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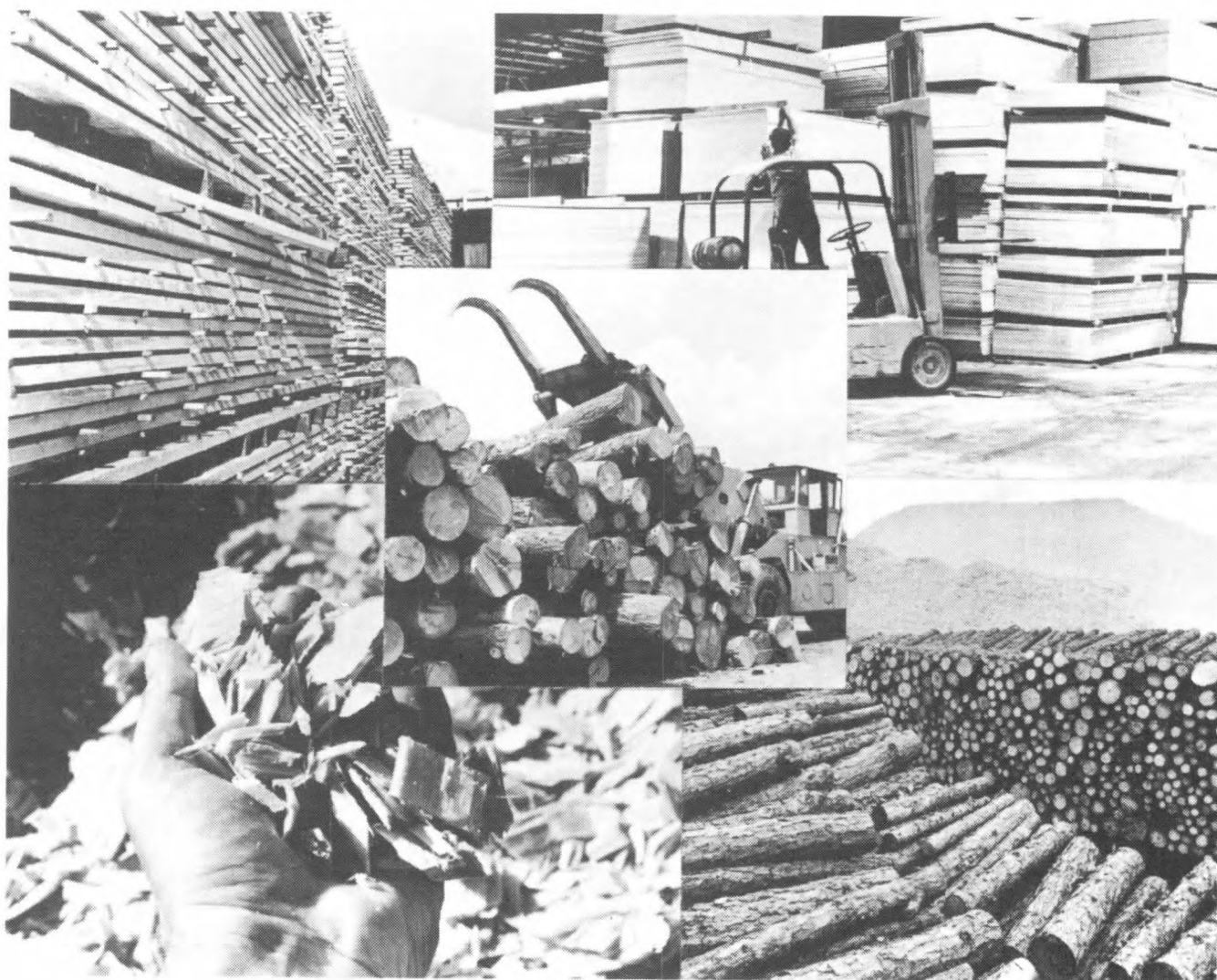
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MISSISSIPPI'S Forest Products Industry: Performance and Contribution to the State's Economy, 1970 to 1980

Con H Schallau, Wilbur R. Maki, Bennett B. Foster, and Clair H. Redmond



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Abbreviations

States

AL	Alabama
AR	Arkansas
FL	Florida
GA	Georgia
KY	Kentucky
LA	Louisiana
MS	Mississippi
NC	North Carolina
OK	Oklahoma
SC	South Carolina
TN	Tennessee
TX	Texas
VA	Virginia
SO	South
US	United States

Industries

FPI	Forest Products Industry
LWP	Lumber and Wood Products
PAP	Paper and Allied Products
WF	Wood Furniture

Authors

CON H SCHALLAU is a research economist at the Pacific Northwest Research Station, Forestry Sciences Laboratory, 3200 Jefferson Way, Corvallis, Oregon 97331. WILBUR R. MAKI is a professor, University of Minnesota, Department of Agricultural and Applied Economics, St. Paul, Minnesota 55108. BENNETT B. FOSTER and CLAIR H. REDMOND are, respectively, forest economist and economist, USDA Forest Service, Southern Region, State and Private Forestry, 1720 Peachtree Road N.W., Atlanta, Georgia 30367.

Abstract

Schallau, Con H; Maki, Wilbur R.; Foster, Bennett B.; Redmond, Clair H. 1988. Mississippi's forest products industry: performance and contribution to the State's economy, 1970 to 1980. Res. Pap. PNW-RP-398. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 22 p.

The forest products industry is one of Mississippi's basic industries, and in 1980, it accounted for about one of six basic jobs. Mississippi was one of the majority of Southern States in which the forest products industry improved its competitive position during the 1970's. Between 1972 and 1977, growth in productivity of Mississippi's forest products industry was exceeded by only three other States in the South.

Keywords: Forest products industries, economics (forest products industries), employment (forest products industries), Mississippi.

Preface

This report briefly describes Mississippi's forest products industry--its composition, location, evolution, and relation to economic activity elsewhere in the State, the South, and the Nation.

This is one in a series of reports for each of the 13 Southern States. These reports are companions to an analysis of the interregional competition in the forest products industries of the South and the Pacific Northwest.

Estimates of employment and earnings shown in this report were derived from U.S. Department of Commerce data. All references to dollar amounts are in constant 1977 dollars.

Highlights

- Forest products is one of Mississippi's basic industries; that is, this industry exports products and by doing so brings in new dollars to support economic growth and development. During the 1970's, the forest products industry grew in importance while the role of the State's most important basic industry, agriculture, diminished.
- Mississippi's forest products industry has three segments: paper and allied products, lumber and wood products (not including mobile homes), and wood furniture manufacturing. Lumber and wood products accounted for slightly more than one-half of the industry's employment and earnings. Employment in the wood furniture segment increased significantly between 1970 and 1980; the other two segments experienced a slight decline in employment.
- The rate of growth in average earnings was significantly higher for Mississippi's forest products industry than for the Nation and about the same as the average for the South.
- In 1977, lumber and wood products had the largest share of the \$979 million of value added by Mississippi's forest products industry.
- Paper and allied products had, by far, the highest productivity in Mississippi's forest products industry. Productivity per worker hour was more than twice the average for the State's forest products industry.

- Mississippi was one of the South's most timber-dependent States. It was one of three Southern States where the forest products industry accounted for about one of six basic employees.
- Average annual earnings in the forest products industry in Mississippi were below the average for all States in the South and were considerably less than the average for the United States.
- Mississippi was one of the majority of Southern States in which the forest products industry improved its competitive position from 1972 to 1977.
- Between 1972 and 1977, growth in productivity of Mississippi's forest products industry was exceeded by only three States in the South.

