18.79)	(32.27)				
No. 1	250 - 550	9	8	378	413	400	400	9.3	0.0
				(26.50)	(32.39)				
No. 2	200 - 500	9	7	300	343	300	350	14.3	16.7
				(20.41)	(35.23)				
No. 3	150 - 450	9	6	249	292	250	300	17.3	20.0
				(14.48)	(39.62)				
Black Walnut									
Prime	1000 - 3000	7	4	1593	1719	1800	1437.5	7.9	-20.1
				(224.78)	(440.10)				
No. 1	800 - 2500	9	8	1322	1319	1400	1150	-0.2	-17.9
				(151.44)	(193.17)				
No. 2	500 - 2000	9	8	972	963	1000	775	-0.9	-22.5
				(123.07)	(169.76)				
No. 3	350 - 1100	9	7	629	579	800	400	-7.9	-50.0
				(111.55)	(123.86)				
Softwood									
Pine	150 - 300	6	4	240	220	235	250	-8.3	6.4
				(21.91)	(31.36)				
Red cedar	150 - 500	3	3	517	317	400	400	-38.7	0.0
				(142.40)	(101.38)				

Veneer Log Prices

The number of mills reporting veneer log prices increased slightly from the spring 2015 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.

As reported in the spring, veneer demand remains slow with most mills running at 60% - 70% capacity. Conversely, veneer quality logs continue to remain in demand although pricing has leveled off or in some species have dropped this fall. Depending on the species, these decreases are greater in some, i.e. red oak than others like walnut. Additionally, weather conditions like the economic environment can play havoc on log pricing and volumes available.

Black walnut and white oak veneer remain in demand both domestically and internationally with pricing continuing for the most part remaining stable. Additionally, importers especially China are purchasing 3SC & 2SC walnut logs which has driven some of the local veneer mills and sawmills to drop out of the market or reduce production.

Veneer mills specializing in certain species i.e., hard maple report to some extent higher pricing mostly due to the larger volumes and freight costs to the mill. Overall this domestic demand for veneer, 3SC, 2SC, and grade 2 and 3 saw logs continues to keep pricing stable are even lower prices for logs bought on a weekly basis. Additionally, a slower economic condition throughout the international markets also increases the pressure on export log value and should continue into 2016.

These economic conditions will also affect white oak veneer, but to a much smaller degree. One of the biggest drivers for white oak currently is the stave market. Wine and whiskey manufactures are currently having difficulty building inventories thus requiring additional stave demand. When you add the demand for quarter-sawn and export lumber to the mix, the pressure for logs increases exponentially. Look for white oak logs to remain constant for 2016 and possibly longer.

Table 3. Prices paid for delivered veneer logs by Indiana mills (October 2015).

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
Black Walnut									
Prime									
12–13	800-4500	4	7	3,375	2,971	3,250	3,000	-12.0	-7.7
				(239)	(484)				
14–15	1000-5500	4	8	4,250	4,219	4,000	4,500	-0.7	12.5
				(250)	(538)				
16–17	3000-7500	4	8	4,875	5,563	4,750	5,750	14.1	21.1
				(239)	(467)				
18–20	4000-8000	4	7	5,250	6,750	5,500	7,500	28.6	36.4
				(854)	(548)				
21–23	6000-10000	3	7	6,667	8,571	6,000	9,500	28.6	58.3
				(667)	(694)				
24–28	6500-12500	3	7	8,000	10,071	8,000	11,000	25.9	37.5
				0	(922)				
>28	6500-14000	2	4	10,000	9,875	10,000	9,500	-1.3	-5.0
				0	(1,663)				

Table 3. (continued)

