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COOPERATIVE EXTENSION SERVICE, UAF
Community Development Program
2221 E. Northern Lights Blvd., Suite 132
Anchorage, Alaska 99508-4143
(907) 276-2433 Fax: (907) 277-5242

Micro IMPLAN

Software Manual

List of Authors: Greg Alward
Eric Siverts
Doug Olson
John Wagner
Dave Senf
Scott Lindall

Compiled and Edited by Judy Olson

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The IMPLAN Way to Impact Analysis

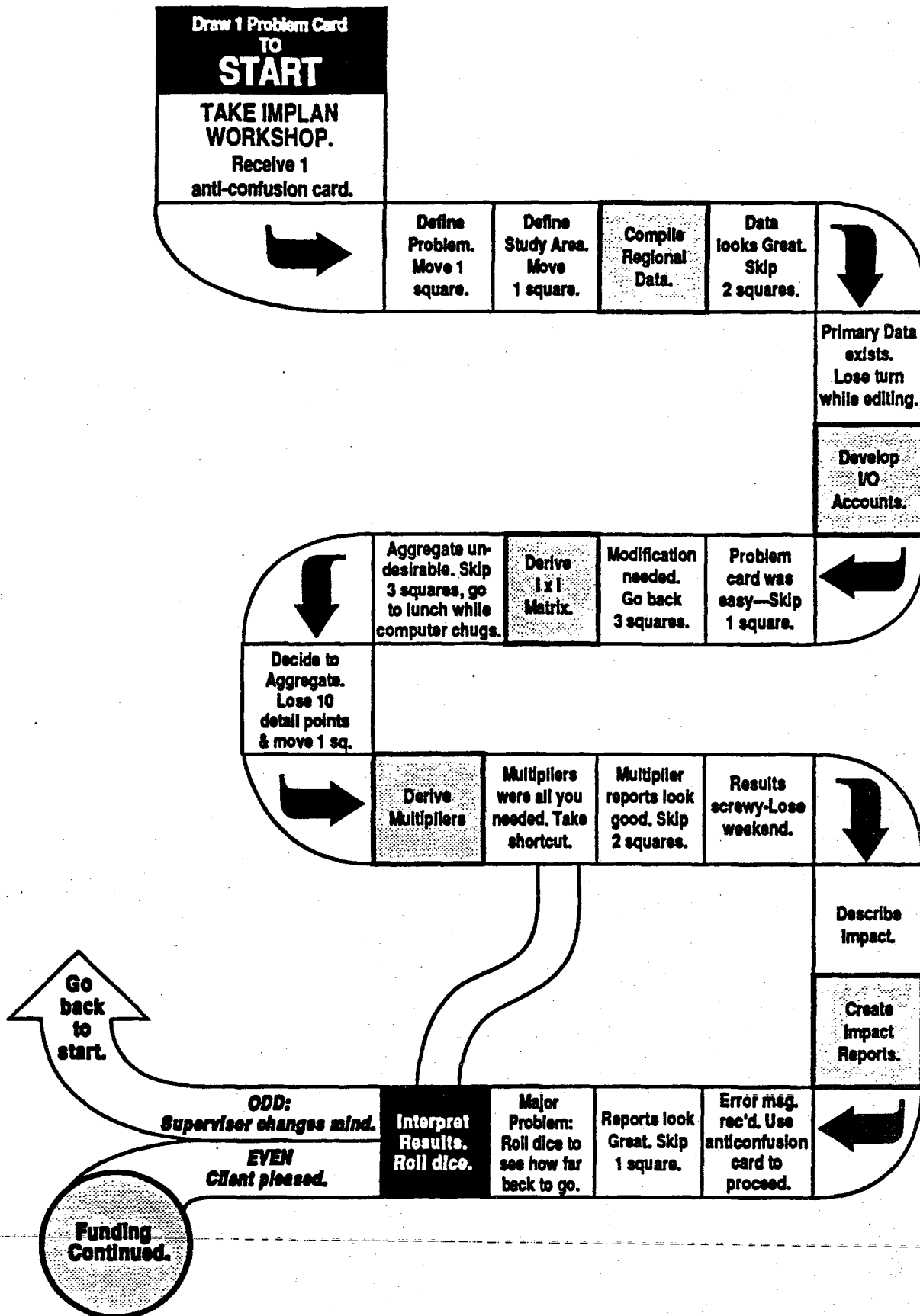


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- NOTES -

IMPLAN - general equilibrium model, not partial equilibrium model.

$$\begin{bmatrix} I - A^{-1} \end{bmatrix} \begin{bmatrix} F_{\text{net Demand}} \end{bmatrix} = \begin{bmatrix} \text{Gross Output} \end{bmatrix}$$

INTRODUCTION

IMPLAN (IMPact Analysis for PLANning) was designed to serve three functions: 1) data retrieval, 2) data reduction and model development, and 3) impact analysis. Comprehensive and detailed data coverage of the entire U.S. by county, and the ability to incorporate user-supplied data at each stage of the model building process, provides a high degree of flexibility both in terms of geographic coverage and model formulation.

In addition to being able to directly modify the IMPLAN database statistics, a user can alter import and export relationships, utilize modified input-output functions, introduce new industries, and disaggregate standard industries and commodities.

The resulting IMPLAN system has the capability of producing a non-survey based input-output model and impact analysis for any region of the United States, with the greatest degree of geographic resolution being a single county.

The IMPLAN data base consists of two major parts: 1) a national-level technology matrix and 2) estimates of sectoral activity for final demand, final payments, industry output and employment for each county. Where no other information is available, the data base provides initial estimates of output, employment, and income. If actual (as opposed to secondary source) data can be obtained, the system is can incorporate user-supplied data to produce superior "hybrid" accounts.

The data represent 1982 county level economic activity for 528 sectors. The total IMPLAN database is being updated to 1985 and should be available at the end of 1989. Since the relationships between the industry sectors have not changed substantially between 1982 and 1989, an impact analysis will still provide the user with an up-to-date estimate of the impacts and the results can be updated using price indices.

Economic accounts and input-output models provide an extremely flexible framework for economic studies and as a result can be adapted to a wide variety of applications. The IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis and the rectangular format recommended by the United Nations. With a modest amount of programming and machine time, these accounts can be readily set up in report format to describe the interdependences among the economic actors in a regional economy.

Besides the ability to describe an economy, IMPLAN allows a user to shock the economy (e.g., introduce a new industry into the economy, remove an industry from the economy, or change final demand for some product in the economy) and examine the effects on the levels of employment, income, and changes in population.

IMPLAN was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management to assist the Forest Service in its land and resource management planning efforts. Forest Service uses of IMPLAN have focused upon estimating the income and employment effects of implementing alternative strategies for managing the National Forests. Other applications have included evaluating individual projects, such as proposals for developing ski areas, coal mines, and harvesting timber.

Uses by other agencies include investigating recovery strategies from natural disasters such as earthquakes (Federal Emergency Management Agency), evaluating Rural Conservation Districts programs (Soil Conservation Service), assessing land management alternatives (Bureau of Land Management), appraising river management projects (U.S. Army Corps of Engineers), and evaluating the impacts of visits to National Parks (National Park Service). Many state and local government agencies, research laboratories and universities have also used IMPLAN in a variety of studies.

You are encouraged to be imaginative in the use of this system. Documentation of your applications in professional journal articles and other sources is encouraged.

This document only describes the Micro-IMPLAN system. A mainframe version of IMPLAN is available by accessing the USDA National Computer Center - Fort Collins (NCC-FC). A user account with NCC-FC is required, as well as an account with the ITT TELENET network for telephone access to NCC-FC. Both accounts can be established for any public agency by contacting NCC-FC, 3825 E. Mulberry St., Ft. Collins, CO 80524, (303) 498-1515.

Chapter 1 - GETTING STARTED

IMPLAN Requirements

The suggested hardware and software configuration for use with IMPLAN is outlined below. There is no endorsement of any particular brand of computers or software in these specifications.

Hardware:

- IBM XT compatible (80286 or 80386 recommended)
- Math coprocessor chip (8087, 80287 or 80387)
- Hard drive with at least 10Mb free
- 640K Ram with at least 568K (582,000 bytes) free
- Back-up capability for hard disk (tape or Bernoulli box)
- 1.2 Mb floppy drive
- Any type of monitor (monochrome or color)

Software (not provided with Micro-IPLAN):

- MS-DOS 3.0 or higher
- Browse routine (BROWSE.COM, LIST.COM, etc.)
- Disk information routine (CHKDSK.COM, FREE.COM, etc.)
- Text Editor (EDEX, WORD PERFECT, BRIEF, etc.)

Configuration:

- In the CONFIG.SYS file: Files=20
- All data and program files in the same directory
- COMMAND.COM in the root directory of the drive with IMPLAN

The IMPLAN system files consume approximately 4.3 Mb of disk space. All system files AND data files must be resident in the same directory to execute the program. Disk space requirements for constructing and using a model vary widely between applications. The number of industries in the study region is a large determinant. 10Mb is the minimum recommended space allotment for the MI directory, this should be sufficient for the creation of a model and its associated reports.

The amount of free memory available on a 640K computer will vary from machine to machine depending upon the system configuration. For example, different versions of MS-DOS utilize between 20 & 45K of memory, various applications may be configured to load automatically upon power-up, etc. The quickest way to check how much free memory is available on your machine is to use the DOS program CHKDSK. If the 'free' memory is less than 582,000 bytes (568K), review your configuration files (e.g., AUTOEXEC.BAT and CONFIG.SYS). You may wish to consider altering these files to reduce the 'overhead' memory requirements. You may also consider having a separate 'boot disk' for IMPLAN and default to the original configuration for other applications.

A word of caution: If you create a separate boot disk for IMPLAN (e.g., a boot disk for drive A rather than the normal boot from drive C), the boot disk must be left in the drive during IMPLAN operations. Some DOS functions, such as file copying and renaming, reference COMMAND.COM on the boot drive.

The only specific configuration considerations for IMPLAN are to set FILES=20 in the CONFIG.SYS file. Memory-resident software or TSR (Terminate-and-Stay-Resident) programs (e.g., SideKick) may interfere with IMPLAN. You may also experience difficulties executing IMPLAN from a DOS shell program.

Installation and Configuration

Now that your system meets the software requirements, IMPLAN can be easily installed from floppy disks. First, make sure the DOS program COMMAND.COM is in the root directory of the drive upon which you will be putting IMPLAN. Then make the destination drive and subdirectory (where you want to put IMPLAN) the default.

For example, suppose you want IMPLAN on the 'C' drive in a directory named 'IMPLAN'. Change to the 'C' drive by typing:

`C:`

Move to the \IMPLAN directory by typing:

`cd\IMPLAN`

If the directory does not exist, you can make it in the following manner:

`mkdir\IMPLAN`

and then change to it with:

`cd\IMPLAN`

Once the destination drive and subdirectory are the default, place the IMPLAN source disks in the floppy disk drive. To begin the installation process, type the following (assuming the floppy disks are in drive A):

`A:MI_SYSTM`

and follow the instructions on the screen from that point on. If you want to check the inventory of IMPLAN files at a later date, just type:

`MI_SYSTM`

from within the IMPLAN subdirectory.

Data files are not copied by the installation program. They can be copied by using the MSDOS copy command.

It is necessary to identify the drive, directory and program name for the text editor, browse routine and disk information routine you wish to use with IMPLAN. For example, you would enter `C:\MI\E.EXE` if you were using the EDEX editor located in the MI subdirectory.

Any text editor will work so long as it can be loaded into memory along with IMPLAN's shell and can be executed with a one line command (including the filename of the file to be edited). If you experience difficulties in using the editor of your choice, try selecting one that has a smaller RAM requirement.

The suggested Browse routine is List.com, and there are two disk information routines which work well: CHKDSK.COM (normally in the DOS subdirectory), and FREE.COM.

To start IMPLAN, just type MI at the DOS prompt.

Whenever IMPLAN is executed, it will automatically check your configuration. If the FILES= has not been set properly in the CONFIG.SYS file, IMPLAN system files are missing, or there is insufficient RAM, IMPLAN will return an error message and terminate.

If the configuration information indicating the location of your text editor, browse routine or disk information routine is missing or incorrect, a non-fatal error message will result. IMPLAN will not operate properly until the problem is corrected. A message will also appear the first time IMPLAN is used after installation. The last line of the message indicates the current location information.

Occasionally, after a CHKDSK.COM run, you will be asked if you want to convert 'lost clusters'. A lost cluster occurs when a file was not saved and closed, for example, a file in use during a system crash.

The option "Configure System" on the IMPLAN main menu will show you your system's current configuration and can be used to change the settings.

** Micro Implan 82 **		Model: Status: No Model Selected
SE	Select a Model	Review or modify the disk and directory locations for the MI system files and data, a text editor program, a file browsing program, and a program for determining disk utilization.
SA	Select a Study Area	
CA	Construct Accounts	This configuration information is important. Without a text editor or browsing program, it will be impossible to view the reports created by the various tasks.
IO	Construct I/O Matrix	
AG	Aggregate I/O Matrix	
MU	Derive Multipliers	
IM	Impact Analysis	
ST	Current Model Status	
UT	Utilities	
CR	Create Reports	
CS	Configure System	
HE	Help	
QU	Quit	

Selecting and executing the "Configure System" option gives a second menu. Selecting and executing "View Configuration" from the second menu will list your current system configuration (below).

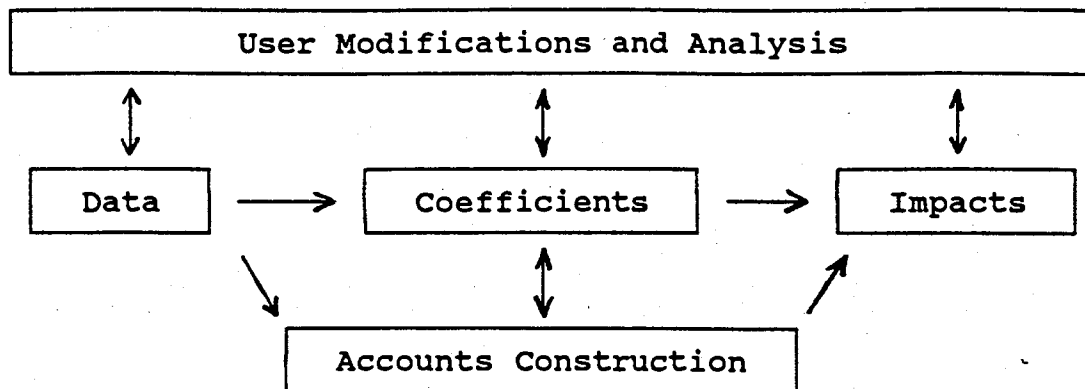
** Micro Implan 82 **	
Configure System	Display the current disk and path names for the MI system and data files, the text editor, the browse program, and the disk query program.
VI View Configuration	Note that if no information for the program appears on the screen, no path has been given for the program. This function will consequently not work. For example, if no path (or an incorrect path) is given for the browse program, then a request to "View a Report" from a menu would not produce the desired effect.
ED Text Editor	
BR Browse Program	
DI Disk Information	
HE Help	
QU Quit	

The other options on the second menu will allow you to change the drive, directory and program names for your text editor, browse routine and disk information routine.

Processing Sequence

Economic accounts and input-output models provide an extremely flexible framework for economic studies and as a result can be adapted to a wide variety of applications. In order to obtain a high degree of flexibility in terms of model formulation, IMPLAN was designed to incorporate user-supplied data at each stage of the model building process (see Figure 1. on the next page).

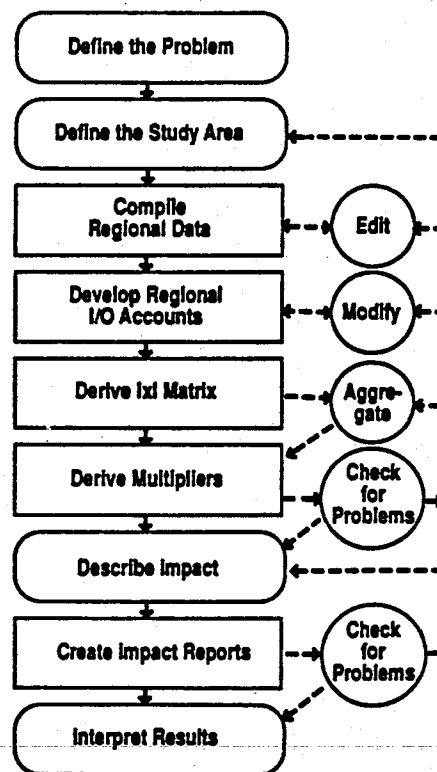
Figure 1. User Interaction



In addition to being able to directly modify the IMPLAN database statistics, a user can alter import and export relationships, utilize modified input-output functions, introduce new industries, and disaggregate standard industries and commodities.

IMPLAN has a general processing sequence for the creation of a typical predictive, demand-driven, input-output model as shown in the flow chart below and check list on the following page.

Figure 2. Flow Chart



IMPLAN Check List

1. Define the Problem in terms of:
 - A. Type of impact - structural, demand or supply change
 - B. Resource(s) involved
 - C. Unit of impact measurement - income, employment, etc
2. Define the study area geographically. Besides the impact site, consider including:
 - A. The location(s) of supporting industries
 - B. Consumer locations
 - C. Travel corridors
 - D. The residential location(s) of the labor force
 - E. The locations of support services
3. Compile regional data and edit, if necessary, to reflect:
 - A. More accurate information
 - B. Structural changesCaution: Many data elements are inter-related.
4. Develop I/O accounts and modify, if necessary, to reflect:
 - A. Regional supply changes
 - B. Regional purchase coefficient changes
 - C. Industry production function changes
 - D. Commodity or industry disaggregation
5. Derive IxI transaction matrix and aggregate, if desired. Consider leaving the following unaggregated:
 - A. Sectors with final demand impact changes
 - B. Industries with large total industrial output
 - C. High-profile (disproportionately large) industries
6. Derive Multipliers and, if desired, create reports:
 - A. Type I - Leontief inverse
 - B. Modified Type III - direct, indirect and induced
7. Describe the impact in terms of:
 - A. The product(s) to be evaluated
 - B. Unit(s) of measure
 - C. Alternative production levels (or quantities)
 - D. Expenditures (sales) for each product allocated and margined to industrial sectors (1982 dollars)
8. Create impact reports and check for problems concerning:
 - A. Unit consistency
 - B. Sector allocations
 - C. Total effects relative to base year industry size
 - D. Decreases properly shown as negative values
9. Interpret results considering the following questions:
 - A. Do the results represent total effects?
 - B. What is the industrial distribution of the effects?
 - C. What changes occurred in Total employment? Value Added? Population? Final demand? Total Industry Output?

General Commands - Menu Environment

When you are in the IMPLAN shell (menu environment), each possible operation is preceded with two letters. Typing the first letter will move the cursor to that position on the screen (referred to as a 'speed search'). Typing both letters will execute an option and a new set of screens will appear.

It is also possible to move the cursor to the desired selection in a menu with the arrow keys. The **Home** and **End** keys will move the cursor to the top and bottom of the list. Hitting **Enter** will execute whichever option is highlighted.

When the cursor is not in a menu where the "QU Quit" option is available, the escape (Esc) key is used to move back to a previous screen.

- ↑ - moves cursor one line up
- ↓ - moves cursor one line down
- Home - moves cursor to the top of the list
- End - moves cursor to the bottom of the list
- Enter - executes the highlighted option
- Esc - returns to previous screen when Quit is not an option.

General Commands - View/Edit Environment

Cursor movement and commands are handled a little differently under the 'View/Edit' environment (for example, editing a table).

- Enter - erases command line and puts cursor into the table
- Tab - activates command line
- - in command line - moves cursor one option to the right
in table - moves cursor one column to the right
- Ctrl → - in table - moves cursor to right side of screen
- ← - in command line - moves cursor one option to the left
in table - moves cursor one column to the left
- Ctrl ← - in table - moves cursor to left side of screen
- ↑ - in table - moves cursor one row up
- ↓ - in table - moves cursor one row down
- PgUp - in table - moves cursor to bottom of previous page
- PgDn - in table - moves cursor to bottom of next page
- Home - in table - moves cursor to top of screen
- Ctrl Home - in table - moves cursor to extreme left of file
- End - in table - moves cursor to bottom of screen
- Ctrl End - in table - moves cursor to extreme right of file

OZ		PCE - LOW	PCE - MED	PCE - HIGH	SLG PUR - ED			
1	DAIRY FARM	.012176	.043900	.025203	.000000			
2	POULTRY AN	.349827	1.005465	.479635	.115463			
3	RANCH FED	.000000	.000000	.000000	.000000			
4	RANGE FED	.000000	.000000	.000000	.000000			
5	CATTLE FEE	.000000	.000000	.000000	.000000			
6	SHEEP, LAM	.000000	.000000	.000000	.000000			
7	HOGS, PIGS	.000000	.000000	.000000	.000000			
8	OTHER MEAT	.000000	.000000	.000000	.000000			
9	MISCELLANE	.069944	.260502	.130424	.000000			
10	COTTON	.000000	.000000	.000000	.000000			
11	FOOD GRAIN	.000000	.000000	.000000	.000000			
12	FEED GRAIN	.013541	.051150	.033608	.000000			
13	HAY AND PA	.032815	.219160	.159836	.000000			
14	GRASS SEED	.000000	.000000	.000000	.000000			
15	TOBACCO	.000000	.000000	.000000	.000000			
16	FRUITS	.485471	1.346866	.743052	.000000			
17	TREE NUTS	.022351	.084433	.055477	.000000			
18	VEGETABLES	.822425	1.999086	.997623	.000000			
19	SUGAR CROP	.000000	.000000	.000000	.000000			
20	MISCELLANE	.000000	.000000	.000000	.000000			
21	OIL BEARIN	.006409	.024209	.015907	.000000			
22	FOREST PRO	.000000	.000000	.000000	.000000			
Proceed Key ? Help		Edit	Lines	Xchange	Row	Column	Save	Quit

The options shown on the command line at the bottom of a 'View/Edit' environment screen perform the following functions:

Proceed - Puts you into the spreadsheet and allows you to move around. This option will NOT allow you to edit.

Key ? - Puts you into the View/Edit part of the Help file.

Help - Describes the various components displayed on the screen.

Edit - Puts you into the spreadsheet and allows you to move around. To change a value, hit Enter. Implan will prompt you for a new number for the highlighted value. Hitting Enter again will replace the highlighted value.

Lines - Toggles between a display that is either single or double spaced.

Xchange - Exchanges the row and column display on the screen (not in the data base).

Row/Column - Permits you to change the contents of the row or column the cursor is on. This is essentially a windowing device and does not change the order in the data base. In this mode the arrow keys, Page Up/Down, or Home/End keys will assist you in finding the row or column you wish to view in this position on the screen. The Enter key will bring the row/column values into position. The ESC key is active and can be used to cancel the action.

Save - The file may be saved with or without making changes in the edit mode. **Save** copies the file (including any changes) into a new file with a new name. If no changes were made, a duplicate copy of the file is made. The ESC key can be used to write over the old file.

Quit - If changes were made, you are asked if you want to lose them. If you don't want to lose your changes, use the "Save" option - the "Quit" option retains the old file as is and trashes any changes made.

Breaking an Execution

The best method to stop an unwanted, time-consuming execution is to reboot the system. An important bookkeeping tool, the status file, is updated when a module completes. Rebooting prevents the status update by preventing the module completion.

Rebooting during an execution can create DOS "dump" files. These contain file fragments from files open at the time of the reboot. The dump files have system-generated names consisting of alpha and numeric characters, easily identifiable from the directory. These files and file fragments can consume disk space and, if the programs are interrupted several times, they can present a problem. It's a good idea to delete them any time they are found.

WARNING: If the command "BREAK=ON" is used in the CONFIG.SYS file, then a ctrl-break will stop a program, but this is not a desirable solution. The ctrl-break merely terminates an individual program (eventually), the IMPLAN shell will think the program ended normally and update the status file. An incorrect status file can wreak all sorts of havoc.

The Help File

There is an extensive on line help file accessible from most of the IMPLAN menus. Where the help file is accessed from will determine the portion of the help file brought to the screen. Once in the help file you can move within it using the options at the bottom of the screen. The "Index" option will display the screen shown on the next page.

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Index	PgUp	PgDn	Goto page	Quit
-------	------	------	-----------	------

Error Messages

Start-up errors can be fatal or non-fatal. Each time IMPLAN is started, several system attributes are reviewed. If there is insufficient RAM, any IMPLAN system files are missing, or the FILES= command in the CONFIG.SYS file is too small, there will be a message to that effect and IMPLAN will not start until the problem has been corrected.

Another type of start-up error concerns IMPLAN's configuration information. If the location of the text editor, browse routine, or disk information routine is missing or incorrect, a warning message will appear. Although IMPLAN will run, several menu items will not operate until the correct information is entered through the "Configure System" option. (Note: These messages will appear the first time IMPLAN is used.)

User-input errors detected during regional accounts construction are captured in a file with an extension of ERR; during an impact analysis, in a file with an extension of IME. Reviewing your input files and making necessary changes should correct most errors of this type.

Some errors, referred to as 'run time' errors, occur during the execution of a program. Correcting these problems generally involve reviewing system configuration, data structure and program logic. You should carefully record the situation (system configuration, data structure, steps leading to the message) and the error message to pass on to the support group.

Appendix C. contains a table of error messages, what they mean, and what to do about them.

Support

There are several types of support available for IMPLAN:

a) Screen Messages - At each step in processing, various amounts of information are displayed on the screen. This is designed to assist you in making appropriate selections, identify which keys are active, or guide you to the on-line HELP.

b) On-line Help - The content of the on-line HELP is of two general types: 1) assistance in use of various programs, interpretation of error messages and other automatically generated messages, and 2) assistance that relates to the economic interpretation of data and the formulation of models.

c) Documentation - In addition to this manual, there are a number of documents describing IMPLAN and analysis using IMPLAN. Appendix A - Related Literature by Topic, lists most of these documents along with a number of good books and articles on related subjects.

d) Workshops - The University of Minnesota holds periodic Micro-IMPLAN workshops. The basic workshop includes lectures and 'hands-on' lab sessions designed to provide familiarity with all sections of IMPLAN.

e) Hot Line - Subscription to a University of Minnesota hot line is available for those people who have attended a Micro-IMPLAN workshop. The hot line assistance is restricted to technical problems encountered while using the software.

f) Consultation - Assistance with the formulation, application and interpretation of a regional economic analysis using IMPLAN can be arranged on a case-by-case basis.

Comments and suggestions regarding IMPLAN are welcome.

- NOTES -

Chapter 2 - EXAMPLE ANALYSIS

The Scenario

Mr. Gillikin, a local developer, has an idea to present to the town council that he thinks will pull the town of Bunbury out of its decade-long doldrums. Bunbury is a college town (Bunbury State College) in Oz County, a relatively isolated, arid part of the nation. Its main industries are its college, some Federal and State agencies, and its meat packing plants (the cattle coming from some of the surrounding range country).

"What we need is exposure to corporate executives," Mr. Gillikin effuses. "Once they experience our marvelous climate and scenery, it's certain they will want to come here to live, bringing their companies with them. What we need is a golf resort! With some state lottery revenue, my management and real estate, and some contributions of town council funds (for minor things such as streets and utilities) we can pull it off. I can see it now, 18 holes of luscious fairways, a lake with an island green, conference rooms, an Olympic sized swimming pool, a four star restaurant and bar. How could it miss? Not considering the new businesses it will attract, the resort will mean 43.8 thousand visitor nights of new tourists, spending 12.8 million dollars a year. The economic impacts will be phenomenal!"

Of course the new resort plan has its critics. The Bunbury State Public Interest Research Group (BSPIRG) is appalled. They point out that the Skeezer Aquifer has dropped 200 feet in the last 40 years. To place the water demands of a golf course and a swimming pool on the diminishing water resource seems scandalous. They also point out that Mr. Gillikin's figures assume that the resort will be filled to capacity every night of the year. Noting that the winter months are quite windy and temperatures rarely exceed 30 degrees, perhaps he is being optimistic. BSPIRG feels that Mr. Gillikin will be lucky to approach 40% of capacity (or 17.5 thousand visitor nights). BSPIRG passes a resolution condemning the scheme as harebrained and a waste of town funds.

The town council assigns the planner the chore of deriving realistic employment and earnings impacts of the proposed golf resort. The bright young planner has fortunately had some exposure to IMPLAN and realizes that this is the perfect vehicle for his analysis. Sitting at his trusty IBM compatible, he ponders the expenditure data given to him (he was lucky, most analysts sweat blood to get this data).

First the data must be converted to 1982 dollars, because all data in the 1982 IMPLAN data base is in 1982 dollars. Using the Bureau of Labor Statistics producer price indices¹ he derives the data shown in the "Total expenditures" column below.

Table 1. Estimated visitor expenditure data (1982 dollars)

Expenditure per visitor night (VN)		
Type of expenditure	Total expenditure (\$)	Spent locally (\$)
Lodging 75.00 →	75.00	75.00
Eating & drinking	60.00	60.00
Air transportation	50.00	0.00
Auto rental	28.00	0.00
Retail purchases	40.00	
Margins*		
Retail	22.00	20.00
Wholesale	4.00	1.00
Manufacturing 12.00 →	12.00 0.00	0
Trucking	2.00	1.00
Golf fees (w/cart)	40.00	40.00
Total	293.00	197.00

* For a discussion of margins see Margins, Chapter 6 - Impact Analysis.

The total of \$293 per visitor night times Mr. Gillikin's estimate of 43.8 thousand visitor nights yields \$12.8 million in new expenditures, but some of that money will not be spent locally. Bunbury has no airport, it is also likely that the resort goers will rent their car at the nearest airport (at Esmarelda City over 150 miles to the south) and drive in. Therefore, Bunbury will not see any benefits of the air transportation or auto rental expenditures. Most of the remaining expenditures, however, will occur in Bunbury.

Finally, the planner must 'margin', that is, break up any retail and wholesale purchase into its components - retail margin, wholesale margin, transportation margins, and manufacturers' costs. (For more details see the section on margining in Chapter 6 - Impact Analysis). The local expenditures per visitor night data required for impact analysis is shown in the second column. For more details on separating local expenditures from total expenditures, see Per Unit Expenditure Allocation, Chapter 6 - Impact Analysis.

Similar data to calculate the construction impact for the golf resort is shown below:

Table 2. Estimated construction expenditure data (1982 dollars)

Type of expenditure	Total expenditure (\$mill)	Spent locally (\$mill)
Contractors	11.0	8.5
Materials	12.0	
Margins*		
Wholesalers	2.2	0.5
Retailers	2.7	0.8
Cement Furniture	0.5	0.5
Other manufctring	6.6	0.0
Total	23.0	10.3

* For a discussion of margins see Margins, Chapter 6 - Impact Analysis

Predicted usage of the golf resort is apparently a controversial issue so the planner decides to present both extremes as well as an alternative usage that represents a moderate position (the midpoint). This perhaps will allow the planner to avoid the political wrangling of the decision process. The three positions (alternatives) are summarized below.

Table 3. Alternative Number of Visitor Nights

	Mr. Gillikin	Mid point	BSPIRG
Number of Visitor Nights (1000s)	43.8	30.6	17.5

The planner is now ready to create the IMPLAN region model. With the IMPLAN system files copied onto his hard disk and configured (see Chapter 1 - Getting Started) he types MI and hits Enter.

Creating the OZ IMPLAN Model

Note -- the user is encouraged to follow along, typing in commands as described in the narrative.

Our conscientious planner has read and memorized the first two screens. Press the Enter key to get past each screen.

Micro IMPLAN 82

Release 89-03

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This release of Micro IMPLAN was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management.

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Proceed Quit

*** NOTICE TO Micro IMPLAN USERS ***

This copy of Micro IMPLAN is provided under the following conditions:

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This copy is registered to:
Joe Smith
Bunbury City Planner
Bunbury, OZ

Registration Number: 890328-03

Proceed Quit

The IMPLAN main menu is cleverly arranged so that the menu selections are sequentially ordered. By taking each item in turn a model will be created.

** Micro Implan 82 **		Model:	Status: No Model Selected
SE	Select a Model	Create and name a new IMPLAN model or select a previously created model from the list of available models. Each model is an application of IMPLAN for a particular geographic area (e.g., a state, a county, a group of counties). The newly created or selected model will become the "current" model and its name will appear above on the status line. All actions (such as "Construct Accounts") will apply to this model.	
SA	Select a Study Area		
CA	Construct Accounts		
IO	Construct I/O Matrix		
AG	Aggregate I/O Matrix		
MU	Derive Multipliers		
IM	Impact Analysis		
ST	Current Model Status		
UT	Utilities		
CR	Create Reports		
CS	Configure System		
HE	Help		
QU	Quit		

The first step is to tell IMPLAN that a new model is to be created. Choose "SE Select a Model". This can be done in one of two ways:

- 1) Type the two letter abbreviation SE or
- 2) Use the arrow keys to highlight the option and press ENTER.

Typing in the menu two-letter abbreviation avoids the painfully slow screen rewrites that cursing (using the cursor arrows) up and down the menu entails. Try it and you'll understand.

Having selected SE the screen now looks as follows:

** Micro Implan 82 **		Model:	Status: No Model Selected
SE	Select a Model	Select Model	Model Selection: Obtain a list of previously created IMPLAN models. The "current" model can be selected from this list and its name will appear on the status line above.
SA	Select a Study Area	LS List and select	
CA	Construct Accounts	CR Create a new model	
IO	Construct I/O Matrix	HE Help	
AG	Aggregate I/O Matrix	QU Quit	
MU	Derive Multipliers		
IM	Impact Analysis		
ST	Current Model Status		
UT	Utilities		
CR	Create Reports		
CS	Configure System		
HE	Help		
QU	Quit		

There is a new set of menu selections in the middle third of the screen and the highlight bar is now active here. If you need to return to the main menu at this time typing Q (for quit) would get you there. However, at this point, create a new model -- type CR.

** Micro Implan 82 **		Model:	Status: No Model Selected
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Select Model LS List and select CR Create a new model HE Help QU Quit	Model Selection: Create a new IMPLAN model. You will be queried for a name. Note that this step only names the new model and makes it the "current" model. You must define the areas (e.g., counties, states) that comprise the model using "Select a Study Area" from the main menu.	
Enter the new name (maximum of 8 characters): OZ			

IMPLAN will now patiently wait for you to type in a model name, which we already have -- type OZ and press Enter. Several things happen at once. You are returned to the main menu and the status (top line of screen) of the model has changed from "No Model Selected" to "New Model". As we step our way through IMPLAN the status line will keep us informed as to where we are. Likewise a status file will also keep track of model information.

** Micro Implan 82 **		Model: OZ	Status: New Model
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	View status information concerning the current model. This information indicates which steps in model construction have been completed, when they were completed, how long each step took to complete and how much disk space was used by the files created by the step. Status information for models other than the current model can be obtained using "Utilities" / "Models" from the main menu. Additional information for models can be found in documentation files which are also accessed using "Utilities" / "Models" from the main menu.		

Typing in ST at the main menu will display the status file as shown below:

Model: OZ		Status: New Model		
General Model Information:				
Date Complete	Start Time	Elapsed Time	File Size	Comments

Study Area				
Accounts				
I/O Matrix				
Aggregation				
Multipliers				

Totals		00:00:00	0	

Proceed				

Pressing Enter will send us back to the main menu. With the model selected now define the region, that is, decide which counties/states are to be included in the model. If you are uncertain about this process see Defining a Study Area, Chapter 3 - Study Area Definition. Type SA to "Select a Study Area".

** Micro Implan 82 **		Model: OZ	Status: New Model
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Study Area LS List and select CD Combine data files HE Help QU Quit	Select a Study Area: Obtain a list of state and county data files. The study area for the "current" model can be defined by selecting the desired group of files. IMPLAN county files are named using XX-yyy where XX is the state zip code abbreviation and yyy is the county FIPS code. State files are named using ST-XX.	

In the fabricated example, OZ county includes more than just the town of Bunbury. Most of the county relies on Bunbury for its services which, by itself, makes a reasonable economic area. Type LS to select the county data files to include.

** Micro Implan 82 **		Model: OZ	Status: New Model
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Study Area LS List and select CD Combine data files HE Help QU Quit	Available Data Files EXAMPLE	
Ins=include Del=exclude Enter=complete Esc=quit ?=where 0 files included			

A list of the county data files currently in the IMPLAN directory are shown. Choose "Example" (which contains OZ County data) by pressing the Ins (insert) key and press Enter. The little arrow that pops up next to "Example" indicates that the file has been selected. You are now ready to execute the program incorporating the data file into the model. Type in CD. The following screen will appear.

** Micro Implan 82 **		Model: OZ	Status: New Model
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Study Area LS List and select CD Combine data files HE Help QU Quit	Selected Data Files EXAMPLE	
Reading Data File: EXAMPLE		1 files remaining	

If the Ins key was not pressed while "Example" was highlighted, the previous screen did not appear and this message did:

• • NOTICE • •

At least one state, county or user-defined data file must be selected before the combined data file for the study area can be constructed.

If all goes well, IMPLAN will return you to the main menu. Note that the status line has changed to "Study Area Complete".

• • Micro Implan 82 • •		Model: OZ	Status: Study Area Complete
SE	Select a Model	Select the counties and/or states to be included in the study area of the current model. After selection, retrieve the data for each county and/or state and combine it into a single data set for the study area. Data for individual counties and states can be viewed using "Utilities" / "Data Files" from the main menu. The combined data file for the study area can be viewed or edited by using "Create Reports" / "Study Area Data" from the main menu.	
SA	Select a Study Area		
CA	Construct Accounts		
IO	Construct I/O Matrix		
AG	Aggregate I/O Matrix		
MU	Derive Multipliers		
IM	Impact Analysis		
ST	Current Model Status		
UT	Utilities		
CR	Create Reports		
CS	Configure System		
HE	Help		
QU	Quit		

At this point an analyst could look at and edit the regional data (see Chapter 3 - Study Area Definition for details). The next step is to create a complete set of input/output accounts for the study area. This is accomplished through the "Construct Accounts" portion of the program. Type CA.

** Micro Implan 82 **		Model: OZ	Status: Study Area Complete
SE Select a Model		Construct Accounts	Construct Accounts:
SA Select a Study Area		CA Construct Accounts	Construct the input-output accounts for the study area with modifications, if any.
CA Construct Accounts		ED Edit to Modify	Two reports, Supply and Trade (#1.0 & 2.0), are always created by this procedure and can be viewed by using "Create Reports" / "Regional Accounts" from the main menu. Optional report #1.5 will also be found there if selected.
IO Construct I/O Matrix		VI View the Error File	
AG Aggregate I/O Matrix		HE Help	
MU Derive Multipliers		QU Quit	
IM Impact Analysis			
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

A detailed description of what goes on in this program can be found in Chapter 4 - Regional Accounts. Basically, commodity production for the region is derived and regional intermediate and final demands are adjusted for imports. Type CA to construct the I/O accounts.

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
SE Select a Model		Assemble a complete set of input-output accounts for the study area.	
SA Select a Study Area		This procedure constructs a complete set of regional input-output accounts by using the selected data for the study area with indirect estimation methods to assemble a social accounting matrix that includes the production (use and make), consumption (final demand), accumulation (final payment) and trade (import and export) submatrices.	
CA Construct Accounts		Reports of the submatrices can be obtained after the accounts have been constructed by using "Create Reports" / "Regional Accounts" from the main menu.	
IO Construct I/O Matrix			
AG Aggregate I/O Matrix			
MU Derive Multipliers			
IM Impact Analysis			
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

Here we are back at the main menu. Status has changed again to read "Accounts Complete". We are going to skip over, for this example, the important step of validating the trade flows derived. IMPLAN should not be treated as a black box with the assumption that the data is perfect. Details on how to generate the reports and alter the trade flows are described in Chapter 4 - Regional Accounts.

While the I/O accounts are created in terms of both commodities and industries IMPLAN derives multipliers based on an industry only basis. For a discussion of what this means see Chapter 5 - Model Development. This also means that the IMPLAN user must perform the step of creating an industry by industry transactions matrix. This is accomplished by typing IO which generates the following screen:

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
SE Select a Model		I/O Matrix	Construct I/O Matrix:
SA Select a Study Area		IO Construct I/O Matrix	Construct industry-by-industry input-output accounts using the industry technology assumption and the market share hypothesis.
CA Construct Accounts		HE Help	
IO Construct I/O Matrix		QU Quit	The results of this procedure are a transactions matrix and final demand matrices (trade and consumption) revised to an industry reference.
AG Aggregate I/O Matrix			
MU Derive Multipliers			
IM Impact Analysis			
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

Typing IO will execute the program creating industry by industry input/output accounts and return you to the main menu. Note that our status is now "I/O Matrix Complete".

** Micro Implan 82 **		Model: OZ	Status: I/O Matrix Complete
SE Select a Model		Use the rectangular input-output accounts to construct "industry-by-industry" or symmetrical input-output accounts for the study area.	
SA Select a Study Area		This procedure reduces two submatrices of the social accounting matrix (the Use and the Make) to a single submatrix, referred to as the transactions table. This table has as many rows and columns as there are industries in the study area. The consumption and trade submatrices (final demands) are also adjusted from a commodity to an industry reference.	
CA Construct Accounts		Reports of these submatrices can be obtained after the I/O accounts have been constructed by using "Create Reports" / "I/O Matrices" from the main menu.	
IO Construct I/O Matrix			
AG Aggregate I/O Matrix			
MU Derive Multipliers			
IM Impact Analysis			
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

The next step, aggregating industrial sectors, is optional. The advantage of aggregating is a smaller matrix (quicker multiplier generation) and smaller reports. The disadvantage is the introduction of error. Aggregation is discussed in Chapter 5 - Model Development. The OZ model has 33 industries, easily managed in a disaggregated form. Therefore, we won't aggregate.

The final step of model construction is to derive the multipliers. Enter this portion of the program by typing MU.

** Micro Implan 82 **		Model: OZ	Status: I/O Matrix Complete
SE Select a Model	Derive Multipliers	Derive Multipliers:	
SA Select a Study Area			
CA Construct Accounts	CU Compute Unagg. Inverse	Compute the Leontief	
IO Construct I/O Matrix	CA Compute Agg. Inverse	inverse matrix for the	
AG Aggregate I/O Matrix	HE Help		
MU Derive Multipliers	QU Quit	>>> UNAGGREGATED <<<	
IM Impact Analysis		I/O matrix for the study	
ST Current Model Status		area.	
UT Utilities		This procedure does	
CR Create Reports		not produce any reports	
CS Configure System		of the inverse matrix. To obtain	
HE Help		these, use "Create Reports" /	
QU Quit		"Multipliers" from the main	
		menu.	

For a discussion of multipliers, see Chapter 5 - Model Development. Type CU to execute the calculations. Note that we are in the main menu and the status is "Multipliers Complete".

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
SE Select a Model	Compute the Leontief inverse of multipliers		
SA Select a Study Area	for the industry-by-industry input-output		
CA Construct Accounts	matrix.		
IO Construct I/O Matrix	This procedure produces a standard matrix of		
AG Aggregate I/O Matrix	Leontief output multipliers based upon the		
MU Derive Multipliers	matrix (either aggregated or unaggregated) for		
IO IM Impact Analysis	the current model.		
ST Current Model Status	Reports of the Leontief inverse and various		
UT Utilities	multipliers can be obtained after the inverse		
CR Create Reports	has been computed by using "Create Reports" /		
CS Configure System	"Multipliers" from the main menu.		
HE Help			
QU Quit			

IMPLAN is capable of generating a number of reports for each step of the model building process if the user so desires. These reports are described in Chapter 7 - Other Options. To create a multiplier report type CR.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Create Reports SA Study Area Data RA Rectangular Accounts IO I/O Matrix AG Aggregated I/O Matrix MU Multipliers HE Help QU Quit	Select, create and view standard reports of the Leontief multipliers for the current model. This procedure presents a list of standard multiplier reports that can be created. Selections are made from a list and then the reports are created. The reports are written to a file which can be viewed and is also suitable for printing on a 132-column printer using DOS facilities after exiting MI. Please note that some reports can be exceptionally large. Refer to HELP for descriptions.		

Type M or move the cursor down to the "Multipliers" option to match the screen. Finish the selection for Multipliers by typing in a U or pressing the Enter key (respectively, depending on how you highlighted the "MU Multipliers" line).

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Create Reports SA Study Area Data RA Rectangular Accounts IO I/O Matrix AG Aggregated I/O Matrix MU Multipliers HE Help QU Quit	Multiplier Reports CR Create Reports SR Select Report Options VI View Optional Reports HE Help QU Quit	Multiplier Reports: Select the optional reports from a list. A list is presented from which optional reports of the Leontief inverse or several types of multipliers (e.g., output, employment, income) can be selected. After the selections are made, the reports can be created using "Create Reports" above. Some optional reports can be very large.	

First we need to select which multiplier report we need -- type SR and then LS to select a report.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Multiplier Reports		Optional Reports	
LS List and Select		Leontief Inverse Matrix	
SA Save and Exit		Multiplier Reports	
HE Help			
QU Quit			

Ins = include Del = exclude Enter = completed Esc = quit 0 rpts selected

Select the "Multipliers Report" by cursing to highlight the line and pressing the Ins key. Press Enter to accept the selection. To 'save' our selection it is necessary to type SA for "Save and Exit". Your screen should now appear as below.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Create Reports		Multiplier Reports	
SA Study Area Data		CR Create Reports	
RA Rectangular Accounts		SR Select Report Options	
IO I/O Matrix		VI View Optional Reports	
AG Aggregated I/O Matrix		HE Help	
MU Multipliers		QU Quit	
HE Help			
QU Quit			

Multiplier Reports:
Create the selected reports.

This procedure will create the reports that were selected from the list. After being created they can be reviewed using "View Reports" below.

Type CR to tell IMPLAN to create the report.

Let's look at one of the multiplier reports generated. Return to the report generator -- type CR, MU for multiplier reports, and VI to 'View'. Highlight the first multiplier

report and press Enter (for examples of each of these reports see Appendix D). The report should look as below (assuming you have a browse program that IMPLAN has been configured to find):

OUTPUT MULTIPLIERS		INVERT R	
	SECTOR	TYPE I	TYPE III
1	DAIRY FARM PRODUCTS	1.0944	1.3143
24	FORESTRY PRODUCTS	1.0569	1.2169
45	CRUSHED AND BROKEN LIMESTONE	1.0992	1.2819
68	NEW RESIDENTIAL STRUCTURES	1.1951	1.3991
69	NEW HIGHWAYS AND STREETS	1.0847	1.2298
82	MEAT PACKING PLANTS	1.1054	1.1581
160	LOGGING CAMPS AND LOGGING CONTRACTOR	1.1502	1.3248
161	SAWMILLS AND PLANING MILLS, GENERAL	1.5519	2.0999
164	MILLWORK	1.2128	1.5271
269	READY-MIXED CONCRETE	1.1395	1.2819
448	MOTOR FREIGHT TRANSPORT AND WAREHOUSE	1.1812	1.5284
454	COMMUNICATIONS, EXCEPT RADIO AND TV	1.0200	1.2249
459	SANITARY SERVICES AND STEAM SUPPLY	1.0925	1.3293
460	RECREATIONAL RELATED WHOLESALE TRADE	1.1165	1.2213

Our analyst checks these reports to be sure the multipliers appear reasonable. The multipliers below (table 4) are pulled from these multiplier reports.

Table 4. Sample multipliers from model creation

Multipliers - Direct, Indirect and Induced			
<u>Sector</u>	<u>Total Output</u>	<u>Total Income</u>	<u>Total Employment</u>
Hotels and lodging places	1.67	0.504	53.67

The interpretation is as follows: for each one million dollar change in final demand for the "Hotels and lodging places" industry, total output for all industries in the region changes by 1.67 million dollars, employee compensation (wages and salaries and benefits) changes by 0.504 million dollars, and employment changes by 53.67 jobs (annual average, full-time and part-time).

Typing Q twice returns us back to the main menu.

Impact Analysis

Now that the OZ County model is created, our planner is ready to consider the impact analysis section of IMPLAN. The first step is to convert the local expenditures data for both golf resort visitation and construction into purchases of final demand from specific sectors in the model. A convenient unit of activity is needed. Our planner uses thousands of visitor nights (MVN) for golf resort visitor use and a single resort (Unit) for golf resort construction. Table 5 is a restatement of tables 1 and 2 in terms of IMPLAN industry sectors and our new units.

Table 5. Final demands for impact analysis in millions of \$1982

Affected IMPLAN Sectors	Visitors (MVN)	Construction (Unit)
66 New residential structures	0.0	8.5
269 Ready-mixed concrete	0.0	0.5
448 Motor freight transport and warehouse	0.001	0.0
460 Recreational related wholesale trade	0.0009	0.0
461 Other wholesale trade	0.0001	0.5
462 Recreational related retail trade	0.016	0.0
463 Other retail trade	0.004	0.8
471 Hotels and lodging places	0.075	0.0
491 Eating and drinking places	0.06	0.0
502 Amusement and recreation services	0.04	0.0
Totals	0.197	10.3

Table 6 is a reformulation of table 3 to show four alternatives that need to be analyzed in terms of the number of 'units' (thousands of visitor nights or a golf resort) produced by the region.

Table 6. Alternative levels of unit production

Alternative No. Title	Visitors (MVN)	Construction (Unit)
1 Construction of golf resort	0	1
2 Mr. Gillikin's visitation level	43.8	0
3 Midpoint visitation level	30.6	0
4 BSPIRG visitation level	17.5	0

Before it is possible to execute the impact analysis it is necessary to create the input file, 'OZ.IM5'. For details on the mechanics of impact analysis and creation of the input file see Chapter 6 - Impact Analysis. Below is an input file which has been created to produce the four impact analyses described in table 6.

*activities
sectors impacted*

#NEW OUTPUTS BY SECTOR FD 2 10
66 269 448 460 461 462 463 471 491 502
Golf Resort MVN
0.0 0.0 0.001 0.0009 0.0001 0.016 0.004 0.075 0.06 0.04
Golf Resort Construction Unit
8.5 0.5 0.0 0.0 0.5 0.0 0.8 0.0 0.0 0.0
#PRINT OPTIONS
#ALTERNATIVE FD Construction Phase
0 1
#ALTERNATIVE FD Gillikin Level
43.8 0
#ALTERNATIVE FD Midpoint Level
30.6 0
#ALTERNATIVE FD BSPIRG Level
17.5 0

*See pg. 101
for format*

Starting from the main menu, type IM to enter the impact analysis menu:

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Impact Analysis CR Create Impact Reports ED Edit the Input File VI View Impact Reports VE View the Error File HE Help QU Quit	Impact Analysis: Create the impact reports for the specified alternative(s). To create these reports, the input data file must have the required information (see below). The reports are written to files called MID.901 -.	

Finally, typing in CR performs the impact analysis and creates the reports. When told to execute an impact analysis IMPLAN looks for a input file with the same region name ('OZ') and the extension 'IM5'. If it exists then the analysis will be performed. IMPLAN will notify you if an error occurs. If one did occur then you can type VE ("View the error file") to see the error message. The impacts report can be viewed by selecting VI ("View Impact Reports") and choosing report OZ.906 (below).

ALTERNATIVE 1: Construction Phase
ANALYSIS OF CHANGE IN FINAL DEMAND
TOTAL CHANGE IN STANDARD TIO-RELATED FLOWS

SECTOR	FINAL DEMAND (MM\$)	TIO (MM\$)	EMPLOYEE COMP PRO INCOME (MM\$)
1 DAIRY FARM PRODUCTS	.0166	.0183	.0011
24 FORESTRY PRODUCTS	.0002	.0013	.0001
45 CRUSHED AND BROKEN LIMES	.0000	.0110	.0034
66 NEW RESIDENTIAL STRUCTURE	8.5000	8.5000	2.1794
69 NEW HIGHWAYS AND STREETS	.0000	.0000	.0000
82 MEAT PACKING PLANTS	.1219	.1695	.0152
160 LOGGING CAMPS AND LOGGIN	.0000	.0252	.0050
161 SAWMILLS AND PLANING MIL	.0000	.0490	.0137
164 MILLWORK	.0001	.1809	.0371
269 READY-MIXED CONCRETE	.5001	.5186	.1239
448 MOTOR FREIGHT TRANSPORT	.0377	.1952	.0814
454 COMMUNICATIONS, EXCEPT R	.1041	.1668	.0714
459 SANITARY SERVICES AND ST	.0030	.0086	.0025
460 RECREATIONAL RELATED WHO	.0210	.0255	.0105

In his report to the town council the planner summarizes the impacts (from the impact reports created by IMPLAN) as shown in Table 7 below:

Table 7. Economic analysis of the Gillikin Golf Resort

Alternative	Impacts (change)			
	Total Value Added (\$mill)	Total Employee Compens. (\$mill)	Total Employment (jobs)	Change in Population
Resort construction	7.1491	4.8777	280.59	842
Resort Operation				
Mr. Gillikin	9.6786	5.7637	576.51	1729
Midpoint	6.7618	4.0267	402.77	1208
BSPIRG	3.8578	2.2976	229.92	690

In his report the planner also makes the following points:

- 1) These are 'type III' multipliers. That is, they include induced impacts of increased spending by households because of increased population.

