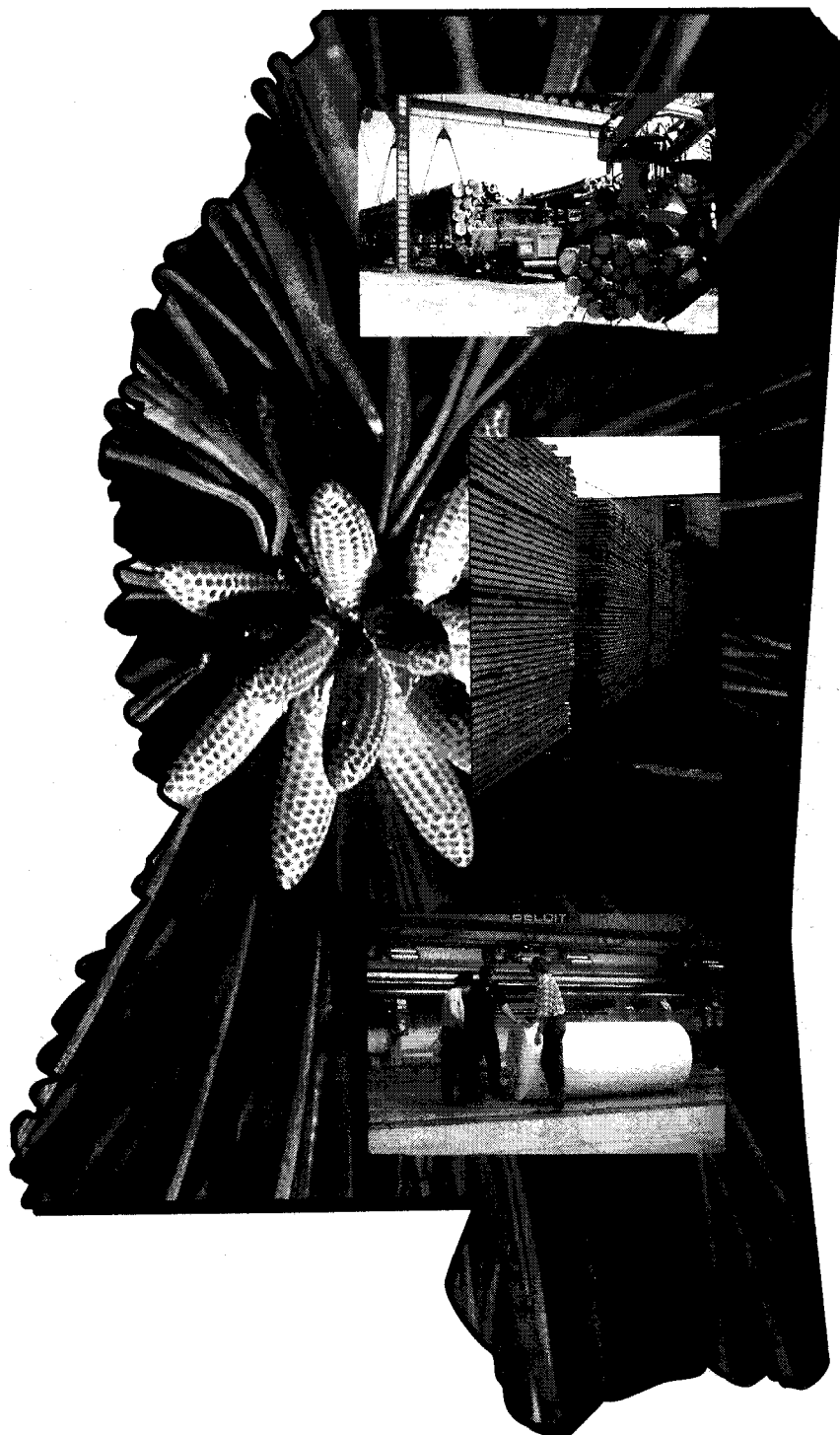


FORESTRY IN MISSISSIPPI

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



BY

Dr. Ian A. Munn

Bulletin #10-087

FWRC RESEARCH BULLETIN



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January 1998

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 one 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 agricultural crops (Daniels 1996). 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 to its employees; 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 and production in these supporting industries in order 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 overall 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 1-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 (1966) who modeled the Mississippi economy using 45 aggregated sectors - 26 food and fiber sectors and 18 non-food and non-fiber sectors. Because the focus of this study is the Forest Products Industry, the non-forestry related food and fiber sectors were further aggregated into three sectors: agricultural production, agricultural processing, and food processing.