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The Forest Products Economy of Mississippi

The Work Force

Mississippi's estimated full- and part-time work force in 1980 was comprised of an estimated 1.08 million employees and proprietors (see appendix 1, table 1, for sources of employment and earnings data). Mississippi's work force grew slower between 1970 and 1980 than did the national average (20.4 vs. 22.3 percent). Total earnings—wage and salary payments and proprietorial income—grew significantly faster than the national average. Measured in constant 1977 dollars, the State's earnings increased by 36.3 percent vs. 27.4 percent for the Nation. As shown in the following tabulation, manufacturing, services, State and local government, and retail trade were the State's, and the Nation's, four largest employer categories.

Employers	Percent of total employment, 1980	
	Mississippi	U.S.
Major industries:		
Manufacturing (including the the forest products industry ¹)	20.4	19.2
Services	14.9	18.2
State and local government	14.5	12.6
Retail trade	11.4	14.2
Agriculture	9.8	4.4
Self-employed	6.9	6.6
Wholesale trade	5.2	5.0
Construction	4.0	4.1
Transportation	3.8	4.8
Federal civilian	3.7	2.8
Finance, insurance, and real estate	3.1	5.0
Federal military	1.6	2.3
Mining	1.0	1.0
Total ²	100.0	100.0

¹ The forest products industry has three segments: (1) lumber and wood products (SIC 24) except mobile homes (SIC 2451); (2) wood furniture manufacturing (SIC 2511, 2512, 2517, 2521, 2541); and (3) paper and allied products (SIC 26).

² Sum of parts may not equal totals because of rounding.

Components of the Economic Base

Along with total employment, another and perhaps more important way exists to judge an industry's contribution to Mississippi's economy. For the State's economy to grow and develop, it must attract new dollars so residents can buy goods and services produced elsewhere. The industries that export products and services beyond local boundaries (that is, to elsewhere in the State, to other States, and to the world) and bring in new dollars constitute the area's economic base. Generally speaking, most manufacturing employment is classified as economic base (or basic); residentiary employment (for example, barber shops, realty firms, schools, and local government) is geared primarily to producing for local needs. Some services may, however, be basic. Federal military employment provides national defense for all the Nation's citizens, and taxpayers outside Mississippi provide financial support for this activity. Federal military therefore qualifies as one of Mississippi's basic industries.

Residentiary employment and its earnings are supported by the economic base. Money flowing into a State from goods and services sold to businesses, governments, and households outside the State provides the income that reimburses wage earners and the self-employed for their services. This income is largely spent for locally available goods and services. The economic growth of a region thus depends on the success of its economic base; the residentiary activities—which serve businesses, government, and household residents of the State—enhance the business climate and the quality of life of these residents.

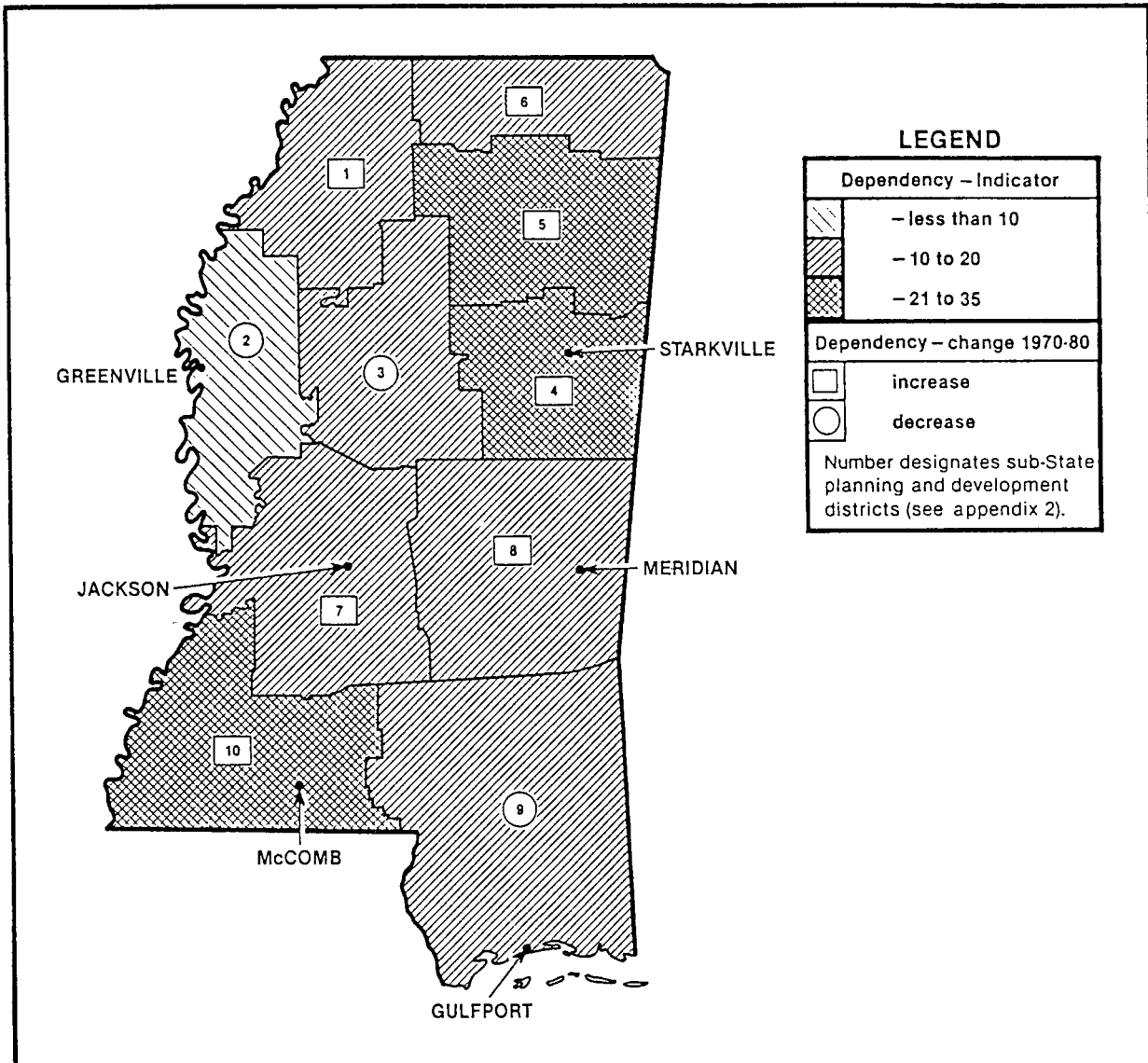
We used the excess earnings and excess employment techniques to identify the industries comprising Mississippi's (or a sub-State district's) economic base. This approach accepts the national distribution of employment and earnings among industries as the norm. Any industry with employment in excess of this norm is considered to be producing for export markets outside the State (or sub-State district) and is part of Mississippi's economic base, provided that the proportion of full-time employment and the productivity of this employment are the same as those for the rest of the Nation. Because of the many part-time workers in farming in Mississippi, the total earnings of this employment is used as an alternative measure of industry dependency. Although the percentage distribution of the total earnings differs sharply from the total employment distribution, the two measures are consistent in that earnings data adjust for the above-average level of part-time employment in a basic industry like farming. For this study, the percentage of Mississippi's excess earnings and employment served as an indicator of the State's dependency on a particular industry for generating new dollars from outside the State (appendix 1, table 2, shows how excess employment and industry dependency indicators for Mississippi were calculated).

In 1980, eight industries accounted for 90.3 percent of the State's excess earnings—that is, its economic base (see tabulation below). These same industries accounted for a slightly larger share (93.8 percent) in 1970. This change reflects a gradual diversification of the economy in Mississippi. In 1970, agriculture, forest products, and textiles accounted for nearly three-fourths of the State's basic earnings; by 1980, they accounted for less than 60 percent. Agriculture accounted for the diminishing importance because the remaining seven industries increased their share of basic earnings and employment. In 1970, forest products was a distant second place to agriculture. By 1980, the forest products industry had closed the gap. Only 7 percentage points separated the basic earnings of the forest products and agriculture industries. In 1970, the forest products industry accounted for one dollar in six generated by the basic sector of Mississippi's economy; by 1980, it accounted for one in five.

