

FORESTRY & FOREST PRODUCTS

Based on 1998 Data

The Impact of the Industry
on the Mississippi Economy:
An Input-Output Analysis



By

Dr. Ian. A. Munn

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Forest and Wildlife Research Center
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Forestry & Forest Products

**The Impact of the Industry on the Mississippi
Economy: An Input-Output Analysis**

by

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and

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Mississippi State University**

INTRODUCTION

Forest resources are a major component of Mississippi's economic base. Forests cover over 18 million acres in Mississippi, or 62% of the state's total land area (Hartsell and London 1995). Over \$1.3 billion dollars worth of forest products are harvested from Mississippi's forest lands annually and delivered to mills and other manufacturing plants, making timber one of Mississippi's most valuable crops (Daniels 1999). Clearly, the forest products industry makes a major contribution to Mississippi's economy.

The forest products industry includes four main sectors: logging, solid wood products, pulp and paper, and wood furniture manufacturing. The impact of the forest products industry on Mississippi's economy is measured by four key statistics: employment - the number of full- and part-time jobs in the sector; employee compensation - the wages paid by the sector; output - the sector's total value of production; and value-added - total sector output minus the costs of purchased inputs. Value-added represents the amount of money available for disbursement, either in the form of wages, owner compensation, or taxes.

The forest products industry sectors impact Mississippi's economy in three ways. First, these sectors impact the state economy directly through their own employment, wages, production, and value-added. Second, there is an indirect effect resulting from the industry's purchase of goods and services from supporting industries in the state, resulting in increased employment, wages, production, and value-added in these supporting industries to meet the demands of the forest products industry. Finally, there is an induced effect, resulting from the purchases of consumer goods and services by the employees of the forest products industry and its supporting industries. This study evaluates the importance of the forest products industry to the state's economy.

METHODS

Input-Output Modeling

The economic impacts of the forest industry were modeled using the Impact Analysis for Planning (IMPLAN) System, originally developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the University of Minnesota. The IMPLAN model was designed by the Forest Service to estimate the regional economic impacts of management plans for National Forests (Alward et al. 1985). IMPLAN is a computerized database and modeling system for constructing regional economic accounts and regional input-output tables. The IMPLAN model uses a 528 sector input-output transactions table based upon the Bureau of Economic Analysis' National I-O table (USDC 1984). The Minnesota IMPLAN Group, Inc. of Stillwater, Minnesota, a commercial venture, provides current data and analytical support necessary to run the model (Alward et al. 1993).

This study combines the 528 sectors into 31 aggregated sectors - 4 major forest products sectors, 1 sector of miscellaneous forestry related activities, and 26 non-forestry related sectors (Table 1). This procedure follows Barnett and Reinschmidt (1996) who modeled the Mississippi economy using 45 aggregated sectors - 26 food and fiber sectors and 18 non-food and non-fiber sectors. The focus of this study is the forest products industry; therefore, the non-forestry related food and fiber sectors were further aggregated into three sectors: agricultural production, agricultural processing, and food processing.

IMPLAN data for 1998, the most recent available, were used in this study. In general, IMPLAN data are very reliable but some state level data are interpolated from regional or national data. If available, accurate local data should be substituted. For Mississippi, actual output data for the logging sector were available from the Mississippi State University Extension Service and were used in this study.

This study examined the impact of the four primary sectors of the forest products industry individually and then examined the impact of the entire industry. Direct effects of the four sectors and the entire forest products industry were obtained from IMPLAN's report of Base Year Information. Total effects (direct, indirect, and induced) were estimated within the IMPLAN model by removing the total employment for the relevant sector and calculating the impact on the state economy resulting from the total loss of industry production for that sector. This is the procedure recommended by the Minnesota IMPLAN Group (2000) to estimate the economic impact of an industry.

RESULTS

Table 2 provides data on the direct effects on Mississippi's economy of the industry aggregations used in this study. Employment, wages and salaries, output, and value-added are reported for each industry aggregation.

The forest products industry (all forest-related sectors) employed 64,637 people in 1998, roughly 5% of the state's total employment. The industry paid out over \$1.8 billion in wages. The industry's average annual wage was \$29,065, which was \$5,820 more than the state average. Total industry output was over \$8.9 billion and value-added generated by the industry exceeded \$2.9 billion.

Each sector of the forest products industry made substantial contributions to the state economy. Tables 3, 4, 5, and 6 provide data on the total effects (direct, indirect and induced) of the logging, solid wood products, pulp and paper, and wood furniture sectors, on the state economy respectively. Total effects are reported by sector. In general, the effects reported for the analyzed sector are direct effects, while the effects reported for all other sectors are indirect and induced effects. The total impact of the sector on the state economy is summarized in the table row titled ALL SECTORS.

Table 7 provides data on the total effects of the aggregated forest-related sectors. Summing the effects of the individual forest-related sectors overestimates the impacts of the forest products industry. Considered separately, each sector has indirect and induced effects on the other forest-

related sectors. However, when all forest-related sectors are considered as a group, these effects are internal and thus do not result in additional indirect or induced effects. Aggregating the forest-related sectors allows IMPLAN to automatically internalize these effects and generate the true impact of the industry on the state economy.