IMPLAN data for 1993, the most recent available at the time, 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 Extension Service and were used in this study.

This study examined the impact of the four primary sectors of the Forest Products Industry individually, then examined the impact of the entire Forest Products 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 relevant sector or industry production and calculating the impact on the state economy. This procedure is consistent with Barnett and Reinschmidt (1996) and Hughes (1995).

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 63,873 people in 1993, roughly 5% of the state's total employment. The industry paid out over \$1.6 billion in wages. The industry's average annual wage was \$25,492 - over \$5,000 more than the state average. Value-added generated by the industry totaled over \$2.6 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, respectively, on the state economy. 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 Forest Products Industry on the state economy.

Logging

\$1.45 Billion <i>Total Industry Output</i>
11,280 Jobs
\$200 Million <i>In Wages</i>
\$410 Million <i>In Value Added</i>

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 American Pulpwood Association recognizes excellence in the logging community through an award called the Outstanding Logger

of the Year. In the 1990's, Mississippi has had three regional winners and in 1995, a Mississippi logger was recognized as the National Outstanding Logger of the Year (Corbitt, S., Executive Vice-President, Mississippi Forestry Association. personal communication, 1997).

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.

The direct effect of the industry is substantial. Timber has become one of Mississippi's most valuable crops. In 1993, the value of Mississippi's timber harvest at the point of first processing was \$1.02 billion dollars. Landowners received \$67.1 million for their standing timber (Daniels 1994). In 1993, logging firms employed 5,060 people and paid \$83 million in wages. Value-added exceeded \$192 million (Table 2).

The total effect (direct, indirect and induced) of logging on Mississippi's economy is even greater (Table 3). In 1993, over 11,000 jobs were related to timber harvesting activities with wages totaling \$200 million. Logging generated an estimated \$1.45 billion addition to Mississippi's total industry output and \$410 million value-added to Mississippi's economy. Construction, wholesale and retail trade, financial and real estate, and health 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 is 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 Forest Products Industry in the state.

Solid Wood Products

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 1993, these firms directly employed 22,549 workers and paid \$529 million in wages. The average annual wage was \$23,500 — \$3,500 higher than the average state wage. Industry output for the sector was \$2.6 billion and the value-added by manufacturing exceeded \$904 million (Table 2).

\$4.9 Billion <i>Total Industry Output</i>
52,841 Jobs
\$1.1 Billion <i>In Wages</i>
\$2.0 Billion <i>In Value Added</i>

The solid wood products sector utilized almost 1.4 billion board feet of pine stumpage and 0.45 billion board feet of hardwood stumpage in 1993, resulting in payments to Mississippi landowners of almost \$528 million. Miscellaneous products such as stumpwood and Christmas trees generated an additional \$2.4 million for landowners (Daniels 1994).

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 construction, transportation and communications, wholesale and retail trade, and financial and real estate sectors, increasing the total industrial output of these sectors by over \$150 million each. This sector generated 52,841 jobs, either directly or in supporting industries. Employee compensation for these jobs was \$1.1 billion annually. Total value-added was over \$2 billion and industry output generated by the solid wood products sector and its supporting industries amounted to \$4.9 billion (Table 4).

Pulp and Paper

\$2.6 Billion <i>Total Industry Output</i>
21,693 Jobs
\$645 Million <i>In Wages</i>
\$1.1 Billion <i>In Value Added</i>

Included in this sector are pulp mills, paper mills, paper-board mills, and manufacturers of paperboard containers and boxes, converted paper and paperboard products and other related paper products (Table 1). In 1993, these firms employed 9,062 workers and paid \$398 million in wages. The average annual wage was \$43,935, more than double the state average. Total industry output for the sector was \$1.7 billion and

value-added by manufacturing exceeded 650 million dollars (Table 2).