<u>Economic base industries</u>	<u>Dependency indicator</u>			
	<u>1970</u>		<u>1980</u>	
	<u>EARN</u>	<u>EMP</u>	<u>EARN</u>	<u>EMP</u>
	(Percent of economic base)			
Agriculture	47.7	51.3	26.4	35.7
Forest products industry	16.2	13.7	19.5	16.3
Textile	11.0	14.1	11.6	17.1
Federal military	7.1	7.7	6.6	9.8
Self-employed	4.0	2.6	10.5	4.3
Food and kindred products	.4	.8	2.2	3.8
Transportation equipment excluding motor vehicles	4.4	2.0	8.2	4.1
Oil and gas extraction	<u>3.0</u>	<u>1.9</u>	<u>5.3</u>	<u>2.5</u>
Subtotal	93.8	94.1	90.3	93.6
All other basic industries	<u>6.2</u>	<u>5.9</u>	<u>9.7</u>	<u>6.4</u>
Total	100.0	100.0	100.0	100.0

Geographical Importance of the State's Forest Products Industry

The contribution of the forest products industry to Mississippi's economic base differed among sub-State districts (see appendix 2 for a listing of counties by district). In district 2, the forest products industry accounted for less than 1 percent of the economic base; in district 5, it was 34.6 percent. Four districts—4, 5, 9, and 10—accounted for 70 percent of the basic employment in the State's forest products industry.

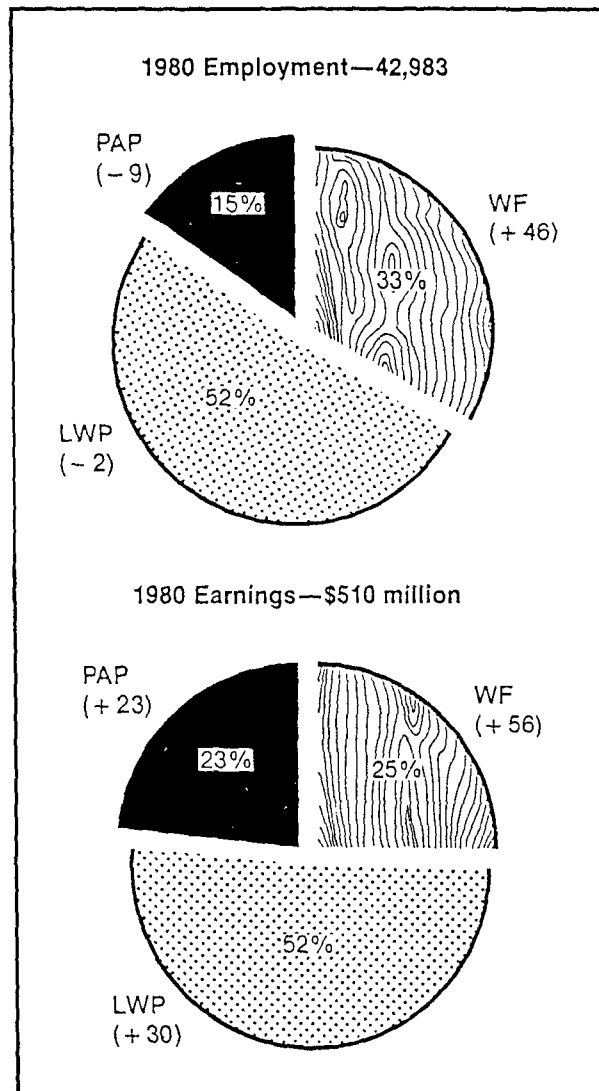


Source: Sub-State estimates for 1970 and 1980 were derived from unpublished county data series provided by the U.S. Department of Commerce, Regional Economic Information System, Washington, DC, and from the Department's *County Business Patterns*. The numbers designate sub-State districts corresponding to the geographical classification of counties as shown in appendix 2.

Composition of the State's Forest Products Industry

Mississippi's forest products industry has three segments: (1) paper and allied products, (2) lumber and wood products (not including mobile homes), and (3) wood furniture manufacturing. The lumber and wood products segment accounted for the same proportion of employment as earnings; paper and allied products had a larger share of earnings than employment; and wood furniture had a larger share of employment than earnings.

While employment decreased in the lumber and wood products and the paper and allied products segments between 1970 and 1980, it increased in wood furniture. The growth in employment in the wood furniture segment is particularly noteworthy because this segment has declined in importance throughout most of the South. Earnings in all three segments increased significantly during the 1970's.

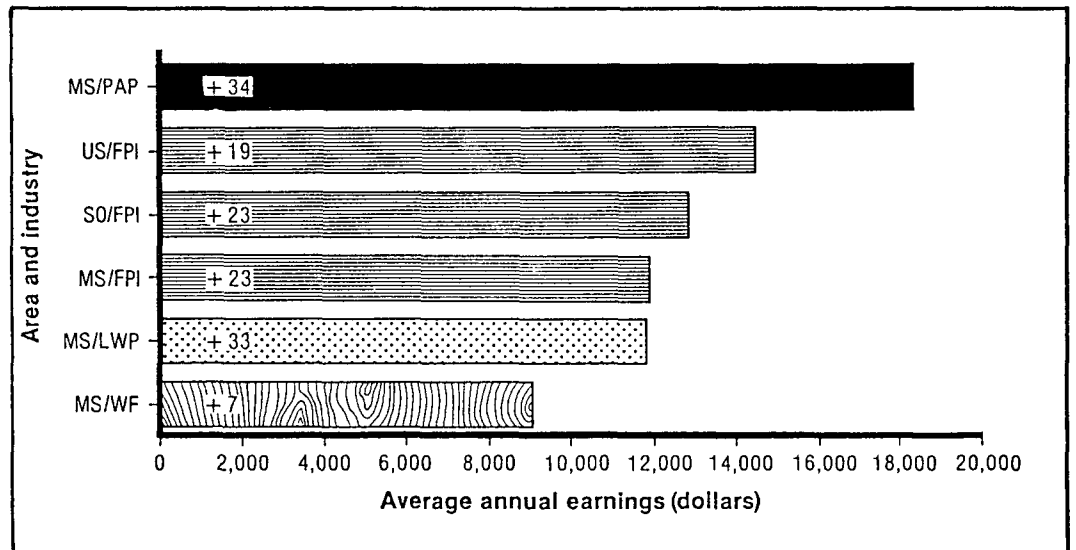


Numbers in parentheses show percentage of change from 1970 to 1980.

Average Annual Earnings per Worker

Average annual 1980 earnings per worker in paper and allied products were greater than were earnings in the other two segments of the forest products industry. Higher average skill levels, capital investment per worker, and unions account for this difference. Earnings in the wood furniture industry were about 50 percent of those for paper and allied products and were significantly below the average for all forest products industries in the South and the United States.

The rate of growth in average earnings was significantly higher for Mississippi's forest products industry than for the Nation and about the same as the average for the South. The rate of change for wood furniture was considerably less than for the forest products industry of the Nation and the South.

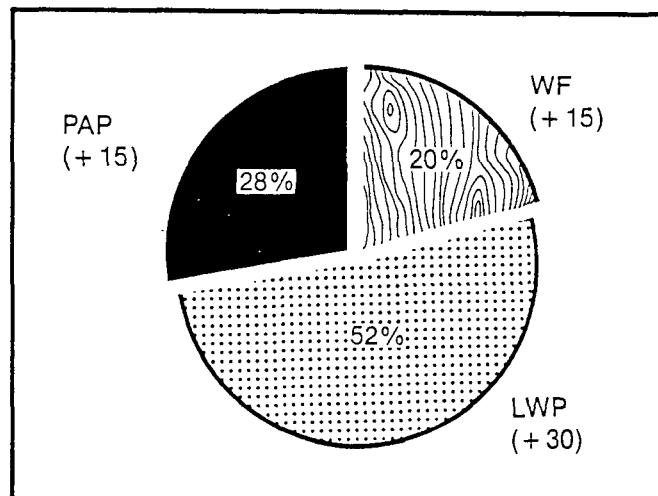


Numbers in bars show percentage of change from 1970 to 1980.

