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1990 INDIANA FOREST PRODUCTS PRICE  
REPORT AND TREND ANALYSIS

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## INTRODUCTION

The Department of Forestry and Natural Resources, Purdue University in cooperation with the Indiana Agricultural Statistics Service has conducted a formal survey of Indiana sawmills and veneer mills to determine the price paid for logs delivered to the mills. For the past 20 years the results of this survey were published in the Indiana Forest Products Marketing and Wood Utilization Report. This year's results appear as a School of Agriculture, Agriculture Experiment Station, Station Bulletin. In the future it is anticipated that the results will appear in a new publication to be produced cooperatively by all the Indiana organizations involved in the ownership, management, and utilization of the state's forest resources.

## METHODOLOGY

Over three hundred sawmills and veneer mills operating in Indiana received a questionnaire in early May. A follow-up questionnaire was mailed one month later. No attempt was made to sample non-respondents. Therefore, it must be assumed that the response is biased. The standard errors should be used for year-to-year comparisons only.

The list of mills surveyed was obtained from the records of the Indiana Division of Forestry. This differed from the sample list used in previous years. In 1989 all holders of an Indiana timber buyers license received a questionnaire. In 1988 and earlier years the sample list consisted primarily of mills which had historically participated in the survey.

As a result of the change in sampling procedure this year's data does not include the prices received by loggers or paid by brokers. Thus, the total number of responses for each item is lower, especially for veneer logs. The procedure used this year is more consistent with the intent of the survey, that is to estimate the average prices paid by mills.

The responses were analyzed using a PC-based SPSS package. The responses were screened for obvious errors. In addition, any response that was obviously out of range was discarded. For example, if the responses for a category included one or more mills reporting prices of \$40, \$50, \$60, \$70, \$80, and one mill reporting \$240, the \$240 response was discarded.

In the past only the average price was reported. This year the mean (arithmetic average), its standard error, and median price are also reported. In order to make valid comparisons the standard errors of the 1989 mean prices and the 1989 median prices are also reported.

The median price is the reported price that divides the histogram of the distribution of prices into two equal halves. The median and mean would have the same value if the distribution was an exact bell-shaped normal curve. The standard error of the mean (s.e.) is a measure of the variability of the responses. It



indicates that amount by which the mean would vary if a different set of mills had responded to the survey. Note that the standard error is relatively small for those species/grade categories for which ten or more mills responded, but is high for categories for which only a few mills responded.

### SAWLOG PRICES

The mean and median prices paid for sawlogs are reported in Table 1. In general, delivered logs prices declined from May 1989 to May 1990. Although mills were asked to report prices paid in May, it is likely that the responses reflect market conditions at least through the end of June since about half of the questionnaires weren't returned until early July.

The biggest percentage declines occurred for the premium species: ash, black cherry, and red oak. Price increases occurred for many of the less preferred species: basswood, elm, hickory, hard maple, soft maple, tulip poplar (tulip wood), and sycamore. White oak and black walnut prices remained strong, at least in the upper grades.

The changes in log prices were consistent with activity in lumber prices, Table 2. Ash prices, Figure 1, peaked in 1989 and continue to fall. Black cherry prices are now holding for FAS with the straight load premium<sup>1</sup> added, Figure 2. No. 1 and 2 Common prices peaked in 1988 and had not firmed as of August. The price for the best grade of red oak, FAS, started a 14 year climb in 1973, Figure 3. Since 1988 the price has leveled off. Common red oak prices followed the expected cyclical pattern over this period in response to changes in overseas markets. White oak prices have followed a similar pattern, but with periodic level periods for FAS.

Due to the promotional efforts of the hardwood exporting industry with funding from U.S.D.A. and the cooperation of the National Forest Products Association overseas buyers have learned that they can produce quality furniture at a lower cost using such species as maple and yellow poplar. Hard maple prices have been moving up slowly since the mid-80's, Figure 5. Surprisingly, soft maple has shown similar strength, Figure 6, as has sycamore, Figure 7, to a lesser extent. Even lowly cottonwood, the favorite wood container and box species, is showing some strength after 15 years of steady No. 1 Common prices, Figure 8. A small quantity of the best quality of cottonwood logs is entering the export market.

The best news of all from the lumber market is the increas-

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1. The prices quoted in the Hardwood Market Report are for loads of lumber of mixed grades, usually as the lumber comes from the mill. Buyers who want loads of only the top grade, FAS, pay a premium over the mixed grade price. This compensates the seller for having to market straight loads of lower grade lumber.



ing strength of yellow poplar (tulip poplar), Figure 9, or as we are now asked to refer to this species, tulip wood. By whatever name, overseas buyers, now see it as a very favorably priced, easy to use species. Modern finishing and laminating techniques make it highly desirable for furniture. It has also caught on in the millwork industry. Prefinished tulip wood molding is now available at most larger do-it-yourself centers. Exporters and millwork houses are after long lengths of defect-free cuttings, putting the most pressure on FAS prices.

#### Sawlog Grades

The survey continues to be based on the Purdue Log Grading System. The sawlog grading rules are widely available in current extension bulletins and are reproduced each year on the first page of the questionnaire used in this price survey. The Purdue system was developed in the early 1950's by Professor A. M. Herrick of Purdue's Department of Forestry and Conservation (Herrick, 1955). Subsequent to the development and adoption within the state of Indiana of the Purdue Log Grading system, the U.S. Forest Service's Central States Research Station, Columbus, Ohio undertook a major project to develop a nationwide hardwood log grading standard. The system adopted in the early 1960's differed substantially from the Purdue system (U.S. Forest Service, 1963). In particular, the Forest Service system uses three grades while the Purdue system uses four grades.

There is not a direct correspondence between the Forest Service and Purdue log grading schemes. Research results obtained using the Forest Service system can't be applied to mills using the Purdue system. A major requirement for a system to be useful is data correlating log grades with the expected yield of lumber grades. This type of information has not been updated for the Purdue system since the original study published in 1946 (Herrick). Thus, a recent Purdue Extension publication dealing with hardwood log and lumber grades is based on the Forest Service system (Cassens and Fischer, 1990).

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.) <sup>1</sup>		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
White Ash Prime	(\$/MBF) 350-750	44	20	539 (19.5)	560 (23.1)	513	575	3.9	12.1
No. 1	250-600	47	24	422 (15.2)	412 (20.8)	425	425	-2.4	0.0
No. 2	150-500	47	25	273 (12.0)	262 (16.8)	275	250	-4.0	-9.1
No. 3	50-200	36	17	134 (6.0)	132 (8.6)	130	120	-1.5	-7.8
Basswood Prime	120-400	34	14	230 (12.1)	234 (23.0)	225	225	1.7	0.0
No. 1	100-300	37	17	190 (9.5)	200 (15.3)	180	200	5.3	11.1
No. 2	50-220	36	17	153 (5.8)	144 (11.1)	150	150	-5.9	0.0
No. 3	50-160	32	14	117 (4.2)	109 (7.9)	120	110	-6.8	-8.3
Beech Prime	120-200	33	15	158 (6.0)	159 (7.9)	150	160	0.6	6.3
No. 1	100-200	33	14	143 (4.7)	140 (6.8)	140	140	-4.9	0.0
No. 2	90-200	32	14	133 (4.1)	130 (7.8)	130	120	-2.3	-7.7
No. 3	80-160	33	15	126 (4.2)	121 (5.9)	120	120	-4.0	0.0

<sup>1</sup> Standard error of the mean is given in parentheses below the mean.

