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ANALYZING HISTORICAL AND REGIONAL STUMPAGE PRICE TRENDS

In Georgia

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ANALYZING HISTORICAL AND REGIONAL

INTRODUCTION

The stumpage price for wood is a continual concern to forest landowners, forest industry, and potential investors in forestry. Planning investments in timber and wood products manufacturing facilities always requires an estimate of future forest stumpage prices. Future prices depend on the supply of and demand for wood, and are usually predicted by analyzing past trends in stumpage prices. Price trends are important not only on a national or state basis, but also on a regional basis since wood can be transported economically for only limited distances. Georgia has had less information on price trends than many other states (Rosen 1984), yet has the largest forest industry base in the South. It has also been the center for foreign and institutional investment, and has some of the greatest reported prices in the South (Timber Mart South 1983). However, historical trends have not been available to estimate the relative rise in price in the last few decades.

This study was initiated to examine historical and regional trends in stumpage prices in Georgia to help provide better information to forest owners and forestry planners in the state. The primary purpose of this study was to collect, summarize, and analyze data on the historical and regional stumpage prices for wood in the state of Georgia. Aggregating past data and determining probable price trends will provide investors with better information.



STUMPAGE PRICE TRENDS

In Georgia

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Procedures

To accomplish the objectives of the study it was necessary to obtain many years of price information from a large geographical area. Price data has not been formally collected in Georgia, so secondary data was obtained on timber sale information from private- and state-owned lands in the state made by the Georgia Forestry Commission. The Commission has records of assistance to private landowners dating back to the mid-1940s. Commission foresters provide forest management assistance to nonindustrial private forest landowners throughout the state. Part of the management assistance program includes the provision of timber marking services to private owners at a nominal cost. Commission Service Foresters mark and tally each tree and then provide a marking report to the landowners. The report is a summary of the volumes marked by species, size class, and product class. In addition, the foresters provide landowners with a list of potential timber buyers in the area, furnish a sample tim-

ber sale contract, and recommend that owners receive several bids for the sale. Actual contacts with the buyers and sale administration must be performed by the landowners.

Since the early 1970s, the Forestry Commission has also administered sales on state-owned forest lands. The marking procedures are similar. However, for state sales, the Commission also administers each sale, usually using a sealed bid process. Records of these private and state sales are kept in local Georgia Forestry Commission offices and provided the data for this study. Cases that involved timber marking performed by Commission foresters were selected for further examination. Many of these cases had received follow-up examinations to note the performance of harvesting crews and often listed the price paid to the landowner for his stumpage. Sales resulting from insect, disease, or weather damage, which can de-value stumpage, were excluded from the sample.

Data Analysis

The data collected from the Georgia Forest Management case records consisted of 333 timber sales conducted from 1949 to 1984. There were 169 pine sawtimber sales, 187 pine pulpwood sales, 29 hardwood sawtimber sales, and 4 hardwood pulpwood sales. The raw data were categorized by product class, Forestry Commission District (Figure 1), and time.

Average prices by district were calculated for each year that data were available. Tables 1 and 2 were made from the averages for easy reference. Summary statistics were calculated for product prices, product volumes and other important sale characteristics (Table 3). The small number of hardwood sales did not warrant further analysis. Therefore, the remainder of this discussion deals with pine pulpwood and sawtimber only.

Nominal (including inflation) and real (without inflation) statewide averages by year were calculated for pine sawtimber (Table 4). Some regional variation in price was evidenced by a \$15.60 per thousand board foot (MBF) mean difference in northern and southern prices. However, this was not statistically significant according to group t-test comparisons. Thus statewide averages were used for the statistical analysis in order to provide a larger sample.

Nominal and real regional averages by year were calculated for pine pulpwood, and are shown in Tables 5 and 6. Forestry

Commission districts 1 through 6 comprised the North Georgia Region (I); districts 7 through 12 comprised the South Georgia Region (II). Unlike sawtimber, the pulpwood data were sufficient to permit analysis for each region. The sawtimber and pulpwood annual price series served as the basis for further analyses.

To account for the affect of inflation, nominal prices were deflated to 1952 dollars using the GNP Implicit Price Deflator. Real prices were determined by discounting each year's nominal price to 1952 levels. The price deflator served as the discount rate.

The nominal and real price series were graphed over time and appear as Figures 2 through 7. Price indices were constructed on both nominal and real prices to show how later years compare to the base year of 1952.

Trend-line regression was used to determine long term annual rates of increase. It was applied to nominal prices, yielding a 5.4 percent per year increase for sawtimber, a 3.8 percent per year increase for pulpwood in region I, and a 5.2 percent per year increase for region II. The same procedure was applied to real prices yielding a 1.14 percent increase per year for sawtimber, a 0.55 percent decrease per year for pulpwood region I, and a 0.85 percent increase per year for region II.