**Value Added by the
Forest Products Industry**

Value added by manufacturing represents income payments made directly to workers and business owners. It is equal to the value of shipments less the cost of materials, parts, supplies, fuel, goods purchased for resale, electric energy, and contract work. Value of shipments includes goods and services provided by other industries. Value added includes only the economic contributions of a particular industry. Consequently, value added is considered a better monetary gauge of the relative economic importance of a manufacturing industry. In 1977, lumber and wood products had the largest share of the \$979 million of value added by Mississippi's forest products industry.

Although employment in the forest products industry exhibited modest growth during the 1970's, value added by the forest products industry increased 22 percent between 1972 and 1977. Lumber and wood products led with an increase of 30 percent.



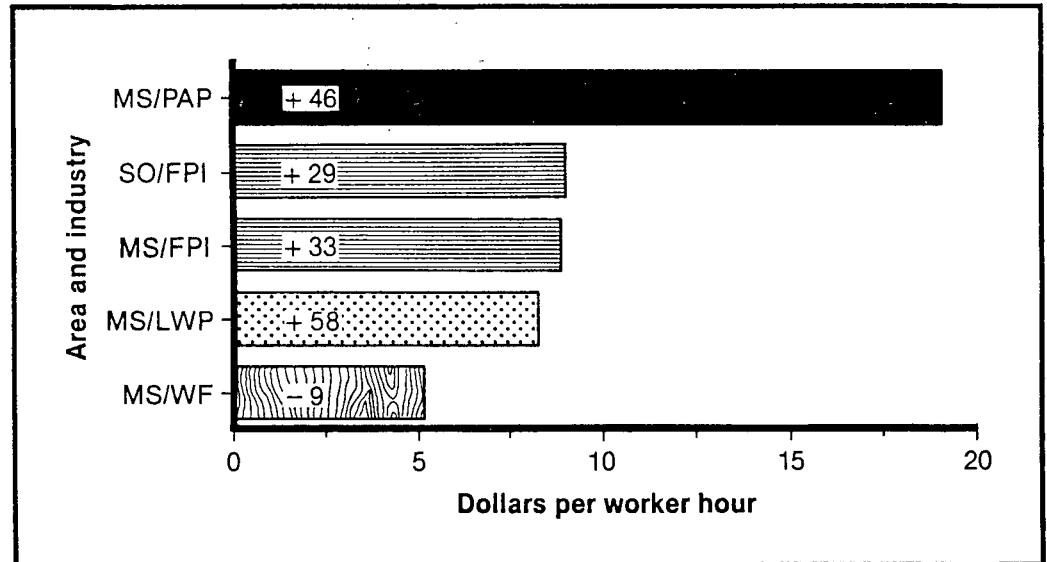
Numbers in parentheses show percentage of change from 1972 to 1977.

Capital Productivity

Increases in productivity are necessary for an industry to remain competitive in the marketplace. Productivity of an industry is measured in terms of value added minus payrolls per worker hour—VAMP (see appendix 1, table 3, for an explanation of how productivity was calculated for Mississippi's forest products industry). This measure of productivity represents profits before taxes and adjusts for wide differences in payroll among industries.

Paper and allied products is more capital intensive than the other segments of the industry and in the past attracted considerable investment in new facilities and equipment. Consequently, its productivity increased during the mid-1970's despite significantly higher, as well as increasing, labor costs. This segment exhibited a significantly larger gain in productivity than did the average for the South.

Paper and allied products had, by far, the highest productivity in Mississippi's forest products industry. Productivity per worker hour was more than twice the average for the State's forest products industry. Productivity in the wood furniture segment, which was low to begin with, decreased between 1972 and 1977.

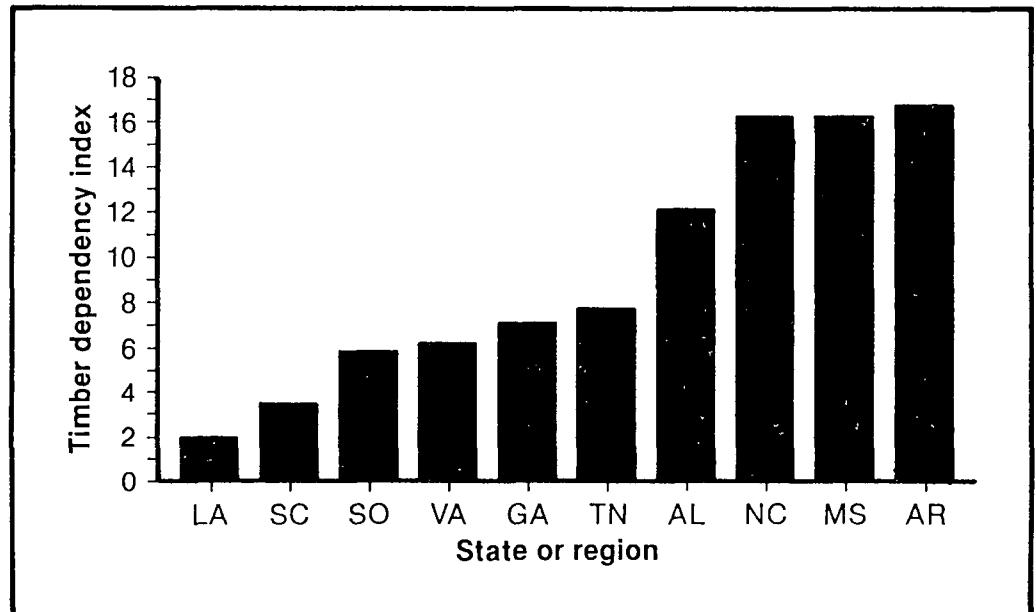


Numbers in bars show percentage of change from 1972 to 1977.

The Forest Products Industry in the South

Importance of the Industry Across the South

The dependency indicators suggest that in 1980 all but four States in the South manufactured forest products in excess of statewide needs. Florida, Kentucky, Oklahoma, and Texas were not self-sufficient in forest products; that is, these States imported more forest products than they exported. Consequently, on net balance, their respective forest products industries did not generate new dollars from the outside. Mississippi was one of three Southern States where the forest products industry accounted for about one of six basic employees.



The timber industry's share of a State's total excess employment serves as the timber-dependency indicator.

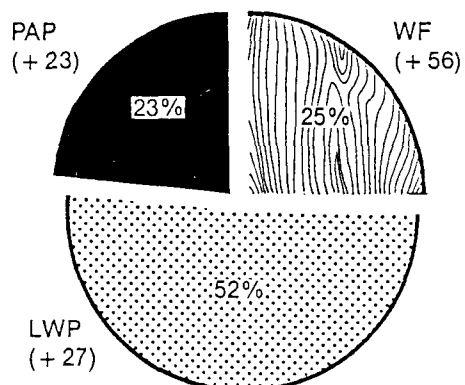
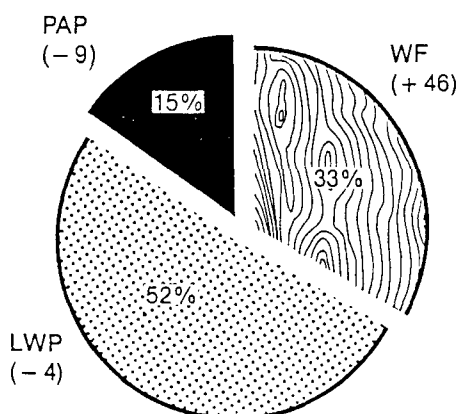
Industry Composition

Both the paper and allied products and the lumber and wood products segments accounted for smaller shares of 1980 employment in Mississippi's forest products industry than they did for the South. During the 1970's, employment and earnings in the wood furniture segment increased at a much faster rate in Mississippi than they did in the South and the Nation. Wood furniture is more prominent in Mississippi than in the South and the Nation.

