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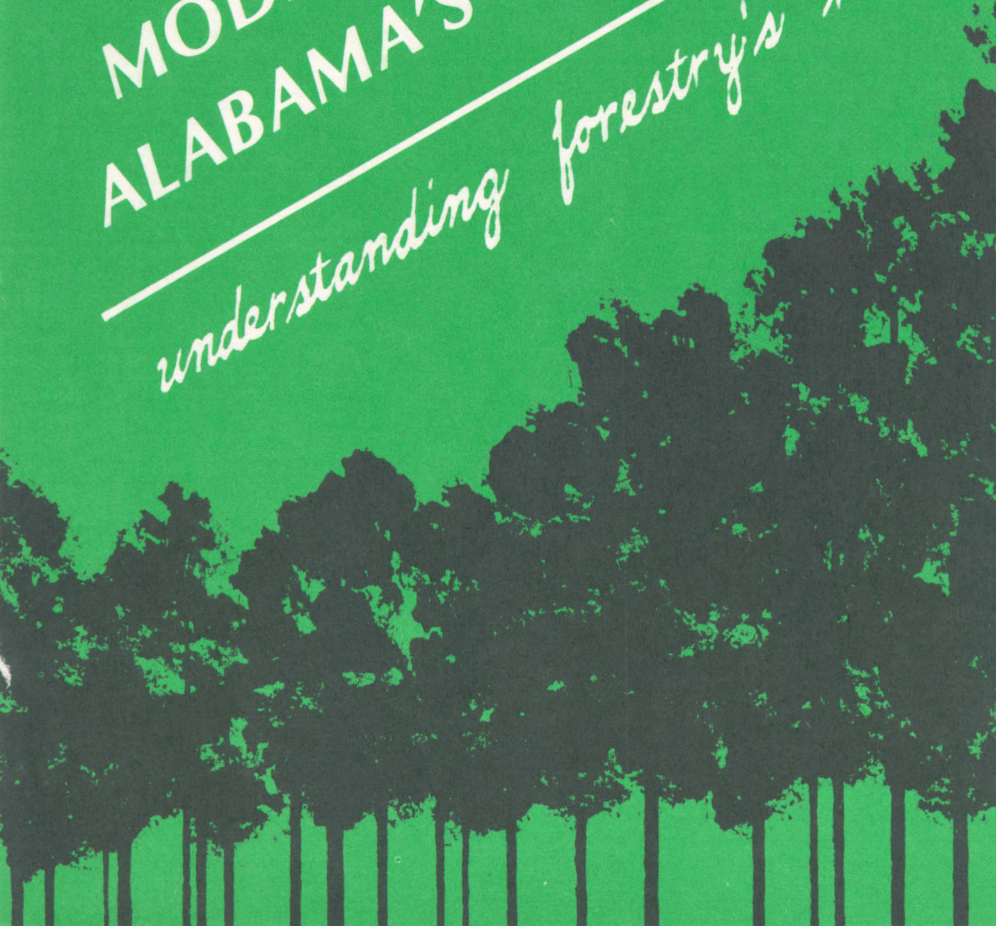
AN INPUT-OUTPUT MODEL OF ALABAMA'S ECONOMY

understanding forestry's role



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AN INPUT-OUTPUT MODEL OF ALABAMA'S ECONOMY: *Understanding Forestry's Role*

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INTRODUCTION AND OBJECTIVES

THE FOREST ECONOMIES of Alabama and other southern states have expanded rapidly in recent years. The natural and human resources of the region are well suited to the needs of the forest industry, and these industries have grown to positions of economic leadership in many southern states.

In Alabama, the forest industry now has the largest value added of any manufacturing industry, which is quite significant because value added is considered to be the best single indicator of an industry's economic contribution to a region *(24)*[1]. The forest industry's value added has grown at a compound annual rate of 11.6 percent since 1960, which shows forestry to be among the State's most rapidly growing major industries *(6)*. Recently announced expansions indicate rapid growth will continue in future years.

Such industrial growth is an interdependent process. Forest industries cannot undergo such growth without influencing and being influenced by the rest of the economy. The prospects for continued development of the forest industries depend heavily upon the availability of timber and other resources. In addition to increasing employment and income in forest industries, this development will cause added income and employment in other sectors of the State's economy. It will also increase tax revenues for Alabama's state and local governments. For this development to occur in an orderly and

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[1]The value added of any firm or industry is the value of gross receipts less the cost of raw materials. It may be viewed as a fund out of which firms can pay wages, rents, interest, and taxes, all of which usually have local significance. It can also be viewed as any industry's contribution to the Nation's Gross National Product.

beneficial way, leaders in industry and government need basic information about the size, scope, and relative impact of forestry and forest industries.

Although large amounts of data are compiled by public agencies, these data are not integrated to show the relationship between forestry and the overall economy of Alabama. In the absence of an integrating model or theory, they provide no basis for a systematic study of the contributions forest industries make and little basis for forecasts about the impacts of planned activities and policies.

It was the objective of this study to describe, quantify, and relate the economic activity of forest industries in Alabama to the entire Alabama economy. The basic procedure was to build an input-output model of the State economy, then use the model to describe the role of the forest industries in the State.

Input-output models of state economies are relatively rare in forestry because the necessary data are difficult and costly to obtain. Two traditional procedures are available for constructing such models. One involves preparing questionnaires and conducting interviews of a sample of businesses within a state. That procedure gives an excellent model, but it is very expensive.[2] A second procedure, used by foresters and general economists, is to estimate a state model by adjusting published national input-output models to correspond to the industrial structure in a state. Troutman and Porterfield *(18)* developed a small model for Arkansas, and Terfehr *(17)* developed a similar, though larger, model for Mississippi. This procedure gives results of uncertain value because it is impossible to assess the validity of the model without independent data. In the few cases where independent data were collected and used for comparison, substantial differencies were found between models derived from national data and those from independently gathered state data *(3, 8, 15)*.

The modeling problem is significant. Input-output models are surely useful, yet traditional procedures seem to present a choice between good models which are prohibitively expensive and unreliable models which are affordable. The model described here is an attempt to solve this problem by using

[2]William Miernyk, who has conducted several input-output studies, told the authors it would likely cost in excess of $1.5 million to duplicate his 1965 West Virginia Model.

low cost mail survey procedures to collect data about Alabama's mining and manufacturing industries. Other sectors were estimated from national input-output tables. The result is a hybrid model, less thorough than that of Loviscek et al. *(11)*, yet consistent with that recommended by Czmanski and Malizia *(3)* and Richardson *(14)*.

The remainder of this report introduces input-output analysis and the methods used to build the Alabama model. The Alabama model is presented in detail, and it is used to reach conclusions about the development potential of forestry in Alabama.

INPUT-OUTPUT ANALYSIS[3]

Input-output analysis was developed by Wassily Leontief in the 1930's and it involves a general theory of production based on ideas of economic interdependence *(9, 10)*. It is unique in its ability to simultaneously provide detailed estimates of specific interindustry transactions and information about the entire aggregate of economic activity. It has been used for a wide variety of purposes including but not limited to evaluations of alternative economic development programs, studies to determine the relative labor intensity of U.S. exports, evaluations of the economic effects of disarmament, studies of state, multicounty, and county economies, and studies of centralized administrative systems.

The idea of economic interdependence among industries, governments, households, and people in other regions is given concreteness in a table of numbers called a flow table or transactions table. Such a table is illustrated in figure 1 where the industries of the economy are listed along the top and left margins. Each entry in the figure is simultaneously a sale from the industry at the left and a purchase by the industry at the top. These numbers, though hypothetical in figure 1, show the total value of all interindustry transactions in a year. For example, the lumber industry bought $4 million worth of agricultural output and sold $6 million worth of lumber products to agricultural businesses. When read down a column the numbers indicate purchases by the industry at the top. When read across a row, they indicate sales by the industry at the left.

[3]For a more complete explanation of input-output analysis see Miernyk *(12)* and Elliot-Jones *(5)*.

Consuming or Purchasing Industries

Producing or selling industries	Agriculture	Lumber	Steel		Final demand	Total sales
Agriculture	7	4	2	. . .	25	82
Lumber	6	2	1	. . .	29	45
Steel	0	5	3	. . .	15	91
.	.	.	.			
.	.	.	.			
.	.	.	.			
Primary input	10	9	20			
Total purchases	82	45	91			

FIG. 1. Hypothetical transactions table for an economy ($Million, 1977).

As displayed in figure 1, the transactions data are simply a description of 1 year of economic life. By themselves, these data provide no predictive or analytical power. Such power comes from combining transactions data with a theory of economic behavior long familiar to businessmen. In this theory, the primary forces creating industrial activity in a region are final demands, measured as the purchases by "end users" of commodities and services. Businessmen invest, purchase raw materials, and produce because they perceive demands for their products.

To produce and meet final demands, each industry must purchase raw materials and services from other industries, stimulating their production as well. When consumers demand more paper, the paper industry must purchase more wood, chemicals, and other inputs. These other industries then increase their purchases, stimulating still more economic activity.

Some of the inputs purchased by industries are given special status—primary inputs. These are non-produced or exogenous inputs from relatively basic sources. Labor and government services are usually included in input-output theory as primary inputs.

In the Alabama model, final demand has four parts: purchases by Alabama households, purchases by state and local governments, purchases by the federal government, and purchases by out-of-state households, businesses, and governments (exports). In the hypothetical numbers of figure 1, only the total final demands are illustrated ($29 million for lumber).

In the Alabama model, primary inputs are labor (purchased from households), government services (provided from taxes), and imports (purchased from outside Alabama). In figure 1, only the total primary inputs are illustrated, and lumber purchased $9 million of these.

A basic accounting identity used in input-output analysis is that total sales must equal total purchases, that is, any industry spends its entire income in a year to meet production costs of that year.

That identity usually requires that extra sectors be included in the model to account for profits, investment, depreciation, and inventory adjustments. In the Alabama model, an unallocated sector serves all these functions as well as providing a place for the adjustments required in balancing the model.

These notions about demand, production requirements, and primary inputs can be further specified by constructing a set of simultaneous equations from the transactions data, then solving the equations in a way that yields a predictive model.

Technical input coefficients (sometimes called direct input requirements) are defined as the value of inputs required per dollar's worth of output. Each industry's production technology can be represented as a column of coefficients, each coefficient defined as . . .

$$a_{ij} = x_{ij}/X_j \qquad \text{(A)}$$

where:

a_{ij} = technical coefficient,

x_{ij} = value of sales of sector i to sector j where i and j go from 1 to n and n is the number of endogenous industries,

X_j = total output of sector j.

The fundamental production equation for the input-output model states that any sector's total output must equal the sum of its sales to other industries plus sales to final demand. Algebraically,

$$X = AX + Y \qquad \text{(B)}$$

where:

$X = n \times 1$ vector of total outputs,

$A = n \times n$ matrix of technical coefficients,

$Y = n \times 1$ vector of final demands, and n is the number of sectors in the model.

The system of simultaneous equations can be solved for X to give,

$$X = (I\text{-}A)^{-1}Y \qquad (C)$$

which is the fundamental predictive equation of input-output analysis. The coefficients in the matrix $(I\text{-}A)^{-1}$ are called interdependency or direct and indirect coefficients. If final demands (Y) can be forecast, then total outputs (X) can be predicted from equation (C), and individual flows can be predicted from equation (A). In other words, from expectations about final demand, the input-output equations can be used to compute an entire corresponding flow table constituting a very detailed yet comprehensive set of forecasts. One of the most useful features of the forecasts is that they incorporate the effects of interdependence among industries. From equation (B), each industry's output is a function of other industries' outputs, so when the system is solved simultaneously, the resulting forecasts are based on the industrial interdependence.

Input-output models are frequently used to compute economic multipliers which are indices of an industry's impact on a state's economy. Two kinds of multipliers (called type I and type II) are calculated for three variables: output, income, and employment. Type I multipliers are computed from a model in which households are outside the industrial system. Households are part of final demand, so their purchases are independently determined by consumer preferences. Increased industrial activity does not automatically increase consumer spending in a type I input-output model. In a type II model, households become part of the industrial system, and their spending levels are linked to other industries. This means that as production increases, household incomes increase, and consumer spending increases, inducing still more production.

Output multipliers show the total sales throughout all industries created by an additional dollar of final demand in any one industry. They are computed by summing the columns of the interdependency coefficients. Since each column entry shows the change in one industry's output (sales) per dollar change in one final demand, the column sum is the total change in all industries per dollar change in one industry.

Income (employment) multipliers show the change in household incomes (employment) that occur throughout the economy per unit income (employment) change in any one industry. They are computed by,

$$M_k = \frac{\sum_{i=1}^{n} a_{hi} \, r_{ik}}{a_{hk}} \qquad \text{(D)}$$

where,

M_k = multiplier for sector k,

a_{hi} = household technical coefficients for sector i,

r_{ik} = ith interdependency coefficient for sector k,

a_{hk} = household technical coefficient for sector k.

If the household technical coefficients a_{hi} and a_{hk} are stated in dollars of household income, income multipliers are calculated; if those coefficients are expressed as number of employees, employment multipliers are calculated. The numerator of the multiplier shows the income (employment) created in the entire economy by an extra dollar of final demand for the output of industry k.

THE ALABAMA MODEL

The Alabama model consists of 25 endogenous or processing sectors and five exogenous sectors. Of the 25 endogenous sectors, six represent forest product industries. Since these six sectors are specifically segregated according to different products and technologies, they allow more detailed examination of forest product industries. The other sectors provide a balanced representation of other industries in Alabama. The exogenous sectors represent various forms of final demand (including exports) and primary inputs (including imports). The base year of the model is 1977, and the data about 1977 transactions were collected in 1978 and 1979.

All non-forestry sectors were specified to conform with the sectoring scheme used in the 1971, 82-sector national model published by the Bureau of Economic Analysis *(21)*. This was done to allow data for the non-manufacturing sectors to be aggregated from the 1971 model. These data were then adjusted, using location quotients, to represent the economic interactions of these sectors in Alabama. Data from a mail survey of the mining and manufacturing sectors were combined with these secondary data to complete the model. The completed model was then used to derive coefficients and multipliers representing Alabama's interindustry structure.

Choice of Sectors[4]

The choice of sectors was based upon industries using similar technological and material inputs to produce similar forms of output. Most of the sectors represent firms engaged in similar activities as indicated by their Standard Industrial Classification (SIC) two digit code number.[5]

Those manufacturing sectors not associated with forest industries were chosen on the basis of their relative size in Alabama as measured by four basic characteristics: the number of employees, payroll, value of shipments, and value added as reported in the 1972 Census of Manufacturers. Since different industries have different technologies, all four of these measures were necessary to determine the industry's relative size. Labor intensive industrial sectors such as "Textiles" will have a large number of employees relative to their value added and value of shipments. On the other hand, a very capital intensive industrial sector such as "Chemical" and "Allied" employs a small number of workers yet produces a significant portion of the value added in Alabama, thus making them an equally important component of the economy. Other sectors also represent significant portions of the State's employment or industrial output as measured by one or several of these census figures.

One sector, designated "Miscellaneous Manufacturing," encompasses all industries not large enough to be classified individually. The size of this sector in terms of the four census statistics was very close to the averages of these four measures

[4]For a list of sectors and sector definitions see Appendix A.

[5]The SIC system, developed and used in most federal statistical compilations, organizes industrial establishments by the "kind-of-activity" in which they are engaged. For more details see *(13)*.

for all other manufacturing sectors. For example, average number of employees for manufacturing sectors (excluding the disproportionately small Forest Industries Sectors) was 27,000 while the number of employees for Miscellaneous Manufacturing was 27,600. Although this sector represents many industries with different technologies and input requirements, it was impractical to separate these industries since each one's individual contribution to the economy is relatively small.

The forest products sectors, however, were chosen according to function rather than relative size. The "Logging Camps" sector serves the function of harvesting timber and providing it to sectors such as Sawmills and Planing Mills, Millwork and Plywood, or Paper and Allied Products. These sectors convert the raw material (harvested timber) into both intermediate and final goods. Some of these intermediate goods may be sold to other sectors such as "Furniture and Fixtures" where they are converted to final goods. One of the original sectors, "Wood Buildings and Mobile Homes," had to be merged with another sector, "Other Lumber and Wood Products," to avoid data problems resulting from low questionnaire responses from those sectors.

Sectors for which census data were either unavailable or not comparable to manufacturing data were also chosen according to function. All services were combined to form a sector as were all finance, insurance, and real estate activities. Other sectors were also chosen using similar logic. While these sectors may be disproportionately large or small when judged on the basis of employment or economic activity, it was considered more important that they represent these different activities.

Exogenous sectors comprising final demand and primary inputs were also chosen according to function. The "Household" sector in Primary Inputs represents wages, interest, dividends, and other payments to households. The corresponding Household sector in Final Demand represents purchases of output by households from each of the producing sectors. Similarly, the "State and Local Government" and "Federal Government" sectors of Primary Inputs represent direct and indirect taxes paid by the producing sectors. The State and Local Government and Federal Government sectors of Final Demand represent purchases and transfer payments made by the "Government" sectors. The "Import" sector represents any inputs purchased outside of the Alabama economy while the "Export" sector indicates the amount of output sold to firms and consumers outside of Alabama. The "Unallocated" column in final demand represents inventory accumulation and goods for capital formation sold by the producing sectors. Finally, the "Unallocated" row in Primary Inputs represents the amount of total sales not directly allocated to the production process. This may consist of depreciation of capital equipment and other activities not accounted for by available data.

Secondary Data

The portion of the Alabama Model constructed from secondary data included those sectors for which a reliable directory or listing could not be found from which to draw samples. In addition, these sectors represent activities and processes which were judged to closely resemble their national counterparts. The sectors involved include the agriculture sectors, Construction, Trade, Services, Finance Insurance and Real Estate, Transportation and Warehousing, Communications and Utilities, State and Local Government, Federal Government, and Households.

Data for those sectors endogenous to the model were derived by aggregating the 1971, 82-sector national input-output Model published by the Bureau of Economic Analysis *(21)*. Aggregation was accomplished using a computer program furnished by Wayne Curtis of Troy State University.[6] The program constructed a regionalized table in accordance with the specified sectoring scheme. Because Alabama is different from the whole U.S. economy, location quotients were used to modify the aggregated national direct requirements table to give a model which more closely describes the individuality of Alabama's economy. Sector outputs were then used to compute the regionalized transactions table. Employment Location Quotients were used for the following two reasons: (1) output pricing for the sectors under consideration was believed to vary on a regional basis, thus output location quotients would be biased by regional price differentials, (2) employment data for both Alabama and the nation were readily available for 1977.[7]

[6]Personal communication with Wayne Curtis, Troy, Alabama.
[7]Bureau of Economic Analysis, Regional Economic Information System.

The employment location quotient[8] is defined as:

$$LQ_i = \frac{x_i/x}{X_i/X}$$

where:

x_i = Alabama employment for sector i

x = total Alabama employment

X_i = national employment for sector i

X = total national employment.

Thus, the employment location quotient is the ratio of the relative regional importance of a sector to the relative national importance of that same sector.