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989, continued.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
Cottonwood	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime	100-160	22	8	130 (5.4)	126 (6.3)	125	120	-3.1	-4.0
No. 1	80-160	22	9	125 (4.7)	112 (8.5)	120	120	-10.4	0.0
No. 2	80-160	23	8	121 (4.7)	119 (11.1)	120	120	-1.7	0.0
No. 3	60-160	24	10	118 (4.6)	113 (9.2)	120	120	-4.2	0.0
Cherry									
Prime	450-750	42	17	566 (16.9)	568 (23.8)	600	600	0.4	0.0
No. 1	300-600	46	22	437 (14.0)	426 (22.2)	450	400	-5.6	-11.1
No. 2	150-410	45	23	277 (12.3)	258 (17.2)	275	250	-6.9	-9.1
No. 3	50-200	35	17	141 (7.2)	138 (9.2)	140	140	-2.1	0.0
White Elm									
Prime	120-200	26	10	149 (9.4)	153 (10.0)	135	150	2.7	11.1
No. 1	120-220	29	14	146 (7.6)	150 (9.0)	140	135	2.7	-3.6
No. 2	90-200	29	15	130 (4.9)	135 (7.8)	120	130	3.9	8.3
No. 3	80-160	27	11	124 (4.5)	125 (6.4)	120	120	0.8	0.0

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989, continued.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
S. Hickory Prime	(\$/MBF) 130-320	35	12	170 (8.8)	200 (18.9)	160	180	17.7	12.5
No. 1	100-260	38	17	152 (7.3)	174 (10.1)	145	160	14.5	10.3
No. 2	50-200	35	17	132 (5.1)	138 (9.1)	130	140	4.6	7.7
No. 3	50-160	32	14	122 (5.6)	117 (7.6)	120	120	-4.1	0.0
Hard Maple Prime	120-500	39	17	298 (12.6)	311 (20.5)	280	300	4.4	7.1
No. 1	120-400	44	22	227 (10.0)	239 (15.1)	200	215	5.3	7.5
No. 2	100-280	41	20	167 (7.3)	180 (9.8)	160	165	7.8	3.1
No. 3	50-200	34	17	126 (5.4)	121 (8.2)	120	120	-4.0	0.0
Soft Maple Prime	120-350	36	14	198 (7.8)	215 (17.4)	200	200	8.6	0.0
No. 1	120-250	40	19	172 (5.6)	181 (8.5)	160	180	5.2	12.5
No. 2	50-200	38	19	143 (4.4)	143 (7.8)	140	140	0.0	0.0
No. 3	50-160	34	17	124 (4.4)	119 (6.8)	120	120	-4.0	0.0



Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989, continued.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
White Oak	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime	400-800	43	18	533 (22.4)	586 (24.9)	500	600	9.9	20.0
No. 1	250-600	47	24	393 (16.6)	421 (22.6)	400	400	7.1	0.0
No. 2	120-400	49	28	241 (12.4)	249 (13.3)	205	245	3.3	19.5
No. 3	50-260	39	20	140 (5.9)	136 (10.2)	140	125	-2.9	-10.7
Red Oak									
Prime	450-750	45	19	597 (17.5)	616 (18.4)	600	600	3.2	0.0
No. 1	200-600	49	24	453 (15.1)	436 (21.0)	450	450	-3.8	0.0
No. 2	120-380	50	27	271 (13.6)	259 (14.1)	250	250	-4.4	0.0
No. 3	50-260	40	19	147 (5.8)	146 (11.0)	150	150	-0.7	0.0
Black Oak									
Prime	400-650	42	18	523 (16.8)	540 (19.5)	500	600	3.3	20.0
No. 1	200-500	46	23	373 (15.0)	375 (17.2)	400	400	0.5	0.0
No. 2	90-300	46	26	236 (11.5)	217 (11.7)	228	210	-8.1	-7.9
No. 3	50-260	37	18	136 (5.5)	138 (10.9)	140	135	1.5	-3.6

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989, continued.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
Tulip Poplar Prime	(\$/MBF) 250-400	43	19	264 (7.4)	308 (9.8)	250	300	16.7	20.0
No. 1	140-500	46	24	203 (7.0)	240 (15.8)	200	235	18.2	17.5
No. 2	100-230	43	23	151 (5.1)	160 (8.0)	150	160	6.0	6.7
No. 3	50-160	36	18	124 (4.1)	119 (6.4)	120	120	-4.0	0.0
Sycamore Prime	120-200	30	11	140 (4.8)	148 (7.8)	145	150	5.7	3.5
No. 1	100-200	30	13	133 (5.1)	140 (7.2)	120	140	5.3	16.7
No. 2	90-160	29	12	127 (4.9)	128 (6.6)	120	120	0.8	0.0
No. 3	80-160	31	13	121 (4.7)	122 (6.0)	120	120	0.8	0.0
Sweetgum Prime	120-200	26	10	144 (5.6)	156 (10.3)	140	155	8.3	10.7
No. 1	100-200	26	11	133 (3.8)	140 (8.2)	135	140	5.3	3.7
No. 2	90-160	26	10	126 (4.2)	125 (7.2)	120	120	-0.8	0.0
No. 3	80-160	28	12	126 (4.8)	121 (6.3)	120	120	-4.0	0.0

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, May 1990 and revised May 1989, continued.

Species/Grade	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
Black Walnut	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime	500-1050	37	15	749 (36.2)	777 (41.4)	700	750	3.7	7.1
No. 1	400-1000	42	18	594 (26.0)	619 (41.4)	500	550	4.2	10.0
No. 2	150-650	43	18	397 (21.4)	406 (33.3)	400	400	2.3	0.0
No. 3	100-350	36	15	239 (21.8)	201 (18.4)	200	200	-15.9	0.0



Table 2. Hardwood lumber prices, 4/4 Appalachian unless otherwise indicated (Hardwood Market Report, Memphis, Tenn), \$ per MBF.

	Jan. 1988	July 1988	Jan. 1989	July 1989	Jan. 1990	July 1990
Tough Ash						
FAS + Premium	910	1,025	1,025	1,030	1,030	900
No. 1C	615	695	695	700	700	640
No. 2C	250	300	300	300	300	260
Basswood						
FAS + Premium	640	640	640	640	650	650
No. 1C	320	320	305	305	305	305
No. 2A	182	160	177	177	177	177
Beech						
FAS	295	295	295	295	295	295
No. 1C	255	255	255	255	255	255
No. 2C	195	195	195	195	195	195
Cottonwood (Southern)						
FAS	365	365	365	365	365	380
No. 1C	270	270	270	270	270	270
No. 2C	135	135	135	135	140	150
Cherry						
FAS + Premium	1,070	1,240	1,115	1,065	1,090	1,115
No. 1C	725	840	830	770	690	660
No. 2C	375	450	445	390	355	325
Elm (Southern)						
FAS	400	400	385	375	345	345
No. 1C	380	380	365	355	325	325
No. 2C	245	245	230	220	200	200
Hickory						
FAS	340	340	340	340	340	340
No. 1C	320	320	320	320	320	320
No. 2C	160	160	160	160	160	200
Hard Maple						
FAS + Premium	525	595	595	635	650	680
No. 1C	375	380	380	385	400	430
No. 2C	225	230	230	230	235	265
Soft Maple						
FAS + Premium	420	420	420	450	480	565
No. 1C	350	350	350	350	365	405
No. 2C	205	210	210	210	215	250
White Oak (Plain)						
FAS + Premium	915	960	995	1,000	1,000	980
No. 1C	510	520	465	465	465	465
No. 2C	280	275	235	240	255	260
Red Oak						
FAS + Premium	1,040	1,070	1,020	1,165	955	995
No. 1C	635	625	535	905	535	545
No. 2C	280	275	250	710	275	285
Yellow Poplar						
FAS + Premium	515	515	505	530	585	595
No. 1C	300	295	290	285	300	320
No. 2A	197	197	195	195	195	200

Table 2. Hardwood lumber prices, 4/4 Appalachian unless otherwise indicated (Hardwood Market Report, Memphis, Tenn), \$ per MBF, cont.

	Jan. 1988	July 1988	Jan. 1989	July 1989	Jan. 1990	July 1990
Sycamore (Southern, Plain)						
FAS	295	295	295	295	300	310
No. 1C	275	275	275	275	280	290
No. 2C	240	240	240	240	245	255
Black Walnut						
FAS	1,605	1,605	1,605	1,605	1,605	1,605
No. 1C	855	855	855	855	855	855
No. 2C	290	290	290	290	290	290

## veneer log prices

Because veneer log prices were solicited only from veneer mills and their response was low, the veneer log prices must be interpreted carefully. The price reported for any species, grade, and size category with less than five responses is essentially meaningless. Therefore, this year's results are meaningful only for the prime grade of the smaller log sizes of walnut and the oaks.

The reported black walnut veneer log prices, Table 3, were up for all sizes and grades. This reflects relative strength in both domestic and overseas markets. As always, walnut remains a speciality species produced by a few mills for a select market. White oak prices were off except for both grades in the smallest size class. Red oak prices showed up strong for the smaller prime logs. But a substantial fall off in the red oak veneer market has apparently eliminated the need for mills to buy anything but the better logs. No mills reported a price for select logs.

### Veneer Log Grades

The standards for defining the "prime" and "select" veneer log grades are determined by each mill responding to the survey. This has been the practice since the survey was started in 1954. It is consistent with the industry practice of not adopting a common veneer log grading system. Each veneer mill has developed a proprietary grading scheme to meet its unique needs.

The prime grade should be interpreted to represent a log containing no noticeable defects such as knots, adventitious buds, splits, end checks, crook, and sweep. This grade does not take into account the many subtle factors that can significantly increase the value of a veneer log, such as geographical source of the tree, soil in which the tree was grown, growth rate, bark texture, among others.