Logging

The logging sector includes all establishments engaged in cutting timber and producing rough, round, hewn, or riven primary forestry and wood raw materials, including wood chips, in the field. The quality of Mississippi's timber harvesting is excellent. The Forest Resources Association recognizes excellence in the logging community through an award called the Outstanding Logger of the Year. In

the 1990's, Mississippi had three regional winners and in 1994, a Mississippi logger was recognized as the National Outstanding Logger of the Year (Jarvis, S., Director of Forestry Programs, Forest Resources Association. personal communication, 2001).

Logging is extremely important to Mississippi's economy for two reasons. First, the sector is essential in providing wood-based raw materials for the rest of the forest products industry. Second, the sector is important because of the economic contributions it makes through its own employment and income creation.

Timber has become one of Mississippi's most valuable crops. In 1998, the value of Mississippi's timber harvest at the point of first processing was \$1.36 billion dollars. The direct effect of the industry was substantial. Landowners received \$1.09 billion for their standing timber (Daniels 1999). Logging firms employed 5,446 people and paid \$117 million in wages. Value-added exceeded \$277 million (Table 2).



The total effect (direct, indirect, and induced) of logging on Mississippi's economy was even greater (Table 3). In 1998, over 14,200 jobs were related to timber harvesting activities with wages totaling \$360 million. Logging generated an estimated \$1.96 billion addition to Mississippi's total industry output and \$631 million of value-added to Mississippi's economy. Construction, wholesale and retail trade, financial and real estate, and transportation and communication services are among those sectors that benefit substantially from the indirect and induced effects created by the logging industry. However, the sector's overall importance was much greater than stated here. Timber harvesting and transportation are essential for solid wood products, pulp and paper, and wood furniture manufacturing - three sectors that make up the remainder of the industry in the state.

Solid Wood Products

\$6.1 Billion <i>Total Industry Output</i>
60,097 Jobs
\$1.6 Billion <i>In Wages</i>
\$2.5 Billion <i>In Value Added</i>

The solid wood products sector is a major component of Mississippi's forest products industry and a key component of the state economy. Included in this sector are sawmills, plywood mills, veneer mills, reconstituted wood product mills, and firms manufacturing articles made primarily of wood (Table 1). In 1998, these firms directly employed 23,110 workers and paid \$637 million in wages. The average

annual wage was \$27,600, which was \$4,350 higher than the state average. Industry output for the sector was \$3.1 billion and the value-added by manufacturing exceeded \$1 billion (Table 2).

The solid wood products sector utilized almost 1.58 billion board feet of pine stumpage and 0.62 billion board feet of hardwood stumpage in 1998, resulting in payments to Mississippi landowners of almost \$877 million (Daniels 1999). Miscellaneous products such as stumpwood and Christmas trees

generated an additional \$5.1 million for landowners (Daniels 1999).

The total impact of the solid wood products sector on Mississippi's economy was substantial. The indirect and induced effects of this sector had major impacts on the transportation and communications, wholesale and retail trade, and financial and real estate sectors, increasing the total industrial output of these sectors by over \$200 million each. This sector generated 60,097 jobs, either directly or in supporting industries. Employee compensation for these jobs was \$1.6 billion annually. Total value-added was over \$2.5 billion. Industry output generated by the solid wood products sector and its supporting industries amounted to \$6.1 billion (Table 4).

Pulp and Paper

Pulp mills, paper mills, paperboard mills, and manufacturers of paperboard containers and boxes, converted paper and paperboard products and other related paper products are included in this sector (Table 1). In 1998, these firms employed 8,802 workers and paid \$462 million in wages. The average annual wage was \$52,491, more than double the state average. Total industry output for the sector was \$2 billion and value-added by manufacturing exceeded \$714 million (Table 2).

The indirect and induced effects of the pulp and paper sector had a major impact on the wholesale and retail trade, construction, transportation and communications, and financial and real estate, increasing the total industrial output of these sectors by more than \$150 million each. The number of full- and part-time jobs generated by the pulp and paper sector, either directly, indirectly or through induced effects, totaled 32,601. Total wages exceeded \$1 billion.

\$3.8 Billion <i>Total Industry Output</i>
32,601 Jobs
\$1.1 Billion <i>In Wages</i>
\$1.7 Billion <i>In Value Added</i>

Industry output related to the activities of the pulp and paper sector amounted to \$3.8 billion with an associated \$1.7 billion value-added (Table 5).

Wood Furniture



This sector includes firms that manufacture wood household furniture, upholstered furniture on wood frames, wood office furniture, and wood partitions and fixtures (Table 1). In 1998, these firms employed 23,945 workers and paid \$653 million in wages. The average annual wage was \$27,274, which was \$4,000 more than the state's average wage. Total industry output for the sector was \$2.1 billion and the

value-added by manufacturing totaled \$797 million (Table 2).

Other industrial sectors that benefited from the indirect and induced effects of the wood furniture sector included the construction, wholesale and retail trade, financial and real estate, transportation and communication services, and health services sectors. Direct, indirect, and induced employment totaled 49,732. Total wages exceeded \$1.3 billion. Industry output related to the activities of the wood furniture and related products sector amounted to \$3.9 billion with an associated \$1.8 billion value-added (Table 6).