These quotients indicate whether imports or exports are necessary to supplement or absorb the output of a sector. If $LQ_i \geq 1$, the regional production coefficient is assumed equal to the national coefficient. If $LQ_i < 1$, local production is assumed to be inadequate to supply local needs, thus imports are necessary. In this case, the regional production coefficient is computed by multiplying LQ_i by the national production coefficient.

Secondary data were also used to compute many of the primary inputs and final demands. The State and Local Government, Federal Government, and Household sectors of Final Demand were estimated from the 82-sector, 1967 National Model *(21)*. Coefficients were derived indicating the pattern of purchases for these three sectors. The coefficients for State and Local Government were multiplied by total state expenditures[9] to derive flows or sales to State and Local Government from the other sectors. Total federal funds spent in Alabama in 1977[10] were multiplied by the coefficients for Federal Government purchases to obtain purchases from Alabama industries. Personal Consumption Expenditure coefficients were multiplied by total household income in Alabama for 1977.[11]

Wages paid to households by each sector were taken from the Survey of Current Business as were transfer payments

[8]For a more detailed treatment of Location Quotients see Schaffer and Chu *(14)*.
[9]Taken from U.S. Department of Commerce *(22)*.
[10]Taken from *(27)*.
[11]U.S. Department of Commerce, "Personal Income by Major Sources," Survey of Current Business, table 34 *(20)*.

from the federal government and dividends, interest, and rent paid to households.[12] The dividends, interest, and part of the rent received by households were allocated to the Finance, Insurance, and Real Estate flow to Households. The remainder of the rent was considered a flow from households to other households. Income taxes paid to the federal government were estimated by multiplying average profit margins in *Business Week (16)* by sector outputs and applying the corporate tax rate of 48 percent. These estimates were combined with survey data for those sectors surveyed. Payments to State and Local Government were estimated by combining the above method of computing income taxes with the estimates of indirect business taxes (including property tax) paid by each sector.[13]

Primary Data

The manufacturing and mining sector flows were derived from primary data obtained from a survey using mail questionnaires. This provided specific data about the Alabama economy, the technologies of its various manufacturing sectors, and their import and export activities. These sectors engage in a much larger export activity than would be implied by location quotients. Similarly, they import more inputs than location quotients would account for. Thus, use of location quotients and national coefficients would tend to overstate the interindustry transactions in Alabama and understate both exports and imports.

The choice of sectors to be surveyed was based upon assumptions about the level of import and export activity of a sector and the availability of an unbiased directory of firms within that sector. Sample firms were selected among those firms listed in the 1976 Alabama Directory of Mining and Manufacturing *(1)*. All of the firms in a sector were first stratified according to size (as measured by employment) and then randomly sampled with a probability proportional to size. Sample size was limited to 1,000 due to costs of printing and mailing questionnaires.

The questionnaire was constructed using one prepared by Frank Giarratani of the Regional Research Institute at West Virginia University as a guide. The Total Design Method as described by Dillman *(4)* was also followed in preparing and

[12]*Ibid.*
[13]Personal communication, Don Eldridge, Bureau of Economic Analysis.

administering the questionnaire. The questionnaire was an attractively packaged 7″ × 8½″ booklet consisting of two printed legal size (8½″ × 14″) pages folded and stapled on the fold. This yielded an easily handled eight-page questionnaire. In addition to this questionnaire, the mailout package[14] included an individually signed and typed cover letter explaining the purpose of the study, a letter in support of the study signed by Governor George C. Wallace, an appendix describing the sectors of the model, and a business reply envelope for return of the questionnaire.

The questionnaire[15] used in this study begins with a set of fairly simple questions asking for total sales, products manufactured, employment, inventory, and planned expansions. The final two questions are more involved. One requests the respondent to indicate the distribution of sales (outputs) as a percentage of total sales. In addition to indicating what portion of total sales went to each of the other sectors, the respondent is also asked to give the percentage of sales to each sector going to firms in Alabama. This allowed the respondent to report that portion of his output exported from Alabama. A detailed set of instructions was included as a part of the question to alleviate confusion. The next two pages contained a question requesting information on the firm's purchases. This question was similar to the one on sales in terms of content and layout. The back cover contained blanks for the name and address of the respondent, a space to request a copy of the results, and a space for additional comments. The two principal questions about sales and purchases allowed independent estimates of much of the transactions matrix. Figure 2 illustrates the combinations of data sources used in the final stages of model construction. Asking firms where or to whom they sold their output is asking them to identify the transactions across a row of the matrix (sales data). Asking from whom they purchased their inputs is asking for the transactions down a column of the matrix (purchases data). If a particular cell in the matrix is between two surveyed sectors, say the sales from Paper and Allied to Chemicals, the paper firms estimate the flow when they respond to the question on sales, and chemical firms estimate it when they describe their purchases. For transactions that are sales from a surveyed sector to an unsur-

[14]For a copy of the complete mailout package see Appendix B.
[15]See Appendix B.

	Sector #	1, 2, 4	3, 5-20	21-25	
Agric. and Construc.	1 2 4	SD	P, SD	SD	SD
Mining and Manufacturing Industries	3 5 20	S SD	P, S, SD	S SD	S SD
Service Industries	21 25	SD	P, SD	SD	SD
Primary Inputs		SD	P, SD	SD	

S = sales data (from question #9 of questionnaire)
P = purchases data (from question #10 of questionnaire)
SD = secondary data (from mostly federal source)

FIG. 2. Data source key for 1977 transactions matrix.

veyed sector, say from Paper and Allied to Services, only sales data are available (plus secondary data). For transactions that are sales from unsurveyed sectors to surveyed sectors, say from Communications and Utilities to Sawmills, only purchases data are available (plus secondary data). The two questions combined allowed multiple estimates of a large portion of the transactions matrix.

The response rate to this questionnaire varied by sector. Of the 947 establishments in the final sample, 163 produced useable questionnaires. Response rate was measured both as percentage of sector output represented by respondents and as percentage of sector employment represented by respondents.[16] Firms producing 11.4 percent of all mining and manufacturing output were accounted for by the survey. This ranged from a low of .9 percent to a high of 39.8 percent for individual sectors. Respondents also accounted for 10.1 percent of all mining and manufacturing employment with a range of 1.3 percent to 36.8 percent by sector.

These response rates, while deemed adequate, were not as good as those obtained in the recent West Virginia Study *(11)* where a mail survey produced an overall response rate of 36.9 percent of manufacturing employment. There appears to be only two differences between the research described here and that in West Virginia. First, the Regional Research Institute at

[16]For a list of response rates by sector see Appendix C.

the University of West Virginia is better known in West Virginia than the forestry department research group at Auburn is known in Alabama. Second, there were some differences in the conduct of the two surveys. The West Virginia team began their survey by sending letters asking selected firms if they would participate in the effort. A postcard was enclosed for the firm's response. They continued sending requests until they received a "satisfactory" response rate. Only after a firm agreed to participate was a questionnaire sent. The questionnaire used in West Virginia was not constructed around the total design method. Instead, it was a set of mimeographed legal size pages. From the data collected in both studies and from phone conversations and visits to West Virginia, it is not clear if or to what extent the differences described above account for the discrepancies in response rates.

Completed questionnaires were checked for accuracy, and the respondent was recontacted by phone if any answers were unclear. Once all completed questionnaires were received, the responses to each question were recorded by sector. For the question on sales (question #9), the answers (given in percentage of total sales) were adjusted by the amount sold to users in Alabama. The remainder was accumulated and recorded as exports. An inventory change coefficient was computed from the question on closing inventories (question #5). A set of coefficients that summed to one (or 100 percent of total sales) was the result. Average coefficients for each sector were then computed by weighting each firm's coefficients by that firm's total sales and a code number representing the reliability of the firm's response,[17] summing across all the respondents, and then dividing by the quality code weighted sum of all respondent's sales for that sector. This put the coefficients back on a percentage of total sales (output) basis.

Information on purchases was also reported as a percentage of total sales. The computations were similar to those described for the sales information, with one exception. Purchases designated as passing through a wholesaler were reduced by trade margins obtained from the Bureau of Economic Analysis.[18] The amount subtracted from these pur-

[17]Reliability weights ranged from one to four with four representing the "most" reliable data and one representing the "least" reliable data. The weights were assigned on the basis of subjective judgement by the individuals involved in the research project.

[18]Personal communication, Phil Ritz, Bureau of Economic Analysis.

chases was accumulated as a purchase from the "Trade" sector. An additional sector, designated Unallocated, represented that portion of total sales not allocated to any purchase. The purchases coefficients were weighted by total sales and quality codes in the same manner as the sales coefficients to obtain an average for that sector.

At this point in the computations, several of the sectors were merged with similar sectors to avoid possible disclosure of confidential information. Some sectors were also merged to avoid computational difficulties associated with maintaining them separately.

The purchases and sales information were combined with the aggregated national model and other secondary data to form the unbalanced flow table. Each separate estimate of a flow was assigned a weight for each cell in the flow table, and a mean flow was computed. For most cells covered by both purchases and sales data, the secondary data were assigned a weight of zero. Where neither purchases nor sales data were available, secondary data alone were used.

The flow table was then balanced so column and row totals equaled the necessary total outputs. The balancing consisted of reducing flows for rows and columns whose sums were greater than the necessary totals and increasing flows for rows and columns whose sums were less than the necessary totals. Adjustments were also made where a priori knowledge indicated a flow was incorrect. Since the primary data portion of the model was considered to be a more accurate representation of Alabama's economy, most of the adjustment occurred in the secondary data and exogenous portions of the model. The final balancing adjustments in input-output modeling are, of necessity, somewhat ad hoc. They require judgements by the research team about which numbers should be increased and decreased. In all these final adjustments, special efforts were made to preserve the integrity of the survey-derived data.

Input-Output Tables

The results of the modeling effort are shown in a series of input-output tables in Appendix D.

Table 1 is the flow or transactions table for Alabama which corresponds to figure 1 described earlier. Transactions are recorded in millions of dollars, so, for example, Paper and Allied (column 13) purchased $109.4 million worth of output from Logging Camps (row 8). Most of those purchases were presumably for pulpwood. Logging Camps also sold a large portion of their output as sawlogs as indicated by the transaction from Logging Camps (row 8) to Sawmills (column 9) of $61.9 million.

One entry to the Federal Government column may cause confusion since it is a negative flow. This negative flow represents that portion of transfer payments (entered as "purchase" from households by the Federal Government) not allocated to Alabama by the Community Services Administration *(27)*. It was derived as a residual and included in the unallocated row so that total federal expenditures (Federal Government column total) in Alabama matched the figure reported by the Community Services Administration.

Table 2 shows the technical or direct input coefficients computed from table 1 according to equation (A) (page 7). Each coefficient in a column shows the proportion of its total sales (or total purchases, since sales and purchases are equal in a balanced model) which were purchased from the industry in the corresponding row. For example, Pulp and Paper purchased 0.02619 of its total sales value from construction, presumably for various types of annual maintenance expenditures. Pulp and Paper purchased more than 37 percent of its total purchases from other Alabama industries and 16.8 percent of its purchases from households. The endogenous total purchases are important because they indicate the degree of reliance each sector has on other industries in the State, and they turn out to be important determinants of each industry's multipliers. In general, the forest products industries make a larger proportion of their purchases from other Alabama businesses than most other manufacturing industries.

Table 3 shows the direct and indirect coefficients which constitute the $(I-A)^{-1}$ matrix of equations *(3)*. Each coefficient shows the change in total output (sales) of the industry listed at the left that results from a dollar change in final demand for the products of the industry at the top. Reading down a column, then, one sees how each industry's sales are affected by the demands for a particular product. Column 9, for example, shows the impact of new demands for wood products on the economy. The other industries most affected are Other Agriculture, Logging Camps, Chemical and Allied, Machinery and Electrical, Transportation Equipment, Miscellaneous Manufacturing, and the last five service sectors of the economy. The demand for lumber does not appreciably affect the construction industry (column 9, row 4), but demands for construction do affect the wood products industry (column 4, row 9). The column sums at the bottom of the table show the total change in sales among all industries of the economy that results from an extra dollar of final demand. These figures are the type I output multipliers referred to earlier. The output multipliers of the forestry-related sector average 1.52 while the average for other manufacturing industries is 1.27. In general, the forest industries stimulate Alabama's economy more than do other manufacturing industries.

Tables 4 and 5, entitled Direct and Indirect Response tables, show the information used to compute the numerators of type I income and employment multipliers as described in equation (D). In table 4, since each entry is the product of an interdependency coefficient and a household income coefficient, each shows the change in household incomes of people employed by the industry at the left for each dollar change in demand for the products of the industry at the top. Each column, then, shows how the demand for that industry's output affects household incomes of people employed by other Alabama industries. Each row shows how households employed by any industry are affected by the demands for the products of the various column industries. The column sums are the numerators of the income multipliers of the various industries.

The entries in table 5 are exactly analogous to those in table 4 except they show expected changes in employment. If one wants to learn how expansions in the demand for any one industry will affect employment in other industries, he reads the numbers in the appropriate column. If information is needed about how employment in one industry is affected by expansions in others, the appropriate row in table 5 must be consulted. The employment data used to compute the employment technical coefficients of equation *(4)* are shown at the end of Appendix D in table 11.

Table 6 presents the three type I multipliers for each industry in Alabama.

Tables 7-10 in Appendix D present information relevant to the type II input-output model where households are treated as an endogenous sector. Having households endogenous does not alter the transactions matrix or the direct coefficients, but it does increase the size of equation system (B) and therefore changes the solution values of the $(I-A)^{-1}$ matrix in equation (C). The title of the new interdependency matrix shown in table 7 reflects the fact that those estimates include not only the direct and indirect effects that industries have on one another, but also the effects induced by the added consumer spending from extra household incomes.

Tables 8 and 9 are type II analogues to tables 4 and 5, showing income and employment responses to change in final demands.

Table 10 shows type II multipliers derived from the other tables according to equation (D).

SUMMARY AND CONCLUSIONS

The input-output model described in this report has many potential uses. It can help forecast the statewide effects of change in any of Alabama's major industries, and it can give the effects on an industry by industry basis. For example, Bowers (2) used the model to forecast the effect of three recent expansions in the pulp and paper industry. The estimated increase in annual demand for pulp and paper was \$322 million, and this is expected to stimulate additional sales in other industries of \$490 million, additional household incomes throughout Alabama of \$167 million annually, and an added 10,700 jobs (type II estimates). As an additional contribution, tax receipts to State and Local Governments will increase by about \$29 million annually.

One special feature of this input-output model is the combination of primary survey data and published federal data. The hypothesis underlying this approach is that a state economy can attribute most of its distinctiveness to its manufacturing enterprises. Flick, Trenchi, and Bowers *(7)* used location quotient data and the work of other input-output studies to support that hypothesis.

The advantages of such a hybrid model are several *(7)*. It is possible to get consistent estimates of taxes paid to two categories of governments, which is impossible in models based solely on the national model. Survey data provide estimates of exports and imports which are also unobtainable from the national model. Survey data determine the ratio of endogenous to exogenous purchases which improves the accuracy of multiplier estimates.

In general, the Alabama model helps establish that carefully constructed mail surveys can be used to build input-output models for recent years at reasonable costs. In regions where the relative contributions of forestry and forest products are changing rapidly as in Alabama, such models help provide a firm analytical base for public and private policy initiatives. In Alabama, the results of this study confirm what many foresters have known intuitively—that the forest industries make a large contribution to the State. The multipliers of the forest industries are consistently larger than those of other manufacturing industries. "This means Alabama will have larger increases in business activity, household incomes, and employment from expansions in the forest industries than from comparable expansions in other manufacturing industries. For a state with traditional emphasis on textiles and primary metals, this is important news." *(7)*.

LITERATURE CITED

(1) ALABAMA DEVELOPMENT OFFICE. 1976. 1976 Alabama Directory of Mining and Manufacturing.

(2) BOWERS, JOHN R. 1979. The Alabama Forest Industries: Their Contributions to the State's Economy. Unpublished M.S. Thesis, Department of Forestry, Auburn University, Auburn, Alabama.

(3) CZAMANSKI, S. AND E. E. MALIZIA. 1969. Applicability and Limitations in the Use of National Input-output Tables for Regional Studies. Reg. Sci. Assoc. Pap. and Proc., Vol. 23.

(4) DILLMAN, DON A. 1978. Mail and Telephone Surveys, The Total Design Method. John Wiley & Sons, New York, New York.

(5) ELLIOTT-JONES, M. F. 1971. Input-output Analysis: A Non-technical Description. The Conference Board. New York, New York.

(6) FLICK, WARREN A. AND JOHN R. BOWERS. 1980. Alabama Forestry is South's Growth Leader. *Alabama Forests* 23(1):5-8.

(7) ______________, PETER TRENCHI III, AND JOHN R. BOWERS. 1980. Regional Analysis of Forest Industries: Input-output Methods. *Forest Science* 26(4):548-560.

(8) GALLAGHER, C. J. 1975. A Statistical Comparison of Regional Input-output Tables. Atl. Econ. J. 3(1):61.

(9) LEONTIEF, WASSILY. 1941, 1951. The Structure of the American Economy, 1919-1939. White Plains, New York. International Arts and Sciences Press, Inc.

(10) ______________, AND OTHERS. 1953. Studies in the Structure of the American Economy. White Plains, New York. International Arts and Science Press.

(11) LOVISCEK, A. L., R. E. HOLLIDAY, L. A. ROBINSON, AND M. A. WOLFORD. 1979. The 1975 West Virginia Input-output Study. West Virginia University Foundation, Morgantown, West Virginia.

(12) MIERNYK, W. H. 1965. The Elements of Input-output Analysis. Random House, New York, New York.

(13) OFFICE OF MANAGEMENT AND BUDGET. 1972. Standard Industrial Classification Manual 1972.

(14) RICHARDSON, H. W. 1972. Input-output and Regional Economics. John Wiley and Sons, New York.

(15) SCHAFFER, W. A. AND KONG CHU. 1969. Nonsurvey Techniques for Constructing Regional Interindustry Models. Papers of the Regional Science Association, Vol. XXIII.

(16) SURVEY OF CORPORATE PERFORMANCE. 1977. Business Week Industrial Edition No. 2496.

(17) TERFEHR, T. R. 1976. The Economic Contribution of Forestry to Mississippi: An Application of Input-output Analysis. Unpublished M.S. Thesis, Mississippi State University.

(18) TROUTMAN, F. H. AND R. L. PORTERFIELD. 1974. The Role of Arkansas' Forests in the State's Economy. Industrial Research and Extension Center, University of Arkansas. Pub. D-16. Little Rock, Arkansas.

(19) U. S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS. 1974. Survey of Current Business, Vol. 54, No. 2.

(20) ______________. 1978. Survey of Current Business, Vol. 58, No. 10.

(21) ________________. 1977. Input-output Table of the U. S. Economy, 1971. BEA Staff Paper No. 28.

(22) ________________. 1978. Governmental Finances in 1976-1977.

(23) ________________. 1974. 1972 Census of Manufacturers: Area Statistics, Alabama.

(24) ________________. 1980. 1977 Census of Manufacturers, Geographic Area Series: Alabama. Washington, D.C.