The select grade should be interpreted as a log better than a prime grade sawlogs, but containing at least one significant defect.



Table 3. Prices paid for delivered veneer logs by Indiana veneer mills, May 1990 and revised May 1989.

Species/Grade /Log Dia.	1990 Range	No. Respon.		Mean (s.e.) <sup>1</sup>		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
Black Walnut	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime									
12-13	1000-2000	17	5	1482 (160.0)	1480 (146.3)	1200	1500	0.0	25.0
14-15	2000-3500	20	5	1993 (223.5)	2300 (300.0)	1500	2000	15.4	33.3
16-17	3000-5000	21	5	2695 (281.0)	3600 (400.0)	2500	3000	33.6	20.0
18-20	3500-6000	17	4	3305 (428.5)	4875 (657.5)	3000	5000	47.5	40.0
21-23	6000-7000	13	2	3965 (611.2)	6500 (500.0)	4000	6500	63.9	62.5
24-28	6000-7000	12	2	4792 (844.9)	6500 (500.0)	4250	6500	35.6	52.9
>28	6000-7000	9	2	5594 (2037.6)	6500 (500.0)	3500	6500	16.2	85.7
Select									
12-13	900-1200	10	4	1030 (106.5)	1025 (62.9)	1050	1000	-0.5	-4.8
14-15	1500	12	5	1496 (141.5)	1500 (0.0)	1500	1500	-0.3	0.0
16-17	1500-2500	12	5	2088 (242.6)	2100 (187.1)	2000	2000	-0.6	0.0
18-20	2000-3000	11	5	2764 (340.5)	2600 (187.1)	2800	2500	-5.9	-10.7
21-23	3000	7	2	3343 (644.3)	3000 (0.0)	4000	3000	-10.3	-25.0
24-28	3000	6	2	4383 (774.8)	3000 (0.0)	4400	3000	-31.6	-31.8
>28	3000	4	2	5750 (1547.8)	3000 (0.0)	5000	3000	-47.8	-40.0

<sup>1</sup> Standard error of the mean is given in parentheses below the mean.

Table 3. Prices paid for delivered veneer logs by Indiana veneer mills, May 1990 and revised May 1989, continued.

Species/Grade /Log Dia.	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
White Oak	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime									
13-14	800-1600	19	6	958 (82.7)	1183 (127.9)	1000	1100	23.5	10.0
15-17	1000-1800	21	6	1457 (81.5)	1383 (122.2)	1500	1350	-5.1	-10.0
18-20	1500-2500	21	6	2014 (99.4)	1933 (154.2)	2000	1900	-4.0	-5.0
21-23	1800-3500	16	6	2503 (158.0)	2416 (244.2)	2500	2350	-3.5	-6.0
24-28	3000-5000	13	4	2862 (232.2)	3750 (478.7)	3000	3500	31.0	16.7
>28	3000	12	1	3200 (384.1)	3000 (0.0)	3000	3000	-6.3	0.0
Select									
13-14	600-1000	9	3	756 (102.9)	867 (133.3)	700	1000	14.7	42.9
15-17	900-1200	9	3	1067 (113.0)	1033 (88.2)	1000	1000	-3.2	0.0
18-20	1000-1500	10	4	1590 (153.6)	1175 (118.1)	1775	1100	-26.1	-38.0
21-23	1500-1600	8	2	1838 (210.2)	1550 (50.0)	1875	1550	-15.7	-17.3
24-28	2200	6	1	2208 (227.5)	2200 (0.0)	2250	2200	-0.4	-2.2
>28	2200	5	1	2750 (433.0)	2200 (0.0)	2500	2200	-20.0	-12.0

Table 3. Prices paid for delivered veneer logs by Indiana veneer mills, May 1990 and revised May 1989, continued.

Species/Grade /Log Dia.	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)		
		1989	1990	1989	1990	1989	1990	Mean	Median	
Red Oak										
Prime	(\$/MBF)			(\$/MBF)		(\$/MBF)				
16-17	1000-1500	17	5	953 (61.2)	1260 (108.9)	1000	1350	32.2	35.0	
18-20	1000-1450	16	4	1084 (70.4)	1225 (105.1)	1100	1225	13.0	11.4	
21-23	1100-1450	16	4	1203 (78.5)	1275 (77.7)	1200	1275	6.0	6.3	
24-28	1100-1400	10	2	1235 (154.9)	1250 (150.0)	1350	1250	1.2	-7.4	
>28	1100-1400	9	2	1272 (172.2)	1250 (150.0)	1300	1250	-1.7	-3.9	
Select										
16-17	n.a.	9	0	<del>1272</del> 812 (172.2)	n.a.	1300	n.a.	n.a.	n.a.	
18-20	n.a.	6	0	900 (68.3)	n.a.	800	n.a.	n.a.	n.a.	
21-23	n.a.	7	0	1014 (103.3)	n.a.	1000	n.a.	n.a.	n.a.	
24-28	n.a.	4	0	1125 (160.1)	n.a.	1000	n.a.	n.a.	n.a.	
>28	n.a.	4	0	1150 (150.0)	n.a.	1000	n.a.	n.a.	n.a.	



Table 3. Prices paid for delivered veneer logs by Indiana veneer mills, May 1990 and revised May 1989, continued.

Species/Grade /Log Dia.	1990 Range	No. Respon.		Mean (s.e.)		Median		Change (%)	
		1989	1990	1989	1990	1989	1990	Mean	Median
Hard Maple	(\$/MBF)			(\$/MBF)		(\$/MBF)			
Prime									
16-20	600-1000	14	2	611 (68.2)	800 (200.0)	600	800	30.9	33.3
>20	400-1200	7	2	607 (93.5)	800 (400.0)	700	800	31.8	14.3
Select									
16-20	n.a.	5	0	430 (104.4)	n.a.	350	n.a.	n.a.	n.a.
>20	n.a.	5	0	440 (99.2)	n.a.	350	n.a.	n.a.	n.a.
Tulip Poplar									
Prime									
16-20	250-450	9	3	378 (59.0)	367 (60.1)	350	400	-2.9	14.3
>20	300-450	7	4	436 (67.9)	400 (35.4)	400	425	-8.3	6.3
Select									
16-20	n.a.	5	0	295 (43.6)	n.a.	250	n.a.	n.a.	n.a.
>20	n.a.	4	0	319 (47.2)	n.a.	325	n.a.	n.a.	n.a.

## CUSTOM COSTS AND MISCELLANEOUS PRODUCTS

Costs reported for custom activities, Table 4, continue to be highly variable, but within the same range as last year. The average hauling cost stayed around \$1.00 per MBF per mile. This cost hasn't changed substantially since the last oil "crisis." Based on recent gasoline and diesel fuel price increases, average transportation cost should now be at least \$1.10.

The price paid for pallet lumber logs increased \$5 to \$10 per MBF, about consistent with inflation. This increase is attributable to logging and hauling costs, not stumpage costs. Bark remains an attractive by-product. The wide range in prices indicates that bark's value is tied to proximity of the mill to urban landscape markets.

Ash handle logs, Table 6, sold at a premium over ash sawlogs. Declining ash lumber prices will, however, put downward pressure on this small speciality market.

Table 4. Custom costs reported by Indiana mills, May 1990, and revised 1989.

	No. Re- sponses	Range	Mean (s.e.)		Median	
			1989	1990	1989	1990
Sawing \$/MBF	18	100-200	151 (9.4)	140 (5.3)	125	150
Logging \$/MBF	3	55-130	92 (7.2)	79 (12.1)	100	65
Hauling: \$ /MBF	6	30- 75	51 (5.1)	53 (6.6)	50	60
Distance	22	10-120	50 (6.1)	69 (14.2)	50	60
\$/MBF/Mile	n.a.		1.02	0.77	1.00	1.00

Table 5. Prices of miscellaneous products reported by Indiana mills, May 1990 and revised 1989.

	No. Responses	Range	Mean (s.e.)		Median	
			1989	1990	1989	1990
Pallet logs, \$/MBF	18	100-190	135 (4.2)	140 (5.3)	130	140
Pulp Chips, \$/Ton	12	7- 35	16.02 (1.9)	15.36 (2.2)	14.35	14.56
Sawdust, \$/Ton	13	1-7.50	6.90 (1.4)	3.62 (0.5)	5.13	4.00
Bark, \$/Ton	12	3- 27	10.60 (2.8)	10.53 (2.3)	5.13	7.50

Table 6. Prices paid for handle logs by Indiana mills, May 1990.