Total Industry Impact

The forest products industry is responsible for approximately 50% of the total effects due to food and fiber-related production and processing (Barnett and Reinschmiedt 1996). In 1998, the combined impact of all sectors of the forest products industry on Mississippi's economy was dramatic. Forestry-related employment (direct, indirect, and induced) accounted for 10% of all jobs in Mississippi. The average annual wage in

forestry related occupations was \$29,065, which was \$5,820 greater than the average annual wage in Mississippi (Table 2).

In Mississippi, total industry output related to the forest products industry exceeded \$14.8 billion and related value-added exceeded \$6.5 billion. Related employment totaled 151,632 full- or part-time jobs with an associated annual payroll of \$4.2 billion (Table 7).

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Table 1. Aggregation Scheme for IMPLAN Input-Output Analysis of the Forest Products Industry Impact on the Mississippi Economy, 1998.

MODEL SECTORS	ORIGINAL IMPLAN SECTORS
MISCELLANEOUS FOREST PRODUCTS	Forest Products; Forestry Products
LOGGING	Logging Camps & Logging Contractors
SOLID WOOD PRODUCTS	Sawmills & Planing Mills; Hardwood Dimension & Flooring; Millwork; Special Product Sawmills, Not Elsewhere Classified (N.E.C.); Veneer & Plywood; Structural Wood Members, N.E.C.; Wood Containers; Wood Pallets & Skids; Prefabricated Wood Buildings; Wood Preserving; Reconstituted Wood Products; Wood Products, N.E.C.
WOOD FURNITURE	Wood Kitchen Cabinets; Wood Household Furniture; Upholstered Household Furniture; Wood TV & Radio Cabinets; Wood Office Furniture; Wood Partitions & Fixtures
PULP AND PAPER	Pulp Mills; Paper Mills, Except Building Paper; Paperboard Mills; Paperboard Containers & Boxes; Paper Coated & Laminated Packaging; Paper Coated & Laminated N.E.C.; Bags, Paper; Die-cut Paper & Board; Sanitary Paper Products; Envelopes; Stationery Products; Converted Paper Products, N.E.C.
RESOURCE SERVICES	Commercial Fishing; Agricultural, Forestry, Fishery Services
MINING	Iron Ores; Copper Ores; Lead & Zinc Ores; Gold Ores; Silver Ores; Ferroalloy Ores, Except Vanadium; Metal Mining Services; Uranium-radium-vanadium Ores; Metal Ores, N.E.C.; Coal Mining; Natural Gas & Crude Petroleum; Natural Gas Liquids; Dimension Stone; Sand & Gravel; Clay, Ceramic, Refractory Minerals; Potash, Soda, & Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mines; Nonmetallic Minerals; Misc. Nonmetallic Minerals, N.E.C.
CONSTRUCTION	New Residential Structures; New Industrial & Commercial Buildings; New Utility Structures; New Highways & Streets; New Farm Structures; New Mineral Extraction Facilities; New Government Facilities; Maintenance & Repair, Residences; Maintenance & Repair Other Facilities; Maintenance & Repair Oil & Gas Wells
AGRICULTURAL PRODUCTS	Dairy Farm Products; Poultry & Eggs; Ranch Fed Cattle; Range Fed Cattle; Cattle Feedlots; Sheep, Lambs & Goats; Hogs, Pigs, & Swine; Other Meat Animal Products; Miscellaneous Livestock; Cotton; Food Grains; Feed Grains; Hay & Pasture; Grass Seeds; Tobacco; Fruits; Tree Nuts; Vegetables; Sugar Crops; Miscellaneous Crops; Oil Bearing Crops; Greenhouse & Nursery Products; Landscape & Horticultural Services
AGRICULTURAL PROCESSING	Meat Packing Plants; Sausages & Other Prepared Meats; Poultry Processing; Creamery Butter; Cheese, Natural & Processed; Condensed & Evaporated Milk; Ice Cream & Frozen Desserts; Fluid Milk; Flour & Other Grain Mill Produce; Cereal Preparations; Rice Milling; Blended & Prepared Flour; Wet Corn Milling; Cottonseed Oil Mills; Soybean Oil Mills; Vegetable Oil Mills, N.E.C.; Animal & Marine Fats & Oils; Shortening & Cooking Oils; Dog, Cat, & Other Pet Food;
FOOD PROCESSING	Canned Specialties; Canned Fruits & Vegetables; Dehydrated Food Products; Pickles, Sauces, & Salad Dressings; Frozen Fruits, Juices & Vegetables; Frozen Specialties; Bread, Cake, & Related Products; Cookies & Crackers; Sugar; Confectionery Products; Chocolate & Cocoa Products; Chewing Gum; Salted & Roasted Nuts & Seeds; Malt Beverages; Malt; Wines, Brandy, & Brandy Spirits; Distilled Liquor, Except Brandy; Bottled & Canned Soft Drinks; Flavoring Extracts & Syrups; Canned & Cured Sea Foods; Prepared Fresh Or Frozen Fish; Roasted Coffee; Potato Chips & Similar Snacks; Manufactured Ice; Macaroni & Spaghetti; Food Preparations, N.E.C.; Cigarettes; Cigars; Chewing & Smoking Tobacco; Tobacco Stemming & Redrying
FARM INPUTS AND MACHINERY	Prepared Feeds, N.E.C.; Nitrogenous & Phosphatic Fert.; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery & Equipment; Lawn & Garden Equipment