The indirect and induced effects of the pulp and paper sector had a major impact on the wholesale and retail trade, service, petroleum and chemicals, transportation and communications, construction, and utility sectors, increasing the total industrial output of these sectors by more than \$70 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 21,693. Total

wages exceeded \$647 million. Industry output related to the activities of the pulp and paper sector amounted to \$2.6 billion with an associated \$1.1 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 1993, these firms employed 26,548 workers and paid \$612 million in wages. The average annual wage was \$23,048 — \$3,000 more than the state's average annual wage. Total industry output for the sector was \$1.7 billion and the value-added by manufacturing exceeded \$650 million (Table 2).

\$3.2 Billion <i>Total Industry Output</i>
49,566 Jobs
\$1.0 Billion <i>In Wages</i>
\$1.6 Billion <i>In Value Added</i>

Other industrial sectors that benefit from the indirect and induced effects of the wood furniture sector include the construction, wholesale and retail trade, and service sectors. Direct, indirect and induced employment totaled 49,567. Total wages exceeded \$1.0 billion. Industry output related to the activities of the wood furniture and related products sector amounted to \$3.2 billion with an associated \$1.6 billion value-added (Table 6).

Total Industry Impact

The combined impact of all sectors of the Forest Products Industry on Mississippi's economy is dramatic. Forestry related employment (direct, indirect and induced) accounts for 10% of all jobs in Mississippi. 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). The average annual wage in forestry related occupations is \$25,686, - \$5,600 greater than the average annual wage in Mississippi (Table 2).

In Mississippi, total industry output related to the Forest Products Industry exceeds \$11.4 billion and related value-

added exceeds \$4.9 billion. Related employment totals 129,443 full- or part-time jobs with an associated annual payroll of \$2.8 billion (Table 7).

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Table I. Aggregation Scheme for IMPLAN Input-Output Analysis of the Forest Products Industry Impact on the Mississippi Economy, 1993.

MODEL SECTORS	ORIGINAL IMPLAN SECTORS
MISC. 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; 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; Hay & Pasture; Grass Seeds; Tobacco; Fruits; Tree Nuts; Vegetables; Sugar Crops; Miscellaneous Crops; Oil Bearing Crops; Greenhouse & Nursery Products; Landscape & Horticultural Services
AGRICULTURE PROCESSING	Meat Packing Plants; Sausages & Other Prepared Meats; Poultry Processing; Creamery Butter; Cheese, Natural & Processed; Condensed & Evaporated Milk; Ice Cream & Frozen Desserts; 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;

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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 23p9.674Beverages; 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
FABRIC MILLS AND LEATHER	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
PETROLEUM AND CHEMICALS	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; 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
GLASS, STONE, AND CLAY	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 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.
METAL INDUSTRIES	Blast Furnaces & Steel Mills; Steel Wire & Related Products; Cold Finishing of Steel Shapes; Steel Pipe & Tubes; Iron & Steel Foundries; Primary Copper; Primary Nonferrous Metals, N.E.C.; Secondary Nonferrous Metals; Copper Rolling & Drawing; Aluminum Rolling & Drawing; Nonferrous Rolling & Drawing; Nonferrous Wire Drawing & Ins.; 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; 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.
MACHINERY AND EQUIPMENT	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; 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, 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; 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