	No. Responses	Range	Mean (s.e.)	
			1989	1990
White Ash		(\$/MBF)	(\$/MBF)	
No. 1	3	500-700	485	600
No. 2	2	400-500	393	450
No. 3	1	250	333	250
Hard Maple				
No. 1	1	400	345	400
No. 2	1	200	200	200
No. 3	0		150	



## INDIANA TIMBER PRICE INDEX -- UPDATE

The delivered log prices collected in the Indiana Forest Products Price Survey are used to calculate the log value of typical stands of timber. This provides trend-line data that can be used to monitor long-term price trends for timber. The species and log quality distribution used to calculate the weighted averages were reported in Indiana Forest Products Marketing and Wood Utilization Report, Bulletin No. 189, June 16, 1987, p. 13. The values for 1989 are different because the recalculated 1989 prices were used in the analysis. The recalculations were made to include late responses.

The actual price, Table 7, is a weighted average of the delivered log prices reported in the price survey. The price index, Table 7, is the series of actual prices divided by the price in 1957, the base year. The real price, Table 7, is the actual price deflated by the producer price index for all commodities with 1982 as the base year. Thus, the real price series represents the purchasing power of dollars based on a 1982 market basket of industrial goods,

### Average Stand

The value of the logs in an average stand of timber increased from \$56 per MBF in 1957 to \$290 per MBF in 1990. After adjusting for inflation the increase was from \$170 to \$253 per MBF. If the change in real prices from 1957 to 1990 had been constant from year to year, that is, a straight line, the yearly change would have averaged 0.9 percent. Thus, prices on average continued to out pace inflation.

### Quality Stand

The value of the logs in a high quality stand of timber increased from \$65 per MBF in 1957 to \$404 per MBF in 1990. After adjusting for inflation the increase was from \$199 to \$353 per MBF. If the change in real prices from 1957 to 1990 had been constant from year to year, that is, a straight line, the yearly change would have averaged 1.4 percent. Higher quality timber continued to increase in value at a faster rate than average quality timber.

### Can Prices Increase Forever?

Can real price increases of the magnitude observed over the last 33 years continue forever? Logic dictates that they can't. First, keep in mind that the real price increases reported are linear, even though they have been converted to an equivalent average annual compound rate of increase. It would be a grave mistake to make timber investment decisions on the basis of an assumed exponential rate of increase. For example, if the 1.4 percent real price increase for the quality stand were compounded for 30 years the predicted price in 2020 would be \$535. Based on the observed straight line increase the price would be \$440. The difference in price predictions made using an exponential



and a straight line assumption becomes larger as the projection period increases.

Based on a long-term historical perspective America's timber resource is still being "exploited" or "mined." This means that on average we are able to extract the resource at a cost below the full cost to replace in-kind the quantity consumed. A review of commodity price trends (Manthy, 1978) reveals that sawlogs are the only commodity exhibiting a consistent pattern of increasing prices. At the time the continent was settled timber on average had a negative value. Settlers cleared vast acreages of timber but used only a small portion of the volume removed. For all hardwood species except black walnut, the price still isn't high enough to cover the full replacement cost of the timber harvested.

In a market economy the price of a renewable resource which is initially abundant can be expected to rise until it reaches a level adequate to cover all replacement costs. The largest cost is of course time -- opportunity cost. At this point supply and demand theoretically will balance. This equilibrium will change over time in response to market conditions for substitute products, land values, and many other factors. Supply means the portion of the timber inventory available for commercial harvest. Thus, continued set-asides will move us to equilibrium quicker. On the other hand, the government could greatly disturb future equilibrium market conditions by allowing harvesting in set-aside areas in times of emergency. Many historical examples can be cited of economies for which the timber resource was eliminated for all practical purposes (Perlin, 1989).

Once the conditions necessary for equilibrium develop, further price increases should be based on an increase in consumer preferences for particular species and uses for which there is no substitute. The only example of this is the very small segment of the furniture and other decorative markets where real wood solids are used. In all other applications substitutes for wood are already technically available.

Table 7. Weighted average actual price, price index, and deflated price for an average and quality stand of timber in Indiana, 1957 to 1990.

Year	Average Stand <sup>1</sup>			Quality Stand <sup>1</sup>		
	Actual Price (\$/MBF)	Index Number	Real Price <sup>2</sup> (\$/MBF)	Actual Price (\$/MBF)	Index Number	Real Price <sup>2</sup> (\$/MBF)
1957	55.5	100.0	170.1	65.0	100.0	199.2
1958	54.3	97.8	164.2	64.6	99.4	195.3
1959	54.7	98.6	165.0	66.6	102.5	200.9
1960	57.9	104.3	174.5	68.1	104.8	205.2
1961	59.4	107.0	179.8	68.7	105.7	207.9
1962	59.8	107.7	180.4	71.1	109.4	214.5
1963	59.4	107.0	179.8	73.3	112.8	221.8
1964	60.8	109.5	183.6	73.2	112.6	221.1
1965	64.9	116.9	192.1	78.4	120.6	232.1
1966	69.6	125.4	199.5	85.1	130.9	243.9
1967	71.8	129.4	205.3	86.3	132.8	246.8
1968	76.4	137.7	213.2	94.6	145.5	264.0
1969	78.6	141.6	211.1	96.9	149.1	260.2
1970	83.9	151.2	217.3	101.7	156.5	263.5
1971	86.8	156.4	218.0	105.5	162.3	264.9
1972	89.6	161.4	215.2	108.2	166.5	259.8
1973	113.0	203.6	241.0	135.3	208.2	288.6
1974	134.3	242.0	239.9	164.2	252.6	293.3
1975	124.2	223.8	203.1	159.9	246.0	261.5
1976	132.9	239.5	207.7	167.1	257.1	261.2
1977	143.3	258.2	211.0	183.6	282.5	270.4
1978	180.7	325.6	246.9	226.2	348.0	309.1
1979	199.3	359.1	241.9	253.4	389.8	307.6
1980	207.2	373.3	220.5	298.1	458.6	317.3
1981	206.0	371.2	200.8	277.9	427.5	270.9
1982	200.9	362.0	192.0	273.1	420.2	261.0
1983	200.6	361.4	189.3	258.3	397.4	243.7
1984	233.2	420.2	215.1	313.0	481.5	288.8
1985	210.4	379.1	194.6	270.2	415.7	249.8
1986	224.0	403.6	221.1	309.3	475.8	305.3
1987	257.2	463.4	250.2	328.9	506.0	319.9
1988	262.4	472.8	245.5	342.4	526.8	320.3
1989	287.6	518.2	256.3	410.9	632.2	366.2
1990	290.0	522.5	253.3	403.6	620.9	352.5

<sup>1</sup> See Indiana Forest Products Marketing and Wood Utilization Report, Bulletin No. 189, June 16, 1987, p. 13, for definition of stand quality.

<sup>2</sup> Actual price deflated by Producer Price Index for All Commodities, U.S. Dept. Commerce.



Figure 2. Black cherry lumber prices, monthly, 1948 to Aug. 1990, 4/4 Appala., Hardwood Mkt. Rpt.