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
Black Walnut									
Select									
12–13	600-3750	4	4	2,375	2,025	2,500	1,875	-14.7	-25.0
				(315)	(651)				
14–15	800-4500	4	4	2,700	2,825	3,000	3,000	4.6	0.0
				(300)	(762)				
16–17	1500-6500	4	4	3,625	3,875	4,000	3,750	6.9	-6.3
				(554)	(1,028)				
18–20	3000-6500	4	4	4,250	4,750	4,500	4,750	11.8	5.6
				(433)	(878)				
21–23	3500-7500	3	4	3,833	5,500	3,000	5,500	43.5	83.3
				(833)	(1,021)				
24–28	3500-8500	4	4	5,500	6,250	6,000	6,500	13.6	8.3
				(1,323)	(1,199)				
>28	3500-8000	3	3	6,000	5,883	6,000	6,000	-2.0	0.0
				(3,000)	(1,302)				
White Oak									
Prime									
13–14	600-2400	4	8	1,525	1,800	1,550	1,925	18.0	24.2
				(206)	(199)				
15–17	800-2600	4	9	2,200	2,056	2,000	2,300	-6.5	15.0
				(271)	(176)				
18–20	2000-3200	4	7	2,650	2,614	2,550	2,700	-1.4	5.9
				(362)	(168)				
21–23	2000-4000	3	7	3,167	3,050	3,000	3,150	-3.7	5.0
				(441)	(246)				
24–28	200-4500	3	7	3,767	3,279	3,800	4,000	-13.0	5.3
				(433)	(553)				
>28	3000-5000	2	5	4,000	3,960	3,500	3,800	-1.0	8.6
				(1,000)	(449)				
Select									
13–14	350-2200	4	6	N/A	N/A	1,050	1,500	N/A	N/A
				(178)	(252)				
15–17	600-2400	4	6	1,600	1,675	1,550	1,775	4.7	14.5
				(349)	(248)				
18–20	1000-2800	4	4	2,175	1,988	2,200	2,075	-8.6	-5.7
				(386)	(394)				
21–23	1000-3000	3	4	2,167	2,138	2,200	2,275	-1.3	3.4
				(491)	(468)				
24–28	1000-3250	3	3	2,767	2,000	3,000	1,750	-27.7	-41.7
				(788)	(661)				
>28	1000-4000	2	2	2,650	2,500	2,650	2,500	-5.7	-5.7
				(1,350)	(1,500)				

Table 3. (continued)

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1] ($/MBF)		Median ($/MBF)		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
Black Cherry									
Prime									
12–13	600-3000	2	4	800	1,900	800	2,000	137.5	150.0
				(200)	(493)				
14–15	600-4000	2	4	900	2,150	2,000	2,000	138.9	0.0
				(300)	(699)				
16–17	1000-4000	3	6	1,367	2,417	1,750	2,250	76.8	28.6
				(410)	(417)				
18–20	1200-4250	3	6	2,033	2,492	2,250	2,250	22.6	0.0
				(837)	(428)				
21–23	2000-4500	3	5	2,667	2,600	4,000	2,000	-2.5	-50.0
				(667)	(485)				
24–28	2000-5000	3	4	3,000	3,000	3,500	2,500	0.0	-28.6
				(1,000)	(707)				
>28	2000-5000	2	4	4,000	3,000	N/A	2,500	-25.0	N/A
				(2,000)	(707)				
Select									
12–13	2,000	2	1	900	2,000	900	2,000	122.2	122.2
				(100)	N/A				
14–15	3,000	2	1	900	3,000	900	3,000	233.3	233.3
				(100)	N/A				
16–17	3,000	3	1	1,300	3,000	1,300	3,000	130.8	130.8
				(145)	N/A				
18–20	3,500	3	1	1,500	3,500	1,500	3,500	133.3	133.3
				(536)	N/A				
21–23	3,500	3	1	1,500	3,500	1,500	3,500	133.3	133.3
				(702)	N/A				
24–28	3,500	3	1	1,500	3,500	1,500	3,500	133.3	133.3
				(1,035)	N/A				
>28	3,500	2	1	3,150	3,500	3,150	3,500	11.1	11.1
				(1,850)	N/A				
Red Oak									
Prime									
16–17	1500 - 2500	3	6	1,333	1,075	1,500	1,100	-19.4	-26.7
				(328)	(129)				
18–20	1500 - 2500	3	7	1,567	1,150	1,800	1,200	-26.6	-33.3
				(338)	(125)				
21–23	1500 - 2500	2	7	1,450	1,179	1,450	1,200	-18.7	-17.2
				(550)	(103)				
24–28	1500 - 3000	2	7	1,450	1,186	1,450	1,200	-18.2	-17.2
				(550)	(99)				
>28	1500 - 4000	2	5	1,450	1,240	1,450	1,400	-14.5	-3.4
				(550)	(144)				

Table 3. (continued)