- 2) The construction phase is transitory, the impacts extend only through the construction period with perhaps some residual economic benefits.
- 3) Comparing the average compensation per employee for the construction phase versus the operational phase (\$17384 vrs. \$9997.57) reveals the traditionally lower paying, part-time nature of jobs in connection with recreation-tourism industries.

Some applicable IMPLAN features our planner did not choose to incorporate in his analysis are listed below:

- 1) The planner used sector 66 *new residential structures* for all construction instead of breaking Construction down into the various types of contractors, such as sector 69, *new highways and streets* and sector 67, *new industrial and commercial buildings*. Even though sector 67 does not currently exist in the model, it is possible to introduce it with a minimum value when defining the study area (see Editing the Database in Chapter 3). Since the sector does not currently exist, it is probable that crews from outside will come in for the duration of the project and then leave. This makes the change in population of 842 for the construction phase doubtful. It is unlikely that temporary workers would bring in their families.
2. A similar problem exists for the operational phase. The low-paying jobs created will probably not cause as many families to move into OZ as indicated in the impact report. The resort will likely rely on family members of current OZ residents or import seasonal workers. The population/employment ratio can be changed to correct these kind of problems (see Chapter 6 - Impact Analysis).
3. A resort lodging facility and associated restaurant do not represent the average for their respective industries. For example, profit margins are higher and output per worker is higher, therefore, fewer employees are required for the output indicated. IMPLAN allows the user to define and introduce new production functions for an industry to correct for local divergence from industry averages (see Chapter 4 - Regional Accounts).

Epilogue

Before releasing the report, the town council removed the BSPIRG alternative from the report - over the protests of the planner - as well as any mention of low-paying jobs. After all, Mr. Gillikin was a very persuasive fellow.

- NOTES -

Chapter 3 - STUDY AREA DEFINITION

Problem Definition

A general problem definition phase should be conducted prior to use of the system. During this phase of an analysis the specific question to be addressed should be clearly outlined in as much detail as possible. Discussions between the person doing the analysis and a manager or management team is often necessary to clearly pinpoint the objective of the analysis or study.

Considerations in defining the problem are:

1. The extent and intensity of the study.
 - a. Does it involve more than one resource?
 - b. Does each resource involve the same economy?
 - c. Has the question been investigated by others for the same geographical area?
 - d. Have other economic models been constructed for the impact area? What have they revealed about how the economy is structured?
2. Identification of the measures of economic impact that will best describe the consequences of the action or event, e.g., income, employment or industry output.
3. The most appropriate model form to be used. It is possible that something other than an I-O model should be developed.
4. Determination of the type of impacts to be analyzed, e.g., demand or supply changes. If supply changes are anticipated then assumptions must be made in order to use IMPLAN (a demand-driven input-output modeling system).
5. Identification of any structural changes to the economy necessary to reflect the selected impact. Can the problem be analyzed within the current structure of the economy or will it be necessary to make certain structural changes to reflect the change event?
6. Spatial identification of the study area. Is there more than one geographical area involved in the problem, e.g., county, and regional impacts, and are both expected to be assessed?
7. The stage of planning or occurrence the analysis directed toward. Is this to be an evaluation of a past program or change in the economy, or is it to be a prediction of effects from a future program or change?

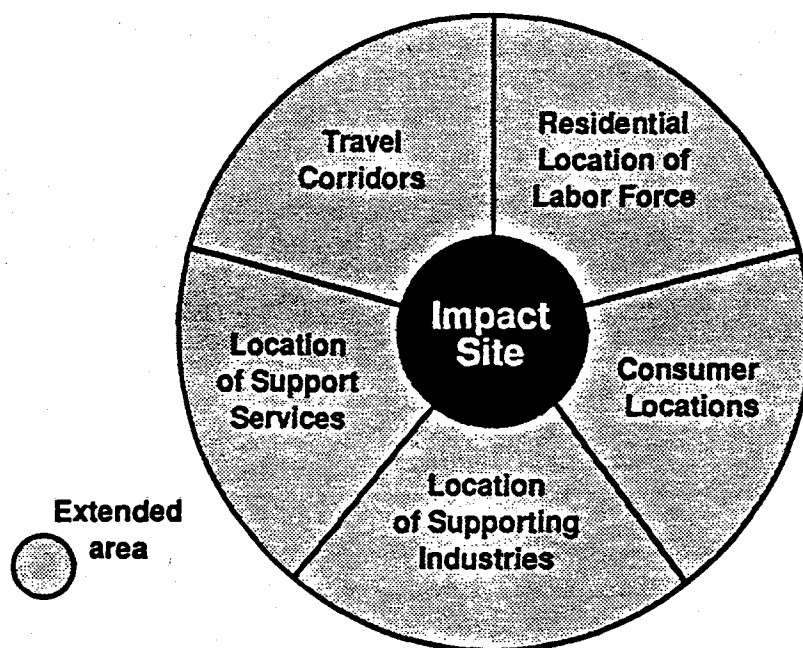
Defining a Study Area

An impact analysis is the determination of the effects of an event on the people who live and work in the study area. These effects can be isolated by including the proper areas in the study.

The study area needs to be large enough to serve as a 'functional economic unit', an area having a sufficient variety of activities to be relatively self-contained. A functional economic area is also defined as a place that is a consumer of goods and services and an employer of labor. The size is generally defined in terms of commuting distances or shopping distances, or how far from the city center people will drive to work or shop. Functional economic areas can be thought of as a concentric circle with a city at the hub and fingers thrusting outward into the more rural areas. The radius of the circle would then be the maximum commuting or shopping distance.

The study area should center around the immediate location of the activities whose impacts you are trying to determine. It might also include the area surrounding the immediate impact area since the sellers of goods and services in the central area may live in the peripheral areas and the secondary impacts occur in those surrounding areas.

Figure 3. Functional Economic Area

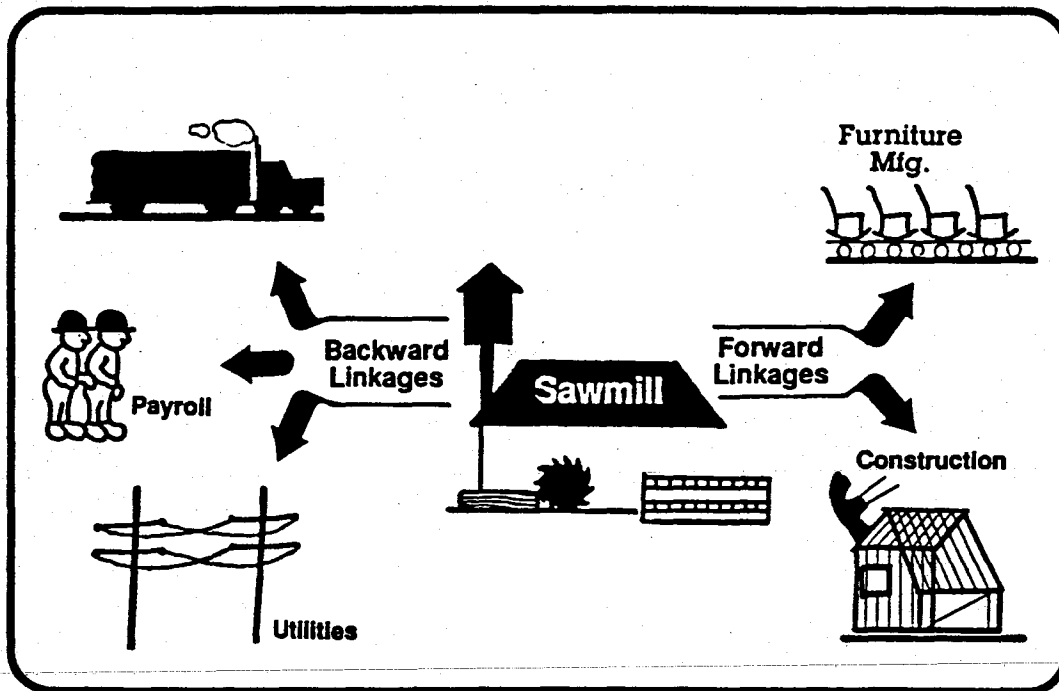


The size and composition of the extended area depends on the type of impact under consideration and the type of area(s) immediately surrounding the impact site. Each extended area element shown in Figure 3 should be considered for possible inclusion in the study area. However, the study area should be small enough such that its economy registers the effects of the alternatives being studied. If the study area is too large, other unrelated activities may be included in the impact and you will have a difficult time understanding the specific local impacts.

As an analysis example, consider a hypothetical expansion of the Alta ski area in the Wasatch National Forest. If the task is to determine the economic impacts of the expansion on the Salt Lake city economy, then the Salt Lake city area will be included in the study area. The entire state of Utah would probably not be included because it would be difficult to identify the specific local area effects of the ski area expansion. However, any nearby counties that fall within commuting distance of the center of the activity should be included. In the case of our example, the study concern is Salt Lake City, but the center of the activity is the Alta ski area, therefore the outward thrust is towards Salt Lake City. The maximum commuting distance and (probable radius of the study area) would be the distance one would drive to the ski areas.

After the study area is defined, the next step is to identify the industries affected by your hypothetical impacts. Trade patterns consist of the flow of goods and services between various industries and user groups in a particular area.

Figure 4. Forward and Backward Linkages



You should identify key commodities for your study and attempt to include all major supporting (backward-linked) industries in the impact area. The same considerations should be given to 'forward-linked' industries when determining the impact area. If further processing of the commodity in nearby counties is taking place, then you should consider including these counties in the study area.

IMPLAN's data base is set up by county; thus the smallest region that you may model is a single county. Any number of counties may be combined to form the impact area. The data base also includes state totals, so that all counties in a state need not be added together.

Selecting a Model

Each model created will represent a particular geographic area. Utilizing Micro IMPLAN's flexibility, you can develop as many variations for a particular region as necessary. The "Select a Model" option in the main menu allows you to create a new model or select a previously created model.

** Micro Implan 82 **		Model:	Status: No Model Selected
SE	Select a Model	Create and name a new IMPLAN model or select a previously created model from the list of available models. Each model is an application of IMPLAN for a particular geographic area (e.g., a state, a county, a group of counties). The newly created or selected model will become the "current" model and its name will appear above on the status line. All actions (such as "Construct Accounts") will apply to this model.	
SA	Select a Study Area		
CA	Construct Accounts		
IO	Construct I/O Matrix		
AG	Aggregate I/O Matrix		
MU	Derive Multipliers		
IM	Impact Analysis		
ST	Current Model Status		
UT	Utilities		
CR	Create Reports		
CS	Configure System		
HE	Help		
QU	Quit		

Models developed in previous runs are stored along with a status file. If you select a previously created model, the system will display the status at the top of the screen (the last work done on the model).

Creating a new model simply names the model. You can use up to 8 letters or numbers in any combination as the model name (Micro IMPLAN reserves the 3 character extension for keeping track of various model generated files). Try to avoid naming a model with a data file name, otherwise the data file could be deleted when the model is deleted (models are deleted with a global MODEL.* command, using the DOS wild card *).

The actual model creation begins with the next option on the IMPLAN main menu - Select a Study Area.

Selecting a Study Area

Executing "Select a Study Area" from the main menu and "List and Select" from the secondary menu will print a list of data files on the right-hand portion of your screen. Data files are selected by using the insert key, or removed from your selection with the delete key. If you are unsure what a data file is, highlight the questionable file and press the ? key. The name of the county or state the file represents will appear on the lower left portion of the screen. Appendix M. contains the FIPS county codes for all counties in all states.

** Micro Implan 82 ** Model: OZ Status: New Model		
	Study Area	Available Data Files
SE Select a Model		
SA Select a Study Area	LS List and select	EXAMPLE
CA Construct Accounts	CD Combine data files	
IO Construct I/O Matrix	HE Help	
AG Aggregate I/O Matrix	QU Quit	
MU Derive Multipliers		
IM Impact Analysis		
ST Current Model Status		
UT Utilities		
CR Create Reports		
CS Configure System		
HE Help		
QU Quit		

Ins=include Del=exclude Enter=complete Esc=quit ?=where 0 files included

Once your selection is made, execute "Combine Data Files" from the secondary menu. This combines the individual county or state level data files you selected into one file that contains regional totals.

The regional database can now be examined by executing "Create Reports" from the main menu, and "Study Area Data" from the secondary menu (see Study Area Data, Chapter 7 - Other Options). You have a choice of either "View/Edit", "Write to MMP File" or "Write to Spreadsheet" (a sample of the MMP and spreadsheet formats are contained in Appendix D - Reports and Tables). Generally, it is easier to study the region's industry structure and data if you write to a spreadsheet and then print the spreadsheet.

At this time, you should perform some validation of the IMPLAN regional data base. You may want to collect employment and earnings data for the counties you've included in your study area (employment and earnings data are usually the only available county data). Compare your data and industry structure with that shown in the region report and take note of any discrepancies. If there are problems, you may want to update the IMPLAN data base with your own numbers (see Editing Implications below).

Regional Data Base Components

There are essentially four components of the IMPLAN regional data base: Employment, Value Added, Total Industry Output and Final Demands. The regional total file contains estimates of regional final demand for 522 commodities, and total industry output, value added and employment for any of the 528 industries represented in the region. Industries 525-528 are special sectors. They reconcile certain aggregate estimates in the I/O accounts with NIPA (National Income and Products Accounts). A bridge to BEA industry numbers and Standard Industrial Classifications is contained in Appendix N.

1. **Employment** - The employment estimates are produced from a variety of sources, including County Business Patterns and Dunn and Bradstreet data.

2. **Value Added** - Are those costs added to the intermediate costs of producing goods and services to form the producer price. There are four components of value added:

Employee compensation - e.g. wages and salaries,

Proprietary income - includes self-employed income,

Indirect business taxes - e.g. sales and excise taxes, and

Other property income - e.g. interest and corporate profits.

3. **Total Industry Output** - The total output of each industry (this is not the same as Total Commodity Output).

4. Final Demands - The final demand for the output produced by each sector. Final demands are divided and sub-divided into 13 components:

Exports - output demanded for foreign export purposes.

Personal consumption expenditures - industry output purchased by individuals for personal consumption. The data base estimates three levels of expenditures depending on the income level. The three levels are: <\$10,000, between \$10,000 and \$30,000 and >\$30,000.

State and local government expenditures - Expenditures on goods and services required to provide government services. There are two categories in the IMPLAN database: educational expenditures and noneducational expenditures.

Federal government expenditures - Expenditures for goods and services required to run the federal government. This category is divided into military and nonmilitary expenditures.

State and local government sales - This includes sales of government goods and services to industries (effectively a negative final demand).

Federal government sales - Similar to state and local government sales.

Inventory purchases and sales - Goods that are not dispersed in a particular year are stored in inventory (inventory purchases) for sale in the next period (inventory sales). Services generally do not have inventory sales, or purchases. Ever try to store advice that wasn't used in a particular time period? Inventory values reflect the net change in inventory amounts for the year.

Gross Private Capital Formation - Goods that are sold to industries who use the goods as capital equipment. The sales of these goods provides industries with their capital structure.

Special Sectors - The four industries that make certain aggregate estimates consistent with NIPA accounts.

525 Government Industry - This sector contains a single entry in the Employee Compensation row that represents labor payments to employees in general government. This entry balances the expenditures made by the government institutions in the final demand quadrant for commodity 525.

526 Rest of the World - In general, this sector accounts for the net output (and income and employment) of US citizens and industries working abroad, and foreign employees and businesses operating in the US. It is related to several entries in the NIPA dealing with the inflow and outflow of business activity to the US.

527 Household Industry - This sector contains a single entry in the Employee compensation row that represents labor payments to household employees such as maids, chauffeurs, and baby sitters. It balances the expenditures made by the household institutions in the final demand quadrant for commodity 526.

528 Inventory Valuation Adjustment - This sector is used to account for the price differences of inventory and profit incomes from the beginning to the end of the year.

Editing the Database

Since there are a number of assumptions embodied in IMPLAN's structure (e.g., estimates of trade flow based on Regional Purchase Coefficient), the data base must be considered a point of departure. Where no other information is available, it provides initial estimates of output, employment, and income. The system is designed to incorporate user-supplied data, should actual (as opposed to secondary source) data be available. Changes to specific data elements can also be made to reflect structural changes in the economy.

The regional database can be changed from within the Micro Implan software by selecting the "View/Edit" option from the Study Area Data menu ("Create Reports" from main menu, "Study Area Data" from secondary menu). This will NOT change the data in the original county and/or state file, but, if you save your changes, it WILL write over the regional database. For editing command details see the View/Edit Environment section in Chapter 1 - Getting Started.

If an industry does not exist in the study area, it can be added by replacing the zero values of the database with some values you provide. The model will then add that industry to the analysis and the Final Demands will be reallocated based on the Regional Purchase Coefficients.

To add a sector not already in IMPLAN (529 and up) enter the four main data base components (Employment, Value Added, Total Industry Output, and Final Demands) and add the Production Function in the Accounts section. There are 10 sectors available for 'new' industries, 529-538. An industry can be removed from the study area by entering a zero for the Total Industry Output.

To change the Total Industry Output but not the production function, keep the ratio of Employee Compensation to Total Industry Output the same. The ratio of Total Value Added to Total Industry Output is checked by IMPLAN to determine whether or not the intermediate coefficients should be changed.

The original IMPLAN state and county data files can also be edited by using the "Data Files" option under "Utilities" (see Chapter 7 - Other Options). Select "View/Edit" for the appropriate county or state file you wish to edit. After you make the change and before you exit the file you are asked to provide a new name for the file. Original data files all have the .ODF file extension, modified data files will have a .MDF file extension. These files can now be used in several different models. Changes made in this way will not show up in a current model, until the new data files are selected under "Select a Study Area" and combined under "Combine Data Files".

Editing Implications

When a value in the database is changed there are corresponding changes that will also have to be made. In the case of an employment change, the other required changes are to the Employee Compensation cell, the Total Value Added cell, and Total Industry Output.

Each element in the database is balanced with other elements in the database and between elements in other databases. County data vectors are balanced to state level vectors and correspondingly, state vectors are balanced to the U.S. values. Though a change in a county will affect the overall balance of the county, you should not be too concerned about this unless you are making comparisons with the related state or the nation. If you change data in your study area, and then want to do a similar analysis to the entire state you may have to make the same changes to the state data base. More than likely, the changes are small enough to not cause problems at the state level.

One of the special sectors, 525 Government Industry, relates to government labor payments and employment which is often a substantial part of a regional economy. If you decide to correct these numbers to agree with an external estimate, the outlays of industry 525 for employee compensation should probably balance with expenditures by government for commodity 525 unless there are either imports or exports of government employment.

Total Industry Output and the Value Added elements are very sensitive to change. Editing either could change the intermediate inputs and therefore the whole production structure. By using proportional substitution, production function changes can be avoided. The labor versus output relationship is also sensitive.

- NOTES -

Chapter 4 - REGIONAL ACCOUNTS

Constructing Regional Accounts

The "Select a Study Area" portion of IMPLAN compiled factor payments (employee and industry income and indirect business tax), final demand and industry output production data to describe gross economic activity. Now this data will be transformed into the regional purchases and sales transactions required by input/output accounting.

A 1977 (price updated to 1982) Bureau of Economic Analysis (BEA) national model provides the technical coefficients for constructing regional transaction matrices. National consumption functions (the 'Use' matrix) are customized to represent the local economy and gross regional final demands (from the regional database) are adjusted to reflect final demands purchased locally. A 'Make' table describes the production of each industry, while a 'Use' table describes the consumption, with commodities being the link between the two.

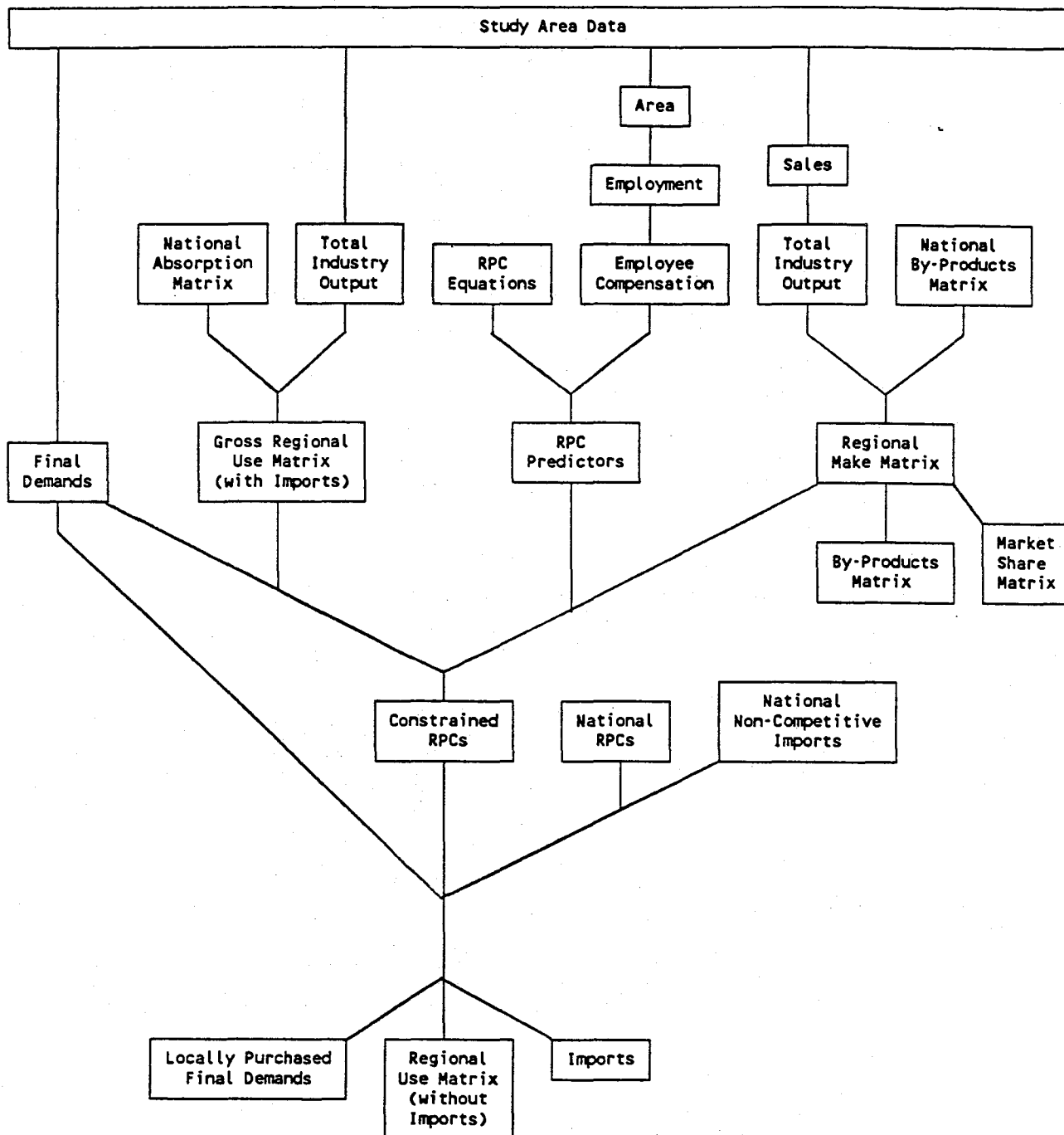
Executing the "Construct Accounts" option from the main menu gives a second menu:

** Micro Implan 82 **		Model: OZ	Status: Study Area Complete
SE Select a Model	Construct Accounts	Construct Accounts:	
SA Select a Study Area			
CA Construct Accounts	CA Construct Accounts	Construct the	Construct the
IO Construct I/O Matrix	ED Edit to Modify	input-output accounts	input-output accounts
AG Aggregate I/O Matrix	VI View the Error File	for the study area with	for the study area with
MU Derive Multipliers	HE Help	modifications, if any.	modifications, if any.
IM Impact Analysis	QU Quit		
ST Current Model Status		Three reports, Trans-	Three reports, Trans-
UT Utilities		shipments, Supply, and	shipments, Supply, and
CR Create Reports		Trade (#0.5, 1.0 & 2.0),	Trade (#0.5, 1.0 & 2.0),
CS Configure System		are always created by	are always created by
HE Help		this procedure and can	this procedure and can
QU Quit		be viewed by using	be viewed by using
		"Create Reports" /	"Create Reports" /
		"Regional Accounts"	"Regional Accounts"
		from the main menu.	from the main menu.
		Optional report #1.5	Optional report #1.5
		will also be found	will also be found
		there if selected.	there if selected.

What Happens When You Construct Accounts?

The flow chart below depicts the flow of regional and national data during the calculations of a regional set of input-output accounts.

Figure 5. Regional and National Data Flow Chart



What you see when you execute "Construct Accounts" from the secondary menu is a changing status line at the bottom of the screen, tracking the progress of the computations (see below).

** Micro Implan 82 **		Model: OZ	Status: Study Area Complete
SE Select a Model		Construct Accounts	Program Executing
SA Select a Study Area			
CA Construct Accounts		CA Construct Accounts	
IO Construct I/O Matrix		ED Edit to Modify	
AG Aggregate I/O Matrix		VI View the Error File	
MU Derive Multipliers		HE Help	
IM Impact Analysis		QU Quit	
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			
Compute the Make Matrix: Adjust for Industry/Commodity Disagg. If Required			

When all the accounts have been constructed you are returned to the main menu, but this takes a little while. The following three sections briefly describe what is happening behind the scenes - the transformation of regional and national data into a set of regional input-output accounts.

Calculating Supply:

The supply portion of the flow chart results in the 'Regional Make Matrix', the 'Regional By-products Matrix', and the 'Regional Market Share Matrix'.

The Make Matrix describes the composition of each industry's output (row) in terms of the value of each commodity (column) produced by that industry. The sum of each row yields Total Industry Output. The sum of each column is the 'Gross Commodity Production', that is, the value of each commodity produced by all industrial sectors in the region.

The region's Make Matrix is derived from a national By-products Matrix (1977 Bureau of Economics matrix price updated to 1982) included in the IMPLAN data files. Each row of the National Byproducts Matrix is multiplied by the Regional Industry Output to derive the Regional Make Matrix.

		Commodity					
		A	B	C			
Industry A	$\begin{bmatrix} .90 & 0 & .10 \\ 0 & 1 & 0 \\ .10 & 0 & .90 \end{bmatrix}$	.90	0	.10	National By-Products Matrix		
Industry B		0	1	0			
Industry C		.10	0	.90			
Industry A	$\begin{bmatrix} 9 & 0 & 1 \\ 0 & 30 & 0 \\ 4 & 0 & 36 \end{bmatrix}$	9	0	1	Regional Make Matrix	$\begin{bmatrix} 10 \\ 30 \\ 40 \end{bmatrix}$	Regional Total Industry Output
Industry B		0	30	0			
Industry C		4	0	36			
		$\begin{bmatrix} 13 & 30 & 37 \end{bmatrix}$	Gross Commodity Production				

There are also non-industrial supplies of each commodity. The sources of these supplies are reductions of inventory, sales from Federal government and sales from State and local governments. 'Total Commodity Supply' is the sum of Gross Commodity Production plus commodities supplied by non-industrial sources. 'Net Commodity Supply' is Total Commodity Supply less the foreign export of that commodity.

		Commodity				
		A	B	C		
		13	30	37	Gross Commodity Production	
		1	0	0	Inventory Sales	
		4	0	0	State and Local Government Sales	
+		0	0	2	Federal Government Sales	
		18	30	39	Total Commodity Supply	
-		1	0	0	Foreign Exports	
		17	30	39	Net Commodity Supply	

Foreign exports for each region are pre-specified, that is, domestic trade flows (unique to each region) will not affect foreign export values. Gross commodity production will, however, determine if foreign exports are locally produced. If production is less than foreign exports then the difference is 'transhipped', that is, imported to exports (Transshipments Report is in Appendix D - Reports and Tables), and there will be no gross commodity production available for local use. The derivation of net commodity supply from gross commodity production is the subject of the Regional Supply Report (found in Appendix D - Reports and Tables).

The By-products Matrix is a matrix of coefficients (the sum of each row equals one). Each entry in the Make Matrix has been divided by that row's total industry output.

	Industry	Commodity					
		A	B	C			
	A	9	0	1	Regional Make Matrix	$\begin{bmatrix} 10 \\ 30 \\ 40 \end{bmatrix}$	Regional Total Industry Output
	B	0	30	0			
	C	4	0	36			

18 30 39 Total Commodity Supply

	Industry	Commodity					
		A	B	C			
	A	9/10	0	1/10	=	$\begin{bmatrix} .90 & 0 & .10 \\ 0 & 1 & 0 \\ .10 & 0 & .90 \end{bmatrix}$	Regional Byproducts Matrix
	B	0	30/30	0			
	C	4/40	0	36/40			

	Industry	Commodity					
		A	B	C			
	A	9/18	0	1/39	=	$\begin{bmatrix} .50 & 0 & .026 \\ 0 & 1 & 0 \\ .222 & 0 & .923 \end{bmatrix}$	Regional Market Share Matrix
	B	0	30/30	0			
	C	4/18	0	36/39			

The Market Share Matrix is also a matrix of coefficients. Each entry in the Regional Make Matrix is divided by the Total Commodity Supply for that commodity (column). The resulting ratio is the fraction of the Total Commodity Supply supplied by the individual industry. Note that the column totals for this matrix are less than or equal to one as the total commodity supply includes non-industrial sources. This matrix will be important in converting commodity based data to industry based data in the development of multipliers (see Industry x Industry Matrix in Chapter 5 - Model Development).

Calculating Demand:

The demand section of the flow chart on page 46 is the left hand portion resulting in the 'Gross Regional Use Matrix'.

The **Gross Regional Use Matrix** is the local industry requirements of commodities (including imports). The commodities an industry consumes in producing its output can be thought of as a recipe (\$2 of coal, \$10 of business services and so on). An 'Absorption Matrix' is a matrix of these recipes (otherwise known as production functions) in coefficient format with the sum of the column less than one (value added and non-competitive import elements making up the remainder of the production function).

Multiplying the column elements of the National Absorption Matrix by the corresponding Total Industry Output derives the Gross Regional Use Matrix. The National Absorption Matrix (1977 Bureau of Economic Analysis matrix price updated to 1982) included in the IMPLAN data files includes imports.

	Industry				
	A	B	C		
Commodity A	[.05 .0 .2]			National Absorption Matrix (includes competitive imports)	
Commodity B		.1	.1		0
Commodity C		.2	.1		.05
	[10 30 40]			Regional Total Industry Output	
Commodity A	[.5 0 8]			Gross Regional Use Matrix (includes competitive imports)	
Commodity B		1	3		0
Commodity C		2	3		2

The **Gross Regional Commodity Demand** represents all local demands for each commodity whether the commodity is imported or produced locally.

	Industry			
	A	B	C	
Commodity A	.5	0	8	+ (by row)
Commodity B	1	3	0	
Commodity C	2	3	2	
	[11.5 26 8]			=
	[20 30 15]			
Gross Regional Use Matrix	Gross Regional Final Demands	Gross Regional Commodity Demand		

Calculating Trade Flows:

The Trade Flow calculations pull the rest of the flow chart elements (Figure 5, page 46) together to result in the Regional Use Matrix (net of imports), Imports, and the locally purchased Final Demands.

Regional Purchase Coefficients (RPCs) represent the proportion of locally produced goods or services (net commodity supply) that are used to meet local demand (regional commodity demand). The RPC for each commodity is unique to the study region based on a prediction equation (see Appendix G for a more detailed discussion of RPCs). The RPC calculated for a commodity is subject to the limitation of the Net Commodity Supply (calculated above). This avoids using more of a local commodity than is available. That is: for each commodity i

$$RPC_i \text{ is less than or equal to } \frac{\text{Net commodity supply}_i}{\text{Gross commodity demand}_i}$$

The Regional Use Matrix previously calculated includes imports (from the National Absorption Matrix). When the RPC for each commodity is multiplied by the corresponding row of the Gross Regional Use Matrix, the product is the value of the local commodity purchased by a local industry. The difference between before and after application of the RPC is the value of the imported commodity purchased by a local industry. The imported commodity value becomes an element of the 'Competitive Imports to Intermediate Demand' matrix.

Industry			
	A	B	C
Commodity A	.5	0	8
Commodity B	1	3	0
Commodity C	2	3	2
Gross Regional Use Matrix			

$\begin{bmatrix} .10 \\ .25 \\ .75 \end{bmatrix}$	$=$	<table><tr><th colspan="3">Industry</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>.05</td><td>0</td><td>.8</td></tr><tr><td>.25</td><td>.75</td><td>0</td></tr><tr><td>1.5</td><td>2.25</td><td>1.5</td></tr></table>	Industry			A	B	C	.05	0	.8	.25	.75	0	1.5	2.25	1.5
Industry																	
A	B	C															
.05	0	.8															
.25	.75	0															
1.5	2.25	1.5															
RPCs		Net Regional Use Matrix															

Commodity A	.45	0	7.2
Commodity B	.75	2.25	0
Commodity C	.5	.75	.5
Competitive Imports to Use			

The Final Demands from the regional data include imports. The value of locally produced commodities purchased for local final use is found by multiplying the RPC for each commodity by the corresponding row of final demands.

$$\begin{array}{l}
 \text{Commodity A} \\
 \text{Commodity B} \\
 \text{Commodity C}
 \end{array}
 \begin{bmatrix} 11.5 \\ 26 \\ 8 \end{bmatrix}
 \begin{array}{c}
 \times \\
 \text{(by row)}
 \end{array}
 \begin{bmatrix} .1 \\ .25 \\ .75 \end{bmatrix}
 =
 \begin{bmatrix} 1.15 \\ 6.5 \\ 6 \end{bmatrix}$$

Gross Regional Final Demands RPCs Total Local Final Demands

The difference between before and after application of the RPC is the value of the commodity imported for final use and becomes an element of the 'Regional Competitive Imports to Consumption Demand' and the 'Regional Competitive Imports to Investment & Trade Demand' matrices. Example reports showing these matrices are found in Appendix D - Reports and Tables).

$$\begin{array}{l}
 \text{Commodity A} \\
 \text{Commodity B} \\
 \text{Commodity C}
 \end{array}
 \begin{bmatrix} 11.5 \\ 26 \\ 8 \end{bmatrix}
 \begin{array}{c}
 - \\
 \text{(by row)}
 \end{array}
 \begin{bmatrix} 1.15 \\ 6.5 \\ 6 \end{bmatrix}
 =
 \begin{bmatrix} 10.35 \\ 19.5 \\ 2 \end{bmatrix}$$

Gross Regional Final Demands Total Local Final Demands Competitive Imports to Final Demand

or

$$\begin{array}{l}
 \text{Commodity A} \\
 \text{Commodity B} \\
 \text{Commodity C}
 \end{array}
 \begin{bmatrix} 11.5 \\ 26 \\ 8 \end{bmatrix}
 \begin{array}{c}
 \times \\
 \text{(by row)}
 \end{array}
 \begin{bmatrix} .9 \\ .75 \\ .25 \end{bmatrix}
 =
 \begin{bmatrix} 10.35 \\ 19.5 \\ 2 \end{bmatrix}$$

Gross Regional Final Demands Import Propensity (1-RPC) Competitive Imports to Final Demand

The Competitive Imports to Final Demand can also be derived by multiplying each Gross Final Demand entry by its commodity Import Propensity. The Import Propensity represents the portion of the Gross Regional Commodity Demand not purchased locally (1-RPC).

The Total Local Use of Local Commodities is found by adding the rows of the Regional Use Matrix (net of imports) to the Total Regional Final Demand (net of imports).

		Industry					
		A	B	C			
Commodity A	$\begin{bmatrix} .05 & 0 & 8 \\ .25 & .75 & 0 \\ 1.5 & 2.25 & 1.5 \end{bmatrix}$	$\begin{bmatrix} 1.15 \\ 6.5 \\ 6 \end{bmatrix}$	$\begin{bmatrix} 2 \\ 7.5 \\ 11.25 \end{bmatrix}$				
Commodity B							
Commodity C							
	Net Regional Use Matrix	+ (by row)	Total Regional Final Demands	=	Local Use of Local Commodity		

The Net Commodity Supply minus the local use of a locally produced commodity is the value of that commodity exported by the region to other parts of the U.S..

Commodity A	$\begin{bmatrix} 17 \\ 30 \\ 39 \end{bmatrix}$	$\begin{bmatrix} 2 \\ 7.5 \\ 11.25 \end{bmatrix}$	$\begin{bmatrix} 15 \\ 22.5 \\ 27.75 \end{bmatrix}$		
Commodity B					
Commodity C					
	Net Commodity Supply	- (by row)	Local Use of Local Commodity	=	Domestic Exports

The final result of these computations is a complete set of balanced regional I/O accounts as shown in Figure 6 on the next page. The MID numbers refer to the file extensions of optional accounts reports. The reports will be discussed later in the Accounts Reports section of this chapter.

C

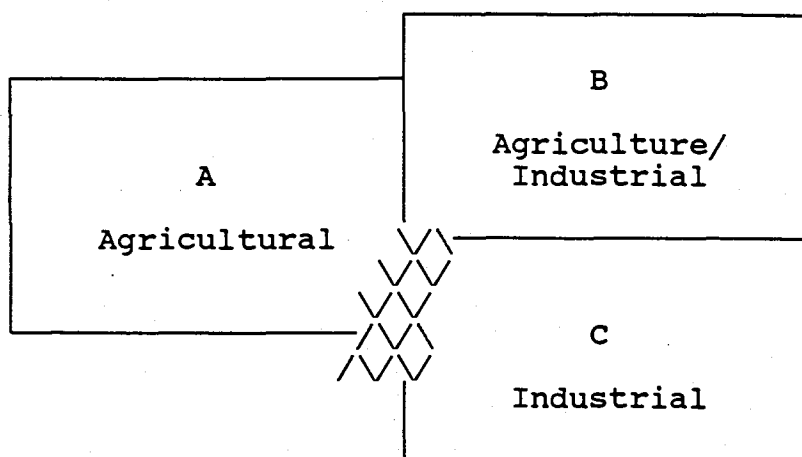


Modifying Regional Accounts

IMPLAN is flexible enough to allow the user to apply knowledge of local conditions to adapt national average assumptions to local conditions. The national absorption and byproducts matrices are used to describe regional consumption and production in the absence of better information. Subjective and/or primary data can be used to modify production and consumption functions as well as trade flows.

For example: There is a region ABC with a natural barrier. A's economy is strictly agricultural, C's is strictly industrial, while B's economy contains a mix of industry types (Figure 7 below).

Figure 7. Region ABC



Due to the industry mix and the natural barrier, A does not buy or sell to C. Thus, the RPCs are smaller than the national average for the affected industries. In this case, the RPCs for the A-B industry mix and the B-C industry mix can be found using separate models and then applied to the ABC model to reflect our knowledge of local conditions.

Data to modify accounts are introduced in an input file with the model id as the file name and extension AP5 (MID.AP5). This file is constructed by IMPLAN automatically when you do not have optional input. If you wish to use one or more optional features you must create this file with a text editor outside of IMPLAN's shell. Once the file is created with your optional input, "Construct Accounts" is reexecuted to incorporate the new options.

Required input:

There are two required input records. The first record contains either a zero or non-zero (numeric) in column one. If zero, no optional reports are generated (IMPLAN default); if non-zero, the absorption adjustment and regional purchase coefficient report is created (see Appendix D - Reports and Tables). The second record is a 999 starting in column one. This is used as an end-of-file (EOF) indicator. For example:

a) no optional reports:

0
999

b) absorption adjustment and RPC report created

1
999

Optional input:

There are four ways the regional accounts can be modified:

1. Reduce regional supply
2. Change regional purchase coefficients (RPCs)
3. Modify industry production function
4. Disaggregate industry and/or commodity

Each type of modification can appear alone or in combination with other categories, none are necessary. The only requirements are: 1) Data must be placed between the first required record (see above) and the 999 end-of-file indicator and 2) all data for a particular modification must be entered prior to entering a new type of modification.

In the following descriptions 'Record' will be used rather loosely; a 'record' may, in some instances, consist of 2 or more lines of input.

1. Changing Regional Supply:

At least 5 input records (shown on the following page) are required to modify the regional supply:

Record 1: 0 (or non-zero value to create absorption adjustment report, see Required Input above).
 Record 2: REGIONAL SUPPLY
 Record 3: n (where n = the number of commodities whose regional supply is being changed).
 Record 4: c1 v1 ... cn vn (c1 = 1st commodity number, vi = % of net commodity supply sold to local consumption, etc.)
 (The input format is 'free field' - separate each value with a comma or blank(s), use additional lines as needed.)
 Record 5: 999 (EOF indicator, see Required Input above).

For example, we know that two commodities (4 and 137) sell 2% and 30% of net commodity supply to local consumption, respectively. We wish to modify the regional supply to reflect this additional knowledge. Our input file (.AP5) would look like this:

```
0
REGIONAL SUPPLY
2
4 .02    137 .3
999
```

2. Changing RPCs (Regional Purchase Coefficients):

An RPC is an unique value calculated for each commodity for each study area based on the population and land area in the region, and regional employee compensation and employment figures. The Absorption Adjustment and RPC report will show the default RPCs. The non-asterisked commodity RPCs can be adjusted. An asterisk indicates non-industrial sources are the only sources of the commodity.

There are two types of RPC changes that are possible:

- a) Industry/institution and/or
- b) Commodity

The differences between the two are based on whether the primary orientation is industry/institution or commodity. For industry/institutional changes, specific levels of regional use of a commodity may be known for one industry, but not all industries. For a commodity orientation the assumption is made that all industries make the same amount of regional purchases of the commodity in question.

a) Industry/Institution: In this type of RPC modification, new RPC values are given for individual commodities used by an industry/institution. If not all commodities used by an industry are specified, the remaining commodities utilize the original 'default' RPC. Since the commodity RPC average is subject to the constraint of the supply/demand pooling ratio, an industry RPC change will result in RPC adjustments for the other industries purchasing that commodity. Exceeding the Supply/Demand ratio will result in an error message.

It is possible to change any number of commodity RPCs for a single industry/institution, up to a maximum of 75 commodities. The default RPCs appear in the Regional Trade Report (see Appendix D - Reports and Tables for an example report).

Input is grouped by commodity. At least 2 input records are required for each group(commodity):

Record 1: 0 (or non-zero value, see Required Input above).

Record 2: RPC

Record 3: INDUSTRY

Record 4: cn ni (cn = the commodity number affected and
ni = the number of industries with RPC
changes).

Record 5: XX###RPC (XX = GI for gross intermediate or
FD for final demand,
= the industry number being changed,
RPC = the new RPC)

(The input format is A2 I3 F10.8 with no spaces
in between and a line for each RPC change.)

Record 6: 999 (EOF indicator, see Required Input above).

The Final Demand components which can be specified in Record 5 are:

01	PCE - Low Income (less than \$10,000)
02	PCE - Medium Income (\$10,000 to \$30,000)
03	PCE - High Income (over \$30,000)
05	State & Local Gov. Purchases, Non-educational
06	State & Local Gov. Purchases, Educational
08	Federal Gov. Purchases, Non-Military
09	Federal Gov. Purchases, Military
10	Commodity Credit Corporation
12	Inventory Purchases
13	Capital Formation

RPC changes can not be applied to final demand components 4, 7, 11, (federal, state and local government, and inventory sales) and 14 (foreign exports).

For example, we wish to change the RPCs in commodity 3: for industry 11 in the intermediate demands matrix to 0.123, and the RPC for the second final demands component to 0.345 (for this purpose, final demands are considered industries). Our input file (.AP5) would look like this:

```
0
RPC
INDUSTRY
3 2
GI011 0.123
FD002 0.345
999
```

There can be any number of RPC changes. The optional input identifiers (RPC and INDUSTRY), however, only appear once. For example, the input file:

```
1
RPC
INDUSTRY
3 3
GI011 0.123
GI136 0.456
FD001 0.987
137 1
GI136 0.777
462 2
FD002 0.333
FD003 0.444
999
```

would modify 3 commodities: 3, 137, 462. Commodity 3 has 3 industry/institution RPC changes. The industries modified are 11 and 136 of intermediate demand, and the first component of final demand. Commodity 137 has one industry (136) in intermediate demand modified. Commodity 462 has two components of final demand (2 and 3) modified.

b) Commodity: The objective of this form of RPC change is to have all industrial consumption of a commodity at the same rate (defined by the RPC). This is done by making a direct substitution in the RPC vector. Any number of commodities may be changed. Revised commodity RPC values appear in the Regional Trade Report, "Intraregional Commodity Purchase Coef" column.

At least 5 input records (shown on the following page) are required to modify the RPC commodity vector:

3. Changing the Industry Production Function:

Any number of industries can have their production functions modified. This is a total industry replacement. The row and column input vectors specified will replace the national default values in their entirety. In other words, if there are 10 values in the national table, and only one value specified by the user, then there will only be one value in the regional table. The input is grouped by industry:

Record 1: 0 (or non-zero value, see Required Input above).

Record 2: PRODUCTION FUNCTIONxxx (xxx = the number of industries to be changed.)

Record 3: in1 in2 ... inx (in1 = 1st industry to be modified, etc.)

(The input format is free field).

Record 4: COMMODITY PRODUCTION

Record 5: n c1 v1 ... cn vn (n = the number of commodity/value pairs to be substituted in the national by-products matrix
c1 = the 1st commodity number
v1 = value for 1st commodity
etc.)

(Record 5 must be repeated for each industry specified in record 3. The values are percentages and must add up to 1.0. Input format is free field)

Record 6: INTERMEDIATE REQUIREMENTS

Record 7: n c1 v1 ... cn vn (n = the number of commodity/value pairs to be substituted in the national absorption matrix
c1 = the 1st commodity number
v1 = value for 1st commodity
etc.)

(Record 7 must be repeated for each industry specified in record 3. The values are coefficients. Input format is free field)

Record 8: PRIMARY FACTOR REQUIREMENTS

Record 9: employee-comp indirect-business-tax
proprietary-income other-property-income to
total industry output ratios

(The sum of Record 9 values plus the values from Record 7 equals 1. Record 9 must be repeated for each industry specified in record 3. Input format is free field.)

Record 10: 999 (EOF indicator, see Required Input above).

For example, two industries (3, 137) need production function modifications. Industry 3 has 5 commodity-value pairs for the by-products matrix. Industry 137 has 4 pairs for the absorption matrix:

```

0
PRODUCTION FUNCTION002
3 137
COMMODITY PRODUCTION
5 3 .5 11 .05 12 .4 59 .05 450 .0
3 4 .25 59 .25 137 .50
INTERMEDIATE REQUIREMENTS
3 1 .00287 3 .33447 5 .23826
4 2 .001 4 .003 131 .131 132 .321
PRIMARY FACTOR REQUIREMENTS
.0244 .125 .275 .000
.044 .25 .25 .000
999

```

Note: The order of the commodity production, intermediate requirements, and primary factor requirements data must correspond to the order of the industries specified in record 2. The total of the Intermediate Requirements values (Record 7) plus the total of the Primary Factor Requirements values (Record 9) should equal 1.

4. Disaggregating:

It is helpful to review the contents of the industry and/or commodity balance sheet when constructing a disaggregation data set. Up to 10 disaggregations can be run for a given scenerio. (CAUTION: This option has not been fully tested.)

Disaggregating an Industry:

```

Record 1: 0 (or a non-zero value, see Required Input above)
Record 2: MODIFY INDUSTRY
Record 3: n (n = number of industries to be disaggregated -
           less than or equal to 10)
Record 4: a name for the new industry
Record 5: in ec ibt pti opi emp (in = old industry number
                                ec = employee comp ($MM)
                                ibt = indirect bus. tax ($MM)
                                pti = proprietary income ($MM)
                                opi = other property income
                                    ($MM)
                                emp = employment (in 1000s) for
                                    example: 3.5 jobs would
                                    be .0035)

```

(All values, except for the old industry number, are for the new industry. Input format is free field.)

Record 6: MAKExxx (xxx = the number of commodities in the
MAKE row.)

Record 7: c1 v1 ... cn vn (c1 = the 1st commodity number
v1 = value for 1st commodity (\$MM)
etc.)
(The number of commodity-value pairs must = the
number 'xxx' specified in record 6. Input
format is free field.)

Record 8: GICD### (### = the number of commodities in the
Gross Intermediate Commodity Demand
column, that is, the number of
commodities in the USE matrix.)

Record 9: c1 v1 ... cn vn (c1 = the 1st commodity number
v1 = value for 1st commodity (\$MM)
etc.)
(The number of commodity-value pairs must = the
number '###' specified in record 8. Input
format is free field. Records 4-9 are repeated
for each industry, 'n' times, as specified in
Record 3.)

Record 10: 999 (EOF, see Required Input above)

For each industry added, the MAKE row sum must equal the
GICD column sum + (ec+ibt+pti+opi) from record 5 (that is, total
industry outlay must equal total industry output).

For example, one industry (3) is to be disaggregated. There
will be 5 commodities in the MAKE row and 11 in the GICD column.
Since we want an absorption adjustment report the first record
will be non-zero:

```

1
MODIFY INDUSTRY
1
Disaggregated industry 3
3 .0076 .0042 .05273 .000 .0035
MAKE005
3 .31 11 .0 12 .0 59 .00207 450 .0
GICD011
3 .12727 5 .05176 12 .00085 52 .00301
79 .03958 95 .00654 214 .00075 432 .00571
433 .00003 440 .01117 448 .00087
999

```

Disaggregating a Commodity:

Record 1: 0 (or a non-zero value, see Required Input above)
Record 2: MODIFY COMMODITY
Record 3: n (n = the number of commodities to be
disaggregated - less than or equal to 10)
Record 4: a name for the new disaggregated commodity
Record 5: cn pl pm ph ss spe spn fs fpn fpm cc ir ia cf fe

(cn = the old commodity number
pl = personal consumption, low (\$MM)
pm = personal consumption, med (\$MM)
ph = personal consumption, high (\$MM)
ss = state and local gov sales (\$MM)
spe = state and local gov purchases, educ (\$MM)
spn = state and local gov purch., non-educ (\$MM)
fs = fed gov sales (\$MM)
fpn = fed gov purchases, non-military (\$MM)
fpm = fed gov purchases, military (\$MM)
cc = commodity credit corp (\$MM)
ir = inventory reductions (\$MM)
ia = inventory additions (\$MM)
cf = capital formation (\$MM)
fe = foreign exports) (\$MM)

(All values, except for the number of the commodity to be disaggregated, are for the new commodity. Input format is free field.)

Record 6: MAKExxx (xxx = the number of industries in the MAKE row.)

Record 7: i1 v1 ... in vn (i1 = the 1st industry number
v1 = new value for 1st industry \$MM
etc.)

(The number of industry-value pairs must = the number 'xxx' specified in record 6. Input format is free field.)

Record 8: GICD### (### = the number of industries in the GICD column - the USE matrix.)

Record 9: i1 v1 ... in vn (i1 = the 1st industry number
v1 = value for 1st industry (\$MM)
etc.)

(The number of industry-value pairs must = the number '###' specified in record 8. Input format is free field. Records 4-9 are repeated for each commodity, 'n' times, as specified in Record 3.)

Record 10: 999 (EOF indicator, see Required Input above)

For example, to disaggregate commodity 12 we will add 2 industries to the new 'MAKE' column, and 2 to the new GICD row:

```

0
MODIFY COMMODITY
1
Disaggregated commodity 12
12 .00011 .0 .0 .000072 .0000057
    .0 .0001 .0002 .0003
        .0009 .000047 .00003 .00101 .00009
MAKE002
3 .003 4 .0009
GICD002
3 .0085 4 .005
999

```

Disaggregated industries and/or commodities are assigned numeric reference values of 529 through 538 for as many disaggregations as specified.

When disaggregating an industry and commodity, the potential exists within the newly created industry (.GE. 529) or commodity (.GE. 529) to specify a newly created commodity or industry number (.GE. 529). For example, suppose industry 3 is disaggregated creating new industry 529, and that industry 3 contains commodity 12. Suppose also that commodity 12 is disaggregated into new commodity 529 which contains industry 3.

```

1
MODIFY COMMODITY
1
disaggregated cmdty 12
12 .00011 .0 .0 .000072 .0000057 .0 .0
    .0 .0 .0009 .001 .0 .0 .001
MAKE 2
3 .003 4 .0009
GICD 2
3 .007 4 .005
MODIFY INDUSTRY
1
modified industry 3, livestock
3 .0076 .0042 .05273 .0 .0035
MAKE 6
3 .31 11 .0 12 .0 59 .00007 450 .0 529 .002
GICD 11
3 .12727 5 .05176 12 .00085 52 .00301
79 .03958 95 .00654 214 .00075 432 .00571
433 .00003 440 .01117 448 .00087
999

```


Note that new industry 529 contains commodity 529. When this occurs, two items must be noted:

1. The program assumes the user has manually disaggregated the data within the intersection of the new industry/commodity vectors before data entry. In other words, the program will only disaggregate industry/commodity numbers less than or equal to 528.

2. The data for the intersection of new industry/commodity vectors must be entered as part of the industry disaggregation data. If it is entered with the commodity disaggregation data, it will be ignored.

Examples of Mixed Input Files:

The four categories of optional input (regional supply, RPC, industry production function, and disaggregation) can be mixed and matched. The following are a few examples of mixed input files.