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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;
TRANS. AND COMM. 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
MISC. 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: Apparel Made From Purchased Mat; Curtains & Draperies: Housefurnishings, N.E.C.; Textile Bags; Canvas Products; Pleating & Stitching; Automotive & Apparel Trimming; Schiffi 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; 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
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
MISC. SERVICES	Hotels & Lodging Places; Laundry, Cleaning & Shoe Repair; Portrait & Photographic Studies; 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; Domestic Services
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: Hosoiitals: 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 (1993).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	654	5.3x	99.09	52.603
LOGGING	5,060	X2.9')	1,020.83	192.59
SOLID WOOD PRODUCTS	22,549	529.87	2,635.08	904.00
WOOD FURNITURE	26,548	611.86	1,763.62	805.49
PULP AND PAPER	9,062	39x. 14	1,664.26	653.X 1
FOREST PRODUCTS INDUSTRY (sum of above sectors)	63,873	1628.23	7,182.88	2,609.42
RESOURCE SERVICES	7,381	6X.53	14X.01	122.06
MINING	3,137	77.52	992.66	4x9.77
CONSTRUCTION	83,397	1,503.19	8,563.75	2,935.91
AGRICULTURAL PRODUCTS	57,465	23x.29	2,765.55	1,168.99
AGRICULTURE PROCESSING	20,127	436.09	3,608.41	494.52
FOOD PROCESSING	8,947	208.34	1,446.71	408.94
FARM INPUTS & MACHINERY	4,085	130.21	998.70	1 X4.44
FABRIC MILLS AND LEATHER	1,892	4X.69	180.34	62.77
PETROLEUM AND CHEMICALS	2 1,870	797.92	5.56X.32	1,665.75
GLASS, STONE, AND CLAY	5,523	15X.52	542.50	252.83
METAL INDUSTRIES	16,828	523.40	2,345.70	762.40
MACHINERY AND EQUIPMENT	29,2X 1	922.53	3.3 10.80	1,318.12
TRANSPORTATION EQUIPMENT	26,379	892.52	2,833.60	1,130.98
TECHNOLOGY INDUSTRIES	6,112	167.78	759.92	257.18
TRANS. AND COMM. SERVICES	42,538	1,161.69	3,966.35	2099.2 1
MISC. MANUFACTURING	58,538	1,098.80	4,197.85	1,632.22
UTILITY SERVICES	8,417	372.35	1,815.50	1,059.56
WHOLESALE AND RETAIL TRADE	251,170	3,720.62	8,165.45	6,473.81
FINANCIAL AND REAL ESTATE	56,034	1,159.31	8,817.51	5,168.46
MISC. SERVICES	145,437	1,907.14	5,732.71	3,313.63
RECREATION AND AMUSEMENT	23,261	354.27	931.33	605.89
HEALTH SERVICES	71,822	1,826.70	3,708.78	2,648.77
EDUCATION	110,071	2,220.63	2,437.70	2,226.49
GOVERNMENT	154,707	4,258.49	4,589.16	4,387.36
DOMESTIC SERVICES	18,545	114.94	114.94	114.94
ALL SECTORS	1,296,655	25,996.85	85,711.54	43,543.88

Table 3. Total Effects of the Logging Sector on Mississippi Employment, Wages, Output, and Value-Added for the Aggregated Economic Sectors (1993).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	1	0.0055	0.1253	0.1139
LOGGING	5,060	82.9942	1,020.829	192.5977
SOLID WOOD PRODUCTS	51	1.2374	6.3516	2.1377
WOOD FURNITURE	15	0.3199	0.9888	0.4235
PULP AND PAPER	16	0.5371	2.4196	0.7305
RESOURCE SERVICES	16	0.1598	0.3008	0.2457
MINING	19	0.468	6.1983	3.1306
CONSTRUCTION	353	6.663	33.4423	12.3957
AGRICULTURAL PRODUCTS	111	0.4969	3.5064	1.5783
AGRICULTURE PROCESSING	33	0.8299	7.703	0.8952
FOOD PROCESSING	17	0.4968	2.5128	1.0844
FARM INPUTS AND MACHINERY	65	3.1346	22.373	1.8916
FABRIC MILLS AND LEATHER	3	0.0845	0.3038	0.1084
MISC. MANUFACTURING	158	2.7441	10.116	3.9985
PETROLEUM AND CHEMICALS	44	2.019	22.3236	5.5326
GLASS, STONE, AND CLAY	4	0.1152	0.3973	0.1835
METAL INDUSTRIES	123	3.4685	16.2214	5.3486
MACHINERY AND EQUIPMENT	153	5.0159	15.7736	7.2067
TRANSPORTATION EQUIPMENT	63	1.9746	8.2371	3.5041
TECHNOLOGY INDUSTRIES	17	0.4329	2.0848	0.6506
TRANS. AND COMM. SERVICES	348	8.7486	28.8752	15.5754
UTILITY SERVICES	66	2.8125	13.6047	7.6517
WHOLESALE AND RETAIL TRADE	1,995	29.76	65.4169	51.7738
FINANCIAL AND REAL ESTATE	398	8.4158	59.57	34.0525
MISC. SERVICES	1,023	13.4481	55.8799	25.1535
RECREATION AND AMUSEMENT	99	1.3248	3.9075	2.2289
HEALTH SERVICES	590	15.1291	30.6415	21.8364
EDUCATION	247	4.3563	8.3998	4.4703
GOVERNMENT	74	2.3032	4.8248	3.3296
DOMESTIC SERVICES	118	0.7344	0.7344	0.7344
ALL SECTORS	11,281	200.2306	1,454.063	410.5643