Species/Grade	15-Oct Range ($/MBF)	No. Responses		Mean (s.e.)[1]		Median		Change (%)	
		15-Mar	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct	Mean	Median
				($/MBF)		($/MBF)			
Red Oak									
Select									
16–17	1,100	3	1	1,067	1,100	1,200	1,100	3.1	-8.3
				(296)	0				
18–20	1,100	3	1	1,333	1,100	1,700	1,100	-17.5	-35.3
				(418)	N/A				
21–23	1,100	2	1	1,150	1,100	1,150	1,100	-4.3	-4.3
				(650)	0				
24–28	1,100	2	1	1,150	1,100	1,150	1,100	-4.3	-4.3
				(650)	N/A				
>28	1,100	2	1	1,150	1,100	1,150	1,100	-4.3	-4.3
				(650)	N/A				
Hard Maple									
Prime									
16–20	1000 - 3000	6	8	2,375	2,125	2,500	2,000	-10.5	-20.0
				(262)	(206)				
> 20	1000 - 3500	4	7	3,000	2,357	3,500	2,500	-21.4	-28.6
				(467)	(303)				
Select									
16–20	1000 - 1000	2	2	1,500	1,000	1,500	1,000	-33.3	-33.3
				N/A	N/A				
> 20	1000 - 1000	2	2	2,000	1,000	2,000	1,000	-50.0	-50.0
				N/A	N/A				
Yellow Poplar									
Prime									
16–20	500 - 1000	1	4	N/A	675	1,800	600	N/A	-66.7
				N/A	(111)				
> 20	600 - 850	1	4	N/A	738	2,200	750	N/A	-65.9
				N/A	(55)				
Select									
16–20	350 - 350	N/A	1	N/A	350	N/A	350	N/A	N/A
				N/A	N/A				
> 20	350 - 350	N/A	1	N/A	350	N/A	350	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 2015 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 decreased slightly, pulpwood and bark prices generally decreased, and sawdust prices increased from the spring report.

Until about the 1970's 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 (October 2015), free on board (fob) the producing mill.

			Mean		Median	
	No. Responses	15-Oct	15-Mar	15-Oct	15-Mar	15-Oct
Pallet logs, $/MBF	8	160-320	305	266	300	300
Pallet logs, $/ton	3	40-50	42	43	40	40
Pulpwood, $/ton	1	20	31	20	34	20
Pulp chips, $/ton	5	12.7-25	22	20	20	21.8
Sawdust, $/ton	0	N/A	17	N/A	12.25	N/A
Sawdust, $/cu. yd.	4	Jul-35	5	16	4.3	11.5
Bark, $/ton	2	7.5-10	8	9	10	8.75
Bark, $/cu. yd.	5	23-Feb	8	9	11	7
Mixed, $/ton	1	15	19	15	19.03	15
Mixed, $/cu. yd.	1	3	N/A	3	N/A	3

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 (Table 5). Logging costs as reported in this survey indicate an increase in logging costs from $148 to $200 per MBF.

Table 5. Custom costs reported by Indiana mills (October 2015)

			Mean		Median	
	No. Respons	15-Oct Range	15-Mar	15-Oct	15-Mar	15-Oct
Sawing ($/MBF)	3	250-400	281	317	250	300
Sawing ($/hour)	0	N/A	N/A	N/A	N/A	N/A
Logging ($/MBF)	2	200	148	200	150	200
Hauling ($/MBF)	4	70-100	60	85	N/A	85
Distance (miles)	3	20-75	35	47	60	45
$/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. The following species were removed from the index and their relative weight reassigned proportionally to the remaining species in both average and quality stands: basswood, cottonwood, elm, black oak and sycamore. Relative weights 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
Veneer Species:	(%)	(%)
White oak	18	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
Non-veneer Species:		
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	3.7
Basswood	0	0
Cottonwood	0	0
Elm	0	0
Black oak	0	0
Sycamore	0	0

The nominal (not deflated) price (columns three and six in Table 6) 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 2014 for the average stand was 937.0 percent of the 1957 price. The index for a quality stand increased from 997.5 percent to 1092.6 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'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: November this year. The index decreased from 200.5 for 2014 to 192.7 as of November 2015.

Average Stand

The nominal weighted average price for a stand of average quality decreased from $575.10 in 2014 to $531.4 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 $286.8 in 2014 to $275.8 this year. The new equation for the trend line for the 1957 to 2015 period is,

Avg. Stand Real Price = 199.18 + 1.76 × T, where,

T = 1 for 1957, 2 for 1958 . . . 59 for 2015

The average annual compound rate of interest required to take the linear trend line from $201 in 1957 to $303 in 2015 is 0.73 percent, i.e. less than 1 percent. This rate will continue to decrease until the real price is above the trend line for several years. 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 $825.9 in 2014 to $437.3 this year. (Table 7, column six and Figure 5). The average real price series for a high-quality stand decreased from an adjusted $411.9 in 2014 to 226.9 this year.