Table 1. Yearly Average Sawtimber Stumpage Prices, by Forestry Commission District^{1/}

Year	District											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1952	-	24.00	22.50	31.25	-	-	45.82	-	37.53	-	-	-
1953	-	-	20.37	-	-	30.00	-	-	35.50	-	-	-
1954	-	-	23.45	54.54	-	32.26	-	-	25.83	-	-	-
1955	-	-	30.50	-	-	25.00	-	-	25.85	-	-	-
1956	-	-	29.00	35.50	-	35.00	25.00	-	-	35.17	-	-
1957	-	-	30.00	31.77	-	30.00	25.00	-	-	39.49	-	-
1958	-	-	30.00	27.61	-	30.00	-	-	-	50.00	-	-
1959	-	-	29.00	32.50	-	36.40	-	-	-	39.63	-	31.21
1960	-	-	-	36.78	-	40.00	-	-	-	38.96	-	53.22
1961	-	-	30.00	-	-	-	-	-	-	-	-	-
1962	-	-	-	-	-	-	-	-	-	-	-	-
1963	-	-	-	-	-	-	-	-	-	-	-	-
1964	-	-	-	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	33.22	-	40.00	-	-
1966	-	-	-	-	-	35.66	-	-	-	-	-	-
1967	-	-	-	-	-	40.00	-	-	-	-	-	-
1968	-	-	32.00	-	-	40.00	-	-	-	-	50.00	-
1969	-	-	-	-	-	40.00	-	-	-	-	-	-
1970	-	-	-	-	-	-	-	-	-	-	-	-
1971	-	-	-	-	-	-	-	-	-	-	-	-
1972	-	-	50.00	-	-	-	-	-	-	-	-	-
1973	-	-	70.33	-	-	85.00	-	-	-	-	-	-
1974	-	-	-	-	-	88.29	80.00	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-	96.00	-	-
1976	-	-	-	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	94.90	-	-	100.00	68.53	-	-
1978	-	-	45.22	-	-	-	-	-	110.05	-	-	-
1979	-	-	-	-	-	-	-	125.00	-	-	-	-
1980	-	-	70.00	-	-	-	-	-	-	-	-	-
1981	-	-	120.00	-	-	-	-	-	-	-	-	-
1982	-	-	133.28	-	-	-	-	-	-	142.04	-	-
1983	-	-	-	-	-	-	-	-	-	148.68	-	-
1984	-	-	130.00	-	157.26	-	-	-	-	161.19	-	-

^{1/} All prices in dollars per MBF Scribner log rule.

Table 2. Yearly Average Pulpwood Stumpage Prices, by Forestry Commission District^{1/}

Year	District											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1952	-	-	3.33	3.00	-	-	-	-	4.80	-	-	-
1953	-	-	4.11	-	-	3.43	-	-	-	-	-	-
1954	-	-	2.97	-	-	3.25	-	-	-	-	-	-
1955	-	-	4.24	-	-	3.57	4.93	-	-	-	-	-
1956	-	-	5.25	3.52	-	5.98	5.87	-	-	6.15	-	-
1957	-	-	4.80	5.00	-	4.88	-	-	-	6.26	-	-
1958	5.25	-	5.00	5.42	-	5.00	-	-	-	7.28	-	-
1959	4.74	-	5.00	5.87	-	5.63	6.50	-	-	7.50	-	7.25
1960	-	-	6.05	5.33	8.50	8.66	-	-	-	-	-	7.00
1961	5.00	-	-	-	-	-	-	-	-	-	-	-
1962	-	-	7.00	6.47	-	-	-	-	-	-	-	-
1963	-	-	-	-	-	7.00	-	7.00	6.67	-	-	-
1964	-	-	5.00	-	-	-	-	-	-	-	8.00	-
1965	-	-	5.35	-	7.57	-	-	-	-	7.50	-	-
1966	-	-	5.25	-	-	7.00	-	-	-	7.51	-	-
1967	-	-	-	-	-	7.83	-	-	-	9.52	-	-
1968	-	-	7.27	-	-	8.00	-	-	-	-	-	-
1969	-	-	6.34	-	-	6.50	-	8.00	-	8.05	10.00	-
1970	-	-	-	-	-	-	-	-	-	8.78	-	-
1971	-	-	-	-	-	-	-	-	-	-	-	-
1972	-	-	6.00	-	-	-	-	-	-	-	-	-
1973	-	5.00	6.62	-	-	-	-	-	18.00	-	-	-
1974	-	-	8.20	-	-	7.92	17.16	-	14.67	-	-	-
1975	-	-	-	-	-	-	15.77	-	-	-	-	-
1976	-	-	8.94	-	-	-	-	-	20.46	-	-	-
1977	-	-	-	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	20.11	-	-	-	-	-
1979	-	-	-	-	7.32	-	21.12	15.00	-	-	-	-
1980	-	-	-	-	-	-	18.50	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	-	-
1982	-	-	-	-	16.05	-	25.36	-	-	-	-	-
1983	-	-	13.18	-	-	-	20.46	-	-	-	-	-
1984	-	12.00	-	-	-	-	-	-	-	-	-	-

^{1/} All prices in dollars per standard cord.