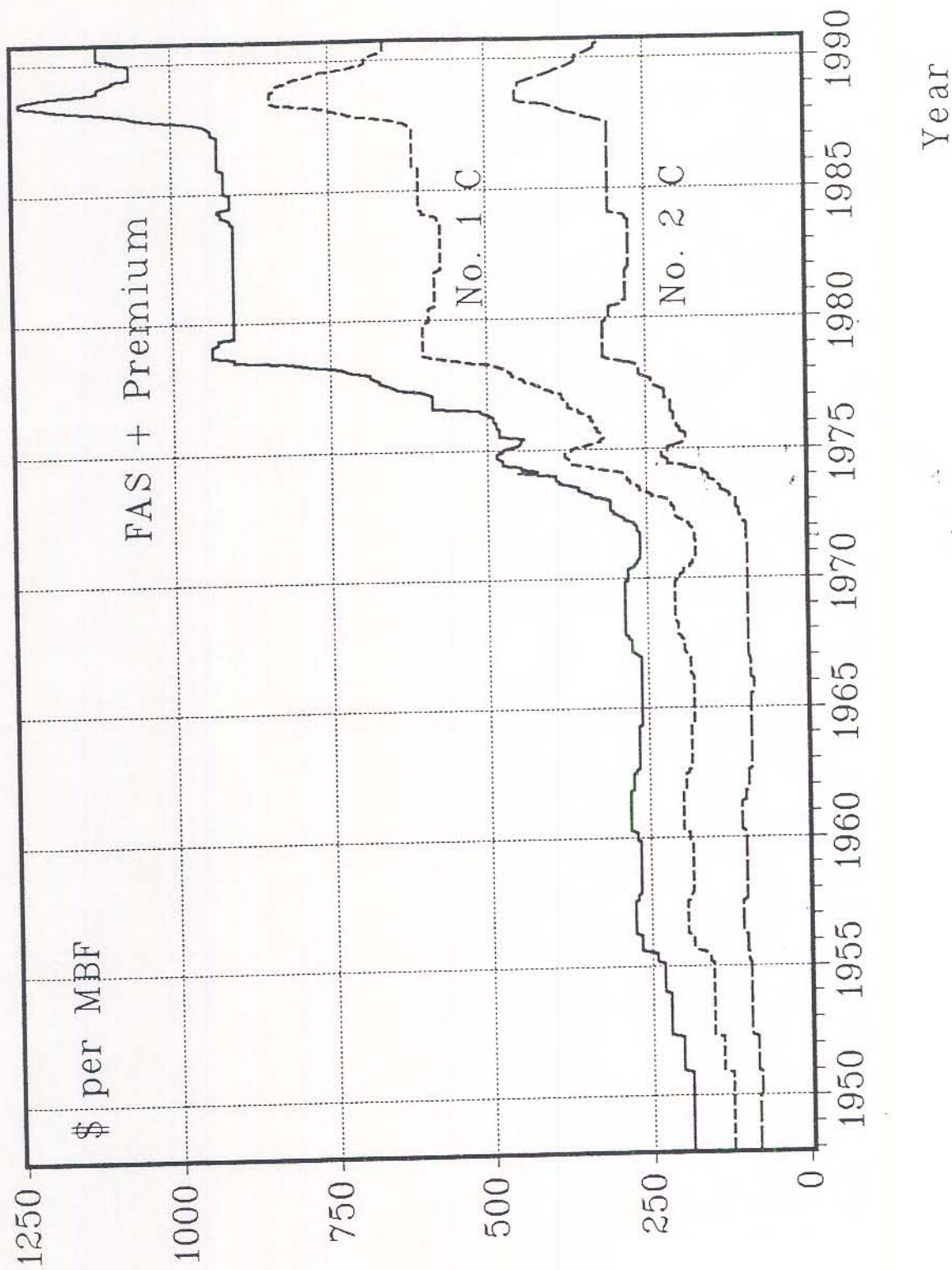


Figure 3. Red oak lumber prices, monthly, 1948 to Aug. 1990, 4/4 Appala., Hardwood Mkt. Rpt.

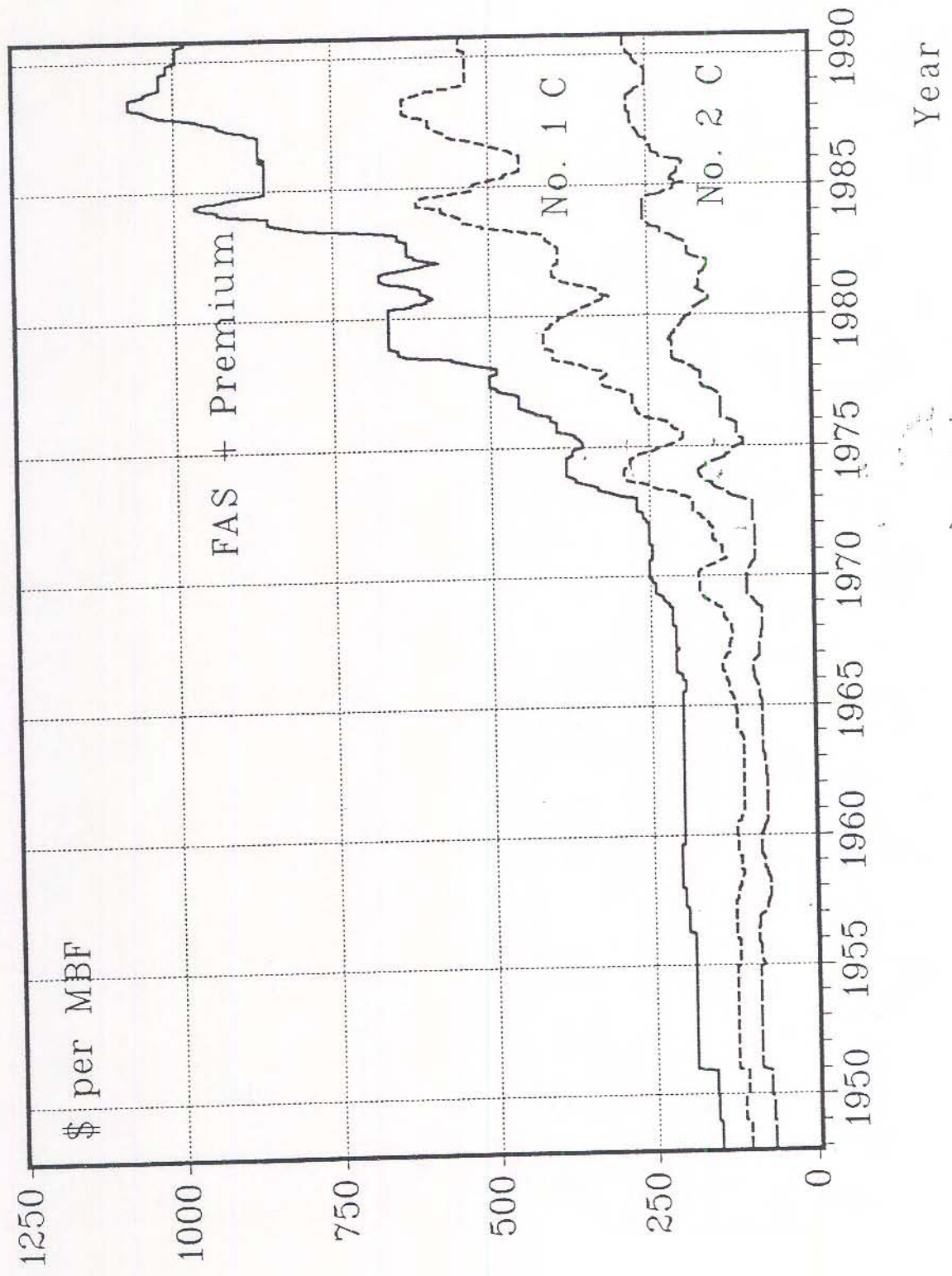




Figure 4. White oak lumber prices, monthly, 1948 to Aug. 1990; 4/4 Appala., Hardwood Mkt. Rpt.