Table 1 continued from page 5

<p>FABRIC MILLS AND LEATHER</p>	<p>Broadwoven Fabric Mills & Finishing; Narrow Fabric Mills; Thread Mills; Textile Goods, N.E.C.; Leather Tanning & Finishing; Leather Gloves & Mittens; Personal Leather Goods; Leather Goods, N.E.C</p>
<p>PETROLEUM AND CHEMICALS</p>	<p>Bags, Plastic; Alkalies & Chlorine; Industrial Gases; Inorganic Pigments; Inorganic Chemicals N.E.C.; Cyclic Crudes, Interm. & Indus.; Plastics Materials & Resins; Synthetic Rubber; Cellulosic Man-made Fibers; Organic Fibers, Noncellulosic; Drugs; Soap & Other Detergents; Polishes & Sanitation Goods; Surface Active Agents; Toilet Preparations; Paints & Allied Products; Gum & Wood Chemicals; Adhesives & Sealants; Explosives; Printing Ink; Carbon Black; Chemical Preparations, N.E.C.; Petroleum Refining; Paving Mixtures & Blocks; Asphalt Felts & Coatings; Lubricating Oils & Greases; Petroleum & Coal Products, N.E.C.; Tires & Inner Tubes; Rubber & Plastics Footwear; Rubber & Plastics Hose & Belting; Gaskets, Packing & Sealing; Fabricated Rubber Products, N.E.C.; Miscellaneous Plastics Products</p>
<p>GLASS, STONE, AND CLAY</p>	<p>Glass & Glass Products, Exc. Containers; Glass Containers; Cement, Hydraulic; Brick & Structural Clay Tile; Ceramic Wall & Floor Tile; Clay Refractories; Structural Clay Products, N.E.C.; Vitreous Plumbing Fixtures; Vitreous China Food Utensils; Fine Earthenware Food Utensils; Porcelain Electrical Supplies; Pottery Products, N.E.C.; Concrete Block & Brick; Concrete Products, N.E.C.; Ready-mixed Concrete; Lime; Gypsum Products; Cut Stone & Stone Products; Abrasive Products; Asbestos Products; Minerals, Ground Or Treated; Mineral Wool; Nonclay Refractories; Nonmetallic Mineral Products, N.E.C.</p>
<p>METAL INDUSTRIES</p>	<p>Blast Furnaces & Steel Mills; Electrometallurgical Products; Steel Wire & Related Products; Cold Finishing of Steel Shapes; Steel Pipe & Tubes; Iron & Steel Foundries; Primary Copper; Primary Aluminum; Primary Nonferrous Metals, N.E.C.; Secondary Nonferrous Metals; Copper Rolling & Drawing; Aluminum Rolling & Drawing; Nonferrous Rolling & Drawing; Nonferrous Wire Drawing & Ins.; Aluminum Foundries; Brass, Bronze, & Copper Foundries; Nonferrous Castings, N.E.C.; Metal Heat Treating; Primary Metal Products, N.E.C.; Metal Cans; Metal Barrels, Drums & Pails; Cutlery; Hand & Edge Tools, N.E.C.; Hand Saws & Saw Blades; Hardware, N.E.C.; Metal Sanitary Ware; Plumbing Fixture Fittings & Trim; Heating Equipment, Except Elect; Fabricated Structural Metal; Metal Doors, Sash, & Trim; Fabricated Plate Work; Sheet Metal Work; Architectural Metal Work; Prefabricated Metal Buildings; Miscellaneous Metal Work; Screw Machine Products & Bolt; Iron & Steel Forgings; Nonferrous Forgings; Automotive Stampings; Crowns & Closures; Metal Stampings, N.E.C.; Plating & Polishing; Metal Coating & Allied Services; Small Arms Ammunition; Ammunition, Except For Small Arms; Small Arms; Other Ordnance & Accessories; Industrial & Fluid Valves; Steel Springs, Except Wire; Pipe, Valves, & Pipe Fittings; Miscellaneous Fabricated Wire Products; Metal Foil & Leaf; Fabricated Metal Products, N.E.C.</p>
<p>MACHINERY AND EQUIPMENT</p>	<p>Steam Engines & Turbines; Internal Combustion Engines; Construction Machinery & Equipment; Mining Machinery, Except Oil Fields; Oil Field Machinery; Elevators & Moving Stairways; Conveyors & Conveying Equipment; Hoists, Cranes, & Monorails; Machine Tools, Metal Cutting Type; Machine Tools, Metal Forming Type; Industrial Patterns; Special Dies & Tools & Accessories; Power Driven Hand Tools; Rolling Mill Machinery; Welding Apparatus; Metalworking Machinery, N.E.C.; Textile Machinery; Woodworking Machinery; Paper Industries Machinery; Printing Trades Machinery; Food Products Machinery; Special Industry Machinery N.E.C.; Pumps & Compressors; Ball & Roller Bearings; Blowers & Fans; Packaging Machinery; Power Transmission Equipment; Industrial Furnaces & Ovens; General Industrial Machinery, N.E.C.; Commercial Laundry Equipment; Refrigeration & Heating Equipment; Measuring & Dispensing Pumps; Service Industry Machines,</p>