(25) ________________. 1976. Annual Survey of Manufacturers, 1974: Area Statistics.

(26) ________________. 1978. Annual Survey of Manufacturers, 1976: Area Statistics.

(27) ________________, COMMUNITY SERVICES ADMINISTRATION. Geographic Distribution of Federal Funds in Alabama, Fiscal Year 1977.

APPENDIX A

Sector Descriptions

DESCRIPTION OF ALABAMA INDUSTRIAL GROUPS*

01 Livestock—(SIC 013, 0198)—Farms producing primarily dairy farm products, poultry, meat animals, and miscellaneous livestock products.

02 Other agriculture—(SIC 011, 012, pt. 014, 0192, 074, pt. 08, 09)—Any farm producing primarily products not classified in sector one. Also includes greenhouse and nursery products, forestry and fisheries products, and hunting.

03 Mining—(SIC 10-14)—All mineral extraction including coal, iron ore, oil and gas, stone, sand, gravel, and clay.

04 Construction—(SIC 15-17)—All construction including maintenance and repair construction.

05 Food and kindred—(SIC 20)—Firms manufacturing or processing food and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls.

06 Textiles—(SIC 22 (exc 225))—Firms engaged in manufacturing yarn, thread, etc., woven fabric, dyeing and finishing, coating and waterproofing of fabric, and manufacture of felt goods, and miscellaneous textiles. Excludes knitting mills.

07 Apparel—(SIC 225, 23)—Knitting mills, establishments producing clothing and fabricating products by cutting and sewing purchased woven or knit textile fabrics such as leather, furs, and rubberized fabrics.

08 Logging camps—(SIC 2411)—Firms engaged in cutting timber and in producing rough, round, hewn, or riven primary forest or wood raw materials. Excluded are logging and woods operations conducted in combination with sawmills, pulpmills, or other converting establishments.

09 Sawmills—(SIC 242)—Firms engaged in sawing rough lumber and timber, planing mills combined with sawmills, and planing mills engaged in producing surfaced lumber and standard workings or patterns of lumber. Also includes hardwood dimension and flooring mills.

10 Millwork and plywood—(SIC 243)—Firms primarily engaged in manufacturing fabricated millwork, wood cabinets, hardwood veneer and plywood, softwood veneer and plywood, and structural wood members of laminated or fabricated trusses, arches, and other structural members.

11 Other wood products—(SIC 24 (exc 241, 242, 243))—Firms manufacturing mobile homes, prefabricated wood buildings, sections and panels, wooden containers, particleboard, wood preserving, and those firms engaged in turning and shaping wood and manufacturing miscellaneous wood products not elsewhere classified.

12 **Furniture and fixtures**—(SIC 25)—Firms manufacturing household, office, public building, and restaurant furniture, and office and store fixtures. Does not include millwork and cabinets as described in sector 10.

13 **Paper and allied**—(SIC 26)—Firms primarily engaged in manufacturing: (1) pulp from wood or other materials; (2) paper, paperboard and building board from wood pulp and their fibrous materials; (3) converted paper and paperboard products such as envelopes, bags, sanitary paper, and stationery; (4) paperboard containers and boxes including corrugated boxes and sanitary food containers.

14 **Chemical and allied**—(SIC 28)—Firms producing basic chemicals and firms manufacturing products by predominantly chemical processes. Products include acids, alkalines, salts, organic chemicals, synthetic fibers, pigments, drugs, soaps, paints, and fertilizers.

15 **Rubber and plastics**—(SIC 30)—Firms manufacturing rubber products such as tires, rubber footwear, mechanical rubber goods, hoses and belting, and rubber sundries. Does not include establishments primarily engaged in recapping. Also includes firms engaged in molding primary plastics.

16 **Primary metals**—(SIC 33)—Firms engaged in the smelting and refining of ferrous and nonferrous metals from ore, pig, or scrap, also in the rolling, drawing, alloying, and casting of these metals. Includes manufacture of nails, spikes, and insulated wire and cable.

17 **Fabricated metals**—(SIC 34)—Firms engaged in fabricating ferrous and nonferrous metal products except machinery, transportation equipment, scientific instruments, watches, clocks, jewelry, and silverware.

18 **Machinery and electric**—(SIC 35, 36)—Firms engaged in manufacturing machinery and equipment other than transportation equipment. Machines powered by built-in or detachable motors are included as are powered portable tools, office machines, and machines for generation, storage, transmission, transformation, and utilization of electrical energy.

19 **Transportation equip.**—(SIC 37)—Firms engaged in manufacturing equipment for transportation of passengers and cargo by land, air, and water.

20 **Miscellaneous manufacturing**—(SIC 21, 27, 29, 31, 32, 38, 39)—Manufacturing firms not elsewhere classified. Included are tobacco manufacturing, printing, publishing and allied, petroleum refining and related industries, leather and leather

products, stone, clay, glass and concrete products, scientific instruments, photographic and optical goods, watches, clocks, and other miscellaneous industries.

21 **Wholesale and retail**—(SIC 50-59)—All firms engaged in wholesale and retail trade both for industrial and personal consumption and use.

22 **Services**—(SIC 70, 72, 73 (exc 7396), 75, 76, 78-82, 84, 89, 07, pt. 08)—Commercial and institutional establishments engaged in furnishing lodging or camping facilities on a fee basis, establishments primarily engaged in providing services involving the care of the person or his apparel such as laundries and barber shops, automobile services and repair, miscellaneous repair services, and all motion picture and amusement establishments. Also, firms primarily engaged in rendering services to business establishments on a fee or contract basis, medical, surgical and other health services, legal services, educational services, non-commercial museums and art galleries, miscellaneous services such as surveyors, architects, accountants, agricultural services, forestry services, nurseries, and management.

23 **Finance, insurance, real estate**—(SIC 60-67)—Firms operating primarily in the fields of finance, insurance, and real estate, including banks, credit agencies, brokers, and insurance agents. Real estate includes owners, lessors, lessees, buyers, sellers, agents, and developers.

24 **Transportation**—(SIC 40-42, 44-47)—All forms of transportation including railroads, local and interstate passenger transport, motor freight (trucking) transport and warehousing, water and air transportation, and transportation services.

25 **Comm. and utilities**—(SIC 48, 49)—Firms furnishing point-to-point communication services, and those firms engaged in the generation, transmission, and/or distribution of electricity or gas or steam, provision of water and irrigation systems, and disposal of garbage, sewage, and other waste.

*SIC is Standard Industrial Classification.

APPENDIX B

Mailout Package

STATE OF ALABAMA

GOVERNOR'S OFFICE

MONTGOMERY

In Support of a Study on
The Structure of Alabama's Economy

The study on the Structure of Alabama's Economy being done at Auburn promises to provide useful results for many people in industry and government. The study was initiated by people in the forest industries who plan to use it in conjunction with anticipated expansions, but the results will have general appeal and usefulness. The purpose of the work is to compile data and describe procedures for forecasting the statewide benefits associated with continued economic expansion. As we all know, our State economy is strong, diversified, and capable of providing many future opportunities for our people.

The prompt response of all those firms asked to participate is vital to the success of the study. Because such detailed statistical data are costly to acquire by conventional interviews, the research team at Auburn is trying to assemble necessary information by mail. I would like to take this opportunity to ask your support in this important work. Since only a small percentage of all the business establishments in the State have been asked to cooperate, each response becomes especially important.

We can all look forward to the results. They will be useful to industries planning to locate in Alabama, to industries already here but thinking of expansion, and to State and local government agencies who regularly prepare economic forecasts.

Sincerely,

George C. Wallace
Governor

GCW/bb

Auburn University

Auburn University, Alabama 36849

Department of Forestry
108 White Smith Hall

School of Agriculture, Forestry, and Biological Sciences
Agricultural Experiment Station

Telephone (205) 826-4050
ACTS: 923-4050

August 17, 1978

Gentlemen:

Alabama's economy is developing rapidly, and many people in industry and government can use reliable, factual knowledge about the structure of our State economy. Such information, in the form of input-output model, is used by people in industry and government to make forecasts of industrial expansions and analyses of changes in employment and income. The basis of this work is a carefully selected random sample of industrial establishments in Alabama.

Your firm is one of the small number which is being asked to provide data. The data requested are about your establishment's sales and purchases, so whoever completes the questionnaire will need to be familiar with those aspects of your operations. If our results are to be truly representative of Alabama, it is important that each selected firm cooperate. In this regard we have sought and received Governor Wallace's endorsement of this work.

You may be assured of complete confidentiality. The information you provide will be combined with the responses of other firms to find averages for your industry. Your name and address will be used only to check your name from our mailing list and perhaps to recontact you in the event we have a question about your answers.

The results of our research will be made available to officials in government and industry. You may receive a copy of the results by answering YES on the back of the questionnaire.

I will be most happy to answer the questions you might have. Please write or call collect. The numer id (205) 826-4050.

Thank you for your help.

Sincerely,

Warren A. Flick

Warren A. Flick
Project Director

WAF/ac
Enclosures

A questionnaire about your establishment's sales and purchases was mailed to you last week. If you have already completed and returned it to us, please accept our sincere thanks. If not, please do so today.

The results of this study will be useful over many years. Since relatively few firms are selected and many have already responded each remaining firm takes on added importance.

If you have questions about filling out the questionnaire, please let us know. One of us on the project can help you make estimates of the data we need if you feel it will otherwise take too much time. Your answers will be kept completely confidential.

Our phone number is 205-826-4050. Please call collect if we can be of any help.

Sincerely,

Warren A. Flick

Warren A. Flick
Project Director

Auburn University

Auburn University, Alabama 36849

Department of Forestry
108 White Smith Hall

School of Agriculture, Forestry, and Biological Sciences
Agricultural Experiment Station

Telephone (205) 826-4050
ACTS: 923-4050

September 7, 1978

Gentlemen:

About three weeks ago I wrote to you seeking information about your business. As of today we have not received your completed questionnaire.

This research will help promote expanding markets for Alabama business and is supported by people in industry and government.

Your firm was selected through a sampling process designed to give representative data about our economy. Since only a few firms were contacted, each one becomes especially important. Will you please take the time to help with this work? Your response will be kept completely confidential.

A replacement questionnaire is enclosed in case your first copy is misplaced. The person completing the questionnaire should be familiar with your sales and purchases. If you have any questions about the survey, please write or call collect. The number is (205) 826-4050.

Thank you for your help.

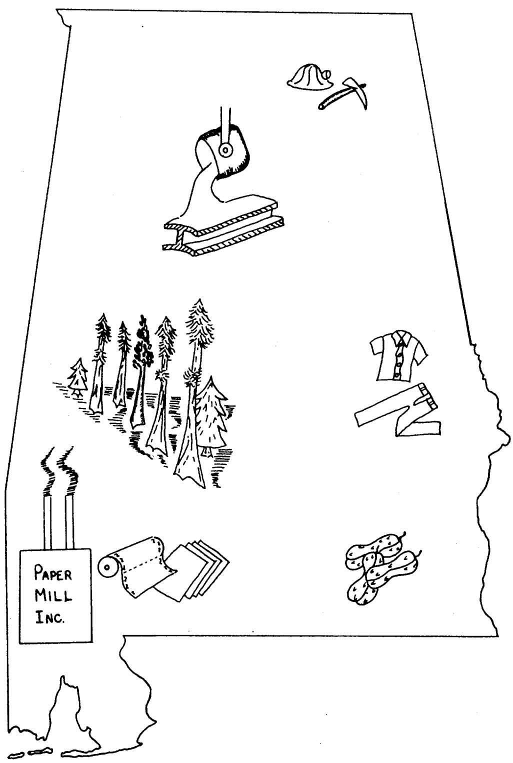
Sincerely,

Warren A. Flick

Warren A. Flick
Project Leader

WAF/ac
Enclosure

ALABAMA'S INDUSTRIAL STRUCTURE:
An Input - Output Survey



This survey is the basis of a comprehensive analysis of Alabama's economy. Please answer the questions and return this questionnaire in the envelope provided.

Thank you for your help.

Department of Forestry
Auburn University
Auburn, AL 36830

Your answers to the first five questions will permit us to classify your establishment by size and industry, and to identify your net inventory changes.

Q-1 What were your total sales in 1977 of all products?

TOTAL SALES $________

Q-2 Please list your major products or services and what percentage each is of total sales.

	PRODUCT	PERCENTAGE
1.	________	________
2.	________	________
3.	________	________
4.	________	________

Q-3 What are your current capacities (please list products in same order as in Q-2 and include units of output per day or month)?

	PRODUCT	CAPACITY
1.	________	________
2.	________	________
3.	________	________
4.	________	________

Q-4 What was your total employment and payroll during the month of March 1977?

1. NUMBER OF EMPLOYEES ________
2. PAYROLL $________

Q-5 What was the value of your closing inventory of finished goods in 1976 and 1977?

1976 VALUE OF INVENTORY $________

1977 VALUE OF INVENTORY $________

The next three questions will help us forecast planned changes in Alabama's industrial capacity.

Q-6 Do you plan to expand (or reduce) your firm's capacity in Alabama during the next 2 years? (Circle appropriate response.)

1. EXPANDING
2. REMAIN ABOUT THE SAME → If no change is planned, skip from here to Q-9.
3. REDUCING

Q-7 Please describe the type of expansion (reduction) planned by your firm (types of capital equipment, improvements, shutdown, etc.) in the next 2 years.

____

____

____

____

____

____

____

____

____

Q-8 What will be the capacity of your firm (in units of output per day or month) after the planned expansion (or reduction) is completed?

	PRODUCT	CAPACITY
1.	__________	__________
2.	__________	__________
3.	__________	__________
4.	__________	__________

The next two questions organize your annual sales and purchases by industrial group. When weighted by the size of your establishment and adjusted for net inventory change, your answers along with others will show the structure of sales and purchases for all industries in Alabama. There is an example with each question to help make it clear.

Q-9 What were your sales in 1977 to the user groups shown below? Please write your answers as percentages of total sales. The word user is emphasized because we must know the groups that actually use your products for additional production or final consumption. If most of your sales are to wholesalers or retailers who pass your product on to others, *please write the percentage of sales by the user group of final destination*. It is also important to estimate the portion of your sales to users located in Alabama. If you do not provide a specific estimate, we will assume all sales to that group are exported from Alabama. For further description of user groups (industries) please refer to enclosed appendix.

Example: SALES

	Group	Percentage of Total Sales	Percent to Alabama Users
..	....		
..	....		
..	....		
14	Pulpmills and Papermills	2 %	90 %
15	Other Paper and Allied	%	%
16	Chemical and Allied	5 %	%
17	Rubber and Misc. Plastics	%	%
..	....		
..	....		
..	....		
29	State and Local Government	%	%
30	Federal Government	10 %	%
31	Households	8 %	50 %
	TOTAL	100 %	

In this example, the establishment sold 2 percent of its total sales to *Pulpmills and Papermills*. Of this, 90 percent went to firms in Alabama. Eight percent of their total sales went to *Households* (final consumer goods), 50 percent of which were located in Alabama. They also sold 5 percent of total sales to *Chemical and Allied*, 10 percent to the *Federal Government*, and the rest to other industrial groups not listed in this example. The total for the *Percentage of Total Sales* should add to 100 percent.

	GROUP	PERCENTAGE OF TOTAL SALES	PERCENT TO ALABAMA USERS
01	LIVESTOCK	%	%
02	OTHER AGRICULTURE	%	%
03	MINING	%	%
04	CONSTRUCTION	%	%
05	FOOD AND KINDRED	%	%
06	WEAVING & MISC. TEXTILE GOODS	%	%

	GROUP	PERCENTAGE OF TOTAL SALES	PERCENT TO ALABAMA USERS
07	APPAREL & MISC. FABRICATED TEXTILE----------	%	%
08	LOGGING CAMPS------------------------------	%	%
09	SAWMILLS AND PLANING MILLS-----------------	%	%
10	MILLWORK AND PLYWOOD-----------------------	%	%
11	WOOD BUILDINGS & MOBILE HOMES--------------	%	%
12	OTHER LUMBER & WOOD PRODUCTS---------------	%	%
13	FURNITURE AND FIXTURES---------------------	%	%
14	PULPMILLS, PAPERMILLS----------------------	%	%
15	OTHER PAPER & ALLIED-----------------------	%	%
16	CHEMICAL & ALLIED--------------------------	%	%
17	RUBBER & MISC. PLASTICS--------------------	%	%
18	PRIMARY METALS-----------------------------	%	%
19	FABRICATED METALS--------------------------	%	%
20	MACHINERY, ELECTRICAL & ELECTRONIC----------	%	%
21	TRANSPORTATION EQUIPMENT-------------------	%	%
22	MISC. MANUFACTURING------------------------	%	%
23	WHOLESALE & RETAIL TRADE-------------------	%	%
24	HOTELS, LODGING, PERSONAL & REPAIR SERVICES AND AMUSEMENTS---------------------------	%	%
25	BUSINESS & MEDICAL SERVICES----------------	%	%
26	FINANCE, INSURANCE, REAL ESTATE------------	%	%
27	TRANSPORTATION & WAREHOUSING---------------	%	%
28	COMMUNICATIONS & UTILITIES-----------------	%	%
Final Users			
29	STATE AND LOCAL GOVERNMENT-----------------	%	%
30	FEDERAL GOVERNMENT-------------------------	%	%
31	HOUSEHOLDS---------------------------------	%	%
	TOTAL	100 %	

Q-10 What were your purchases in 1977 from the industry groups shown below? Please write your answers as percentages of total *sales*, and exclude purchases of capital equipment (these were requested earlier). If most of your purchases are from wholesalers or retailers who bought the products from others, please write the percentage of total sales in the industry group that made the product. Please put an "X" next to purchases that "passed through" a wholesaler or retailer. The purchases from wholesalers or retailers which cannot be traced to an industry of origin should be placed under group 23, *Wholesale and Retail Trade*. Taxes are recorded as purchases from appropriate governments, and wages and salaries are purchases from households. As before, it is important to identify the portion of your purchases from establishments in Alabama. If you do not provide a specific estimate, we will assume all your purchases from that group are imported into Alabama. Because capital expenditures are excluded, the percentages need not add to 100. For further description of industry groups please refer to enclosed appendix.

Example: PURCHASES

	Group		Percentage of Total Sales	Percent from Alabama Industries
..	....			
..	....			
15	Other Paper and Allied	X	1 %	100 %
16	Chemical and Allied		3 %	75 %
17	Rubber and Misc. Plastics		%	%
..	....			
23	Wholesale and Retail Trade	X	2 %	100 %
..	....			
29	State and Local Government		5 %	90 %
30	Federal Government		8 %	0 %
31	Households		20 %	95 %

In this example the establishment spends one percent of its total sales on products from the *Other Paper and Allied* industry in Alabama. The "X" indicates these products are bought from a wholesaler. This establishment spent 3 percent of its total sales on products from the *Chemical and Allied* industry and seventy-five percent of these purchases were from firms in Alabama. Two percent of total sales was spent at various wholesale and retail establishments for miscellaneous unclassified products. All of these purchases (100%) were made in Alabama. Five percent of total sales are paid to *State and Local Governments* as property taxes, income taxes, workmen's compensation insurance, unemployment insurance, etc., of which ninety percent are to governments in Alabama. The remaining ten percent are to governments in neighboring states. Eight percent of total sales is paid to the *Federal Government* as income taxes, special business taxes, excise taxes, etc. None of this amount is considered "spent" in Alabama. Finally, 20% of total sales is paid to *Households* as wages, salaries and dividends, 95% of which went to Alabama households.