MISSISSIPPI

1980 Employment—42,983

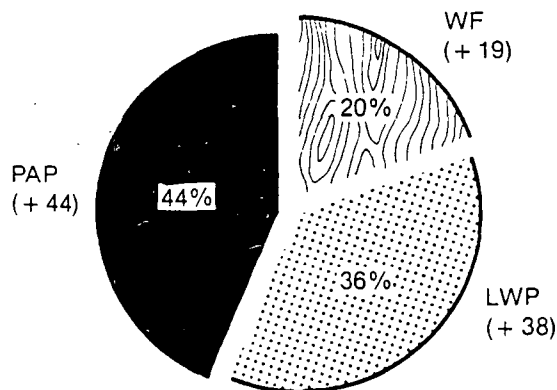
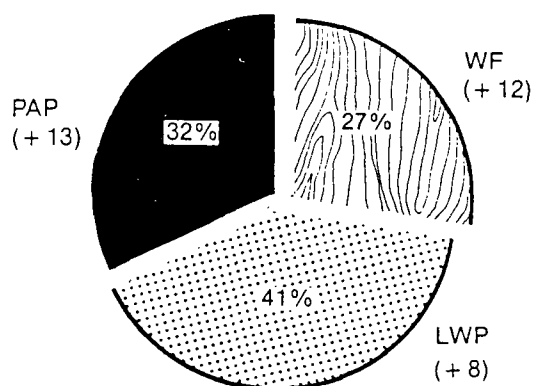
1980 Earnings—\$510 million



THE SOUTH

1980 Employment—620,567

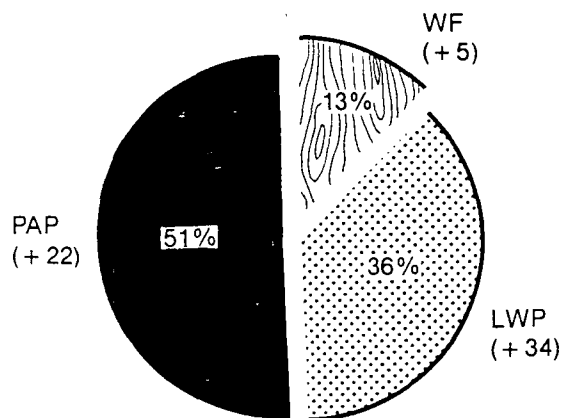
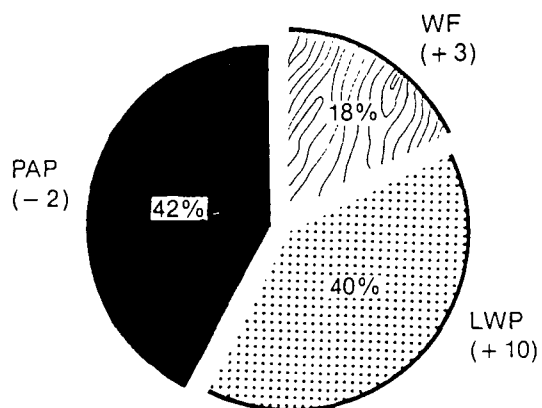
1980 Earnings—\$7.96 billion



UNITED STATES

1980 Employment—1,634,000

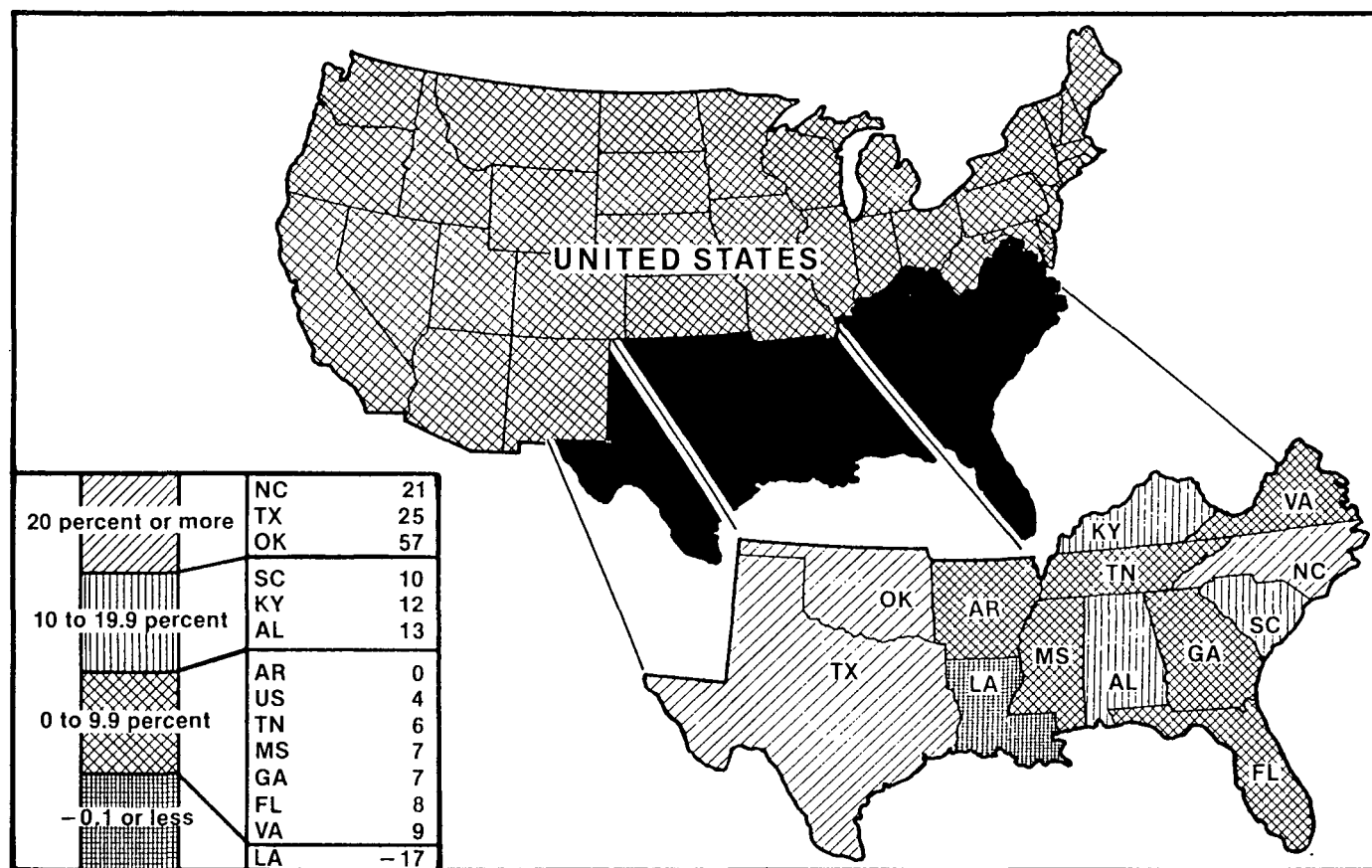
1980 Earnings—\$23.65 billion



Numbers in parentheses show percentage of change from 1970 to 1980.