Table 1 continued from page 6

	N.E.C.; Carburetors, Pistons, Rings, Valves; Fluid Power Cylinders & Actuators; Fluid Power Pumps & Motors; Scales & Balances; Industrial Machines N.E.C.; Transformers; Switchgear & Switchboard Apparatus; Motors & Generators; Carbon & Graphite Products; Relays & Industrial Controls; Electrical Industrial Apparatus; Household Cooking Equipment; Household Refrigerators & Freezers; Household Laundry Equipment; Electric Housewares & Fans; Household Vacuum Cleaners; Household Appliances, N.E.C.; Electric Lamps; Wiring Devices; Lighting Fixtures & Equipment; Storage Batteries; Primary Batteries, Dry & Wet; Engine Electrical Equipment; Magnetic & Optical Recording Media; Electrical Equipment, N.E.C.
TRANSPORTATION EQUIPMENT	Industrial Trucks & Tractors; Motor Vehicles; Truck & Bus Bodies; Motor Vehicle Parts & Accessories; Truck Trailers; Motor Homes; Aircraft; Aircraft & Missile Engines; Aircraft & Missile Equipment; Ship Building & Repairing; Boat Building & Repairing; Railroad Equipment; Motorcycles, Bicycles, & Parts; Travel Trailers & Campers; Transportation Equipment, N.E.C
TECHNOLOGY INDUSTRIES	Electronic Computers; Computer Storage Devices; Computer Terminals; Computer Peripheral Equipment; Calculating & Accounting Machines; Typewriters & Office Machines; Automatic Merchandising Machines; Radio & TV Receiving Sets; Phonograph Records & Tape; Telephone & Telegraph Apparatus; Radio & TV Communication Equipment; Communications Equipment N.E.C.; Electron Tubes; Printed Circuit Boards; Semiconductors & Related Devices; Electronic Components, N.E.C.; Complete Guided Missiles; Tanks & Tank Components; Search & Navigation Equipment; Laboratory Apparatus & Furniture; Automatic Temperature Controls; Mechanical Measuring Devices; Instruments To Measure Electricity; Analytical Instruments; Optical Instruments & Lenses; Surgical & Medical Instrument; Surgical Appliances & Supplies; Dental Equipment & Supplies; X-ray Apparatus; Electromedical Apparatus; Ophthalmic Goods; Photographic Equipment & Supplies
TRANSPORTATION AND COMMUNICATION SERVICES	Railroads & Related Services; Local, Interurban Passenger Trains; Motor Freight Transport & Warehousing; Water Transportation; Air Transportation; Pipe Lines, Except Natural Gas; Arrangement Of Passenger Transportation; Transportation Services; Communications, Except Radio & TV; Radio & TV Broadcasting
MISCELLANEOUS MANUFACTURING	Womens Hosiery, Except Socks; Hosiery, N.E.C.; Knit Outerwear Mills; Knit Underwear Mills; Knit Fabric Mills; Knitting Mills, N.E.C.; Yarn Mills & Finishing Of Textiles; Carpets & Rugs; Coated Fabrics, Not Rubberized; Tire Cord & Fabric; Nonwoven Fabrics; Cordage & Twine; Apparel Made From Purchased Mat; Curtains & Draperies; Housefurnishings, N.E.C.; Textile Bags; Canvas Products; Pleating & Stitching; Automotive & Apparel Trimming; Schiffl Machine Embroideries; Fabricated Textile Products, N.E.C.; Mobile Homes; Metal Household Furniture; Mattresses & Bedsprings; Household Furniture, N.E.C.; Metal Office Furniture; Public Building Furniture; Metal Partitions & Fixtures; Blinds, Shades, & Drapery; Furniture & Fixtures, N.E.C.; Newspapers; Periodicals; Book Publishing; Book Printing; Miscellaneous Publishing; Commercial Printing; Manifold Business Forms; Greeting Card Publishing; Blankbooks & Looseleaf Binder; Bookbinding & Related; Typesetting; Plate Making; Footwear Cut Stock; House Slippers; Shoes, Except Rubber; Luggage; Womens Handbags & Purses; Watches, Clocks, & Parts; Jewelry, Precious Metal; Lead Pencils & Art Goods; Marking Devices; Carbon Paper & Inked Ribbons; Costume Jewelry; Fasteners, Buttons, Needles, Pins; Brooms & Brushes; Signs & Advertising Displays; Burial Caskets & Vaults; Hard Surface Floor Coverings; Manufacturing Industries, N.E.C.; Silverware & Plated Ware; Jewelers Materials & Lapidary; Musical Instruments; Dolls; Games, Toys, & Childrens Vehicles; Sporting & Athletic Goods, N.E.C.; Pens & Mechanical Pencils