	GROUP	PERCENTAGE OF TOTAL SALES	PERCENT FROM ALABAMA INDUSTRIES
01	LIVESTOCK	%	%
02	OTHER AGRICULTURE	%	%
03	MINING	%	%
04	CONSTRUCTION	%	%
05	FOOD AND KINDRED	%	%
06	WEAVING & MISC. TEXTILE GOODS	%	%

(

	GROUP	PERCENTAGE OF TOTAL SALES	PERCENT FROM ALABAMA INDUSTRIES
07	APPAREL & MISC. FABRICATED TEXTILE----------	%	%
08	LOGGING CAMPS-------------------------------	%	%
09	SAWMILLS AND PLANING MILLS------------------	%	%
10	MILLWORK AND PLYWOOD------------------------	%	%
11	WOOD BUILDINGS & MOBILE HOMES---------------	%	%
12	OTHER LUMBER & WOOD PRODUCTS----------------	%	%
13	FURNITURE AND FIXTURES----------------------	%	%
14	PULPMILLS, PAPERMILLS-----------------------	%	%
15	OTHER PAPER & ALLIED------------------------	%	%
16	CHEMICAL & ALLIED---------------------------	%	%
17	RUBBER & MISC. PLASTICS---------------------	%	%
18	PRIMARY METALS------------------------------	%	%
19	FABRICATED METALS---------------------------	%	%
20	MACHINERY, ELECTRICAL & ELECTRONIC----------	%	%
21	TRANSPORTATION EQUIPMENT--------------------	%	%
22	MISC. MANUFACTURING-------------------------	%	%
23	WHOLESALE & RETAIL TRADE--------------------	%	%
24	HOTELS, LODGING, PERSONAL & REPAIR SERVICES AND AMUSEMENTS----------------------------	%	%
25	BUSINESS & MEDICAL SERVICES-----------------	%	%
26	FINANCE, INSURANCE, REAL ESTATE-------------	%	%
27	TRANSPORTATION & WAREHOUSING----------------	%	%
28	COMMUNICATIONS & UTILITIES------------------	%	%
Final Users			
29	STATE AND LOCAL GOVERNMENT------------------	%	%
30	FEDERAL GOVERNMENT--------------------------	%	%
31	HOUSEHOLDS----------------------------------	%	%
	TOTAL	%	

Please print the name and address of your establishment.

____

____

____

Please print the name and telephone number of the person completing this questionnaire.

____

Do you wish to receive a copy of the results? (Please circle your answer.)

1. YES

2. NO

Is there anything else you would like to tell us about your firm or your industry? If so, please use the following space.

Appendix: Description of Alabama Industrial Groups*

01 Livestock and Livestock Products - (SIC 013, 0198) - Farms producing primarily dairy farm products, poultry, meat animals and misc. livestock products.

02 Other Agricultural Products - (SIC 011, 012, pt. 014, 0192, 074, pt. 08, 09) - Any farm producing primarily products not classified in sector one. Also includes greenhouse and nursery products, forestry and fisheries products and hunting.

03 Mining - (SIC 10-14) - All mineral extraction including coal, iron ore, oil and gas, stone, sand, gravel and clay.

04 Construction - (SIC 15-17) - All construction including maintenance and repair construction.

05 Food and Kindred - (SIC 20) - Firms manufacturing or processing food and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls.

06 Weaving and Misc. Textile Goods - (SIC 22 (exc 225)) - Firms engaged in manufacturing yarn, thread, etc., woven fabric, dyeing and finishing, coating and waterproofing of fabric, and manufacture of felt goods and misc. textiles. Excludes knitting mills.

07 Apparel and Misc. Fabricated Textiles - (SIC 225, 23) - Knitting mills, establishments producing clothing and fabricating products by cutting and sewing purchased woven or knit textile fabrics such as leather, furs, and rubberized fabrics.

08 Logging Camps - (SIC 2411) - Firms engaged in cutting timber and in producing rough, round, hewn, or riven primary forest or wood raw materials. Excluded are logging and woods operations conducted in combination with sawmills, pulpmills, or other converting establishments.

09 Sawmills and Planing Mills - (SIC 242) - Firms engaged in sawing rough lumber and timber, planing mills combined with sawmills, and planing mills engaged in producing surfaced lumber and standard workings or patterns of lumber. Also includes hardwood dimension and flooring mills.

10 Millwork and Plywood - (SIC 243) - Firms primarily engaged in manufacturing fabricated millwork, wood cabinets, hardwood veneer and plywood, softwood veneer and plywood, and structural wood members of laminated or fabricated trusses, arches, and other structural members.

11 Wood Buildings and Mobile Homes - (SIC 245) - Firms manufacturing mobile homes and prefabricated wood buildings, sections and panels.

12 Other Lumber and Wood Products - (SIC 24 (exc 241, 242, 243, 245)) - Firms producing wooden containers, particleboard, wood preserving, and those firms engaged in turning and shaping wood and manufacturing misc. wood products not elsewhere classified.

13 Furniture and Fixtures - (SIC 25) - Firms manufacturing household, office, public building, and restaurant furniture, and office and store fixtures. Does not include millwork and cabinets as described in sector 10.

14 Pulpmills, Papermills (exc. building paper and building board) - (SIC 2611, 2621, 2631) - Firms primarily engaged in manufacturing: (1) pulp from wood or other materials; (2) paper (except building paper) from wood pulp and other fibers; or (3) paperboard from wood pulp and other fibers.

15 Other Paper and Allied - (SIC 26 (exc. 2611, 2621, 2631)) - Firms primarily engaged in manufacturing: (1) converted paper and paperboard products such as envelopes, bags, sanitary paper, and stationary; (2) paperboard containers and boxes including corrugated boxes, and sanitary food containers; or (3) building paper and building board from wood pulp and other fibrous materials.

16 Chemical and Allied - (SIC 28) - Firms producing basic chemicals and firms manufacturing products by predominantly chemical processes. Products include acids, alkalies, salts, organic chemicals, synthetic fibers, pigments, drugs, soaps, paints, and fertilizers.

17 Rubber and Misc. Plastics - (SIC 30) - Firms manufacturing rubber products such as tires, rubber footwear, mechanical rubber goods, hoses and belting, and rubber sundries. Does not include establishments primarily engaged in recapping. Also includes firms engaged in molding primary plastics.

18 Primary Metals - (SIC 33) - Firms engaged in the smelting and refining of ferrous and nonferrous metals from ore, pig, or scrap, also in the rolling, drawing, alloying and casting of these metals. Includes manufacture of nails, spikes, and insulated wire and cable.

19 Fabricated Metal Products - (SIC 34) - Firms engaged in fabricating ferrous and nonferrous metal products except machinery, transportation equipment, scientific instruments, watches, clocks, jewelry, and silverware.

20 Machinery, Electrical and Electronic Equipment - (SIC 35, 36) - Firms engaged in manufacturing machinery and equipment other than transportation equipment. Machines powered by built-in or detachable motors are included as are powered portable tools, office machines and machines for generation, storage, transmission, transformation and utilization of electrical energy.

21 Transportation Equipment - (SIC 37) - Firms engaged in manufacturing equipment for transportation of passengers and cargo by land, air, and water.

22 Miscellaneous Manufacturing - (SIC 21, 27, 29, 31, 32, 38, 39) - Manufacturing firms not elsewhere classified. Included are tobacco manufacturing, printing, publishing and allied, petroleum refining and related industries, leather and leather products, stone, clay, glass and concrete products, scientific instruments, photographic and optical goods, watches and clocks and other misc. industries.

23 Wholesale and Retail Trade - (SIC 50-59) - All firms engaged in wholesale and retail trade both for industrial and personal consumption and use.

24 Hotels, Lodging, Personal and Repair Services and Amusements - (SIC 70, 72, 75, 76 (exc. 7692, 7694, pt 7699) 78, 79) - Commercial and institutional establishments engaged in furnishing lodging or camping facilities on a fee basis, establishments primarily engaged in providing services involving the care of the person or his apparel such as laundries and barber shops, automobile services and repair, misc. repair services (except welding repair and armature rewinding shops), and all motion picture and amusement establishments.

25 Business and Medical Services and Nonprofit Organizations - (SIC 73 (exc. 7396) 7692, 7694, pt. 7699, 80, 81, 82, 84, 89, 07, pt. 08) - Firms primarily engaged in rendering services to business establishments on a fee or contract basis, welding and armature repair, medical, surgical and other health services, legal services, educational services, non-commercial museums and art galleries, misc. services such as surveyors, architects, accountants, agricultural services, forestry services, nurseries, and management.

26 Finance Insurance, Real Estate - (SIC 60-67) - Firms operating primarily in the fields of finance, insurance and real estate, including banks, credit agencies, brokers and insurance agents. Real estate includes owners, lessors, lessees, buyers, sellers, agents and developers.

27 Transportation and Warehousing - (SIC 40-42, 44-47) - All forms of transportation including railroads, local and interstate passenger transport, motor freight (trucking) transport and warehousing, water and air transportation and transportation services.

28 Communications and Utilities - (SIC 48, 49) - Firms furnishing point-to-point communication services, and those firms engaged in the generation, transmission and/or distribution of electricity or gas or steam, provision of water and irrigation systems, and disposal of garbage, sewage, and other waste.

* SIC is Standard Industrial Classification

APPENDIX C

Response Rates by Sector as a Percentage of Output and Employment

SECTOR NUMBER	SECTOR[1] OUTPUT	SAMPLE[1] OUTPUT	RESPONSE RATE %
3	1027.8	53.4	5.2
5	2631.2	177.1	6.7
6	1409.7	142.9	10.1
7	1351.9	149.7	11.1
8	350.3	3.1	0.9
9	425.9	83.4	19.6
10	203.5	81.1	39.8
11	252.6	25.5	10.1
12	148.9	53.9	36.2
13	2207.0	725.3	32.9
14	2534.2	23.2	0.9
15	923.6	52.7	5.7
16	3511.1	384.0	10.9
17	1097.3	57.5	5.2
18	1267.5	119.9	9.5
19	816.6	15.7	1.9
20	1318.5	297.6	22.6
TOTAL	21477.6	2446.0	11.4

[1]$Millions

SECTOR NUMBER	SECTOR[2] EMPLOYMENT	SAMPLE[2] EMPLOYMENT	RESPONSE RATE %
3	13.8	0.6	4.3
5	27.3	2.8	10.3
6	36.7	3.3	9.0
7	62.7	5.6	8.9
8	5.1	0.1	2.0
9	10.8	1.1	10.2
10	5.7	1.5	26.3
11	6.9	0.4	5.8
12	5.1	1.3	25.5
13	20.1	7.4	36.8
14	15.1	0.2	1.3
15	13.1	0.9	6.9
16	41.7	3.4	8.1
17	24.4	2.1	8.6
18	26.5	2.4	9.1
19	18.1	0.4	2.2
20	33.2	3.4	10.2
TOTAL	366.3	36.9	10.1

[2]In thousands

APPENDIX D

Input-output Tables

TABLE 1
TRANSACTIONS MATRIX

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	137.6	19.1	0.0	0.0	429.3	0.9
2	OTHER AGRICULTURE	77.3	8.4	44.6	3.1	54.0	25.5
3	MINING	0.1	2.7	29.7	84.5	0.0	1.7
4	CONSTRUCTION	5.9	6.0	11.9	1.5	6.6	5.5
5	FOOD & KINDRED	1.6	0.3	0.0	0.0	178.0	0.0
6	TEXTILES	0.2	0.9	0.0	8.5	0.0	6.7
7	APPAREL	0.0	0.5	0.0	2.0	0.0	0.0
8	LOGGING CAMPS	0.6	0.3	0.0	36.4	0.4	0.0
9	SAWMILLS	0.0	0.4	0.0	52.2	0.0	1.8
10	MILLWORK & PLYWOOD	0.0	0.2	0.0	33.2	0.0	0.0
11	OTHER WOOD PRODUCTS	0.1	0.3	0.0	27.3	3.1	1.8
12	FURNITURE & FIXTURES	0.0	0.0	0.0	22.2	0.0	0.0
13	PAPER & ALLIED	0.3	0.1	5.0	17.6	24.3	6.4
14	CHEMICAL & ALLIED	9.0	166.1	7.9	71.2	0.7	0.9
15	RUBBER & PLASTICS	0.6	1.8	0.8	24.6	2.7	0.0
16	PRIMARY METALS	0.0	0.3	1.0	134.6	0.0	3.7
17	FABRICATED METALS	2.0	1.2	23.7	285.1	56.8	0.0
18	MACHINERY & ELECTRIC	0.3	3.8	13.0	112.5	5.0	9.2
19	TRANSPORTATION EQUIP	0.1	0.4	62.3	0.2	6.1	4.0
20	MISC. MANUFACTURING	1.8	10.1	15.6	235.6	15.2	8.3
21	WHOLESALE & RETAIL	29.4	23.2	14.3	220.0	26.6	9.3
22	SERVICES	23.0	47.6	13.9	153.8	16.7	3.4
23	FIN. INS. & REAL EST	16.9	36.2	15.0	41.1	10.8	9.6
24	TRANSPORTATION	17.8	9.3	2.8	112.3	35.8	3.8
25	COMM. & UTILITIES	4.3	5.4	64.4	18.8	48.3	49.1
	ENDOGENOUS TOTALS	328.9	344.6	325.9	1698.3	920.4	151.6
26	STATE & LOCAL GOVT.	85.7	56.6	24.3	53.6	39.3	17.6
27	FEDERAL GOVT.	20.6	13.1	76.6	275.3	68.3	31.0
28	HOUSEHOLDS	214.5	136.5	270.0	1138.0	292.0	444.0
29	IMPORTS	277.8	42.0	196.1	830.8	909.2	545.6
30	UNALLOCATED	0.0	0.0	134.9	415.4	402.0	219.9
	TOTALS	927.5	592.8	1027.8	4411.4	2631.2	1409.7

TABLE 1
TRANSACTIONS MATRIX

	7	8	9	10	11	12	13	14	15
1	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.4	0.0
2	1.0	13.1	11.8	2.7	3.4	0.0	0.0	8.5	0.0
3	0.0	0.0	1.4	0.0	0.0	0.0	6.9	2.2	2.0
4	1.1	0.0	0.5	0.8	0.2	0.4	57.8	2.4	1.2
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	122.8	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
7	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	14.3	61.9	28.2	32.0	0.6	109.4	0.0	0.0
9	0.0	0.0	10.9	1.7	15.6	2.1	84.6	0.0	0.2
10	0.0	0.1	1.8	2.2	5.0	0.0	4.9	0.0	0.0
11	0.0	0.0	0.6	0.1	0.5	1.0	3.0	0.0	3.9
12	1.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
13	9.6	0.0	0.0	3.0	0.0	2.4	140.9	2.1	0.1
14	0.1	1.3	0.5	1.6	9.7	1.2	105.3	204.0	0.8
15	1.2	0.7	0.6	0.3	0.0	0.0	2.5	1.2	4.1
16	0.0	0.0	2.5	0.1	0.0	9.2	1.5	0.0	0.5
17	0.0	0.1	1.8	0.1	5.6	12.0	0.0	0.1	1.0
18	5.6	7.0	4.8	2.8	2.4	1.0	31.6	8.4	3.2
19	2.3	29.1	0.4	0.1	0.3	0.0	7.7	2.4	0.0
20	2.4	0.0	4.6	2.7	16.2	1.3	17.9	2.2	3.3
21	13.5	7.4	4.1	2.9	6.2	1.3	23.7	18.9	5.2
22	8.8	6.8	3.3	0.7	0.3	2.8	12.1	29.8	6.8
23	11.5	6.4	11.1	0.6	0.4	0.9	4.5	29.3	8.2
24	24.6	13.4	10.6	5.1	14.2	1.6	24.8	16.5	20.4
25	19.7	11.7	12.1	7.0	5.5	1.5	184.6	14.1	25.2
	240.4	116.7	145.4	62.7	117.5	39.5	823.7	342.5	86.1
26	30.1	12.5	6.2	2.7	2.9	3.3	23.6	26.3	8.0
27	65.8	29.8	13.8	3.6	4.4	5.3	73.9	40.1	25.8
28	357.0	96.4	105.1	52.9	61.6	62.0	371.0	263.0	222.0
29	455.2	47.1	119.2	46.3	36.5	33.8	467.4	1653.6	528.8
30	203.4	47.8	36.2	35.3	29.7	5.0	447.4	208.7	52.9
	1351.9	350.3	425.9	203.5	252.6	148.9	2207.0	2534.2	923.6

TABLE 1
TRANSACTIONS MATRIX

	16	17	18	19	20	21	22	23
1	0.0	0.0	0.0	0.0	0.0	0.0	3.6	32.4
2	0.0	0.0	0.0	0.0	0.2	0.2	10.0	25.4
3	6.6	0.1	0.0	0.0	133.4	0.2	0.3	6.8
4	3.1	10.5	0.5	0.3	13.2	13.1	28.9	281.0
5	0.0	0.0	0.0	0.0	0.0	106.0	11.4	6.2
6	0.0	0.0	0.0	0.0	0.0	1.0	1.3	1.1
7	0.0	0.0	0.0	0.0	0.0	5.5	4.4	1.3
8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
9	0.0	1.2	1.0	0.0	0.9	8.9	0.0	0.0
10	0.5	0.0	1.6	1.3	0.7	3.9	0.1	0.0
11	12.0	0.4	0.5	0.0	4.5	0.0	0.2	1.4
12	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.5
13	11.2	0.6	11.9	0.0	10.4	32.5	7.7	9.4
14	12.4	0.4	2.8	0.1	0.7	14.3	34.8	19.2
15	0.8	7.5	0.2	0.6	2.3	14.2	16.1	4.4
16	277.4	69.7	9.3	83.1	13.9	1.7	0.3	4.1
17	14.4	63.5	22.6	2.7	21.0	7.9	24.2	2.7
18	18.6	2.7	8.7	1.2	5.1	15.0	29.4	30.0
19	11.0	0.2	0.1	1.4	2.3	5.2	16.4	7.7
20	27.0	31.0	1.8	4.0	59.0	33.3	76.1	23.9
21	32.1	12.9	10.4	5.0	7.7	46.5	42.6	55.7
22	21.8	22.3	5.6	5.6	22.4	162.5	104.5	229.8
23	5.3	16.7	10.1	18.6	6.2	149.0	101.1	277.6
24	67.8	12.7	10.0	14.9	35.4	24.2	14.7	38.2
25	141.1	23.8	22.3	11.5	49.0	77.0	113.1	68.4
	663.1	276.2	119.4	150.3	388.3	726.8	641.2	1127.2
26	17.5	17.4	22.2	30.9	14.0	878.6	104.5	592.8
27	88.6	62.9	46.9	54.0	57.9	35.0	55.6	155.3
28	868.0	320.0	342.0	297.0	383.0	2556.0	2157.0	2422.6
29	1616.3	346.1	614.4	259.1	278.5	152.6	749.2	73.8
30	257.6	74.7	122.6	25.3	196.8	0.0	115.2	0.0
	3511.1	1097.3	1267.5	816.6	1318.5	4349.0	3822.7	4371.7