1. Disaggregate a commodity and an industry:

```
1
MODIFY COMMODITY
1
Disaggregated commodity 12
12 .00011 .0 .0 .000072 .0000057
.0 .0001 .00 .0001 .0 .0 .0 .01 .01
MAKE002
3 .003 4 .0009
GICD002
3 .007 4 .005
MODIFY INDUSTRY
1
Disaggregated industry 3
3 .0076 .0042 .05273 .0 .0035
MAKE005
3 .31 11 .0 12 .0 59 .0027 450 .0
GICD 11
3 .12727 5 .05176 12 .00085 52 .00301
79 .03958 95 .00654 214 .00075 432 .00571
433 .00003 440 .01117 448 .00087
999
```

2. Disaggregate a commodity and change regional supply for a commodity:

```
0
MODIFY COMMODITY
1
disaggregated cmdty 12
12 .00011 .0 .0 .000072 .0000057 .0
.01 .001 .0 .0 .0 .001 .0009 .0
MAKE 2
3 .003 4 .0009
GICD 2
3 .0085 4 .005
REGIONAL SUPPLY
1
463 .6
999
```

3. Disaggregate a commodity, specify an individual regional purchase coefficient:

```
0
MODIFY COMMODITY
1
disaggregated cmdty 12
12 .00011 .0 .0 .000072 .0000057 .0
.0 .0 .0 .0009 .001 .0 .0 .001
MAKE 2
3 .003 4 .0009
GICD 2
3 .0085 4 .005
RPC
529 1
GI003 .2
999
```

Accounting Reports

IMPLAN generates some accounts reports automatically (an example of each can be found in Appendix D - Reports and Tables). There are a number of optional reports which display different elements of the regional I/O accounts. One of these, the absorption adjustment report, is generated from the regional account modification file. The other optional reports can be generated from the "Create Reports" option in the main menu under the "Accounts Reports" section (see Rectangular Accounts, Chapter 7 - Other Options). A selection may create more than one 'accounts report'. The screen on the next page shows the available selections:

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
Accounts Reports LS List and Select SA Save and Exit HE Help QU Quit		Optional Reports Use Matrix Absorption Matrix Make Matrix Market Shares Matrix Byproducts Matrix Consumption & Trade Factors & Trade Non-Comp. Imports to Use Non-Comp. Imports to FD Comp. Imports to Use Comp. Imports to FD Industry Balance Sheet Commodity Balance Sheet Social Accounting Matrix	
Ins = Include Del = exclude Enter = completed Esc = quit 0 rpts selected			

Figure 6 on page 54 shows the relationship of the optional accounts reports to the rectangular input-output accounting scheme. On the next page, Table 8 lists all of the accounts reports by file extension. An example of each report is available in Appendix D - Reports and Tables.

Some of the reports, (Use Matrix, Absorption Matrix and the import matrices) can get quite large depending on the number of commodities and industries. Report files can take up as much room as 4 Mb. At the other extreme: the OZ model reports (from the Example Analysis section) used under 400 Kb.

Table 8. Regional Accounting Reports

<u>MID</u> <u>Ext</u>	<u>Report</u> <u>No.</u>	<u>Title</u>
Automatically Generated Reports		
001	0.5	Regional Transshipments
002	1.0	Regional Supply Report
002		Miscellaneous Sales
004	1.6	Modified Trade Data
005	2.0	Regional Trade Report
006		Industries and Commodities in the Model
OPT	3.0	User Input Option
User Option Reports (specified in the input file)		
003	1.5	Absorption Adjustment
	1.5	Regional Purchase Coefficients
Optional Reports		
101	2.0	Regional Use Matrix
102	2.1	Regional Absorption Matrix
103	3.0	Regional Make Matrix
104	4.0	Regional Market Shares Matrix
105	5.0	Regional Byproducts Matrix
106	6.0	Regional Consumption Demand
106	6.1	Regional Investment and Trade Demand
107	7.0	Final Payments: Factors
107	7.1	Final Payments: Trade
108	8.0	Regional Non-competitive Commodity Imports to Intermediate Demand
108	8.0-s	Regional Non-competitive Commodity Import to Non-industrial Regional Purchases
109	9.0	Regional Non-competitive Imports to Consumption Demand
109	9.0-s	Regional Non-competitive Imports to Non-industrial Regional Purchases
109	9.1	Regional Non-competitive Imports to Investment & Trade Demand
109	9.1-s	Regional Non-competitive Imports to Non-industrial Investment & Trade Demand
110	10.0	Regional Competitive Commodity Imports to Intermediate Demand
111	11.0	Regional Competitive Imports to Consumption Demand
111	11.1	Regional Competitive Imports to Investment & Trade Demand
112	12.0	Industry Balance Sheet, Parts I and II
113	13.0	Commodity Balance Sheet, Parts I and II

Automatically Generated Reports:

In any report 'T' or 'R' next to a sector denotes a modified sector. An asterisk marks commodities for which there is no corresponding industry in the region.

Regional Transshipments Whenever more of a commodity is exported from the region than is produced, imports must be used to satisfy both local demand and the export demand. This is known as 'transshipping'. Besides the transshipment values, Foreign Exports and Commodity Supply values are given.

Regional Supply Report A description of the production and supply of commodities and services by the industries and institutions in the study area. Values are listed for Gross Commodity Production, Foreign Exports, Inventory Reduction, State & Local and Federal Government Sales and Net Commodity Supply. A number in the Inventory Reduction column indicates sales from inventory of that commodity exceeded additions, and represents the net reduction.

Miscellaneous Sales A description of the production and supply of commodities and services by Households and Capital Formation. Three commodities are listed: sales of scrap (523), used and second hand goods (524) and services provided by households to foreign citizens and businesses operating in the U.S. (526).

Modified Trade Data This is a documentation file automatically created when RPCs are modified (see sample file below).

MODIFIED TRADE DATA

ACCOUNTS REPORT #1.6
7/17/89

FOR COMMODITY 161, ORIGINAL DEFAULT RPC	= .11725,	DEFAULT IMPORT PROPENSITY	= .88275
USER-SPECIFIED RPC FOR INDUSTRY 66	= .12500,	COMPUTED IMPORT PROPENSITY	= .87500
MODIFIED DEFAULT RPC = S/DP	= .05352,	IMPORT PROPENSITY	= .94648

Regional Trade Report The components that are used to derive trade flows: Net Commodity Supply, Gross Regional Commodity Demand, average RPC, average Import Propensity, Total Commodity Imports, Domestic Commodity Exports, and the Intraregional Commodity Sales Coefficient. The Regional Sales Coefficient is the fraction of Net Commodity Supply used to meet regional Gross Commodity Demand.

Industries and Commodities in the Model A list of the industries and commodities existing in the region.

User Input Option This document file lists the various account modification options and which (if any) have been used to modify the regional accounts (see sample file below).

	ACCOUNTS REPORT #3.0 3/ 1/89
USER INPUT OPTIONS	

OPTIONS:	STATUS:
REGIONAL SUPPLY VECTOR CHANGE(S)	NO
COMMODITY RPC CHANGE(S)	NO
INDUSTRY/INSTITUTION RPC CHANGE(S)	NO
DISAGGREGATED INDUSTRY(IES)	NO
DISAGGREGATED COMMODITY(IES)	NO
MODIFIED PRODUCTION FUNCTION(S)	NO

Optional Reports From the Input File:

Both these reports are generated with a single option in the account input file. A 'T' or 'R' next to a sector denotes a modified sector. An asterisk marks commodities for which there is no corresponding industry in the region.

Absorption Adjustment The National and Regional Gross Absorption matrices (includes imports) and Total Factor Payments ratios. If the Regional Factor differs from the National Factor then IMPLAN adjusts the corresponding industry column of the Regional Gross Absorption matrix by an 'Absorption Adjustment Ratio' to rebalance the industry.

Regional Purchase Coefficients Compares RPCs with the Supply/Demand Pooling ratios. Domestic and Foreign Imports are also given.

Optional Reports:

All of these reports are generated under the "Create Reports" section of the main menu. The individual reports can be selected and then created from the "Accounts Reports" option. A 'T' or 'R' next to a sector denotes a modified sector. An asterisk marks commodities for which there is no corresponding industry in the region.

Regional Use Matrix The values of commodities (columns) used in production by each industry (rows), net of imports. (Note: This is a reversal of convention - transposed for printing purposes.)

Regional Absorption Matrix The fraction of each industry's total outlay spent on a given commodity consumed during production, net of imports.

Regional Make Matrix The values of commodities produced by each industry. Inventory Reductions and Federal and State & Local Government Sales are also given. (Note: This matrix is transposed.)

Regional Market Shares Matrix The fraction of each commodity's Total Supply produced by each industry.

Regional By-Products Matrix The fraction of each industry's Total Output that each commodity represents.

Regional Consumption Demand A report showing consumption by households and government of each commodity available in the region, net of imports.

Regional Investment and Trade Demand Investment (Inventory Additions and Capital Formation) and Trade (Domestic and Foreign Exports) purchases of commodities available in the region. Total Intermediate Demand, Total Final Demand and Total Commodity Output are also given.

Final Payments: Factors Factor payments to labor (Employee Compensation), government (Indirect Business Taxes), capital (Proprietary and Other Property Type Income), and Total Value Added are shown. Values are the same as in the Study Area reports.

Final Payments: Trade Payments for imports are shown (Competitive Imports, Non-Competitive Imports, Total Domestic Imports, and Foreign Imports). Total Domestic Final Payments (Total Value Added + Total Domestic Imports), Total Final Payments (Total Value Added + Total Imports), and Total Industry Outlay are also shown.

Regional Non-competitive Imports to Intermediate Demand Values of industry-produced commodities not produced in the region imported to meet industry intermediate demands.

Regional Non-competitive Imports to Non-industrial Regional Purchases (A misnomer) Values of commodities not produced locally which are imported from non-industrial sources to meet industry intermediate demands.

Regional Non-competitive Imports to Consumption Demand Values of industry-produced commodities not produced in the region imported to meet household and government final demands.

Regional Non-competitive Imports to Non-industrial Regional Purchases Values of commodities not produced locally which are imported from non-industrial sources to meet household and government final demands.

Regional Non-competitive Imports to Investment and Trade Demand Values of industry-produced commodities not produced in the region imported to meet investment and trade final demands.

Regional Non-competitive Imports to Non-industrial Regional Purchases Values of commodities not produced locally which are imported from non-industrial sources to meet investment and trade final demands.

Regional Competitive Commodity Imports to Intermediate Demand The industrial import to intermediate demand of commodities which are also produced in the region.

Regional Competitive Commodity Imports to Final Demand The import of commodities, which are also produced in the region, by households and government.

Regional Competitive Imports to Investment and Trade Demand The import of commodities, which are also produced in the region, by investment and trade elements of final demand.

Industry Balance Sheet, Part I The commodity production by a given industry is described. The selected industry's row of the Make, Market Share, and By-products matrices, are listed as well as the RPCs and exports of the commodities it produces. This report is useful when modifying an industry production function.

Industry Balance Sheet, Part II The selected industry's requirements are described, both the intermediate inputs and factor payments. The industry's column of the Absorption matrix (both gross and net of imports) and total imports are listed. This report is also useful when modifying an industry production function.

Commodity Balance Sheet, Part I The total production of the highlighted commodity by each industry in the area producing the commodity. The commodity's column of the Market Share and By-products matrices are also displayed.

Commodity Balance Sheet, Part II The intermediate demands (corresponding commodity row of the absorption and Use matrices) and final demands of the highlighted commodity are shown. This report is useful when making industry RPC modifications.

- NOTES -

Chapter 5 - MODEL DEVELOPMENT

The Industry by Industry Matrix

IMPLAN multiplies the Regional Market Share Matrix (industry by commodity) times the Regional Absorption Matrix (commodity by industry) to derive the Regional Direct Coefficients Matrix (industry by industry). Both the Market Share and Regional Absorption matrices were created in the Regional Accounts section of IMPLAN (see 'What Happens When You Construct Accounts' in Chapter 4).

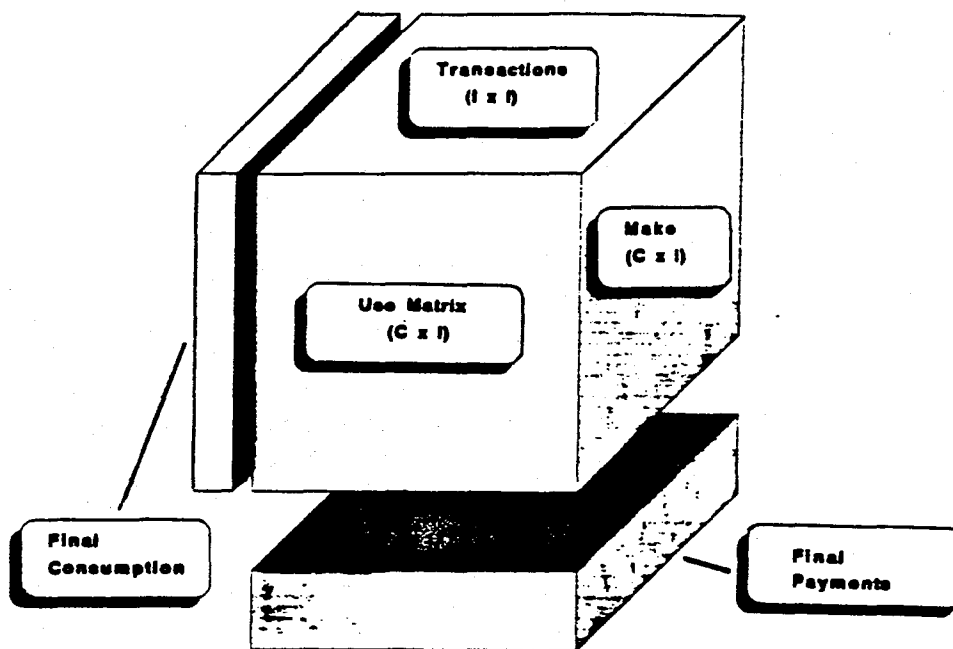
Entries in the Regional Absorption Matrix show the proportion of each industry's total outlay spent on locally produced commodities. Entries in the Regional Market Share matrix represent a given industry's proportion of a region's total commodity production. Multiplication of a Regional Market Share Matrix entry with an entry of the Regional Absorption Matrix establishes interindustry purchases by tracing the use of a commodity by an industry to the industry that produces the commodity.

	Commodity (xI)		Industry (xC)		Industry (xI)
	A B C		A B C		A B C
A B C	$\begin{bmatrix} .5 & 0 & .026 \\ 0 & 1 & 0 \\ .222 & 0 & .923 \end{bmatrix}$	x	$\begin{bmatrix} .005 & 0 & .02 \\ .025 & .025 & 0 \\ .15 & .075 & .038 \end{bmatrix}$	=	$\begin{bmatrix} .006 & .002 & .011 \\ .025 & .025 & 0 \\ .14 & .069 & .04 \end{bmatrix}$
	Regional Market Share Matrix		Regional Absorption Matrix		Regional Direct Coefficients Matrix

In this example, Industry A produces \$.5 (or 50%) and Industry C produces \$.22 (or 22%) of each dollar of commodity A produced in the region. For each dollar of output produced by Industry A, Industry A purchases locally \$.005 of commodity A, \$.025 of commodity B and \$.15 of commodity C. Industry A uses \$.006 (.5 x .005 + 0 x .025 + .026 x .15) of its own industrial output for every dollar of output since industry A produces 50% of commodity A, 22% of commodity C while purchasing .005, .025, and .15 dollars worth of commodities A, B, and C respectively for each dollar of output.

The Regional Transactions Matrix is derived by multiplying the Direct Coefficients Matrix with Total Industry Output. The regional consumption of commodities by households and government is converted to demands of industry output by multiplying the final demand vector by the Market Share Matrix. The investment, trade, Total Intermediate Demand, Total Final Demand, and Total Industry Output vectors are similarly converted.

Figure 8. Pictorial Relationship of the Use and Make Matrices to the Industry by Industry Transaction Matrix



Executing the "Construct I/O Matrix" option from the main menu and "Construct I/O Matrix" from the secondary menu will create the IxI (industry by industry) Direct Coefficients Matrix along with the IxI Transaction Matrix and regional consumption and trade vectors.

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
SE Select a Model	I/O Matrix	Construct I/O Matrix:	
SA Select a Study Area	IO Construct I/O Matrix	Construct industry-	
CA Construct Accounts	HE Help	by-industry input-output	
IO Construct I/O Matrix	QU Quit	accounts using the	
AG Aggregate I/O Matrix		industry technology	
MU Derive Multipliers		assumption and the	
IM Impact Analysis		market share hypothesis.	
ST Current Model Status			
UT Utilities		The results of this	
CR Create Reports		procedure are a trans-	
CS Configure System		actions matrix and final	
HE Help		demand matrices (trade	
QU Quit		and consumption) revised	
		to an industry reference.	

I/O Reports

Four optional I/O reports can be generated from the "Create Reports" option in the main menu, under the "I/O Matrix" section. Copies of these reports can be found in Appendix D - Reports and Tables.

Table 9. I/O Reports

MID Ext	Report No.	Title
301	3.5	Direct Purchases per One Dollar of Output
302	3.4	Interindustry Transactions
303	6.0	Regional Consumption Demand
303	6.1	Regional Investment & Trade Demand

Direct Purchases per One Dollar of Output The Regional Direct Coefficients Matrix. Only those industries indigenous to the study area are included. An entry represents the fraction of the local row industry's output purchased by the column industry.

Interindustry Transactions The Regional Transaction Matrix. Only those industries indigenous to the study area are included. Reading across a row shows the dollar amounts of intraregional sales by the row industry to the column industries. Reading down a column shows the dollar amount of intraregional purchases by the column industry from the row industries.

Regional Consumption Demand A report showing Final Demands (household and government consumption) as demands for industry output. Only those industries indigenous to the study area are included.

Regional Investment & Trade Demand This report shows the investment (Inventory Additions and Capital Formation), trade (Domestic Imports and Foreign Imports), Total Intermediate Demands, Total Final Demands and Total Industry Output vectors as demands for industry output. Only those industries indigenous to the study area are included.

Aggregating Industries

Aggregating industries, to reduce the 528 sector IMPLAN model to a smaller size, can be done prior to inversion of the I/O matrix and calculation of multipliers. The aggregating step is completely optional. If you do not wish to aggregate, simply move on to "Derive Multipliers".

A smaller model will be more manageable in IMPLAN reports and invert faster than the full 528 sector model. Aggregation and inversion times will vary depending on computer capabilities and on the region being modeled. Aggregation for Oregon or Alaska from 528 sectors to 75 sectors takes approximately 45 minutes on an IBM AT running at 6 MHz. Aggregation times will vary considerably depending upon the aggregation schemes. Some inversion times are listed below.

Table 10. Some General Inversion Times (hr:min)

	386 20 MHz	386 16 MHz	286 12 MHz	286 8 MHz	286 6 MHz
200	<5	<5	10	15	20
300	7	10	35	50	1:10
-310	20	30	1:05	1:30	2:10
400	40	1:00	2:05		
525	1:05	1:30		6:36	9:06

If a model is aggregated, some detailed demand change information is lost during inversion. By not aggregating, detailed demand change data is available and, if desired, can be manually summarized after inversion using a spreadsheet. The decision to aggregate and what aggregation scheme to use depends on the objective of the analysis and time constraints.

The following suggestions should be considered when designing aggregation schemes:

1. Try to leave sectors with final demand changes unaggregated. In input-output theory, each sector represents a homogenous production function. Aggregation results in a production function that is a weighted average for all the sectors included. The weighted average may differ significantly from the individual production function.
-

2. Try to leave industries with relatively large total industrial output unaggregated. Since large industries are more likely to be affected than other industries by final demand changes, interpretation of impacts will be clearer if they are left unaggregated.
3. Try to leave 'High-profile' industries unaggregated. Any industry that is politically important or represents more than its share of a region's industrial structure compared to its share of the national structure would be considered a high-profile industry.
4. Try to follow the Standard Industrial Classification codes (SIC) when creating aggregation schemes. Industries with the same two or three digit SIC code are likely to have similar production functions as well as similar purchase and sales patterns. Thus aggregating along SIC codes will produce aggregations with more realistic purchase and sales patterns than aggregations constructed without following SIC codes. The IMPLAN - SIC bridge table is contained in Appendix N.

Aggregation schemes can be constructed that apply only to an individual model or, as a more generalized 'template', which can be applied to many models.

Creating an Aggregation Scheme:

If you are constructing a model with a specific aggregation scheme that you do not plan to utilize for any other model then the "Create Aggr Scheme" option under "Aggregate I/O Matrix" can be used.

** Micro Implan 82 **		Model: OZ	Status: I/O Matrix Complete
SE Select a Model	Aggregation	AG Aggregate I/O Matrix	Aggregation:
SA Select a Study Area		ST Select a Template	Create an aggregation
CA Construct Accounts		CR Create Aggr Scheme	scheme for the current
IO Construct I/O Matrix		VI View Aggr Scheme	model.
AG Aggregate I/O Matrix		HE Help	This procedure is
MU Derive Multipliers		QU Quit	used to create the
IM Impact Analysis			scheme for grouping
ST Current Model Status			industries together.
UT Utilities			A scheme created this
CR Create Reports			way applies only to the current
CS Configure System			model. Templates, created under
HE Help			"Utilities"/"Templates",
QU Quit			can be used with any
			model.

Only the industries existing in the study area will be available for aggregation.

** Micro Implan 82 **		Model: OZ
Create a Scheme VI View the scheme CR Create an aggregate MO Modify an aggregate DI Dissolve an aggregate FI Find a sector CH Change names SA Save scheme & exit HE Help QU Quit	Aggregation Scheme 1 >Ag., Forestry and Fi 45 CRUSHED AND BROKEN L 82 MEAT PACKING PLANTS 160 LOGGING CAMPS AND LO 161 SAWMILLS AND PLANING 164 MILLWORK 269 READY-MIXED CONCRETE 448 MOTOR FREIGHT TRANSP 454 COMMUNICATIONS, EXCE 459 SANITARY SERVICES AN 460 RECREATIONAL RELATED 461 OTHER WHOLESALE TRAD 462 RECREATIONAL RELATED 463 OTHER RETAIL TRADE 464 BANKING 467 INSURANCE CARRIERS 468 INSURANCE AGENTS AND	New aggr. sector name 66 NEW RESIDENTIAL STRU 69 NEW HIGHWAYSAND STR
<Enter> = Add <Tab> = Switch Window <C> = Close # Ind = 30		

The "Create Aggr Scheme" menu has seven aggregation related options:

View the Scheme (VI) - IMPLAN sectors included in an aggregate are displayed when the aggregate is highlighted and the Tab key is pressed. To return to the other functions press the close key C.

Create an Aggregate (CR) - After naming a new aggregate, IMPLAN sectors are included by highlighting each sector and pressing Enter. Sectors can be removed from an aggregate by using the Tab key, highlighting the sector to be removed, and pressing the Enter key. Once all sectors to be aggregated have been entered press the close key C.

Modify an Aggregate (MO) - This option is used for adding or removing IMPLAN sectors from aggregates. Highlight the aggregate to be modified and press Enter. The Tab key flips between adding or removing a sector. The operation is preformed by pressing the Enter key when the sector is highlighted. After modification is complete, press CR to return to the aggregation menu.

Dissolve an Aggregate (DI) - This option removes all the IMPLAN sectors from an aggregate, erasing it. To dissolve an aggregate, highlight the aggregate and press Enter.

Find a Sector (FI) - This option will find and display an IMPLAN sector or aggregate containing the sector when a sector number is entered. The IMPLAN sectors comprising an aggregate can be viewed by using the Tab key.

Change Name (CH) - To change the name of any IMPLAN sector or aggregate, highlight the sector/aggregate name to be changed and press Enter. Enter the new name and press Enter again.

Save Scheme & Exit (SA) - This option saves an aggregation scheme and returns you to the main menu.

The aggregation scheme created under the "Create Aggr Scheme" menu is stored by IMPLAN in a file called MODEL.SMH where MODEL refers to the model name or identification originally given during model creation. A different aggregation scheme can be created by repeating the "Create Aggr Scheme" procedure, but by repeating the procedure the old aggregation scheme is deleted.

Creating an Aggregation Template:

A more general approach is to construct an aggregation template that can be applied to more than one model. A template details how sectors are to be aggregated if the industries exists in the area. Those industries not in the area are ignored in construction of the model.

To construct an aggregation template, the "Aggr Templates" option under the "Utilities" menu is used.

** Micro Implan 82 **		Model: OZ	Status: I/O Matrix Complete
Utilities	Template Utilities	Template Utilities:	
MO Models	LI List Templates	Create an aggregation template. A template is created to aggregate any matrix produced by "Construct I/O Matrix" from the main menu. A template differs from an aggregation scheme because it applies to any model (it allocates all 528 IMPLAN industries). A scheme applies only to a single model since it allocates only the industries occurring in the study area.	
DF Data Files	DU Duplicate a Template		
RE Reports	DE Delete a Template		
AT Aggr. Templates	RE Rename a Template		
DO DOS	CR Create a Template		
HE Help	MO Modify a Template		
QU Quit	WR Write to a File		
	VI View a Template		
	DI Disk Information		
	HE Help		
	QU Quit		

Previously created templates can be listed, copied, deleted, renamed, modified or viewed.

The aggregation options under the "Create a Template" menu are similar to those under the "Create Aggr Scheme" menu. An eight character or less name must be assigned to each new template. All 528 sectors are available for aggregation. The template is saved in a file named NAME.SMH (NAME being the name given the template under "Create a Template"). The new template can then be used under the "Aggregate I/O Matrix" option on the main menu by executing the "Select a Template" option.

Aggregation:

Actual aggregation of IMPLAN sectors is achieved with the "Aggregate I/O Matrix" option. To apply an aggregation template, use the "Select a Template" option. This option will list available templates (see screen below). Highlight the template desired and press Enter. Confirm your choice with the "Save Scheme & Exit" option.

** Micro Implan 82 **		Model: OZ	Status: I/O Matrix Complete
SE Select a Model	AGGREGATION	AG Aggregate I/O Matrix	Available Templates
SA Select a Study Area		ST Select a Template	AK
CA Construct Accounts		CR Create Aggr Scheme	EXAMPLE
IO Construct I/O Matrix		VI View Aggr Scheme	MN75
AG Aggregate I/O Matrix		HE Help	
MU Derive Multipliers		QU Quit	
IM Impact Analysis			
ST Current Model Status			
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

Keys: Esc = Quit Enter = Select

After you have chosen a template or created a scheme, highlight "Aggregate I/O Matrix", and press the Enter key to initiate model aggregation.

Aggregated I/O Reports

The three optional I/O reports, described on page 77, can be generated for the aggregated model from the "Create Reports" option in the main menu, under the "Aggregated I/O Matrix" section. Copies of these reports can be found in Appendix D - Reports and Tables.

Table 11. Aggregated I/O Reports

<u>MID Ext</u>	<u>Report No.</u>	<u>Title</u>
401	3.5	Direct Purchases per One Dollar of Output (Aggregated)
402	3.4	Interindustry Transactions (Aggregated)
403	6.0	Regional Consumption Demand (Aggregated)
403	6.1	Regional Investment & Trade Demand (Aggregated)
403	7.0	Final Payments: Factors (Industry Basis) (Aggregated)
403	7.1	Final Payments: Trade (Industry Basis) (Aggregated)

Direct Purchases per One Dollar of Output (Aggregated)
This is the aggregated Regional Direct Coefficients Matrix.

Interindustry Transactions (Aggregated) This is the
aggregated Regional Transaction Matrix.

Regional Consumption Demand (Aggregated) Final Demands
(household and government consumption) for aggregated industry
output.

Regional Investment & Trade Demand (Aggregated)
Investment (Inventory Additions and Capital Formation), trade
(Domestic Imports and Foreign Imports), Total Intermediate
Demands, Total Final Demands and Total Industry Output vectors
shown as demands for aggregated industry output.

Final Payments: Factors (Industry Basis) (Aggregated)
Factor payments by aggregated industries to labor (Employee
Compensation), government (Indirect Business Tax), and capital
(Proprietary and Other Property Type Income). This report is
similar to the Regional Accounting Report 'Final Payments:
Factors' MID extension 107, report number 7.0.

Final Payments: Trade (Industry Basis) (Aggregated)
 Aggregated industries' payments for Total Imports, Total Domestic Final Payments, Total Final Payments, and Total Industry Outlay. This report is similar to the Regional Accounting Report 'Final Payments: Trade' MID extension 107, report number 7.1.

Deriving Multipliers

The notion of a multiplier rests upon the difference between the initial effect of a change in final demand and the total effects of that change. Total effects can be calculated either as direct and indirect effects, or as direct, indirect, and induced effects. Direct effects are production changes associated with the immediate effects or final demand changes. Indirect effects are production changes in backward-linked industries caused by the changing input needs of directly effected industries (for example, additional purchases to produce additional output). Induced effects are the changes in regional household spending patterns caused by changes in household income (generated from the direct and indirect effects).

Five different sets of multipliers are estimated by IMPLAN corresponding to five measures of regional economic activity; Total Industry Output, personal income, total income, Value Added and Employment. For each set of multipliers, two types of multipliers are generated, Type I and Type III described below.

Either an aggregated or full 528 sector model can be inverted. Execute "Derive Multipliers" from the main menu and "Compute (Unagg or Agg) Inverse" from the secondary menu:

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Derive Multipliers CU Compute Unagg. Inverse CA Compute Agg. Inverse HE Help QU Quit	Derive Multipliers: Compute the Leontief inverse matrix for the >>> UNAGGREGATED <<< I/O matrix for the study area. This procedure does not produce any reports of the inverse matrix. To obtain these, use "Create Reports" / "Multipliers" from the main menu.	

A changing status line at the bottom of the screen will follow the progress of the inversion. When the inversion is complete, IMPLAN will return you to the main menu.

Type I Multipliers:

A Type I multiplier is the direct effect (produced by a change in final demand) plus the indirect effect divided by the direct effect. Increased demands are assumed to lead to increased employment and population with the average income level remaining constant.

The Leontief inverse (Type I multipliers matrix) is derived by inverting the direct coefficients matrix:

$$[\text{Identity matrix} - \text{Regional IxI Coefficient matrix}]^{-1}$$

The result is a matrix of total requirement coefficients (the amount each industry must produce in order for the purchasing industry to deliver one dollar's worth of output to final demand).

Type III Multipliers:

The IMPLAN Type III multiplier is a modification of the Type III multiplier developed by Miernyk. Type III multipliers compare direct, indirect and induced effects to the direct effects generated by a change in final demand (direct + indirect + induced, all divided by direct).

The Type III induced effects are quite different from the induced effects of a Type II multiplier. A Type II multiplier captures induced effects by assuming a linear relationship between income and consumption changes. The assumption is that an increase in output will raise income levels, and therefore increase household spending proportionately. Population is assumed stable. The result is a much larger total effect. This exaggeration is useful for identifying where an impact occurs, but will not give an indication of the degree of the effect. Type II multipliers are not available from IMPLAN.

~~To minimize the over-estimation that occurs with a linear consumption function, IMPLAN estimates induced effects based on the changes in employment and population. The resultant multipliers are typically five to fifteen percent smaller than Type II multipliers.~~

To estimate induced effects, IMPLAN first converts direct and indirect effects to changes in employment based on each sector's employment-to-output ratio. Employment change is then multiplied by the region's population-to-employment ratio, converting it into population change. Population change is multiplied by average regional per-capita consumption rates by sector to estimate the regional household consumption generated by the initial final demand changes. This change in household consumption is treated as additional final demand changes. These changes in final demand are multiplied by the Leontief matrix to generate the first round of induced (additional direct and indirect) effects.

The procedure is repeated, thereby capturing successive rounds of induced effects, until population change is less than 10 people. Often, induced effects are larger than indirect effects.

Multiplier Reports

After a model is inverted, multiplier multiplier reports can be generated with the "Create Reports" option in the main menu. Selecting "Multipliers" gives the following menu:

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Create Reports SA Study Area Data RA Rectangular Accounts IO I/O Matrix AG Aggregated I/O Matrix MU Multipliers HE Help QU Quit	Multiplier Reports CR Create Reports SR Select Report Options VI View Optional Reports HE Help QU Quit	***NOTICE*** No reports have been selected. You must do this before the reports can be created.	
Proceed			

Executing "Select Report Options" shows two report options. The last option actually creates five multiplier reports. To select a report, press Insert followed by Enter.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Multiplier Reports LS List and Select SA Save and Exit HE Help QU Quit	Optional Reports Leontief Inverse Matrix Multiplier Reports		
Ins = include Del = exclude Enter = completed Esc = quit 0 rpts selected			

"Create Reports" will now generate the multipliers . After generation is complete, IMPLAN will return to the main menu. To view a multiplier report, execute "Create Reports" from the main menu, "Multipliers" from the second menu, and "View Optional Reports" from the third. The report can also be accessed via spreadsheet or word processing package. A copy of each report is contained in Appendix D.

Table 12. Multiplier Reports

MID Ext	Report No.	Title
601	5.2	Leontief Inverse
602	5.3	Output Multipliers
603	5.41	Personal Income Multipliers
604	5.42	Total Income Multipliers
605	5.43	Value Added Multipliers
606	5.44	Employment Multipliers

Leontief Inverse A matrix of total requirement coefficients. Each entry represents the dollar amount of the local row industry's output purchased by the column industry to produce one dollar of output. The result is a matrix of Type I multipliers - the direct plus the indirect effects produced by a change in final demand divided by the direct effects.

Output Multipliers The Per Capita Personal Consumption Expenditures and the Total Industry Output (or gross sales) multipliers. Output multipliers can be used to gauge the interdependence of sectors; the larger the output multiplier, the greater the independence of the sector on the rest of the regional economy. A Type I entry represents the value of production (from indirect and direct effects) required from all sectors by a particular sector to deliver one dollar's worth of output. Type III adds in the induced requirements. Also included in this report is the Per Capita Personal Consumption Expenditures used to derive induced effects.

Example: If a Type I multiplier for the Dairy Farm industry is 1.0943, for each dollar of output produced by the Dairy Farm sector, .0943 dollars worth of indirect output is generated in other local industries. If the Type III Dairy Farm multiplier is 1.3140, .3140 dollars of indirect and induced output is generated in other local industries. The induced output would be $1.3140 - 1.0943$ or .2197 dollars for each dollar of output produced by the Dairy Farm sector.

Personal Income Multipliers In addition to the personal income multipliers, this report lists the direct, indirect and induced employee compensation effects generated per dollar of output. A Type I personal income multiplier is the direct and indirect employee compensation divided by the direct employee compensation (generated by one dollar of final output). The Type III multiplier adds in the induced effects component.

Example: If, the Type I multiplier for the dairy farm industry is 1.4761 and the Type III multiplier is 2.7067, then for each dollar of direct employee compensation generated by this industry, .4761 dollars of indirect employee compensation, and 1.2306 dollars of induced employee compensation is generated.

Total Income Multipliers Type I and Type III Total Income multipliers are listed in this report along with the direct, indirect, and induced Total Income effects generated from the production of one dollar's worth of final demand.

Value Added Multipliers Type I and Type III Value Added multipliers are listed in this report along with the direct, indirect, and induced Value Added effects generated from the production of one dollar of output. Value Added includes: employee compensation, proprietary income, other property type income, and indirect business tax.

Employment Multipliers Type I and Type III Employment multipliers are listed in this report along with the direct, indirect, and induced Employment effects from the production of one dollar of output. Employment is in terms of the number of jobs.

Example: If a Dairy Farm Type I employment multiplier is 1.1158, for each job created directly by the dairy farm industry, .1158 jobs are created indirectly.

- Notes -

Chapter 6 - IMPACT ANALYSIS

Basically, impact analysis involves 'shocking' the economy and examining the effects on the levels of employment, income, and changes in population. As a demand-driven model, IMPLAN links the generated Leontief inverse matrix with user-supplied changes in final demand to provide alternative models of the regional economic environment.

IMPLAN assumes that, at this stage, all corrections for industry size, technology or trade patterns have been made by the user and incorporated into the base year regional use and make matrices. Data on the temporal distribution of sales can be entered as separate alternatives to obtain an approximation of the effects over time.

IMPLAN does not provide for dynamic economic changes that may take place in the region. No provisions are made for shifts in population or labor force variations or capital investments that may occur as a result of the change being studied. Therefore:

- 1) All additional labor requirements are assumed to be met by an influx of households to the region, with each member consuming at the average rate defined by the personal consumption vector.
- 2) Decreases in employment are assumed to result in no further household consumption. And
- 3) Fixed ratios are assumed between the number of household members and each job in the region, between employment and output (number of jobs per million dollars of total industry output), and between income and employment. These ratios can be modified by the user.

Describing a Change

The first step in performing an impact analysis, is to gather the required data and describe the change(s) involved. Often, there is more than one element involved in an economic impact analysis. For example, a Forest Service planning alternative will normally involve the sale of one or more commodities (timber and forage), the use of government funds to provide these commodities, and the transfer of funds from the federal government to state or county governments. Each component interacts with the model in a different way. If each component can be separately defined as an independent item in the input file, a display of effects for each, all or any combination of the policy components is possible.

Usually, an analysis involves a change in final demand - some variation in consumption (e.g., households, government, etc.,) - or a shift in industrial purchases of commodities (i.e., variations in the production function) by existing firms. Sometimes, it is necessary to evaluate a supply constraint with a demand-driven I/O model. To do this, it is necessary to convert the commodity into its finished forms and subtract those values as final demand changes.

An analysis may also involve a structural change in the regional economy. When you add a new industry with its associated total industry output and value added components, Implan will include the backward-linked effects (national averages, unless user specified) in the transactions matrix. The desired level of export sales will need to be defined in the impact analysis input file, otherwise the model will compute local consumption based on the new available supply, exporting only the remainder.

Whatever the source of the change, the user is expected to define the quantity and industrial distribution. Each analysis concern must be defined in terms of:

- 1) The product(s) to be evaluated.
 - a) product name
 - b) unit of measure
 - c) alternate production levels (or quantities).
- 2) Per unit price
 - a) expenditures (sales) for each product
 - b) values adjusted to 1982 dollars.
- 3) Expenditure allocation to appropriate industrial sectors
 - a) purchaser to producer price allocation (marginizing)
 - b) employment redefinition

Product Identification

A product (output) is defined as any set of commodities (or commodities consumed during an activity) that are valued for use in a demand change. These are considered the change elements - the elements that describe the change that is being analyzed.

When identifying the product, it is important to keep in mind that an input-output model deals only with products that have a market effect. A problem may include hunter expenditures, for instance, but not the value of a deer, or deer population. Items that are not part of a market transaction can not be included in an input-output model.

The more detailed a set of products used to describe a change are, the easier it is to allocate expenditures or sales to appropriate industries or institutions. Separation of public versus private transactions is often helpful. In other situations, it may be appropriate to separate products (output) by stage of production. For example, logs may be both exported to out-of-region mills (valued as logs), as well as those sold to local mills (valued as processed lumber).

Unit of Measure:

A unit of measure should be assigned to each product. Units can be in physical terms (dimensioned lumber), agency budgets (purchases of goods and services), household consumption (commodity consumption), dollar values, or any other terms appropriate for the problem under study. It is necessary to verify that the units of measure and the values used with the model agree. IMPLAN software expects the product of the unit of measure times the alternative production level to be expressed in millions of dollars but does not check for this consistency.

Alternate Production Levels:

Several alternatives for production levels (or quantities of output) can be specified. A production level can be expressed in terms of:

- 1) Current levels - the total industry output for a given year
- 2) Changes from current levels - departures from a given year.
Quantities can be either positive (increase in outputs) or negative (decrease in outputs).
- 3) Unit changes - A change from current levels of one product unit.

Per Unit Price Determination

It is necessary to determine the price per unit for each product. To a seller, this would be the sales price; to a buyer, the purchase price. In either case, it represents the transaction price or the total amount of purchases necessary to participate in one unit of activity. The per unit prices are multiplied by the product levels to produce demand level changes. In many situations the typical price per physical quantity is used (dollars per thousand board feet of lumber sold from a sawmill). In other situations it may be appropriate to use percentage amounts as one figure and total output levels as another.

The average market price should be assigned only to the quantity of output (production level) that actually impacts the economy. Assigning a market price to unused output, such as unused grazing capacity, will over-estimate the economic impacts.

Local prices should be used where sufficient data are available. It is also preferable to obtain actual prices in effect for the base year of the model (1982). This avoids problems inherent in price deflating, since nationally defined deflators rarely correspond to local prices.

Recreation expenditure profiles should be carefully reviewed to ensure that the dollar amounts for each item are representative for both the activity and the study area. National data sources such as the Public Area Recreation Visitor Study (Cordell et al., 1987) and the National Hunting and Fishing Survey (U.S. Department of Interior, 1980) are possible data sources with large area coverage.

Wood processing industries are well represented at the 4 digit SIC level in the IMPLAN data base. When defining the per unit expenditure patterns, close attention should be paid to public versus private production of stumpage and the backward-linkages defined by the model.

Constant Dollar Adjustment:

Dollar values for both user defined demand changes and those inherent in the model must be for the same year (1982). If data for user defined changes are not available for this year the use of price deflators is necessary. Commodity level price deflators are available in Appendix K. For analysis dealing with the items bought at purchaser prices (e.g., consumer goods for recreation activities) it is necessary to adjust them back to producer prices for use with the I/O model. This involves a concept referred to as 'marginizing'. Tabulated data that describes the amount of the purchaser price that is allocated to each sector is available in Appendix L.

Price changes over time may differ widely between sectors. Because of the input-output assumption that relative prices do not change, it is better to deflate values by sector rather than to use a national aggregate. The U.S. Department of Labor Statistics (1988) deflators are displayed in Appendix K. These deflators are used by dividing the user expenditure by the appropriate deflator (proper year and sector) to obtain the price adjusted expenditure value.

In situations involving transfer of funds between various government units the use of a GNP implicit price deflator should be considered. A general price deflator may be more appropriate than a commodity-specific deflator, when the composition of government expenditures is based on an average for the area.

Per Unit Expenditure Allocation

As raw materials are moved along the chain of processing it is possible to value them at various stages of production. Some products do not show up as a final demand, in which case it is necessary to identify a forward-linked industry from which to value the change. The following four possibilities should be considered in selecting a sector:

1. The sector from which the output is finally consumed or exported (sales to components of final demand).
2. The sector from which an intermediate product is exported from the region. In this situation, there is generally a break in the chain of producing industries; sales made by the last industry should be used.

Example: A mining company produces copper ore refined out-of-region to copper ingots, which are then used by a local industry to manufacture motors and generators. In this case, the ore would be used as the final demand product.

3. The producing sector when the purchasing industry is able to substitute other sources or do without this commodity.

Example: A local cattle producer sells to a large feeder lot which buys livestock from a large, multistate market. In this case the local cattle becomes the final demand product as an export.

4. Situations in which the output is sold to so many industries that it is not possible to identify the original source of supply.

Example: A sawmill sells dimensioned lumber to other manufacturing firms, wholesale distributors, as well as local builders. In this case, it may be easiest to consider the dimensioned lumber as a final demand export.

It may be necessary to separate a particular commodity and apply a portion of it to one or more of the above situations. The objective is to properly capture the backward-linked effects for each commodity and/or component of the policy being studied.

Government sectors can be broadly separated into those that produce a commodity and those that provide a service. For those producing a commodity, a sector is included with the industrial sectors in the region. They are expected to react in the same linear manner as other industrial sectors. For government service sectors, the change must be expressed as purchases of various commodities. See 'Response Coefficients' below.

Margins:

In many situations, the purchase of products is from a wholesaler or retailer. The term 'margin' originates from wholesale and retail trade. The term is also applied to other non-production costs incorporated in a purchaser price. For I/O purposes, the cost of a product resold by wholesale and retail trade sectors is not included in the value of their product.

Purchaser value is the sum of five components:

<u>Component</u>	<u>IMPLAN SECTOR</u>	<u>DESCRIPTION</u>
1. Basic Value	1-445	Agriculture, mining, manufacturing and construction
	447	Local, Interurban passenger transit
	452-459	Transportation services, communications, radio and gas, water and sanitary services
	464-466	Banking and credit
	469-528	Real Estate, Services and government enterprises
2. Transportation Margins	446	Railroads and related services
	448	Motor freight transport and warehousing
	449	Water transportation
	450	Air transportation
	451	Pipe lines, except natural gas
3. Wholesale trade Margins	460	Recreational related wholesale trade
	461	Other wholesale trade
4. Retail trade Margins	462	Recreational related retail trade
	463	Other retail trade
5. Insurance	467	Insurance carriers
	468	Insurance agents

Excise taxes levied directly on the wholesaler are part of the total wholesale margin. Similarly excise taxes levied directly on the retailer are combined with sales taxes (if any) and the retail distributive service to become the total retail trade margin.

Bureau of Economic Analysis (BEA) provides detailed data for personal consumption expenditures which lists for each item associated margins by industrial sector, producer prices, purchaser prices and categories of personal consumption (U.S. Department of Commerce, 1984). This BEA file was compiled on both an industry basis (1982 IMPLAN sectors) and personal consumption category (PCE) to assist users in allocating expenditures to various sectors. These files are contained in Appendix L. When applying user defined purchaser values with these margins, be sure any taxes are properly allocated to the appropriate manufacturing, wholesale or retail trade sectors.

Also shown in Appendix L are bridge percentages that distribute the remaining purchaser value to 'basic value' sectors (manufacturing, agriculture, etc.) These bridge percentages, as distinguished from margined percentages, indicate that the expenditures apply to the production industry as opposed to a distributional industry. The application of the bridge and margined percentages permit the complete allocation of the expenditures (purchaser value) for a PCE category to the appropriate IMPLAN sectors.

Users that have detailed expenditure profiles for consumer purchases that do not match the items given in the various BEA personal consumption categories are encouraged to define their own categories.

Customizing Expenditure Patterns:

Industry intermediate requirements and personal consumption patterns can both be customized by entering the new pattern as a final demand vector.

Industry Expenditure Patterns An industry's computed expenditure pattern can be obtained from I/O report, "Direct Purchases per One Dollar of Output" (the Direct Coefficients Matrix). Column 161 identifies industry 161's intermediate requirement purchases from endogenous industries.

The expenditures can be changed to fit a particular establishment. A change implies a change in either the National Absorption Coefficients or the Regional Purchase Coefficient (RPC), or both. The rule of thumb for a change in the National Absorption Coefficient is that the National Absorption Coefficient plus the sum of the primary factor requirements divided by the Total Industry Output equals one. An increase (decrease) in the RPC implies less (more) of the commodity is imported to satisfy intermediate requirements.

Per Capita Expenditure Patterns Household expenditure patterns show the spending of labor income via household consumption and can be customized. This is important since labor payments are usually a large component of an industry's total outlay and the feedback effects of household consumption can be significant.

The computed Household Expenditure pattern can be obtained from the I/O report, "Regional Consumption Demand". The household expenditure column vector can be interpreted in the same manner as a column vector of the direct coefficients matrix (i.e., a production function).

This analogy can be important when examining the impacts of recreation (and similar) activities. Instead of developing a recreation industry (e.g., a downhill skiing resort industry), expenditures for skiing denote the production function for the skiing experience.

Changes in the household consumption expenditure pattern can be accomplished in the same manner as the expenditure pattern for intermediate requirements. One or more of the computed personal consumption expenditure categories, from the I/O report, "Regional Consumption Demand", can be customized and developed into a vector of final demand changes.

There are three general levels of personal consumption expenditures (PCE) based on the three levels of annual household income contained within the IMPLAN data base. The three annual income levels are low (<\$10,000 annually), medium (\$10,000 to \$30,000 annually) and high (>\$30,000 annually).

A change in the household expenditures implies either a change in the amount spent for a particular commodity or a change in the amount of the commodity purchase locally, or both. The sum of the elements of the household expenditure column is less than or equal to one. If the particular type of household spends no money on imports, the sum of the expenditure elements is one.

A more detailed discussion of Expenditure Patterns can be found in Appendix H - Response Coefficients.

Response Coefficients

Combining expenditure patterns and response coefficients is an alternate technique for conducting impact analyses. An I/O multiplier has the same units in both the numerator and denominator. A response coefficient has different units in the numerator and denominator. To generate response coefficients, an (industry and/or household) expenditure pattern is used as the final demand vector. The number of units in the Production Flow Alternative in the impact input file is the conversion factor creating the units in the denominator. The values in the reports resulting from this input file are the Response Coefficients.

There is a rule of thumb for determining response coefficient units: The conversion factor times the smallest final demand change should not be less than 1. For example, if the smallest fraction in the expenditure pattern is 0.001 then the change in final demand should be at least 1000.0 in magnitude. This increases the precision of the estimated induced effects.

Once the Response Coefficients have been generated, the impacts of marginal policy changes are easily determined. Response Coefficients generated with one set of units can still be used for other units by using a conversion factor. For example: To determine the effects of varying the allowable sales quantity (MMBF), when your Response Coefficients are in terms of millions of dollars (\$MM), convert the MMBF final demand into dollars:

$$(\text{MMBF}) * (\$/\text{MMBF}) = \$$$

and then scale the dollar amount to the units associated with the response coefficients, in our case:

$$\$ / \$1,000,000 \text{ (conversion factor)} = \text{scaled Final Demand}$$

The scaled Final Demand is then multiplied by the response coefficients to determine the direct, indirect, and induced effects (a scalar multiplication).

A more detailed discussion can be found in Appendix H - Response Coefficients.

The Impact Analysis Input File

The input file, MODEL.IM5 (where MODEL is the model ID), can be created and edited using the text editor configured in the IMPLAN shell ("Edit the Impact File" option under the Impact Analysis section of IMPLAN).

If more than one impact file is needed for a model, the DOS rename or copy routine can be used to swap between input files.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
SE Select a Model SA Select a Study Area CA Construct Accounts IO Construct I/O Matrix AG Aggregate I/O Matrix MU Derive Multipliers IM Impact Analysis ST Current Model Status UT Utilities CR Create Reports CS Configure System HE Help QU Quit	Impact Analysis CR Create Impact Reports ED Edit the Input File VI View Impact Reports VE View the Error File HE Help QU Quit	Impact Analysis: Use the text editor to enter impact analysis data using the formats given in the HELP file. This file must contain information about: activities cause changes in final demand ("outputs"), which industries are affected by activities and the rates at which they are affected (the "expenditure matrix"), report options, and the magnitudes of the activities (the "alternative").	

The input file structure will vary some what, depending on the economic factors being analyzed. Basically, it consists of a series of 80-column records, organized by a series of header records (identified by a '#' in the first column). To avoid an error message, the cursor should be left at the end of the last line (with no ending carriage return).

The header records separate the data into four catagories of input. Under each heading, sector numbers can be in any order. If they are not in numerical order, IMPLAN will sort them and print a warning message on the screen. The last 3 sections are necessary and must be given in order, the first is optional and can be given anytime before production flow alternatives, but not in the middle of another section:

- | | |
|------------------------------------|--------------------------|
| 1. Population/Employment Ratio: | POP/EMP RATIO |
| 2. Production Unit Identification: | NEW OUTPUTS BY SECTOR FD |
| 3. Printing Options: | PRINT OPTIONS |
| 4. Production Flow Alternatives: | ALTERNATIVE |

1. The Population/Employment Ratio:

This header record allows the user to change either the population or the employment values and thereby define a new ratio that is used in computing the induced effect. This value, if supplied by the user, supersedes that defined by the program. Without this header record, IMPACT uses the population value on the data base and the private sector employment value, that is, total employment minus Government Employment (Sector 525). The private sector employment value, when multiplied by family size, equals the private sector population.

Header Record: #POP/EMP RATIO = . - - - - -

Numeric values must start in column 18 and must include a decimal point.

2. Production Unit Identification:

Header Record: #NEW OUTPUTS BY SECTOR FD XXYYY

(where: XX (Columns 27-28) = the number of products
(outputs) to be evaluated,
up to 50

YYY (Columns 29-31) = the number of affected
sectors, up to 528)

Record 1: s1 s2 ... sn (s1 = 1st affected sector number
s2 = 2nd affected sector number
sn = last affected sector number
where n = YYY specified above)

(Input format is 'free field' - separate each value
with a comma or blank(s), use additional lines as
needed. Sectors can be in any sequence numerically,
as long as the expenditure data are entered in the
same sequence.)

Record 2: PRODUCT ABRV

(where: PRODUCT (Columns 1-24) = identifies the product
to be evaluated

ABVR (Columns 26-29) = a four-character
abbreviation for the
production unit)

Record 3: e1 e2 ... en (e1 = expenditure for 1st affected
sector number
e2 = expenditure for 2nd affected
sector number
en = expenditure for last affected
sector number)

(Input format is free field. Expenditures must be in
the same order as the sectors listed in Record 1.)

There should be XX repetitions of Records 2 and 3, one for
each product (XX as defined in the header record).

3. Printing Options:

Header Record: #PRINT OPTIONS BKBY

(BK (Columns 16-17) - if present, will print reports showing the breakdown of direct, indirect, and induced effects. If this option is not used, only the total effects report will be printed.

BY (Columns 18-19) - if present, will print a report of base year data. If this option is not used, no base year report will be printed.)

4. Production Flow Alternatives:

Header Record: #ALTERNATIVE FD [title]

(title (Column 17-end of record) = alternative title

Record 1: q1 ... qn (q1 = quantity of production units for 1st product identified in header section number 1,
qn = quantity of production units for last product, where n = XX, given in the header record for the production unit identification.)