Table 3. Georgia Timber Sale Data Summary Statistics, 1952-1983

	<u>Number</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Sum</u>
Acres Harvested	330	79.26	130.83	1.00	1340	26155.0
Sale Value	333	\$ 4726.00	\$ 9948.15	\$ 6.00	\$ 103,711.85	\$ 1,573,771.7
Pine Sawtimber Vol. (MBF) Scribner	169	126.94	144.16	2.0	1080.33	21453.53
Pine Pulpwood Vol. (cords)	187	231.18	487.61	2.0	3982.0	43230.25
Hdwd Sawtimber Vol. (MBF) Doyle	29	25.10	41.09	1.0	215.0	727.9
Hdwd Pulpwood Vol. (cords)	4	66.75	85.38	10.00	192.0	267.0
Pine Sawtimber Price (\$/MBF)	169	\$ 48.87	\$ 38.31	\$ 10.00	\$ 174.13	-
Pine Pulpwood Price (\$/cord)	187	\$ 7.09	\$ 4.25	\$ 2.66	\$ 25.36	-
Hdwd Sawtimber Price (\$/MBF)	29	\$ 31.19	\$ 20.03	\$ 5.00	\$ 90.65	-
Hdwd Pulpwood Price (\$/cord)	4	\$ 6.40	\$.74	\$ 6.00	\$ 7.51	-
Pine Sawtimber Vol. (MBF/acre)	169	2.19	1.68	.04	8.72	-
Pine Pulpwood Vol. (cords/acre)	184	4.87	6.72	.15	47.73	-

Source: Georgia Forestry Commission Case Files

Table 4. Nominal and Real Pine Sawtimber Stumpage Prices

Year	Stumpage Price \$/MBF	Price Index	% Change From Previous Year	GNP Price Deflator	Real Price \$/MBF	Real Price Index	Real % Change From Previous Year
1952	34.36	100	-	1.4	34.36	100	-
1953	26.84	78	-23.2	1.6	26.42	76	-24.4
1954	28.44	82	5.9	1.2	27.66	80	4.7
1955	27.96	81	-1.6	2.2	26.61	77	-3.8
1956	33.95	98	21.4	3.2	31.31	91	17.6
1957	31.59	91	-6.9	3.4	28.17	81	-10.0
1958	33.46	97	5.9	1.7	29.34	85	4.1
1959	32.47	94	-2.9	2.4	27.81	80	-5.2
1960	42.24	122	30.0	1.6	35.60	103	28.0
1961	30.00	87	-28.9	0.9	25.06	72	-29.6
1962	-	-	-	1.8	-	-	-
1963	-	-	-	1.5	-	-	-
1964	-	-	-	1.5	-	-	-
1965	36.61	106	-	2.2	28.53	84	-
1966	36.56	106	-0.0	3.2	27.61	80	-3.1
1967	40.00	116	9.4	3.0	29.33	85	6.2
1968	40.50	117	1.2	4.4	28.44	82	-3.0
1969	40.00	116	-1.2	5.1	26.73	77	-6.0
1970	-	-	-	5.4	-	-	-
1971	-	-	-	5.0	-	-	-
1972	50.00	145	-	4.2	28.97	84	-
1973	75.22	218	50.4	5.8	41.20	119	42.1
1974	85.53	248	13.7	8.8	43.06	125	4.5
1975	96.00	279	12.2	9.3	44.21	128	2.6
1976	-	-	-	5.2	-	-	-
1977	87.81	255	-	5.8	36.35	105	-
1978	77.63	225	-11.5	7.4	29.91	87	-3.9
1979	125.00	363	61.0	8.6	44.35	129	48.2
1980	70.00	203	-44.0	9.2	22.74	66	-48.7
1981	120.00	349	71.4	9.4	35.64	103	56.7
1982	142.04	413	18.3	6.0	39.79	115	11.6
1983	143.08	416	0.7	4.2	38.47	111	-3.3
1984	154.17	448	7.7	3.7	39.42	118	6.3