Growth of Employment

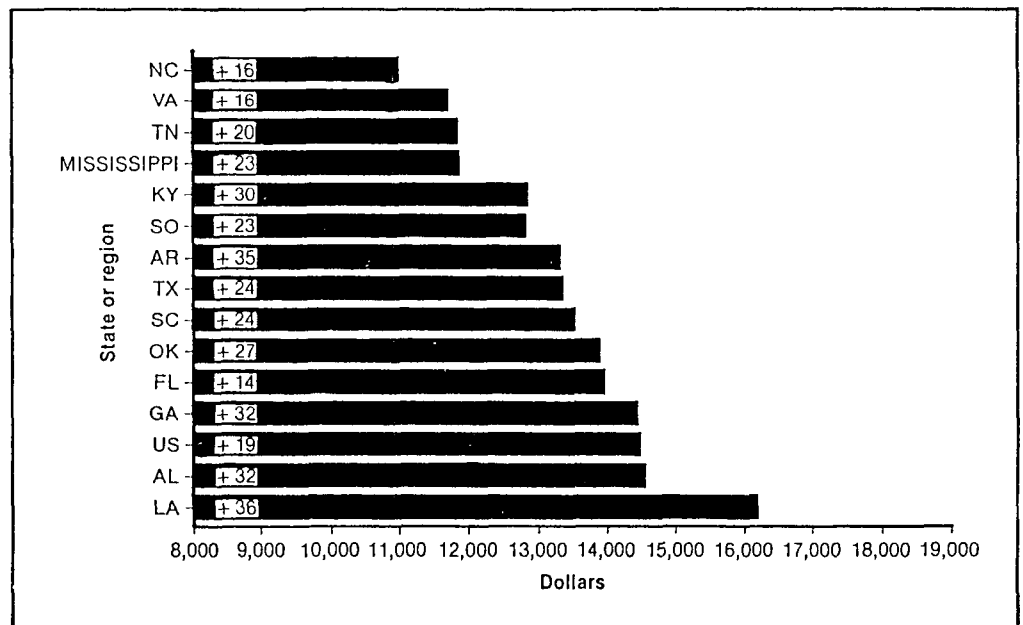
With the exceptions of Arkansas and Louisiana, employment in the forest products industry in each of the Southern States grew faster than did the U.S. counterpart. Between 1970 and 1980, employment in Oklahoma and Texas grew faster than the all-industry average of 22.3 percent. Between 1970 and 1980, employment in the forest products industry in Mississippi increased by more than 2,800. In relative terms, only three States—Arkansas, Tennessee and Louisiana—exhibited a slower rate of growth in employment.



Average Annual Earnings Average annual earnings per worker in the forest products industry differed significantly by State in 1980. About \$5,000 separated the State with the highest (Louisiana) from the State with the lowest (North Carolina). Pulp and allied products manufacturing, which has traditionally paid higher wages than have other segments of the forest products industry, dominated Louisiana's forest products industry. Wood furniture, which has paid lower average wages, dominated North Carolina's industry.

Average annual earnings in the forest products industry in Mississippi were below the average for all Southern States and considerably less than the average for the United States. The increase in earnings was the same, however, for Mississippi and the South.

In general, paper and allied products dominated the forest products industry in the States with the highest average annual earnings. This relation reflects higher job skills and unions in pulp and paper manufacturing. Wages, by and large, were the lowest in States where the labor-intensive wood furniture industry was more important.



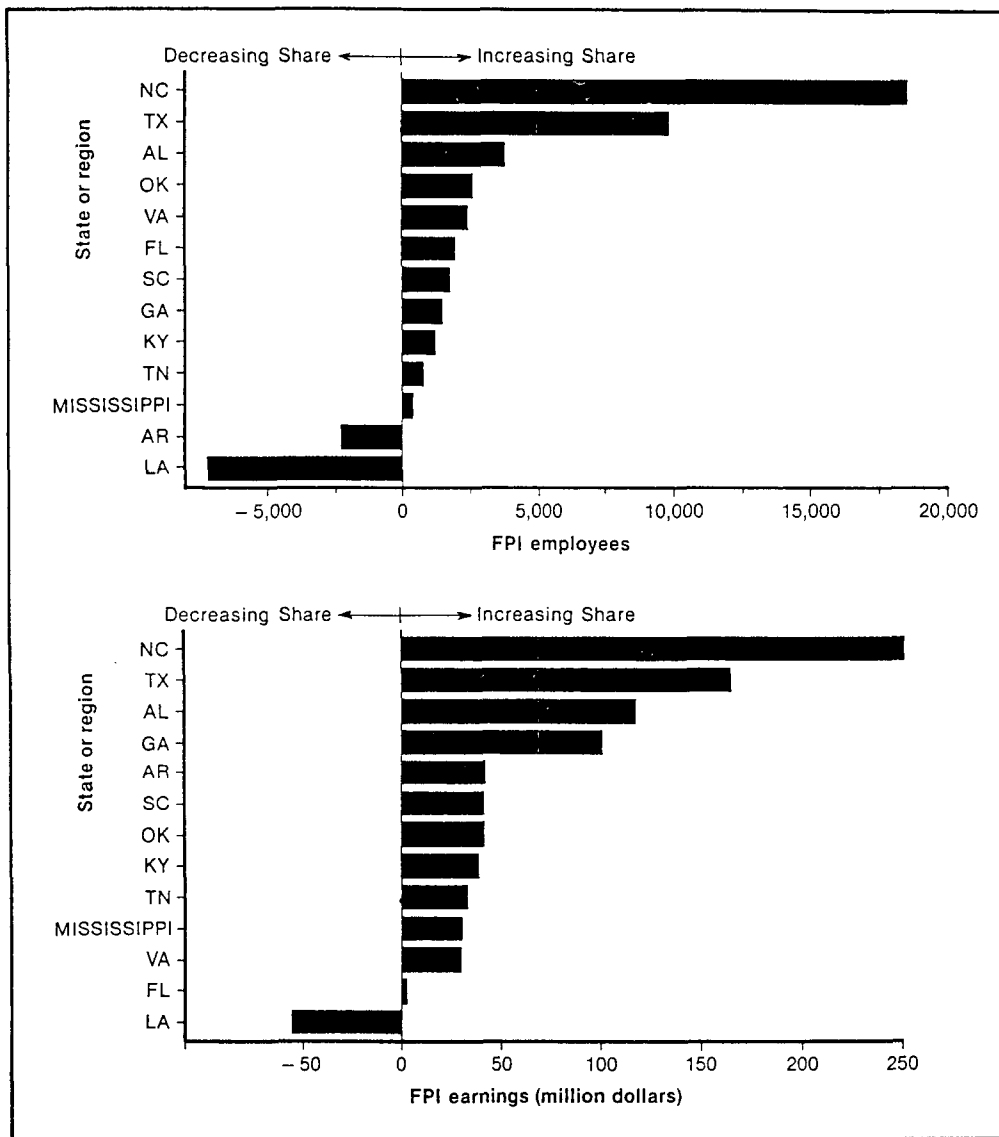
Numbers in bars show percentage of change from 1970 to 1980.

Shift in Employment and Earnings

Between 1970 and 1980, total employment in the Nation's forest products industry remained constant; except for Louisiana, it increased in every Southern State. All southern States except Arkansas and Louisiana increased their share of the Nation's forest products industry employment, and all but Louisiana increased their share of earnings.

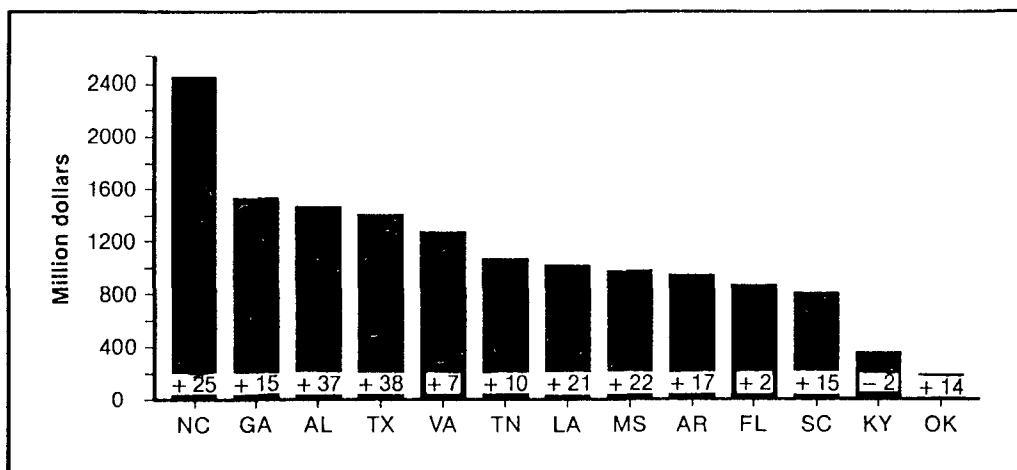
The regional shift shows how much more or less employment and earnings a State would have had in the forest products industry in 1980 had it grown at the national rate. Mississippi, for example, had nearly 365 more employees in 1980 than it would have had if its forest products industry had grown at the national rate.