(The quantity can be either a positive or negative value. A value of zero eliminates that output from the analysis. Input format is free field.)

An Impact analysis input file can have any number of production flow alternatives. They will show up as Alternative 1, Alternative 2, etc., on the impact reports in the order in which they appear in the input file. For Example, the impact analysis input file used in the OZ example (Chapter 2) had 4 Alternatives:

#NEW OUTPUTS BY SECTOR FD 2-10

66 269 448 460 461 462 463 471 491 502

Golf Resort

SVN

0.0 0.0 0.001 0.0009 0.0001 0.016 0.004 0.075 0.06 0.04

Golf Resort Construction Unit

8.5 0.5 0.0 0.0 0.5 0.0 0.8 0.0 0.0 0.0

#PRINT OPTIONS

#ALTERNATIVE/ FD Construction Phase

0

#ALTERNATIVE FD Gillikin Level

43.8 0

#ALTERNATIVE FD Midpoint Level

30.6 0

#ALTERNATIVE FD BSPIRG Level

17.5 0

This input file describes two products to be evaluated: 'Golf Resort' and 'Golf Resort Construction Unit'. Changes are specified for 10 sectors (66, 269, 448, 460, 461, 462, 463, 471, 491, and 502). The population/employment ratio is not modified. Printed reports will list only the total effects and no base year report will be printed.

The alternatives list the 'quantity' of the products. Alternative 1 results should show the effects of the construction of one golf resort and none of the golf resort operation effects. While Alternative 2 should show the effects of 43.8 thousand visitor nights worth of golf resort operation and no effects from the golf resort construction.

Once the input file has been created, executing "Create Impact Reports" will generate reports for the impact analysis.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
SE Select a Model	Impact Analysis	Program Executing	
SA Select a Study Area			
CA Construct Accounts	CR Create Impact Reports		
IO Construct I/O Matrix	ED Edit the Input File		
AG Aggregate I/O Matrix	VI View Impact Reports		
MU Derive Multipliers	VE View the Error File		
IM Impact Analysis	HE Help		
ST Current Model Status	QU Quit		
UT Utilities			
CR Create Reports			
CS Configure System			
HE Help			
QU Quit			

Computing the Total Effects for Alternative #: 3

Impact Reports

Table 13. Impact Reports

<u>MID</u> <u>Ext</u>	<u>Report</u> <u>No.</u>	<u>Title</u>
901	6.111	1982 Base Year Data, Standard TIO-Related Flows
901	6.112	1982 Base Year Data, Standard TIO-Related Coefficients
902	6.210	Analysis of Change in Final Demand, Description of the Alternative
903	6.221	Analysis of Change in Final Demand, Direct Change in Standard TGO-Related Flows
904	6.222	Analysis of Change in Final Demand, Indirect Change in Standard TIO-Related Flows
905	6.223	Analysis of Change in Final Demand, Induced Change in Standard TIO-Related Flows
906	6.224	Analysis of Change in Final Demand, Total Change in Standard TIO-Related Flows
IME		Impact Analysis Error File

1982 Base Year Data, Standard TIO-Related Flows This report displays the base year Final Demand, Total Industry Output, Total Value Added and Employment (number of jobs) by sector. Income is broken down in \$MM (millions of dollars) paid to Employee Compensation, Property, and Total Income (includes Indirect Business Taxes) by sector.

1982 Base Year Data, Standard TIO-Related Coefficients The base year Final Demand and Total Industry Output is given in \$MM by sector. Income coefficients (income per million dollars of Total Industry Output) are also given for employee compensation, property income, total income, and value added. Employment coefficients are shown in number of jobs per million dollars.

Reports 6.111 and 6.112 are the only two reports obtained if the PRINT OPTIONS header record is used alone as a single record of input, with BY in columns 18 and 19.

Analysis of Change in Final Demand, Description of Alternative This report is a list of the direct effects of the specified alternative by affected sector. Increases (or decreases) are shown for each product and quantity identified by the user in the impact input file.

Analysis of Change in Final Demand, Direct Change in Standard TGO-Related Flows The direct changes in Total Industry Outputs are the same values as the total final demand changes reprinted from Report 6.210. The last column in this report displays the change in employment in each sector. The change in population as a result of the direct effects was obtained by multiplying the total employment by the population-to-employment ratio. Associated direct effects are also given for income and value added.

Analysis of Change in Final Demand, Indirect Change in Standard TGO-Related Flows The direct change in Final Demand was multiplied by the inverted Leontief matrix to obtain the direct and indirect change. The direct effect is subtracted, leaving the indirect effect. Note that the FD values are all zeros. When an open model (no household row or column) is used all effects are from the interindustry sales and purchases and not from final demand. The employment and income effects were obtained by multiplying the change in Total Industry Output by the employment and income coefficients shown in Report 6.111.

Analysis of Change in Final Demand, Induced Change in Standard TGO-Related Flows This report is similar in format to that of Reports 6.222 and 6.221. A change in employment, caused by the impact alternative, induces a change in Final Demand as a result of additional consumer spending. A modified Type III multiplier (discussed in Chapter 5 - Model Development) is used to iteratively obtain the induced effects.

Analysis of Change in Final Demand, Total Change in Standard TGO-Related Flows This report is a summation of the direct, indirect, and induced effects from the previous three reports.

- NOTES -

Chapter 7 - OTHER OPTIONS

Current Model Status

As you step your way through IMPLAN, the status line at the top of the screen will keep you informed as to where you are. There is also a status file, MODEL.STS (where MODEL is the model name), that keeps track of model information. If you have configured your system with a BROWSE routine, this file can be displayed using the "Current Model Status" option from the main menu (example below).

Model: OZ		Status: Multiplier Complete			
General Model Information:					
	Date Complete	Start Time	Elapsed Time	File Size	Comments
Study Area	04-18-89	12:12	00:00:17	49363	1 data files
Accounts	04-18-89	12:13	00:02:58	229842	
I/O Matrix	04-18-89	12:23	00:02:16	10164	(I*)33* 33
Aggregate	04-18-89	12:38	00:01:18	5878	(I*)10* 10
Multiplier	04-18-89	12:56	00:00:24	6334	(I*)33* 33
Totals			00:07:13	301581	
Proceed					

This status file will be updated as the model progresses. To return to the main menu, use your BROWSE routine's exit command.

Utilities

There are quite a number of files created in the process of an IMPLAN analysis. The Utilities option allows you to 'manage' these files. A DOS gateway is provided. In addition, various housekeeping tools such as copy, rename, and delete are provided for the various types of files and in some cases, create, view, edit, and list. Executing "Utilities" from the main menu displays a secondary menu on the screen. The secondary menu is organized by the type of file to be manipulated:

** Micro Implan 82 ** Model: OZ Status: Multiplier Complete	
Utilities DF Data Files RE Reports AT Aggr. Templates DO DOS HE Help QU Quit	List, view, edit, copy, delete or rename models. This procedure contains a variety of house-keeping tools for taking care of files associated with models. Note that this is the procedure where the documentation files for models can be edited to incorporate your notes.

Models:

Existing models can be copied, renamed, or deleted by selecting one from the available list and confirming the operation. The status option identifies which program modules have been executed, the elapsed time, file size and which data files were used.

** Micro Implan 82 ** Model: OZ Status: Multiplier Complete		
Utilities MO Models DF Data Files RE Reports AT Aggr. Templates DO DOS HE Help QU Quit	Model Utilities LI List Models DU Duplicate a Model DE Delete a Model RE Rename a Model ST Status of a Model ED Edit Documentation DI Disk Information HE Help QU Quit	Model Utilities: List the available IMPLAN models.

The "Edit Documentation" option permits you to add any notes associated with the construction or interpretation of the current model to the MODEL.DOC file (where MODEL is the model name) created by IMPLAN (example below). This option invokes your specified text editor.

```

OZ.DOC      Line 1      Col 1      Byte 1      Over      Indent
            This file is provided to document the model construction process.
            Please feel free to add to or edit its contents at any time.
-----
Study Area:  1 data files included

Name      Location      Population      Area      FIPS Code
            (thousands)      (sq.mi.)
-----
EXAMPLE    Oz County      108.61      2619.00      8  69
-----
Study Are   Completed on 04-18-89 at 12:12
-----
Accounts    Completed on 04-18-89 at 12:13
-----
I/O Matri   Completed on 04-18-89 at 12:23

```

Disk information provides you an estimate of the number of bytes available and allocated on your hard disk.

Data Files:

County and state data files can be copied, renamed, or deleted from the available list. These are the original data files - not to be confused with the regional data base created under the study area definition section.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Utilities MO Models DF Data Files RE Reports AT Aggr. Templates DO DOS HE Help QU Quit	Data File Utilities LI List Data Files DU Duplicate Data File DE Delete a Data File RE Rename a Data File VI View/Edit Data File WS Write to Spreadsheet WM Write to MMP File ED Edit Documentation DI Disk Information HE Help QU Quit	Available Data Files EXAMPLE	
Enter = Select		Esc = Quit	? = Where?

Each data file can also be viewed or edited. This utilizes the internal viewing and editing capability of IMPLAN and not the external text editor you specified in the configuration routine. It is also possible to write the selected file out in a format that a spreadsheet can read, or generate an MMP (Matrix Manipulation Program) file. An example of an MMP file is in Appendix D.

The "Edit Documentation" option permits you to keep notes that pertain to this data file, such as modifications made or updates applied. This option invokes your external text editor and opens up a file with a 'DFD' extension:

EXAMPLE.DFD	Line 1	Col 1	Byte 1	Over	Indent
Oz County		Pop (M): 108.61		Area (sq mi): 2619.00	
FIPS Code: 53 01	Converted on 02-06-89 at 10:28				

The data document file has several pieces of information (1982 population, area in square miles, FIPS codes and date of conversion from the downloaded ascii file) which you can retain or delete.

Reports:

All reports can be copied, deleted or renamed from the available list. Each report file can also be edited using the external text editor you specified in the configuration routine.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Utilities		Report Utilities	Available Reports
MO Models		LI List Report Files	OZ 001
DF Data Files		DU Duplicate Report File	OZ 002
RE Reports		DE Delete a Report File	OZ 005
AT Aggr. Templates		RE Rename a Report File	OZ 006
DO DOS		ED Edit a Report File	OZ 902
HE Help		DI Disk Information	OZ 906
QU Quit		HE Help	OZ IME
		QU Quit	OZ OPT
Enter = select		Esc = quit	? = Report Contents

The reports are listed by filename. Highlighting a filename and hitting the ? key will display the report(s) title(s) at the bottom of the screen (some files may contain more than one report).

Aggr. Templates:

Templates are aggregation routines that can be applied to more than one model. Creating different templates for application to a variety of models, adds uniformity to model creation and minimizes time spent developing input files.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Utilities	Template Utilities	Template Utilities:	
MO Models	LI List Templates	Create an aggregation template.	
DF Data Files	DU Duplicate a Template	A template is created to aggregate any matrix produced by "Construct I/O Matrix" from the main menu. A template differs from an aggregation scheme because it applies to any model (it allocates all 528 IMPLAN industries). A scheme applies only to a single model since it allocates only the industries occurring in the study area.	
RE Reports	DE Delete a Template		
AT Aggr. Templates	RE Rename a Template		
DO DOS	CR Create a Template		
HE Help	MO Modify a Template		
QU Quit	WR Write to a File		
	VI View a Template		
	DI Disk Information		
	HE Help		
	QU Quit		

Previously created templates can be copied, deleted, or renamed. If you select the "View Aggr Scheme" option the browse routine will display the aggregation scheme for the selected template (as shown below):

Aggregation Scheme for Template: EXAMPLE

1 Ag., Forestry and Fishery

is an aggregate of the following original sectors:

- 1 DAIRY FARM PRODUCTS
- 2 POULTRY AND EGGS
- 3 RANCH FED CATTLE
- 4 RANGE FED CATTLE
- 5 CATTLE FEEDLOTS
- 6 SHEEP, LAMBS AND GOATS
- 7 HOGS, PIGS AND SWINE
- 8 OTHER MEAT ANIMAL PRODUCTS
- 9 MISCELLANEOUS LIVESTOCK
- 10 COTTON
- 11 FOOD GRAINS
- 12 FEED GRAINS
- 13 HAY AND PASTURE
- 14 GRASS SEEDS
- 15 TOBACCO
- 16 FRUITS
- 17 TREE NUTS
- 18 VEGETABLES
- 19 SUGAR CROPS
- 20 MISCELLANEOUS CROPS
- 21 OIL BEARING CROPS
- 22 FOREST PRODUCTS

"Modify a Template" allows you to reenter the template and change the aggregation scheme. You may want to change the name of a sector (or aggregate) to reflect how you have built a particular model. It is also possible to dissolve or delete an aggregate from those previously created. You can change an individual aggregate using the "Modify an Aggregate" option. This prints the current aggregation scheme in the middle of the screen:

** Micro Implan 82 **		Template: EXAMPLE
Modify Template VI View the scheme CR Create an aggregate MO Modify an aggregate DI Dissolve an aggregate FI Find a sector CH Change names SA Save scheme & exit HE Help QU Quit	Aggregation Scheme 1>Ag.,Forestry and Fi 28>Mining 66>Construction 76>Durable manufacturin 82>Non-durable manufact 446>Trans., comm. and ut 460>Trade 464>F.I.R.E. 471>Services and misc. 516>Government and gov.	
<Tab> = Switch Window <C> = Close		# Ind = 10

For more information on options, see Creating an Aggregation Scheme, Chapter 5 - Model Development. The "Quit" option will not save the edited version. To save, use the "Save and Exit" option.

DOS:

The "DOS" option is a gateway to DOS. Executing it will send you to DOS. A flashing message reminds you to type EXIT to return to IMPLAN:

Type >> EXIT << to Return to MicroIMPLAN

The IBM Personal Computer DOS
Version 3.20 (C) Copyright International Business Machines Corp 1981, 1986
(C) Copyright Microsoft Corp 1981, 1986

CATESTMB>

Create Reports

There are 15 optional accounts reports, 3 optional I-O matrix reports, and 2 optional multiplier reports. Study area data can also be viewed and edited. The secondary menu organizes the reports by the stage of model completion:

** Micro Implan 82 **

Model: OZ Status: Study Area Complete

Create Reports

SA Study Area Data
RA Rectangular Accounts
IO I/O Matrix
AG Aggregated I/O Matrix
MU Multipliers
HE Help
QU Quit

View and/or edit (to modify) the combined data set for the study area, or write the data set to a file for external uses.

This procedure is used to review the data set for the study area of the current model that was created by combining state/county data files. It is also be used to change elements of the combined data set, but please be aware of the implications of making these modifications (see HELP).

This procedure can also produce files of the combined data set for export to external procedures. The export files can be formatted for use by spreadsheets or as ASCII files.

Study Area Reports:

The study area data (or regional data) is composed of four basic elements: 1) final demand, 2) value added, 3) total industry output, and 4) employment. These components are described in detail in Regional Database Components, Chapter 3 - Study Area Definition.

The regional data set can be written to a spreadsheet or MMP file, or viewed and edited. Generally it is easier to study a region's industry structure and data if it is written to a spreadsheet and then printed. Changes to any specific data element can be made by selecting the "View/Edit" option. This option utilizes Implan's view/edit environment - not your external editor. Saving your changes writes over the original regional database, but does not change the original county and/or state files. The original data files can be edited using the "Data Files" option under Utilites (see DATA FILES above).

Rectangular Accounts:

Detailed descriptions of the components and computations involved in rectangular accounts are given in Chapter 4 - Regional Accounts. Under the "Rectangular Accounts" option, accounts reports can be viewed, and optional reports can be selected and created:

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
Create Reports	Accounts Reports	Accounts Reports:	
SA Study Area Data	CR Create Reports	Create the selected reports.	
RA Rectangular Accounts	SR Select Report Options		
IO I/O Matrix	VI View Optional Reports		
AG Aggregated I/O Matrix	VA View Accounts Reports	This procedure will	
MU Multipliers	VU View User Option Rpt	create the reports that	
HE Help	HE Help	were selected from the	
QU Quit	QU Quit	list. After being	
		created they can be	
		reviewed using "View	
		Reports" below.	

Implan generates some accounts reports automatically. One optional report can be specified in the 'modifying accounts' input file. Thirteen additional reports can be selected and created under the "Rectangular Accounts" option. An example of each can be found in Appendix D.

** Micro Implan 82 **		Model: OZ	Status: Accounts Complete
Accounts Reports LS List and Select SA Save and Exit HE Help QU Quit	Optional Reports Use Matrix Absorption Matrix Make Matrix Market Shares Matrix Byproducts Matrix Consumption & Trade Factors & Trade Non-Comp. Imports to Use Non-Comp. Imports to FD Comp. Imports to Use Comp. Imports to FD Industry Balance Sheet Commodity Balance Sheet Social Accounting Matrix		
Ins = include Del = exclude Enter = completed Esc = quit 0 rpts selected			

Report options are selected using the Insert key. The selections must be saved using the "Save and Exit" option before they can be created. The "Quit" option will not save selections. Several options contain more than one report. An example of each report and a table of all reports can be found in Appendix D - Reports and Tables.

I/O Matrix Reports:

Three optional I/O matrix reports can be selected, created or viewed:

** Micro Implan 82 **		Model: OZ	Status: I/O Complete
I/O Matrix Reports LS List and Select SA Save and Exit HE Help QU Quit	Optional Reports Direct Coeff. Matrix Transactions Table Final Demands		
Ins = include Del = exclude Enter = completed Esc = quit 0 rpts selected			

The components of these reports are discussed in The Multiplier Report, Chapter 5 - Model Development.

Aggregated I/O Matrix:

The same reports described in the I/O matrix can be selected, created or viewed for the aggregated I/O model.

Multipliers:

There are two optional Multiplier reports ('Leontief Inverse Matrix' and 'Multiplier Reports') which can be selected, created, or viewed. Both Type I and Type III multipliers are displayed, along with response coefficients (the direct, indirect, and induced components), for industry output, personal income, total income, value added, and employment. Multipliers and report components are discussed in Chapter 5 - Model Development. An example of each multiplier report can be found in Appendix D.

** Micro Implan 82 **		Model: OZ	Status: Multiplier Complete
Create Reports	Multiplier Reports	Available Reports	
SA Study Area Data	CR Create Reports	OZ .602	
RA Rectangular Accounts	SR Select Report Options	OZ .603	
IO I/O Matrix	VI View Optional Reports	OZ .604	
AG Aggregated I/O Matrix	HE Help	OZ .605	
MU Multipliers	QU Quit	OZ .606	
HE Help			
QU Quit			

Enter = view	Esc = quit	? = Report Contents
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- NOTES -

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Appendix B - Glossary and Equations

Absorption Matrix The fractions of each industry's total outlay spent on given commodities consumed during production. The Use Matrix divided by the Total Industry Outlay. The National Absorption Matrix includes imports. The Regional Absorption Matrix is net of imports.

	Industry					Industry		
	A	B	C			A	B	C
Commodity A	$\begin{bmatrix} .05 & 0 & .8 \\ .25 & .75 & .0 \\ 1.5 & 2.25 & 1.5 \end{bmatrix}$			Regional Use Matrix		$\begin{bmatrix} .005 & 0 & .02 \\ .025 & .025 & 0 \\ .15 & .75 & .038 \end{bmatrix}$		
Commodity B								
Commodity C								
	10	30	40	Total Industry Outlay	=		Regional Absorption Matrix	

Aggregation The combination of several industrial sectors into one user-named sector.

Backward Linkage An industry who produces goods used by industry i.

By-Products Coefficient The fraction of an industry's total output a given commodity represents.

By-Products Matrix A matrix of By-Products Coefficients. The values from the Make Matrix divided by the given industry's Total Industry Output.

	Commodity				Sum of Make Matrix Rows		Commodity		
	A	B	C				A	B	C
Industry A	$\begin{bmatrix} 9 & 0 & 1 \\ 0 & 30 & 0 \\ 4 & 0 & 36 \end{bmatrix}$			divide by row	$\begin{bmatrix} 10 \\ 30 \\ 40 \end{bmatrix}$	=	$\begin{bmatrix} 0.9 & 0 & 0.1 \\ 0 & 1 & 0 \\ 0.1 & 0 & 0.9 \end{bmatrix}$		
Industry B									
Industry C									
	Regional Make Matrix				Regional Total Industry Output			National By- Products Matrix	

Competitive Imports The dollar amount of a locally produced commodity imported to the region.

Disgregation Separating a single industrial sector or commodity into several discrete sub-sectors or commodities.

Domestic Commodity Exports The value of locally produced goods and services exported from the region to other parts of the U.S..

Domestic Commodity Exports = $1 - \frac{\text{Intraregional Commodity Sales Coefficient}}{\text{Net Commodity Supply}}$

Domestic Imports The amount of each commodity that is not obtained from local supply. The Gross Inputs minus the Regional Inputs.

Employee Compensation Wages and Salaries.

Employment The number of people a given industry employs. Units are in jobs.

Exports Any export out of the study region, foreign or domestic.

Factor Payments Costs added to the intermediate costs of producing goods and services to form the price. Another term for the Value Added components: Employee Compensation, Property Type Income, Indirect Business Taxes, and Other Property Income.

Final Demands Purchases for final use or consumption.

Foreign Exports The amount of a commodity exported outside the United States.

Forward Linkage A consumer of industry i products.

Functional Economic Area An area having a sufficient variety of activities to be relatively self-contained. A place that is a consumer of goods and services and an employer of labor

Government Expenditures Expenditures on goods and services required to provide government services. Government expenditures are subdivided into four categories: State and Local Educational, State and Local Non-educational, Federal Military, and Federal Non-military.

Government Sales Sales of government goods and services to industries (effectively a negative final demand) subdivided into two categories: State and Local Government Sales and Federal Government Sales.

Gross Commodity Production The total value of each commodity produced in the region by all industries during the year. The sum of a column of the Make Matrix.

Gross Inputs The total amount of each commodity used by an industry. The Total Absorption Coefficient times the Regional Total Industry Output.

Gross Regional Commodity Demand All local demands (intermediate + final demands) for each commodity either produced locally or imported.

Impact Analysis The determination of the effects of an event on the people who live and work in the study area.

Import Propensity The fraction of the Gross Regional Commodity Demand that is not purchased locally (a coefficient).

$$\text{Import Propensity}_i = 1 - \text{Regional Purchase Coefficient}_i$$

Indirect Business Taxes Sales and excise taxes.

Industry Output The total gross output of each industry.

Intermediate Demands Purchases of commodities by industries to be used to produce goods or services.

Intraregional Commodity Sales Coefficient The fraction of locally produced goods and services available for local use sold to regional demand.

$$\text{Intraregional Commodity Sales Coefficient}_i = \frac{(\text{RPC}_i) (\text{Commodity Demand}_i)}{\text{Net Commodity Supply}_i}$$

Inventory Purchases and Sales Goods that are not dispersed in a particular year are stored in inventory (inventory purchases) for sale in the next year (inventory sales).

Inventory Reduction Commodities released from inventory and consumed during the year.

Make Matrix The values of commodities (columns) produced by the different industries (rows). The sum of each row is that industry's Total Industry Output. The sum of each column is that commodity's Gross Commodity Production.

Market Share Coefficient The fraction of the commodity's Total Output produced by each industry on the national level.

Market Share Matrix The fraction of each commodity's Total Output produced by each industry. Found by dividing the values from the Make Matrix by the given commodity's Total Commodity Supply. The column totals of the Market Share Matrix may be less than one since the Total Commodity Supply includes non-industrial sources.

	Commodity				Commodity		
	A	B	C		A	B	C
Industry A	9	0	1	Regional Make Matrix	0.5	0	0.026
Industry B	0	30	0		0	1	0
Industry C	4	0	36		0.222	0	0.923
	18	30	39	Total Commodity Supply	Regional Market Share Matrix		

Net Commodity Supply Locally produced goods and services available for local use (Total Commodity Supply minus Foreign Exports).

$$\text{Net Commodity Supply} = \text{Gross Commodity Production} + \text{Inventory Reduction} + \text{Government Sales} - \text{Foreign Exports}$$

Non-Competitive Imports The importation values of commodities not produced locally.

Other Property Income Interest and corporate profits.

Personal Consumption Expenditures Purchases in millions of 1982 dollars by individuals for personal consumption. IMPLAN estimates expenditures based on three income levels: income < \$10,000, \$10,000 < income < \$30,000, and \$30,000 < income.

Private Capital Formation Goods that are sold to industries who use the goods as capital equipment. The sales of these goods provide industries with their capital structure.

Production Function The appropriate column of the Use Matrix plus the corresponding Value Added is that industry's Production Function. Essentially, a recipe of the commodities an industry consumes in the production of its output. A Production Function can be in dollars or in a coefficient format (a ratio of the value divided by the Total Industry Outlay).

Property Type Income Income from self-employment.

Regional Absorption Coefficient The fraction of an industry's total outlay spent on a given commodity consumed during production (net of imports).

Regional Consumption Demand A report showing consumption by households and governments (federal and state) of each commodity available in the region.

Regional Inputs The amount of each industry's demand for each commodity that is met by local production. The RPC times the Gross Inputs.

Regional Purchase Coefficient (RPC) The fraction of locally produced goods or services (Net Commodity Supply) that is used to meet local demand (Regional Commodity Demand). For more details, see Appendix D - Regional Purchase Coefficients.

$$RPC_i = \frac{\text{Total Regional Production (commodity i) consumed by the region}}{\text{Gross Regional Commodity}_i \text{ Demand}}$$

Regional Supply

Response Coefficient The final demand vector generated from a change in final demand of 1 production unit.

Study Area The location of the subject economy.

Total Absorption Coefficient The fraction of an industry's total outlay spent on a given commodity consumed during production (includes imports).

Total Commodity Imports The total value of all local demands (intermediate + final demands) that are not purchased locally. The Gross Regional Commodity Demand times the Import Propensity.

Total Commodity Output The total value of each commodity produced by all industries for the given year. Intermediate Demands plus Final Demands (net of imports). The sum of all the Total Commodity Output values equals the sum of all the Total Industry Output values.

Total Commodity Supply The total value of a commodity produced by all industrial sectors in the region plus that supplied by non-industrial sources (reductions of inventory and sales from government sources).

		Commodity			
		A	B	C	
Industry A	Regional Make Matrix	9	0	1	
Industry B		0	30	0	
Industry C		4	0	36	
Sum of Columns		13	30	37	Gross Commodity Production
+		1	0	0	Inventory Sales
+		4	0	0	State and Local Gov. Sales
+		0	0	2	Federal Government Sales
		18	30	39	Total Commodity Supply

Total Industry Outlay The column in the Use Matrix plus the associated Value Added, and Imports. This value should be equal to the Total Industry Output derived from the Make Matrix.

		Industry			
		A	B	C	
Commodity A	Regional Use Matrix	.05	0	.8	
Commodity B		.25	.75	.0	
Commodity C		1.5	2.25	1.5	
		1.8	3.0	2.3	Gross Industry Commodity Demand
+		6.5	24	30	Total Value Added
+		1.7	3	7.7	Competitive Imports
+		0	0	0	Non-competitive Imports
		10	30	40	Total Industry Outlay

Total Industry Output The total value of all production for an industry during the year. The sum of a row of the Make Matrix is that industry's Total Industry Output.

Transshipped Commodities Commodities imported for exportation (or transshipment). Whenever more of a commodity is exported than is produced, imports must be used to satisfy both local demand and the export demand.

Use Matrix

The values of commodities and imports (rows) used in production by each industry (columns). NOTE: After the Regional Purchase Coefficients are applied, the Use Matrix is net of imports. The sum of each column is that industry's Gross Industry Commodity Demand. The sum of each row is the Intermediate Demand of that commodity.

Value Added

Costs added to the intermediate costs of producing goods and services to form the price: Employee Compensation, Property Type Income, Indirect Business Taxes, and Other Property Income.

- NOTES -

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Appendix B - Glossary and Equations

Absorption Matrix The fractions of each industry's total outlay spent on given commodities consumed during production. The Use Matrix divided by the Total Industry Outlay. The National Absorption Matrix includes imports. The Regional Absorption Matrix is net of imports.

	Industry				Industry			
	A	B	C		A	B	C	
Commodity A	.05 0 .8	.25 .75 .0	1.5 2.25 1.5	Regional Use Matrix	.005 0 .02	.025 .025 0	.15 .75 .038	
Commodity B								Commodity C
	10	30	40	Total Industry Outlay	Regional Absorption Matrix			

Aggregation The combination of several industrial sectors into one user-named sector.

Backward Linkage An industry who produces goods used by industry i.

By-Products Coefficient The fraction of an industry's total output a given commodity represents.

By-Products Matrix A matrix of By-Products Coefficients. The values from the Make Matrix divided by the given industry's Total Industry Output.

	Commodity				Sum of		Commodity			
	A	B	C		Make Matrix Rows		A	B	C	
Industry A	9 0 1	0 30 0	4 0 36	divide by row	10 30 40	=	0.9 0 0.1	0 1 0	0.1 0 0.9	
Industry B										Industry C
	Regional Make Matrix	Regional Total Industry Output			National By-Products Matrix					

Competitive Imports The dollar amount of a locally produced commodity imported to the region.

Disgregation Separating a single industrial sector or commodity into several discrete sub-sectors or commodities.

Domestic Commodity Exports The value of locally produced goods and services exported from the region to other parts of the U.S..

Domestic Commodity Exports = $1 - \frac{\text{Intraregional Commodity Sales Coefficient}}{\text{Net Commodity Supply}}$

Domestic Imports The amount of each commodity that is not obtained from local supply. The Gross Inputs minus the Regional Inputs.

Employee Compensation Wages and Salaries.

Employment The number of people a given industry employs. Units are in jobs.

Exports Any export out of the study region, foreign or domestic.

Factor Payments Costs added to the intermediate costs of producing goods and services to form the price. Another term for the Value Added components: Employee Compensation, Property Type Income, Indirect Business Taxes, and Other Property Income.

Final Demands Purchases for final use or consumption.

Foreign Exports The amount of a commodity exported outside the United States.

Forward Linkage A consumer of industry i products.

Functional Economic Area An area having a sufficient variety of activities to be relatively self-contained. A place that is a consumer of goods and services and an employer of labor

Government Expenditures Expenditures on goods and services required to provide government services. Government expenditures are subdivided into four categories: State and Local Educational, State and Local Non-educational, Federal Military, and Federal Non-military.

Government Sales Sales of government goods and services to industries (effectively a negative final demand) subdivided into two categories: State and Local Government Sales and Federal Government Sales.

Gross Commodity Production The total value of each commodity produced in the region by all industries during the year. The sum of a column of the Make Matrix.

Gross Inputs The total amount of each commodity used by an industry. The Total Absorption Coefficient times the Regional Total Industry Output.

Gross Regional Commodity Demand All local demands (intermediate + final demands) for each commodity either produced locally or imported.

Impact Analysis The determination of the effects of an event on the people who live and work in the study area.

Import Propensity The fraction of the Gross Regional Commodity Demand that is not purchased locally (a coefficient).

$$\text{Import Propensity}_i = 1 - \text{Regional Purchase Coefficient}_i$$

Indirect Business Taxes Sales and excise taxes.

Industry Output The total gross output of each industry.

Intermediate Demands Purchases of commodities by industries to be used to produce goods or services.

Intraregional Commodity Sales Coefficient The fraction of locally produced goods and services available for local use sold to regional demand.

$$\text{Intraregional Commodity Sales Coefficient}_i = \frac{(\text{RPC}_i) (\text{Commodity Demand}_i)}{\text{Net Commodity Supply}_i}$$

Inventory Purchases and Sales Goods that are not dispersed in a particular year are stored in inventory (inventory purchases) for sale in the next year (inventory sales).

Inventory Reduction Commodities released from inventory and consumed during the year.

Make Matrix The values of commodities (columns) produced by the different industries (rows). The sum of each row is that industry's Total Industry Output. The sum of each column is that commodity's Gross Commodity Production.

Market Share Coefficient The fraction of the commodity's Total Output produced by each industry on the national level.

Market Share Matrix The fraction of each commodity's Total Output produced by each industry. Found by dividing the values from the Make Matrix by the given commodity's Total Commodity Supply. The column totals of the Market Share Matrix may be less than one since the Total Commodity Supply includes non-industrial sources.

	Commodity				Commodity		
	A	B	C		A	B	C
Industry A	9	0	1	Regional Make Matrix	0.5	0	0.026
Industry B	0	30	0		0	1	0
Industry C	4	0	36		0.222	0	0.923
	18	30	39	Total Commodity Supply	Regional Market Share Matrix		

Net Commodity Supply Locally produced goods and services available for local use (Total Commodity Supply minus Foreign Exports).

$$\text{Net Commodity Supply} = \text{Gross Commodity Production} + \text{Inventory Reduction} + \text{Government Sales} - \text{Foreign Exports}$$

Non-Competitive Imports The importation values of commodities not produced locally.

Other Property Income Interest and corporate profits.

Personal Consumption Expenditures Purchases in millions of 1982 dollars by individuals for personal consumption. IMPLAN estimates expenditures based on three income levels: income < \$10,000, \$10,000 < income < \$30,000, and \$30,000 < income.

Private Capital Formation Goods that are sold to industries who use the goods as capital equipment. The sales of these goods provide industries with their capital structure.

Production Function The appropriate column of the Use Matrix plus the corresponding Value Added is that industry's Production Function. Essentially, a recipe of the commodities an industry consumes in the production of its output. A Production Function can be in dollars or in a coefficient format (a ratio of the value divided by the Total Industry Outlay).

Property Type Income Income from self-employment.

Regional Absorption Coefficient The fraction of an industry's total outlay spent on a given commodity consumed during production (net of imports).

Regional Consumption Demand A report showing consumption by households and governments (federal and state) of each commodity available in the region.

Regional Inputs The amount of each industry's demand for each commodity that is met by local production. The RPC times the Gross Inputs.

Regional Purchase Coefficient (RPC) The fraction of locally produced goods or services (Net Commodity Supply) that is used to meet local demand (Regional Commodity Demand). For more details, see Appendix D - Regional Purchase Coefficients.

$$RPC_i = \frac{\text{Total Regional Production (commodity i) consumed by the region}}{\text{Gross Regional Commodity}_i \text{ Demand}}$$

Regional Supply

Response Coefficient The final demand vector generated from a change in final demand of 1 production unit.

Study Area The location of the subject economy.

Total Absorption Coefficient The fraction of an industry's total outlay spent on a given commodity consumed during production (includes imports).

Total Commodity Imports The total value of all local demands (intermediate + final demands) that are not purchased locally. The Gross Regional Commodity Demand times the Import Propensity.

Total Commodity Output The total value of each commodity produced by all industries for the given year. Intermediate Demands plus Final Demands (net of imports). The sum of all the Total Commodity Output values equals the sum of all the Total Industry Output values.

Total Commodity Supply The total value of a commodity produced by all industrial sectors in the region plus that supplied by non-industrial sources (reductions of inventory and sales from government sources).

		Commodity			
		A	B	C	
Industry A	Regional Make Matrix	9	0	1	
Industry B		0	30	0	
Industry C		4	0	36	
Sum of Columns		13	30	37	Gross Commodity Production
+		1	0	0	Inventory Sales
+		4	0	0	State and Local Gov. Sales
+		0	0	2	Federal Government Sales
		18	30	39	Total Commodity Supply

Total Industry Outlay The column in the Use Matrix plus the associated Value Added, and Imports. This value should be equal to the Total Industry Output derived from the Make Matrix.

		Industry			
		A	B	C	
Commodity A	Regional Use Matrix	.05	0	.8	
Commodity B		.25	.75	.0	
Commodity C		1.5	2.25	1.5	
		1.8	3.0	2.3	Gross Industry Commodity Demand
+		6.5	24	30	Total Value Added
+		1.7	3	7.7	Competitive Imports
+		0	0	0	Non-competitive Imports
		10	30	40	Total Industry Outlay

Total Industry Output The total value of all production for an industry during the year. The sum of a row of the Make Matrix is that industry's Total Industry Output.

Transshipped Commodities Commodities imported for exportation (or transshipment). Whenever more of a commodity is exported than is produced, imports must be used to satisfy both local demand and the export demand.

Use Matrix The values of commodities and imports (rows) used in production by each industry (columns). NOTE: After the Regional Purchase Coefficients are applied, the Use Matrix is net of imports. The sum of each column is that industry's Gross Industry Commodity Demand. The sum of each row is the Intermediate Demand of that commodity.

Value Added Costs added to the intermediate costs of producing goods and services to form the price: Employee Compensation, Property Type Income, Indirect Business Taxes, and Other Property Income.

- NOTES -

Micro IMPLAN
Release 89-03
ERROR MESSAGES

Error messages may occur during your use of Micro IMPLAN. Two classes of error messages may be experienced: user-input, and run time. User-input data errors detected when constructing accounts will be captured in a file with an extension of ERR; or when performing an impact analysis in a file with an extension of IME. These files may be reviewed using the "View the Error File" option on either the Construct Accounts or the Impact Analysis menu. Most error messages are designed to check input for agreement with program syntax and highlight areas where the input file is either out of order, exceeds limits, or values are not in correct fields. Reviewing your input file and making the necessary corrections as indicated below should correct any problems detected.

The second classification of error messages are referred to as "run time". These error messages typically result from some combination of operating system and program incompatibility. No attempt has been made here to list and define all possible messages; users that receive these messages should call the IMPLAN help line for assistance in correcting the situation.

USER-INPUT ERROR MESSAGES

Constructing Accounts - Sales coefficient changes

1. ERROR IN RSV SPEC. COMMODITY # OUT OF RANGE, NO. SPECIFIED: _____. MUST BE BETWEEN 1 & _____, CHANGE FIRST VALUE OF PAIR _____.

In this message "RSV" means Regional Supply Values; in other parts of the notebook use of the term Regional Sales Coefficients is made. The regional sales coefficients are decimal values that define the amount of regionally produced commodities that are available for regional purchase.

The value specified as a commodity number exceeded the range of 1 to 528, e.g., 538 in the following sample data set:

<u>Incorrect</u>	<u>Correct</u>
0	0
REGIONAL SUPPLY	REGIONAL SUPPLY
2	2
1 .01 538 .05	1 .01 53 .05
999	999

2. ERROR-SUPPLY REDUCTION PERCENTAGE FOR COMMODITY _____. MUST BE IN THE RANGE 0 TO 1.

The percent of the net commodity supply sold to local industries or final demand must be expressed as a value between 0 and 1.0, do not use whole numbers; e.g., ten percent in the following example should be expressed as 0.10:

<u>Incorrect</u>	<u>Correct</u>
0	0
REGIONAL SUPPLY	REGIONAL SUPPLY
1	1
1 10.0	1 0.10
999	999

Constructing Accounts - Regional Purchase Coefficient change

1. ERROR IN COMMODITY RPC CHG DATA. COMMODITY NOS. OUT OF RANGE. VALUE SPECIFIED WAS _____. RANGE IS 1 TO _____.

A commodity number that exceeds 528 was entered; review the data file and be sure that all commodity numbers are less than or equal to 528; e.g., commodity 611 in the following example is incorrect:

<u>Incorrect</u>	<u>Correct</u>
0	0
RPC	RPC
COMMODITY001	COMMODITY001
611 .1	11 0.1
999	999

2. ERROR IN USER-SPECIFIED COMMODITY RPC DATA. RPC VALUE FOR COMMODITY _____, OUT OF RANGE. VALUE SPECIFIED WAS _____. RANGE IS 0. TO _____.

The percentage value must be expressed as a value between 0 and 1.0, do not use whole numbers. For example the following data set RPC value (21.0) should be expressed as 0.21:

<u>Incorrect</u>	<u>Correct</u>
0	0
RPC	RPC
COMMODITY001	COMMODITY001
1 21.0	1 0.21
999	999

3. ERROR IN RPC CHANGE DATA. RPC CARD MUST BE FOLLOWED BY "COMMODITY" OR "INDUSTRY" CARD, STOP RUN IN "READ".

An incorrect record sequence was specified, an RPC change indicator must be followed by either a COMMODITY or INDUSTRY identifier. If you wish to specify the regional purchase coefficient value for a single industry's purchase of a commodity an INDUSTRY identifier should be used; or if you are expressing the regional purchase coefficient for all industries' purchase of a single commodity, a COMMODITY identifier should be used.

4. ERROR IN RPC DATA: COMMODITY CHGS MUST FOLLOW INDUSTRY CHGS, RE-ORDER DATA.

An incorrect sequence was specified in the data set for commodity and industry RPC changes; commodity changes must follow industry changes. This sequence is necessary since the industry changes are the most limiting in terms of how the use of a commodity is allocated among competing industry groups.

5. ERROR IN COMMODITY RPC CHG DATA: NO. OF COMMODITIES OUT OF RANGE. VALUE SPECIFIED WAS _____. RANGE IS 1 TO _____.

The value specified on the COMMODITY record exceeds the range of 1 to 528; review this input record to be sure the correct number of commodities has been specified.

6. ERROR-COMMODITY # FOR TRADE RATIO DATA OUT OF RANGE. NUMBER SPECIFIED WAS _____. MUST BE BETWEEN 1 & _____, CHANGE FIRST VALUE ON FIRST TRADE RATIO DATA RECORD.

The value specified on the INDUSTRY record exceeds the range of 1 to 528; review this input record to be sure the correct industry number has been entered.

7. ERROR-# OF INDUSTRIES FOR TRADE RATIO DATA OUT OF RANGE, NO. SPECIFIED WAS _____. MUST BE BETWEEN 1 & _____, CHANGE 2ND VALUE ON FIRST TRADE RATIO DATA RECORD.

The value specified as the number of industries purchasing a commodity exceeded the range of 1 to 528, e.g., 663 in the following sample data set which should be a 3:

<u>Incorrect</u>	<u>Correct</u>
RPC	RPC
INDUSTRY	INDUSTRY
45 663	45 3
GI045 .01	GI045 .01
GI069 .01	GI069 .01
GI269 .01	GI269 .01
999	999

8. ERROR-FLAG FOR TRADE RATIO DATA INCORRECT. VALUE SPECIFIED WAS _____. MUST BE -FD- OR -GI-. CHANGE FIRST FIELD ON TRADE RATIO CARD _____.

When specifying an Industry/Institution RPC change a correct identifier must precede the industry or institution number. The identifier must either be "GI" for any intermediate industry, or "FD" for any Final Demand institution. A table of final demand institutions that may be included and the number to use for each one (Flag in record #5) is given in the Micro IMPLAN help file (See section entitled "Changing Regional Purchase Coefficients: Industry/Institution"). Micro IMPLAN counts record number 4, commodity number and number of affected industries, as the first ratio card, so flag changes begin on card 2.

9. ERROR-INDUSTRY NO. FOR TRADE RATIO DATA INCORRECT. NO. SPECIFIED WAS _____. MUST BE BETWEEN 1 and 528 CHANGE 2ND FIELD ON TRADE RATIO CARD _____.

An incorrect industry number was specified, numbers must be between 1 and 528 for 1982 data sets.

10. ERROR-TRADE RATIO FOR COMMODITY _____, INDUSTRY _____, MUST BE IN THE RANGE: 0 TO 1.

An RPC value cannot exceed 1.0, check your data file for incorrect values. If a free format is used in specifying multiple values, be sure that at least one blank space exists between each value.

11. ERR-TRADE RATIO CANNOT BE SPECIFIED FOR FOREIGN EXPORTS, COMMODITY _____, IN ERROR.

An RPC value cannot be specified for Foreign exports. A table of final demand institutions that may be included and the number to use for each one (Flag in record #5) is given in the Micro IMPLAN help file (See section entitled "Changing Regional Purchase Coefficients: Industry/Institution").

12. "ACCOUNTS" WILL NOT BALANCE WITH USER-SPECIFIED TRADE RATIOS FOR COMMODITY _____.

TRADE RATIO FOR ONE OR MORE INDUSTRIES OVER-SPECIFIED.

TRADE RATIO FOR ONE OR MORE FINAL DEMANDS OVER-SPECIFIED.

---REDUCTION OF ONE OR MORE TRADE RATIOS NECESSARY---

The above messages will be generated when using the industry-specific RPC change options that specify commodity use levels that exceed regional production. Review the allocation of RPC levels by industry

and specify RPC levels such that the balance of the industries purchasing the commodity do not exceed regional production.

13. ERROR IN USER-SPECIFIED COMMODITY RPC DATA. RPC VALUE FOR COMMODITY ____, OUT OF RANGE. VALUE SPECIFIED WAS ____. RANGE = 0. TO ____.

The upper limit for an RPC change is defined by the Supply Demand Pool (SDP) ratio. Stated another way the RPC value cannot exceed the ratio of the net commodity supply divided by gross commodity demand. Review the SDP ratios given in the Absorption Adjustment, RPC's and SDP report (.003 - file extension) for the maximum RPC value for the commodity being changed.

Constructing Accounts - Production function changes

1. ERROR-A MAXIMUM OF ____, PRODUCTION FUNCTIONS MAY BE MODIFIED, ____ WERE SPECIFIED.
2. ERROR-PRODUCTION FUNCTION INDUSTRY NUMBERS MUST BE BETWEEN 1 AND ____ AS SPECIFIED.
3. ERROR-NUMBER OF COMMODITIES SPECIFIED FOR PRODUCTION FUNCTION MUST BE BETWEEN 1 AND ____, ____, WERE SPECIFIED FOR INDUSTRY ____.
4. ERROR-COMMODITY NUMBERS FOR PRODUCTION FUNCTION CHANGE MUST BE BETWEEN 1 AND ____, ____, WAS SPECIFIED FOR INDUSTRY ____.
5. ERROR-COMMODITY PRODUCTION COEFFICIENTS MUST SUM TO 1, INDUSTRY ____, SUM = ____, COEFFICIENTS: ____.
6. ERROR-NUMBER OF COMMODITIES SPECIFIED FOR PRODUCTION FUNCTION MUST BE BETWEEN 1 AND ____, ____, WERE SPECIFIED FOR INDUSTRY ____.
7. COMMODITY NUMBERS FOR PRODUCTION FUNCTION CHANGE MUST BE BETWEEN 1 AND ____, ____, WAS SPECIFIED FOR INDUSTRY ____.
8. INTERMEDIATE & PRIMARY FACTOR REQMT COEFFICIENTS MUST EQUAL 1.0. INDUSTRY ____ SUM = ____, INTERMEDIATE REQMTS COEFFICIENTS SUM = ____, PRIMARY FACTORS REQMTS COEFFICIENTS = ____.

Impact Analysis

1. "ERROR, - COLUMN 1 MUST CONTAIN "#"

This error will occur if the # sign is left off these header records:

- a) NEW OUTPUTS BY SECTOR FD,
- b) PRINT OPTIONS,
- c) ALTERNATIVE FD, and
- d) POP/EMP RATIO.

This message will also occur when there are an incorrect number of values following an output header record causing the program to read an alpha string. The number of expenditure values after each output header record must equal the number of affected sectors shown on the "NEW OUTPUTS BY SECTOR FD" record.

2. "MAX FD FOREST OUTPUTS -- 50 YOU SPECIFIED ____."

"MAX FD AFFECTED SECTORS -- 528 YOU SPECIFIED ____ . -- STOP RUN"

If user input exceeds either of these two limits, this message is printed. If it is necessary to analyze more than 50 outputs it is suggested that the data file be separated into blocks of fifty, with the total effects obtained by summation of the individual parts.

3. "STOP" NON-NUMERIC IN NUMERIC FIELD ON

- POP/EMP RATIO RECORD
- PRINT OPTIONS RECORD
- NEW OUTPUTS RECORD

"STOP - ERROR: NON-NUMERIC ON FD ALTERNATIVE RECORD"

"STOP - ERROR: ON SECTOR NUMBER RECORD. NON-NUMERIC IN FIELD"

"ERROR IN FD EXPENDITURE MATRIX. NON-NUMERIC IN LINE ____."

Any of the above messages are the result of a non-numeric value in a field that is read by a format expecting only numeric values. Check data for alpha characters, especially alpha "0" substituting for zeros. Also check to be sure that there are as many expenditure values as there are sectors since the program may be trying to read an alpha string which may be an output or header record.

4. "DATA OUT OF ORDER OR SPELLING ERROR VALUE READ WAS ____, STOP IN 'MAIN'".

A critical character input value was misspelled, or the data file is not in the correct order.

5. "ERROR ON 'IMPACT' SECTOR RECORD, SECTOR ____ IS NOT ON YOUR PARAMETER FILE, STOP RUN".

A sector was specified for analysis, but is not in the model. Check a report that contains all sectors, e.g., any report following "Construct an I-O matrix" or "Derive Multipliers".

6. "STOP IN READ?" --- EXPECTED 'NEW OUTPUTS' "

The NEW OUTPUTS BY SECTOR FD header record is out of sequence. This card is normally the first one in a data file; if multiple copies of this header record are used it each should have an ALTERNATIVE header record following it.

-NOTES-

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MID.PRN

Regional Data Base in Spreadsheet Format (only first portion of data is shown).

```

Data File: EXAMPLE
***PCE - LOW      ***PCE - MED      ***PCE - HIGH      ***SLG PUR-ED      ***SLG PUR-NON ED      ***FG PUR-NON MIL      ***FG PUR-MIL
1 DAIRY FARM PRODUCTS      .012176      .043900      .025203      .000000      .000000      .000000
2 POULTRY AND EGGS      .349827      1.005465      .479635      .115463      .044247      .000000
3 RANCH FED CATTLE      .000000      .000000      .000000      .000000      .000000      .000000
4 RANGE FED CATTLE      .000000      .000000      .000000      .000000      .000000      .000000
5 CATTLE FEEDLOTS      .000000      .000000      .000000      .000000      .000000      .000000
6 SHEEP, LAMBS AND GOATS      .000000      .000000      .000000      .000000      .000000      .000000
7 HOGS, PIGS AND SWINE      .000000      .000000      .000000      .000000      .000000      .000000
8 OTHER MEAT ANIMAL PRODUCTS      .000000      .000000      .000000      .000000      .000000      .000000
9 MISCELLANEOUS LIVESTOCK      .069944      .260502      .130424      .000000      .008459      .000000
10 COTTON      .000000      .000000      .000000      .000000      .000000      .3965
11 FOOD GRAINS      .000000      .000000      .000000      .000000      .000000      .48964
12 FEED GRAINS      .013541      .051150      .033608      .000000      .000000      .79785
13 HAY AND PASTURE      .032815      .219160      .159836      .000000      .000000      .000000
14 GRASS SEEDS      .000000      .000000      .000000      .000000      .000000      .03500
15 TOBACCO      .000000      .000000      .000000      .000000      .000000      .000000
16 FRUITS      .465471      1.346866      .743052      .000000      .000000      .000000
17 TREE NUTS      .022351      .084433      .055477      .000000      .000000      .000000
18 VEGETABLES      .622425      1.999086      .997623      .000000      .000000      .000000
19 SUGAR CROPS      .000000      .000000      .000000      .000000      .000000      .000000
20 MISCELLANEOUS CROPS      .000000      .000000      .000000      .000000      .000000      .000000
21 OIL BEARING CROPS      .006409      .024209      .015907      .000000      .000000      .41710
22 FOREST PRODUCTS      .000000      .000000      .000000      .000000      .000000      .000000
23 GREENHOUSE AND NURSERY PRODUCTS      .205872      .954312      .871759      .000000      .000000      .000000
24 FORESTRY PRODUCTS      .044335      .167473      .110037      .000000      .000000      .000000
25 COMMERCIAL FISHING      .040118      .151541      .099570      .000000      .000000      .000000
26 AGRICULTURAL, FORESTRY, FISHERY      .044992      .169954      .111668      .000000      .000000      .000000
27 LANDSCAPE AND HORTICULTURAL SERV      .009868      .037275      .024491      .000000      .000000      .03168
28 IRON ORES      .000000      .000000      .000000      .000000      .000000      .000000
29 FERROALLOY ORES, EXCEPT VANADIUM      .000000      .000000      .000000      .000000      .000000      .000000
30 COPPER ORES      .000000      .000000      .000000      .000000      .000000      .000000
31 LEAD AND ZINC ORES      .000000      .000000      .000000      .000000      .000000      .000000
32 GOLD ORES      .000000      .000000      .000000      .000000      .000000      .000000
33 SILVER ORES      .000000      .000000      .000000      .000000      .000000      .000000
34 BAUXITE AND OTHER ALUMINUM ORES      .000000      .000000      .000000      .000000      .000000      .000000
35 METAL MINING SERVICES      .000000      .000000      .000000      .000000      .000000      .000000
36 MERCURY ORES      .000000      .000000      .000000      .000000      .000000      .000000
37 URANIUM-RADIUM-VANADIUM ORES      .000000      .000000      .000000      .000000      .000000      .000000
38 METAL ORES, NOT ELSEWHERE CLASSIF      .000000      .000000      .000000      .000000      .000000      .000000
39 ANTHRACITE AND ANTHRACITE MINING      .009883      .027443      .012959      .000000      .000000      .000000
40 BITUMINOUS AND LIGNITE MINING, S      .027451      .076323      .036090      .293748      .151772      .000000
41 NATURAL GAS      .000000      .000000      .000000      .000000      .000000      .00068
42 CRUDE PETROLEUM      .000000      .000000      .000000      .000000      .000000      .02071
43 NATURAL GAS LIQUIDS      .000000      .000000      .000000      .000000      .000000      .000000
44 DIMENSION STONE      .000000      .000000      .000000      .000000      .000000      .000000
45 CRUSHED AND BROKEN LIMESTONE      .000000      .000000      .000000      .000000      .000000      .000000
46 CRUSHED AND BROKEN GRANITE      .000000      .000000      .000000      .000000      .000000      .000000
47 CRUSHED AND BROKEN STONE, N. E.      .000000      .000000      .000000      .000000      .000000      .000000
48 CONSTRUCTION SAND AND GRAVEL      .000000      .000000      .000000      .000000      .000000      .000000
49 INDUSTRIAL SAND      .000000      .000000      .000000      .000000      .000000      .000000
50 BENTONITE      .000000      .000000      .000000      .000000      .000000      .000000
51 FIRE CLAY      .000000      .000000      .000000      .000000      .000000      .000000
52 FULLER'S EARTH      .000000      .000000      .000000      .000000      .000000      .000000
53 KAOLIN AND BALL CLAY      .000000      .000000      .000000      .000000      .000000      .000000
54 CLAY, CERAMIC, REFRACTORY MINERA      .000000      .000000      .000000      .000000      .000000      .000000
55 NONMETALLIC MINERALS (EXCEPT FUE      .000000      .000000      .000000      .000000      .000000      .000000
56 GYPSUM      .000000      .000000      .000000      .000000      .000000      .000000
57 TALC, SOAPSTONE, AND BORATE MINE      .000970      .003666      .002408      .000000      .000000      .000000
58 MISC. NONMETALLIC MINERALS, N.E.      .000000      .000000      .000000      .000000      .000000      .000000
59 BARITE      .000000      .000000      .000000      .000000      .000000      .000000
60 FLOURSPAR      .000000      .000000      .000000      .000000      .000000      .000000
61 POTASH, SODA, AND BORATE MINERAL      .000000      .000000      .000000      .000000      .000000      .000000
62 PHOSPHATE ROCK      .000000      .000000      .000000      .000000      .000000      .000000
63 ROCK SALT      .000000      .000000      .000000      .000000      .310010      .00132
64 SULFUR      .000179      .000679      .000445      .000000      .000000      .000000
65 CHEMICAL, FERTILIZER MINERAL MIN      .000296      .001117      .000734      .000000      .000000      .000000
66 NEW RESIDENTIAL STRUCTURES      .000000      .000000      .000000      .432047      1.789567      .000000
67 NEW INDUSTRIAL AND COMMERCIAL BU      .000000      .000000      .000000      7.080468      8.474223      14.11086
68 NEW UTILITY STRUCTURES      .000000      .000000      .000000      .000000      9.353257      .81290
69 NEW HIGHWAYS AND STREETS      .000000      .000000      .000000      .000000      12.449590      .40891
70 NEW FARM STRUCTURES      .000000      .000000      .000000      .000000      .000000      .000000
71 NEW MINERAL EXTRACTION FACILITIES      .000000      .000000      .000000      .000000      .000000      .000000
72 NEW GOVERNMENT FACILITIES      .000000      .000000      .000000      .000000      3.663299      2.40320
73 MAINTENANCE AND REPAIR, RESIDENT      .000000      .000000      .000000      .000000      .000000      .000000
74 MAINTENANCE AND REPAIR OTHER FAC      .000000      .000000      .000000      .000000      .000000      .56843
75 MAINTENANCE AND REPAIR OIL AND G      .000000      .000000      .000000      .58.348420      46.826820      .000000
76 COMPLETE GUIDED MISSILES      .000000      .000000      .000000      .000000      .000000      .18238
77 AMMUNITION, EXCEPT FOR SMALL AR      .000000      .000000      .000000      .000000      .000000      .01548
78 TANKS AND TANK COMPONENTS      .000000      .000000      .000000      .000000      .000000      .00016
79 SMALL ARMS      .051190      .193366      .127050      .000000      .000000      .00490
80 SMALL ARMS AMMUNITION      .021988      .083058      .054574      .000000      .000000      .00282
81 OTHER ORDNANCE AND ACCESSORIES      .000000      .000000      .000000      .000000      .000000      .00154
82 MEAT PACKING PLANTS      1.874062      6.979112      3.494128      1.865271      4.863394      .00013
83 SAUSAGES AND OTHER PREPARED MEAT      1.535289      5.717492      2.862487      1.028326      .170277      .00076

```

MID.MMP

Regional Data Base in MMP (Matrix Manipulation Program) Format (only first portion of file is shown).