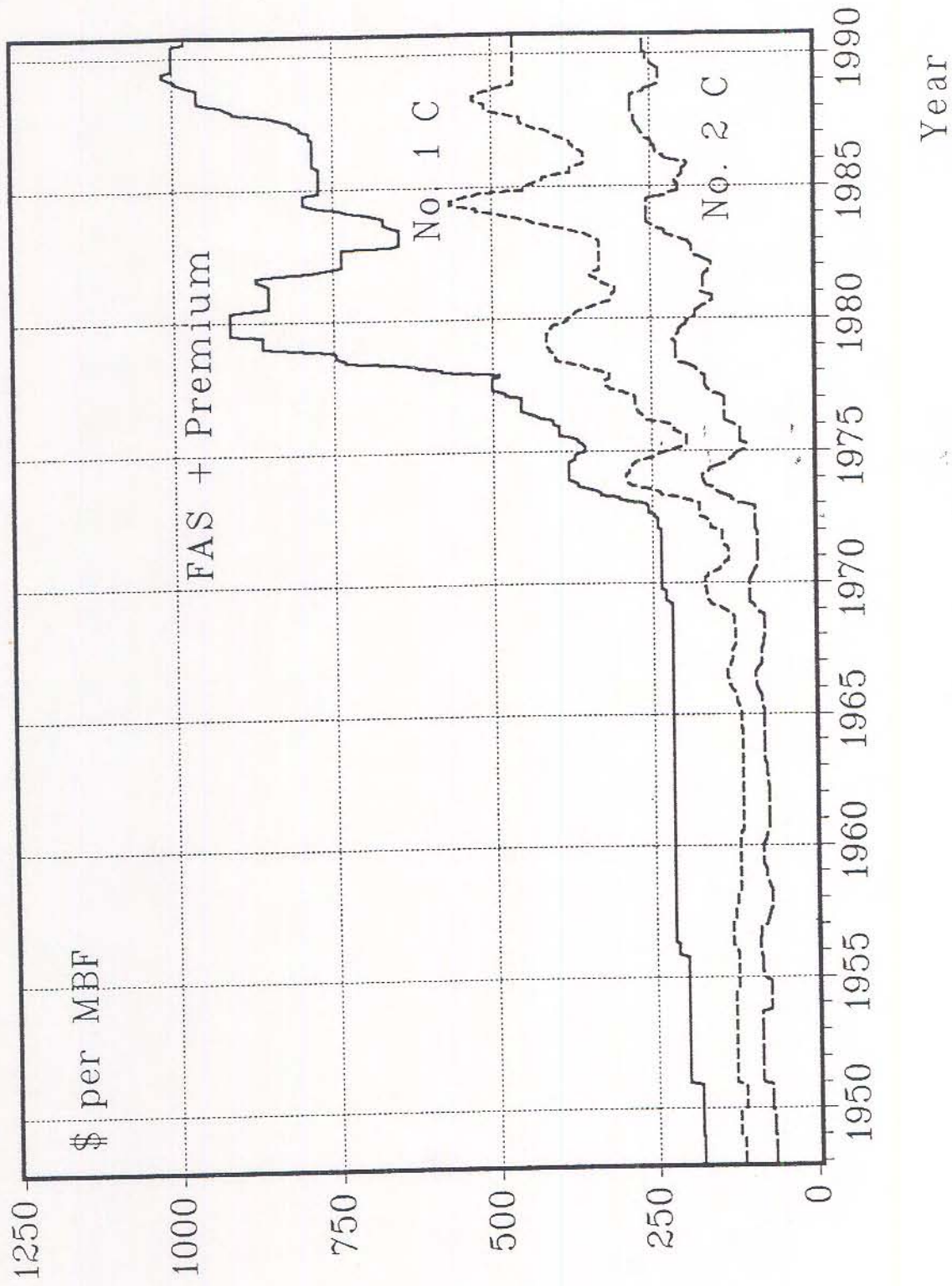


Figure 5. Hard maple lumber prices, monthly, 1948  
Aug. 1990, 4/4 Appala., Hardwood Mkt. Rpt.

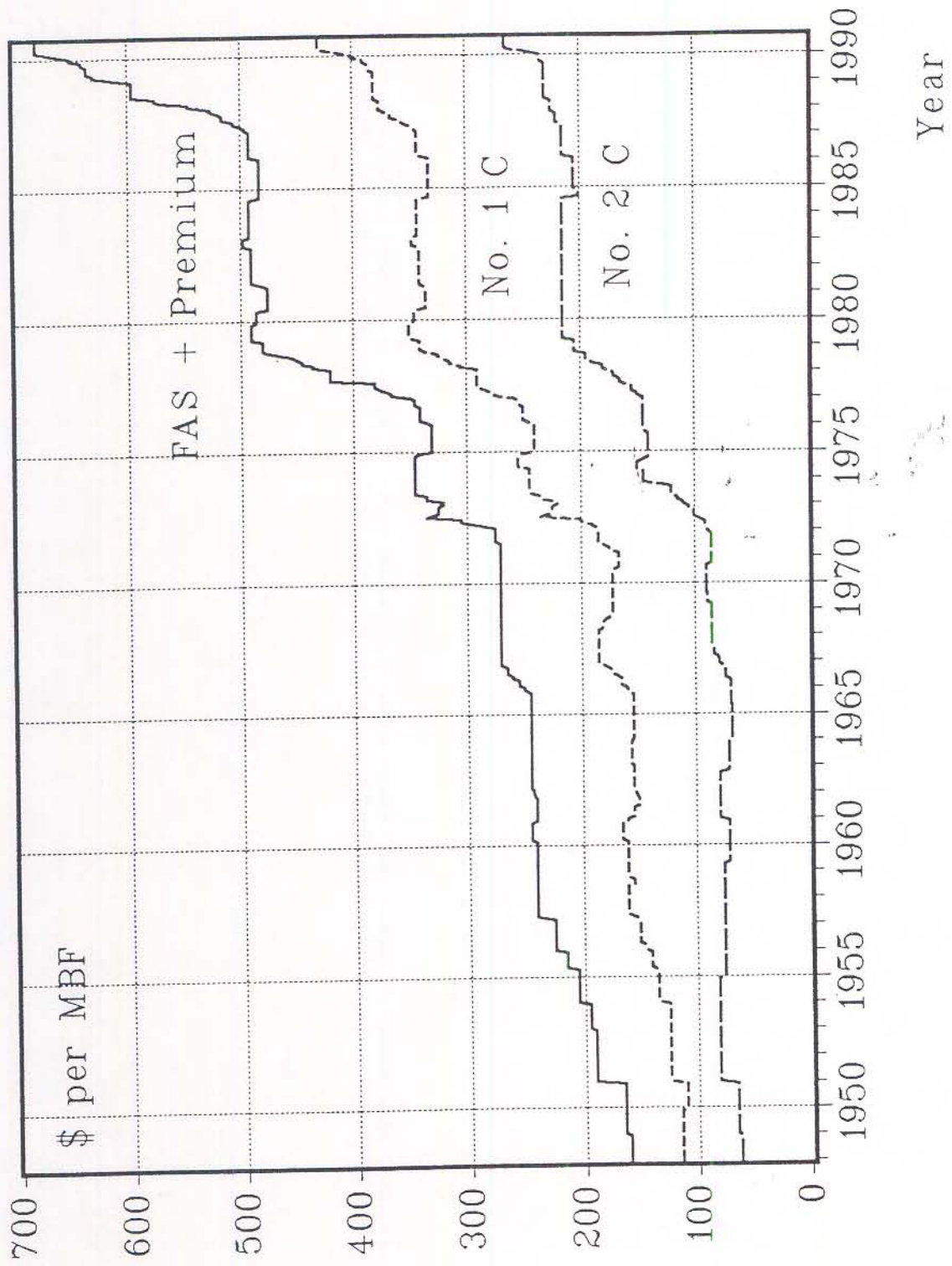


Figure 6. Soft maple lumber prices, monthly, 1948 to Aug. 1990; 4/4 Appala., Hardwood Mkt. Rpt.