Increased shares of employment and earnings reflect the comparative advantage the South's forest products industry enjoyed over competitors elsewhere. Mississippi was one of the majority of Southern States in which the forest products industry improved its competitive position during the 1970's. Several factors (for example, relatively lower labor costs, lower raw materials costs, and closer proximity to markets) might account for a comparative advantage, although adverse trends in one factor need not reduce its advantage. For instance, increasing labor costs need not adversely affect the South's comparative advantage if those costs are offset by increased capital or labor productivity.



Value Added by the Forest Products Industry

In 1977, North Carolina led the South in value added by the forest products industry. Mississippi was eighth in absolute terms and fourth in rate of growth. This relatively low ranking in value added can be attributed to Mississippi's limited secondary processing activity. One State, Kentucky, produced less value added in 1977 than in 1972.



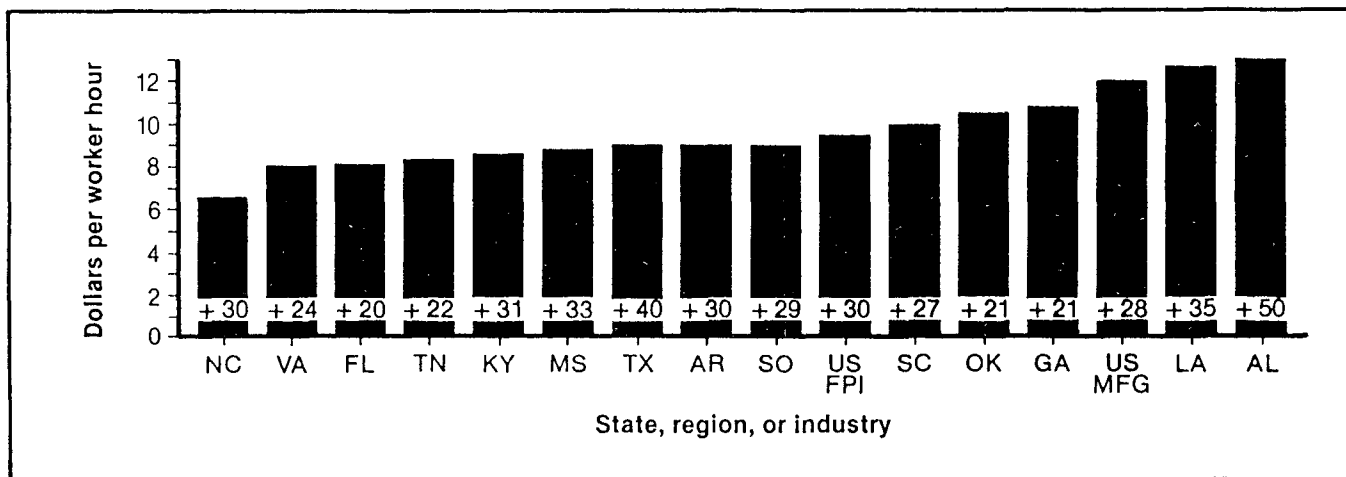
Numbers in bars show percentage of changes from 1972 to 1977.

Capital Productivity

The paper and allied products segment, which is more capital-intensive and, therefore, more susceptible to technological change than are other segments of the forest products industry, exhibited the highest productivity within the forest products industry. Wood furniture, on the other hand, is the most labor-intensive of the three. North Carolina produced more value added than any other State in the South, but the productivity of its forest products industry in 1977 was the lowest. This reflects the dominant role of labor-intensive wood furniture manufacturing in North Carolina.

Increases in productivity exceeded increases in payroll per worker between 1972 and 1977 for all the Southern States. This relation is, in part, responsible for the South's comparative advantage in the forest products industry.

In 1977, growth in productivity of the paper and allied products segment in Mississippi (46 percent) far exceeded the average for the forest products industry and the average for all industries in the Nation. But the productivity of the wood furniture segment declined. As a consequence, productivity of Mississippi's forest products industry was slightly below that of the average for the 13 Southern States. Growth in productivity of Mississippi's forest products industry was exceeded, however, by that of only three States in the South.



Numbers in bars show percentage of change from 1972 to 1977.

Acknowledgment

Many helpful suggestions of several reviewers were incorporated in this research report. This project was funded in part by USDA Forest Service, Resource Program and Assessment Staff, and State and Private Forestry, Area Planning and Development, State Planning for Forest Resources.

Appendix 1

Tables

Table 1—Total labor and proprietorial employment and income, by Industry, Mississippi, 1980¹

Industry number	Industry	Employees	Total income
		<i>Number</i>	<i>Thousand 1977 dollars²</i>
Wage and salary			
1	Agriculture	32,342	445,519
2	Agricultural services, forestry, and fisheries	6,042	56,306
3	Coal mining	--	--
4	Oil and gas extraction	9,683	183,992
5	Metal mining	--	--
6	Nonmetallic minerals	1,258	20,433
7	Construction	43,494	591,162
8	Food and kindred products	22,705	225,363
9	Tobacco	--	--
10	Textile mill production	6,482	57,046
11	Apparel and other textiles	41,091	273,540
12	Paper and allied products	6,453	117,995
13	Printing and publishing	5,731	60,940
14	Chemical and allied products	7,086	107,282
15	Petroleum refining	1,715	41,855
16	Rubber and miscellaneous plastics	5,936	79,014
17	Leather and leather products	1,953	12,886
18	Lumber and wood products, excluding mobile homes	22,295	262,786
19	Mobile homes	886	10,443
20	Wood furniture	14,235	128,937
21	Other furniture and fixtures	2,952	26,738
22	Stone, clay, and glass products	6,973	88,755
23	Primary metals	3,376	48,235
24	Fabricated metals	10,163	127,226
25	Machinery, excluding electrical	13,885	176,198
26	Electrical machinery	21,522	257,678
27	Transportation equipment, excluding motor vehicles	17,703	310,336
28	Motor vehicles	2,689	33,540
29	Instruments and related equipment	2,076	18,087
30	Miscellaneous manufacturing	3,661	35,990
31	Railroad transportation	4,284	91,399
32	Trucking and warehousing	11,497	172,978

Table 1—Total labor and proprietorial employment and income, by Industry, Mississippi, 1980¹ (continued)

Industry number	Industry	Employees	Total income
		<i>Number</i>	<i>Thousand 1977 dollars²</i>
33	Local transit	875	9,530
34	Air transportation	649	10,477
35	Pipeline transportation	177	3,706
36	Transportation services	523	8,780
37	Water transportation	3,286	43,683
38	Communications	11,438	197,386
39	Electrical, gas, and sanitation services	8,453	149,840
40	Wholesale trade	40,216	572,194
41	Retail trade	123,799	956,570
42	Banking	12,338	131,494
43	Other credit agencies	5,903	76,247
44	Insurance	10,767	174,540
45	Real estate and combinations	4,625	48,503
46	Hotel and other lodging	8,195	49,913
47	Personal miscellaneous business, and repair services	23,152	230,126
48	Auto repair service	4,249	57,544
49	Amusement	3,032	17,590
50	Motion pictures	1,047	4,284
51	Private households	42,352	87,421
52	Medical and other health	33,400	447,471
53	Private education	7,656	50,827
54	Nonprofit organizations	29,427	145,049
55	Miscellaneous services	8,494	209,904
56	Federal civilian	30,049	426,981
57	Federal military	40,259	251,743
58	State and local government	157,026	1,213,188
Proprietorial			
59	Nonfarm proprietors	74,999	825,041
60	Farm Proprietors	67,612	306,420
Total		1,084,166	10,769,111

¹ Source of data for this table for Mississippi, other States of the South, and the United States: unpublished data, U.S. Department of Commerce, Regional Economics Measurements Division, Regional Economic Information System (REIS), Washington, DC, 1982. Unpublished data used by the U.S. Department of Commerce in preparing their *County Business Patterns* (CBP) series on employment and payroll were used to differentiate wood-related from nonwood-related employment and earnings. For example, CBP data were used to separate mobile homes (no. 19, above) from the lumber and wood products (no. 18) industry. Wood furniture (no. 20) was similarly separated from other furniture and fixtures (no. 21).