Table 4. Total Effects of the Solid Wood Products Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1993).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	9	0.0355	0.8161	0.7419
LOGGING	2159	35.4072	435.5088	82.1666
SOLID WOOD PRODUCTS	22,553	529.9770	2,635.4392	905.0754
FURNITURE	73	1.5146	4.6836	2.0059
PULP AND PAPER	130	4.2872	19.2919	5.825
RESOURCE SERVICES	32	0.3149	0.6157	0.5044
MINING	80	1.9942	28.0063	13.9744
CONSTRUCTION	1,852	35.0177	176.6053	65.3367
AGRICULTURAL PRODUCTS	514	2.301	16.2675	7.3191
AGRICULTURE PROCESSING	155	3.8938	36.14	4.1997
FOOD PROCESSING	2	2.3281	11.774	5.0808
FARM INPUTS AND MACHINERY	39	1.7071	12.392	1.313
FABRIC MILLS AND LEATHER	15	0.3921	1.3953	0.502
MISC. MANUFACTURING	818	15.009	53.2923	22.1311
PETROLEUM AND CHEMICALS	25x	11.8888	111.7349	30.5557
GLASS, STONE, AND CLAY	2x	0.8192	2.804	1.3034
METAL INDUSTRIES	177	4.741	21.0417	7.1393
MACHINERY AND EQUIPMENT	245	8.4393	27.1368	11.9161
TRANSPORTATION EQUIPMENT	44	1.2839	7.0486	2.1605
TECHNOLOGY INDUSTRIES	83	2.0901	10.0346	3.1583
TRANS. AND COMM. SERVICES	2,145	59.1609	180.1542	98.9509
UTILITY SERVICES	562	25.4063	125.4025	72.3435
WHOLESALE AND RETAIL TRADE	9,687	149.4519	324.8645	259.3382
FINANCIAL AND REAL ESTATE	1,770	37.5205	273.6483	156.0907
MISC. SERVICES	4,676	60.6752	204.8332	109.9138
RECREATION AND AMUSEMENT	481	6.3613	19.3725	10.716
HEALTH SERVICES	2,763	70.8738	143.5445	102.2941
EDUCATION	458	7.3911	15.5149	7.6134
GOVERNMENT	397	12.561	27.5578	18.9178
DOMESTIC SERVICES	555	3.4401	3.4401	3.4401
ALL SECTORS	52,841	1,096.284	4,930.361	2,012.028

Table 5. Total Effects of the Pulp and Paper Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1993)