TABLE 1
TRANSACTIONS MATRIX

	24	25	A[1]	B[1]	C[1]	D[1]	E[1]	F[1]	G[1]
1	0.2	0.0	628.8	0.5	5.9	52.1	0.0	240.2	927.5
2	2.7	0.0	291.9	2.7	23.8	40.7	0.0	233.7	592.8
3	1.2	157.4	437.2	10.8	3.4	24.2	0.0	552.2	1027.8
4	58.3	97.8	608.5	766.0	270.7	0.0	2766.2	0.0	4411.4
5	6.6	0.0	310.1	17.0	42.0	592.4	8.7	1661.0	2631.2
6	1.3	0.3	144.3	0.5	3.2	8.4	0.0	1253.3	1409.7
7	3.5	0.8	33.0	1.1	15.6	56.1	11.3	1234.8	1351.9
8	0.0	0.0	284.2	0.1	0.5	0.0	3.3	62.2	350.3
9	0.0	0.0	181.5	0.1	0.5	1.7	3.7	238.4	425.9
10	0.0	0.0	55.5	0.1	0.5	8.3	0.3	138.8	203.5
11	1.3	0.4	62.4	0.1	0.5	59.3	7.0	123.3	252.6
12	0.0	0.0	28.6	8.3	4.9	12.6	0.0	94.5	148.9
13	3.4	2.3	301.2	3.4	5.7	7.0	4.2	1885.5	2207.0
14	5.3	3.5	673.8	76.9	101.3	31.2	50.4	1600.6	2534.2
15	10.4	2.3	99.9	2.7	12.1	9.6	2.2	797.1	923.6
16	9.9	2.7	625.5	0.1	10.2	0.1	63.0	2812.2	3511.1
17	7.0	1.2	556.7	2.9	73.5	5.0	0.0	459.2	1097.3
18	11.5	18.3	351.1	10.9	47.0	40.2	11.0	807.3	1267.5
19	26.2	0.2	186.1	9.5	27.8	43.6	0.0	549.6	816.6
20	80.1	23.1	696.5	34.6	76.8	167.2	12.1	331.3	1318.5
21	48.1	17.2	684.2	9.6	73.1	3582.1	0.0	0.0	4349.0
22	59.2	98.3	1061.8	108.8	277.3	2352.8	22.0	0.0	3822.7
23	57.2	36.3	880.6	29.1	19.1	3369.1	73.8	0.0	4371.7
24	191.1	32.4	754.4	42.8	272.0	623.6	16.6	0.0	1709.4
25	35.1	375.6	1388.6	71.2	79.0	920.5	0.0	0.0	2459.3
	619.6	870.1	11326.4	0.0	0.0	0.0	0.0	0.0	0.0
26	66.1	196.6	0.0	0.0	1082.7	371.7	0.0	0.0	3787.7
27	41.0	467.2	0.0	0.0	0.0	1187.9	0.0	0.0	2999.7
28	529.0	595.0	0.0	1774.0	3803.0	342.4	0.0	270.0	20745.0
29	453.7	330.4	0.0	36.3	0.0	1388.0	0.0	0.0	12487.8
30	0.0	0.0	0.0	676.2	-205.5	2986.9	0.0	0.0	6488.4
	1709.4	2459.3	0.0	3696.3	6126.6	18284.7	3055.8	15345.2	90630.0

[1]A, Endogenous totals; B, State and Local Government; C, Federal Government; D, Households; E, Unallocated; F, Exports; G, Total Output.

TABLE 2
DIRECT REQUIREMENTS MATRIX

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	0.14836	0.03222	0.0	0.0	0.16316	0.00064
2	OTHER AGRICULTURE	0.08334	0.01417	0.04339	0.00070	0.02052	0.01809
3	MINING	0.00011	0.00455	0.02890	0.01915	0.0	0.00121
4	CONSTRUCTION	0.00636	0.01012	0.01158	0.00034	0.00251	0.00390
5	FOOD & KINDRED	0.00173	0.00051	0.0	0.0	0.06765	0.0
6	TEXTILES	0.00022	0.00152	0.0	0.00193	0.0	0.00475
7	APPAREL	0.0	0.00084	0.0	0.00045	0.0	0.0
8	LOGGING CAMPS	0.00065	0.00051	0.0	0.00825	0.00015	0.0
9	SAWMILLS	0.0	0.00067	0.0	0.01183	0.0	0.00128
10	MILLWORK & PLYWOOD	0.0	0.00034	0.0	0.00753	0.0	0.0
11	OTHER WOOD PRODUCTS	0.00011	0.00051	0.0	0.00619	0.00118	0.00128
12	FURNITURE & FIXTURES	0.0	0.0	0.0	0.00503	0.0	0.0
13	PAPER & ALLIED	0.00032	0.00017	0.00486	0.00399	0.00924	0.00454
14	CHEMICAL & ALLIED	0.00970	0.28020	0.00769	0.01614	0.00027	0.00064
15	RUBBER & PLASTICS	0.00065	0.00304	0.00078	0.00558	0.00103	0.0
16	PRIMARY METALS	0.0	0.00051	0.00097	0.03051	0.0	0.00262
17	FABRICATED METALS	0.00216	0.00202	0.02306	0.06463	0.02159	0.0
18	MACHINERY & ELECTRIC	0.00032	0.00641	0.01265	0.02550	0.00190	0.00653
19	TRANSPORTATION EQUIP	0.00011	0.00067	0.06061	0.00005	0.00232	0.00284
20	MISC. MANUFACTURING	0.00194	0.01704	0.01518	0.05341	0.00578	0.00589
21	WHOLESALE & RETAIL	0.03170	0.03914	0.01391	0.04987	0.01011	0.00660
22	SERVICES	0.02480	0.08030	0.01352	0.03486	0.00635	0.00241
23	FIN. INS. & REAL EST	0.01822	0.06107	0.01459	0.00932	0.00410	0.00681
24	TRANSPORTATION	0.01919	0.01569	0.00272	0.02546	0.01361	0.00270
25	COMM. & UTILITIES	0.00464	0.00911	0.06266	0.00426	0.01836	0.03483
	ENDOGENOUS TOTALS	0.35461	0.58131	0.31709	0.38498	0.34980	0.10754
26	STATE & LOCAL GOVT.	0.09240	0.09548	0.02364	0.01215	0.01494	0.01248
27	FEDERAL GOVT.	0.02221	0.02210	0.07453	0.06241	0.02596	0.02199
28	HOUSEHOLDS	0.23127	0.23026	0.26270	0.25797	0.11098	0.31496
29	IMPORTS	0.29951	0.07085	0.19080	0.18833	0.34555	0.38703
30	UNALLOCATED	0.0	0.0	0.13125	0.09417	0.15278	0.15599
	TOTALS	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 2
DIRECT REQUIREMENTS MATRIX

	7	8	9	10	11	12	13	14	15
1	0.0	0.01513	0.0	0.0	0.0	0.0	0.0	0.00016	0.0
2	0.00074	0.03740	0.02771	0.01327	0.01346	0.0	0.0	0.00335	0.0
3	0.0	0.0	0.00329	0.0	0.0	0.0	0.00313	0.00087	0.00217
4	0.00081	0.0	0.00117	0.00393	0.00079	0.00269	0.02619	0.00095	0.00130
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.09084	0.0	0.0	0.0	0.0	0.00134	0.0	0.0	0.0
7	0.01110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.04082	0.14534	0.13857	0.12668	0.00403	0.04957	0.0	0.0
9	0.0	0.0	0.02559	0.00835	0.06176	0.01410	0.03833	0.0	0.00022
10	0.0	0.00029	0.00423	0.01081	0.01979	0.0	0.00222	0.0	0.0
11	0.0	0.0	0.00141	0.00049	0.00198	0.00672	0.00136	0.0	0.00422
12	0.00089	0.0	0.00023	0.0	0.0	0.0	0.0	0.0	0.0
13	0.00710	0.0	0.0	0.01474	0.0	0.01612	0.06384	0.00083	0.00011
14	0.00007	0.00371	0.00117	0.00786	0.03840	0.00806	0.04771	0.08050	0.00087
15	0.00089	0.00200	0.00141	0.00147	0.0	0.0	0.00113	0.00047	0.00444
16	0.0	0.0	0.00587	0.00049	0.0	0.06179	0.00068	0.0	0.00054
17	0.0	0.00029	0.00423	0.00049	0.02217	0.08059	0.0	0.00004	0.00108
18	0.00414	0.01998	0.01127	0.01376	0.00950	0.00672	0.01432	0.00331	0.00346
19	0.00170	0.08307	0.00094	0.00049	0.00119	0.0	0.00349	0.00095	0.0
20	0.00178	0.0	0.01080	0.01327	0.06413	0.00873	0.00811	0.00087	0.00357
21	0.00999	0.02112	0.00963	0.01425	0.02454	0.00873	0.01074	0.00746	0.00563
22	0.00651	0.01941	0.00775	0.00344	0.00119	0.01880	0.00548	0.01176	0.00736
23	0.00851	0.01827	0.02606	0.00295	0.00158	0.00604	0.00204	0.01156	0.00888
24	0.01820	0.03825	0.02489	0.02506	0.05622	0.01075	0.01124	0.00651	0.02209
25	0.01457	0.03340	0.02841	0.03440	0.02177	0.01007	0.08364	0.00556	0.02728
	0.17782	0.33314	0.34139	0.30811	0.46516	0.26528	0.37322	0.13515	0.09322
26	0.02226	0.03568	0.01456	0.01327	0.01148	0.02216	0.01069	0.01038	0.00866
27	0.04867	0.08507	0.03240	0.01769	0.01742	0.03559	0.03348	0.01582	0.02793
28	0.26407	0.27519	0.24677	0.25995	0.24386	0.41639	0.16810	0.10378	0.24036
29	0.33671	0.13446	0.27988	0.22752	0.14450	0.22700	0.21178	0.65251	0.57254
30	0.15045	0.13645	0.08500	0.17346	0.11758	0.03358	0.20272	0.08235	0.05728
	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 2
DIRECT REQUIREMENTS MATRIX

	16	17	18	19	20	21	22	23
1	0.0	0.0	0.0	0.0	0.0	0.0	0.00094	0.00741
2	0.0	0.0	0.0	0.0	0.00015	0.00005	0.00262	0.00581
3	0.00188	0.00009	0.0	0.0	0.10118	0.00005	0.00008	0.00156
4	0.00088	0.00957	0.00039	0.00037	0.01001	0.00301	0.00756	0.06428
5	0.0	0.0	0.0	0.0	0.0	0.02437	0.00298	0.00142
6	0.0	0.0	0.0	0.0	0.0	0.00023	0.00034	0.00025
7	0.0	0.0	0.0	0.0	0.0	0.00126	0.00115	0.00030
8	0.0	0.0	0.0	0.0	0.0	0.00002	0.0	0.0
9	0.0	0.00109	0.00079	0.0	0.00068	0.00205	0.0	0.0
10	0.00014	0.0	0.00126	0.00159	0.00053	0.00090	0.00003	0.0
11	0.00342	0.00036	0.00039	0.0	0.00341	0.0	0.00005	0.00032
12	0.0	0.0	0.0	0.0	0.0	0.00106	0.0	0.00011
13	0.00319	0.00055	0.00939	0.0	0.00789	0.00747	0.00201	0.00215
14	0.00353	0.00036	0.00221	0.00012	0.00053	0.00329	0.00910	0.00439
15	0.00023	0.00683	0.00016	0.00073	0.00174	0.00327	0.00421	0.00101
16	0.07901	0.06352	0.00734	0.10176	0.01054	0.00039	0.00008	0.00094
17	0.00410	0.05787	0.01783	0.00331	0.01593	0.00182	0.00633	0.00062
18	0.00530	0.00246	0.00686	0.00147	0.00387	0.00345	0.00769	0.00686
19	0.00313	0.00018	0.00008	0.00171	0.00174	0.00120	0.00429	0.00176
20	0.00769	0.02825	0.00142	0.00490	0.04475	0.00766	0.01991	0.00547
21	0.00914	0.01176	0.00821	0.00612	0.00584	0.01069	0.01114	0.01274
22	0.00621	0.02032	0.00442	0.00686	0.01699	0.03736	0.02734	0.05257
23	0.00151	0.01522	0.00797	0.02278	0.00470	0.03426	0.02645	0.06350
24	0.01931	0.01157	0.00789	0.01825	0.02685	0.00556	0.00385	0.00874
25	0.04019	0.02169	0.01759	0.01408	0.03716	0.01771	0.02959	0.01565
	0.18886	0.25171	0.09420	0.18406	0.29450	0.16712	0.16773	0.25784
26	0.00498	0.01586	0.01751	0.03784	0.01062	0.20202	0.02734	0.13560
27	0.02523	0.05732	0.03700	0.06613	0.04391	0.00805	0.01454	0.03552
28	0.24722	0.29162	0.26982	0.36370	0.29048	0.58772	0.56426	0.55416
29	0.46034	0.31541	0.48473	0.31729	0.21122	0.03509	0.19599	0.01688
30	0.07337	0.06808	0.09673	0.03098	0.14926	0.0	0.03014	0.0
	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 2
DIRECT REQUIREMENTS MATRIX

	24	25
1	0.00012	0.0
2	0.00158	0.0
3	0.00070	0.06400
4	0.03411	0.03977
5	0.00386	0.0
6	0.00076	0.00012
7	0.00205	0.00033
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0
11	0.00076	0.00016
12	0.0	0.0
13	0.00199	0.00094
14	0.00310	0.00142
15	0.00608	0.00094
16	0.00579	0.00110
17	0.00410	0.00049
18	0.00673	0.00744
19	0.01533	0.00008
20	0.04686	0.00939
21	0.02814	0.00699
22	0.03463	0.03997
23	0.03346	0.01476
24	0.11179	0.01317
25	0.02053	0.15273
	0.36247	0.35380
26	0.03867	0.07994
27	0.02399	0.18997
28	0.30947	0.24194
29	0.26541	0.13435
30	0.0	0.0
	1.00000	1.00000

TABLE 3
DIRECT & INDIRECT REQUIREMENTS TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	1.17910	0.03993	0.00216	0.00093	0.20742	0.00165
2	OTHER AGRICULTURE	0.10049	1.02021	0.04629	0.00356	0.04039	0.01904
3	MINING	0.00271	0.00967	1.03829	0.02814	0.00366	0.00532
4	CONSTRUCTION	0.01300	0.01902	0.01878	1.00616	0.00837	0.00714
5	FOOD & KINDRED	0.00373	0.00243	0.00072	0.00180	1.07372	0.00031
6	TEXTILES	0.00052	0.00179	0.00016	0.00209	0.00018	1.00484
7	APPAREL	0.00028	0.00114	0.00016	0.00068	0.00015	0.00007
8	LOGGING CAMPS	0.00117	0.00120	0.00070	0.01308	0.00132	0.00082
9	SAWMILLS	0.00041	0.00121	0.00064	0.01332	0.00076	0.00175
10	MILLWORK & PLYWOOD	0.00020	0.00060	0.00034	0.00800	0.00017	0.00014
11	OTHER WOOD PRODUCTS	0.00035	0.00082	0.00032	0.00678	0.00148	0.00141
12	FURNITURE & FIXTURES	0.00012	0.00016	0.00012	0.00513	0.00007	0.00005
13	PAPER & ALLIED	0.00130	0.00184	0.00630	0.00640	0.01124	0.00528
14	CHEMICAL & ALLIED	0.04432	0.31356	0.02422	0.02099	0.01616	0.00731
15	RUBBER & PLASTICS	0.00179	0.00432	0.00171	0.00701	0.00199	0.00029
16	PRIMARY METALS	0.00135	0.00257	0.01130	0.04054	0.00291	0.00385
17	FABRICATED METALS	0.00473	0.00549	0.02811	0.07285	0.02648	0.00116
18	MACHINERY & ELECTRIC	0.00271	0.01031	0.01567	0.02878	0.00378	0.00772
19	TRANSPORTATION EQUIP	0.00130	0.00276	0.06360	0.00403	0.00348	0.00346
20	MISC. MANUFACTURING	0.00831	0.02447	0.02193	0.06370	0.01139	0.00828
21	WHOLESALE & RETAIL	0.04493	0.04858	0.02034	0.05615	0.02181	0.00900
22	SERVICES	0.04493	0.09848	0.02685	0.04602	0.02085	0.00777
23	FIN. INS. & REAL EST	0.03464	0.07783	0.02522	0.01866	0.01514	0.01056
24	TRANSPORTATION	0.02958	0.02496	0.00944	0.03626	0.02406	0.00529
25	COMM. & UTILITIES	0.01295	0.02275	0.08398	0.02109	0.03006	0.04425
	TOTALS	1.53490	1.73609	1.44734	1.51213	1.52704	1.15676

TABLE 3
DIRECT & INDIRECT REQUIREMENTS TABLE

	7	8	9	10	11	12	13	14	15
1	0.00040	0.02065	0.00467	0.00370	0.00386	0.00044	0.00155	0.00057	0.00022
2	0.00279	0.04196	0.03609	0.02036	0.02259	0.00132	0.00476	0.00400	0.00052
3	0.00237	0.00431	0.00877	0.00591	0.01142	0.00363	0.01352	0.00193	0.00537
4	0.00417	0.00677	0.00794	0.00940	0.00811	0.00685	0.03475	0.00294	0.00466
5	0.00048	0.00117	0.00080	0.00082	0.00133	0.00052	0.00065	0.00036	0.00036
6	0.09234	0.00017	0.00015	0.00011	0.00016	0.00141	0.00013	0.00004	0.00005
7	1.01131	0.00024	0.00019	0.00017	0.00027	0.00010	0.00015	0.00006	0.00010
8	0.00061	1.04285	0.15659	0.14860	0.14527	0.00860	0.06271	0.00012	0.00075
9	0.00057	0.00025	1.02665	0.00958	0.06408	0.01587	0.04271	0.00012	0.00060
10	0.00008	0.00058	0.00461	1.01122	0.02057	0.00035	0.00297	0.00005	0.00014
11	0.00022	0.00021	0.00169	0.00074	1.00252	0.00719	0.00186	0.00005	0.00434
12	0.00093	0.00007	0.00031	0.00007	0.00009	1.00005	0.00021	0.00003	0.00003
13	0.00850	0.00095	0.00095	0.01676	0.00187	0.01807	1.06924	0.00123	0.00048
14	0.00190	0.01837	0.01413	0.01719	0.05078	0.01142	0.05871	1.08923	0.00181
15	0.00122	0.00301	0.00252	0.00246	0.00162	0.00105	0.00211	0.00074	1.00480
16	0.00112	0.01085	0.00971	0.00338	0.00588	0.07407	0.00430	0.00045	0.00134
17	0.00087	0.00250	0.00669	0.00258	0.02707	0.08742	0.00403	0.00062	0.00216
18	0.00572	0.02308	0.01678	0.01893	0.01587	0.00903	0.01991	0.00419	0.00446
19	0.00265	0.08815	0.01543	0.01408	0.01561	0.00174	0.01039	0.00142	0.00091
20	0.00466	0.00600	0.01666	0.01855	0.07535	0.01548	0.01507	0.00232	0.00652
21	0.01254	0.02864	0.01839	0.02189	0.03487	0.01313	0.01828	0.00934	0.00762
22	0.01063	0.03289	0.02185	0.01481	0.01664	0.02567	0.01756	0.01561	0.01147
23	0.01231	0.03087	0.03868	0.01230	0.01540	0.01146	0.01074	0.01513	0.01199
24	0.02230	0.05040	0.03950	0.03863	0.07762	0.01796	0.02227	0.00877	0.02655
25	0.02423	0.04874	0.04701	0.05365	0.04458	0.02371	0.11463	0.00901	0.03496
	1.22490	1.46370	1.49675	1.44591	1.66344	1.35655	1.53320	1.16830	1.13224