Table 5. Nominal and Real Pulpwood Stumpage Prices, North Georgia

Year	Stumpage Price \$/cord	Price Index	% Change From Previous Year	GNP Price Deflator	Real Price \$/cord	Real Price Index	Real % Change From Previous Year
1952	3.16	100	-	1.4	3.16	100	-
1953	3.65	115	15.5	1.6	3.59	113	13.6
1954	3.07	97	-15.8	1.2	2.99	94	-16.8
1955	3.91	123	27.3	2.2	3.72	117	24.6
1956	5.22	165	33.5	3.2	4.81	152	29.3
1957	4.88	154	-6.5	3.4	4.35	137	-9.5
1958	5.24	165	7.3	1.7	4.59	145	5.5
1959	5.44	172	3.8	2.4	4.65	147	1.3
1960	7.12	225	30.8	1.6	6.00	189	28.8
1961	5.00	158	-29.7	0.9	4.18	132	-30.4
1962	6.73	212	34.6	1.8	5.52	174	32.2
1963	7.00	221	4.0	1.5	5.66	179	2.4
1964	5.00	158	-28.5	1.5	3.98	126	-29.6
1965	5.67	179	13.4	2.2	4.42	139	10.9
1966	6.42	203	13.2	3.2	4.84	153	9.7
1967	7.83	247	21.9	3.0	5.74	181	18.4
1968	7.39	233	-5.6	4.4	5.19	164	-9.6
1969	6.42	203	-13.1	5.1	4.29	135	-17.3
1970	-	-	-	5.4	-	-	-
1971	-	-	-	5.0	-	-	-
1972	6.00	189	-	4.2	3.48	110	-
1973	6.21	196	3.5	5.8	3.40	107	-2.1
1974	8.10	256	30.4	8.8	4.08	129	19.8
1975	-	-	-	9.3	-	-	-
1976	8.94	282	-	5.2	3.91	123	-
1977	-	-	-	5.8	-	-	-
1978	-	-	-	7.4	-	-	-
1979	7.31	231	-	8.6	2.59	82	-
1980	-	-	-	9.2	-	-	-
1981	-	-	-	9.4	-	-	-
1982	16.05	507	-	6.0	4.50	142	-
1983	13.18	417	-17.8	4.2	3.54	112	-21.1
1984	12.00	379	-8.9	3.7	3.07	97	-13.3

Table 6. Nominal and Real Pulpwood Stumpage Prices, South Georgia

Year	Stumpage Price \$/cord	Price Index	% Change From Previous Year	GNP Price Deflator	Real Stumpage Price \$/cord	Real Price Index	Real % Change From Previous Year
1952	4.80	100	-	1.4	4.80	100	57.7
1953	-	-	-	1.6	-	-	-
1954	-	-	-	1.2	-	-	-
1955	4.92	102	-	2.2	4.68	97	-
1956	6.03	125	22.5	3.2	5.56	115	18.7
1957	6.26	130	3.8	3.4	5.58	116	0.4
1958	7.28	151	16.2	1.7	6.38	133	14.3
1959	7.20	150	-1.1	2.4	6.16	128	-3.4
1960	7.00	145	-2.7	1.6	5.90	122	-4.3
1961	-	-	-	0.9	-	-	-
1962	-	-	-	1.8	-	-	-
1963	6.83	142	-	1.5	5.52	115	-
1964	8.00	166	17.1	1.5	6.37	132	15.4
1965	7.50	156	-6.2	2.2	5.84	121	-8.2
1966	7.51	156	0.1	3.2	5.67	118	-2.9
1967	9.52	198	27.7	3.0	6.98	145	24.0
1968	-	-	-	4.4	-	-	-
1969	9.01	187	-	5.1	6.02	125	-
1970	8.78	182	-2.5	5.4	5.57	115	-7.5
1971	-	-	-	5.0	-	-	-
1972	-	-	-	4.2	-	-	-
1973	-	-	-	5.8	-	-	-
1974	17.58	366	-	8.8	8.85	184	-
1975	15.22	317	-13.4	9.3	7.00	146	-20.7
1976	-	-	-	5.2	-	-	-
1977	20.45	426	-	5.8	8.46	176	-
1978	20.11	418	-1.6	7.4	7.75	161	-8.4
1979	18.06	376	10.1	8.6	6.41	133	1.4
1980	18.50	385	2.4	9.2	6.01	125	-6.1
1981	-	-	-	9.4	-	-	-
1982	25.36	528	-	6.0	7.10	148	-
1983	20.46	426	-19.3	4.2	5.50	114	-22.5
1984	-	-	-	-	-	-	-