Table 1 continued from page 7

UTILITY SERVICES	Electric Services; Gas Production & Distribution; Water Supply & Sewerage Systems; Sanitary Services & Steam Supplies
WHOLESALE AND RETAIL TRADE	Wholesale Trade; Building Materials & Gardening; General Merchandise Stores; Food Stores; Automotive Dealers & Service Stations; Apparel & Accessory Stores; Furniture & Home Furnishings Stores; Eating & Drinking; Miscellaneous Retail;
FINANCIAL AND REAL ESTATE	Banking; Credit Agencies; Security & Commodity Brokers; Insurance Carriers; Insurance Agents & Brokers; Owner-occupied Dwellings; Real Estate
MISCELLANEOUS SERVICES	Hotels & Lodging Places; Laundry, Cleaning & Shoe Repair; Portrait & Photographic Studios; Beauty & Barber Shops; Funeral Service & Crematories; Miscellaneous Personal Services; Advertising; Other Business Services; Photofinishing, Commercial Photography; Services To Buildings; Equipment Rental & Leasing; Personnel Supply Services; Computer & Data Processing Services; Detective & Protective Services; Automobile Rental & Leasing; Automobile Parking & Car Washing; Automobile Repair & Services; Electrical Repair Service; Watch, Clock, Jewelry & Furniture; Miscellaneous Repair Shops; Legal Services; Child Day Care Services; Social Services, N.E.C.; Residential Care; Other Nonprofit Organizations; Business Associations; Labor & Civic Organizations; Religious Organizations; Engineering, Architectural Services; Accounting, Auditing, & Bookkeeping; Management & Consulting Services; Research, Development, & Testing
RECREATION AND AMUSEMENT	Motion Pictures; Theatrical Producers, Bands etc; Bowling Alleys & Pool Halls; Commercial Sports Except Racing; Racing & Track Operations; Amusement & Recreation Services; Membership Sports & Recreation
HEALTH SERVICES	Doctors & Dentists; Nursing & Protective Care; Hospitals; Other Medical & Health Services
EDUCATION	Elementary & Secondary School; Colleges, Universities, Schools; Other Educational Services; Job Trainings & Related Service; State & Local Government - Education
GOVERNMENT	Local Government Passenger Transportation; State & Local Electric Utilities; Other State & Local Govt Enterprise; U.S. Postal Service; Federal Electric Utilities; Other Federal Government Enterprise; Federal Government - Military; Federal Government - Non-military; Commodity Credit Corporation; State & Local Government - Non-Education;
DOMESTIC SERVICES	Domestic Services
BALANCE	Noncomparable Imports; Scrap; Used & Secondhand Goods; Rest Of The World Industry; Inventory Valuation Adjustment

Table 2. Direct Effects on Mississippi Employment, Wages, Output, and Value-Added of the Aggregated Economic Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISCELLANEOUS FOREST PRODUCTS	3,334	8.71	265.51	144.35
LOGGING	5,446	117.17	1,361.75	277.19
SOLID WOOD PRODUCTS	23,110	637.74	3,163.08	1,029.33
WOOD FURNITURE	23,945	653.08	2,132.29	797.30
PULP AND PAPER	8,802	462.03	2,058.74	714.96
FOREST PRODUCTS INDUSTRY (sum of above sectors)	64,637	1,878.72	8,981.36	2,963.14
RESOURCE SERVICES	9,238	70.61	193.68	125.46
MINING	5,275	158.52	846.03	561.02
CONSTRUCTION	100,197	2,068.94	8,956.37	3,082.10
AGRICULTURAL PRODUCTS	56,567	214.66	3,683.79	1,302.29
AGRICULTURAL PROCESSING	22,149	513.14	4,066.09	643.65
FOOD PROCESSING	6,777	160.32	1,232.77	248.87
FARM INPUTS & MACHINERY	4,240	148.52	1,412.23	254.71
FABRIC MILLS AND LEATHER	1,738	53.83	234.53	68.79
MISCELLANEOUS MANUFACTURING	44,896	1,068.57	4,575.73	1,463.58
PETROLEUM AND CHEMICALS	20,458	841.60	6,119.45	1,480.98
GLASS, STONE, AND CLAY	6,003	202.63	799.82	334.05
METAL INDUSTRIES	18,814	639.10	3,218.63	1,039.48
MACHINERY AND EQUIPMENT	33,903	1,202.25	5,020.16	1,734.19
TRANSPORTATION EQUIPMENT	27,048	833.61	3,418.47	981.65
TECHNOLOGY INDUSTRIES	5,470	168.79	892.34	246.52
TRANS. AND COMM. SERVICES	52,550	1,706.88	6,533.19	3,331.79
UTILITY SERVICES	7,676	376.37	2,408.01	1,574.01
WHOLESALE AND RETAIL TRADE	285,259	5,021.27	12,425.69	9,143.97
FINANCIAL AND REAL ESTATE	69,897	1,533.76	8,775.31	6,400.96
MISC. SERVICES	205,979	3,437.85	8,823.61	5,530.98
RECREATION AND AMUSEMENT	32,075	611.91	1,743.87	1,075.70
HEALTH SERVICES	89,191	2,868.70	5,619.75	3,695.77
EDUCATION	119,083	2,997.92	3,283.24	3,014.13
GOVERNMENT	174,434	5,504.08	8,195.39	7,443.21
DOMESTIC SERVICES	17,522	145.65	145.65	145.65
ALL SECTORS	1,481,076	34,428.18	111,928.38	58,182.91