Data File: EXAMPLE
 Format for number of rows and columns
 (14,1X,A17)
 22;Number of columns
 528;Number of rows
 Format for column titles
 (A36)
 Format for column entries
 (5F16.6)
 PCE - LOW

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.000000	.000000	.000000	.069944	.000000
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.350914	.381791	.000000	.046583	.021689
.000000	.000000	.014830	.107788	.006946
.000000	.000000	.000000	.000000	.011656
.005982	.000000	.034874	.026849	.033472
.000000	.000000	.000000	.077900	.000000
.000000	.000000	.000000	1.168563	.448535
.228513	.000000	.737303	.021877	4.909237
.075687	.003288	.000000	.000000	.435655
.087927	.000000	.074357	.102722	.013997
.000000	.000035	.873078	.023537	.014592
.064887	.106384	.044562	.020587	.067088
.002804	.000000	.000000	.000000	.000000
.000000	.000000	.018189	.028842	.000000
.070655	.000000	.000127	.000000	.000000
.000000	.025356	.011872	.000000	.003998
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.000000	.004833	.053216	.062484	.040270
.002765	.036093	.000000	.000000	.011769
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.000000	.000000	.000000	.000000	.000000
.002840	.000000	.000000	.040661	.000000
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.000000	.000000	.000000	.000000	.000000
.000000	.000000	.000000	.000000	.006861
.000000	.000000	.010589	.003891	.023941
.000000	.000000	.064786	.000000	.000000
.000000	.000769	.005261	.003882	.000000

MID.001 0.5 Regional Transshipments -- automatically generated when Constructing Accounts.

REGIONAL TRANSSHIPMENTS (MM\$)			ACCOUNTS REPORT #0.5 3/ 1/89
COMMODITY	COMMODITY SUPPLY	FOREIGN EXPORTS	TRANSSHIPMENTS
26	.0514	.1070	.0556
172	.0061	.0089	.0028
244	.4274	2.6963	2.2689
329	.0111	.0311	.0201
343	.0853	.5355	.4502

Commodity Commodity number which required a transshipment.

Commodity Supply Total value of local industrial production of the commodity.

Foreign Exports Foreign export demand from region

Transshipments Imports required to meet Foreign Export demand. Foreign Export minus Commodity Supply.

MID.002

1.0 Regional Supply Report -- automatically generated when Constructing Accounts.

REGIONAL SUPPLY REPORT		ACCOUNTS REPORT #1.0					PAGE 1 3/ 1/89
COMMODITY NUMBER	NAME	GROSS COMMODITY PRODUCTION (MMS)	FOREIGN EXPORTS (MMS)	INVENTORY REDUCTION (MMS)	ST & LOCAL GOVERNMENT SALES (MMS)	FEDERAL GOVERNMENT SALES (MMS)	NET COMMODITY SUPPLY (MMS)
1	DAIRY FARM PRODUCTS	9.77445	.00000	.00055	.00000	.00000	9.77500
2	POULTRY AND EGGS	.00000	.00000	.00058	.00000	.00000	.00058
3	RANCH FED CATTLE	.00000	.00000	.00000	.00000	.00000	.00000
4	RANGE FED CATTLE	.00000	.00000	.00000	.00000	.00000	.00000
5	CATTLE FEEDLOTS	.00388	.00000	.00000	.00000	.00000	.00388
6	SHEEP, LAMBS AND GOATS	.00000	.00000	.00000	.00000	.00000	.00000
7	HOGS, PIGS AND SWINE	.00000	.00000	.01366	.00000	.00000	.01366
8	OTHER MEAT ANIMAL PRODUCTS	.00000	.00000	.00000	.00000	.00000	.00000
9	MISCELLANEOUS LIVESTOCK	.00000	.00000	.00030	.00000	.00000	.00030
10	COTTON	.00000	.00000	.00000	.00000	.00000	.00000
11	FOOD GRAINS	.00000	.00000	.00000	.00000	.00000	.00000
12	FEED GRAINS	.00000	.00000	.00000	.00000	.00000	.00000
13	HAY AND PASTURE	.00000	.00000	.08974	.00000	.00000	.08974
14	GRASS SEEDS	.00000	.00000	.00011	.00000	.00000	.00011
15	TOBACCO	.00000	.00000	.00000	.00000	.00000	.00000
16	FRUITS	.00000	.00000	.00006	.00000	.00000	.00006
17	TREE NUTS	.00000	.00000	.00000	.00000	.00000	.00000
-	VEGETABLES	.00000	.00000	.02195	.00000	.00000	.02195
-		.00000	.00000	.00431	.00000	.00000	.00431
-		.00000	.00000	.00102	.00000	.00081	.00184
515	SOCIAL SERVICES, ...	.00000	.00000	.00000	.00000	.00000	.00000
516	U.S. POSTAL SERVICE	.00000	.00000	.00000	.00000	.00000	.00000
517	FEDERAL ELECTRIC UTILITIES	.00000	.00000	.00000	.00000	.00005	.01008
518	OTHER FEDERAL GOVERNMENT ENTERPRISES	.00000	.00000	.00000	.00000	.00000	1.10689
519	LOCAL GOVERNMENT PASSENGER TRANSIT	.00000	.00000	.00000	.00000	.00000	.00000
520	STATE AND LOCAL ELECTRIC UTILITIES	.00000	.00000	.00000	.00000	.00000	.00000
521	OTHER STATE AND LOCAL GOVT ENTERPRIS	.00000	.00000	.00000	.00000	.00000	.00000
522	NONCOMPARABLE IMPORTS	.00000	.00000	.00408	.00000	.00000	.00408
523	SCRAP	.00481	.00000	.00000	.00000	.00127	1.41857
524	USED AND SECONDHAND GOODS	.00000	.00000	.00833	.00000	.02598	5.47232
525	GOVERNMENT INDUSTRY	250.19880	.00000	.00000	.00000	.00000	250.19880
526	REST OF THE WORLD INDUSTRY	31.06652	.00000	.00000	.00000	.30603	41.47050
527	HOUSEHOLD INDUSTRY	2.24402	.00000	.00000	.00000	.00000	2.24402
528	INVENTORY VALUATION ADJUSTMENT	-6.89138	.00000	6.89138	.00000	.00000	.00000
TOTALS		1271.7420	.5812	13.5866	12.0519	.8954	1314.6430

Gross Commodity Production (GCP) Total value of each commodity produced in the region by all industries -i.e., the sum of the corresponding commodity column in the make matrix.

Foreign Exports (FXP) Value of regional export to outside of U.S..

Inventory Reduction (INR) A number here indicates that sales from inventory exceeded additions, a net reduction.

St & Local Government Sales (SLS) Sales of commodities by State and local government agencies.

Federal Government Sales (FGS) Sales of commodities by Federal government agencies.

Net Commodity Supply (NCS) The total amount of a commodity available for domestic export and for consumption by the region. This can be calculated by:

$$NCS = \text{Max} (0, GCP - FXP) + INR + SLS + FGS$$

MID.002

Miscellaneous Sales -- automatically generated when
Constructing Accounts.

MISCELLANEOUS SALES					
COMMODITY	LOW	P C E MED	HIGH	CAPITAL FORMATION	ROW SUMS
523	.1221	.4613	.3031	.5260	1.4125
524				5.4380	5.4380
526	1.3910	5.2545	3.4524		10.0980
TOTALS	1.5131	5.7158	3.7555	5.9640	

Sales of scrap (523), used and second hand goods (524) by households or business. Commodity 526 are services provided by households to other households such as housecleaning, childcare, and chauffeuring.

MID.003 1.5 Absorption Adjustment -- generated by user option
when Constructing Accounts.

ACCOUNT REPORT #1.5 3/ 1/89
PAGE 1

ABSORPTION ADJUSTMENT

REGIONAL PURCHASE COEFFICIENTS

INDUSTRY	NATIONAL INPUT COEFFICIENT		REGIONAL INPUT COEFFICIENT		ABSORPTION ADJUSTMENT RATIO	COMMODITY	S/DP RATIO	REGIONAL PURCHASE COEF (RPC)	DOMESTIC COMMODITY IMPORTS-\$MM	FOREIGN COMMODITY IMPORTS-\$MM
	INTERMEDIATE	FACTOR	INTERMEDIATE	FACTOR						
1	.76023	.23977	.76023	.23977	1.00000	1	1.0000	.7868	.0173	.0000
2	.90569	.09431	.00000	.00000	.00000	2*	.0002	.0000	2.5589	.0039
3	.88809	.11191	.00000	.00000	.00000	3	.0000	.0000	.0000	.0000
4	.88812	.11188	.00000	.00000	.00000	4	.0000	.0000	3.7294	.0000
5	.88812	.11188	.00000	.00000	.00000	5	.0002	.0001	17.2994	.3345
6	.88811	.11189	.00000	.00000	.00000	6	.0000	.0000	.5051	.0006
7	.88812	.11188	.00000	.00000	.00000	7*	.0014	.0000	9.9228	.0402
8	.88811	.11189	.00000	.00000	.00000	8	.0000	.0000	.0062	.0003
9	.84704	.15296	.00000	.00000	.00000	9*	.0006	.0000	.5035	.0345
10	.60470	.39530	.00000	.00000	.00000	10	.0000	.0000	.3947	.0014
11	.64120	.35880	.00000	.00000	.00000	11	.0000	.0000	.6076	.0010
12	.65026	.34974	.00000	.00000	.00000	12	.0000	.0000	.9839	.0030
13	.65026	.34974	.00000	.00000	.00000	13*	.0192	.0000	4.6787	.0000
14	.55043	.44957	.00000	.00000	.00000	14*	.1043	.0000	.0008	.0002
15	.44178	.55822	.00000	.00000	.00000	15	.0000	.0000	.0000	.0000
16	.47465	.52535	.00000	.00000	.00000	16*	.0000	.0000	2.1766	.5090
17	.37312	.62688	.00000	.00000	.00000	17	.0000	.0000	.1591	.0032
18	.44142	.55858	.00000	.00000	.00000	18*	.0048	.0000	4.1735	.4141
19					.00000	19*	1.0000	.0000	.0000	.0000
20					.00000	20*	.1500	.0000	.0114	.0008
21					.00000	21	.0000	.0000	.4633	.0003
517	.69895	.30105	.00000	.00000	.00000	521	.0000	.0000	.0000	.1208
518	.39422	.60578	.00000	.00000	.00000	522*	.0003	.0000	.0000	.0000
519	.60750	.39250	.00000	.00000	.00000	523	1.0000	.4829	.0000	.0000
520	.78947	.21053	.00000	.00000	.00000	524*	.9090	.4829	3.1134	.0000
521	.61205	.38795	.00000	.00000	.00000	525	.5193	.5193	231.5819	.0000
522	.00000	1.00000	.00000	.00000	.00000	526	1.0000	.0000	.0000	.0000
523	.00000	1.00000	.00000	.00000	.00000	527	.7872	.0000	2.8505	.0000
524	.00000	1.00000	.00000	.00000	.00000	528	.0000	.0000	.0000	.0000
525	.00000	1.00000	.00000	1.00000	.00000					
526	.00000	1.00000	.00000	1.00000	.00000					
527	.00000	1.00000	.00000	1.00000	.00000					
528	.00000	1.00000	.00000	1.00000	.00000					
TOTALS									1888.893	83.068

Input Coefficient The National and Regional Absorption matrices and Total Factor Payments ratios.

National Intermediate The sum of the corresponding industry column of the National Absorption matrix coefficients.

National Factor The fraction of Total Industry Output for the Nation represented by the total value added factor payments.

Regional Intermediate The sum of the corresponding industry column of the region's gross Absorption matrix coefficients (includes imports).

Regional Factor The fraction of the regional Total Industry Output represented by the regional total value added factor payments. This value may differ from the National average if one or more of the elements of value added has been user-modified.

Absorption Adjustment Ratio The ratio required to make the Regional Intermediate plus Regional Factor add to 1.0. If the region's Factor payment to Total Industry Output ratio (Regional Factor) differs from the National Factor then IMPLAN adjusts the corresponding industry column of the regional gross Absorption Matrix to rebalance the industry.

MID.003

1.5 Regional Purchase Coefficients -- generated by user option when Constructing Accounts.

ACCOUNT REPORT #1.5

3/ 1/89

PAGE 1

ABSORPTION ADJUSTMENT

REGIONAL PURCHASE COEFFICIENTS

INDUSTRY	INPUT COEFFICIENT				ABSORPTION ADJUSTMENT RATIO	COMMODITY	S/DP RATIO	REGIONAL PURCHASE COEF (RPC)	DOMESTIC COMMODITY IMPORTS-\$MM	FOREIGN COMMODITY IMPORTS-\$MM
	NATIONAL INTERMEDIATE	FACTOR	REGIONAL INTERMEDIATE	FACTOR						
1	.76023	.23977	.76023	.23977	1.00000	1	1.0000	.7868	.0173	.0000
2	.90569	.09431	.00000	.00000	.00000	2*	.0002	.0000	2.5589	.0009
3	.88809	.11191	.00000	.00000	.00000	3	.0000	.0000	.0000	.0000
4	.88812	.11188	.00000	.00000	.00000	4	.0000	.0000	3.7294	.0000
5	.88812	.11188	.00000	.00000	.00000	5	.0002	.0001	17.2994	.3345
6	.88811	.11189	.00000	.00000	.00000	6	.0000	.0000	.5051	.0006
7	.88812	.11188	.00000	.00000	.00000	7*	.0014	.0000	9.9228	.0422
8	.88811	.11189	.00000	.00000	.00000	8	.0000	.0000	.0062	.0003
9	.84704	.15296	.00000	.00000	.00000	9*	.0006	.0000	.5035	.0345
10	.60470	.39530	.00000	.00000	.00000	10	.0000	.0000	.3947	.0014
11	.64120	.35880	.00000	.00000	.00000	11	.0000	.0000	.6076	.0010
12	.65026	.34974	.00000	.00000	.00000	12	.0000	.0000	.9839	.0030
13	.65026	.34974	.00000	.00000	.00000	13*	.0192	.0000	4.6787	.0000
14	.55043	.44957	.00000	.00000	.00000	14*	.1043	.0000	.0008	.0002
15	.44178	.55822	.00000	.00000	.00000	15	.0000	.0000	.0000	.0000
16	.47465	.52535	.00000	.00000	.00000	16*	.0000	.0000	2.1766	.5090
17	.37312	.62688	.00000	.00000	.00000	17	.0000	.0000	.1591	.0032
18	.35838	.64162	.00000	.00000	.00000	18*	.0048	.0000	4.1735	.4141
19	.46027	.53973	.00000	.00000	.00000	19*	1.0000	.0000	.0000	.0000
20	.55070	.44930	.00000	.00000	.00000	20*	.1500	.0000	.0114	.0008
21	.39748	.60252	.00000	.00000	.00000	21	.0000	.0000	.4633	.0003
22	.34707	.65293	.00000	.00000	.00000	22	.0000	.0000	.0000	.0000
23*						23*	.0047	.0000	2.0098	.1208
								.1136	.6443	.0171
498	.30707	.69293	.00000	.00000	.00000	497	.0000	.0000		.4247
497	.49708	.50292	.00000	.00000	.00000	498	.0000	.0000	1.2908	.0000
498	.50553	.49447	.00000	.00000	.00000	499	.0000	.0000	.8740	.0000
499	.37449	.62551	.00000	.00000	.00000	500	.0000	.0000	1.2980	.0000
500	.27115	.72885	.00000	.00000	.00000	501	.0000	.0000	1.8161	.0000
501	.66890	.33110	.00000	.00000	.00000	502	.0086	.0086	14.5826	.0000
502	.38909	.61091	.38910	.61090	1.00002	503	.0000	.0000	63.4507	.0000
503	.39289	.60711	.00000	.00000	.00000	504	.4758	.4758	30.3501	.0000
504	.49266	.50734	.49266	.50734	1.00000	505	.0000	.0000	8.9531	.0000
505	.44243	.55757	.00000	.00000	.00000	506	.0000	.0000	10.6794	.0000
506	.49539	.50461	.00000	.00000	.00000	507	.8750	.8750	.6939	.0000
507	.53880	.46120	.53880	.46120	1.00000	508	1.0000	.9032	.7281	.0000
508	.37760	.62240	.37760	.62240	1.00000	509*	.1621	.1621	1.5857	.0000
509	.47458	.52542	.00000	.00000	.00000	510	.0000	.0000	1.4833	.0000
510	.57023	.42977	.00000	.00000	.00000	511	.0000	.0000	4.0650	.0000
511	.58325	.41675	.00000	.00000	.00000	512	.0000	.0000	9.5108	.0000
512	.42042	.57958	.00000	.00000	.00000	513*	.0034	.0034	5.5220	.0000
513	.51675	.48325	.00000	.00000	.00000	514	.0000	.0000	2.2959	.0000
514	.55445	.44555	.00000	.00000	.00000	515	.0000	.0000	11.7465	.0000
515	.17957	.82043	.00000	.00000	.00000	516	1.0000	.9047	.6435	.0000
516	.24151	.75849	.24151	.75849	1.00000	517	.0000	.0000	.0000	.0000
517	.69895	.30105	.69895	.30105	1.00000	518*	.2008	.2008	.3476	.0000
518	.39422	.60578	.00000	.00000	.00000	519	.0000	.0000	.0000	.0000
519	.60750	.39250	.00000	.00000	.00000	520	.0000	.0000	.0000	.0000
520	.78947	.21053	.00000	.00000	.00000	521	.0000	.0000	5.1145	.0000
521	.61205	.38795	.00000	.00000	.00000	522*	.0003	.0003	.0040	13.3616
522	.00000	1.00000	.00000	.00000	.00000	523	1.0000	.4829	.0041	.0018
523	.00000	1.00000	.00000	.00000	.00000	524*	.9090	.4829	3.1134	.0000
524	.00000	1.00000	.00000	.00000	.00000	525	.5193	.5193	231.5819	.0000
525	.00000	1.00000	.00000	1.00000	.00000	526	1.0000	.0000	.0000	.0000
526	.00000	1.00000	.00000	1.00000	.00000	527	.7872	.0000	2.8505	.0000
527	.00000	1.00000	.00000	1.00000	.00000	528	.0000	.0000	.0000	.0000
528	.00000	1.00000	.00000	1.00000	.00000					
TOTALS									1888.893	83.068

S/DP Ratio The supply demand pooling ratio represents the maximum fraction of the Gross Regional Commodity Demand that can be met by the region's Net Commodity Supply, used as an upper limit to the Regional Purchase Coefficient (RPC). Net Commodity Supply to Gross Regional Commodity Demand Ratio.

Regional Purchase Coef (RPC) The estimated fraction of the region's Net Commodity Supply used to meet the Gross Regional Commodity Demand as limited by the S/DP Ratio.

MID.005 2.0 Regional Trade Report -- automatically generated
when Constructing Accounts.

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REGIONAL TRADE REPORT

CHDTY	NAME	NET COMMODITY SUPPLY (MMS)	GROSS REGIONAL COMMODITY DEMAND (MMS)	AVG. REGIONAL COMMODITY PURCHASE COEF. (RPC)	AVG. IMPORT PROPNESITY (1-RPC)	TOTAL COMMODITY IMPORTS (MMS)	INTRAREGIONAL COMMODITY SALES COEFFICIENT	DOMESTIC COMMODITY EXPORTS (MMS)
1	DAIRY FARM PRODUCTS	9.77500	.08128	.78680	.21320	.01733	.00654	9.71105
2*	POULTRY AND EGGS	.00058	2.55980	.00000	1.00000	2.55980	.00000	.00058
3	RANCH FED CATTLE	.00000	.00000	.00000	1.00000	.00000	.00000	.00000
4	RANGE FED CATTLE	.00000	3.72938	.00000	1.00000	3.72938	.00000	.00000
	FEEDLOTS	.00388	17.63516	.00007	.99993	17.63388	.32944	.00260
		.00000	.50575	.00000	1.00000	.50575	.00000	.00000
221		.01346	9.96292	.00000	1.00000	9.96292	.00000	.01366
522*	NONCOMPARABLE IMPORTS		.00000	.00000	1.00000	.00644	.00000	.00000
523	SCRAP	1.41857		.00000	1.00000	.53797	.00000	.00030
524*	USED AND SECONDHAND GOOD	5.47232	6.02046			TOTAL	.00000	.00000
525	GOVERNMENT INDUSTRY	250.19880	481.78070	.51932	.48068			.00000
526	REST OF THE WORLD INDUST	41.47050	.00000	.00000	1.00000	.00000	.00000	.00000
527	HOUSEHOLD INDUSTRY	2.26402	2.85049	.00000	1.00000	2.85049	.00000	2.26402
528	INVENTORY VALUATION ADJU	.00000	.00000	.00000	1.00000	.00000	.00000	.00000
TOTALS		1314.6430	2988.9940			1971.9610		297.6100

*THESE COMMODITIES NOT PRODUCED BY ANY REGIONAL INDUSTRY.
ADDITIONS TO COMMODITY SUPPLY ARE MADE ONLY BY:
GOVT SALES, INVENTORY REDUCTIONS, SALES BY HOUSEHOLDS, OR
SALES OF CAPITAL GOODS.
MODIFICATIONS TO RPCS OR REGIONAL COMMODITY SUPPLY DO NOT APPLY
TO THESE COMMODITIES.
TOTAL CONTRIBUTIONS ARE:

FEDERAL GOVERNMENT SALES	=	.2552
ST. AND LOCAL GOVT SALES	=	.3256
INVENTORY REDUCTIONS	=	5.1476
HH LOW-INCOME SALES	=	.0000
HH MEDIUM-INCOME SALES	=	.0000
HH HIGH-INCOME SALES	=	.0000
CAPITAL GOODS SALES	=	5.4380

Net Commodity Supply Locally produced goods and services
available for local use (Total Commodity Supply minus
Foreign Exports).

Gross Regional Commodity Demand All local demand (intermediate
plus non-export final demands) for each commodity.

Ave. Regional Commodity Purchase Coef. (RPC) The IMPLAN
estimate (unless modified) of the fraction of local demand
met by the locally produced goods and services.

Ave. Import Propensity (1-RPC) The fraction of local demands
met by domestic and foreign imports.

Total Commodity Imports Domestic and foreign imports to the
region. Gross Regional Commodity Demand times Ave. Import
Propensity.

Intraregional Commodity Sales Coefficient The Regional Sales
Coefficient (RSC) is the fraction of Net Commodity Supply
(NCS) used to meet regional Gross Commodity Demand (GCD).

$$RSC = (RPC * GCD) / NCS$$

Domestic Commodity Export Exports by the region to the
rest of the U.S. Net Commodity Supply times (1 minus the
Regional Sales Coefficient).

MID.006

Industries and Commodities in the Model -- automatically generated when Constructing Accounts.

***** THE REGIONAL ACCOUNTS CONTAIN 33 INDUSTRIES AND 125 COMMODITIES *****

INDUSTRIES AND COMMODITIES IN THE MODEL:

IND	COM	IND	COM	IND	COM	IND	COM	IND	COM	IND	COM	IND	COM
1	1												
			102									502	502
					204				404	454	454	504	504
5	54					255							
	55					257						507	507
							306				456	508	508
							308				458		
							309				459	459	
			160	160							460	460	
			161	161				311	361		461	461	
			162	162				312			462	462	
			163	163				313			463	463	
			164	164				314			464	464	
			165	165	215								
	66	66	166	166	216	266					466	516	516
			167	167		267					467	467	517
			168	168	218	268	318				468	468	
	69	69	169	169	219	269			419				
			170	170	220	270	320				470	470	
			171	171		271					471	471	
			172	172		272	322						
			173	173									523
24	24		174	174									
						275						525	525
	26					276						526	526
			126				327					527	527
	28							329				528	528
			178		229	279							
			180		231	280							
			182			282					481		
	82	82	183										
	83		184						433				
			185		235								
			186										
			188		238								
			139		239								
	90												
			192										
					244		343	392		441	491	491	
							344						
45	44												
	45												
	46												
	47												
	48	98		198						448	448		
	49			199		299							

IND Existing industries.

COM Existing commodities.

MID.101

2.0 Regional Use Matrix -- generated by asking for the "Use Matrix" in Accounts Optional Reports.

REGIONAL USE MATRIX (MILLIONS OF 1982 DOLLARS)
 *** NOTE: THIS MATRIX IS TRANSPOSED FOR DISPLAY ***

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INDUSTRY	COMMODITY									
	1	5	24	26	28	44	45	46	47	48
1	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
24	.00000	.00000	.00078	.00000	.00000	.00000	.00000	.00000	.00000	.00000
45	.00000	.00000	.00000	.00000	.00000	.00000	.02484	.00000	.00000	.00021
66	.00000	.00000	.00000	.00000	.00000	.00000	.09472	.00002	.01057	.00175
69	.00000	.00000	.00000	.00000	.00000	.00000	.05403	.00001	.00603	.00682
82	.00000	.00120	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.04729	.00000	.00000	.00000	.00000	.00000	.00000	.00000
161	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
164	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
269	.00000	.00000	.00000	.00000	.00000	.00000	.06749	.00000	.00084	.04837
448	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
454	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
459	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
460	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
461	.00000	.00000	.00010	.00000	.00000	.00000	.00000	.00000	.00000	.00000
462	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
463	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
464	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
467	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
471	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
491	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
502	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
516	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
517	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

REGIONAL USE MATRIX (MILLIONS OF 1982 DOLLARS)
 *** NOTE: THIS MATRIX IS TRANSPOSED FOR DISPLAY ***

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INDUSTRY	COMMODITY				
	523	525	526	527	528
1	.00000	.00000	.00000	.00000	.00000
24	.00000	.00000	.00000	.00000	.00000
45	.00000	.00000	.00000	.00000	.00000
66	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000
82	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.00000	.00000	.00000
161	.00000	.00000	.00000	.00000	.00000
164	.00000	.00000	.00000	.00000	.00000
470	.00000	.00000	.00000	.00000	.00000
471	.00000	.00000	.00000	.00000	.00000
491	.00000	.00000	.00000	.00000	.00000
502	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000
508	.00000	.00000	.00000	.00000	.00000
516	.00000	.00000	.00000	.00000	.00000
517	.00000	.00000	.00000	.00000	.00000
525	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000

Use Matrix The values of commodities (columns) used in production by each industry (rows), net of imports.

MID.102

2.1 Regional Absorption Matrix - generated by asking for "Absorption Matrix" in Accounts Optional Reports.

REGIONAL ABSORPTION MATRIX (PERCENT OF INDUSTRY TOTAL INPUT PURCHASES)
 *** NOTE: THIS MATRIX IS TRANSPOSED FOR DISPLAY ***

ACCOUNT REPORT #2.1
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INDUSTRY	COMMODITY									
	1	5	24	26	28	44	45	46	47	48
1	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
24	.00000	.00000	.00080	.00000	.00000	.00000	.00000	.00000	.00000	.00000
45	.00000	.00000	.00000	.00000	.00000	.00000	.00914	.00000	.00000	.00038
66	.00000	.00000	.00000	.00000	.00000	.00000	.00067	.00000	.00007	.00001
69	.00000	.00000	.00000	.00000	.00000	.00000	.00338	.00000	.00038	.00043
82	.00000	.00003	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.04819	.00000	.00000	.00000	.00000	.00000	.00000	.00000
161	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
164	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
269	.00000	.00000	.00000	.00000	.00000	.00000	.00775	.00000	.00010	.00555
448	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
454	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
459	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
460	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
461	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
462	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
463	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
464	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
467	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
471	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
491	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
502	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
516	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
517	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

REGIONAL ABSORPTION MATRIX (PERCENT OF INDUSTRY TOTAL INPUT PURCHASES)
 *** NOTE: THIS MATRIX IS TRANSPOSED FOR DISPLAY ***

ACCOUNT REPORT #2.1
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INDUSTRY	COMMODITY				
	523	525	526	527	528
1	.00000	.00000	.00000	.00000	.00000
24	.00000	.00000	.00000	.00000	.00000
45	.00000	.00000	.00000	.00000	.00000
66	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000
82	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.00000	.00000	.00000
161	.00000	.00000	.00000	.00000	.00000
491	.00000	.00000	.00000	.00000	.00000
502	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000
508	.00000	.00000	.00000	.00000	.00000
516	.00000	.00000	.00000	.00000	.00000
517	.00000	.00000	.00000	.00000	.00000
525	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000

Absorption Matrix The fractions of each industry's total outlay spent on commodities consumed during production, net of imports.

MID.103

3.0 Regional Make Matrix -- generated by asking for
"Make Matrix" in Accounts Optional Reports. (Millions
of 1982 dollars).

ACCOUNT REPORT #3.0 PAGE 1
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REGIONAL MAKE MATRIX (MILLIONS OF 1982 DOLLARS)

INDUSTRY	NUMBER OF COMDTYS	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE
1	4	(1 9.77445)	(26 .05144)	(90 2.38096)	(502 .01023)	
24	1	(24 .97520)				
45	9	(28 .00936)	(44 .00039)	(45 2.57425)	(47 .01561)	(48 .04487)
		(49 .00858)	(54 .00039)	(55 .01385)	(238 .05092)	
66	1	(66 142.04190)				
69	1	(69 15.96617)				
82	9	(5 .00388)	(82 34.42358)	(83 6.53773)	(98 .01279)	(102 .03321)
		(121 .78394)	(123 .03666)	(126 .00014)	(229 .02113)	
160	13	(160 .95948)	(161 .01962)	(162 .00029)	(163 .00008)	(164 .00002)
		(166 .00162)	(167 .00001)	(169 .00009)	(170 .00010)	(172 .00001)
		(173 .00005)	(275 .00002)	(344 .00002)		
161	28	(139 .00010)	(160 .02256)	(161 .78350)	(162 .00250)	(163 .00141)
		(164 .00467)	(165 .00002)	(166 .01945)	(167 .00174)	(169 .00089)
		(170 .00043)	(171 .00116)	(172 .00017)	(173 .00012)	(174 .00043)
		(183 .00032)	(199 .00048)	(216 .00012)	(218 .00205)	(219 .00002)
		(220 .00062)	(231 .00142)	(269 .00018)	(276 .00029)	(280 .00008)
		(329 .00053)	(433 .00028)	(441 .00024)		
164	42	(131 .00133)	(160 .00199)	(161 .03658)	(162 .00017)	(163 .00050)
		(164 2.92524)	(165 .02821)	(166 .01543)	(167 .00307)	(168 .00100)
		(170 .00091)	(171 .00216)	(172 .00299)	(173 .00307)	(174 .00141)
		(178 .00166)	(180 .00017)	(182 .00108)	(183 .00216)	(184 .00091)
		(185 .00033)	(186 .00008)	(188 .00083)	(192 .00913)	(198 .00232)
		(220 .00199)	(244 .01568)	(271 .00091)	(299 .00108)	(306 .00166)
		(309 .02248)	(312 .00133)	(313 .00066)	(318 .00149)	(320 .00149)
		(. .01153)	(329 .00738)	(343 .00290)	(392 .00315)	(404 .00357)
		(. .00299)	(523 .00481)			
507		(. .00041)	(46 .00041)	(47 .03052)	(48 .15816)	(161 .00203)
508	1	(. .00027)	(204 .00027)	(215 .00339)	(235 .00041)	(238 .04069)
516	1	(216 .00109)		(255 .01791)	(257 .00515)	(266 .00217)
517	4	(525 250.194)	(. .11014)	(269 8.16060)	(270 .00068)	(272 .00448)
525	1	(526 31.06652)		(279 .00380)	(280 .00014)	(282 .00122)
526	1	(527 2.24402)		(314 .00163)	(327 .00081)	(329 .00109)
527	1	(1 .00055)	(45 .00111)			
INV CHANGE	63	(90 .00985)	(126 .00111)			
		(161 .01329)	(164 .04061)			
		(169 .00311)	(170 .00018)	(171 .00018)		
		(183 .00103)	(184 .00552)	(185 .00552)		
		(199 .00219)	(204 .04217)	(215 .00450)		
		(229 .00325)	(235 .02358)	(244 .41064)		
		(266 .00209)	(267 .01409)	(268 .00865)	(269 .00865)	
		(279 .00585)	(280 .05229)	(308 .06044)	(309 .00111)	
		(313 .03471)	(314 .00198)	(320 .00291)	(322 .01478)	
		(329 .00206)	(343 .08235)	(361 .01540)	(392 .00246)	(404 .00000)
		(419 .00025)	(433 .00292)	(441 .01444)	(448 .04826)	(460 .00000)
		(461 .22741)	(463 .00031)	(467 .00003)		
S/L GOV SALE	7	(24 .09747)	(48 .04219)	(463 .21636)	(471 3.29783)	(491 6.27422)
		(504 .00493)	(507 1.79332)			
FED GOV SALE	8	(24 .03422)	(54 .00010)	(219 .00013)	(235 .17807)	(467 .01466)
		(470 .10564)	(523 .00127)	(526 .30603)		

Make Matrix The values of commodities produced by each industry.

Inv Change (Reductions) sales of commodities by all industries from inventory.

S/L Gov Sale Sales of commodities by State and local governments.

Fed Gov Sales Sales of commodities by the Federal government.

MID.104

4.0 Regional Market Shares Matrix -- generated by asking for "Market Shares Matrix" in Accounts Optional Reports.

ACCOUNT REPORT #4.0

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REGIONAL MARKET SHARES MATRIX (PERCENT OF COMMODITY PRODUCED)

INDUSTRY	NUMBER OF COMDTYS	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE
1	4	(1 .99994)	(26 1.00000)	(90 .99588)	(502 .08059)	
24	1	(24 .88103)				
45	9	(28 1.00000)	(44 1.00000)	(45 .99234)	(47 .31799)	(48 .17505)
		(49 1.00000)	(54 .80089)	(55 1.00000)	(238 .55581)	
66	1	(66 1.00000)				
69	1	(69 1.00000)				
82	9	(5 1.00000)	(82 .99861)	(83 1.00000)	(98 1.00000)	(102 1.00000)
		(121 1.00000)	(123 1.00000)	(126 .07530)	(229 .86667)	
160	13	(160 .97284)	(161 .02295)	(162 .09808)	(163 .03788)	(164 .00001)
		(166 .04448)	(167 .00061)	(169 .02105)	(170 .05949)	(172 .00177)
		(173 .01658)	(275 .01120)	(344 1.00000)		
161	28	(139 .99035)	(160 .02288)	(161 .91634)	(162 .84587)	(163 .71159)
		(164 .00157)	(165 .00033)	(166 .53276)	(167 .09787)	(169 .21840)
		(170 .26704)	(171 .34993)	(172 .02730)	(173 .03655)	(174 .01487)
		(183 .09219)	(199 .17999)	(216 .00110)	(218 .07767)	(219 .02599)
		(220 .23861)	(231 1.00000)	(269 .00002)	(276 .19314)	(280 .00150)
		(329 .04784)	(433 .08646)	(441 .01668)		
164	42	(131 .08774)	(160 .00202)	(161 .04279)	(162 .05605)	(163 .25052)
		(164 .98475)	(165 .59307)	(166 .42275)	(167 .17288)	(168 .02796)
		(170 .56098)	(171 .65007)	(172 .49151)	(173 .94687)	(174 .04827)
		(178 1.00000)	(180 .05475)	(182 1.00000)	(183 .61402)	(184 .14195)
		(185 .67332)	(186 1.00000)	(188 .82579)	(192 1.00000)	(198 .15620)
		(220 .76139)	(244 .03668)	(271 1.00000)	(299 1.00000)	(306 1.00000)
		(309 .59373)	(312 1.00000)	(313 .01876)	(318 1.00000)	(320 .33897)
		(322 .43826)	(329 .66746)	(343 .03406)	(392 .56148)	(404 .22384)
		(419 .92333)	(523 .00339)			
269	31	(45 .00497)	(46 1.00000)	(47 .62183)	(48 .61702)	(161 .00238)
		(167 .03056)	(204 .00639)	(215 .42553)	(235 .00201)	(238 .44419)
		(239 1.00000)	(244 .00254)	(255 .81867)	(257 .13385)	(266 .50991)
		(267 .91055)	(268 .92718)	(269 .99288)	(270 1.00000)	(272 .51150)
		(275 .98880)	(276 .80686)	(279 .39382)	(280 .00258)	(282 1.00000)
		(308 .01763)	(311 .13833)	(314 .45055)	(327 .09390)	(329 .09811)
		(361 .05807)				
448	2	(448 .99686)	(459 .28661)			
454	1	(454 1.00000)				
459	1	(459 .71339)				
460	1	(460 .99248)				
461	1	(461 .99750)				
462	1	(462 1.00000)				
463	1	(463 .99852)				
464	3	(464 1.00000)	(466 1.00000)	(481 1.00000)		
467	1	(467 .99914)				
468	1	(468 1.00000)				
470	1	(470 .99538)				
471	2	(470 .00304)	(471 .87976)			
491	1	(491 .95405)				
502	1	(502 .91941)				

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REGIONAL MARKET SHARES MATRIX (PERCENT OF COMMODITY PRODUCED)

INDUSTRY	NUMBER OF COMDTYS	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE
504	1	(504 .99982)				
507	1	(507 .63091)				
508	1	(508 1.00000)				
516	1	(516 1.00000)				
517	4	(216 .99890)	(456 1.00000)	(458 1.00000)	(470 .00081)	
525	1	(525 1.00000)				
526	1	(526 .74912)				
527	1	(527 1.00000)				

Market Shares The fraction of each commodity's Total Supply produced by each industry.

MID.105

5.0 Regional Byproducts Matrix -- generated by asking for "Byproducts Matrix" in Accounts Optional Reports.

ACCOUNT REPORT #5.0

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REGIONAL BYPRODUCTS MATRIX (PERCENT OF INDUSTRY OUTPUT)

INDUSTRY	NUMBER OF COMDTYS	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE
1	4	(1 .80006)	(26 .00421)	(90 .19489)	(502 .00084)	
24	1	(24 1.00000)				
45	9	(28 .00345)	(44 .00014)	(45 .94703)	(47 .00574)	(48 .01651)
		(49 .00316)	(54 .00014)	(55 .00510)	(238 .01873)	
66	1	(66 1.00000)				
69	1	(69 1.00000)				
82	9	(5 .00009)	(82 .82249)	(83 .15621)	(98 .00031)	(102 .00079)
		(121 .01873)	(123 .00088)	(126 .00000)	(229 .00050)	
160	13	(160 .97766)	(161 .01999)	(162 .00030)	(163 .00008)	(164 .00002)
		(166 .00165)	(167 .00001)	(169 .00009)	(170 .00010)	(172 .00001)
		(173 .00005)	(275 .00001)	(344 .00002)		
161	28	(139 .00012)	(160 .02668)	(161 .92635)	(162 .00296)	(163 .00167)
		(164 .00552)	(165 .00002)	(166 .02299)	(167 .00205)	(169 .00106)
		(170 .00051)	(171 .00137)	(172 .00020)	(173 .00014)	(174 .00051)
		(183 .00038)	(199 .00057)	(216 .00014)	(218 .00242)	(219 .00002)
		(220 .00074)	(231 .00168)	(269 .00021)	(276 .00035)	(280 .00009)
		(329 .00063)	(433 .00033)	(441 .00029)		
164	42	(131 .00042)	(160 .00064)	(161 .01170)	(162 .00005)	(163 .00016)
		(164 .93523)	(165 .00902)	(166 .00493)	(167 .00098)	(168 .00032)
		(170 .00029)	(171 .00069)	(172 .00095)	(173 .00098)	(174 .00045)
		(178 .00053)	(180 .00005)	(182 .00034)	(183 .00069)	(184 .00029)
		(185 .00011)	(186 .00003)	(188 .00027)	(192 .00292)	(198 .00074)
		(220 .00064)	(244 .00501)	(271 .00029)	(299 .00034)	(306 .00053)
		(309 .00719)	(312 .00042)	(313 .00021)	(318 .00048)	(320 .00048)
		(322 .00369)	(329 .00236)	(343 .00093)	(392 .00101)	(404 .00114)
		(419 .00095)	(523 .00154)			
269	31	(45 .00148)	(46 .00005)	(47 .00350)	(48 .01816)	(161 .00023)
		(167 .00006)	(204 .00003)	(215 .00039)	(235 .00005)	(238 .00005)
		(239 .00008)	(244 .00012)	(255 .00206)	(257 .00059)	(266 .00025)
		(267 .01646)	(268 .01265)	(269 .93697)	(270 .00008)	(272 .00051)
		(275 .00011)	(276 .00014)	(279 .00044)	(280 .00002)	(282 .00014)
		(308 .00012)	(311 .00012)	(314 .00019)	(327 .00009)	(329 .00012)
		(361 .00011)				
448	2	(448 .97362)	(459 .02638)			
454	1	(454 1.00000)				
459	1	(459 1.00000)				
460	1	(460 1.00000)				
461	1	(461 1.00000)				
462	1	(462 1.00000)				
463	1	(463 1.00000)				
464	3	(464 .97513)	(466 .00901)	(481 .01586)		
467	1	(467 1.00000)				
468	1	(468 1.00000)				
470	1	(470 1.00000)				
471	2	(470 .01690)	(471 .98310)			
491	1	(491 1.00000)				
502	1	(502 1.00000)				

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REGIONAL BYPRODUCTS MATRIX (PERCENT OF INDUSTRY OUTPUT)

INDUSTRY	NUMBER OF COMDTYS	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE	COMMODITY NO. & VALUE
504	1	(504 1.00000)				
507	1	(507 1.00000)				
508	1	(508 1.00000)				
516	1	(516 1.00000)				
517	4	(216 .01751)	(456 .96387)	(458 .00060)	(470 .01802)	
525	1	(525 1.00000)				
526	1	(526 1.00000)				
527	1	(527 1.00000)				

By-Products Matrix The fraction of each industry's Total Output that each commodity represents.

MID.106 6.0 Regional Consumption Demand -- generated by asking for "Final Demand Matrix" in Regional Optional Reports. All demands are net of imports.

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REGIONAL CONSUMPTION DEMAND (MILLIONS OF 1982 DOLLARS)

COMMODITY	HOUSEHOLDS PERSONAL CONSUMPTION			FEDERAL		GOVERNMENTS		
	LOW	MEDIUM	HIGH	PUR/NON-MIL	PUR/MIL	CCC	PUR/NON-ED	STATE/LOCAL PUR/ED
1	.0096	.0345	.0198	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
24	.0050	.0190	.0125	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
49	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
54	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
55	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
66	.0000	.0000	.0000	.0000	.0627	.0000	1.6769	.4049
69	.0000	.0000	.0000	.3418	.0004	.0000	10.4068	.0000
82	1.6698	6.2186	3.1134	.0001	.0001	.0000	.4334	1.6620
83	.7224	2.6901	1.3468	.0004	.0016	.0000	.0801	.4838
90	.3726	1.1680	.5507	.0003	.0000	.0000	.0000	.0000
98	.0011	.0042	.0020	.0000	.0000	.0000	.0000	.0000
102	.0026	.0174	.0127	.0000	.0000	.0000	.0000	.0000
121	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
123	.0039	.0121	.0061	.0000	.0000	.0000	.0000	.0000
126	.0002	.0009	.0004	.0000	.0000	.0000	.0000	.0000
131	.0000	.0003	.0001	.0000	.0000	.0000	.0001	.0002
139	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
160	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
161	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
162	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
--	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
523	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
525	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
526	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
527	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	67.3272	237.5254	144.3377	9.1336	6.9665	.0000	146.3013	117.1751

Households Personal Consumption - Medium Purchase of commodities by individuals for personal use.
 Low Households earning less than \$10,000
 Medium Households earning between \$10,000 and \$30,000.
 High Households earning more than \$30,000.

Pur/Non-Mil Purchase of commodities by Federal non-military agencies.

Pur/Mil Purchase of commodities by military agencies of the Federal government.

CCC Purchases by the Federal Commodity Credit Corporation

Pur/Non-ed Purchase of commodities by non-educational State and local government agencies.

Pur/Ed Purchase of commodities by educational State and local government agencies.

MID.106

6.1 Regional Investment and Trade Demand -- generated by asking for "Final Demands Matrix" in Accounts Optional Reports. All demands are net of imports.

ACCOUNT REPORT #6.1 PAGE 1
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REGIONAL INVESTMENT & TRADE DEMAND (MILLIONS OF 1982 DOLLARS)

COMMODITY	INVESTMENT		TRADE		INTERMEDIATE DEMAND (\$MM)	TOTAL		COMMODITY OUTPUT (\$MM)
	INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	DOMESTIC EXPORTS (\$MM)	FOREIGN EXPORTS (\$MM)		INTERMEDIATE DEMAND (\$MM)	FINAL DEMAND (\$MM)	
1	.0000	.0000	9.7111	.0000	.0000	9.7750	9.7750	9.7750
5	.0001	.0000	.0026	.0000	.0012	.0027	.0039	.0039
24	.0000	.0000	1.0222	.0000	.0482	1.0587	1.1069	1.1069
26	.0000	.0000	.0000	.0514	.0000	.0514	.0514	.0514
28	.0000	.0000	.0094	.0000	.0000	.0094	.0094	.0094
44	.0000	.0000	.0004	.0000	.0000	.0004	.0004	.0004
45	.0000	.0000	2.3530	.0000	.2411	2.3530	2.5941	2.5941
46	.0000	.0000	.0004	.0000	.0000	.0004	.0004	.0004
47	.0000	.0000	.0316	.0000	.0174	.0316	.0491	.0491
48	.0000	.0000	.1992	.0000	.0571	.1992	.2563	.2563
49	.0000	.0000	.0086	.0000	.0000	.0086	.0086	.0086
54	.0000	.0000	.0005	.0000	.0000	.0005	.0005	.0005
55	.0000	.0000	.0116	.0000	.0023	.0116	.0139	.0139
66	.0000	139.8974	.0000	.0000	.0000	142.0419	142.0419	142.0419
69	.0000	5.2172	.0000	.0000	.0000	15.9662	15.9662	15.9662
-	.0000	.0000	13.2616	.0000	8.1125	26.3590	34.4715	34.4715
		.0000	.0000	.0000	1.2125	5.3252	6.5377	6.5377
523	-----		.0000	.0000	.2992	2.0916	2.3908	2.3908
525	.0000	.0000	-----	-----	.0002	.0126	.0128	.0128
526	.0000	.0000	41.4705	-----	-----	.0328	.0332	.0332
527	.0000	.0000	2.2440	.0000	-----	-----	7A39	7A39
528	.0000	.0000	.0000	.0000	-----	-----	-----	-----
TOTALS	.0049	165.1676	289.8127	.5812	119.7250	1184.3330	1304.0580	1304.0580

Investment Inventory Additions Net addition to inventory --i.e., current year's production of a commodity exceeds the current year's sales.

Investment Capital Formation Total purchases by firms for each commodity used as investment (land, plant and equipment, etc. used in the production process).

Trade Domestic Exports Commodity export from the region to the rest of the United States.

Trade Foreign Exports Commodity export from the region to the rest of the world outside of the U.S.

Total Intermediate Demand Total Commodity Output minus Total Final Demand. Total purchases of a commodity by all industries to be used to produce goods or services. The sum of the row of the USE matrix.

Total Final Demand Sum of all purchases for final use or consumption.

Total Commodity Output Total value of each commodity produced by all industries.

MID.107

7.0 Final Payments: Factors -- generated by asking for "Final Payments Matrix" in Accounts Optional Reports.

ACCOUNT REPORT #7.0 PAGE 1
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FINAL PAYMENTS: FACTORS (\$MM 1982)

INDUSTRY	EMPLOYEE COMPENSATION	INDIRECT BUSINESS TAXES	PROPRIETARY INCOME	OTHER PROPERTY INCOME	TOTAL VALUE ADDED	EMPLOYMENT
1	.7414	.2005	1.4029	.5845	2.9293	174.84
24	.0691	.0577	.1162	.2527	.4957	10.00
45	.8448	.1139	-.0139	.6362	1.5811	31.27
66	36.4201	1.5595	3.6116	2.4874	44.0785	1381.24
69	4.3532	.2175	.3513	.2417	5.1637	140.16
82	3.7509	.1040	.0047	.3945	4.2541	110.69
160	.1943	.0037	.0139	.0810	.2929	10.39
161	.2367	.0118	.0078	.0457	.3020	27.85
164	.6408	.0515	.0193	.1127	.8244	57.15
269	2.0809	.1321	.0014	.3708	2.5851	63.62
448	6.5654	.3890	.6417	1.7605	9.3566	363.08
454	10.5398	2.1634	-.0296	9.3413	22.0350	357.68
459	.2979	.0464	.0024	.3088	.6554	15.79
460	1.4763	.4432	.0667	.3998	2.3860	17.04
461	37.4426	11.2411	1.6908	10.1390	60.5134	1885.36
462	6.3308	2.0301	.4347	1.0777	9.8733	514.14
463	67.9968	21.8041	4.6687	11.5754	106.0450	5659.07
464	15.0055	.6436	.0380	7.1141	22.8011	800.17
467	4.2378	.9972	.0000	-.0931	5.1420	351.92
468	3.6634	.1413	.6369	.2504	4.6920	177.39
470	6.8517	17.9001	-1.8053	85.1086	108.0551	861.80
471	7.0756	.8566	-.6122	3.2077	10.5278	904.12
491	37.7688	5.3070	2.8443	7.0432	52.9632	5430.48
502	.0417	.0067	.0011	.0218	.0713	5.06
504	13.5979	.0017	.2353	.1385	13.9735	943.59
507	1.4140	.0000	.0000	-.0003	1.4138	332.87
508	42.9499	.0000	.0000	-.0044	42.9455	2118.30
516	9.1774	.0000	.0000	-1.7727	7.4048	317.13
517	.8364	.0000	.0000	1.0144	1.8507	21.23
525	250.1988	.0000	.0000	-.0000	250.1988	12892.42
526	-.0577	.0000	.0000	31.1242	31.0665	-16.21
527	2.2440	.0000	.0000	.0000	2.2440	248.46
528	.0000	.0000	-.2883	-6.6031	-6.8914	.00
TOTALS	574.9871	66.4238	14.0402	166.3788	821.8300	36208.10

Employee Compensation Total payroll costs (wages and salaries and benefits) paid by local industries.