The average annual compound rate of increase for the trend line remained relatively unchanged at 0.97% year (Figure 5). The equation for the trend line is,

Quality Stand Real Price = 247.4 + 3.17 × T, where

T = 1 for 1957, 2 for 1958 . . . 59 for 2015

As for an average stand, this rate will continue to decrease until the real price is above the trend line for several years. 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 59 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, 1973-2015.

		Average Stand			Quality Stand		
	Producer Price	Nominal	Index	Real	Nominal	Index	Real
Year	Index	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	1,019.1	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	1,020.9	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	1,052.4	381.4
2014	2.01	575.1	965.0	286.8	825.9	1,150.5	411.9
2015	1.93	531.4	891.6	275.8	437.3	609.2	226.9

Figure 4. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2015.

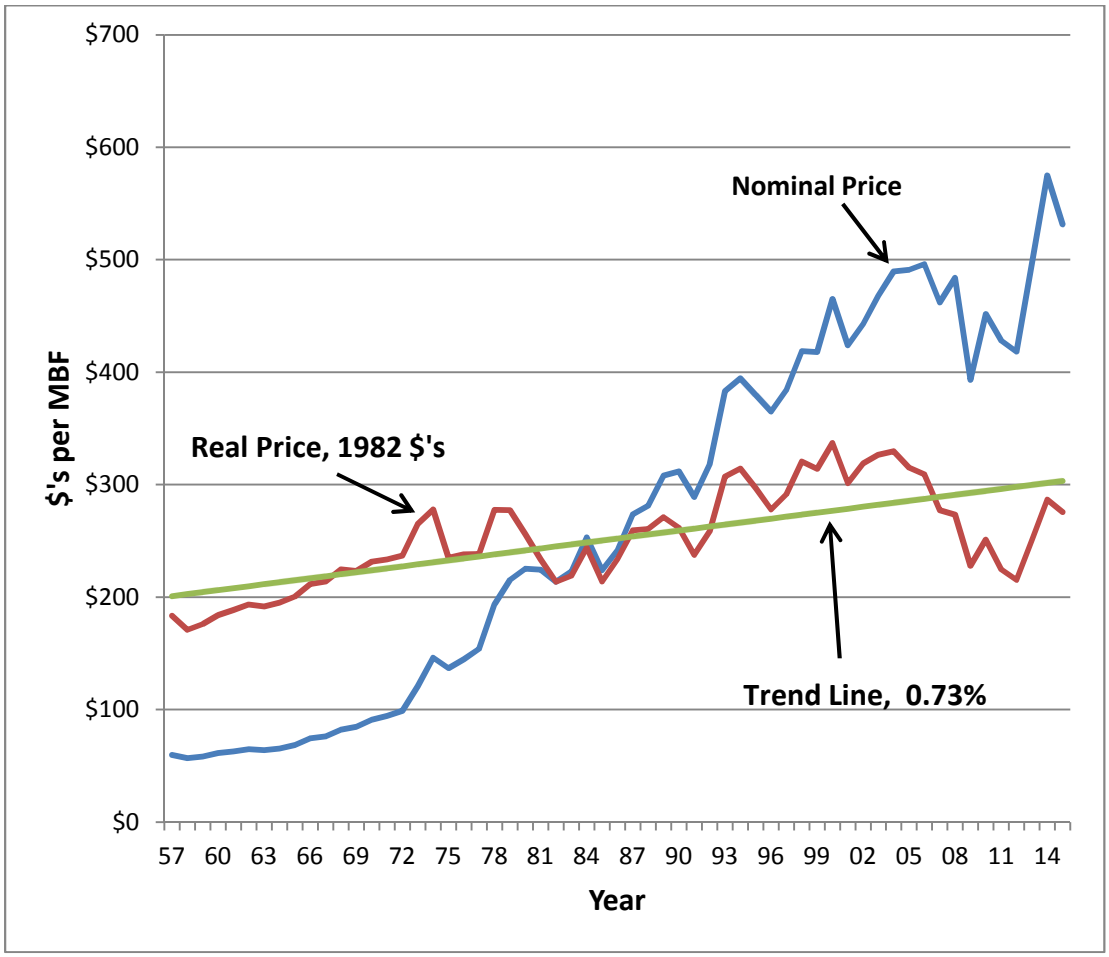


Figure 5. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2015.