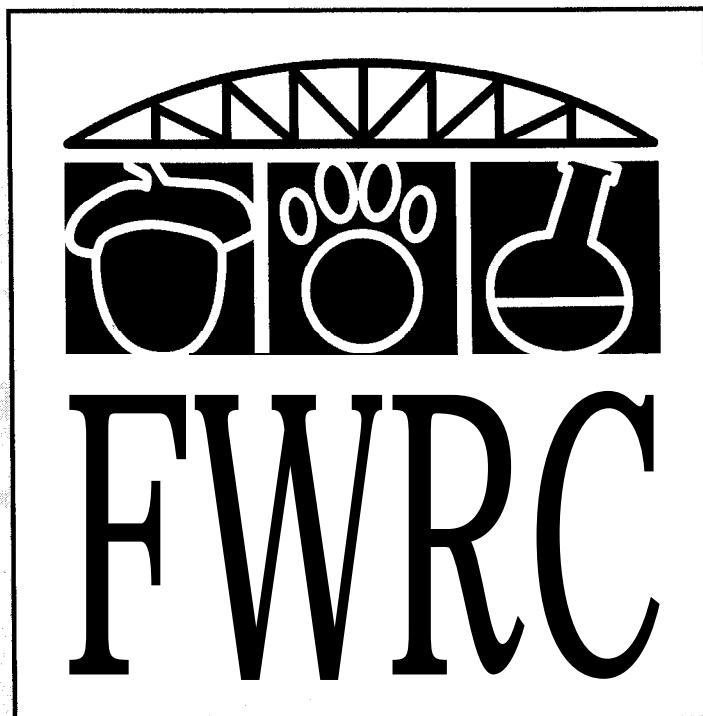
MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	1	0.00	0.07	0.07
LOGGING	197	3.22	39.66	7.48
SOLID WOOD PRODUCTS	278	6.44	32.24	11.00
WOOD FURNITURE	30	0.61	1.90	0.81
PULP AND PAPER	9,063	398.17	1,665.42	653.88
RESOURCE SERVICES	12	0.12	0.24	0.19
MINING	49	1.21	17.12	8.51
CONSTRUCTION	x21	15.48	77.18	2X.68
AGRICULTURAL PRODUCTS	218	0.97	7.12	3.23
AGRICULTURE PROCESSING	72	1.80	16.94	1.99
FOOD PROCESSING	34	0.95	4.84	2.09
FARM INPUTS AND MACHINERY	28	1.29	9.43	0.88
FABRIC MILLS AND LEATHER	23	0.61	2.21	0.78
MISC. MANUFACTURING	333	6.09	21.77	8.97
PETROLEUM AND CHEMICALS	226	11.03	87.56	26.67
GLASS, STONE, AND CLAY	8	0.21	0.71	0.34
METAL INDUSTRIES	40	1.19	5.62	1.83
MACHINERY AND EQUIPMENT	105	3.40	11.71	4.74
TRANSPORTATION EQUIPMENT	13	0.34	2.20	0.53
TECHNOLOGY INDUSTRIES	35	0.87	4.17	1.31
TRANS. AND COMM. SERVICES	1,224	32.21	96.56	53.77
UTILITY SERVICES	342	14.86	71.73	39.77
WHOLESALE AND RETAIL TRADE	4,021	62.64	135.71	108.69
FINANCIAL AND REAL ESTATE	714	14.91	108.89	63.03
MISC. SERVICES	1,913	24.92	89.28	45.76
RECREATION AND AMUSEMENT	197	2.60	7.90	4.39
HEALTH SERVICES	1,134	29.09	58.92	41.99
EDUCATION	158	2.48	5.33	2.56
GOVERNMENT	178	5.48	12.74	8.68
DOMESTIC SERVICES	228	1.41	1.41	1.41
ALL SECTORS	21,693	644.74	2,596.75	1,134.16

Table 6. Total Effects of the Wood Furniture Sector on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1993).