Indirect Business Taxes Sales and excise taxes paid by firms during their production processes.

Proprietary Income Income from self employment.

Other Property Income Includes corporate income, rental income, interest, and corporate transfer payments.

Total Value Added The amount added to the intermediate costs goods and services. It is the sum of Employee Compensation, Proprietary Income, Indirect Business Taxes, and Other Property Income.

Employment Number of jobs (annual average) required by a given industry, including self employed.

FINAL PAYMENTS: TRADE								
INDUSTRY	COMPETITIVE IMPORTS (MMS)	NON-COMPETITIVE IMPORTS (MMS)	TOTAL DOMESTIC IMPORTS (MMS)	FOREIGN IMPORTS (MMS)	TOTAL IMPORTS (MMS)	TOTAL DOMESTIC FINAL PAYMENTS (MMS)	TOTAL FINAL PAYMENTS (MMS)	TOTAL INDUSTRY OUTLAYS (MMS)
1	.98094	7.28310	8.20762	.05642	8.26404	11.13694	11.19336	12.21708
24	.25167	.17786	.42640	.00313	.42953	.92214	.92527	.97520
45	.44328	.45050	.84484	.04894	.89378	2.42589	2.47483	2.71823
66	45.26513	28.19044	70.21835	3.23724	73.45557	114.29690	117.53410	142.04190
69	5.43913	4.16262	9.36567	.23608	9.60175	14.52939	14.76546	15.96617
82	18.40367	15.22506	33.21663	.41209	33.62872	37.47076	37.88285	41.85307
160	.46330	.08759	.52758	.02332	.55090	.82045	.84377	.98140
161	.10368	.03672	.13458	.00582	.14040	.43655	.44237	.84579
164	1.37655	.36370	1.56901	.17123	1.74024	2.39336	2.56460	3.12782
269	3.90354	1.13808	4.90378	.13783	5.04161	7.48891	7.62674	8.70956
448	2.39078	1.79233	4.01438	.16873	4.18310	13.37093	13.53966	15.75677
454	.41174	1.72266	1.72362	.41079	2.13440	23.75857	24.16936	24.62028
459	.21816	.27472	.27474	.01814	.29288	.93012	.94826	1.03473
460	.27658	.54644	.80227	.02076	.82302	3.18827	3.20902	3.58311
	.01452	13.85881	20.34688	.52645	20.87333	80.86028	81.38673	90.87431
		.40443	2.61105	.04552	2.65658	12.48433	12.52986	13.61909
			.04425	.48896	28.53320	134.08930	134.57820	146.27720
507	.46406				11.90877	34.48332	34.70984	39.22547
508	6.02237	12.30939				8.51323	8.56887	17.14366
516	.42278	1.43882	1.78028	.06111			4.39486	7.18626
517	.52921	3.55292	4.02923	.05290	4.08213			9.1700
525	.00000	.00000	.00000	.00000	.00000	250.19880	250.19880	
526	.00000	.00000	.00000	.00000	.00000	31.06652	31.06652	31.06652
527	.00000	.00000	.00000	.00000	.00000	2.24402	2.24402	2.24402
528	.00000	.00000	.00000	.00000	.00000	-6.89138	-6.89138	-6.89138
TOTALS	143.5534	186.5262	319.6884	10.3912	330.0796	1141.5180	1151.9100	1271.7420

Competitive Imports The value of all commodities imported to the region by each industry which are also locally produced.

Non-Competitive Imports The value of all commodities imported to the region by each industry which are not locally produced.

Total Domestic Imports Total value of all commodities imported to the region by each industry from the rest of the U.S..

Foreign Imports Total value of all commodities imported to the region by each industry from the rest of the world outside the U.S..

Total Imports Total imports, foreign and domestic, to the region by each industry.

Total Domestic Final Payments All payments to domestic entities other than for local intermediate goods and services. The sum of Total Value Added and Total Domestic Imports.

Total Final Payments All payments by each industry other than for local intermediate goods and services. The sum of Total Value Added and Total Imports.

Total Industry Outlay (Total Industry Output). The sum of all purchases by an industry in its production process.

MID.108

8.0 Regional Non-competitive Commodity Imports to Intermediate demand -- generated by asking for "Non-Comp. Imports to Use" in Accounts Optional Reports.

REGIONAL NON-COMPETITIVE COMMODITY IMPORTS TO INTERMEDIATE DEMAND (MILLIONS OF 1982 DOLLARS)

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COMTY	INDUSTRY									
	1	24	45	66	69	82	160	161	164	269
2	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
4	.00000	.00000	.00000	.00000	.00000	3.72938	.00000	.00000	.00000	.00000
6	.00000	.00000	.00000	.00000	.00000	.49329	.00000	.00000	.00000	.00000
7	.00000	.00000	.00000	.00000	.00000	9.96292	.00000	.00000	.00000	.00000
9	.00000	.00000	.00000	.00000	.00000	.00867	.00000	.00000	.00000	.00000
11	.00879	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
12	.05439	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
13	.26688	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
14	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
16	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
18	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
20	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
23	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
25	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
27	.00000	.00041	.00016	.19132	.11659	.00044	.00005	.00004	.00027	.00061
40	.00000	.00000	.00000	.00000	.00000	.00058	.00000	.00001	.00036	.00090
58	.00062	.00000	.00000	.00507	.01258	.00000	.00000	.00000	.00000	.00566
63	.00000	.00000	.00000	.00000	.00000	.00291	.00000	.00000	.00000	.00000
73	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
74	.12254	.12400	.02132	.21584	.01917	.06007	.00615	.00403	.02448	.18145
79	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00001	.00000	.00000
80	.00000	.00211	.00000	.00512	.00080	.00000	.00000	.00000	.00000	.00911
84	.00000	.00209	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
85	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
86	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
87	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
88	.00000	.00000	.00000	.00000	.00000	.01587	.00000	.00000	.00000	.00000
104	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
105	.01377	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
106	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
107	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
108	.03135	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
109	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
110	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
112	.01118	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
114	.00000	.00000	.00000	.00108	.00000	.00000	.00000	.00000	.00000	.00000
115	.00132	.00000	.00034	.00144	.00037	.00202	.00000	.00003	.00029	.00072
116	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

REGIONAL NON-COMPETITIVE COMMODITY IMPORTS TO INTERMEDIATE DEMAND (MILLIONS OF 1982 DOLLARS)

ACCOUNT REPORT #8.0

3/ 1/89

PAGE 5. 4 OF 5. 4

COMTY	INDUSTRY		
	526	527	528
435	.00000	.00000	.00000
436	.00000	.00000	.00000
437	.00000	.00000	.00000
521	.00000	.00000	.00000
522	.00000	.00000	.00000
524	.00000	.00000	.00000

NON-COMPETITIVE IMPORTS FOR THE FOLLOWING COMMODITIES ARE ZERO FOR THE ENTIRE ROW
THE ROW IS NOT PRINTED IN ORDER TO SAVE PROCESSING TIME:

3 8 10 15 17 19 21 22 29 30 31 32 33 34 35 36 37 38 39 41 42 43 50 51 52 53 56 57 59 60
61 62 64 65 67 68 70 71 72 75 76 77 78 81 111 113 127 128 129 130 132 133 134 137 138 141 145 146 147 148
149 156 157 158 175 176 177 179 181 187 189 206 209 212 213 214 217 222 223 226 227 228 233 237 241 242 247 248 249 250
252 278 281 283 284 286 289 291 293 294 301 302 317 323 324 336 341 342 345 348 350 351 352 356 358 363 367 371 372 377
380 384 401 405 407 408 410 411 412 413 414 416 421 423 429 430 432 439 440 443 455 469 473 476 477 496 498 505 511 512
514 517 519 520

Non-Competitive Imports to Intermediate Demand Import of
industry produced commodities, which are not produced in the
region.

MID.108

8.0s Regional Non-competitive Imports to
Non-industrial Regional Purchases -- generated by
asking for "Non-comp. Imports to Use".

REGIONAL NON-COMPETITIVE COMMODITY IMPORTS TO NON-INDUSTRIAL REGIONAL PURCHASES (1982 \$MM)

ACCOUNT REPORT #8.0-S
DATE 3/ 1/89
PAGE 1. 1 OF 4. 4

COMDTY	INDUSTRY									
	1	24	45	66	69	82	160	161	164	269
2	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
7	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
9	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
13	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
14	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
16	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
18	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
19	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
20	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
23	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
25	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
29	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
30	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
37	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
38	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
41	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
42	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
57	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
78	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
84	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
88	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
89	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
91	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
94	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
95	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
99	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
100	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
103	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
104	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
106	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
108	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
109	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
115	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
116	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
118	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
120	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
124	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
127	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
132	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
151	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
155	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
157	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
159	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
191	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
200	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
201	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
202	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
203	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
205	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
208	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000

REGIONAL NON-COMPETITIVE COMMODITY IMPORTS TO NON-INDUSTRIAL REGIONAL PURCHASES (1982 \$MM)

ACCOUNT REPORT #8.0-S
DATE 3/ 1/89
PAGE 4. 4 OF 4. 4

COMDTY	INDUSTRY		
	526	527	528
495	.000000	.000000	.000000
509	.000000	.000000	.000000
513	.000000	.000000	.000000
518	.000000	.000000	.000000
522	.000000	.000000	.000000
524	.000000	.000000	.000000

Non-Competitive Imports from Non-industrial Sources Import of
commodities, which are not produced locally, from
non-industry sources --i.e, inventory sales, Federal
government sales, and State and local government sales.

MID.109

9.0 Regional Non-competitive Imports to Consumption Demand -- generated by asking for "Non-Comp. Imports to FD" in Accounts Optional Reports.

ACCOUNT REPORT #9.0 PAGE 1
3/ 1/89

REGIONAL NON-COMPETITIVE IMPORTS TO CONSUMPTION DEMAND
(MILLIONS OF 1982 DOLLARS)

COMDTY	HOUSEHOLDS			GOVERNMENTS			STATE-LOCAL	
	PERSONAL CONSUMPTION	MEDIUM	HIGH	PUR/NON-MIL	FED. GOVT PUR/MIL	CCC	PUR/NON-ED	PUR-ED
2	.3498	1.0055	.4796	.0000	.0000	.0000	.0442	.1155
3	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
9	.0699	.2605	.1304	.0000	.0003	.0000	.0085	.0000
10	.0000	.0000	.0000	.3960	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.4896	.0000	.0000	.0000	.0000
12	.0135	.0512	.0336	.7979	.0000	.0000	.0000	.0000
13	.0328	.2192	.1598	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
16	.4655	1.3469	.7431	.0000	.0000	.0000	.0000	.0000
17	.0224	.0844	.0555	.0000	.0000	.0000	.0000	.0000
18	.6224	1.9991	.9976	.0000	.0000	.0000	.0000	.0000
19	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
21	.0064	.0242	.0159	.4173	.0000	.0000	.0000	.0000
22	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
23	.2059	.9543	.8718	.0000	.0000	.0000	.0000	.0000
25	.0401	.1515	.0996	.0000	.0000	.0000	.0000	.0000
25	.0000	.0373	.0245	.0317	.0010	.0000	.0000	.0000
...	...	...	.0000	.0000	.0000	.0000	.0000	.0000
520	.0000	...	...	.0000	.0000	.0000	.0000	.0000
521	.6316	2.3860	1.5611	...	...	.0000	.0000	.0000
522	1.5795	5.9664	3.9202	.4741	.3043	.0000	.0000	.0000
524	.4278	1.6162	1.0619	.0000	.0000	.0000	.0000	.0000
TOTALS	91.0535	361.2583	260.0442	27.0160	8.1106	.0000	69.9688	68.3161

Non-Competitive Imports to Consumption Demand Import of industry produced commodities, which are not produced in the region, by elements of final demand identified as "Consumption".

Households Personal Consumption - Medium Purchase of commodities by individuals for personal use.
Low Households earning less than \$10,000
Medium Households earning between \$10,000 and \$30,000.
High Households earning more than \$30,000.

Pur/Non-Mil Purchase of commodities by Federal non-military agencies.

Pur/Mil Purchase of commodities by military agencies of the Federal government.

CCC Purchases by the Federal Commodity Credit Corporation

Pur/Non-ed Purchase of commodities by non-educational State and local government agencies.

Pur/Ed Purchase of commodities by educational State and local government agencies.

MID.109

9.0s Regional Non-competitive Imports to
Non-industrial Regional Purchases -- generated by
asking for "Non-Comp. Imports to FD" in Accounts
Optional Reports.

ACCOUNT REPORT #9.0-S PAGE 1
3/ 1/89REGIONAL NON-COMPETITIVE IMPORTS TO NON-INDUSTRIAL REGIONAL PURCHASES
(MILLIONS OF 1982 DOLLARS)

COMDTY	HOUSEHOLDS			GOVERNMENTS			STATE-LOCAL	
	PERSONAL CONSUMPTION			FED. GOVT			PUR/NON-ED	
	LOW	MEDIUM	HIGH	PUR/NON-MIL	PUR/MIL	CCC	PUR/NON-ED	PUR-ED
2	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
9	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
19	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
23	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
29	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
30	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
509	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
513	.0031	.0069	.0083	.0000	.0000	.0000	.0000	.0000
518	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
522	.0005	.0018	.0012	.0001	.0002	.0000	.0000	.0000
524	.3995	1.5091	.9915	.0000	.0000	.0000	.0000	.0000
TOTALS	.4435	1.6856	1.1305	.0005	.0003	.0000	.0001	.0003

Non-Competitive Imports from Non-industrial Sources Import of commodities from non-industry sources --i.e, inventory sales, Federal government sales, and State and local government sales, which are not produced locally, by elements of final demand.

Households Personal Consumption - Medium Purchase of commodities by individuals for personal use.

Low Households earning less than \$10,000

Medium Households earning between \$10,000 and \$30,000.

High Households earning more than \$30,000.

Pur/Non-Mil Purchase of commodities by Federal non-military agencies.

Pur/Mil Purchase of commodities by military agencies of the Federal government.

CCC Purchases by the Federal Commodity Credit Corporation

Pur/Non-ed Purchase of commodities by non-educational State and local government agencies.

Pur/Ed Purchase of commodities by educational State and local government agencies.

MID.109

9.1 Regional Non-competitive Imports to Investment & Trade Demand -- generated by asking for "Non-Comp. Imports to FD" in Accounts Optional Reports.

REGIONAL NON-COMPETITIVE IMPORTS TO INVESTMENT & TRADE DEMAND
(MILLIONS OF 1982 DOLLARS)

ACCOUNT REPORT #9.1 PAGE 1
3/ 1/89

COMMODITY	INVESTMENT INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	TRADE FOREIGN EXPORTS (\$MM)	INTERMEDIATE DEMAND (\$MM)	TOTAL FINAL DEMAND (\$MM)	COMMODITY IMPORTS (\$MM)
2	.0000	.0000	.0000	.5652	1.9946	2.5598
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	3.7294	.0000	3.7294
6	.0125	.0000	.0000	.4933	.0125	.5057
7	.0000	.0000	.0000	9.9629	.0000	9.9629
8	.0064	.0000	.0000	.0000	.0064	.0064
9	.0000	.0000	.0000	.0684	.4696	.5380
10	.0000	.0000	.0000	.0000	.3960	.3960
11	.1102	.0000	.0000	.0088	.5998	.6086
12	.0296	.0000	.0000	.0611	.9258	.9869
13	.0000	.0000	.0000	4.2669	.4118	4.6787
14	.0000	.0000	.0000	.0010	.0000	.0010
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.1303	2.5554	2.6857
17	.0000	.0000	.0000	.0000	.1623	.1623
18	.0000	.0000	.0000	.9685	3.6191	4.5876
19	.0000	.0000	.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0122	.0000	.0122
21	.0000	.0000	.0000	.0000	.4636	.4636
520	.0000	.0000	.0000	.0000	.0000	.0000
521	.0000	.0000	.0000	.0000	.0000	.0000
522	.0000	.0153	.0000	.8258	.0000	.0000
524	.0000	.0000	.0000	.0075	3.1059	3.1134
TOTALS	.1589	174.7298	.0000	186.5262	1060.6560	1247.1830

Non-Competitive Imports to Investment and Trade Import of industry produced commodities, which are not produced in the region, by elements of final demand identified as "Investment and Trade".

Investment Inventory Additions Net addition to inventory --i.e., current year's production of a commodity exceeds the current year's sales.

Investment Capital Formation Total purchases by firms for each commodity used as investment (land, plant and equipment, etc. used in the production process).

Trade Domestic Exports Commodity export from the region to the rest of the United States.

Trade Foreign Exports Commodity export from the region to the rest of the world outside of the U.S.

Total Intermediate Demand Total Commodity Output minus Total Final Demand. Total purchases of a commodity by all industries to be used to produce goods or services. The sum of the row of the USE matrix.

Total Final Demand Sum of all purchases for final use or consumption.

Total Commodity Output Total value of each commodity produced by all industries.

MID.109

9.1s Regional Non-competitive Imports to Non-industrial Regional Purchases -- generated by asking for "Non-Comp. Imports to FD" in Accounts Optional Reports.

ACCOUNT REPORT #9.1-S PAGE 1
3/ 1/89

REGIONAL NON-COMPETITIVE IMPORTS TO NON-INDUSTRIAL REGIONAL PURCHASES
(MILLIONS OF 1982 DOLLARS)

COMMODITY	INVESTMENT		TRADE		TOTAL	
	INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	FOREIGN EXPORTS (\$MM)	INTERMEDIATE DEMAND (\$MM)	FINAL DEMAND (\$MM)	COMMODITY IMPORTS (\$MM)
2	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
9	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000
19	.0000	.0000	.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000
23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
---	---	---	.0000	.0000	.0000	.0000
513	.0000	.0000	.0000	.0000	.0000	.0000
518	.0000	.0000	.0000	.0000	.0000	.0000
522	.0000	.0000	.0000	.0000	.0000	.0000
524	.0000	.0000	.0000	.0070	2.9001	.0000
TOTALS	.0000	.0005	.0000	.1078	3.2613	3.3691

Non-Competitive Imports from Non-industrial Sources Import of commodities from non-industry sources -i.e, inventory sales, Federal government sales, and State and local government sales, which are not produced locally, by elements of final demand identified as "Investment and Trade".

Investment Inventory Additions Net addition to inventory --i.e., current year's production of a commodity exceeds the current year's sales.

Investment Capital Formation Total purchases by firms for each commodity used as investment (land, plant and equipment, etc. used in the production process).

Trade Domestic Exports Commodity export from the region to the rest of the United States.

Trade Foreign Exports Commodity export from the region to the rest of the world outside of the U.S.

Total Intermediate Demand Total Commodity Output minus Total Final Demand. Total purchases of a commodity by all industries to be used to produce goods or services. The sum of the row of the USE matrix.

Total Final Demand Sum of all purchases for final use or consumption.

Total Commodity Output Total value of each commodity produced by all industries.

MID.110

10.0 Regional Competitive Commodity Imports to Intermediate Demand -- generated by asking for "Comp. Imports to Use" in Accounts optional reports.

REGIONAL COMPETITIVE COMMODITY IMPORTS TO INTERMEDIATE DEMAND (MILLIONS OF 1982 DOLLARS)

ACCOUNT REPORT #10.0

3/ 3/89

PAGE 1. 1 OF 3. 4

COMDTY	INDUSTRY									
	1	24	45	66	69	82	160	161	164	269
1	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
5	.00000	.00000	.00000	.00000	.00000	16.50899	.00000	.00000	.00000	.00000
24	.00000	.00609	.00000	.00000	.00000	.00000	.36920	.00000	.00000	.00000
26	.30538	.16529	.00000	.00000	.00000	.00000	.00499	.00046	.00075	.00000
28	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
44	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
45	.00000	.00000	.00896	.03415	.01948	.00000	.00000	.00000	.00000	.02433
46	.00000	.00000	.00000	.17323	.09889	.00000	.00000	.00000	.00000	.01928
47	.00000	.00000	.00000	.17506	.09992	.00000	.00000	.00000	.00000	.01398
48	.00000	.00000	.00318	.02692	.10480	.00000	.00000	.00000	.00000	.74349
49	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
54	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00881
55	.00000	.00000	.01246	.00000	.00000	.00000	.00000	.00000	.00000	.00000
66	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
82	.00000	.00000	.00000	.00000	.00000	.25578	.00000	.00000	.00000	.00000
83	.00000	.00000	.00000	.00000	.00000	.18380	.00000	.00000	.00000	.00000
90	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
98	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
102	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
121	.00005	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
123	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
126	.00000	.00000	.00000	.00000	.00000	.09509	.00000	.00000	.00000	.00000
131	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
139	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.00000	.00000	.00000	.00000	.00783	.04722	.00372	.00000
161	.00179	.00000	.00000	5.73917	.00847	.00000	.00364	.02494	.63978	.00984
162	.00000	.00000	.00000	.16118	.00000	.00000	.00000	.00000	.01215	.00000
163	.00000	.00000	.00000	.23973	.00000	.00000	.00000	.00000	.00000	.00000
164	.00000	.00000	.00000	1.64622	.00197	.00000	.00000	.00000	.02051	.00000
165	.00000	.00000	.00000	2.93963	.00000	.00000	.00000	.00000	.00000	.00000
166	.00000	.00000	.00000	3.22089	.04810	.00000	.00000	.00023	.12598	.00000
167	.00000	.00000	.00000	.59091	.00892	.00000	.00000	.00000	.00000	.00000
168	.00000	.00000	.00000	1.49107	.00000	.00000	.00000	.00000	.00000	.00000
169	.00000	.00000	.00000	.03917	.01110	.00000	.00000	.00000	.00000	.00000
170	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00041	.00000
171	.00000	.00000	.00000	.14001	.00000	.00000	.00000	.00000	.02219	.00000
172	.00138	.00000	.00000	.39732	.00744	.00000	.00000	.00000	.05367	.00000
173	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00016	.00000
174	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
178	.00000	.00000	.00000	.10488	.00000	.00000	.00000	.00000	.00000	.00000
180	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
182	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
183	.00000	.00000	.00000	.15796	.00000	.00000	.00000	.00000	.00000	.00000
184	.00000	.00000	.00000	.04511	.00000	.00000	.00000	.00000	.00000	.00000
185	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
186	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
188	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
192	.00000	.00000	.00000	.13157	.00000	.00000	.00000	.00000	.00000	.00000
198	.00000	.00000	.00084	.26744	.00000	.00034	.00000	.00001	.00000	.00016

REGIONAL COMPETITIVE COMMODITY IMPORTS TO INTERMEDIATE DEMAND (MILLIONS OF 1982 DOLLARS)

ACCOUNT REPORT #10.0

3/ 3/89

PAGE 3. 4 OF 3. 4

COMDTY	INDUSTRY		
	526	527	528
456	.00000	.00000	.00000
458	.00000	.00000	.00000
459	.00000	.00000	.00000
460	.00000	.00000	.00000
523	.00000	.00000	.00000
525	.00000	.00000	.00000
526	.00000	.00000	.00000
527	.00000	.00000	.00000
528	.00000	.00000	.00000

Competitive Imports to Intermediate Demand Import of all commodities, by each industry, which are also produced in the region.

MID.111

11.0 Regional Competitive Imports to Consumption Demand -- generated by asking for "Comp. Imports to FD" in Accounts Optional Reports.

REGIONAL COMPETITIVE IMPORTS TO CONSUMPTION DEMAND
(MILLIONS OF 1982 DOLLARS)ACCOUNT REPORT #11.0 PAGE 1
3/ 1/89

COMDTY	HOUSEHOLDS			GOVERNMENTS			STATE-LOCAL	
	PERSONAL CONSUMPTION	FED. GOVT		PUR/NON-MIL		CCC	PUR/NON-ED	PUR-ED
	LOW	MEDIUM	HIGH	PUR/NON-MIL	PUR/MIL			
1	.0026	.0094	.0054	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
24	.0393	.1485	.0975	.0000	.0000	.0000	.0000	.0000
26	.0450	.1700	.1117	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
49	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
54	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
55	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
66	.0000	.0000	.0000	.0000	.0042	.0000	.1126	.0272
69	.0000	.0000	.0000	.0671	.0001	.0000	2.0428	.0000
82	.2042	.7605	.3808	.0000	.0000	.0000	.0530	.2033
83	.8129	3.0274	1.5157	.0004	.0018	.0000	.0902	.5445
90	1.2834	4.0229	1.8966	.0010	.0000	.0000	.0000	.0000
98	.4738	1.7540	.8570	.0000	.0000	.0000	.0000	.0000
102	.2183	1.4585	1.0638	.0002	.0000	.0000	.0000	.0000
121	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
123	.2133	.6546	.3318	.0001	.0000	.0000	.0000	.0000
124	.8640	3.1987	1.5629	.0112	.0000	.0000	.0000	.0000
131	.0385	.3779	.1444	.0000	.0000	.0000	.1253	.2096
139	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
525	.0000	.0000	.0000	.0001	.0001	.0000	.0000	.0000
526	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
527	.2634	1.2816	1.3055	.0000	.0000	.0000	.0000	.0000
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	41.7043	158.1895	98.2799	8.8017	6.4999	.0000	127.0718	111.6771

Competitive Imports to Consumption Demand Import of all commodities, which are also produced in the region, by elements of final demand identified as "Consumption".

Households Personal Consumption - Medium Purchase of commodities by individuals for personal use.

Low Households earning less than \$10,000

Medium Households earning between \$10,000 and \$30,000.

High Households earning more than \$30,000.

Pur/Non-Mil Purchase of commodities by Federal non-military agencies.

Pur/Mil Purchase of commodities by military agencies of the Federal government.

CCC Purchases by the Federal Commodity Credit Corporation

Pur/Non-ed Purchase of commodities by non-educational State and local government agencies.

Pur/Ed Purchase of commodities by educational State and local government agencies.

MID.111

11.1 Regional Competitive Imports to Investment and Trade Demand -- generated by asking for "Comp. Imports to FD" in Accounts Optional Reports.

REGIONAL COMPETITIVE IMPORTS TO INVESTMENT & TRADE DEMAND
(MILLIONS OF 1982 DOLLARS)

ACCOUNT REPORT #11.1 PAGE 1
3/ 1/89

COMMODITY	INVESTMENT INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	TRADE-- FOREIGN EXPORTS (\$MM)	INTERMEDIATE DEMAND (\$MM)	TOTAL FINAL DEMAND (\$MM)	COMMODITY IMPORTS (\$MM)
1	.0000	.0000	.0000	.0000	.0173	.0173
5	1.1249	.0000	.0000	16.5090	1.1249	17.6339
24	.0000	.0000	.0000	.3761	.2853	.6614
26	.0000	.0000	.0556	.7571	.3822	1.1393
28	.0008	.0000	.0000	.0000	.0008	.0008
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0869	.0000	.0869
46	.0000	.0000	.0000	.2914	.0000	.2914
47	.0000	.0000	.0000	.2890	.0000	.2890
48	.0000	.0000	.0000	.8784	.0000	.8784
49	.0000	.0000	.0000	.0000	.0000	.0000
54	.0000	.0000	.0000	.0088	.0000	.0088
	.0000	.0000	.0000	.0125	.0000	.0125
523	.0000	.0000	.0000	.0000	9.5405	9.5405
525	.0000	.0000	.0000	.0000	3.1341	3.1341
526	.0000	.0000	.0000	.0000	1.4018	2.5939
527	.0000	.0000	.0000	.0000	.0000	.0000
528	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	1.1309	27.8702	2.7976	143.5534	584.0228	727.5762

Competitive Imports to Investment and Trade Import of all commodities, which are also produced in the region, by elements of final demand identified as "Investment and Trade".

Investment Inventory Additions Net addition to inventory --i.e., current year's production of a commodity exceeds the current year's sales.

Investment Capital Formation Total purchases by firms for each commodity used as investment (land, plant and equipment, etc. used in the production process).

Trade Domestic Exports Commodity export from the region to the rest of the United States.

Trade Foreign Exports Commodity export from the region to the rest of the world outside of the U.S.

Total Intermediate Demand Total Commodity Output minus Total Final Demand. Total purchases of a commodity by all industries to be used to produce goods or services. The sum of the row of the USE matrix.

Total Final Demand Sum of all purchases for final use or consumption.

Total Commodity Output Total value of each commodity produced by all industries.

MID.112

12 Industry Balance Sheet, Part I -- generated by asking for "Industry Balance Sheet" and specifying an industry in Accounts Optional Reports.

INDUSTRY BALANCE SHEET, PART I, INDUSTRY 82 -MEAT PACKING PLANTS					ACCOUNT REPORT #12 3/ 1/89 PAGE 1
REGIONAL COMMODITY	COMMODITY PRODUCTION (MMS)	MARKET SHARE COEFFICIENT	BY-PRODUCT COEFFICIENT	RPC	TOTAL COMMODITY EXPORTS(MMS)
5	.00388	1.00000	.00009	.00007	.00260
82	34.42358	.99861	.82249	.89103	13.26155
83	6.53773	1.00000	.15621	.47051	.00000
98	.01279	1.00000	.00031	.00236	.00525
102	.03321	1.00000	.00079	.01182	.00000
121	.78394	1.00000	.01873	.76898	.78378
123	.03666	1.00000	.00088	.01809	.00000
126	.00014	.07530	.00000	.00027	.00000
229	.02113	.86667	.00050	.00016	.02334
TOTAL	41.85307				14.07654

Commodity Production Value of each commodity produced --i.e, the corresponding industry row in the Make matrix.

Market Share Coefficient The non-zero components from the corresponding industry row in the Market Share matrix.

By-Product Coefficient The non-zero components from the corresponding industry row in the By-Products matrix.

RPC (Regional Purchase Coefficients) Fraction of a locally produced commodity used to meet gross commodity demand.

Total Commodity Export Domestic and foreign commodity export.

MID.112

12A Industry Balance Sheet, Part II -- generated by asking for "Industry Balance Sheet" and specifying an industry in Accounts Optional Reports.

INDUSTRY BALANCE SHEET, PART II - INPUTS
INDUSTRY 82: MEAT PACKING PLANTS

ACCOUNT REPORT #12A
3/ 1/89 PAGE 1

COMMODITY	TOTAL ABSORPTION COEFFICIENT	GROSS INPUTS (\$MM)	REGIONAL PURCHASE COEFF	REGIONAL ABSORPTION COEFF	REGIONAL INPUTS (\$MM)	DOMESTIC IMPORTS (\$MM)
4	.0891066	3.72938	.00000	.0000000	.00000	3.72938
5	.3944797	16.51019	.00007	.0000286	.00120	16.50899
6	.0117862	.49329	.00000	.0000000	.00000	.49329
7	.2380453	9.96292	.00000	.0000000	.00000	9.96292
9	.0002073	.00867	.00000	.0000000	.00000	.00867
27	.0000105	.00044	.00000	.0000000	.00000	.00044
40	.0000138	.00058	.00000	.0000000	.00000	.00058
63	.0000696	.00291	.00000	.0000000	.00000	.00291
74	.0014353	.06007	.00000	.0000000	.00000	.06007
82	.0560834	2.34726	.89103	.0499719	2.09148	.25578
83	.0082938	.34712	.47051	.0039023	.16332	.18380
88	.0003791	.01587	.00000	.0000000	.00000	.01587
114	.0000313	.00131	.00000	.0000000	.00000	.00131
115	.0000482	.00202	.00000	.0000000	.00000	.00202
126	.0022726	.09511	.00027	.0000006	.00003	.09509
151	.0000527	.00221	.00000	.0000000	.00000	.00221
490	.0003231	.01352	.00000	.0000000	.00000	.01352
491	.0017080	.07148	.90152	.0015398	.06444	.00704
492	.0001242	.00520	.00000	.0000000	.00000	.00520
493	.0001779	.00745	.00004	.0000000	.00000	.00745
497	.0000045	.00019	.00000	.0000000	.00000	.00019
499	.0000056	.00024	.00000	.0000000	.00000	.00024
510	.0000663	.00278	.00000	.0000000	.00000	.00278
513	.0000061	.00026	.00340	.0000000	.00000	.00025
516	.0008442	.03533	.90468	.0007638	.03197	.00337
521	.0005385	.02254	.00000	.0000000	.00000	.02254
522	.0000390	.00163	.00030	.0000000	.00000	.00163
TOTAL	.8983555	37.59894		.0948609	3.97022	33.62873
.....						
EMPLOYMENT COMPENSATION (\$MM)		3.7509				
INDIRECT BUSINESS TAXES (\$MM)		.1040				
PROPRIETARY INCOME (\$MM)		.0047				
OTHER PROPERTY INCOME (\$MM)		.3945				
TOTAL VALUE ADDED (\$MM)		4.2541				
TOTAL INDUSTRY OUTPUT (\$MM)		41.8531				

END BALANCE SHEET, INDUSTRY 82

Total Absorption Coefficient The corresponding industry column from the National absorption matrix (if unmodified).

Gross Inputs The industry's total purchase of the commodity (includes imports). This can be calculated as

$$\text{Total Industry Output} * \text{Total Absorption Coefficient}$$

Regional Absorption Coefficient The fraction of the industry's total outlay spent on a commodity (net of imports). This is the product of the Total Absorption Coefficient * RPC.

Regional Inputs The industry's local purchase of each commodity. This is equal the product of Gross Inputs times the RPC.

Domestic Imports This is actually Total Imports and is equal to Gross Inputs minus Regional Inputs.

Value added components and Total Industry Output are shown to complete the input requirements for the industry balance sheet.

MID.113

13 Commodity Balance Sheet, Part I -- generated by asking for "Commodity Balance Sheet" and specifying a commodity in Accounts Optional Reports.

COMMODITY BALANCE SHEET, PART I, COMMODITY 82		ACCOUNT REPORT #13	
MEAT PACKING PLANTS		3/ 1/89	
		PAGE 1	
REGIONAL	INDUSTRY	MARKET	
INDUSTRY	PRODUCTION	SHARE	BY-PRODUCTS
	(\$MM)	COEFFICIENT	COEFFICIENT
82	34.42358	.99861	.82249
TOTAL	34.42358		

Industry Production Total production of the highlighted commodity by each industry producing the commodity.

Market Share Coefficient The non-zero components from the corresponding commodity column of the Market Share matrix.

By-Product Coefficient The non-zero components from the corresponding commodity column of the By-product matrix.

MID.113

13A Commodity Balance Sheet, Part II -- generated by asking for "Commodity Balance Sheet" and specifying a commodity in Accounts Optional Reports.

ACCOUNT REPORT #13A
3/ 1/89 PAGE 1

REGIONAL COMMODITY BALANCE SHEET, PART II
COMMODITY 82: MEAT PACKING PLANTS

REGIONAL INDUSTRY	TOTAL ABSORPTION COEFFICIENT	GROSS INPUTS (\$MM)	REGIONAL PURCHASE COEFF	REGIONAL ABSORPTION COEFF	REGIONAL INPUTS (\$MM)	DOMESTIC IMPORTS (\$MM)
82	.0560834	2.34726	.89103	.04997	2.09148	.25578
459	.0000238	.00002	.89103	.00002	.00002	.00000
471	.0006610	.01622	.89103	.00059	.01446	.00177
491	.0507580	6.61228	.89103	.04523	5.89174	.72055
502	.0035069	.00041	.89103	.00312	.00036	.00004
504	.0044821	.12345	.89103	.00399	.11000	.01345
507	.0016293	.00499	.89103	.00145	.00445	.00054
PCE-LOW		1.87406	.89103		1.66984	.20422
PCE-MEDIUM		6.97911	.89103		6.21859	.76052
PCE-HIGH		3.49413	.89103		3.11337	.38076
CAPITAL FORMATION		.00000	.89103		.00000	.00000
INVENTORY ADDITION		.00000	.89103		.00000	.00000
S/L GOVT PUR/NON-ED		.48639	.89103		.43339	.05300
S/L GOVT PURCH/ED		1.86527	.89103		1.66201	.20326
FED GOVT PUR/NON-MIL		.00013	.89103		.00012	.00001
FED GOVT PUR/MIL		.00009	.89103		.00008	.00001
COMMODITY CREDIT CORP		.00000	.89103		.00000	.00000
FOREIGN EXPORTS		.00000	1.00000		.00000	.00000
DOMESTIC EXPORTS		.00000			13.26155	.00000
TOTAL FINAL DEMAND		14.69918	.89103		13.09740	1.60179
TOTAL COMMODITY OUTPUT		34.42358				

END BALANCE SHEET, COMMODITY 82

Total Absorption Coefficient The corresponding commodity row from the National absorption matrix (if unmodified).

Gross Inputs The amount of this commodity (including imports) used by each industry. The product of the Total Absorption Coefficient times the Total Industry Output.

Regional Purchase Coeff (RPC) The fraction of the gross regional demand of the highlighted commodity met by local production.

Regional Absorption Coeff The fraction of an industry's outlay spent on this commodity (net of imports). The product of the Total Absorption Coefficient times the RPC.

Regional Inputs The amount of this commodity (net of imports) used by each industry. The product of Gross Inputs times the RPC.

Domestic Imports This is actually Total Imports. Gross Inputs minus Regional inputs.

Final demand values are adjusted for imports. Total Commodity Output here is the sum of Regional Inputs plus final demand.

MID.301 3.5 Direct Purchases per One Dollar of Output -- an I/O report.

DIRECT PURCHASES PER ONE DOLLAR OF OUTPUT (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)

LISTER REPORT #3.500
4/26/89

PAGE 1. 1 OF 1. 4

	1	24	45	66	69	82	160	161	164	269
1	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
24	.00000	.00070	.00000	.00000	.00000	.00000	.04246	.00000	.00000	.00000
45	.00000	.00000	.00991	.00075	.00622	.00000	.00000	.00000	.00000	.00889
66	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
82	.00001	.00000	.00000	.00000	.00000	.05383	.00000	.00000	.00000	.00000
160	.00000	.00000	.00000	.00013	.00000	.00000	.06047	.42303	.00963	.00000
161	.00002	.00000	.00000	.00486	.00008	.00000	.00185	.01335	.02415	.00013
164	.00000	.00000	.00000	.02080	.00024	.00000	.00015	.00105	.01302	.00001
269	.00000	.00000	.00009	.00182	.00488	.00000	.00000	.00001	.00022	.00568
448	.01504	.00405	.00435	.00884	.01949	.00396	.00180	.00374	.00662	.05485
454	.00157	.00037	.00103	.00226	.00168	.00042	.00017	.00049	.00224	.00225
459	.00000	.00000	.00104	.00014	.00012	.00006	.00016	.00013	.00012	.00009
460	.00041	.00012	.00194	.00015	.00025	.00000	.00086	.00006	.00004	.00172
461	.02773	.02767	.01950	.05957	.02641	.02966	.01519	.02337	.01071	.02663
462	.00003	.00033	.00028	.00012	.00019	.00000	.00099	.00002	.00002	.00151
463	.00071	.00051	.00156	.05976	.00427	.00003	.00259	.00041	.00025	.00378
464	.01095	.00661	.00914	.00463	.00432	.00165	.00236	.00252	.00475	.00202
467	.00244	.00024	.00370	.00233	.00216	.00049	.00115	.00111	.00196	.00152
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.02224	.00015	.01858	.00190	.00182	.00158	.00097	.00137	.00443	.00308
471	.00061	.00102	.00500	.00096	.00079	.00010	.00023	.00010	.00028	.00052
491	.00018	.00696	.00466	.00111	.00053	.00147	.00170	.00232	.00470	.00707
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00000	.00052	.00012	.00000	.00000	.00000	.00000	.00024	.00000	.00031
516	.00012	.00068	.00065	.00032	.00061	.00076	.00032	.00051	.00125	.00106
517	.00135	.00044	.00609	.00032	.00028	.00055	.00014	.00163	.00127	.00101
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

DIRECT PURCHASES PER ONE DOLLAR OF OUTPUT (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)

LISTER REPORT #3.500
4/26/89

PAGE 1. 4 OF 1. 4

	527	528
1	.00000	.00000
24	.00000	.00000
45	.00000	.00000
66	.00000	.00000
69	.00000	.00000
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161	.00000	.00000
164	.00000	.00000
269	.00000	.00000
448	.00000	.00000
454	.00000	.00000
459	.00000	.00000
460	.00000	.00000
461	.00000	.00000
462	.00000	.00000
463	.00000	.00000
464	.00000	.00000
467	.00000	.00000
468	.00000	.00000
470	.00000	.00000
471	.00000	.00000
491	.00000	.00000
504	.00000	.00000
507	.00000	.00000
508	.00000	.00000
516	.00000	.00000
517	.00000	.00000
525	.00000	.00000
526	.00000	.00000
527	.00000	.00000
528	.00000	.00000

INTERINDUSTRY TRANSACTIONS (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)LISTER REPORT #3.400
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PAGE 1. 1 OF 1. 4

	1	24	45	66	69	82	160	161	164	269
1	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
24	.00000	.00000	.00000	.00000	.00000	.00000	.04167	.00000	.00000	.00000
45	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
66	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
82	.00015	.00000	.00000	.00000	.00000	2.25311	.00000	.00000	.00000	.00000
160	.00001	.00000	.00000	.01848	.00005	.00000	.05935	.35779	.03013	.00003
161	.00021	.00000	.00000	.69100	.00129	.00011	.00182	.01129	.07552	.00113
164	.00004	.00000	.00000	2.95418	.00379	.00000	.00015	.00088	.04073	.00006
269	.00001	.00000	.00025	.25815	.07794	.00000	.00000	.00001	.00068	.04948
448	.18377	.00395	.01183	1.25609	.31119	.16579	.00176	.00316	.02071	.47773
454	.01921	.00036	.00281	.32143	.02687	.01744	.00016	.00041	.00701	.01957
459	.00000	.00000	.00282	.01989	.00184	.00244	.00016	.00011	.00036	.00083
460	.00507	.00011	.00527	.02148	.00407	.00018	.00084	.00005	.00011	.01502
461	.33879	.02698	.05302	8.46191	.42162	1.24134	.01491	.01976	.31812	.23193
462	.00035	.00032	.00076	.01718	.00301	.00010	.00098	.00002	.00006	.01317
463	.00869	.00049	.00423	8.48869	.06821	.00140	.00255	.00035	.00077	.03290
464	.13376	.00645	.02484	.65827	.06896	.06919	.00232	.00213	.01486	.01757
467	.02986	.00024	.01005	.33145	.03442	.02071	.00113	.00094	.00612	.01321
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.27169	.00014	.05050	.26917	.02902	.06626	.00096	.00116	.01386	.02682
471	.39750	.00100	.01358	.13654	.01260	.00414	.00023	.00008	.00088	.00455
491	.00224	.00678	.01266	.15771	.00839	.06148	.00167	.00197	.01470	.36154
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00000	.00051	.00033	.00000	.00000	.00000	.00000	.00020	.00000	.00273
516	.00148	.00066	.00175	.04510	.00978	.03197	.00032	.00043	.00392	.00923
517	.01652	.00043	.01656	.04586	.00447	.02306	.00014	.00138	.00396	.00883
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

INTERINDUSTRY TRANSACTIONS (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)LISTER REPORT #3.400
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	527	528
1	.00000	.00000
24	.00000	.00000
45	.00000	.00000
66	.00000	.00000
69	.00000	.00000
82	.00000	.00000
160	.00000	.00000
161	.00000	.00000
164	.00000	.00000
269	.00000	.00000
448	.00000	.00000
454	.00000	.00000
459	.00000	.00000
460	.00000	.00000
461	.00000	.00000
462	.00000	.00000
463	.00000	.00000
464	.00000	.00000
467	.00000	.00000
468	.00000	.00000
470	.00000	.00000
471	.00000	.00000
491	.00000	.00000
504	.00000	.00000
507	.00000	.00000
508	.00000	.00000
516	.00000	.00000
517	.00000	.00000
525	.00000	.00000
526	.00000	.00000
527	.00000	.00000
528	.00000	.00000

MID.303 6.0 Regional Consumption Demand -- an I/O report.

REGIONAL CONSUMPTION DEMAND (MILLIONS OF 1982 DOLLARS)

LISTER REPORT #6.0 PAGE 1
4 28 87

INDUSTRY	HOUSEHOLDS- PERSONAL CONSUMPTION			FEDERAL		GOVERNMENTS		STATE/LOCAL PUR/ED
	LOW	MEDIUM	HIGH	PUR/NON-MIL	PUR/MIL	CCC	PUR/NON-ED	
1	.3801	1.1989	.5701	.0003	.0000	.0000	.0000	.0000
24	.0044	.0168	.0110	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
66	.0000	.0000	.0000	.0000	.0627	.0000	1.6769	.4049
69	.0000	.0000	.0000	.3418	.0004	.0000	10.4068	.0000
82	2.3976	8.9338	4.4768	.0005	.0017	.0000	.5129	2.1436
160	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
161	.0003	.0010	.0007	.0000	.0000	.0000	.0000	.0000
164	.0007	.0033	.0027	.0001	.0001	.0000	.0000	.0000
269	.0009	.0041	.0037	.0000	.0000	.0000	.0000	.0000
448	.8727	2.4112	1.6107	.0396	.1410	.0000	.0000	.0000
454	2.4078	7.3830	3.7044	.1897	.0000	.0000	.9237	2.3295
459	.0578	.2098	.1236	.0014	.0002	.0000	.0000	.0000
460	.2119	1.2491	1.0171	.0153	.0047	.0000	.0000	.0000
461	6.9356	26.1990	17.2140	.2124	.2748	.0000	.0000	.0000
462	1.0759	6.3433	5.1652	.0004	.0001	.0000	.0000	.0000
463	15.9238	60.1515	39.5223	.0009	.0028	.0000	.0000	.0000
464	3.0753	12.7958	9.7911	.4381	.0001	.0000	4.7517	.0000
467	1.2189	7.0498	6.0904	.0000	.0007	.0000	.0000	.0000
468	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
470	14.9298	31.5210	7.3162	.0000	.0356	.0000	.0000	.0000
471	1.0678	3.7989	4.4919	.0521	.0585	.0000	.0000	.0000
491	9.0607	42.9419	27.4613	.0319	.0316	.0000	.0000	.0000
504	5.0470	14.4072	7.9694	.0690	.0501	.0000	.0000	.0000
507	.3664	1.5335	1.1655	.0000	.0000	.0000	.0000	.0000
508	.6557	2.7445	2.0858	1.0897	.0214	.0000	.0000	.1837
516	.3125	1.1805	.7756	.1222	.0311	.0000	.7222	.2259
517	.3992	1.3806	.7446	.0004	.0184	.0000	.6266	.3633
525	.0000	.0000	.0000	6.5145	6.2181	.0000	126.6645	110.8018
526	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
527	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	66.4026	233.4587	141.3139	9.1202	6.9542	.0000	146.2852	117.1727

MID.303

6.1 Regional Investment & Trade Demand -- an I/O report.

LISTER REPORT #6.1 PAGE 1
4/26/89

REGIONAL INVESTMENT & TRADE DEMAND (MILLIONS OF 1982 DOLLARS)

INDUSTRY	INVESTMENT INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	TRADE DOMESTIC EXPORTS (\$MM)	FOREIGN EXPORTS (\$MM)	INTERMEDIATE DEMAND (\$MM)	TOTAL FINAL DEMAND (\$MM)	INDUSTRY OUTPUT (\$MM)
1	.0000	.0000	9.7105	.0602	.2969	11.9201	12.2171
24	.0000	.0000	.9006	.0000	.0424	.9328	.9752
45	.0000	.0000	2.3853	.0249	.3080	2.4102	2.7182
66	.0000	139.8974	.0000	.0000	.0000	142.0419	142.0419
69	.0000	5.2172	.0000	.0000	.0000	15.9662	15.9662
82	.0001	.0000	13.5132	.5430	9.3300	32.5231	41.8531
160	.0000	.0000	.4780	.0374	.4660	.5154	.9814
161	.0000	.0003	.0120	.0470	.7845	.0613	.8458
164	.0000	.0041	.0322	.0823	3.0022	.1256	3.1278
269	.0000	.0000	8.2695	.0372	.3941	8.3155	8.7096
448	.0000	.3519	2.6503	.4790	7.2005	8.5563	15.7568
454	.0000	.8900	1.5530	.4885	4.7507	19.8696	24.6203
459	.0000	.0000	.0000	.0002	.6418	.3930	1.0347
460	.0000	.5279	.0000	.3244	.2327	3.3504	3.5831
461	.0000	10.6843	3.2213	4.1756	21.9574	68.9169	90.8743
462	.0000	.8285	.0000	.0000	.1857	13.4334	13.6191
463	.0000	.5702	20.7201	.0462	9.3394	136.9378	146.2772
464	.0000	.0000	.9550	.2314	7.1870	32.0385	39.2255
467	.0000	.0000	.0000	.0993	2.6845	14.4592	17.1437
468	.0000	.0000	.2411	.0000	6.9451	.2411	7.1863
470	.0000	6.0634	42.9813	3.0693	30.0004	105.9166	135.9170
471	.0000	.0185	13.9649	.0255	1.0664	23.4782	24.5446
491	.0000	.0000	43.2139	.1001	7.4294	122.8413	130.2707
504	.0000	.0000	.0000	.0000	.0000	27.5427	27.5427
507	.0000	.0000	.0000	.0000	.0000	3.0654	3.0654
508	.0000	.0000	62.2033	.0000	.0161	68.9839	69.0000
516	.0000	.0000	3.6254	.0301	2.7370	7.0255	9.7625
517	.0000	.0049	.1423	.0062	1.7611	4.3865	6.1476
525	.0000	.0000	.0000	.0000	.0000	250.1988	250.1988
526	.0000	.0000	.0000	31.0665	.0000	31.0665	31.0665
527	.0000	.0000	2.2440	.0000	.0000	2.2440	2.2440
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	.0001	165.0587	233.0170	40.9744	118.7593	1159.7580	1278.5170

MID.401

3.5 Direct Purchases per One Dollar of Output (Aggregated) -- an Aggregation report.

DIRECT PURCHASES PER ONE DOLLAR OF OUTPUT (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)
(AGGREGATED MODEL)

LISTER REPORT #3.500
6/15/89

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	1	45	66	69	82	160	161	164	269	4-8
1	.00005	.00000	.00000	.00000	.00000	.04246	.00000	.00000	.00000	.00000
45	.00000	.00991	.00075	.00622	.00000	.00000	.00000	.00000	.00869	.00000
66	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
82	.00001	.00000	.00000	.00000	.05383	.00000	.00000	.00000	.00000	.00000
160	.00000	.00000	.00014	.00000	.00000	.06047	.42303	.00966	.00000	.00000
161	.00002	.00000	.00513	.00009	.00000	.00187	.01354	.02547	.00014	.00000
164	.00001	.00001	.02097	.00025	.00000	.00017	.00106	.01335	.00002	.00001
269	.00000	.00010	.00182	.00488	.00000	.00000	.00001	.00022	.00570	.00000
4-8	.01423	.00435	.00884	.01949	.00396	.00180	.00374	.00662	.05485	.08901
454	.00148	.00103	.00226	.00168	.00042	.00017	.00049	.00224	.00225	.00141
459	.00000	.00104	.00014	.00012	.00006	.00016	.00013	.00012	.00009	.00003
460	.00043	.00213	.00017	.00028	.00000	.00095	.00007	.00004	.00190	.00228
461	.02773	.01950	.05957	.02641	.02966	.01519	.02337	.10171	.02663	.01388
462	.00005	.00028	.00012	.00019	.00000	.00099	.00002	.00002	.00151	.00005
463	.00070	.00156	.05976	.00427	.00003	.00259	.00041	.00025	.00378	.00683
464	.01063	.00919	.00464	.00432	.00165	.00237	.00252	.00475	.00202	.00392
467	.00229	.00372	.00235	.00217	.00050	.00116	.00112	.00197	.00153	.00425
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.02061	.01858	.00190	.00182	.00158	.00097	.00137	.00443	.00308	.00833
471	.00064	.00500	.00096	.00079	.00010	.00023	.00010	.00028	.00052	.00075
491	.00068	.00466	.00111	.00053	.00147	.00170	.00232	.00470	.00707	.00396
502	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00004	.00012	.00000	.00000	.00000	.00000	.00024	.00000	.00031	.00000
516	.00016	.00065	.00032	.00061	.00076	.00032	.00051	.00125	.00106	.00111
517	.00129	.00609	.00032	.00028	.00055	.00014	.00163	.00127	.00101	.00046
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