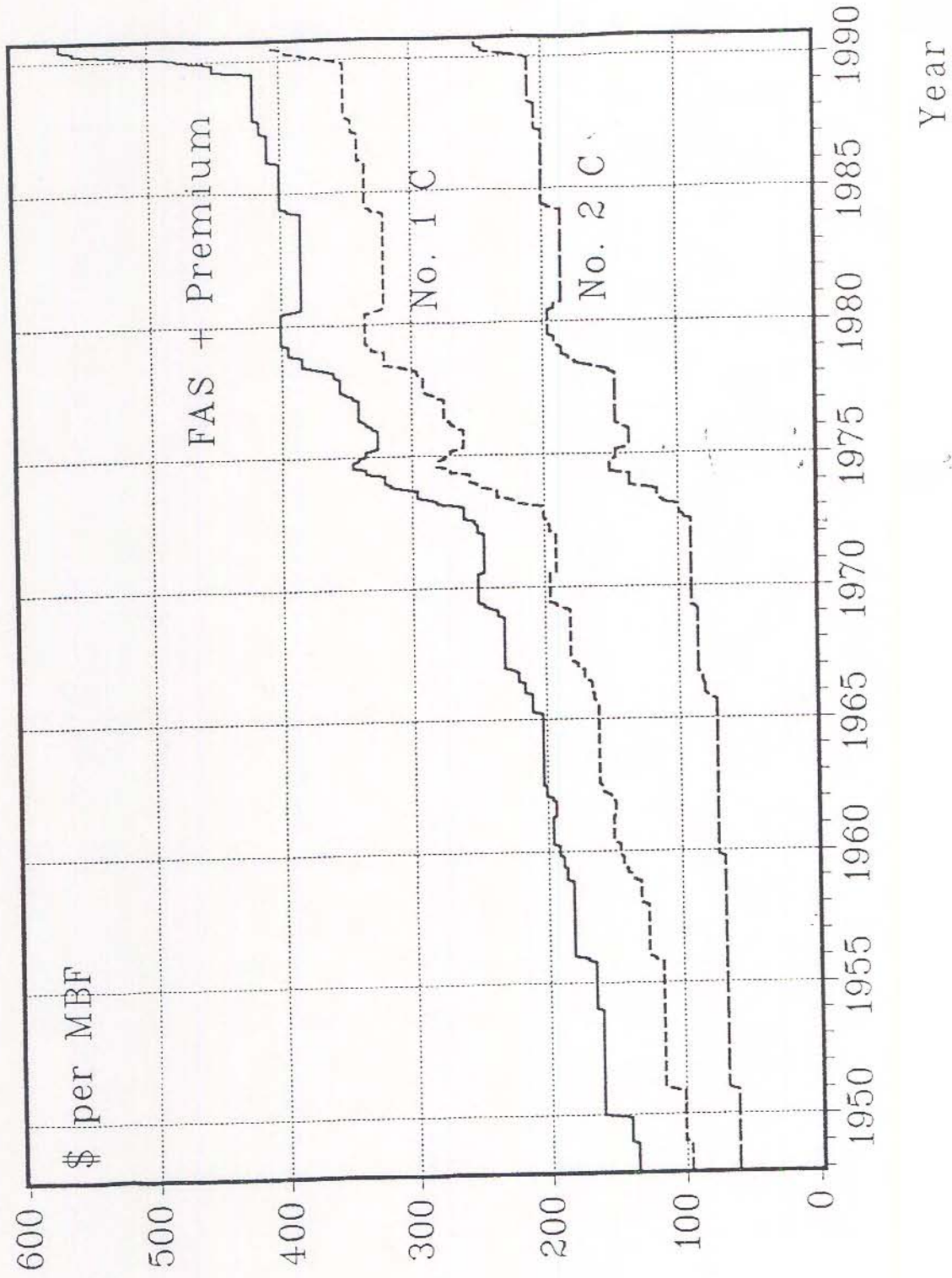




Figure 7. Sycamore lumber prices, monthly, 1948 to Aug. 1990, 4/4 Southern, Hardwood Mkt. Rpt.

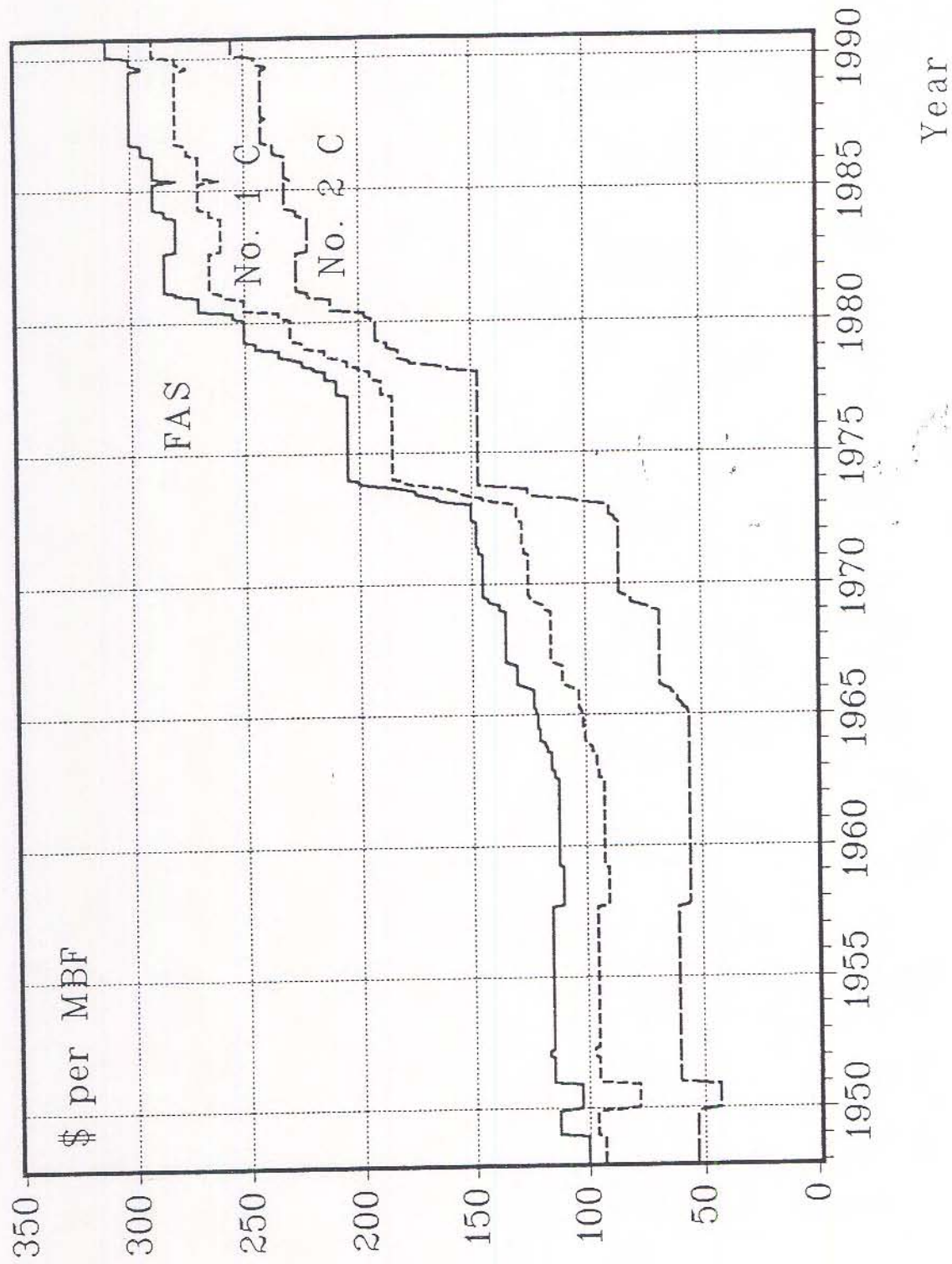




Figure 8. Cottonwood lumber prices, monthly, 1948 to Aug. 1990, 4/4 Southern, Hdwd. Mkt. Rpt.

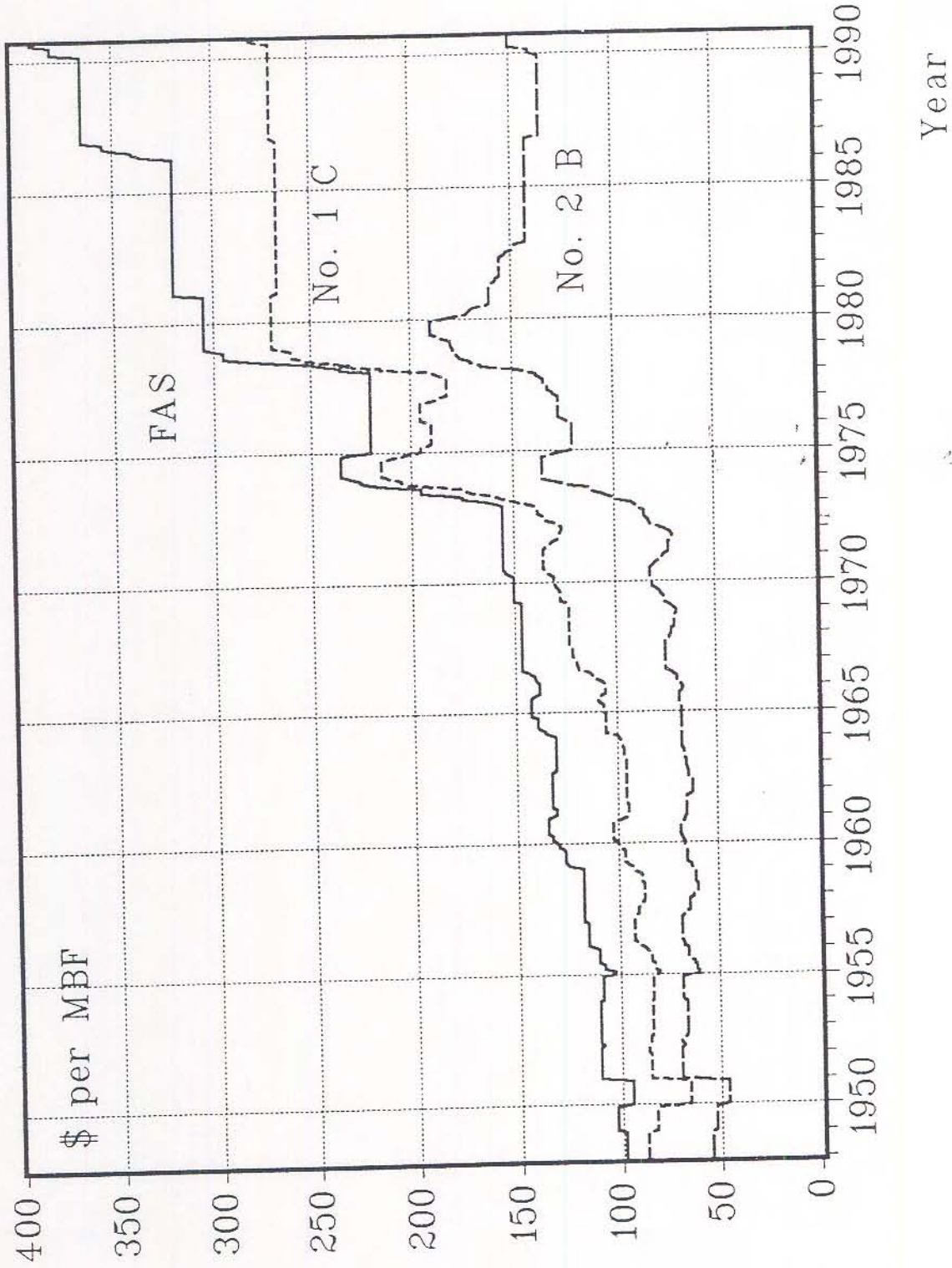


Figure 9. Yellow poplar lumber prices, monthly, 1948 to Aug. 1990, 4/4 Appala., Hdwd. Mkt. Rpt.