TABLE 3
DIRECT & INDIRECT REQUIREMENTS TABLE

	16	17	18	19	20	21	22	23
1	0.00019	0.00037	0.00020	0.00036	0.00049	0.00561	0.00229	0.01021
2	0.00057	0.00067	0.00034	0.00045	0.00564	0.00176	0.00356	0.00791
3	0.00712	0.00663	0.00213	0.00288	0.11427	0.00324	0.00556	0.00631
4	0.00487	0.01439	0.00304	0.00433	0.01706	0.00789	0.01231	0.07165
5	0.00047	0.00062	0.00034	0.00042	0.00056	0.02675	0.00376	0.00245
6	0.00005	0.00008	0.00003	0.00005	0.00011	0.00042	0.00052	0.00051
7	0.00010	0.00012	0.00006	0.00009	0.00016	0.00139	0.00127	0.00050
8	0.00089	0.00060	0.00103	0.00041	0.00155	0.00114	0.00038	0.00119
9	0.00052	0.00156	0.00135	0.00016	0.00165	0.00263	0.00035	0.00115
10	0.00032	0.00019	0.00136	0.00169	0.00084	0.00103	0.00018	0.00062
11	0.00384	0.00092	0.00051	0.00048	0.00385	0.00020	0.00028	0.00090
12	0.00004	0.00009	0.00003	0.00003	0.00010	0.00112	0.00008	0.00051
13	0.00420	0.00164	0.01040	0.00079	0.01003	0.00884	0.00292	0.00346
14	0.00527	0.00194	0.00346	0.00130	0.00495	0.00561	0.01212	0.01005
15	0.00066	0.00782	0.00051	0.00113	0.00267	0.00379	0.00474	0.00207
16	1.08729	0.07467	0.00972	0.11162	0.01579	0.00160	0.00216	0.00471
17	0.00595	1.06398	0.01961	0.00484	0.02256	0.00399	0.00876	0.00695
18	0.00699	0.00454	1.00778	0.00300	0.00748	0.00501	0.00930	0.01051
19	0.00444	0.00142	0.00061	1.00279	0.00972	0.00204	0.00509	0.00299
20	0.01185	0.03522	0.00359	0.00848	1.05402	0.01099	0.02387	0.01333
21	0.01219	0.01594	0.00982	0.00909	0.01168	1.01367	0.01406	0.02004
22	0.01170	0.02801	0.00775	0.01202	0.02679	0.04386	1.03408	0.06464
23	0.00497	0.02072	0.01051	0.02682	0.01191	0.04000	0.03182	1.07341
24	0.02582	0.01840	0.01053	0.02442	0.03554	0.00909	0.00740	0.01491
25	0.05505	0.03571	0.02439	0.02470	0.06011	0.02665	0.04003	0.02578
	1.25535	1.33624	1.12908	1.24235	1.41954	1.22831	1.22691	1.35677

TABLE 3
DIRECT & INDIRECT REQUIREMENTS TABLE

	24	25
1	0.00188	0.00058
2	0.00315	0.00412
3	0.01064	0.08164
4	0.04458	0.05151
5	0.00590	0.00068
6	0.00123	0.00035
7	0.00250	0.00055
8	0.00100	0.00086
9	0.00095	0.00084
10	0.00050	0.00047
11	0.00147	0.00065
12	0.00027	0.00028
13	0.00397	0.00251
14	0.00697	0.00572
15	0.00782	0.00202
16	0.01231	0.00488
17	0.01026	0.00733
18	0.01063	0.01235
19	0.01865	0.00583
20	0.06096	0.01884
21	0.03730	0.01443
22	0.04959	0.05569
23	0.04596	0.02433
24	1.13206	0.02133
25	0.03694	1.19190
	1.50750	1.50968

TABLE 4
DIRECT & INDIRECT INCOME RESPONSE TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	0.27269	0.00924	0.00050	0.00022	0.04797	0.00038
2	OTHER AGRICULTURE	0.02314	0.23492	0.01066	0.00082	0.00930	0.00438
3	MINING	0.00071	0.00254	0.27275	0.00739	0.00096	0.00140
4	CONSTRUCTION	0.00335	0.00491	0.00484	0.25956	0.00216	0.00184
5	FOOD & KINDRED	0.00041	0.00027	0.00008	0.00020	0.11916	0.00003
6	TEXTILES	0.00016	0.00056	0.00005	0.00066	0.00006	0.31649
7	APPAREL	0.00007	0.00030	0.00004	0.00018	0.00004	0.00002
8	LOGGING CAMPS	0.00032	0.00033	0.00019	0.00360	0.00036	0.00022
9	SAWMILLS	0.00010	0.00030	0.00016	0.00329	0.00019	0.00043
10	MILLWORK & PLYWOOD	0.00005	0.00016	0.00009	0.00208	0.00005	0.00004
11	OTHER WOOD PRODUCTS	0.00009	0.00020	0.00008	0.00165	0.00036	0.00034
12	FURNITURE & FIXTURES	0.00005	0.00007	0.00005	0.00214	0.00003	0.00002
13	PAPER & ALLIED	0.00022	0.00031	0.00106	0.00108	0.00189	0.00089
14	CHEMICAL & ALLIED	0.00460	0.03254	0.00251	0.00218	0.00168	0.00076
15	RUBBER & PLASTICS	0.00043	0.00104	0.00041	0.00169	0.00048	0.00007
16	PRIMARY METALS	0.00033	0.00063	0.00279	0.01002	0.00072	0.00095
17	FABRICATED METALS	0.00138	0.00160	0.00820	0.02124	0.00772	0.00034
18	MACHINERY & ELECTRIC	0.00073	0.00278	0.00423	0.00777	0.00102	0.00208
19	TRANSPORTATION EQUIP	0.00047	0.00100	0.02313	0.00147	0.00127	0.00126
20	MISC. MANUFACTURING	0.00241	0.00711	0.00637	0.01850	0.00331	0.00240
21	WHOLESALE & RETAIL	0.02640	0.02855	0.01195	0.03300	0.01282	0.00529
22	SERVICES	0.02535	0.05557	0.01515	0.02597	0.01177	0.00438
23	FIN. INS. & REAL EST	0.01920	0.04313	0.01398	0.01034	0.00839	0.00585
24	TRANSPORTATION	0.00915	0.00772	0.00292	0.01122	0.00745	0.00164
25	COMM. & UTILITIES	0.00313	0.00550	0.02032	0.00510	0.00727	0.01070
	TOTALS	0.39497	0.44128	0.40252	0.43134	0.24640	0.36222

TABLE 4
DIRECT & INDIRECT INCOME RESPONSE TABLE

	7	8	9	10	11	12	13	14	15
1	0.00009	0.00478	0.00108	0.00086	0.00089	0.00010	0.00036	0.00013	0.00005
2	0.00064	0.00966	0.00831	0.00469	0.00520	0.00030	0.00110	0.00092	0.00012
3	0.00062	0.00113	0.00230	0.00155	0.00300	0.00095	0.00355	0.00051	0.00141
4	0.00107	0.00175	0.00205	0.00242	0.00209	0.00177	0.00897	0.00076	0.00120
5	0.00005	0.00013	0.00009	0.00009	0.00015	0.00006	0.00007	0.00004	0.00004
6	0.02908	0.00005	0.00005	0.00004	0.00005	0.00044	0.00004	0.00001	0.00002
7	0.26706	0.00006	0.00005	0.00004	0.00007	0.00003	0.00004	0.00002	0.00003
8	0.00017	0.28699	0.04309	0.04089	0.03998	0.00237	0.01726	0.00003	0.00021
9	0.00014	0.00006	0.25335	0.00236	0.01581	0.00392	0.01054	0.00003	0.00015
10	0.00002	0.00015	0.00120	0.26287	0.00535	0.00009	0.00077	0.00001	0.00004
11	0.00005	0.00005	0.00041	0.00018	0.24448	0.00175	0.00045	0.00001	0.00106
12	0.00039	0.00003	0.00013	0.00003	0.00004	0.41641	0.00009	0.00001	0.00001
13	0.00143	0.00016	0.00016	0.00282	0.00032	0.00304	0.17974	0.00021	0.00008
14	0.00020	0.00191	0.00147	0.00178	0.00527	0.00119	0.00609	0.11304	0.00019
15	0.00029	0.00072	0.00060	0.00059	0.00039	0.00025	0.00051	0.00018	0.24152
16	0.00028	0.00268	0.00240	0.00083	0.00145	0.01831	0.00106	0.00011	0.00033
17	0.00025	0.00073	0.00195	0.00075	0.00790	0.02549	0.00117	0.00018	0.00063
18	0.00154	0.00623	0.00453	0.00511	0.00428	0.00244	0.00537	0.00113	0.00120
19	0.00097	0.03206	0.00561	0.00512	0.00568	0.00063	0.00378	0.00051	0.00033
20	0.00135	0.00174	0.00484	0.00539	0.02189	0.00450	0.00438	0.00067	0.00190
21	0.00737	0.01683	0.01081	0.01286	0.02049	0.00772	0.01074	0.00549	0.00448
22	0.00600	0.01856	0.01233	0.00836	0.00939	0.01449	0.00991	0.00881	0.00647
23	0.00682	0.01711	0.02143	0.00682	0.00854	0.00635	0.00595	0.00838	0.00665
24	0.00690	0.01560	0.01222	0.01196	0.02402	0.00556	0.00689	0.00272	0.00822
25	0.00586	0.01179	0.01137	0.01298	0.01078	0.00574	0.02773	0.00218	0.00846
	0.33866	0.43096	0.40184	0.39141	0.43750	0.52389	0.30657	0.14609	0.28478

TABLE 4
DIRECT & INDIRECT INCOME RESPONSE TABLE

	16	17	18	19	20	21	22	23
1	0.00004	0.00009	0.00005	0.00008	0.00011	0.00130	0.00053	0.00236
2	0.00013	0.00015	0.00008	0.00010	0.00130	0.00040	0.00082	0.00182
3	0.00187	0.00174	0.00056	0.00076	0.03002	0.00085	0.00146	0.00166
4	0.00126	0.00371	0.00078	0.00112	0.00440	0.00204	0.00317	0.01848
5	0.00005	0.00007	0.00004	0.00005	0.00006	0.00297	0.00042	0.00027
6	0.00002	0.00002	0.00001	0.00002	0.00003	0.00013	0.00016	0.00016
7	0.00003	0.00003	0.00001	0.00003	0.00004	0.00037	0.00033	0.00013
8	0.00025	0.00016	0.00028	0.00011	0.00043	0.00031	0.00010	0.00033
9	0.00013	0.00038	0.00033	0.00004	0.00041	0.00065	0.00009	0.00028
10	0.00008	0.00005	0.00035	0.00044	0.00022	0.00027	0.00005	0.00016
11	0.00094	0.00023	0.00012	0.00012	0.00094	0.00005	0.00007	0.00022
12	0.00002	0.00004	0.00001	0.00001	0.00004	0.00047	0.00003	0.00021
13	0.00071	0.00028	0.00175	0.00013	0.00169	0.00149	0.00049	0.00058
14	0.00055	0.00020	0.00036	0.00013	0.00051	0.00058	0.00126	0.00104
15	0.00016	0.00188	0.00012	0.00027	0.00064	0.00091	0.00114	0.00050
16	0.26880	0.01846	0.00240	0.02760	0.00390	0.00040	0.00054	0.00116
17	0.00173	0.31028	0.00572	0.00141	0.00658	0.00116	0.00255	0.00203
18	0.00189	0.00123	0.27192	0.00081	0.00202	0.00135	0.00251	0.00284
19	0.00162	0.00052	0.00022	0.36472	0.00353	0.00074	0.00185	0.00109
20	0.00344	0.01023	0.00104	0.00246	0.30617	0.00319	0.00693	0.00387
21	0.00716	0.00937	0.00577	0.00534	0.00687	0.59575	0.00827	0.01178
22	0.00660	0.01580	0.00438	0.00678	0.01511	0.02475	0.58349	0.03647
23	0.00275	0.01148	0.00582	0.01487	0.00660	0.02217	0.01763	0.59484
24	0.00799	0.00570	0.00326	0.00756	0.01100	0.00281	0.00229	0.00462
25	0.01332	0.00864	0.00590	0.00598	0.01454	0.00645	0.00969	0.00624
	0.32152	0.40074	0.31130	0.44092	0.41718	0.67155	0.64588	0.69314

TABLE 4
DIRECT & INDIRECT INCOME RESPONSE TABLE

	24	25
1	0.00043	0.00013
2	0.00073	0.00095
3	0.00280	0.02145
4	0.01150	0.01329
5	0.00065	0.00008
6	0.00039	0.00011
7	0.00066	0.00015
8	0.00028	0.00024
9	0.00023	0.00021
10	0.00013	0.00012
11	0.00036	0.00016
12	0.00011	0.00012
13	0.00067	0.00042
14	0.00072	0.00059
15	0.00188	0.00049
16	0.00304	0.00121
17	0.00299	0.00214
18	0.00287	0.00333
19	0.00678	0.00212
20	0.01771	0.00547
21	0.02192	0.00848
22	0.02798	0.03143
23	0.02547	0.01348
24	0.35033	0.00660
25	0.00894	0.28837
	0.48958	0.40111

TABLE 5
DIRECT & INDIRECT EMPLOYMENT REQUIREMENTS TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	0.06674	0.00226	0.00012	0.00005	0.01174	0.00009
2	OTHER AGRICULTURE	0.00568	0.05765	0.00262	0.00020	0.00228	0.00108
3	MINING	0.00004	0.00013	0.01394	0.00038	0.00005	0.00007
4	CONSTRUCTION	0.00022	0.00033	0.00032	0.01731	0.00014	0.00012
5	FOOD & KINDRED	0.00004	0.00003	0.00001	0.00002	0.01114	0.00000
6	TEXTILES	0.00001	0.00005	0.00000	0.00005	0.00000	0.02616
7	APPAREL	0.00001	0.00005	0.00001	0.00003	0.00001	0.00000
8	LOGGING CAMPS	0.00002	0.00002	0.00001	0.00019	0.00002	0.00001
9	SAWMILLS	0.00001	0.00003	0.00002	0.00034	0.00002	0.00004
10	MILLWORK & PLYWOOD	0.00001	0.00002	0.00001	0.00022	0.00000	0.00000
11	OTHER WOOD PRODUCTS	0.00001	0.00002	0.00001	0.00019	0.00004	0.00004
12	FURNITURE & FIXTURES	0.00000	0.00001	0.00000	0.00018	0.00000	0.00000
13	PAPER & ALLIED	0.00001	0.00002	0.00006	0.00006	0.00010	0.00005
14	CHEMICAL & ALLIED	0.00026	0.00187	0.00014	0.00013	0.00010	0.00004
15	RUBBER & PLASTICS	0.00003	0.00006	0.00002	0.00010	0.00003	0.00000
16	PRIMARY METALS	0.00002	0.00003	0.00013	0.00048	0.00003	0.00005
17	FABRICATED METALS	0.00011	0.00012	0.00062	0.00162	0.00059	0.00003
18	MACHINERY & ELECTRIC	0.00006	0.00022	0.00033	0.00060	0.00008	0.00016
19	TRANSPORTATION EQUIP	0.00003	0.00006	0.00141	0.00009	0.00008	0.00008
20	MISC. MANUFACTURING	0.00021	0.00062	0.00055	0.00160	0.00029	0.00021
21	WHOLESALE & RETAIL	0.00267	0.00288	0.00121	0.00333	0.00129	0.00053
22	SERVICES	0.00208	0.00456	0.00124	0.00213	0.00097	0.00036
23	FIN. INS. & REAL EST	0.00044	0.00100	0.00032	0.00024	0.00019	0.00014
24	TRANSPORTATION	0.00057	0.00048	0.00018	0.00070	0.00047	0.00010
25	COMM. & UTILITIES	0.00017	0.00029	0.00108	0.00027	0.00039	0.00057
	TOTALS	0.07944	0.07280	0.02438	0.03052	0.03006	0.02995

TABLE 5
DIRECT & INDIRECT EMPLOYMENT REQUIREMENTS TABLE

	7	8	9	10	11	12	13	14	15
1	0.00002	0.00117	0.00026	0.00021	0.00022	0.00002	0.00009	0.00003	0.00001
2	0.00016	0.00237	0.00204	0.00115	0.00128	0.00007	0.00027	0.00023	0.00003
3	0.00003	0.00006	0.00012	0.00008	0.00015	0.00005	0.00018	0.00003	0.00007
4	0.00007	0.00012	0.00014	0.00016	0.00014	0.00012	0.00060	0.00005	0.00008
5	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000
6	0.00240	0.00000	0.00000	0.00000	0.00000	0.00004	0.00000	0.00000	0.00000
7	0.04690	0.00001	0.00001	0.00001	0.00001	0.00000	0.00001	0.00000	0.00000
8	0.00001	0.01518	0.00228	0.00216	0.00211	0.00013	0.00091	0.00000	0.00001
9	0.00001	0.00001	0.02603	0.00024	0.00162	0.00040	0.00108	0.00000	0.00002
10	0.00000	0.00002	0.00013	0.02832	0.00058	0.00001	0.00008	0.00000	0.00000
11	0.00001	0.00001	0.00005	0.00002	0.02738	0.00020	0.00005	0.00000	0.00012
12	0.00003	0.00000	0.00001	0.00000	0.00000	0.03425	0.00001	0.00000	0.00000
13	0.00008	0.00001	0.00001	0.00015	0.00002	0.00016	0.00974	0.00001	0.00000
14	0.00001	0.00011	0.00008	0.00010	0.00030	0.00007	0.00035	0.00649	0.00001
15	0.00002	0.00004	0.00004	0.00003	0.00002	0.00001	0.00003	0.00001	0.01425
16	0.00001	0.00013	0.00012	0.00004	0.00007	0.00088	0.00005	0.00001	0.00002
17	0.00002	0.00006	0.00015	0.00006	0.00060	0.00194	0.00009	0.00001	0.00005
18	0.00012	0.00048	0.00035	0.00040	0.00033	0.00019	0.00042	0.00009	0.00009
19	0.00006	0.00195	0.00034	0.00031	0.00035	0.00004	0.00023	0.00003	0.00002
20	0.00012	0.00015	0.00042	0.00047	0.00190	0.00039	0.00038	0.00006	0.00016
21	0.00074	0.00170	0.00109	0.00130	0.00207	0.00078	0.00109	0.00055	0.00045
22	0.00049	0.00152	0.00101	0.00069	0.00077	0.00119	0.00081	0.00072	0.00053
23	0.00016	0.00040	0.00050	0.00016	0.00020	0.00015	0.00014	0.00019	0.00015
24	0.00043	0.00098	0.00077	0.00075	0.00151	0.00035	0.00043	0.00017	0.00052
25	0.00031	0.00063	0.00061	0.00069	0.00057	0.00031	0.00148	0.00012	0.00045
	0.05223	0.02712	0.03656	0.03752	0.04223	0.04176	0.01852	0.00882	0.01707