PINE SAWTIMBER STUMPAGE PRICES

GEORGIA 1949 TO 1984

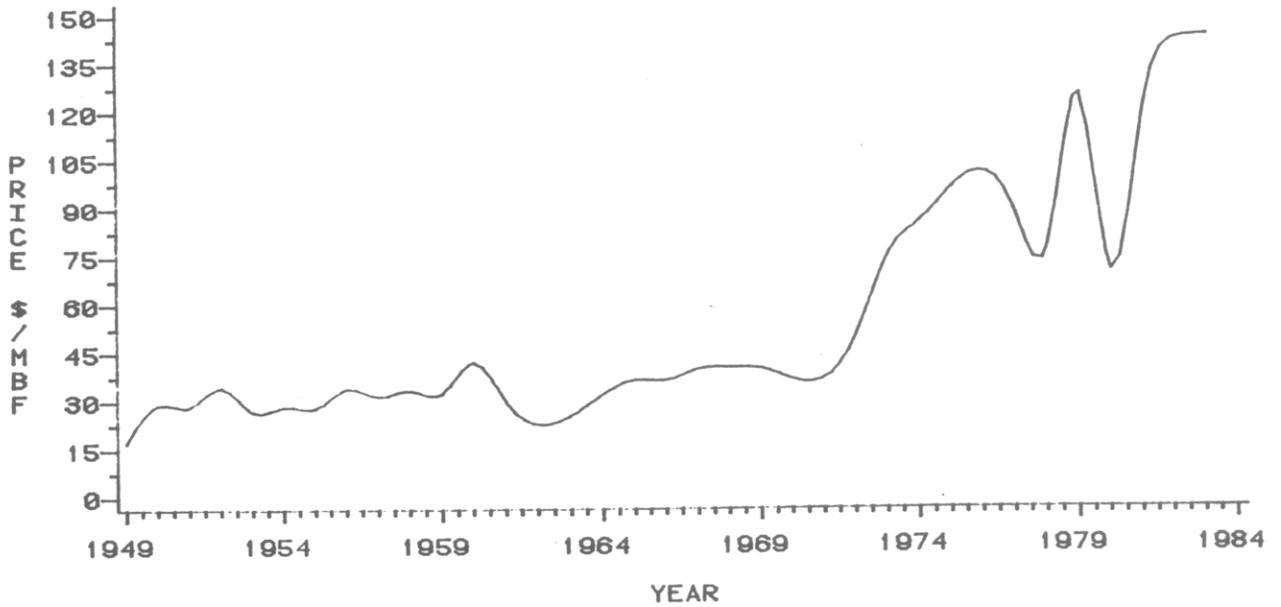


Figure 2. Actual Pine Sawtimber Stumpage Prices in Georgia, 1949 to 1984.

REAL PINE SAWTIMBER STUMPAGE PRICES

GEORGIA 1952 TO 1983

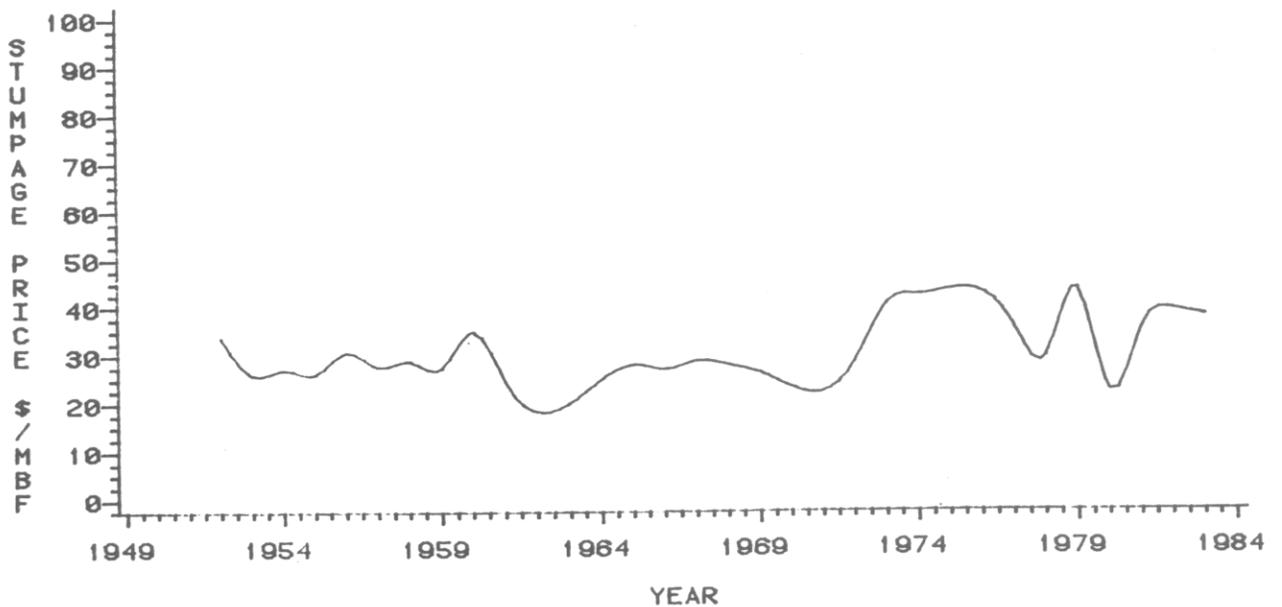


Figure 3. Real Pine Sawtimber Stumpage Prices, 1952 to 1983.