² The Personal Consumption Expenditures (PCE) deflator, 1977 = 100, was used to deflate nominal dollars.

Table 2—Calculation of 1980 dependency indexes for Mississippi

(In percent)

Industry	Employment		Mississippi excess employment ¹	Dependency index ²
	Mississippi	United States		
Agriculture	3.66	1.46	2.19	11.51
Agricultural services, forestry, and fisheries	.68	.62	.07	.34
Farm proprietors	7.64	3.03	4.61	24.20
Coal mining	—	.27	—	—
Oil and gas extraction	1.08	.60	.48	2.51
Metal mining	—	.11	—	—
Nonmetallic minerals	.14	.14	.01	.03
Construction	4.92	4.74	.17	.90
Food and kindred products	2.57	1.87	.70	3.66
Tobacco	—	.07	—	—
Textile mill production	.73	.93	—	—
Apparel and other textiles	4.64	1.39	3.26	17.09
Paper and allied products	.73	.76	—	—
Printing and publishing	.65	1.37	—	—
Chemical and allied products	.80	1.22	—	—
Petroleum refining	.19	.22	—	—
Rubber and miscellaneous plastics	.67	.80	—	—
Leather and leather products	.22	.26	—	—
Lumber and wood products, excluding mobile homes	2.52	.71	1.81	9.50
Mobile homes	.10	.05	.05	—
Wood furniture	1.61	.32	1.29	6.75
Other furniture and fixtures	.33	.19	.15	.76
Stone, clay, and glass products	.79	.73	.06	.30
Primary metals	.38	1.26	—	—
Fabricated metals	1.15	1.77	—	—
Machinery, excluding electrical	1.57	2.73	—	—
Electrical machinery	2.43	2.31	.12	.63
Transportation equipment, excluding motor vehicles	2.00	1.21	.79	4.14
Motor vehicles	.30	.87	—	—
Instruments and related equipment	.23	.77	—	—
Miscellaneous manufacturing	.41	.47	—	—
Railroad transportation	.48	.58	—	—
Trucking and warehousing	1.30	1.40	—	—
Local transit	.10	.29	—	—
Air transportation	.07	.50	—	—
Pipeline transportation	.02	.02	—	—
Transportation services	.06	.22	—	—
Water transportation	.37	.23	.14	.74
Communications	1.29	1.48	—	—
Electrical, gas, and sanitation services	.96	.90	.05	.27

Table 2—Calculation of 1980 dependency indexes for Mississippi (continued)

(In percent)

Industry	Employment		Mississippi excess employment ¹	Dependency index ²
	Mississippi	United States		
Wholesale trade	4.55	5.79	—	—
Retail trade	13.99	16.50	—	—
Banking	1.39	1.72	—	—
Other credit agencies	.67	.99	—	—
Insurance	1.22	1.89	—	—
Real estate and combinations	.52	1.16	—	—
Hotel and other lodging	.93	1.20	—	—
Personal miscellaneous business, and repair services	2.62	4.69	—	—
Auto repair service	.48	.63	—	—
Amusement	.34	.84	—	—
Motion pictures	.12	.24	—	—
Medical and other health	3.78	5.71	—	—
Private education	.87	1.47	—	—
Nonprofit organizations	3.33	3.01	.31	1.65
Miscellaneous services	.96	1.63	—	—
Federal civilian	3.40	3.27	.13	.66
Federal military	4.55	2.68	1.87	9.81
State and local government	—	—	—	—
Nonfarm proprietors	8.48	7.66	.81	4.27
Total ³	100.00	100.00	19.07	100.00

¹ Mississippi minus U.S. employment. Figures may not be exactly equal to Mississippi minus U.S. because of rounding. Dashes signify no excess employment.

² Individual industry excess employment expressed as a percentage of Mississippi's total excess employment (sum of column 4).

³ Sum of parts may not equal totals because of rounding.

Table 3—Value added, hours worked, payroll, and capital productivity,¹ Mississippi forest products industry, 1977²

Industry	Value added	Payroll	Hours worked	Productivity	Productivity change,
					1972-77
	- \$Million-		Million	\$VAMP per hour	Percent
Lumber and wood products	507.1	196.5	37.9	8.19	+57.54
Wood furniture	200.9	95.6	20.5	5.13	-8.62
Paper and allied products	270.6	85.8	9.5	19.05	+45.67

¹ Productivity equals value added minus payroll (VAMP) divided by hours worked. For a discussion of VAMP, see W. Charles Sawyer and Joseph A. Ziegler. 1980. "The use of VAMP shift as a predictive model." Unpublished paper presented at the annual meeting of the Western Regional Science Association, Monterey, California.

² Source: U.S. Bureau of the Census, Census of Manufacturing, for 1972 and 1977, Mississippi and the United States, available in 1976 and 1980, respectively. In the few instances where data were not available for some subindustry segments, the distribution of the number of establishments was used to estimate nondisclosures.

Appendix 2

Mississippi Counties by Sub-State Planning and Development Districts

District code	Counties
1	Coahoma, DeSoto, Panola, Quitman, Tallahatchie, Tate, Tunica
2	Bolivar, Humphreys, Issaquena, Sharkey, Sunflower, Washington
3	Attala, Carroll, Grenada, Holmes, Leflore, Montgomery, Yalobusha
4	Choctaw, Clay, Lowndes, Noxubee, Oktibbeha, Webster, Winston
5	Calhoun, Chickasaw, Itawamba, Lafayette, Lee, Monroe, Pontotoc, Union
6	Alcorn, Benton, Marshall, Prentiss, Tippah, Tishomingo
7	Copiah, Hinds, Madison, Rankin, Simpson, Warren, Yazoo
8	Clarke, Jasper, Kemper, Lauderdale, Leake, Neshoba, Newton, Scott, Smith
9	Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jefferson Davis, Jones, Lamar, Marion, Pearl River, Perry, Stone, Wayne
10	Adams, Amite, Claiborne, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, Wilkinson

Schallau, Con H; Maki, Wilbur R.; Foster, Bennett B.; Redmond, Clair H. 1988.

Mississippi's forest products industry: performance and contribution to the State's economy, 1970 to 1980. Res. Pap. PNW-RP-398. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 22 p.

The forest products industry is one of Mississippi's basic industries, and in 1980, it accounted for about one of six basic jobs. Mississippi was one of the majority of Southern States in which the forest products industry improved its competitive position during the 1970's. Between 1972 and 1977, growth in productivity of Mississippi's forest products industry was exceeded by only three other States in the South.

Keywords: Forest products industries, economics (forest products industries), employment (forest products industries), Mississippi.

The **Forest Service** of the U.S. Department of Agriculture is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

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Pacific Northwest Research Station
319 S.W. Pine St.
P.O. Box 3890
Portland, Oregon 97208



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