TABLE 5
DIRECT & INDIRECT EMPLOYMENT REQUIREMENTS TABLE

	16	17	18	19	20	21	22	23
1	0.00001	0.00002	0.00001	0.00002	0.00003	0.00032	0.00013	0.00058
2	0.00003	0.00004	0.00002	0.00003	0.00032	0.00010	0.00020	0.00045
3	0.00010	0.00009	0.00003	0.00004	0.00153	0.00004	0.00007	0.00008
4	0.00008	0.00025	0.00005	0.00007	0.00029	0.00014	0.00021	0.00123
5	0.00000	0.00001	0.00000	0.00000	0.00001	0.00028	0.00004	0.00003
6	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
7	0.00000	0.00001	0.00000	0.00000	0.00001	0.00006	0.00006	0.00002
8	0.00001	0.00001	0.00002	0.00001	0.00002	0.00002	0.00001	0.00002
9	0.00001	0.00004	0.00003	0.00000	0.00004	0.00007	0.00001	0.00003
10	0.00001	0.00001	0.00004	0.00005	0.00002	0.00003	0.00001	0.00002
11	0.00010	0.00003	0.00001	0.00001	0.00011	0.00001	0.00001	0.00002
12	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00000	0.00002
13	0.00004	0.00001	0.00009	0.00001	0.00009	0.00008	0.00003	0.00003
14	0.00003	0.00001	0.00002	0.00001	0.00003	0.00003	0.00007	0.00006
15	0.00001	0.00011	0.00001	0.00002	0.00004	0.00005	0.00007	0.00003
16	0.01291	0.00089	0.00012	0.00133	0.00019	0.00002	0.00003	0.00006
17	0.00013	0.02366	0.00044	0.00011	0.00050	0.00009	0.00019	0.00015
18	0.00015	0.00009	0.02107	0.00006	0.00016	0.00010	0.00019	0.00022
19	0.00010	0.00003	0.00001	0.02223	0.00022	0.00005	0.00011	0.00007
20	0.00030	0.00089	0.00009	0.00021	0.02654	0.00028	0.00060	0.00034
21	0.00072	0.00095	0.00058	0.00054	0.00069	0.06018	0.00084	0.00119
22	0.00054	0.00130	0.00036	0.00056	0.00124	0.00203	0.04791	0.00299
23	0.00006	0.00027	0.00013	0.00034	0.00015	0.00051	0.00041	0.01375
24	0.00050	0.00036	0.00020	0.00047	0.00069	0.00018	0.00014	0.00029
25	0.00071	0.00046	0.00031	0.00032	0.00077	0.00034	0.00052	0.00033
	0.01658	0.02951	0.02366	0.02644	0.03370	0.06505	0.05186	0.02202

TABLE 5
DIRECT & INDIRECT EMPLOYMENT REQUIREMENTS TABLE

	24	25
1	0.00011	0.00003
2	0.00018	0.00023
3	0.00014	0.00110
4	0.00077	0.00089
5	0.00006	0.00001
6	0.00003	0.00001
7	0.00012	0.00003
8	0.00001	0.00001
9	0.00002	0.00002
10	0.00001	0.00001
11	0.00004	0.00002
12	0.00001	0.00001
13	0.00004	0.00002
14	0.00004	0.00003
15	0.00011	0.00003
16	0.00015	0.00006
17	0.00023	0.00016
18	0.00022	0.00026
19	0.00041	0.00013
20	0.00154	0.00047
21	0.00221	0.00086
22	0.00230	0.00258
23	0.00059	0.00031
24	0.02199	0.00041
25	0.00048	0.01536
	0.03180	0.02306

TABLE 6
TYPE I MULTIPLIERS

	SECTOR	OUTPUT	INCOME	EMPL.
		I--------	MULTIPLIERS	-------I
1	LIVESTOCK	1.53	1.71	1.40
2	OTHER AGRICULTURE	1.74	1.92	1.29
3	MINING	1.45	1.53	1.82
4	CONSTRUCTION	1.51	1.67	1.77
5	FOOD & KINDRED	1.53	2.22	2.90
6	TEXTILES	1.16	1.15	1.15
7	APPAREL	1.22	1.28	1.13
8	LOGGING CAMPS	1.46	1.57	1.86
9	SAWMILLS	1.50	1.63	1.44
10	MILLWORK & PLYWOOD	1.45	1.51	1.34
11	OTHER WOOD PRODUCTS	1.66	1.79	1.55
12	FURNITURE & FIXTURES	1.36	1.26	1.22
13	PAPER & ALLIED	1.53	1.82	2.03
14	CHEMICAL & ALLIED	1.17	1.41	1.48
15	RUBBER & PLASTICS	1.13	1.18	1.20
16	PRIMARY METALS	1.26	1.30	1.40
17	FABRICATED METALS	1.34	1.37	1.33
18	MACHINERY & ELECTRIC	1.13	1.15	1.13
19	TRANSPORTATION EQUIP	1.24	1.21	1.19
20	MISC. MANUFACTURING	1.42	1.44	1.34
21	WHOLESALE & RETAIL	1.23	1.14	1.10
22	SERVICES	1.23	1.14	1.12
23	FIN. INS. & REAL EST	1.36	1.25	1.72
24	TRANSPORTATION	1.51	1.58	1.64
25	COMM. & UTILITIES	1.51	1.66	1.79

TABLE 7
DIRECT, INDIRECT, & INDUCED REQUIREMENTS TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	1.18830	0.05022	0.01154	0.01099	0.21316	0.01009
2	OTHER AGRICULTURE	0.10501	1.02526	0.05090	0.00850	0.04322	0.02319
3	MINING	0.00925	0.01698	1.04495	0.03528	0.00773	0.01131
4	CONSTRUCTION	0.02730	0.03500	0.03335	1.02178	0.01729	0.02026
5	FOOD & KINDRED	0.03171	0.03370	0.02924	0.03235	1.09118	0.02597
6	TEXTILES	0.00124	0.00260	0.00089	0.00287	0.00062	1.00550
7	APPAREL	0.00283	0.00399	0.00276	0.00346	0.00174	0.00241
8	LOGGING CAMPS	0.00200	0.00213	0.00155	0.01399	0.00184	0.00158
9	SAWMILLS	0.00125	0.00214	0.00149	0.01423	0.00128	0.00252
10	MILLWORK & PLYWOOD	0.00083	0.00130	0.00098	0.00869	0.00057	0.00072
11	OTHER WOOD PRODUCTS	0.00284	0.00361	0.00286	0.00950	0.00303	0.00370
12	FURNITURE & FIXTURES	0.00082	0.00095	0.00084	0.00590	0.00051	0.00070
13	PAPER & ALLIED	0.00399	0.00485	0.00905	0.00934	0.01292	0.00775
14	CHEMICAL & ALLIED	0.05012	0.32004	0.03013	0.02732	0.01978	0.01263
15	RUBBER & PLASTICS	0.00366	0.00641	0.00361	0.00906	0.00316	0.00201
16	PRIMARY METALS	0.00324	0.00468	0.01322	0.04260	0.00409	0.00559
17	FABRICATED METALS	0.00849	0.00969	0.03194	0.07695	0.02882	0.00460
18	MACHINERY & ELECTRIC	0.00792	0.01613	0.02098	0.03447	0.00703	0.01250
19	TRANSPORTATION EQUIP	0.00490	0.00678	0.06726	0.00796	0.00573	0.00676
20	MISC. MANUFACTURING	0.02267	0.04051	0.03656	0.07938	0.02035	0.02144
21	WHOLESALE & RETAIL	0.18569	0.20584	0.16379	0.20987	0.10962	0.13809
22	SERVICES	0.15322	0.21947	0.13721	0.16428	0.08841	0.10708
23	FIN. INS. & REAL EST	0.17963	0.23983	0.17299	0.17700	0.10559	0.14353
24	TRANSPORTATION	0.06140	0.06052	0.04188	0.07102	0.04392	0.03448
25	COMM. & UTILITIES	0.06629	0.08234	0.13833	0.07934	0.06333	0.09316
26	HOUSEHOLDS	0.67865	0.75822	0.69162	0.74115	0.42337	0.62238
	TOTALS	2.80324	3.15315	2.73993	2.89729	2.31830	2.31996

TABLE 7
DIRECT, INDIRECT, & INDUCED REQUIREMENTS TABLE

	7	8	9	10	11	12	13	14	15
1	0.00829	0.03070	0.01403	0.01282	0.01406	0.01264	0.00869	0.00398	0.00686
2	0.00667	0.04690	0.04069	0.02485	0.02760	0.00732	0.00827	0.00568	0.00379
3	0.00797	0.01144	0.01542	0.01239	0.01867	0.01230	0.01860	0.00434	0.01008
4	0.01643	0.02238	0.02249	0.02357	0.02395	0.02582	0.04585	0.00823	0.01497
5	0.02447	0.03170	0.02927	0.02854	0.03232	0.03763	0.02237	0.01071	0.02054
6	0.09296	0.00096	0.00088	0.00083	0.00096	0.00236	0.00069	0.00030	0.00057
7	1.01350	0.00302	0.00279	0.00269	0.00309	0.00348	0.00213	0.00100	0.00193
8	0.00132	1.04376	0.15744	0.14943	0.14619	0.00970	0.06335	0.00043	0.00135
9	0.00129	0.00117	1.02750	0.01041	0.06500	0.01698	0.04335	0.00043	0.00121
10	0.00063	0.00127	0.00526	1.01185	0.02127	0.00119	0.00346	0.00028	0.00060
11	0.00236	0.00293	0.00422	0.00321	1.00529	0.01050	0.00380	0.00097	0.00614
12	0.00154	0.00084	0.00102	0.00078	0.00088	1.00099	0.00075	0.00029	0.00054
13	0.01081	0.00389	0.00369	0.01943	0.00486	0.02164	1.07133	0.00222	0.00243
14	0.00687	0.02470	0.02003	0.02294	0.05721	0.01912	0.06321	1.09137	0.00599
15	0.00283	0.00505	0.00442	0.00431	0.00369	0.00353	0.00356	0.00143	1.00615
16	0.00274	0.01291	0.01163	0.00525	0.00797	0.07658	0.00577	0.00115	0.00270
17	0.00409	0.00660	0.01051	0.00631	0.03124	0.09241	0.00694	0.00201	0.00487
18	0.01018	0.02877	0.02208	0.02409	0.02163	0.01594	0.02396	0.00611	0.00821
19	0.00574	0.09208	0.01909	0.01764	0.01960	0.00651	0.01318	0.00275	0.00350
20	0.01697	0.02167	0.03127	0.03278	0.09126	0.03452	0.02622	0.00763	0.01688
21	0.13323	0.18223	0.16160	0.16138	0.19079	0.19983	0.12754	0.06141	0.10911
22	0.10348	0.15105	0.13202	0.12213	0.13659	0.16931	0.10161	0.05567	0.08955
23	0.13663	0.18907	0.18620	0.15599	0.17601	0.20378	0.12328	0.06876	0.11654
24	0.04959	0.08513	0.07188	0.07018	0.11288	0.06018	0.04697	0.02055	0.04950
25	0.06996	0.10693	0.10128	0.10651	0.10366	0.09445	0.15603	0.02873	0.07342
26	0.58189	0.74049	0.69045	0.67253	0.75173	0.90016	0.52675	0.25102	0.48932
	2.31241	2.84763	2.78716	2.70281	3.06838	3.03889	2.51767	1.63745	2.04674

TABLE 7
DIRECT, INDIRECT, & INDUCED REQUIREMENTS TABLE

	16	17	18	19	20	21	22	23
1	0.00768	0.00971	0.00745	0.01063	0.01021	0.02126	0.01734	0.02636
2	0.00425	0.00526	0.00390	0.00551	0.01042	0.00945	0.01095	0.01585
3	0.01244	0.01327	0.00728	0.01018	0.12117	0.01436	0.01625	0.01779
4	0.01651	0.02890	0.01431	0.02029	0.03217	0.03221	0.03569	0.09674
5	0.02325	0.02900	0.02239	0.03165	0.03011	0.07432	0.04952	0.05155
6	0.00064	0.00081	0.00060	0.00086	0.00087	0.00164	0.00170	0.00178
7	0.00218	0.00270	0.00207	0.00294	0.00285	0.00573	0.00544	0.00498
8	0.00157	0.00144	0.00169	0.00134	0.00243	0.00255	0.00173	0.00265
9	0.00120	0.00241	0.00201	0.00110	0.00254	0.00405	0.00172	0.00262
10	0.00083	0.00083	0.00186	0.00240	0.00151	0.00211	0.00122	0.00173
11	0.00587	0.00345	0.00247	0.00326	0.00648	0.00443	0.00436	0.00528
12	0.00061	0.00081	0.00058	0.00082	0.00085	0.00232	0.00124	0.00175
13	0.00639	0.00437	0.01252	0.00380	0.01288	0.01343	0.00733	0.00819
14	0.00999	0.00783	0.00803	0.00777	0.01108	0.01547	0.02160	0.02023
15	0.00219	0.00972	0.00198	0.00322	0.00465	0.00696	0.00780	0.00535
16	1.08883	0.07659	0.01121	0.11373	0.01778	0.00481	0.00525	0.00802
17	0.00900	1.06779	0.02257	0.00903	0.02653	0.01038	0.01490	0.01354
18	0.01123	0.00982	1.01188	0.00881	0.01298	0.01387	0.01782	0.01965
19	0.00737	0.00507	0.00344	1.00680	0.01352	0.00815	0.01097	0.00930
20	0.02354	0.04979	0.01491	0.02450	1.06918	0.03540	0.04735	0.03853
21	0.12677	0.15876	0.12076	0.16622	0.16036	1.25300	0.24425	0.26707
22	0.09986	0.13788	0.09311	0.13291	0.14117	0.22799	1.21117	0.25469
23	0.12300	0.16783	0.12478	0.18869	0.16506	0.28653	0.26892	1.32786
24	0.05173	0.05070	0.03562	0.05995	0.06915	0.06321	0.05945	0.07077
25	0.09847	0.08982	0.06643	0.08424	0.11645	0.11733	0.12725	0.11938
26	0.55244	0.68856	0.53488	0.75761	0.71681	1.15388	1.10978	1.19098
	2.28782	2.62311	2.12874	2.65827	2.75921	3.38483	3.30101	3.58264

TABLE 7
DIRECT, INDIRECT, & INDUCED REQUIREMENTS TABLE

	24	25	26
1	0.01329	0.00993	0.02330
2	0.00876	0.00872	0.01146
3	0.01875	0.08828	0.01655
4	0.06231	0.06604	0.03620
5	0.04058	0.02910	0.07084
6	0.00212	0.00108	0.00182
7	0.00566	0.00314	0.00645
8	0.00203	0.00170	0.00210
9	0.00198	0.00169	0.00212
10	0.00128	0.00111	0.00160
11	0.00456	0.00318	0.00631
12	0.00115	0.00100	0.00179
13	0.00731	0.00524	0.00682
14	0.01416	0.01161	0.01468
15	0.01013	0.00392	0.00473
16	0.01465	0.00679	0.00478
17	0.01492	0.01114	0.00951
18	0.01708	0.01764	0.01318
19	0.02311	0.00948	0.00911
20	0.07876	0.03342	0.03635
21	0.21178	0.15738	0.35638
22	0.18383	0.16567	0.27418
23	0.22569	0.17158	0.36710
24	1.17152	0.05365	0.08059
25	0.10306	1.24607	0.13504
26	0.84121	0.68921	1.71823
	3.07967	2.79777	3.21126

TABLE 8
DIRECT, INDIRECT, & INDUCED INCOME RESPONSE TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	0.27482	0.01161	0.00267	0.00254	0.04930	0.00233
2	OTHER AGRICULTURE	0.02418	0.23608	0.01172	0.00196	0.00995	0.00534
3	MINING	0.00243	0.00446	0.27450	0.00927	0.00203	0.00297
4	CONSTRUCTION	0.00704	0.00903	0.00860	0.26359	0.00446	0.00523
5	FOOD & KINDRED	0.00352	0.00374	0.00324	0.00359	0.12109	0.00288
6	TEXTILES	0.00039	0.00082	0.00028	0.00090	0.00020	0.31669
7	APPAREL	0.00075	0.00105	0.00073	0.00091	0.00046	0.00064
8	LOGGING CAMPS	0.00055	0.00059	0.00043	0.00385	0.00051	0.00043
9	SAWMILLS	0.00031	0.00053	0.00037	0.00351	0.00032	0.00062
10	MILLWORK & PLYWOOD	0.00022	0.00034	0.00026	0.00226	0.00015	0.00019
11	OTHER WOOD PRODUCTS	0.00069	0.00088	0.00070	0.00232	0.00074	0.00090
12	FURNITURE & FIXTURES	0.00034	0.00039	0.00035	0.00246	0.00021	0.00029
13	PAPER & ALLIED	0.00067	0.00081	0.00152	0.00157	0.00217	0.00130
14	CHEMICAL & ALLIED	0.00520	0.03321	0.00313	0.00284	0.00205	0.00131
15	RUBBER & PLASTICS	0.00088	0.00154	0.00087	0.00218	0.00076	0.00048
16	PRIMARY METALS	0.00080	0.00116	0.00327	0.01053	0.00101	0.00138
17	FABRICATED METALS	0.00248	0.00283	0.00931	0.02244	0.00840	0.00134
18	MACHINERY & ELECTRIC	0.00214	0.00435	0.00566	0.00930	0.00190	0.00337
19	TRANSPORTATION EQUIP	0.00178	0.00246	0.02446	0.00290	0.00208	0.00246
20	MISC. MANUFACTURING	0.00658	0.01177	0.01062	0.02306	0.00591	0.00623
21	WHOLESALE & RETAIL	0.10913	0.12098	0.09626	0.12335	0.06443	0.08116
22	SERVICES	0.08646	0.12384	0.07742	0.09270	0.04989	0.06042
23	FIN. INS. & REAL EST	0.09954	0.13290	0.09586	0.09809	0.05852	0.07954
24	TRANSPORTATION	0.01900	0.01873	0.01296	0.02198	0.01359	0.01067
25	COMM. & UTILITIES	0.01604	0.01992	0.03347	0.01919	0.01532	0.02254
	TOTALS	0.66594	0.74402	0.67867	0.72727	0.41545	0.61073