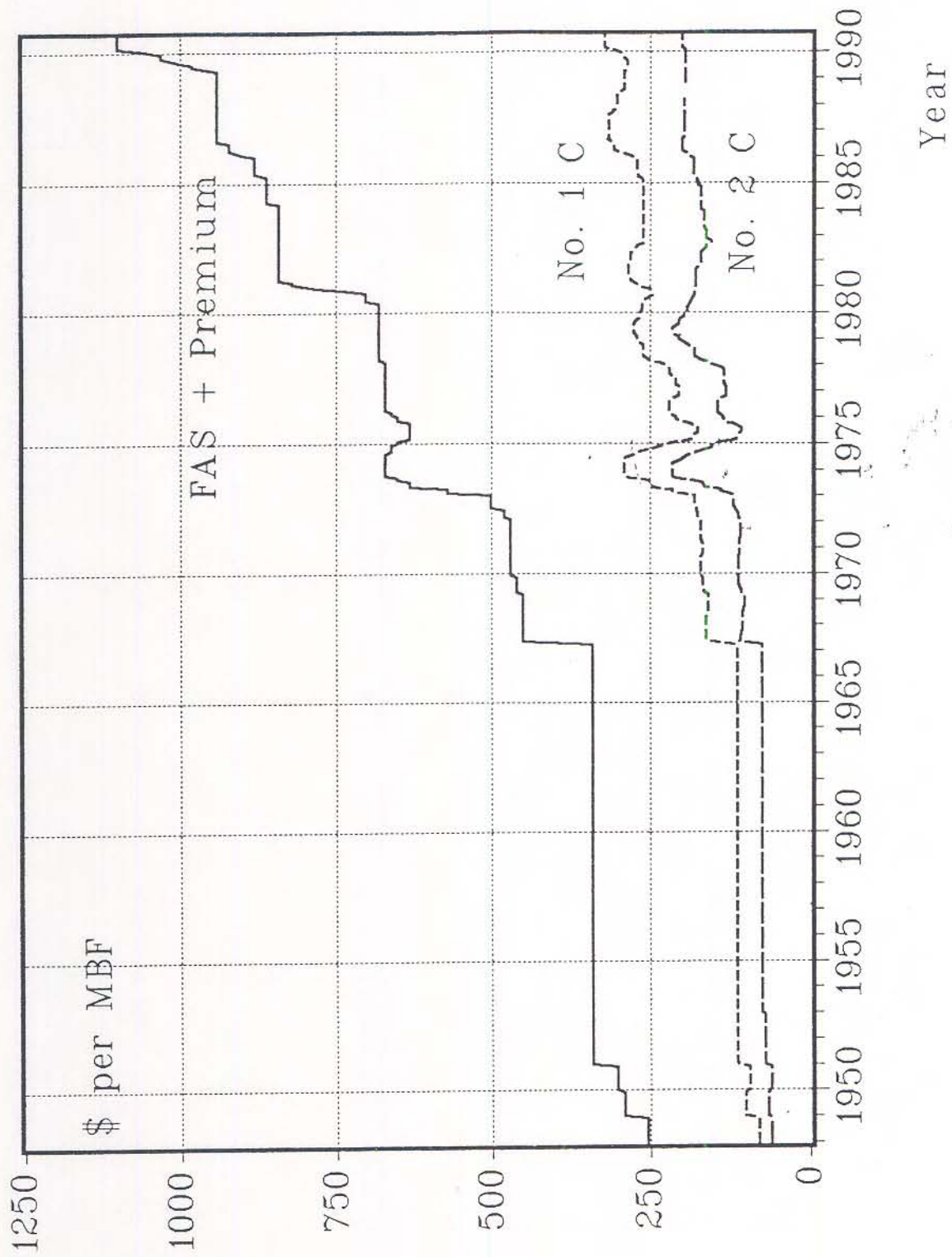


Figure 10. Average stand, actual, deflated and trend line price series, 1957 to 1990.

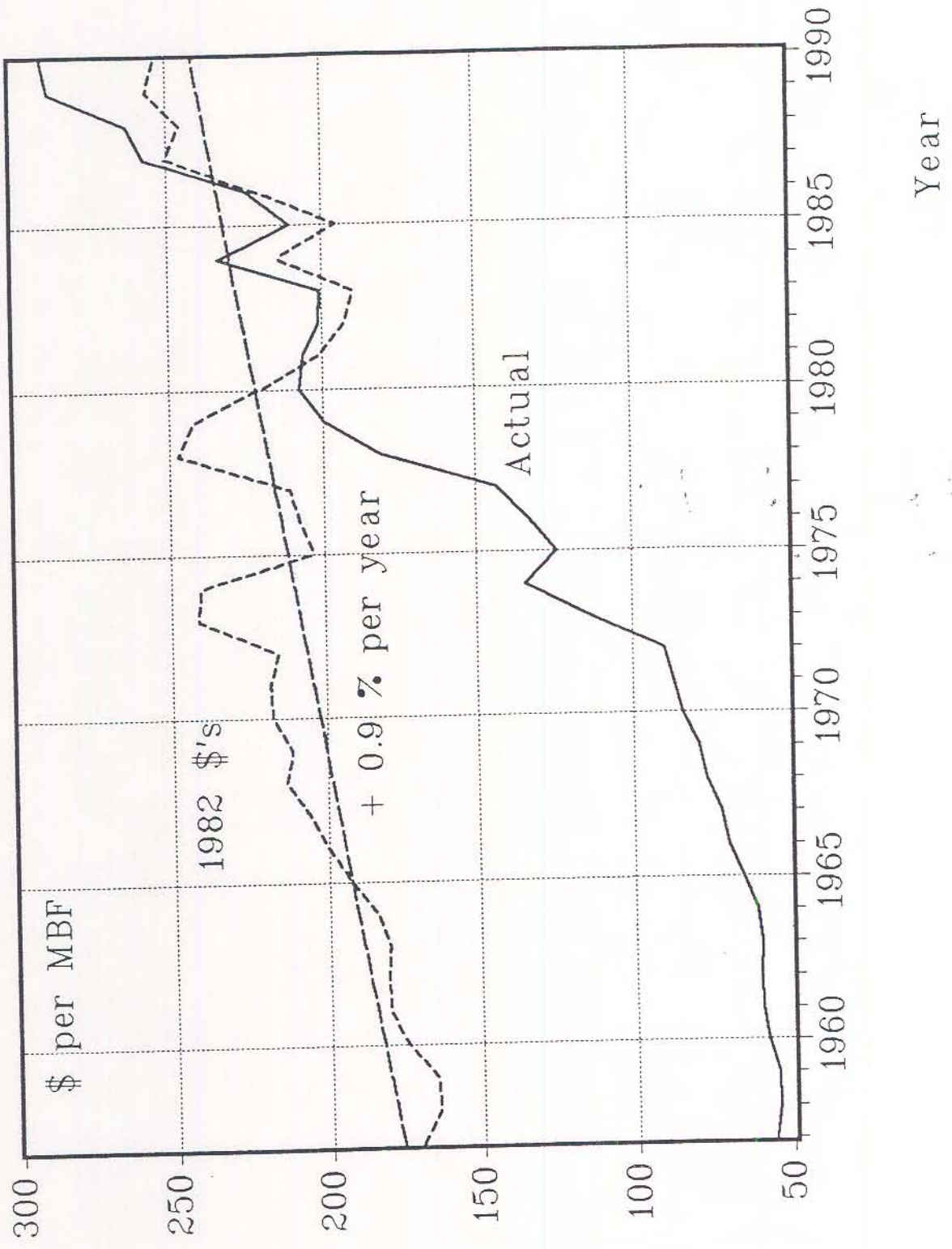




Figure 11. Quality stand, actual, deflated and trend line price series, 1957 to 1990.