DIRECT PURCHASES PER ONE DOLLAR OF OUTPUT (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)
(AGGREGATED MODEL)

LISTER REPORT #3.500
6/15/89

PAGE 1. 4 OF 1. 4

	527	528
1	.00000	.00000
45	.00000	.00000
66	.00000	.00000
69	.00000	.00000
82	.00000	.00000
160	.00000	.00000
161	.00000	.00000
164	.00000	.00000
269	.00000	.00000
448	.00000	.00000
454	.00000	.00000
459	.00000	.00000
460	.00000	.00000
461	.00000	.00000
462	.00000	.00000
463	.00000	.00000
464	.00000	.00000
467	.00000	.00000
468	.00000	.00000
470	.00000	.00000
471	.00000	.00000
491	.00000	.00000
502	.00000	.00000
504	.00000	.00000
507	.00000	.00000
508	.00000	.00000
516	.00000	.00000
517	.00000	.00000
525	.00000	.00000
526	.00000	.00000
527	.00000	.00000
528	.00000	.00000

3.4 Interindustry Transactions (Aggregated) -- an
Aggregation report.INTERINDUSTRY TRANSACTIONS (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)
(AGGREGATED MODEL)LISTER REPORT #3.400
6/15/89

PAGE 1. 1 OF 1. 4

	1	45	66	69	82	160	161	164	269	448
1	.00069	.00000	.00000	.00000	.00000	.04167	.00000	.00000	.00000	.00000
45	.00000	.02695	.10593	.09938	.00000	.00000	.00000	.00000	.07572	.00000
66	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
82	.00015	.00000	.00000	.00000	2.25310	.00000	.00000	.00000	.00000	.00000
160	.00001	.00000	.01947	.00006	.00000	.05935	.35779	.03023	.00003	.00000
161	.00023	.00000	.72891	.00150	.00011	.00184	.01145	.07966	.00120	.00001
164	.00009	.00004	2.97903	.00396	.00000	.00016	.00089	.04175	.00020	.00012
269	.00001	.00026	.25845	.07795	.00011	.00000	.00001	.00069	.04963	.00003
448	.18772	.01183	1.25608	.31119	.16579	.00176	.00316	.02071	.47773	1.40244
454	.01957	.00281	.32143	.02687	.01744	.00016	.00041	.00701	.01957	.06951
459	.00000	.00282	.01989	.00184	.00244	.00016	.00011	.00036	.00083	.00046
460	.00569	.00580	.02362	.00447	.00020	.00093	.00006	.00012	.01652	.03593
461	.36577	.05302	8.46191	.42162	1.24134	.01491	.01976	.31812	.23193	.21870
462	.00067	.00076	.01718	.00301	.00010	.00098	.00002	.00006	.01317	.00706
463	.00918	.00423	8.48869	.06821	.00140	.00255	.00035	.00077	.03290	.10754
464	.14022	.02498	.65846	.06899	.06925	.00232	.00213	.01487	.01762	.06169
467	.03027	.01011	.33337	.03462	.02083	.00114	.00094	.00615	.01329	.06694
468	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
470	.27184	.05050	.26917	.02902	.06626	.00096	.00116	.01386	.02682	.13128
471	.00850	.01358	.13654	.01260	.00414	.00023	.00008	.00088	.00455	.01182
491	.00902	.01266	.15771	.00839	.06148	.00167	.00197	.01470	.06154	.06244
502	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00051	.00033	.00000	.00000	.00000	.00000	.00020	.00000	.00273	.00000
516	.00215	.00175	.04510	.00978	.03197	.00032	.00043	.00392	.00923	.01747
517	.01695	.01655	.04586	.00447	.02309	.00014	.00138	.00396	.00884	.00722
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
528	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

INTERINDUSTRY TRANSACTIONS (1982 DOLLARS)
(INDUSTRY-BY-INDUSTRY)
(AGGREGATED MODEL)LISTER REPORT #3.400
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PAGE 1. 4 OF 1. 4

	527	528	CMOTY NO.	ROW SUM	COL SUM
1	.00000	.00000	1 1	.34050	1.06924
45	.00000	.00000	2 45	.30798	.23899
66	.00000	.00000	3 66	.00000	24.32679
69	.00000	.00000	4 69	.00000	1.18793
82	.00000	.00000	5 82	9.33053	3.95902
160	.00000	.00000	6 160	.46707	.13124
161	.00000	.00000	7 161	.82711	.40232
164	.00000	.00000	8 164	3.02962	.55785
269	.00000	.00000	9 269	.39651	1.06404
448	.00000	.00000	10 448	7.20102	2.20067
454	.00000	.00000	11 454	4.75116	.44736
459	.00000	.00000	12 459	.64198	.08566
460	.00000	.00000	13 460	.25593	.36627
461	.00000	.00000	14 461	21.95883	9.28929
462	.00000	.00000	15 462	.18574	1.08215
463	.00000	.00000	16 463	9.33945	11.62289
464	.00000	.00000	17 464	7.21173	4.41152
467	.00000	.00000	18 467	2.70066	8.56720
468	.00000	.00000	19 468	6.94514	.77955
470	.00000	.00000	20 470	30.00285	11.68794
471	.00000	.00000	21 471	1.06677	2.92036
491	.00000	.00000	22 491	7.43111	20.68146
502	.00000	.00000	23 502	.00107	.00954
504	.00000	.00000	24 504	.00000	3.04840
507	.00000	.00000	25 507	.00000	.41171
508	.00000	.00000	26 508	.01613	7.67266
516	.00000	.00000	27 516	2.73711	.49360
517	.00000	.00000	28 517	1.76155	.21186
525	.00000	.00000	29 525	.00000	.00000
526	.00000	.00000	30 526	.00000	.00000
527	.00000	.00000	31 527	.00000	.00000
528	.00000	.00000	32 528	.00000	.00000
TOTALS				118.90760	118.90750

MID.403

6.0 Regional Consumption Demand (Aggregated) -- an Aggregation report.

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6/14/89

REGIONAL CONSUMPTION DEMAND (MILLIONS OF 1982 DOLLARS)(AGGREGATED)

INDUSTRY	HOUSEHOLDS			FEDERAL		GOVERNMENTS		STATE/LOCAL
	PERSONAL CONSUMPTION			PUR/NON-MIL	PUR/MIL	CCC	PUR/NON-ED	
	LOW	MEDIUM	HIGH					PUR/ED
1	.3859	1.2199	.5832	.0003	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
66	.0000	.0000	.0000	.0000	.0627	.0000	1.6769	.4049
69	.0000	.0000	.0000	.3418	.0004	.0000	10.4068	.0000
82	2.3977	8.9342	4.4770	.0005	.0017	.0000	.5129	2.1435
160	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
161	.0003	.0011	.0007	.0000	.0000	.0000	.0000	.0000
164	.0012	.0055	.0045	.0003	.0002	.0000	.0000	.0000
269	.0009	.0042	.0038	.0001	.0003	.0000	.0000	.0000
448	.8727	2.4112	1.6106	.0396	.1410	.0000	.0000	.0000
454	2.4078	7.3830	3.7044	.1897	.0000	.0000	.9237	2.3295
459	.0578	.2098	.1235	.0014	.0002	.0000	.0000	.0000
460	.2329	1.3734	1.1183	.0169	.0052	.0000	.0000	.0000
461	6.9356	26.1990	17.2140	.2124	.2748	.0000	.0000	.0000
462	1.0759	6.3433	5.1652	.0004	.0001	.0000	.0000	.0200
463	15.9238	60.1515	39.5223	.0009	.0028	.0000	.0000	.0000
464	3.0823	12.8249	9.8133	.4395	.0002	.0000	4.7670	.0000
467	1.2260	7.0907	6.1256	.0000	.0007	.0000	.0000	.0000
468	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
470	14.9298	31.5210	7.3162	.0000	.0356	.0000	.0000	.0000
471	1.0678	3.7989	4.4919	.0521	.0585	.0000	.0000	.0000
491	9.0607	42.9419	27.4613	.0319	.0316	.0000	.0000	.0000
502	.0092	.0615	.0448	.0001	.0000	.0000	.0000	.0000
504	5.0470	14.4072	7.9694	.0690	.0501	.0000	.0000	.0000
507	.3664	1.5335	1.1655	.0000	.0000	.0000	.0000	.0000
508	.6557	2.7445	2.0858	1.0897	.0214	.0000	.0000	.1837
516	.3125	1.1805	.7756	.1222	.0311	.0000	.7222	.2259
517	.3997	1.3824	.7457	.0004	.0184	.0000	.6265	1.0633
525	.0000	.0000	.0000	6.5145	6.2181	.0000	126.6645	110.8018
526	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
527	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	66.4494	233.7230	141.5226	9.1235	6.9550	.0000	146.3006	117.1726

MID.403

6.1 Regional Investment & Trade Demand (Aggregated) -- an Aggregation report.

LISTER REPORT #6.1 PAGE 1
6/14/89

REGIONAL INVESTMENT & TRADE DEMAND (MILLIONS OF 1982 DOLLARS)(AGGREGATED)

INDUSTRY	INVESTMENT INVENTORY ADDITIONS (\$MM)	CAPITAL FORMATION (\$MM)	TRADE DOMESTIC EXPORTS (\$MM)	FOREIGN EXPORTS (\$MM)	INTERMEDIATE DEMAND (\$MM)	TOTAL FINAL DEMAND (\$MM)	INDUSTRY OUTPUT (\$MM)
1	.0000	.0000	10.6111	.0514	.3405	12.8518	13.1923
45	.0000	.0000	2.4103	.0000	.3080	2.4103	2.7182
66	.0000	139.8974	.0000	.0000	.0000	142.0419	142.0419
69	.0000	5.2172	.0000	.0000	.0000	15.9662	15.9662
82	.0001	.0000	14.0550	.0000	9.3305	32.5225	41.8531
160	.0000	.0000	.5143	.0000	.4671	.5143	.9814
161	.0000	.0003	.0156	.0007	.8271	.0187	.8458
164	.0000	.0086	.0490	.0290	3.0296	.0982	3.1278
269	.0000	.0009	8.3006	.0022	.3965	8.3130	8.7096
448	.0000	.3519	3.1287	.0000	7.2010	8.5558	15.7568
454	.0000	.8900	2.0411	.0000	4.7512	19.8691	24.6203
459	.0000	.0000	.0000	.0000	.6420	.3927	1.0347
460	.0000	.5804	.0000	.0000	.2559	3.3272	3.5831
461	.0000	10.6843	7.3954	.0000	21.9588	68.9155	90.8743
462	.0000	.8285	.0000	.0000	.1857	13.4333	13.6191
463	.0000	.5702	20.7662	.0000	9.3394	136.9378	146.2772
464	.0000	.0000	1.0866	.0000	7.2117	32.0138	39.2255
467	.0000	.0000	.0000	.0000	2.7007	14.4430	17.1437
468	.0000	.0000	.2411	.0000	6.9451	.2411	7.1863
470	.0000	6.0634	46.0482	.0000	30.0028	105.9142	135.9170
471	.0000	.0185	13.9901	.0000	1.0668	23.4778	24.5446
491	.0000	.0000	43.3123	.0000	7.4311	122.8396	130.2707
502	.0000	.0000	.0000	.0000	.0011	.1156	.1167
504	.0000	.0000	.0000	.0000	.0000	27.5427	27.5427
507	.0000	.0000	.0000	.0000	.0000	3.0654	3.0654
508	.0000	.0000	62.2033	.0000	.0161	68.9839	69.0000
516	.0000	.0000	3.6554	.0000	2.7371	7.0254	9.7625
517	.0000	.0049	.1448	.0000	1.7615	4.3861	6.1476
525	.0000	.0000	.0000	.0000	.0000	250.1988	250.1988
526	.0000	.0000	31.0665	.0000	.0000	31.0665	31.0665
527	.0000	.0000	2.2440	.0000	.0000	2.2440	2.2440
528	.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTALS	.0001	165.1167	273.2794	.0833	118.9075	1159.7260	1278.6340

MID.403

7.0 Final Payments: Factors (Industry Basis) (Aggregated) -- an Aggregation report.

LISTER REPORT #7.0 PAGE 1
6/14/89

FINAL PAYMENTS: FACTORS (INDUSTRY BASIS) (AGGREGATED)

INDUSTRY	EMPLOYEE COMPENSATION (\$MM)	INDIRECT BUSINESS TAXES (\$MM)	PROPRIETARY INCOME (\$MM)	OTHER PROP. INCOME (\$MM)	TOTAL VALUE ADDED (\$MM)	EMPLOYMENT
1	.81054	.25823	1.51914	.83713	3.42505	184.84
45	.84483	.11393	-.01388	.63618	1.58105	31.27
66	36.42007	1.55946	3.61157	2.48740	44.07850	1381.24
69	4.35319	.21754	.35127	.24171	5.16372	140.16
82	3.75089	.10404	.00466	.39454	4.25413	110.69
160	.19433	.00368	.01386	.08100	.29287	10.39
161	.23667	.01182	.00782	.04567	.30197	27.85
164	.64079	.05151	.01933	.11272	.82435	57.15
269	2.08088	.13207	.00136	.37080	2.58512	63.62
448	6.56538	.38897	.64174	1.76045	9.35655	363.08
454	10.53979	2.16340	-.02955	9.36132	22.03495	357.68
459	.29787	.04637	.00236	.30878	.65538	15.79
460	1.47634	.44323	.06667	.39977	2.38600	17.04
461	37.44255	11.24113	1.69076	10.13896	60.51340	1885.36
462	6.33082	2.03006	.43467	1.07772	9.87328	514.14
463	67.99684	21.80411	4.66865	11.57541	106.04500	5659.07
464	15.00545	.64357	.03797	7.11408	22.80107	800.17
467	4.23781	.99724	.00000	-.09309	5.14196	351.92
468	3.66344	.14130	.63687	.25038	4.69198	177.39
470	6.85171	17.90011	-1.80528	85.10858	108.05510	861.80
471	7.07564	.85662	-.61220	3.20774	10.52779	904.12
491	37.76876	5.30695	2.84429	7.04316	52.96317	5430.48
502	.04168	.00671	.00111	.02180	.07130	5.06
504	13.59791	.00174	.23531	.13849	13.97345	943.59
507	1.41404	.00000	.00000	-.00028	1.41376	332.87
508	42.94989	.00000	.00000	-.00440	42.94549	2118.30
516	9.17743	.00000	.00000	-1.77266	7.40477	317.13
517	.83637	.00000	.00000	1.01438	1.85075	21.23
525	250.19880	.00000	.00000	-.00005	250.19880	12892.42
526	-.05766	.00000	.00000	31.12418	31.06652	-16.21
527	2.24402	.00000	.00000	.00000	2.24402	248.46
528	.00000	.00000	-.28828	-6.60310	-6.89138	.00
TOTAL	574.987	66.424	14.040	166.379	821.830	36208.10

MID.403

7.1 Final Payments: Trade (Industry Basis) (Aggregated) -- an Aggregation report.

 LISTER REPORT #7.1 PAGE 1
6/14/89

FINAL PAYMENTS: TRADE(INDUSTRY BASIS) (AGGREGATED)

INDUSTRY	COMPETITIVE IMPORTS (MMS)	NON-COMPETITIVE IMPORTS (MMS)	TOTAL DOMESTIC IMPORTS (MMS)	FOREIGN IMPORTS (MMS)	TOTAL IMPORTS (MMS)	TOTAL DOMESTIC FINAL PAYMENTS (MMS)	TOTAL FINAL PAYMENTS (MMS)	TOTAL OUTLAYS (MMS)
1	1.23261	7.46096	8.63403	.05954	8.69357	12.05908	12.11862	13.19228
45	.44328	.45050	.84484	.04894	.89378	2.42589	2.47483	2.71823
66	45.26513	28.19044	70.21835	3.23724	73.45557	114.29690	117.53410	142.04190
69	5.43913	4.16262	9.36567	.23608	9.60175	14.52939	14.76546	15.96617
82	18.40367	15.22506	33.21663	.41209	33.62872	37.47076	37.88285	41.85307
160	.46330	.08759	.52758	.02332	.55090	.82045	.84377	.98140
161	.10368	.03672	.13458	.00582	.14040	.43655	.44237	.84579
164	1.37655	.36370	1.56901	.17123	1.74024	2.39336	2.56460	3.12782
269	3.90354	1.13808	4.90378	.13783	5.04161	7.48891	7.62674	8.70956
448	2.39078	1.79233	4.01438	.16873	4.18310	13.37093	13.53966	15.75677
454	.41174	1.72266	1.72362	.41079	2.13440	23.75857	24.16936	24.62028
459	.21816	.07472	.27474	.01814	.29288	.93012	.94826	1.03473
460	.27658	.54644	.80227	.02076	.82302	3.18827	3.20902	3.58311
461	7.01452	13.35881	20.34688	.52645	20.87333	80.86028	81.38673	90.87431
462	.96615	1.69043	2.61105	.04552	2.65658	12.48433	12.52986	13.61909
463	10.37703	18.15618	28.04425	.48896	28.53320	134.08930	134.57820	146.27720
464	6.06041	5.84836	11.68226	.22652	11.90877	34.48332	34.70984	39.22547
467	2.16496	1.26195	3.37127	.05564	3.42691	8.51323	8.56887	17.14366
468	.66393	1.03895	1.67532	.02756	1.70288	6.36730	6.39486	7.18626
470	5.19122	10.91855	15.99398	.11579	16.10977	124.04910	124.16490	135.91700
471	4.16376	6.91249	10.83304	.24322	11.07625	21.36083	21.60404	24.54460
491	14.48851	42.08282	53.92202	2.64930	56.57133	106.88520	109.53450	130.27070
502	.00820	.02752	.03504	.00068	.03572	.10634	.10702	.11671
504	5.08818	5.40390	10.03061	.46147	10.49208	24.00407	24.46553	27.54270
507	.46406	.77330	1.19159	.04577	1.23736	2.60535	2.65112	3.06541
508	6.02237	12.30939	17.91214	.41963	18.33176	60.85763	61.27726	69.00002
516	.42278	1.43882	1.78028	.08131	1.86159	9.18505	9.26636	9.76253
517	.52921	3.55292	4.02923	.05290	4.08213	5.87998	5.93288	6.14765
525	.00000	.00000	.00000	.00000	.00000	250.19880	250.19880	250.19880
526	.00000	.00000	.00000	.00000	.00000	31.06652	31.06652	31.06652
527	.00000	.00000	.00000	.00000	.00000	2.24402	2.24402	2.24402
528	.00000	1.23261	.00000	.00000	1.23261	-6.89138	-6.89138	-6.89138
TOTALS	143.5534	187.7588	319.6884	10.3912	331.3122	1141.5180	1151.9100	1271.7420

NOTE--UNAGGREGATED INDUSTRY FINAL PAYMENTS PRINTED IN "ACCOUNT" REPORTS 7.0 & 7.1

MID.601 5.2 Leontief Inverse -- a Multiplier report.

LEONTIEF INVERSE

INVERT REPORT #5.200

PAGE 1. 1 OF 1. 4

	1	24	45	66	69	82	160	161	164	269
1	1.00000	.00002	.00001	.00001	.00000	.00001	.00001	.00001	.00002	.00002
24	.00000	1.00070	.00000	.00012	.00000	.00000	.04526	.01941	.00092	.00000
45	.00000	.00000	1.01001	.00077	.00633	.00000	.00000	.00000	.00000	.00000
66	.00000	.00000	.00000	1.00000	.00000	.00000	.00000	.00000	.00000	.00000
69	.00000	.00000	.00000	.00000	1.00000	.00000	.00000	.00000	.00000	.00000
82	.00010	.00045	.00033	.00021	.00010	1.05705	.00016	.00025	.00047	.00048
160	.00001	.00000	.00000	.00281	.00005	.00000	1.06527	.45676	.02157	.00006
161	.00002	.00000	.00000	.00545	.00009	.00000	.00200	1.01441	.02484	.00013
164	.00000	.00000	.00000	.02108	.00024	.00000	.00017	.00115	1.01322	.00001
269	.00000	.00000	.00010	.00183	.00491	.00000	.00000	.00001	.00022	1.00572
448	.01696	.00492	.00530	.01111	.02215	.00505	.00262	.00567	.00931	.00113
454	.00219	.00081	.00164	.00348	.00223	.00082	.00049	.00104	.00350	.00299
459	.00005	.00005	.00113	.00023	.00016	.00010	.00020	.00026	.00024	.00016
460	.00047	.00014	.00198	.00022	.00034	.00003	.00094	.00048	.00012	.00189
461	.02853	.02862	.02066	.06346	.02751	.03199	.01798	.03211	.10598	.02875
462	.00006	.00035	.00031	.00018	.00023	.00002	.00109	.00051	.00011	.00157
463	.00089	.00059	.00167	.06002	.00450	.00012	.00284	.00170	.00053	.00429
464	.01207	.00724	.01025	.00616	.00506	.00218	.00322	.00436	.00630	.00291
467	.00274	.00040	.00400	.00293	.00243	.00067	.00135	.00123	.00248	.00199
468	.00111	.00016	.00162	.00119	.00098	.00027	.00055	.00074	.00101	.00031
470	.02481	.00119	.02137	.00635	.00326	.00255	.00185	.00301	.00728	.00527
471	.00078	.00114	.00520	.00132	.00098	.00023	.00039	.00037	.00071	.00076
491	.00152	.00804	.00584	.00376	.00172	.00264	.00285	.00445	.00841	.00351
504	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
507	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
508	.00000	.00053	.00013	.00000	.00000	.00000	.00002	.00025	.00001	.00032
516	.00051	.00094	.00103	.00098	.00089	.00097	.00054	.00091	.00179	.00136
517	.00147	.00054	.00630	.00068	.00042	.00064	.00023	.00181	.00152	.00120
525	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
526	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
527	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
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LEONTIEF INVERSE

INVERT REPORT #5.200

PAGE 1. 4 OF 1. 4

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82	.00000	.00000
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161	.00000	.00000
164	.00000	.00000
269	.00000	.00000
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527	1.00000	.00000
528	.00000	1.00000

MID.602 5.3 Output Multipliers -- a Multiplier report.

OUTPUT MULTIPLIERS

INVERT REPORT #5.300

PAGE 1

SECTOR	TYPE I	TYPE III	PER CAPITA PERSONAL CONSUMPTION EXPENDITURES
1 DAIRY FARM PRODUCTS	1.0943	1.3140	14.
24 FORESTRY PRODUCTS	1.0568	1.2166	0.
45 CRUSHED AND BROKEN LIMESTONE	1.0989	1.2813	0.
66 NEW RESIDENTIAL STRUCTURES	1.1944	1.3979	0.
69 NEW HIGHWAYS AND STREETS	1.0846	1.2295	0.
82 MEAT PACKING PLANTS	1.1053	1.1580	100.
160 LOGGING CAMPS AND LOGGING CONTRACTOR	1.1500	1.3244	0.
161 SAWMILLS AND PLANING MILLS, GENERAL	1.5515	2.0987	0.
164 MILLWORK	1.2103	1.5233	0.
269 READY-MIXED CONCRETE	1.1392	1.2814	0.
448 MOTOR FREIGHT TRANSPORT AND WAREHOUS	1.1609	1.5276	31.
454 COMMUNICATIONS, EXCEPT RADIO AND TV	1.0199	1.2246	85.
459 SANITARY SERVICES AND STEAM SUPPLY	1.0923	1.3288	2.
460 RECREATIONAL RELATED WHOLESALE TRADE	1.1164	1.2211	16.
461 OTHER WHOLESALE TRADE	1.1164	1.4411	318.
462 RECREATIONAL RELATED RETAIL TRADE	1.0889	1.6267	80.
463 OTHER RETAIL TRADE	1.0889	1.6396	731.
464 BANKING	1.1243	1.4435	162.
467 INSURANCE CARRIERS	1.5575	2.0189	91.
468 INSURANCE AGENTS AND BROKERS	1.1187	1.4896	0.
470 REAL ESTATE	1.0964	1.1994	340.
471 HOTELS AND LODGING PLACES	1.1336	1.6692	59.
491 EATING AND DRINKING PLACES	1.1767	1.7819	502.
504 HOSPITALS	1.1239	1.6232	173.
507 ELEMENTARY AND SECONDARY SCHOOLS	1.1485	2.6707	19.
508 COLLEGES, UNIVERSITIES, SCHOOLS	1.1233	1.5681	35.
516 U.S. POSTAL SERVICE	1.0567	1.5163	14.
517 FEDERAL ELECTRIC UTILITIES	1.0387	1.0957	16.
525 GOVERNMENT INDUSTRY	1.0000	1.7090	0.
526 REST OF THE WORLD INDUSTRY	1.0000	.9928	0.
527 HOUSEHOLD INDUSTRY	1.0000	2.5234	0.
528 INVENTORY VALUATION ADJUSTMENT	1.0000	1.0000	0.

MID.603 5.41 Personal Income Multipliers -- a Multiplier report.

PERSONAL INCOME MULTIPLIERS

INVERT REPORT #5.410

PAGE 1

SECTOR	DIRECT	INDIRECT	INDUCED	TOTAL	TYPE I	TYPE III
1 DAIRY FARM PRODUCTS	.0607	.0289	.0747	.1643	1.4759	2.7073
24 FORESTRY PRODUCTS	.0709	.0217	.0544	.1469	1.3069	2.0740
45 CRUSHED AND BROKEN LIMESTONE	.3108	.0286	.0621	.4014	1.0919	1.2916
66 NEW RESIDENTIAL STRUCTURES	.2564	.0740	.0692	.3997	1.2886	1.5587
69 NEW HIGHWAYS AND STREETS	.2727	.0320	.0493	.3540	1.1174	1.2982
82 MEAT PACKING PLANTS	.0896	.0240	.0179	.1315	1.2672	1.4672
160 LOGGING CAMPS AND LOGGING CONTRACTOR	.1980	.0311	.0593	.2885	1.1573	1.4569
161 SAWMILLS AND PLANING MILLS, GENERAL	.2798	.1188	.1862	.5847	1.4244	2.0896
164 MILLWORK	.2049	.0719	.1065	.3832	1.3508	1.8705
269 READY-MIXED CONCRETE	.2389	.0530	.0484	.3402	1.2217	1.4241
448 MOTOR FREIGHT TRANSPORT AND WAREHOUS	.4167	.0623	.1247	.6037	1.1495	1.4489
454 COMMUNICATIONS, EXCEPT RADIO AND TV	.4281	.0062	.0696	.5040	1.0146	1.1772
459 SANITARY SERVICES AND STEAM SUPPLY	.2879	.0338	.0804	.4021	1.1176	1.3969
460 RECREATIONAL RELATED WHOLESALE TRADE	.4120	.0370	.0356	.4847	1.0899	1.1763
461 OTHER WHOLESALE TRADE	.4120	.0370	.1104	.5595	1.0899	1.3580
462 RECREATIONAL RELATED RETAIL TRADE	.4648	.0207	.1829	.6685	1.0446	1.4381
463 OTHER RETAIL TRADE	.4648	.0207	.1873	.6729	1.0446	1.4475
464 BANKING	.3825	.0518	.1086	.5429	1.1353	1.4192
467 INSURANCE CARRIERS	.2472	.2543	.1570	.6585	2.0288	2.6638
468 INSURANCE AGENTS AND BROKERS	.5098	.0405	.1262	.6764	1.0794	1.3269
470 REAL ESTATE	.0504	.0139	.0350	.0994	1.2762	1.9712
471 HOTELS AND LODGING PLACES	.2883	.0336	.1822	.5041	1.1165	1.7485
491 EATING AND DRINKING PLACES	.2899	.0427	.2059	.5385	1.1472	1.8572
504 HOSPITALS	.4937	.0286	.1698	.6921	1.0579	1.4019
507 ELEMENTARY AND SECONDARY SCHOOLS	.4613	.0317	.5178	1.0108	1.0688	2.1913
508 COLLEGES, UNIVERSITIES, SCHOOLS	.6225	.0210	.1513	.7947	1.0337	1.2768
516 U.S. POSTAL SERVICE	.9401	.0151	.1563	1.1116	1.0161	1.1824
517 FEDERAL ELECTRIC UTILITIES	.1360	.0123	.0194	.1678	1.0906	1.2333
525 GOVERNMENT INDUSTRY	1.0000	.0000	.2412	1.2412	1.0000	1.2412
526 REST OF THE WORLD INDUSTRY	-.0019	.0000	-.0024	-.0043	1.0000	2.3162
527 HOUSEHOLD INDUSTRY	1.0000	.0000	.5182	1.5182	1.0000	1.5182
528 INVENTORY VALUATION ADJUSTMENT	.0000	.0000	.0000	.0000	.0000	.0000

NOTE: THE INDUCED AND TOTAL COMPONENTS ARE BASED UPON THE TYPE III MULTIPLIERS

MID.604 5.42 Total Income Multipliers -- a Multiplier report.

TOTAL INCOME MULTIPLIERS

INVERT REPORT #5.420

PAGE 1

SECTOR	DIRECT	INDIRECT	INDUCED	TOTAL	TYPE I	TYPE III
1 DAIRY FARM PRODUCTS	.2234	.0541	.1132	.3906	1.2421	1.7489
24 FORESTRY PRODUCTS	.4491	.0297	.0823	.5611	1.0660	1.2493
45 CRUSHED AND BROKEN LIMESTONE	.5397	.0528	.0940	.6865	1.0978	1.2720
66 NEW RESIDENTIAL STRUCTURES	.2993	.0994	.1049	.5036	1.3320	1.6824
69 NEW HIGHWAYS AND STREETS	.3098	.0453	.0747	.4297	1.1462	1.3872
82 MEAT PACKING PLANTS	.0992	.0319	.0271	.1582	1.3221	1.5958
160 LOGGING CAMPS AND LOGGING CONTRACTOR	.2947	.0602	.0899	.4448	1.2044	1.5094
161 SAWMILLS AND PLANING MILLS, GENERAL	.3431	.1803	.2820	.8053	1.5255	2.3475
164 MILLWORK	.2471	.0995	.1613	.5078	1.4025	2.0553
269 READY-MIXED CONCRETE	.2817	.0749	.0733	.4298	1.2660	1.5262
448 MOTOR FREIGHT TRANSPORT AND WAREHOUS	.5691	.0907	.1890	.8488	1.1594	1.4914
454 COMMUNICATIONS, EXCEPT RADIO AND TV	.8071	.0125	.1055	.9251	1.0155	1.1462
459 SANITARY SERVICES AND STEAM SUPPLY	.5886	.0530	.1218	.7634	1.0900	1.2970
460 RECREATIONAL RELATED WHOLESALE TRADE	.5422	.0611	.0539	.6572	1.1127	1.2121
461 OTHER WHOLESALE TRADE	.5422	.0611	.1673	.7706	1.1127	1.4213
462 RECREATIONAL RELATED RETAIL TRADE	.5759	.0533	.2771	.9064	1.0926	1.5738
463 OTHER RETAIL TRADE	.5759	.0533	.2838	.9130	1.0926	1.5853
464 BANKING	.5649	.0738	.1645	.8032	1.1307	1.4218
467 INSURANCE CARRIERS	.2418	.3475	.2378	.8271	2.4374	3.4210
468 INSURANCE AGENTS AND BROKERS	.6332	.0755	.1911	.8998	1.1192	1.4210
470 REAL ESTATE	.6633	.0590	.0531	.7754	1.0889	1.1689
471 HOTELS AND LODGING PLACES	.3940	.0770	.2760	.7471	1.1955	1.8960
491 EATING AND DRINKING PLACES	.3658	.0733	.3119	.7510	1.2005	2.0530
504 HOSPITALS	.5073	.0691	.2573	.8337	1.1363	1.6434
507 ELEMENTARY AND SECONDARY SCHOOLS	.4612	.0906	.7844	1.3363	1.1965	2.8974
508 COLLEGES, UNIVERSITIES, SCHOOLS	.6224	.0753	.2292	.9269	1.1210	1.4893
516 U.S. POSTAL SERVICE	.7585	.0342	.2369	1.0296	1.0451	1.3574
517 FEDERAL ELECTRIC UTILITIES	.3011	.0222	.0294	.3526	1.0736	1.1712
525 GOVERNMENT INDUSTRY	1.0000	.0000	.3654	1.3654	1.0000	1.3654
526 REST OF THE WORLD INDUSTRY	1.0000	.0000	.0037	.9963	1.0000	.9963
527 HOUSEHOLD INDUSTRY	1.0000	.0000	.7851	1.7851	1.0000	1.7851
528 INVENTORY VALUATION ADJUSTMENT	1.0000	.0000	.0000	1.0000	1.0000	1.0000

NOTE: THE INDUCED AND TOTAL COMPONENTS ARE BASED UPON THE TYPE III MULTIPLIERS

MID.605

5.43 Value Added Multipliers -- a Multiplier report.

VALUE ADDED MULTIPLIERS

INVERT REPORT #5.430

PAGE 1

SECTOR	DIRECT	INDIRECT	INDUCED	TOTAL	TYPE I	TYPE III
1 DAIRY FARM PRODUCTS	.2398	.0621	.1322	.4341	1.2592	1.8105
24 FORESTRY PRODUCTS	.5083	.0343	.0961	.6387	1.0674	1.2565
45 CRUSHED AND BROKEN LIMESTONE	.5816	.0603	.1098	.7517	1.1037	1.2924
66 NEW RESIDENTIAL STRUCTURES	.3103	.1187	.1225	.5514	1.3824	1.7770
69 NEW HIGHWAYS AND STREETS	.3234	.0513	.0872	.4619	1.1586	1.4282
82 MEAT PACKING PLANTS	.1016	.0368	.0317	.1701	1.3620	1.6737
160 LOGGING CAMPS AND LOGGING CONTRACTOR	.2984	.0667	.1049	.4701	1.2237	1.5753
161 SAWMILLS AND PLANING MILLS, GENERAL	.3570	.1887	.3292	.8750	1.5286	2.4508
164 MILLWORK	.2636	.1155	.1883	.5674	1.4383	2.1528
269 READY-MIXED CONCRETE	.2968	.0831	.0855	.4654	1.2799	1.5681
448 MOTOR FREIGHT TRANSPORT AND WAREHOUSE	.5938	.0991	.2206	.9136	1.1669	1.5385
454 COMMUNICATIONS, EXCEPT RADIO AND TV	.8950	.0141	.1231	1.0322	1.0157	1.1533
459 SANITARY SERVICES AND STEAM SUPPLY	.6334	.0594	.1422	.8350	1.0937	1.3183
460 RECREATIONAL RELATED WHOLESALE TRADE	.6659	.0688	.0630	.7976	1.1033	1.1978
461 OTHER WHOLESALE TRADE	.6659	.0688	.1953	.9300	1.1033	1.3966
462 RECREATIONAL RELATED RETAIL TRADE	.7250	.0613	.3235	1.1098	1.0846	1.5309
463 OTHER RETAIL TRADE	.7250	.0613	.3313	1.1176	1.0846	1.5416
464 BANKING	.5813	.0794	.1920	.8527	1.1366	1.4669
467 INSURANCE CARRIERS	.2999	.3658	.2776	.9434	2.2197	3.1453
468 INSURANCE AGENTS AND BROKERS	.6529	.0849	.2232	.9609	1.1300	1.4718
470 REAL ESTATE	.7950	.0691	.0620	.9260	1.0869	1.1648
471 HOTELS AND LODGING PLACES	.4289	.0881	.3223	.8392	1.2053	1.9566
491 EATING AND DRINKING PLACES	.4066	.0855	.3641	.8561	1.2102	2.1058
504 HOSPITALS	.5073	.0806	.3004	.8882	1.1588	1.7508
507 ELEMENTARY AND SECONDARY SCHOOLS	.4612	.1054	.9158	1.4825	1.2286	3.2144
508 COLLEGES, UNIVERSITIES, SCHOOLS	.6224	.0881	.2676	.9782	1.1416	1.5716
516 U.S. POSTAL SERVICE	.7585	.0388	.2765	1.0738	1.0511	1.4157
517 FEDERAL ELECTRIC UTILITIES	.3011	.0262	.0343	.3616	1.0871	1.2011
525 GOVERNMENT INDUSTRY	1.0000	.0000	.4266	1.4266	1.0000	1.4266
526 REST OF THE WORLD INDUSTRY	1.0000	.0000	.0043	.9957	1.0000	.9957
527 HOUSEHOLD INDUSTRY	1.0000	.0000	.9166	1.9166	1.0000	1.9166
528 INVENTORY VALUATION ADJUSTMENT	1.0000	.0000	.0000	1.0000	1.0000	1.0000

NOTE: THE INDUCED AND TOTAL COMPONENTS ARE BASED UPON THE TYPE III MULTIPLIERS

EMPLOYMENT MULTIPLIERS

INVERT REPORT #5.440

PAGE 1

SECTOR	DIRECT	INDIRECT	INDUCED	TOTAL	TYPE I	TYPE III
1 DAIRY FARM PRODUCTS	14.3113	1.6562	6.0402	22.0077	1.1157	1.5378
24 FORESTRY PRODUCTS	10.2543	1.3582	4.3928	16.0054	1.1325	1.5608
45 CRUSHED AND BROKEN LIMESTONE	11.5045	1.7550	5.0159	18.2754	1.1526	1.5885
66 NEW RESIDENTIAL STRUCTURES	9.7242	5.0701	5.5964	20.3907	1.5214	2.0969
69 NEW HIGHWAYS AND STREETS	8.7787	1.7531	3.9840	14.5158	1.1997	1.6535
82 MEAT PACKING PLANTS	2.6448	1.1833	1.4481	5.2762	1.4474	1.9949
160 LOGGING CAMPS AND LOGGING CONTRACTOR	10.5818	2.0936	4.7949	17.4702	1.1978	1.6510
161 SAWMILLS AND PLANING MILLS, GENERAL	32.9338	6.8387	15.0452	54.8177	1.2077	1.6645
164 MILLWORK	18.2715	4.4774	8.6055	31.3544	1.2450	1.7160
269 READY-MIXED CONCRETE	7.3045	3.0297	3.9093	14.2435	1.4148	1.9500
448 MOTOR FREIGHT TRANSPORT AND WAREHOUSE	23.0431	3.6096	10.0822	36.7349	1.1566	1.5942
454 COMMUNICATIONS, EXCEPT RADIO AND TV	14.5279	3.483	5.6274	20.5036	1.0240	1.4113
459 SANITARY SERVICES AND STEAM SUPPLY	15.2610	1.9227	6.5003	23.6840	1.1260	1.5519
460 RECREATIONAL RELATED WHOLESALE TRADE	4.7568	2.8494	2.8773	10.4834	1.5990	2.2039
461 OTHER WHOLESALE TRADE	20.7469	2.8494	8.9260	32.5223	1.1373	1.5676
462 RECREATIONAL RELATED RETAIL TRADE	37.7513	1.3330	14.7848	53.8691	1.0353	1.4269
463 OTHER RETAIL TRADE	38.6873	1.3330	15.1389	55.1592	1.0345	1.4258
464 BANKING	20.3992	2.7980	8.7751	31.9723	1.1372	1.5673
467 INSURANCE CARRIERS	20.5279	13.0083	12.6861	46.2224	1.6337	2.2517
468 INSURANCE AGENTS AND BROKERS	24.6839	2.2728	10.1972	37.1540	1.0921	1.5052
470 REAL ESTATE	6.3407	1.1447	2.8316	10.3169	1.1805	1.6271
471 HOTELS AND LODGING PLACES	36.8356	2.0936	14.7262	53.6554	1.0568	1.4566
491 EATING AND DRINKING PLACES	41.6861	2.2975	16.6382	60.6219	1.0551	1.4542
504 HOSPITALS	34.2592	2.0243	13.7254	50.0088	1.0591	1.4597
507 ELEMENTARY AND SECONDARY SCHOOLS	108.5894	2.0444	41.8508	152.4846	1.0188	1.4042
508 COLLEGES, UNIVERSITIES, SCHOOLS	30.6999	1.6303	12.2299	44.5602	1.0531	1.4515
516 U.S. POSTAL SERVICE	32.4840	.9210	12.6365	46.0416	1.0284	1.4174
517 FEDERAL ELECTRIC UTILITIES	3.4527	.6931	1.5683	5.7141	1.2008	1.6550
525 GOVERNMENT INDUSTRY	51.5287	.0000	19.4924	71.0211	1.0000	1.3783
526 REST OF THE WORLD INDUSTRY	-.5219	.0000	-.1974	-.7193	1.0000	1.3783
527 HOUSEHOLD INDUSTRY	110.7207	.0000	41.8836	152.6043	1.0000	1.3783
528 INVENTORY VALUATION ADJUSTMENT	.0000	.0000	.0000	.0000	.0000	.0000

NOTE: THE INDUCED AND TOTAL COMPONENTS ARE BASED UPON THE TYPE III MULTIPLIERS

MID.901 6.111 1982 Base Year Data, Standard TIO-Related Flows
-- an Impact Report.

1982 BASE YEAR DATA
STANDARD TIO-RELATED FLOWS

IMPACT REPORT #6.111

DATE 89/ 6/15
PAGE 1

SECTOR	BASE YEAR FINAL DEMAND (MMS)	BASE YEAR TIO (MMS)	EMPLOYEE COMP INCOME (MMS)	PROPERTY INC (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT NUMBER OF JOBS)
1 DAIRY FARM PRODUCTS	2.2085	12.2171	.7414	1.9874	2.7288	2.9293	174.8420
24 FORESTRY PRODUCTS	.0322	.9752	.0691	.3689	.4380	.4957	10.0000
45 CRUSHED AND BROKEN LINES	.0000	2.7182	.8448	.6223	1.4671	1.5811	31.2720
66 NEW RESIDENTIAL STRUCTUR	142.0419	142.0419	36.4201	6.0990	42.5190	44.0785	1381.2440
69 NEW HIGHWAYS AND STREETS	15.9662	15.9662	4.3532	.5930	4.9462	5.1637	140.1630
82 MEAT PACKING PLANTS	18.4675	41.8531	3.7509	.3992	4.1501	4.2541	110.6930
160 LOGGING CAMPS AND LOGGIN	.0000	.9814	.1943	.0949	.2892	.2929	10.3850
161 SAWMILLS AND PLANING MIL	.0031	.8458	.2367	.0535	.2902	.3020	27.8550
164 MILLWORK	.0492	3.1278	.6408	.1321	.7728	.8244	57.1500
269 READY-MIXED CONCRETE	.0125	8.7096	2.0809	.3722	2.4530	2.5851	63.6190
448 MOTOR FREIGHT TRANSPORT	5.4270	15.7568	6.5654	2.4022	8.9676	9.3566	363.0850
454 COMMUNICATIONS, EXCEPT R	17.8280	24.6203	10.5398	9.3318	19.8716	22.0350	357.6800
459 SANITARY SERVICES AND ST	.3927	1.0347	.2979	.3111	.6090	.6554	15.7910
460 RECREATIONAL RELATED WHO	3.3272	3.5831	1.4763	.4664	1.9428	2.3860	17.0440
461 OTHER WHOLESALE TRADE	61.5201	90.8743	37.4426	11.8297	49.2723	60.5134	1885.3610
462 RECREATIONAL RELATED RET	13.4333	13.6191	6.3308	1.5124	7.8432	9.8733	514.1380
463 OTHER RETAIL TRADE	116.1715	146.2772	67.9968	16.2441	84.2409	106.0450	5659.0660
464 BANKING	30.9272	39.2255	15.0055	7.1521	22.1575	22.8011	800.1671
467 INSURANCE CARRIERS	14.4430	17.1437	4.2378	.0931	4.1447	5.1420	351.9240
468 INSURANCE AGENTS AND BRO	.0000	7.1863	3.6634	.8872	4.5507	4.6920	177.3850
470 REAL ESTATE	59.8660	135.9170	6.8517	83.3033	90.1550	108.0551	861.8030
471 HOTELS AND LODGING PLACE	9.4878	24.5446	7.0756	2.5955	9.6712	10.5278	904.1151
491 EATING AND DRINKING PLAC	79.5273	130.2707	37.7688	9.8875	47.6562	52.9632	5430.4830
502 AMUSEMENT AND RECREATION	.1156	.1167	.0417	.0229	.0646	.0713	5.0610
504 HOSPITALS	27.5427	27.5427	13.5979	.3738	13.9717	13.9735	943.5900
507 ELEMENTARY AND SECONDARY	3.0654	3.0654	1.4140	.0003	1.4138	1.4138	332.8710
508 COLLEGES, UNIVERSITIES,	6.7806	69.0000	42.9499	.0044	42.9455	42.9455	2118.2960
516 U.S. POSTAL SERVICE	3.3700	9.7625	9.1774	-1.7727	7.4048	7.4048	317.1260
517 FEDERAL ELECTRIC UTILITI	4.2413	6.1476	.8364	1.0144	1.8507	1.8507	21.2260
525 GOVERNMENT INDUSTRY	250.1988	250.1988	250.1988	.0000	250.1988	250.1988	12892.4200
526 REST OF THE WORLD INDUST	.0000	31.0665	.0577	31.1242	31.0665	31.0665	-16.2140
527 HOUSEHOLD INDUSTRY	.0000	2.2440	2.2440	.0000	2.2440	2.2440	248.4590
528 INVENTORY VALUATION ADJU	.0000	-6.8914	.0000	-6.8914	-6.8914	-6.8914	.0000
TOTAL	886.4469	1271.7420	574.9871	180.4190	755.4061	821.8300	36208.1000
POPULATION =	108610.						

MID.901

6.112 1982 Base Year Data, Standard TIO-Related Coefficients -- an Impact report.

1982 BASE YEAR DATA
STANDARD TIO-RELATED COEFFICIENTS

IMPACT REPORT #6.112

DATE 89/ 6/15
PAGE 1

SECTOR	BASE YEAR FINAL DEMAND (MMS)	BASE YEAR TIO (MMS)	EMPLOYEE COMP COEFFICIENT (INCOME/MMS)	PROPERTY INC COEFFICIENT (INCOME/MMS)	TOTAL INCOME COEFFICIENT (INCOME/MMS)	VALUE ADDED COEFFICIENT (V.A./MMS)	EMPLOYMENT COEFFICIENT (NO. JOBS/MMS)
1 DAIRY FARM PRODUCTS	2.2085	12.2171	.0607	.1627	.2234	.2398	14.3113
24 FORESTRY PRODUCTS	.0322	.9752	.0709	.3783	.4491	.5083	10.2543
45 CRUSHED AND BROKEN LIMES	.0000	2.7182	.3108	.2289	.5397	.5816	11.5045
66 NEW RESIDENTIAL STRUCTUR	142.0419	142.0419	.2564	.0429	.2993	.3103	9.7242
69 NEW HIGHWAYS AND STREETS	15.9662	15.9662	.2727	.0371	.3098	.3234	8.7787
82 MEAT PACKING PLANTS	18.4675	41.8531	.0896	.0095	.0992	.1016	2.6448
160 LOGGING CAMPS AND LOGGIN	.0000	.9814	.1980	.0967	.2947	.2984	10.5818
161 SAWMILLS AND PLANING MIL	.0031	.8458	.2798	.0632	.3431	.3570	32.9338
164 MILLWORK	.0492	3.1278	.2049	.0422	.2471	.2636	18.2715
269 READY-MIXED CONCRETE	.0125	8.7096	.2389	.0427	.2817	.2968	7.3045
448 MOTOR FREIGHT TRANSPORT	5.4270	15.7568	.4167	.1525	.5691	.5938	23.0431
454 COMMUNICATIONS, EXCEPT R	17.8280	24.6203	.4281	.3790	.8071	.8950	14.5279
459 SANITARY SERVICES AND ST	.3927	1.0347	.2879	.3007	.5886	.6334	15.2610
460 RECREATIONAL RELATED WHO	3.3272	3.5831	.4120	.1302	.5422	.6659	14.7568
461 OTHER WHOLESALE TRADE	61.5201	90.8743	.4120	.1302	.5422	.6659	20.7469
462 RECREATIONAL RELATED RET	13.4333	13.6191	.4648	.1110	.5759	.7250	37.7513
463 OTHER RETAIL TRADE	116.1715	146.2772	.4648	.1110	.5759	.7250	38.6873
464 BANKING	30.9272	39.2255	.3825	.1823	.5649	.5813	20.3992
467 INSURANCE CARRIERS	14.4430	17.1437	.2472	.0054	.2418	.2999	20.5279
468 INSURANCE AGENTS AND BRO	.0000	7.1863	.5098	.1235	.6332	.6529	24.6839
470 REAL ESTATE	59.8660	135.9170	.0504	.6129	.6633	.7950	6.3407
471 HOTELS AND LODGING PLACE	9.4878	24.5446	.2883	.1057	.3940	.4289	36.8356
491 EATING AND DRINKING PLAC	79.5273	130.2707	.2899	.0759	.3658	.4066	41.6861
502 AMUSEMENT AND RECREATION	.1156	.1167	.3571	.1963	.5534	.6109	43.3654
504 HOSPITALS	27.5427	27.5427	.4937	.0136	.5073	.5073	34.2592
507 ELEMENTARY AND SECONDARY	3.0654	3.0654	.4613	.0001	.4612	.4612	108.5894
508 COLLEGES, UNIVERSITIES,	6.7806	69.0000	.6225	.0001	.6224	.6224	30.6999
516 U.S. POSTAL SERVICE	3.3700	9.7625	.9401	.1816	.7585	.7585	32.4840
517 FEDERAL ELECTRIC UTILITI	4.2413	6.1476	.1360	.1650	.3011	.3011	3.4527
525 GOVERNMENT INDUSTRY	250.1988	250.1988	1.0000	.0000	1.0000	1.0000	51.5287
526 REST OF THE WORLD INDUST	.0000	31.0665	.0019	1.0019	1.0000	1.0000	.5219
527 HOUSEHOLD INDUSTRY	.0000	2.2440	1.0000	.0000	1.0000	1.0000	110.7207
528 INVENTORY VALUATION ADJU	.0000	-6.8914	.0000	1.0000	1.0000	1.0000	.0000

MID.902

6.210 Analysis of Change in Final Demand, Description of the Alternative -- an Impact report.

ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
DESCRIPTION OF ALTERNATIVE

IMPACT REPORT #6.210

DATE 89/ 6/15
PAGE 1

OUTPUTS	UNITS	QUANTITY	INDUSTRY SALES BY I-O SECTOR NUMBER (MMS)					
			66	269	448	460	461	462
1 Golf Resort	MVN	30.6000	.0000	.0000	.0306	.0275	.0031	.4896
2 Golf Resort Construction Unit		.0000	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	MMS		.0000	.0000	.0306	.0275	.0031	.4896

ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
DESCRIPTION OF ALTERNATIVE

IMPACT REPORT #6.210

DATE 89/ 6/15
PAGE 2

OUTPUTS	UNITS	QUANTITY	INDUSTRY SALES BY I-O SECTOR NUMBER (MMS)			
			463	471	491	502
1 Golf Resort	MVN	30.6000	.1224	2.2950	1.8360	1.2240
2 Golf Resort Construction Unit		.0000	.0000	.0000	.0000	.0000
TOTAL	MMS		.1224	2.2950	1.8360	1.2240

MID.903

6.221 Analysis of Change in Final Demand, Direct Change in Standard TGO-Related Flows -- an Impact report.

IMPACT REPORT #6.221

ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
DIRECT CHANGE IN STANDARD TGO-RELATED FLOWS

DATE 89/ 6/15
PAGE 1

SECTOR	FINAL DEMAND (MMS)	TIO (MMS)	EMPLOYEE COMP INCOME (MMS)	PROPERTY INC (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
1 DAIRY FARM PRODUCTS	.0000	.0000	.0000	.0000	.0000	.0000	.00
24 FORESTRY PRODUCTS	.0000	.0000	.0000	.0000	.0000	.0000	.00
45 CRUSHED AND BROKEN LIMES	.0000	.0000	.0000	.0000	.0000	.0000	.00
66 NEW RESIDENTIAL STRUCTUR	.0000	.0000	.0000	.0000	.0000	.0000	.00
69 NEW HIGHWAYS AND STREETS	.0000	.0000	.0000	.0000	.0000	.0000	.00
82 MEAT PACKING PLANTS	.0000	.0000	.0000	.0000	.0000	.0000	.00
160 LOGGING CAMPS AND LOGGIN	.0000	.0000	.0000	.0000	.0000	.0000	.00
161 SAWMILLS AND PLANING MIL	.0000	.0000	.0000	.0000	.0000	.0000	.00
164 MILLWORK	.0000	.0000	.0000	.0000	.0000	.0000	.00
269 READY-MIXED CONCRETE	.0000	.0000	.0000	.0000	.0000	.0000	.00
448 MOTOR FREIGHT TRANSPORT	.0306	.0306	.0128	.0047	.0174	.0182	.71
454 COMMUNICATIONS, EXCEPT R	.0000	.0000	.0000	.0000	.0000	.0000	.00
459 SANITARY SERVICES AND ST	.0000	.0000	.0000	.0000	.0000	.0000	.00
460 RECREATIONAL RELATED WHO	.0275	.0275	.0113	.0036	.0149	.0183	.13
461 OTHER WHOLESALE TRADE	.0031	.0031	.0013	.0004	.0017	.0020	.06
462 RECREATIONAL RELATED RET	.4896	.4896	.2276	.0544	.2820	.3549	18.48
463 OTHER RETAIL TRADE	.1224	.1224	.0569	.0136	.0705	.0887	4.74
464 BANKING	.0000	.0000	.0000	.0000	.0000	.0000	.00
467 INSURANCE CARRIERS	.0000	.0000	.0000	.0000	.0000	.0000	.00
468 INSURANCE AGENTS AND BRO	.0000	.0000	.0000	.0000	.0000	.0000	.00
470 REAL ESTATE	.0000	.0000	.0000	.0000	.0000	.0000	.00
471 HOTELS AND LODGING PLACE	2.2950	2.2950	.6616	.2427	.9043	.9844	84.54
491 EATING AND DRINKING PLAC	1.8360	1.8360	.5323	.1394	.6717	.7464	76.54
502 AMUSEMENT AND RECREATION	1.2240	1.2240	.4371	.2403	.6774	.7477	53.08
504 HOSPITALS	.0000	.0000	.0000	.0000	.0000	.0000	.00
507 ELEMENTARY AND SECONDARY	.0000	.0000	.0000	.0000	.0000	.0000	.00
508 COLLEGES, UNIVERSITIES,	.0000	.0000	.0000	.0000	.0000	.0000	.00
516 U.S. POSTAL SERVICE	.0000	.0000	.0000	.0000	.0000	.0000	.00
517 FEDERAL ELECTRIC UTILITI	.0000	.0000	.0000	.0000	.0000	.0000	.00
525 GOVERNMENT INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
526 REST OF THE WORLD INDUST	.0000	.0000	.0000	.0000	.0000	.0000	.00
527 HOUSEHOLD INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
528 INVENTORY VALUATION ADJU	.0000	.0000	.0000	.0000	.0000	.0000	.00
TOTAL	6.0282	6.0282	1.9408	.6990	2.6398	2.9608	238.27
CHANGE IN POPULATION =	715.						