PINE PULPWOOD STUMPAGE PRICES

REGION I
GEORGIA 1952 TO 1984

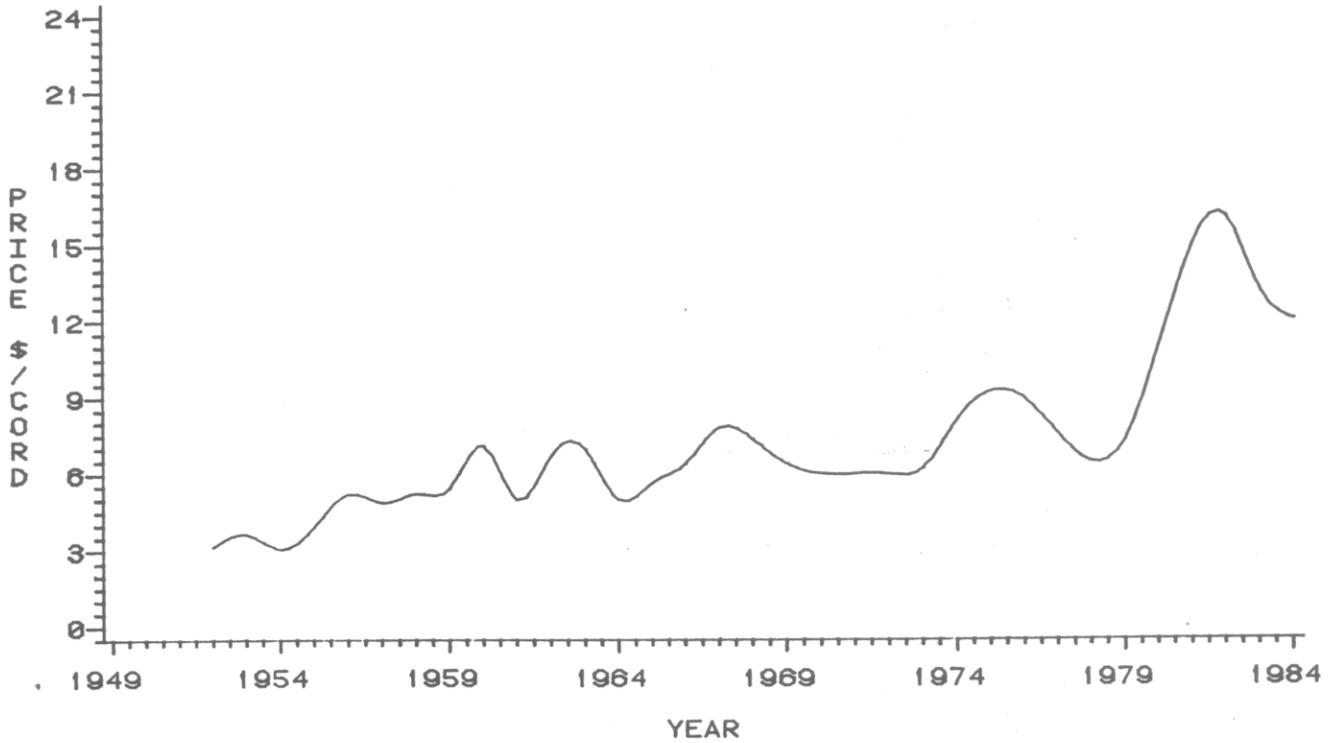


Figure 4. Actual Pine Pulpwood Stumpage Prices in North Georgia, 1952 to 1984.