Table 3. Total Effects of the Logging Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	42	0.30	2.77	1.53
LOGGING	5,444	129.72	1,361.26	277.09
SOLID WOOD PRODUCTS	67	2.05	9.83	2.90
WOOD FURNITURE	30	0.78	2.54	0.95
PULP AND PAPER	8	0.32	1.55	0.42
RESOURCE SERVICES	17	0.16	0.34	0.21
MINING	36	1.51	6.35	4.18
CONSTRUCTION	677	18.85	54.43	20.79
AGRICULTURAL PRODUCTS	86	1.13	4.10	1.63
AGRICULTURAL PROCESSING	29	0.80	6.59	1.02
FOOD PROCESSING	8	0.26	1.53	0.48
FARM INPUTS & MACHINERY	30	1.54	12.03	2.53
FABRIC MILLS AND LEATHER	2	0.07	0.26	0.09
MISC. MANUFACTURING	82	1.97	8.07	2.56
PETROLEUM AND CHEMICALS	33	1.75	20.66	4.09
GLASS, STONE, AND CLAY	3	0.10	0.34	0.17
METAL INDUSTRIES	55	1.71	8.04	2.71
MACHINERY AND EQUIPMENT	80	2.87	11.29	3.90
TRANSPORTATION EQUIPMENT	31	1.00	5.52	1.25
TECHNOLOGY INDUSTRIES	18	0.58	3.05	0.85
TRANS. AND COMM. SERVICES	401	13.87	48.18	23.24
UTILITY SERVICES	66	3.16	20.11	11.41
WHOLESALE AND RETAIL TRADE	2,120	43.20	100.08	71.45
FINANCIAL AND REAL ESTATE	533	13.35	64.60	47.12
MISC. SERVICES	1,570	37.78	73.76	47.45
RECREATION AND AMUSEMENT	87	1.65	4.43	2.41
HEALTH SERVICES	471	18.84	31.07	20.56
EDUCATION	858	21.08	26.92	21.61
GOVERNMENT	1,239	39.23	64.01	54.15
DOMESTIC SERVICES	91	0.76	0.76	0.76
ALL SECTORS	14,213	360.40	1,956.00	631.05

Table 4. Total Effects of the Solid Wood Products Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	78	0.59	3.75	2.16
LOGGING	2,279	54.30	569.77	115.98
SOLID WOOD PRODUCTS	23,306	713.41	3,195.90	1,038.30
WOOD FURNITURE	121	3.13	10.24	3.82
PULP AND PAPER	65	2.66	12.76	3.44
RESOURCE SERVICES	40	0.38	0.81	0.51
MINING	105	4.47	18.76	12.33
CONSTRUCTION	2,401	67.14	195.12	74.19
AGRICULTURAL PRODUCTS	359	4.75	17.00	6.81
AGRICULTURAL PROCESSING	125	3.46	28.34	4.37
FOOD PROCESSING	32	1.12	6.54	2.04
FARM INPUTS & MACHINERY	46	1.64	14.03	2.87
FABRIC MILLS AND LEATHER	8	0.26	1.07	0.33
MISC. MANUFACTURING	341	8.17	33.18	10.61
PETROLEUM AND CHEMICALS	65	10.70	102.35	21.56
GLASS, STONE, AND CLAY	33	1.17	3.73	1.86
METAL INDUSTRIES	82	2.52	11.33	3.99
MACHINERY AND EQUIPMENT	226	8.11	32.66	11.11
TRANSPORTATION EQUIPMENT	61	1.86	10.71	2.48
TECHNOLOGY INDUSTRIES	69	2.25	11.93	3.30
TRANS. AND COMM. SERVICES	2,202	77.99	257.89	123.36
UTILITY SERVICES	363	19.74	114.63	78.41
WHOLESALE AND RETAIL TRADE	9,367	200.17	468.11	333.70
FINANCIAL AND REAL ESTATE	1,852	46.90	247.14	179.85
MISC. SERVICES	5,665	127.09	254.99	160.00
RECREATION AND AMUSEMENT	370	7.04	18.76	10.39
HEALTH SERVICES	2,044	82.40	135.99	89.93
EDUCATION	2,953	75.56	83.12	75.94
GOVERNMENT	4,899	156.08	242.36	214.48
DOMESTIC SERVICES	403	3.35	3.35	3.35
ALL SECTORS	60,097	1,688.42	6,112.54	2,597.67

Table 5. Total Effects of the Pulp and Paper Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	10	0.08	0.46	0.27
LOGGING	328	7.80	81.88	16.67
SOLID WOOD PRODUCTS	371	11.24	55.17	16.00
WOOD FURNITURE	78	2.03	6.63	2.47
PULP AND PAPER	8,812	464.71	2,060.80	715.63
RESOURCE SERVICES	23	0.22	0.46	0.29
MINING	94	3.94	16.61	10.86
CONSTRUCTION	2,021	56.67	152.36	62.05
AGRICULTURAL PRODUCTS	244	3.28	11.71	4.75
AGRICULTURAL PROCESSING	90	2.51	21.95	3.20
FOOD PROCESSING	21	0.74	4.30	1.34
FARM INPUTS & MACHINERY	29	0.99	8.60	1.75
FABRIC MILLS AND LEATHER	7	0.22	.90	0.28
MISC. MANUFACTURING	237	5.75	23.12	7.46
PETROLEUM AND CHEMICALS	249	13.73	105.35	25.23
GLASS, STONE, AND CLAY	8	0.29	0.96	0.47
METAL INDUSTRIES	34	1.15	5.90	1.80
MACHINERY AND EQUIPMENT	146	5.19	21.57	7.16
TRANSPORTATION EQUIPMENT	40	1.18	6.86	1.58
TECHNOLOGY INDUSTRIES	46	1.51	8.00	2.21
TRANS. AND COMM. SERVICES	1,547	55.68	182.90	87.95
UTILITY SERVICES	303	15.36	94.70	58.08
WHOLESALE AND RETAIL TRADE	6,004	126.78	294.77	210.93
FINANCIAL AND REAL ESTATE	1,157	29.51	158.08	114.97
MISC. SERVICES	3,597	80.89	164.96	102.23
RECREATION AND AMUSEMENT	245	4.65	12.46	6.86
HEALTH SERVICES	1,355	54.57	90.05	59.56
EDUCATION	1,928	49.68	53.43	49.83
GOVERNMENT	3,311	105.17	167.77	145.22
DOMESTIC SERVICES	266	2.21	2.21	2.21
ALL SECTORS	32,601	1,107.75	3,818.57	1,722.97