TABLE 8
DIRECT, INDIRECT, & INDUCED INCOME RESPONSE TABLE

	7	8	9	10	11	12	13	14	15
1	0.00192	0.00710	0.00325	0.00296	0.00325	0.00292	0.00201	0.00092	0.00159
2	0.00154	0.01080	0.00937	0.00572	0.00636	0.00169	0.00190	0.00131	0.00087
3	0.00209	0.00301	0.00405	0.00326	0.00490	0.00323	0.00488	0.00114	0.00265
4	0.00424	0.00577	0.00580	0.00608	0.00618	0.00666	0.01183	0.00212	0.00386
5	0.00272	0.00352	0.00325	0.00317	0.00359	0.00418	0.00248	0.00119	0.00228
6	0.02928	0.00030	0.00028	0.00026	0.00030	0.00074	0.00022	0.00010	0.00018
7	0.26764	0.00080	0.00074	0.00071	0.00082	0.00092	0.00056	0.00026	0.00051
8	0.00036	0.28723	0.04333	0.04112	0.04023	0.00267	0.01743	0.00012	0.00037
9	0.00032	0.00029	0.25356	0.00257	0.01604	0.00419	0.01070	0.00011	0.00030
10	0.00016	0.00033	0.00137	0.26303	0.00553	0.00031	0.00090	0.00007	0.00016
11	0.00057	0.00071	0.00103	0.00078	0.24515	0.00256	0.00093	0.00024	0.00150
12	0.00064	0.00035	0.00043	0.00032	0.00037	0.41680	0.00031	0.00012	0.00023
13	0.00182	0.00065	0.00062	0.00327	0.00082	0.00364	0.18009	0.00037	0.00041
14	0.00071	0.00256	0.00208	0.00238	0.00594	0.00198	0.00656	0.11326	0.00062
15	0.00068	0.00121	0.00106	0.00104	0.00089	0.00085	0.00086	0.00034	0.24184
16	0.00068	0.00319	0.00287	0.00130	0.00197	0.01893	0.00143	0.00028	0.00067
17	0.00119	0.00193	0.00307	0.00184	0.00911	0.02695	0.00202	0.00059	0.00142
18	0.00275	0.00776	0.00596	0.00650	0.00584	0.00430	0.00646	0.00165	0.00222
19	0.00209	0.03349	0.00694	0.00642	0.00713	0.00237	0.00480	0.00100	0.00127
20	0.00493	0.00629	0.00908	0.00952	0.02651	0.01003	0.00762	0.00222	0.00490
21	0.07830	0.10710	0.09497	0.09485	0.11213	0.11745	0.07496	0.03609	0.06413
22	0.05839	0.08523	0.07450	0.06891	0.07707	0.09554	0.05734	0.03141	0.05053
23	0.07571	0.10478	0.10318	0.08644	0.09754	0.11292	0.06832	0.03810	0.06458
24	0.01535	0.02635	0.02224	0.02172	0.03493	0.01862	0.01454	0.00636	0.01532
25	0.01693	0.02587	0.02450	0.02577	0.02508	0.02285	0.03775	0.00695	0.01776
	0.57099	0.72663	0.67752	0.65993	0.73766	0.88330	0.51689	0.24632	0.48015

TABLE 8
DIRECT, INDIRECT, & INDUCED INCOME RESPONSE TABLE

	16	17	18	19	20	21	22	23
1	0.00178	0.00224	0.00172	0.00246	0.00236	0.00492	0.00401	0.00610
2	0.00098	0.00121	0.00090	0.00127	0.00240	0.00218	0.00252	0.00365
3	0.00327	0.00348	0.00191	0.00267	0.03183	0.00377	0.00427	0.00467
4	0.00426	0.00746	0.00369	0.00524	0.00830	0.00831	0.00921	0.02496
5	0.00258	0.00322	0.00249	0.00351	0.00334	0.00825	0.00550	0.00572
6	0.00020	0.00025	0.00019	0.00027	0.00027	0.00052	0.00054	0.00056
7	0.00058	0.00071	0.00055	0.00078	0.00075	0.00151	0.00144	0.00131
8	0.00043	0.00040	0.00046	0.00037	0.00067	0.00070	0.00048	0.00073
9	0.00030	0.00059	0.00050	0.00027	0.00063	0.00100	0.00042	0.00065
10	0.00022	0.00022	0.00048	0.00062	0.00039	0.00055	0.00032	0.00045
11	0.00143	0.00084	0.00060	0.00080	0.00158	0.00108	0.00106	0.00129
12	0.00026	0.00034	0.00024	0.00034	0.00035	0.00097	0.00052	0.00073
13	0.00107	0.00074	0.00211	0.00064	0.00216	0.00226	0.00123	0.00138
14	0.00104	0.00081	0.00083	0.00081	0.00115	0.00161	0.00224	0.00210
15	0.00053	0.00234	0.00048	0.00077	0.00112	0.00167	0.00188	0.00129
16	0.26918	0.01893	0.00277	0.02812	0.00440	0.00119	0.00130	0.00198
17	0.00263	0.31139	0.00658	0.00263	0.00774	0.00303	0.00435	0.00395
18	0.00303	0.00265	0.27303	0.00238	0.00350	0.00374	0.00481	0.00530
19	0.00268	0.00184	0.00125	0.36618	0.00492	0.00297	0.00399	0.00338
20	0.00684	0.01446	0.00433	0.00712	0.31058	0.01028	0.01375	0.01119
21	0.07451	0.09331	0.07097	0.09769	0.09425	0.73641	0.14355	0.15696
22	0.05635	0.07780	0.05254	0.07500	0.07966	0.12864	0.68342	0.14371
23	0.06816	0.09300	0.06915	0.10456	0.09147	0.15878	0.14903	0.73584
24	0.01601	0.01569	0.01102	0.01855	0.02140	0.01956	0.01840	0.02190
25	0.02382	0.02173	0.01607	0.02038	0.02817	0.02839	0.03079	0.02888
	0.54210	0.67567	0.52486	0.74342	0.70339	1.13227	1.08899	1.16868

TABLE 8
DIRECT, INDIRECT, & INDUCED INCOME RESPONSE TABLE

	24	25
1	0.00307	0.00230
2	0.00202	0.00201
3	0.00492	0.02319
4	0.01607	0.01704
5	0.00450	0.00323
6	0.00067	0.00034
7	0.00149	0.00083
8	0.00056	0.00047
9	0.00049	0.00042
10	0.00033	0.00029
11	0.00111	0.00078
12	0.00048	0.00041
13	0.00123	0.00088
14	0.00147	0.00120
15	0.00244	0.00094
16	0.00362	0.00168
17	0.00435	0.00325
18	0.00461	0.00476
19	0.00840	0.00345
20	0.02288	0.00971
21	0.12447	0.09250
22	0.10373	0.09348
23	0.12507	0.09508
24	0.36254	0.01660
25	0.02493	0.30147
	0.82546	0.67630

TABLE 9
DIRECT, INDIRECT, & INDUCED EMPLOYMENT REQUIREMENTS TABLE

	SECTOR	1	2	3	4	5	6
1	LIVESTOCK	0.06726	0.00284	0.00065	0.00062	0.01207	0.00057
2	OTHER AGRICULTURE	0.00593	0.05794	0.00288	0.00048	0.00244	0.00131
3	MINING	0.00012	0.00023	0.01403	0.00047	0.00010	0.00015
4	CONSTRUCTION	0.00047	0.00060	0.00057	0.01758	0.00030	0.00035
5	FOOD & KINDRED	0.00033	0.00035	0.00030	0.00034	0.01132	0.00027
6	TEXTILES	0.00003	0.00007	0.00002	0.00007	0.00002	0.02618
7	APPAREL	0.00013	0.00018	0.00013	0.00016	0.00008	0.00011
8	LOGGING CAMPS	0.00003	0.00003	0.00002	0.00020	0.00003	0.00002
9	SAWMILLS	0.00003	0.00005	0.00004	0.00036	0.00003	0.00006
10	MILLWORK & PLYWOOD	0.00002	0.00004	0.00003	0.00024	0.00002	0.00002
11	OTHER WOOD PRODUCTS	0.00008	0.00010	0.00008	0.00026	0.00008	0.00010
12	FURNITURE & FIXTURES	0.00003	0.00003	0.00003	0.00020	0.00002	0.00002
13	PAPER & ALLIED	0.00004	0.00004	0.00008	0.00009	0.00012	0.00007
14	CHEMICAL & ALLIED	0.00030	0.00191	0.00018	0.00016	0.00012	0.00008
15	RUBBER & PLASTICS	0.00005	0.00009	0.00005	0.00013	0.00004	0.00003
16	PRIMARY METALS	0.00004	0.00006	0.00016	0.00051	0.00005	0.00007
17	FABRICATED METALS	0.00019	0.00022	0.00071	0.00171	0.00064	0.00010
18	MACHINERY & ELECTRIC	0.00017	0.00034	0.00044	0.00072	0.00015	0.00026
19	TRANSPORTATION EQUIP	0.00011	0.00015	0.00149	0.00018	0.00013	0.00015
20	MISC. MANUFACTURING	0.00057	0.00102	0.00092	0.00200	0.00051	0.00054
21	WHOLESALE & RETAIL	0.01102	0.01222	0.00972	0.01246	0.00651	0.00820
22	SERVICES	0.00710	0.01017	0.00636	0.00761	0.00410	0.00496
23	FIN. INS. & REAL EST	0.00230	0.00307	0.00222	0.00227	0.00135	0.00184
24	TRANSPORTATION	0.00119	0.00118	0.00081	0.00138	0.00085	0.00067
25	COMM. & UTILITIES	0.00085	0.00106	0.00178	0.00102	0.00082	0.00120
	TOTALS	0.09840	0.09398	0.04371	0.05123	0.04189	0.04734

TABLE 9
DIRECT, INDIRECT, & INDUCED EMPLOYMENT REQUIREMENTS TABLE

	7	8	9	10	11	12	13	14	15
1	0.00047	0.00174	0.00079	0.00073	0.00080	0.00072	0.00049	0.00023	0.00039
2	0.00038	0.00265	0.00230	0.00140	0.00156	0.00041	0.00047	0.00032	0.00021
3	0.00011	0.00015	0.00021	0.00017	0.00025	0.00017	0.00025	0.00006	0.00014
4	0.00028	0.00038	0.00039	0.00041	0.00041	0.00044	0.00079	0.00014	0.00026
5	0.00025	0.00033	0.00030	0.00030	0.00034	0.00039	0.00023	0.00011	0.00021
6	0.00242	0.00002	0.00002	0.00002	0.00002	0.00006	0.00002	0.00001	0.00001
7	0.04701	0.00014	0.00013	0.00012	0.00014	0.00016	0.00010	0.00005	0.00009
8	0.00002	0.01520	0.00229	0.00218	0.00213	0.00014	0.00092	0.00001	0.00002
9	0.00003	0.00003	0.02606	0.00026	0.00165	0.00043	0.00110	0.00001	0.00003
10	0.00002	0.00004	0.00015	0.02834	0.00060	0.00003	0.00010	0.00001	0.00002
11	0.00006	0.00008	0.00012	0.00009	0.02746	0.00029	0.00010	0.00003	0.00017
12	0.00005	0.00003	0.00004	0.00003	0.00003	0.03429	0.00003	0.00001	0.00002
13	0.00010	0.00004	0.00003	0.00018	0.00004	0.00020	0.00976	0.00002	0.00002
14	0.00004	0.00015	0.00012	0.00014	0.00034	0.00011	0.00038	0.00650	0.00004
15	0.00004	0.00007	0.00006	0.00006	0.00005	0.00005	0.00005	0.00002	0.01427
16	0.00003	0.00015	0.00014	0.00006	0.00009	0.00091	0.00007	0.00001	0.00003
17	0.00009	0.00015	0.00023	0.00014	0.00069	0.00205	0.00015	0.00004	0.00011
18	0.00021	0.00060	0.00046	0.00050	0.00045	0.00033	0.00050	0.00013	0.00017
19	0.00013	0.00204	0.00042	0.00039	0.00043	0.00014	0.00029	0.00006	0.00008
20	0.00043	0.00055	0.00079	0.00083	0.00230	0.00087	0.00066	0.00019	0.00042
21	0.00791	0.01082	0.00959	0.00958	0.01133	0.01186	0.00757	0.00365	0.00648
22	0.00479	0.00700	0.00612	0.00566	0.00633	0.00784	0.00471	0.00258	0.00415
23	0.00175	0.00242	0.00239	0.00200	0.00225	0.00261	0.00158	0.00088	0.00149
24	0.00096	0.00165	0.00140	0.00136	0.00219	0.00117	0.00091	0.00040	0.00096
25	0.00090	0.00138	0.00131	0.00137	0.00134	0.00122	0.00201	0.00037	0.00095
	0.06849	0.04780	0.05585	0.05631	0.06323	0.06691	0.03324	0.01583	0.03074

TABLE 9
DIRECT, INDIRECT, & INDUCED EMPLOYMENT REQUIREMENTS TABLE

	16	17	18	19	20	21	22	23
1	0.00043	0.00055	0.00042	0.00060	0.00058	0.00120	0.00098	0.00149
2	0.00024	0.00030	0.00022	0.00031	0.00059	0.00053	0.00062	0.00090
3	0.00017	0.00018	0.00010	0.00014	0.00163	0.00019	0.00022	0.00024
4	0.00028	0.00050	0.00025	0.00035	0.00055	0.00055	0.00061	0.00166
5	0.00024	0.00030	0.00023	0.00033	0.00031	0.00077	0.00051	0.00053
6	0.00002	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	0.00005
7	0.00010	0.00013	0.00010	0.00014	0.00013	0.00027	0.00025	0.00023
8	0.00002	0.00002	0.00002	0.00002	0.00004	0.00004	0.00003	0.00004
9	0.00003	0.00006	0.00005	0.00003	0.00006	0.00010	0.00004	0.00007
10	0.00002	0.00002	0.00005	0.00007	0.00004	0.00006	0.00003	0.00005
11	0.00016	0.00009	0.00007	0.00009	0.00018	0.00012	0.00012	0.00014
12	0.00002	0.00003	0.00002	0.00003	0.00003	0.00008	0.00004	0.00006
13	0.00006	0.00004	0.00011	0.00003	0.00012	0.00012	0.00007	0.00007
14	0.00006	0.00005	0.00005	0.00005	0.00007	0.00009	0.00013	0.00012
15	0.00003	0.00014	0.00003	0.00005	0.00007	0.00010	0.00011	0.00008
16	0.01293	0.00091	0.00013	0.00135	0.00021	0.00006	0.00006	0.00010
17	0.00020	0.02374	0.00050	0.00020	0.00059	0.00023	0.00033	0.00030
18	0.00023	0.00021	0.02116	0.00018	0.00027	0.00029	0.00037	0.00041
19	0.00016	0.00011	0.00008	0.02232	0.00030	0.00018	0.00024	0.00021
20	0.00059	0.00125	0.00038	0.00062	0.02692	0.00089	0.00119	0.00097
21	0.00753	0.00943	0.00717	0.00987	0.00952	0.07439	0.01450	0.01586
22	0.00463	0.00639	0.00431	0.00616	0.00654	0.01056	0.05611	0.01180
23	0.00158	0.00215	0.00160	0.00242	0.00211	0.00367	0.00344	0.01701
24	0.00100	0.00098	0.00069	0.00116	0.00134	0.00123	0.00115	0.00137
25	0.00127	0.00116	0.00086	0.00109	0.00150	0.00151	0.00164	0.00154
	0.03202	0.04875	0.03861	0.04761	0.05373	0.09729	0.08287	0.05529

TABLE 9
DIRECT, INDIRECT, & INDUCED EMPLOYMENT REQUIREMENTS TABLE

	24	25
1	0.00075	0.00056
2	0.00049	0.00049
3	0.00025	0.00119
4	0.00107	0.00114
5	0.00042	0.00030
6	0.00006	0.00003
7	0.00026	0.00015
8	0.00003	0.00002
9	0.00005	0.00004
10	0.00004	0.00003
11	0.00012	0.00009
12	0.00004	0.00003
13	0.00007	0.00005
14	0.00008	0.00007
15	0.00014	0.00006
16	0.00017	0.00008
17	0.00033	0.00025
18	0.00036	0.00037
19	0.00051	0.00021
20	0.00198	0.00084
21	0.01257	0.00934
22	0.00852	0.00768
23	0.00289	0.00220
24	0.02275	0.00104
25	0.00133	0.01606
	0.05530	0.04231

TABLE 10. TYPE II MULTIPLIERS

	SECTOR	I-----------MULTIPLIERS-----------I OUTPUT	INCOME	EMPL.
1	Livestock	2.80	2.88	1.74
2	Other agriculture	3.15	3.23	1.66
3	Mining	2.74	2.58	3.26
4	Construction	2.90	2.82	2.98
5	Food & kindred	2.32	3.74	4.04
6	Textiles	2.32	1.94	1.82
7	Apparel	2.31	2.16	1.48
8	Logging camps	2.85	2.64	3.28
9	Sawmills	2.79	2.75	2.20
10	Millwork & plywood	2.70	2.54	2.01
11	Other wood products	3.07	3.02	2.31
12	Furniture & fixtures	3.04	2.12	1.95
13	Paper & allied	2.52	3.07	3.65
14	Chemical & allied	1.64	2.37	2.66
15	Rubber & plastics	2.05	2.00	2.17
16	Primary metals	2.29	2.19	2.70
17	Fabricated metals	2.62	2.32	2.19
18	Machinery & electric	2.13	1.95	1.85
19	Transportation equip.	2.66	2.04	2.15
20	Misc. manufacturing	2.76	2.42	2.13
21	Wholesale & retail	3.38	1.93	1.64
22	Services	3.30	1.93	1.79
23	Fin. ins., and real est.	3.58	2.11	4.32
24	Transportation	3.08	2.67	2.85
25	Comm. and utilities	2.80	2.80	3.28

TABLE 11. EMPLOYMENT BY INDUSTRY, ALABAMA, 1977
(THOUSANDS OF EMPLOYEES)

1	Livestock	52.5
2	Other agriculture	33.5
3	Mining	13.8
4	Construction	75.9
5	Food and kindred	27.3
6	Textiles	36.7
7	Apparel	62.7
8	Logging camps	5.1
9	Sawmills	10.8
10	Millwork and plywood	5.7
11	Other wood products	6.9
12	Furniture and fixtures	5.1
13	Paper and allied	20.1
14	Chemical and allied	15.1
15	Rubber and plastics	13.1
16	Primary metals	41.7
17	Fabricated metals	24.4
18	Machinery and electric	26.5
19	Transportation equip.	18.1
20	Misc. manufacturing	33.2
21	Wholesale and retail	258.2
22	Services	177.1
23	Fin., ins., and real est.	56.0
24	Transportation	33.2
25	Comm. and utilities	31.7