REAL PINE PULPWOOD STUMPAGE PRICES

REGION I
GEORGIA 1952 TO 1984

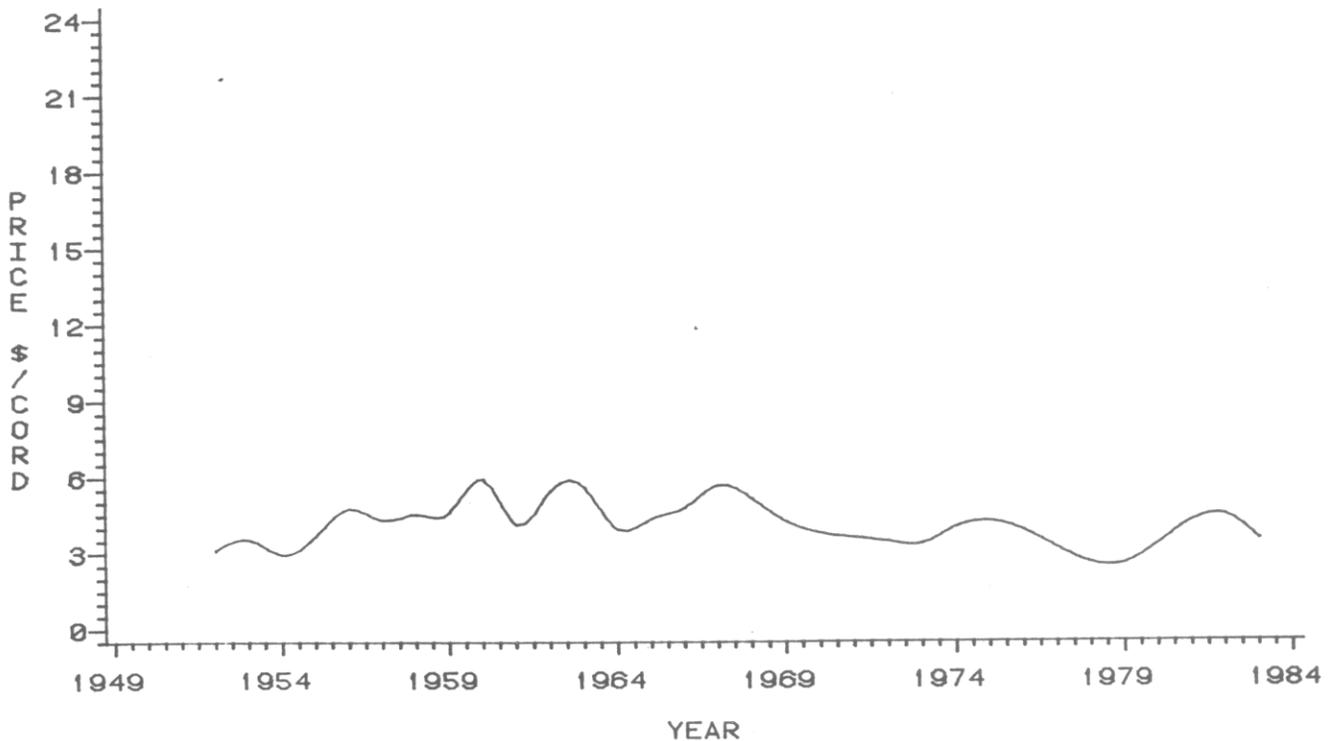


Figure 5. Real Pine Pulpwood Stumpage Prices in North Georgia, 1952 to 1984.

PINE PULPWOOD STUMPAGE PRICES

REGION II
GEORGIA 1952 TO 1984



Figure 6. Actual Pine Pulpwood Stumpage Prices in South Georgia, 1952 to 1984.