Table 6. Total Effects of the Wood Furniture Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	4	0.03	0.20	0.11
LOGGING	114	2.72	28.50	5.80
SOLID WOOD PRODUCTS	1,806	48.89	180.30	66.51
WOOD FURNITURE	23,943	665.39	2,132.16	797.26
PULP AND PAPER	70	2.83	13.58	3.62
RESOURCE SERVICES	31	0.29	0.61	0.38
MINING	52	2.22	9.30	6.11
CONSTRUCTION	1,623	45.51	128.18	50.12
AGRICULTURAL PRODUCTS	292	4.14	15.25	6.10
AGRICULTURAL PROCESSING	132	3.69	35.91	4.80
FOOD PROCESSING	24	0.83	4.87	1.52
FARM INPUTS & MACHINERY	22	0.67	5.94	1.19
FABRIC MILLS AND LEATHER	337	11.04	46.14	14.31
MISC. MANUFACTURING	302	7.31	29.30	9.48
PETROLEUM AND CHEMICALS	81	3.93	39.41	8.67
GLASS, STONE, AND CLAY	22	0.79	2.50	1.25
METAL INDUSTRIES	162	4.92	21.97	8.74
MACHINERY AND EQUIPMENT	134	4.79	19.19	6.58
TRANSPORTATION EQUIPMENT	34	1.04	5.96	1.42
TECHNOLOGY INDUSTRIES	48	1.56	8.17	2.25
TRANS. AND COMM. SERVICES	1,052	37.54	126.77	62.67
UTILITY SERVICES	173	9.20	54.26	36.07
WHOLESALE AND RETAIL TRADE	6,782	143.54	333.72	238.91
FINANCIAL AND REAL ESTATE	1,358	35.15	186.32	135.62
MISC. SERVICES	3,661	80.71	158.77	100.42
RECREATION AND AMUSEMENT	290	5.45	14.83	8.00
HEALTH SERVICES	1,540	62.44	103.10	68.16
EDUCATION	1,936	49.60	53.67	49.74
GOVERNMENT	3,402	109.05	168.82	149.57
DOMESTIC SERVICES	307	2.55	2.55	2.55
ALL SECTORS	49,732	1,347.81	3,933.48	1,851.18

Table 7. Total Effects of the Forest Products Industry on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1998).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	3,448	24.15	271.36	147.70
LOGGING	5,450	129.85	1,362.60	277.37
SOLID WOOD PRODUCTS	23,326	710.25	3,173.46	1,028.73
WOOD FURNITURE	23,943	665.43	2,132.24	797.28
PULP AND PAPER	8,810	461.78	2,051.42	708.63
RESOURCE SERVICES	1,167	11.07	22.47	13.42
MINING	266	11.28	47.41	31.10
CONSTRUCTION	6,484	181.55	511.80	199.90
AGRICULTURAL PRODUCTS	1,061	14.57	54.02	21.40
AGRICULTURAL PROCESSING	383	10.50	92.47	13.42
FOOD PROCESSING	80	2.81	16.43	5.13
FARM INPUTS & MACHINERY	125	4.51	38.43	7.86
FABRIC MILLS AND LEATHER	351	11.49	47.98	14.89
MISC. MANUFACTURING	918	22.15	89.46	28.75
PETROLEUM AND CHEMICALS	535	28.42	251.53	56.16
GLASS, STONE, AND CLAY	61	2.17	6.96	3.46
METAL INDUSTRIES	300	9.32	42.69	15.69
MACHINERY AND EQUIPMENT	558	20.01	81.03	27.52
TRANSPORTATION EQUIPMENT	153	4.64	26.71	6.19
TECHNOLOGY INDUSTRIES	173	5.64	29.82	8.24
TRANS. AND COMM. SERVICES	4,886	174.18	579.09	280.02
UTILITY SERVICES	854	44.78	267.29	173.86
WHOLESALE AND RETAIL TRADE	23,000	486.18	1,131.55	809.01
FINANCIAL AND REAL ESTATE	4,665	118.61	625.15	454.85
MISC. SERVICES	13,726	309.21	616.14	387.71
RECREATION AND AMUSEMENT	944	17.87	48.03	26.33
HEALTH SERVICES	5,162	208.24	343.67	227.27
EDUCATION	7,395	189.42	207.65	190.35
GOVERNMENT	12,389	394.32	615.84	541.97
DOMESTIC SERVICES	1,018	8.46	8.46	8.46
ALL SECTORS	151,632	4,282.88	14,807.17	6,526.68



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