MODEL SECTORS	EMPLOYMENT (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
MISC. FOREST PRODUCTS	0	0.00	0.02	0.02
LOGGING	so	0.82	10.10	1.90
SOLID WOOD PRODUCTS	353	9.13	48.96	16.23
WOOD FURNITURE	26,549	611.87	1,763.65	805.50
PULP AND PAPER	125	4.13	18.59	5.59
RESOURCE SERVICES	29	0.28	0.55	0.45
MINING	38	.95	13.08	6.55
CONSTRUCTION	1,161	21.91	111.40	41.08
AGRICULTURAL PRODUCTS	465	1.98	15.50	6.87
AGRICULTURE PROCESSING	158	3.96	36.97	4.34
FOOD PROCESSING	77	2.18	11.02	4.75
FARM INPUTS & MACHINERY	8	0.24	1.83	0.34
FABRIC MILLS AND LEATHER	321	x.43	30.07	10.81
MISC. MANUFACTURING	7x3	14.10	53.65	20.65
PETROLEUM AND CHEMICALS	121	5.17	5 1.60	13.90
GLASS, STONE, AND CLAY	23	0.65	2.22	1.03
METAL INDUSTRIES	100	2.75	12.80	4.19
MACHINERY AND EQUIPMENT	81	2.65	9.00	3.75
TRANSPORTATION EQUIPMENT	17	0.42	3.51	0.64
TECHNOLOGY INDUSTRIES	74	1.85	x.91	2.78
TRANS. AND COMM. SERVICES	972	26.52	86.63	47.21
UTILITY SERVICES	238	10.38	51.16	29.38
WHOLESALE AND RETAIL TRADE	8,365	121.79	270.05	211.89
FINANCIAL AND REAL ESTATE	1,557	33.10	245.72	141.09
MISC. SERVICES	3,701	47.96	153.46	87.35
RECREATION AND AMUSEMENT	445	5.93	17.69	9.98
HEALTH SERVICES	2,591	66.47	134.63	95.94
EDUCATION	333	5.15	11.12	5.32
GOVERNMENT	311	9.84	20.23	13.99
DOMESTIC SERVICES	521	3.22	3.22	3.22
ALL SECTORS	49,567	1,023.94	3,197.49	1,596.89

Table 7. Total Effects of the Forest Products Industry on Mississippi Employment, Wages, Output, and Value-Added by Industrial Sectors (1993)

MODEL SECTORS	E M P L O Y M E N T (Number of Jobs)	WAGES AND SALARIES (\$MM)	TOTAL INDUSTRY OUTPUT (\$MM)	VALUE-ADDED (\$MM)
FOREST PRODUCTS	369	4.31	74.65	30.40
LOGGING	5,056	X2.93	1,020.15	192.47
SOLID WOOD PRODUCTS	22,570	530.26	2,636.48	905.50
WOOD FURNITURE	26,540	611.71	1,763.14	nos.30
PULP AND PAPER	9,066	398.27	1,665.92	654.06
RESOURCE SERVICES	442	4.57	8.46	6.90
MINING	176	4.37	60.92	30.4 1
CONSTRUCTION	4,001	75.57	3x1.08	140.98
AGRICULTURAL PRODUCTS	1,295	5.70	43.56	19.35
AGRICULTURE PROCESSING	418	10.39	95.73	11.35
FOOD PROCESSING	201	5.70	28.83	12.44
FARM INPUTS AND MACHINERY	119	5.21	37.31	3.94
FABRIC MILLS AND LEATHER	360	9.46	33.75	12.12
MISC. MANUFACTURING	2,008	36.48	133.45	53.61
PETROLEUM AND CHEMICALS	622	28.87	260.09	73.35
GLASS, STONE, AND CLAY	60	1.72	5.90	2.74
METAL INDUSTRIES	379	10.45	47.73	15.88
MACHINERY AND EQUIPMENT	506	16.93	55.57	23.92
TRANSPORTATION EQUIPMENT	107	3.08	17.07	5.17
TECHNOLOGY INDUSTRIES	200	5.02	24.11	7.57
TRANS. AND COMM. SERVICES	4,456	120.61	373.13	205.09
UTILITY SERVICES	1,162	51.43	252.04	143.52
WHOLESALE AND RETAIL TRADE	22,981	347.04	759.84	602.86
FINANCIAL AND REAL ESTATE	4,230	89.55	656.59	376.35
MISC. SERVICES	10,829	140.76	476.61	256.46
RECREATION AND AMUSEMENT	1,169	15.52	46.78	26.13
HEALTH SERVICES	6,768	173.61	351.62	250.58
EDUCATION	1075	17.25	36.24	17.77
GOVERNMENT	917	28.84	62.5 1	42.97
DOMESTIC SERVICES	1,360	8.42	8.42	8.42
ALL SECTORS	129,443	2,844.17	11,417.83	4,937.77



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