REAL PINE PULPWOOD STUMPAGE PRICES

REGION II
GEORGIA 1952 TO 1984

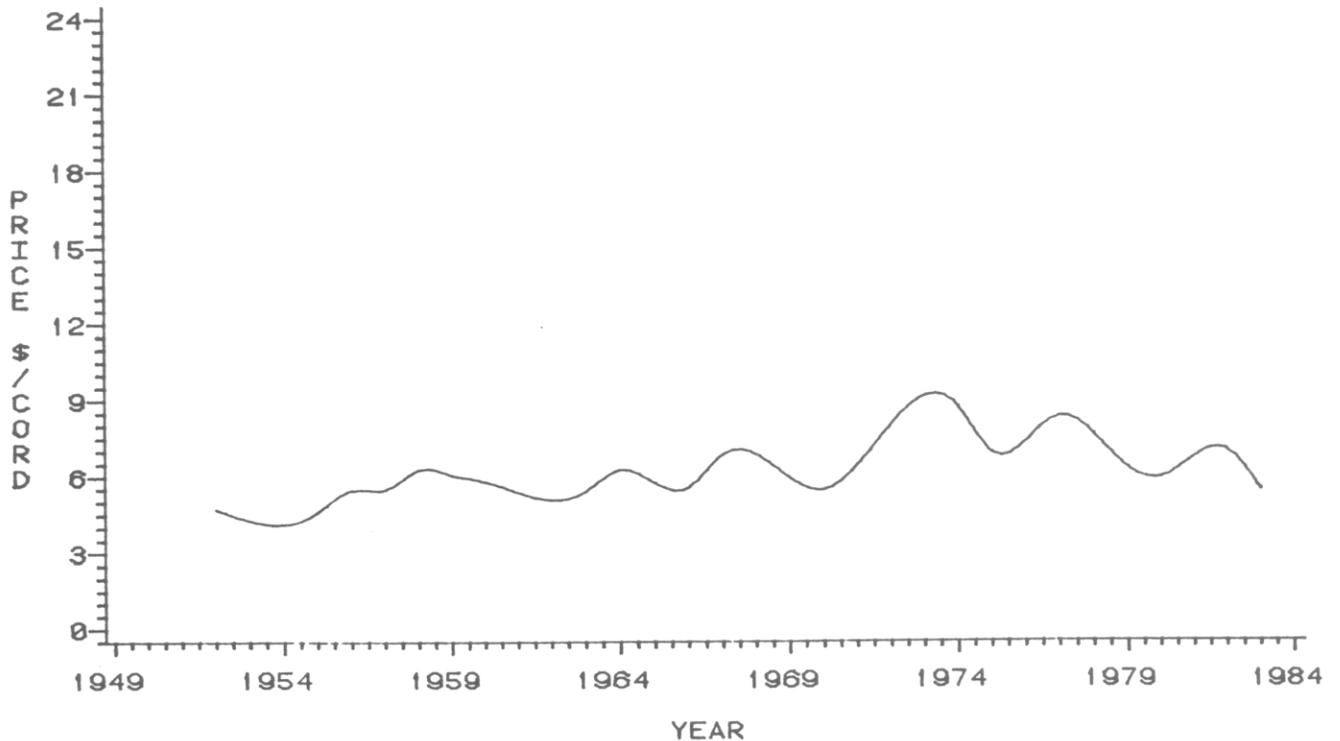


Figure 7. Real Pine Pulpwood Stumpage Prices in South Georgia, 1952 to 1984.

DISCUSSION

Sawtimber stumpage prices remained relatively constant from 1950 to 1960, fluctuating between \$30 and \$40 per MBF. This was also the case for the South in general (Anderson 1969). Nominal prices exhibited an upward trend throughout the 1970's and early 1980's, exhibiting small deviations from the mean. In the past ten years, however, real prices have shown a general decline, possibly caused by a depressed lumber market due to the high inflation and reduced housing starts. Since 1952 the real rate of increase was substantially less than the nominal rate of increase, indicating the strong influence of inflation on prices. However, Georgia sawtimber prices have appreciated at an average rate at least one percent per year greater than the inflation rate. Volatility in the sawtimber market is reflected by the percent changes for one year to another. Nominal values ranged from -44 to +71 percent. Real percent changes were similar since percent changes are independent of the relative level of prices.

Pulpwood stumpage prices exhibited less volatility than did sawtimber prices. Annual percent changes were smaller and less erratic. Nominal prices in both regions showed modest annual increases until the late 1970's and early 1980's. Nominal prices in region II were significantly greater than prices in region I, confirming the general belief that prices differ between regions within the state. Real prices in region II were greatest in the late 1970's and have decreased since then. Real prices in region I have remained less than 1960 levels for the past 15 years. The rate of increase for region II is encouraging. Milliken and Cabbage (1985) found no real pulpwood increases using southwide national forest timber sales. Thus, South Georgia has had greater pulpwood increases than other parts of the South, as many people in the industry have believed.

The negative increase for region I is disturbing, but not unexpected. Conversations with Commission foresters familiar with the Atlanta area suggest that this area is a source of inexpensive pulpwood. As areas are cleared for commercial and residential construction, the timber present is often considered a nuisance. Therefore, local forest products firms and wood dealers are able to procure pulpwood at low prices, leading to reduced prices throughout much of the Northern Region. Also mountain logging increases harvesting costs, leading to lower (residential) stumpage prices.

Overall, real prices for sawtimber and pulpwood in region II (South Georgia) have increased at more than the rate of inflation for the past 32 years. This should be encouraging to long term investors in forestry. The drop in real prices for the past few years may indicate that we are nearing the low point in the cycle and can expect prices to improve in the near future. Improvements in the economy may make this assumption reasonable, perhaps stimulating investments in forest management.

In South Georgia the real price increases for pulpwood indicate increasing resource scarcity. Again, this should be attractive to timberland investors, since pulpwood prices are less volatile and pulp and paper industries are apt to continue to demand large volumes of wood. Naturally, forest industry and procurement foresters are less likely to be pleased with real price increases.

The prospects for improved pulpwood markets in North Georgia are not as good. Urban sprawl continues to advance into counties surrounding the Metro Atlanta area. Perhaps a strong urban forestry program could minimize the clearing of forest land, providing some improvements to present market prices for landowners. For the industry, pulpwood prices will remain relatively cheap, at least until available pine inventories decrease significantly.

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Cost 32,433
Quantity 5000