MID.904

6.222 Analysis of Change in Final Demand, Indirect Change in Standard TIO-Related Flows -- an Impact report.

IMPACT REPORT #6.222

DATE 89/ 6/15
PAGE 1

ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
INDIRECT CHANGE IN STANDARD TIO-RELATED FLOWS

SECTOR	FINAL DEMAND (MMS)	TIO (MMS)	EMPLOYEE COMP INCOME (MMS)	PROPERTY INC (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
1 DAIRY FARM PRODUCTS	.0000	.0045	.0003	.0007	.0010	.0011	.07
24 FORESTRY PRODUCTS	.0000	.0000	.0000	.0000	.0000	.0000	.00
45 CRUSHED AND BROKEN LIMES	.0000	.0000	.0000	.0000	.0000	.0000	.00
66 NEW RESIDENTIAL STRUCTUR	.0000	.0000	.0000	.0000	.0000	.0000	.00
69 NEW HIGHWAYS AND STREETS	.0000	.0000	.0000	.0000	.0000	.0000	.00
82 MEAT PACKING PLANTS	.0000	.1130	.0101	.0011	.0112	.0115	.30
160 LOGGING CAMPS AND LOGGIN	.0000	.0000	.0000	.0000	.0000	.0000	.00
161 SAWMILLS AND PLANING MIL	.0000	.0000	.0000	.0000	.0000	.0000	.00
164 MILLWORK	.0000	.0000	.0000	.0000	.0000	.0000	.00
269 READY-MIXED CONCRETE	.0000	.0003	.0001	.0000	.0001	.0001	.00
448 MOTOR FREIGHT TRANSPORT	.0000	.0356	.0148	.0054	.0203	.0212	.82
454 COMMUNICATIONS, EXCEPT R	.0000	.0529	.0227	.0201	.0427	.0474	.77
459 SANITARY SERVICES AND ST	.0000	.0115	.0033	.0035	.0068	.0073	.18
460 RECREATIONAL RELATED WHO	.0000	.0014	.0006	.0002	.0008	.0009	.01
461 OTHER WHOLESALE TRADE	.0000	.1495	.0616	.0195	.0810	.0995	3.10
462 RECREATIONAL RELATED RET	.0000	.0007	.0003	.0001	.0004	.0005	.03
463 OTHER RETAIL TRADE	.0000	.0064	.0030	.0007	.0037	.0046	.25
464 BANKING	.0000	.0444	.0170	.0081	.0251	.0258	.91
467 INSURANCE CARRIERS	.0000	.0328	.0081	.0002	.0079	.0098	.67
468 INSURANCE AGENTS AND BRO	.0000	.0133	.0068	.0016	.0084	.0087	.33
470 REAL ESTATE	.0000	.2258	.0114	.1384	.1498	.1795	1.43
471 HOTELS AND LODGING PLACE	.0000	.0075	.0022	.0008	.0030	.0032	.28
491 EATING AND DRINKING PLAC	.0000	.0582	.0169	.0044	.0213	.0236	2.42
502 AMUSEMENT AND RECREATION	.0000	.0000	.0000	.0000	.0000	.0000	.00
504 HOSPITALS	.0000	.0000	.0000	.0000	.0000	.0000	.00
507 ELEMENTARY AND SECONDARY	.0000	.0000	.0000	.0000	.0000	.0000	.00
508 COLLEGES, UNIVERSITIES,	.0000	.0000	.0000	.0000	.0000	.0000	.00
516 U.S. POSTAL SERVICE	.0000	.0196	.0185	.0036	.0149	.0149	.64
517 FEDERAL ELECTRIC UTILITI	.0000	.0316	.0043	.0052	.0095	.0095	.11
525 GOVERNMENT INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
526 REST OF THE WORLD INDUST	.0000	.0000	.0000	.0000	.0000	.0000	.00
527 HOUSEHOLD INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
528 INVENTORY VALUATION ADJU	.0000	.0000	.0000	.0000	.0000	.0000	.00
TOTAL	.0000	.8090	.2018	.2060	.4078	.4692	12.30
CHANGE IN POPULATION =	37.						

MID.905

6.223 Analysis of Change in Final Demand, Induced Change in Standard TIO-Related Flows -- an Impact report.

IMPACT REPORT #6.223

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ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
INDUCED CHANGE IN STANDARD TIO-RELATED FLOWS (6 ITERATIONS--FINAL REPORT)

SECTOR	FINAL DEMAND (MMS)	TIO (MMS)	EMPLOYEE COMP INCOME (MMS)	PROPERTY INC (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
1 DAIRY FARM PRODUCTS	.0239	.0261	.0016	.0042	.0058	.0063	.37
24 FORESTRY PRODUCTS	.0004	.0004	.0000	.0001	.0002	.0002	.00
45 CRUSHED AND BROKEN LIMES	.0000	.0000	.0000	.0000	.0000	.0000	.00
66 NEW RESIDENTIAL STRUCTUR	.0000	.0000	.0000	.0000	.0000	.0000	.00
69 NEW HIGHWAYS AND STREETS	.0000	.0000	.0000	.0000	.0000	.0000	.00
82 MEAT PACKING PLANTS	.1755	.2395	.0215	.0023	.0237	.0243	.63
160 LOGGING CAMPS AND LOGGIN	.0000	.0000	.0000	.0000	.0000	.0000	.00
161 SAWMILLS AND PLANING MIL	.0000	.0000	.0000	.0000	.0000	.0000	.00
164 MILLWORK	.0001	.0002	.0000	.0000	.0000	.0000	.00
269 READY-MIXED CONCRETE	.0001	.0002	.0000	.0000	.0000	.0000	.00
448 MOTOR FREIGHT TRANSPORT	.0543	.0873	.0364	.0133	.0497	.0518	2.01
454 COMMUNICATIONS, EXCEPT R	.1498	.1813	.0776	.0687	.1463	.1623	2.63
459 SANITARY SERVICES AND ST	.0043	.0084	.0024	.0025	.0050	.0053	.13
460 RECREATIONAL RELATED WHO	.0303	.0316	.0130	.0041	.0171	.0210	.15
461 OTHER WHOLESALE TRADE	.5590	.6447	.2656	.0839	.3495	.4293	13.37
462 RECREATIONAL RELATED RET	.1397	.1407	.0654	.0156	.0810	.1020	5.31
463 OTHER RETAIL TRADE	1.2835	1.2886	.5990	.1431	.7421	.9342	49.85
464 BANKING	.2856	.3332	.1275	.0608	.1882	.1937	6.80
467 INSURANCE CARRIERS	.1604	.1762	.0436	.0010	.0426	.0529	3.62
468 INSURANCE AGENTS AND BRO	.0000	.0714	.0364	.0088	.0452	.0466	1.76
470 REAL ESTATE	.5970	.7800	.0393	.4781	.5174	.6201	4.95
471 HOTELS AND LODGING PLACE	.1039	.1111	.0320	.0117	.0438	.0476	4.09
491 EATING AND DRINKING PLAC	.8823	.9315	.2701	.0707	.3408	.3787	38.83
502 AMUSEMENT AND RECREATION	.0013	.0013	.0005	.0003	.0007	.0008	.06
504 HOSPITALS	.3045	.3045	.1503	.0041	.1545	.1545	10.43
507 ELEMENTARY AND SECONDARY	.0340	.0340	.0157	.0000	.0157	.0157	3.70
508 COLLEGES, UNIVERSITIES,	.0609	.0610	.0380	.0000	.0380	.0380	1.87
516 U.S. POSTAL SERVICE	.0252	.0455	.0428	.0083	.0345	.0345	1.48
517 FEDERAL ELECTRIC UTILITI	.0281	.0395	.0054	.0065	.0119	.0119	.14
525 GOVERNMENT INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
526 REST OF THE WORLD INDUST	.0000	.0000	.0000	.0000	.0000	.0000	.00
527 HOUSEHOLD INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
528 INVENTORY VALUATION ADJU	.0000	.0000	.0000	.0000	.0000	.0000	.00
TOTAL	4.9043	5.5382	1.8841	.9698	2.8538	3.3318	152.20
CHANGE IN POPULATION =	457.						

MID.906

6.224 Analysis of Change in Final Demand, Total Change in Standard TIO-Related Flows -- an Impact report.

ALTERNATIVE 1: Midpoint Level
ANALYSIS OF CHANGE IN FINAL DEMAND
TOTAL CHANGE IN STANDARD TIO-RELATED FLOWS

IMPACT REPORT #6.224

DATE 89/ 6/15
PAGE 1

SECTOR	FINAL DEMAND (MMS)	TIO (MMS)	EMPLOYEE COMP INCOME (MMS)	PROPERTY INC (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
1 DAIRY FARM PRODUCTS	.0239	.0307	.0019	.0050	.0069	.0074	.44
24 FORESTRY PRODUCTS	.0004	.0004	.0000	.0001	.0002	.0002	.00
45 CRUSHED AND BROKEN LIMES	.0000	.0000	.0000	.0000	.0000	.0000	.00
66 NEW RESIDENTIAL STRUCTUR	.0000	.0000	.0000	.0000	.0000	.0000	.00
69 NEW HIGHWAYS AND STREETS	.0000	.0000	.0000	.0000	.0000	.0000	.00
82 MEAT PACKING PLANTS	.1755	.3525	.0316	.0034	.0350	.0358	.93
160 LOGGING CAMPS AND LOGGIN	.0000	.0000	.0000	.0000	.0000	.0000	.00
161 SAWMILLS AND PLANING MIL	.0000	.0001	.0000	.0000	.0000	.0000	.00
164 MILLWORK	.0001	.0002	.0000	.0000	.0000	.0000	.00
269 READY-MIXED CONCRETE	.0001	.0004	.0001	.0000	.0001	.0001	.00
448 MOTOR FREIGHT TRANSPORT	.0849	.1535	.0640	.0234	.0874	.0912	3.54
454 COMMUNICATIONS, EXCEPT R	.1498	.2342	.1003	.0888	.1890	.2096	3.40
459 SANITARY SERVICES AND ST	.0043	.0199	.0057	.0060	.0117	.0126	.30
460 RECREATIONAL RELATED WHO	.0578	.0605	.0249	.0079	.0328	.0403	.29
461 OTHER WHOLESALE TRADE	.5621	.7972	.3285	.1038	.4322	.5309	16.54
462 RECREATIONAL RELATED RET	.6293	.6310	.2933	.0701	.3634	.4574	23.82
463 OTHER RETAIL TRADE	1.4059	1.4174	.6589	.1574	.8163	1.0275	54.83
464 BANKING	.2856	.3776	.1445	.0689	.2133	.2195	7.70
467 INSURANCE CARRIERS	.1604	.2090	.0517	.0011	.0505	.0627	4.29
468 INSURANCE AGENTS AND BRO	.0000	.0847	.0432	.0105	.0536	.0553	2.09
470 REAL ESTATE	.5970	1.0058	.0507	.6164	.6671	.7996	6.38
471 HOTELS AND LODGING PLACE	2.3989	2.4136	.6958	.2552	.9510	1.0352	88.91
491 EATING AND DRINKING PLAC	2.7183	2.8257	.8192	.2145	1.0337	1.1488	117.79
502 AMUSEMENT AND RECREATION	1.2253	1.2253	.4375	.2406	.6781	.7485	53.13
504 HOSPITALS	.3045	.3045	.1503	.0041	.1545	.1545	10.43
507 ELEMENTARY AND SECONDARY	.0340	.0340	.0157	.0000	.0157	.0157	3.70
508 COLLEGES, UNIVERSITIES,	.0609	.0610	.0380	.0000	.0380	.0380	1.87
516 U.S. POSTAL SERVICE	.0252	.0652	.0613	.0118	.0494	.0494	2.12
517 FEDERAL ELECTRIC UTILITI	.0281	.0711	.0097	.0117	.0214	.0214	.25
525 GOVERNMENT INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
526 REST OF THE WORLD INDUST	.0000	.0000	.0000	.0000	.0000	.0000	.00
527 HOUSEHOLD INDUSTRY	.0000	.0000	.0000	.0000	.0000	.0000	.00
528 INVENTORY VALUATION ADJU	.0000	.0000	.0000	.0000	.0000	.0000	.00
TOTAL	10.9325	12.3754	4.0267	1.8747	5.9014	6.7618	402.77
CHANGE IN POPULATION =	1208.						

***** END ALTERNATIVE 1 END ALTERNATIVE 1 *****

Appendix E. Some Important Considerations

Assumptions (general I/O and IMPLAN specific)		E-2
BEA - IMPLAN differences		E-3

Assumptions

Any static I/O modeling system, such as IMPLAN, contains a number of assumptions:

- * is with
PLAN II -
up IMPLAN I*
- 1) Each industry produces one commodity - there are no multi-product industries or joint products.
 - 2) Industries produce commodities using fixed recipes (production functions) - there is no substitution of ingredients and an increase in ingredients leads to an increase in gross output.
 - 3) Resources (including labor) are unlimited.
 - 4) There is no time dimension - All changes are assumed to be average annual changes. This assumption implies the following:
 - 1) there is no new technology,
 - 2) trade relationships are static,
 - 3) there are no relative price changes (or only changes that can be accounted for with commodity price deflators), and
 - 4) there are no structural changes other than those included by the user.

All corrections for industry size, technology or trade patterns are assumed to have been made by the user and incorporated into the base year regional use and make matrices. Data on the temporal distribution of sales can be entered as separate alternatives to obtain an approximation of the effects over time.

This approach does not provide for any dynamic economic changes that may take place in the region. No provisions are made for shifts in population or labor force variations or capital investments that may occur as a result of the change being studied. Therefore:

- 1) All additional labor requirements are assumed to be met by an influx of households to the region, with each member consuming at the average rate defined by the personal consumption vector.
- 2) Decreases in employment are assumed to result in no further household consumption. And
- 3) Fixed ratios are assumed between the number of household members and each job in the region, between employment and output (number of jobs per million dollars of total gross output), and between income and employment. These ratios can be modified by the user.

BEA - IMPLAN Differences

	BEA	IMPLAN
Sales	Negative Final Demands (negative Expenditures)	Additions to Net Commodity Supply (separate from Expenditures)
Imports	Negative Final Demand (negative export)	Imports allocated to importing industry

IMPLAN multipliers reflect domestic trade flow levels. BEA values include all activities in U.S. transactions, including those activities involving the rest of the world.

- NOTES -

APPENDIX G -- Regional Purchase Coefficients

Why derive regional purchasing coefficients?

A non-survey IMPLAN I/O model is derived from the national model. The national model represents the "average" condition for a particular industry. Consequently, without adjustments for regional differences, the national production functions do not, necessarily, represent industries comprising a local or regional economy.

Stevens and Trainor (1980) note that estimating regional trade flows (imports and exports) across regional boundaries is perhaps the largest source of error in deriving non-survey I/O models. Use of Regional Purchasing Coefficients (RPCs) is one way to eliminate some of the bias inherent in non-survey models.

An RPC represents the proportion of the total supply of a good or service required to meet a particular industry's intermediate demands and final demands that are produced locally. For example, a RPC value of 0.8 for the commodity "fish" means that 80% of the final demand for fish (by fish processors, fish wholesalers, foreign exports and others) are provided by local fishermen. The remainder, 20%, is, of course, imported.

Introduction to RPCs

Gross regional trade flows (gross exports and imports) of commodities are estimated by developing regional purchase coefficients (RPCs). An RPC represents the proportion of the total supply of a good or service used to fulfill the demands of a region that is supplied by the region to itself. For example, given an RPC value of 0.8 for the commodity "fish", then 80% of the demand by fishprocessors, fish wholesalers, foreign exports, and all other demands for fish are met by local producers. Alternatively 20% ($1.0 - \text{RPC}$) of the demand is imported.

What causes errors in trade flow estimation?

- 1) A particular commodity or service classification may contain a number of different grades or attributes. A quality difference, real or perceived can determine whether or not a local consumer is able to or willing to purchase a locally produced commodity or service.
Aggregating different products or services into a single category aggravates this problem. Goats and rabbits are quite often lumped into a single

"Miscellaneous livestock" category yet a fur coat manufacturer will not view them as substitutable.

- 2) Given a choice between two suppliers of a substitutable commodity, a consumer may still choose the one that is more expensive, or of inferior quality for any one of a number of cultural, administrative, or other perceptual reasons. A tourist may buy hand made Indian jewelry even though the similar jewelry costs less and may be of better quality when machine made. An American may buy a car made in Detroit when a cheaper and better quality car can be imported. Any number of factors can affect costs and cause inefficiencies observed when haulers of an identical commodity pass each other going opposite directions on the highway (otherwise known as "crosshauling").

Estimating RPCs

The equation for deriving RPCs is as follows:
for each commodity i

$$RPC_i = X_i/Y_i; \quad \text{since} \quad (1)$$

$$Y_i = X_i + M_i \quad (2)$$

we can derive the following by splitting imports into its two components (foreign and domestic we can derive the following form:

$$RPC_i = \frac{1}{1 + \frac{MW_i}{X_i} + \frac{MUS_i}{X_i}} \quad (3)$$

where: X_i is total regional production of commodity i consumed by the region
 Y_i is total regional consumption of commodity i
 M_i is total imports of commodity i to the region
 MW_i is foreign imports of commodity i to the region
 MUS_i is domestic imports of commodity i to the region

Due to limitations of data, MW_i/X_i is a constant for all regions for each commodity i. This assumes that foreign imports to the Nation are proportionally distributed to each county and state on the basis of production of that commodity. On the other hand, MUS_i/X_i is estimated as follows:

$$\ln \left(\frac{MUS_i}{X_i} \right) = \beta_0 + \beta_1 \ln (WR_i) + \beta_2 \ln \left(\frac{ER_i}{EUS_i} \right) + \beta_3 \ln \left(\frac{ER_i/TER_i}{EUS_i/TEUS_i} \right) + \beta_4 \ln \left(\frac{AR}{AUS} \right) \quad (4)$$

where: MUS_i is imports from rest of US (domestic) to region
 X_i is amount of commodity i produced by the region consumed by the region
 W_i is total employee compensation for industry i
 ER_i is regional employment in industry i
 TER_i is total regional employment
 EUS_i is National employment in industry i
 $TEUS_i$ is total National employment
 AR is the land area of the region
 AUS is the land area of the U.S.

The resulting coefficients are given in table 1. Note that the predictive equation is only used for IMPLAN sectors 1-445, that is, those sectors with "shippable" commodities. The remaining sectors are the "observed" values for each state based from the MRIO data described in the next section. The "observed" RPCs are shown in table 2.

Source of data for predictive equations

Empirical trade flow data were obtained from the 1977 Multiregional Input-Output Accounts* or (MRIOA) which is a cross-sectional data base of state input-output accounts linked with consistent cross interstate trade flows. The MRIOA provides 51 125-sector input-output tables, for all states and the District of Columbia, accompanied by 125 sets of industry-specific interstate trade flow matrices by mode of transportation. Under the MRIOA conventions, international trade figures record flows of good i through the foreign border of a state regardless of the actual final user or original user in the U.S. In order to compute a Leontief inverse (i.e., multipliers) net of foreign imports it is necessary to convert the trade flow data to original point of origin and final destination. U.S. flows of foreign imports and exports were

*U.S. Department of Health and Human Services. 1983. The multiregional input-output accounts, 1977. Vol. I-VI, Jack Faucett Associates, Report submitted to the U.S. Department of Health and Human Services, Contract No. HHS-100-81-0057, July 1983.

allocated to states proportionally to consumption (imports) and output (exports). It was then necessary to rebalance the state trade flows. Note that for states with no foreign borders the gross change in total imports and exports is unchanged.

The parameters for the RPC predictive equation were calculated for the first 84 (sectors with a shippable commodity) of the 125 MRIOA commodity sectors. Each of the MRIOA sectors corresponds exactly to one or several of IMPLAN commodity sectors as shown in table 1 and 2.

Citations:

Stevens, B. and G. Trainor. 1980. Error generation on regional input-output analysis and its implications for non-survey models, in S. Pleeter (ed.) Economic Impact Analysis: Methodology and Applications. Amsterdam: Marinus Nijhoff, pp. 68-84.

Table 1. RPC Coefficient Equation Parameter Values.

MRIO Sector	IMPLAN Sector	constant (b0)	wage ratio (b1)	employ (b2)	loc quot (b3)	area ratio (b4)
1.	1	-6.113101	-0.208808	-0.409649	-0.789998	-0.472072
2.	2-9	-1.89840	0.337024	0.176079	-1.51676	-0.136363
3.	10-15	-1.01394	0.174168	-0.230216	-0.382870	-6.21894E-02
4.	16-23,26-27	-1.16805	0.588951	0.135748	-1.43270	-0.127222
5.	24	-2.88363	-0.393424	-0.825149	0.344069	0.119376
6.	25	-2.87568	1.50974	-1.52741E-02	-0.723569	-0.300379
7.	28-29	-1.35651E-02	2.74420	-0.277488	-0.335571	0.329375
8.	30-38	0.162582	-1.45217	0.513889	-0.961546	-0.390737
9.	39-40	-8.08143E-02	0.170687	3.50150E-02	-0.807814	-0.195466
10.	41	4.01753E-02	2.90280E-02	0.245137	-1.30463	-0.253223
11.	42-43	-3.63079	-3.10095	0.548191	-2.04226	-1.15233
12.	44-58	-3.11395	-0.192131	-0.657423	-0.667580	0.107799
13.	59-65	-5.50226	1.64521	-0.671340	-5.82277E-02	-0.742139
20.	77-81	3.75094	7.51789	1.53285	-2.07178	-0.541420
21.	82-85	-1.01456	-0.906438	0.172872	-0.823781	-0.458971
22.	86-90	-1.69308	-0.481835	-5.64298E-02	-0.539105	-0.247793
23.	91-98	-1.45243	0.199462	-0.195459	-0.243278	-0.361598
24.	99-105	-2.06038	0.102318	-0.328083	2.16112E-02	-0.196162
25.	106-107	-2.12903	-1.11636	-0.129689	-1.25116	-0.190435
26.	108-111	-3.49490	-1.50440	-0.881239	0.384389	-0.217384
27.	112-117	-2.16109	-6.05943E-02	-0.308559	-0.245858	-0.251497
28.	118-126	1.02804	-0.686402	-0.103475	-0.556805	0.189756
29.	127-130	-4.47337	-3.92025	4.56428E-02	-0.221646	-1.12863
30.	131-134	-0.638073	0.657857	0.240988	-0.766622	-0.502768
31.	135-144	-0.479988	2.47623E-03	-0.417444	-0.414948	0.258241
32.	145-146,150	-0.302165	-0.957880	0.789046	-1.73578	-0.833389
33.	151,157-148	0.359817	0.169443	0.129054	-0.828553	-8.24000E-02
34.	149,152-159	1.89577	-1.52513	0.441984	-1.28145	-3.26985E-02
35.	160-163	1.91153	-0.312368	0.289130	-1.08072	0.219315
36.	164-167,169-173	0.238550	-0.693003	-0.158677	-0.64783	0.175722
37.	168,413	-0.256287	1.88751	-0.615424	-1.23256	0.680443
38.	174-179	0.717765	-0.298865	0.100854	-0.941175	0.128500
39.	180-186	1.21341	-0.148556	0.151888	-1.22087	9.69955E-02
40.	187-198	1.55939	1.56238	0.149267	-1.22958	-5.07272E-02
41.	199	-2.33845	-4.55503	-3.61138E-03	-0.586195	-0.460479
42.	200-214	-0.835022	3.56332E-02	-0.155709	-0.200547	-8.82257E-03
43.	215	-0.553954	-0.397906	-9.97895E-02	-0.452767	-0.122956
44.	216-218	-1.29272	0.236246	2.43661E-02	-0.916444	-0.357308
45.	219-224	1.31591	-1.14386	-0.233800	-0.106408	0.343931
46.	225-228	-0.207160	-4.96984	-0.189272	-0.354475	-0.143464
47.	229	-0.385889	0.220298	1.00928	-2.16935	-1.01393
48.	230-233	-0.450860	-1.02165	-0.276760	-2.81492E-02	-0.128255
49.	234	-1.77116	0.339153	-0.436181	-0.281119	-6.10587E-02
50.	235-239	-1.94054	-2.55994	-0.112898	-1.04042	-0.359562
51.	240-245	1.11525	1.49951	-3.32378E-02	-0.542946	0.140858
52.	246-254	0.334794	-0.804193	0.135217	-0.879905	-0.224722
53.	255-256	1.70115	-1.28436	0.434405	-1.61483	-2.43038E-02
54.	257-279	-2.65706	1.32248	-0.319800	-1.33210	1.06521E-02
55.	280-281,283-284,286-288	0.649689	0.349133	-3.25497E-02	-0.533510	6.93558E-02
56.	285	0.661768	1.97778	0.160717	-0.831453	-7.61253E-03
57.	289-302	0.959576	0.230042	-0.276664	-0.130766	0.330336
58.	282,303-304,319-329	0.107608	-1.16262E-02	-0.125102	-0.434321	4.76888E-02
59.	305-314	-1.11857	0.248825	-0.286617	-0.678756	-0.109745
60.	315-318	-0.129954	0.429353	5.00627E-02	-0.847225	2.51093E-02
61.	330-331	2.59044	-13.6746	0.448669	-1.83517	2.52892E-02
62.	332-333	1.85371	-2.66353	0.193895	-0.719776	6.96891E-02
63.	334-336	-2.61810E-02	0.213615	6.88580E-02	-0.848012	-0.297383
64.	337-340	-0.501390	0.109244	7.96179E-02	-0.879382	-0.167482
65.	341-346	-6.95213E-02	-8.84001E-02	0.519785	-1.47343	-0.496051
66.	347-352	0.661173	-2.13639	-0.261071	8.38400E-02	0.119599
67.	353-361	1.29420	2.61013	-0.441997	-0.173180	0.501816

Table 1. RPC Coefficient Equation Parameter Values, continued.

MRIO Sector	IMPLAN Sector	constant (b0)	wage ratio (b1)	employ (b2)	loc quot (b3)	area ratio (b4)
68.	362-365	0.863698	-2.94646	0.426379	-0.770580	-0.369712
69.	366-370	7.89763E-03	-3.11182	-3.23711E-02	-0.253563	-0.252983
70.	371-378	1.17972	-0.251639	-1.81131E-02	-0.638651	1.60264E-02
71.	379-385	-0.933332	0.536288	-5.67638E-03	-1.12405	-0.446767
72.	386-388	0.930680	1.09567	-0.197422	-4.96636E-02	0.134508
73.	389-390	2.23800	-1.01253	0.695168	-1.76870	-0.130522
74.	391-392	-1.30883	-2.95806	-0.757777	9.87000E-02	6.49282E-02
75.	393-395	5.74496E-02	-0.332667	0.307389	-0.932155	-0.365013
76.	396-400	1.59222	-1.56273	0.262553	-0.832709	-9.92753E-02
77.	401-404	2.88963	-0.157940	4.44030E-02	-0.601083	0.238931
78.	405	0.327700	-0.646307	-0.127931	-1.27946	0.102084
79.	407,76	-6.91707	2.19718	-1.41974	0.827274	-0.245145
80.	406	4.80197	-0.838219	-2.63200E-02	-0.128689	0.891699
81.	408-412,414-415	-1.44708	0.247309	-0.363890	-0.294939	-7.22360E-02
82.	416-418,422,425	-0.800730	0.435004	0.381853	-1.61368	-0.424452
83.	419-421,423-424	-5.93227E-02	-0.505167	0.398911	-1.47649	-0.319757
84.	426-445	-0.321246	0.394834	-4.43406E-02	-1.03275	-0.190201

Note: RPCs for the construction sectors (MRIO 14-19 and IMPLAN 66-75) are set to 1.0.

Table 2. Observed RPCs for States.

MRIO	IMPLAN Sectors	AL	AK	AZ	AR	CA	CO
85	446	.900197	.895522	.764890	.899357	1.000000	.903246
86	447, 519	.891972	1.000000	.780427	.554327	1.000000	.636175
87	448	.900113	1.000000	.789916	.558287	1.000000	.653979
88	449	.900892	.925491	.790112	.737868	1.000000	.859254
89	450	.906574	.454106	.792703	.612376	1.000000	.838253
90	451	.000000	.474422	.763746	.540841	1.000000	.602724
91	452-453	.000000	.275509	.760536	.900795	1.000000	.900082
92	454	.448133	.947548	.683544	.901519	1.000000	.630996
93	455	.613580	.410989	.779440	.791775	1.000000	.901942
94	456, 517, 520	.647190	.493284	.756742	.518181	1.000000	.488434
95	457	.800154	.244117	.800266	.613236	1.000000	.711891
96	458	.290665	.489697	.700399	.685351	1.000000	.810247
97	460-461	.800314	.853378	.805447	.867002	1.000000	.838879
98	491	.800074	.663466	.000000	.900582	1.000000	.901519
99	462-463	.800091	.758442	.000000	.660029	1.000000	.752598
100	464-466	.781875	.833694	.698795	.616331	1.000000	.862772
101	467-468	.688038	.888331	.696570	.659733	1.000000	.907822
102	469-470	.565095	.000000	.699454	.623619	1.000000	.776935
103	471	.800011	.000000	.731811	.545778	1.000000	.683544
104	472-477	.731814	.660326	.775584	.855002	1.000000	.810426
105	478-487	.663590	.760249	.742333	.838905	1.000000	.907106
106	488-490	.800038	.777926	.800286	.900139	1.000000	.900892
107	492-494	.586507	.845750	.616205	.716481	1.000000	.814385
108	495-502	.800045	.412456	.800322	.744898	1.000000	.945295
109	503	.510347	.843438	.800338	.658669	1.000000	.690163
110	504-505	.416027	.278561	.740773	.900423	1.000000	.843933
111	506	.661917	.932245	.800546	.705177	1.000000	.786096
112	507-509	.617694	.889686	.800550	.899548	1.000000	.903235
113	510-513	.432603	.344680	.737584	.691224	1.000000	.888268
114	514-515	.800386	.000000	.801226	.840383	1.000000	.944196
115	516, 518	.800304	.129072	.756132	.793214	1.000000	.904679
116	521	.745170	.835262	.801346	.783066	1.000000	.901551
117	522	.456353	.192368	.807018	.900158	1.000000	.900670
118	523-524	.495333	.694998	.723487	.901395	1.000000	.482870
119	525	.342755	.186749	.715703	.903475	1.000000	.913270
120	527	.718744	.578077	.767726	.000000	.000000	.000000
121	526	.800129	.811392	.772135	.000000	.000000	.000000

MRIO	IMPLAN Sectors	CT	DE	DC	FL	GA	HI
85	446	1.000000	.300300	.964077	.700000	.136719	.426145
86	447, 519	1.000000	.951008	.950927	.700510	.672548	1.000000
87	448	1.000000	.955383	.950337	.700468	.679730	.198397
88	449	.469965	.950106	.949106	.700159	.676934	.822032
89	450	1.000000	.941502	.951318	.700150	.681234	1.000000
90	451	1.000000	.950799	.950915	.700239	.679320	.456049
91	452-453	1.000000	.950082	.950310	.700018	.700003	1.000000
92	454	1.000000	.950307	.950175	.668017	.673395	.000000
93	455	1.000000	.950038	.949592	.700089	.699720	.554036
94	456, 517, 520	.444444	.944971	.950727	.699310	.698441	.772261
95	457	1.000000	.943398	.951665	.700014	.700060	.970769
96	458	1.000000	.950151	.949761	.700623	.700009	1.000000
97	460-461	1.000000	.938961	.948883	.700045	.693870	1.000000
98	491	1.000000	.941752	.950693	.000000	.700011	.500000
99	462-463	1.000000	.950483	.950155	.000000	.700000	.000000
100	464-466	1.000000	.950932	.950900	.634731	.700175	.896296
101	467-468	1.000000	.950173	.954196	.736842	.700044	1.000000
102	469-470	1.000000	.948617	.945439	.800355	.700198	1.000000
103	471	1.000000	.938045	.951850	.477638	.700954	.925491
104	472-477	1.000000	.951095	.953654	.505396	.700035	.454106
105	478-487	.000000	.949946	.951503	.425033	.700064	.474422
106	488-490	.000000	.953881	.953716	.523064	.686812	.275509
107	492-494	.872549	.950749	.947342	.521240	.700022	.947548
108	495-502	.144033	.954703	.950023	.585965	.700337	.410989
109	503	.136408	.950009	.949213	.574371	.700016	.493284
110	504-505	.464974	.938422	.950128	.800091	.694723	.244117
111	506	.036481	.939297	.964016	.694781	.691299	.489697
112	507-509	.254155	.937353	.952354	.724749	.693851	.853378
113	510-513	.500045	.950838	.000000	.777919	.700010	.663466
114	514-515	.374297	.940868	.000000	.731672	.700056	.758442
115	516, 518	.324125	.937199	.261538	.800885	.700095	.833694
116	521	.234065	.940908	.950844	.698236	.688547	.888331
117	522	.163372	.946920	.898506	.823529	.696298	.000000
118	523-524	.500282	.939898	.950179	.823944	.699029	.000000
119	525	.279988	.933554	.562468	.810127	.700215	.660326
120	527	.155740	.933811	.950405	.722222	.700105	.760249
121	526	.500884	.951022	.950167	.820789	.700053	.777926

Table 2. Observed RPCs for States, continued.

MR10	IMPLAN Sectors	ID	IL	IN	IA	KS	KY
85	446	.950099	.506806	.496300	.971159	.950050	.800473
86	447, 519	.941779	.560028	.586847	.959311	.930633	.802847
87	448	.950010	.600100	.539465	.966126	.927729	.801444
88	449	.952267	.600259	.522528	.991367	.934352	.764456
89	450	.951874	.602108	.556326	.992078	.939409	.801646
90	451	.000000	.000000	.481345	.976462	.942505	.802311
91	452-453	.000000	.000000	.499957	.981163	.950097	.800393
92	454	.298153	.877358	.477435	.981464	.936407	.804324
93	455	.901526	.256993	.600172	.991895	.947253	.803546
94	456, 517, 520	.905123	.559859	.545642	.986850	.950458	.806043
95	457	.900193	.462790	.510592	.999054	.944570	.805901
96	458	.900537	.407665	.601021	1.000000	.946649	.811794
97	460-461	.900283	.302490	.503186	1.000000	.950059	.800290
98	491	.900002	.600436	.367409	.500230	.950073	.814510
99	462-463	.900083	.175107	.552914	.000000	.951361	.785500
100	464-466	.900145	.456769	.600848	.680851	.949627	.811625
101	467-468	.900031	.402450	.600047	1.000000	.921199	.805068
102	469-470	.896068	.346177	.600839	1.000000	.947018	.801762
103	471	.900013	.392419	.600293	1.000000	.943867	.804141
104	472-477	.900089	.414108	.545909	1.000000	.950736	.800000
105	478-487	.900356	.435306	.600062	1.000000	.950123	.800278
106	488-490	.889569	.440090	.600172	1.000000	.950133	.805867
107	492-494	.900548	.450442	.575320	1.000000	.891511	.801322
108	495-502	.900455	.452464	.600401	1.000000	.925335	.763135
109	503	.902439	.622642	.460532	1.000000	.911722	.796748
110	504-505	.900892	.639769	.600987	1.000000	.927993	.705530
111	506	.882901	.606144	.601077	1.000000	.919420	.810893
112	507-509	.900456	.361382	.577293	1.000000	.951830	.800598
113	510-513	.900833	.082569	.594516	1.000000	.928212	.000000
114	514-515	.900808	.400767	.600031	1.000000	.950677	.000000
115	516, 518	.900551	.614243	.602138	1.000000	.926272	.548718
116	521	.900103	.328649	.519703	1.000000	.927178	.882164
117	522	.874516	.548694	.604520	1.000000	.944576	.774590
118	523-524	.823160	.381702	.600569	1.000000	.924557	.871248
119	525	.784000	.606078	.601488	1.000000	.951466	.865664
120	527	.665088	.602047	.600318	1.000000	.000000	.883940
121	526	.899754	.566161	.577303	1.000000	.000000	.857247

MR10	IMPLAN Sectors	LA	ME	MD	MA	MI	MN
85	446	.413534	.866352	.939592	.974784	.444003	.896226
86	447, 519	.904116	.525316	.933243	1.000000	.550585	.891079
87	448	.900299	1.000000	.946924	.969796	.779117	.779176
88	449	.823633	1.000000	.949448	1.000000	.401914	.988327
89	450	.904496	1.000000	.935629	1.000000	.422799	.975511
90	451	.877739	1.000000	.940612	1.000000	.582136	.990447
91	452-453	.727717	1.000000	.950432	.904605	.443040	.998199
92	454	.826847	.837187	.938751	.713044	.629237	.997229
93	455	.891953	1.000000	.950455	1.000000	.492620	.998013
94	456, 517, 520	.891711	.977862	.947389	.852833	.526066	.845882
95	457	.900079	1.000000	.946257	1.000000	.594046	.990053
96	458	.855593	1.000000	.955117	.916802	.615680	.999049
97	460-461	.878657	.560794	.950108	.888306	.604352	.998287
98	491	.900651	.840033	.000000	1.000000	.602047	.995338
99	462-463	.900826	1.000000	.000000	1.000000	.559648	.993239
100	464-466	.901524	.984281	.400794	.388350	.604539	.993090
101	467-468	.900728	1.000000	.951192	1.000000	.490909	.994976
102	469-470	.903559	1.000000	.958206	.811954	.600611	.915883
103	471	.900695	1.000000	.950995	1.000000	.625187	.928394
104	472-477	.900180	1.000000	.955383	1.000000	.611197	.985700
105	478-487	.900551	1.000000	.950482	1.000000	.000000	.995570
106	488-490	.857143	.900772	.950225	.763229	.000000	.937934
107	492-494	.901339	1.000000	.947716	.746300	.255435	.991174
108	495-502	.637193	1.000000	.949822	1.000000	1.000000	.977342
109	503	.901059	.906475	.948589	.847217	1.000000	.988869
110	504-505	.903433	.550942	.949626	.891553	1.000000	.990198
111	506	.900150	.801787	.950016	.886697	1.000000	.953490
112	507-509	.902251	.722806	.949122	.923505	1.000000	.962364
113	510-513	.900330	.975449	.950340	1.000000	.968676	.929363
114	514-515	.900569	1.000000	.950267	.901023	1.000000	.572865
115	516, 518	.900021	.844680	.951439	.794520	1.000000	.967838
116	521	.900051	.984666	.949014	1.000000	1.000000	.950621
117	522	.901786	.753343	.951348	1.000000	1.000000	.981523
118	523-524	.903195	.897751	.957058	1.000000	1.000000	.906479
119	525	.902388	.932751	.949049	1.000000	.980304	.980586
120	527	.900309	.561404	.950581	.924357	1.000000	.997488
121	526	.901849	.711864	.952908	1.000000	.977848	.941359

Table 2. Observed RPCs for States, continued.

MRIO	IMPLAN Sectors	MS	MO	MT	NE	NV	NH
85	446	.643655	1.000000	.950277	.900371	1.000000	1.000000
86	447, 519	.525485	1.000000	.950204	.900170	1.000000	.901780
87	448	.412554	1.000000	.950367	.901341	1.000000	.551095
88	449	.487643	1.000000	.950288	.900892	1.000000	.932432
89	450	.693699	1.000000	.950065	.886500	1.000000	1.000000
90	451	.693184	1.000000	.925675	.900813	1.000000	.877102
91	452-453	.800032	1.000000	.950893	.824372	1.000000	1.000000
92	454	.389800	1.000000	.951329	.900299	1.000000	1.000000
93	455	.622295	1.000000	.950697	.901148	1.000000	.723005
94	456, 517, 520	.497312	1.000000	.946321	.903819	1.000000	.717306
95	457	.758637	1.000000	.951024	.900255	1.000000	.797974
96	458	.800555	1.000000	.910889	.901354	1.000000	1.000000
97	460-461	.691037	1.000000	.939157	.900970	1.000000	1.000000
98	491	.695122	1.000000	.946574	.901958	1.000000	.000000
99	462-463	.571695	1.000000	.928860	.901972	1.000000	.000000
100	464-466	.560706	1.000000	.951830	.900160	1.000000	.860000
101	467-468	.756083	1.000000	.933214	.876906	1.000000	.552957
102	469-470	.800056	1.000000	.953198	.900081	1.000000	.844720
103	471	.642509	1.000000	.950029	.902629	1.000000	.801046
104	472-477	.656408	1.000000	.948908	.900794	1.000000	.817073
105	478-487	.000000	1.000000	.915672	.000000	1.000000	.805771
106	488-490	.000000	1.000000	.950058	.000000	1.000000	.726215
107	492-494	.519048	1.000000	.950969	.358696	1.000000	.800301
108	495-502	.660944	1.000000	.946808	.943506	1.000000	.705446
109	503	.628443	1.000000	.951066	.910868	1.000000	.627522
110	504-505	.900168	1.000000	.950779	.950638	1.000000	.466551
111	506	.605320	1.000000	.951698	.933213	1.000000	.726575
112	507-509	.797454	1.000000	.928627	.950158	1.000000	.467438
113	510-513	.900048	.000000	.951757	.950119	1.000000	.804305
114	514-515	.900575	.000000	.715182	.950465	1.000000	.801435
115	516, 518	.900073	.175090	.955962	.950177	1.000000	.354704
116	521	.728369	1.000000	.951128	.950134	1.000000	.802679
117	522	.513628	1.000000	.939859	.950203	1.000000	.518201
118	523-524	.900233	1.000000	.950560	.950222	1.000000	.657534
119	525	.801430	1.000000	.950616	.950262	1.000000	.601770
120	527	.649489	1.000000	.951558	.940043	1.000000	.549387
121	526	.767190	1.000000	.933515	.940630	1.000000	.819495
MRIO	IMPLAN Sectors	NJ	NM	NY	NC	ND	OH
85	446	.957447	.638889	.500477	.625101	1.000000	.774266
86	447, 519	.000000	.801178	.306122	.608178	1.000000	.580571
87	448	.000000	.809354	.357430	.568835	1.000000	.411765
88	449	.000000	.800513	.303540	.570301	1.000000	.714490
89	450	.000000	.802036	.221922	.561404	1.000000	.738448
90	451	.000000	.800521	.363337	.659574	1.000000	.700105
91	452-453	1.000000	.800068	.250345	.687336	1.000000	.700323
92	454	.477234	.801015	.126394	.630631	1.000000	.242111
93	455	1.000000	.800192	.500164	.608683	1.000000	.702085
94	456, 517, 520	.630412	.783074	.171299	.531022	1.000000	.717780
95	457	.617305	.772520	.340191	.700621	1.000000	.725023
96	458	.551032	.795424	.166916	.561699	1.000000	.616858
97	460-461	.275492	.774595	.500285	.640566	1.000000	.709408
98	491	.000000	.796391	.500111	.700645	1.000000	.370277
99	462-463	1.000000	.792353	.240395	.579611	1.000000	.703024
100	464-466	1.000000	.802426	.388996	.607586	1.000000	.606299
101	467-468	.479167	.792575	.080738	.597832	1.000000	.793814
102	469-470	1.000000	.785408	.195710	.700068	1.000000	.810247
103	471	.000000	.801193	.182156	.546806	1.000000	.657747
104	472-477	1.000000	.795523	.412502	.693243	1.000000	.512195
105	478-487	1.000000	.762522	.500560	.000000	1.000000	.732906
106	488-490	.000000	.800869	.500082	.000000	1.000000	.726776
107	492-494	.000000	.800085	.418886	.389513	1.000000	.735216
108	495-502	.000000	.744898	.284802	.701116	1.000000	.705160
109	503	1.000000	.792924	.288136	.584521	1.000000	.709302
110	504-505	1.000000	.705475	.500795	.700157	1.000000	.700953
111	506	.829060	.801469	.229947	.701671	1.000000	.726776
112	507-509	1.000000	.801231	.502285	.700055	1.000000	.719626
113	510-513	1.000000	.796851	.398798	.700006	1.000000	.000000
114	514-515	.000000	.800028	.503911	.700120	1.000000	.000000
115	516, 518	1.000000	.786081	.500094	.700103	1.000000	.455446
116	521	.000000	.800000	.312465	.591757	1.000000	.549676
117	522	1.000000	.802828	.500114	.602588	1.000000	.605583
118	523-524	.594017	.728014	.500740	.700078	1.000000	.600281
119	525	1.000000	.767905	.500824	.568297	1.000000	.581965
120	527	.377778	.796683	.000000	.700115	1.000000	.515395
121	526	1.000000	.730686	.000000	.700156	1.000000	.600072

Table 2. Observed RPCs for States, continued.

MRIO	IMPLAN Sectors	OK	OR	PA	RI	SC	SD
85	446	.906782	.692740	.780702	.826848	.664898	1.000000
86	447, 519	.902629	.717671	.000000	1.000000	.392965	1.000000
87	448	.904100	.630252	.867061	.776969	.510217	1.000000
88	449	.900000	.651007	1.000000	1.000000	.700025	1.000000
89	450	.902147	.512345	.810997	.617940	.593579	1.000000
90	451	.901028	.751663	1.000000	.000000	.395161	.000000
91	452-453	.902590	.729592	.745763	.000000	.700005	.000000
92	454	.903026	.662091	.000000	.771930	.668882	.253886
93	455	.901275	.559118	.280156	1.000000	.563626	.901292
94	456, 517, 520	.836895	.586563	.000000	1.000000	.490233	.902913
95	457	.900084	.753346	.790660	1.000000	.545861	.874095
96	458	.707216	.739130	1.000000	.334390	.566444	.862473
97	460-461	.852648	.752577	.000000	1.000000	.700143	.800068
98	491	.000000	.754601	.000000	1.000000	.694885	.814594
99	462-463	.000000	.550562	.000000	1.000000	.529083	.808421
100	464-466	.744966	.750504	.919192	1.000000	.676538	.875969
101	467-468	.774706	.641577	.743151	1.000000	.574246	.850223
102	469-470	.791829	.743049	1.000000	.577922	.558222	.886042
103	471	.817628	.762259	.706240	.955770	.468948	.836106
104	472-477	.638893	.751746	.170646	.675029	.574779	.890181
105	478-487	.850993	.000000	.707703	.967949	.578822	.900439
106	488-490	.850166	.000000	.706882	1.000000	.691224	.900421
107	492-494	.850183	.959677	.638663	.460581	.406793	.900418
108	495-502	.828585	1.000000	.700396	1.000000	.490770	.866800
109	503	.833489	1.000000	.700284	1.000000	.262025	.901768
110	504-505	.826999	1.000000	.612130	.016393	.619570	.901372
111	506	.844022	1.000000	.701559	.473684	.459148	.898317
112	507-509	.838203	1.000000	.703801	1.000000	.590315	.834115
113	510-513	.838500	1.000000	.714490	.969419	.483790	.887620
114	514-515	.850593	1.000000	.710145	1.000000	.395755	.900436
115	516, 518	.850800	1.000000	.706573	.855072	.652769	.900650
116	521	.754966	1.000000	.708370	1.000000	.611408	.900236
117	522	.847241	1.000000	.781182	.703892	.700070	.901579
118	523-524	.837361	1.000000	.535963	1.000000	.703584	.900219
119	525	.841655	1.000000	.708964	1.000000	.468840	.901066
120	527	.823187	1.000000	.375578	1.000000	.000000	.894709
121	526	.850212	1.000000	.653979	1.000000	.000000	.900074
MRIO	IMPLAN Sectors	TN	TX	UT	VT	VA	WA
85	446	.881146	.680000	.801390	.805516	.950246	1.000000
86	447, 519	.900000	.852727	.800316	.801118	.950435	1.000000
87	448	.846856	.543878	.679683	.409938	.950141	1.000000
88	449	.873800	.852322	.603447	.771654	.950057	1.000000
89	450	.900227	.736130	.575718	.431010	.950439	1.000000
90	451	.822682	.852631	.640055	.500000	.988096	.000000
91	452-453	.883564	.798341	.669582	.794704	.950009	.000000
92	454	.901132	.852917	.616475	.535166	.933951	.746835
93	455	.900681	.788212	.658058	.751067	.950663	.752145
94	456, 517, 520	.909991	.390355	.621706	.475703	.858757	.759657
95	457	.795417	.862223	.568594	.469112	.880690	.741197
96	458	.902534	.838840	.587880	.580454	.951775	.662651
97	460-461	.900924	.850418	.599649	.804970	.933302	.750834
98	491	.880988	.852019	.681576	.717742	.797565	.607247
99	462-463	.901069	.830031	.624497	.800821	.926211	.750934
100	464-466	.794932	.772287	.804271	.822064	.736006	.750046
101	467-468	.897255	.790698	.645619	.781341	.946398	.705341
102	469-470	.902439	.839968	.728997	.846626	.854785	.751262
103	471	.883082	.837085	.797255	.640657	.950432	.750298
104	472-477	.901438	.833387	.723169	.802528	.950628	.561393
105	478-487	.889331	.747325	.729954	.800980	.950455	.729323
106	488-490	.900561	.854334	.742724	.808324	.950365	.750908
107	492-494	.902391	.726643	.676724	.791758	.888658	.753562
108	495-502	.900551	.800104	.799068	.716592	.950920	.752154
109	503	.884113	.789030	.754009	.748924	.776642	.691715
110	504-505	.901768	.850101	.758490	.778212	.884315	.661679
111	506	.893276	.814772	.812500	.802111	.951480	.751077
112	507-509	.900278	.835391	.806701	.800910	.902105	.751837
113	510-513	.900778	.000000	.000000	.000000	.945059	.547558
114	514-515	.900299	.000000	.000000	.000000	.950354	.751239
115	516, 518	.895779	.434109	.622340	.339844	.662309	.751295
116	521	.906422	.956357	1.000000	1.000000	.952971	.750701
117	522	.834437	.953600	1.000000	1.000000	.842111	.498525
118	523-524	.902213	.950149	1.000000	1.000000	.950628	.663733
119	525	.901689	.952670	1.000000	1.000000	.875510	.710486
120	527	.901348	.950861	1.000000	1.000000	.837992	.751299
121	526	.901163	.950087	1.000000	.903771	.950051	.697327

Table 2. Observed RPCs for States, continued.

MRIO	IMPLAN Sectors	WV	WI	WY
85	446	.935489	1.000000	.874329
86	447, 519	.941012	1.000000	.776560
87	448	.950028	1.000000	.689122
88	449	.714134	1.000000	.845711
89	450	.900626	1.000000	.780506
90	451	.000000	1.000000	.901637
91	452-453	.000000	1.000000	.800699
92	454	.483568	1.000000	.903026
93	455	.417972	1.000000	.885674
94	456, 517, 520	.461045	1.000000	.565389
95	457	.590609	1.000000	.888415
96	458	.660257	1.000000	.876262
97	460-461	.452954	1.000000	.821371
98	491	.700032	1.000000	.900045
99	462-463	.462571	1.000000	.845381
100	464-466	.596965	1.000000	.900376
101	467-468	.590074	1.000000	.888220
102	469-470	.557503	1.000000	.900143
103	471	.700095	1.000000	.824539
104	472-477	.551241	1.000000	.900336
105	478-487	.570155	1.000000	.000000
106	488-490	.666600	1.000000	.000000
107	492-494	.601819	1.000000	.870229
108	495-502	.690137	1.000000	.730821
109	503	.672325	1.000000	.714081
110	504-505	.597272	1.000000	.773131
111	506	.661710	1.000000	.738220
112	507-509	.656761	1.000000	.906716
113	510-513	.418494	1.000000	.794573
114	514-515	.523352	1.000000	.902672
115	516, 518	.701077	.920861	.639149
116	521	.604189	1.000000	.766916
117	522	.468744	1.000000	.841747
118	523-524	.573695	1.000000	.901256
119	525	.491956	1.000000	.901558
120	527	.694863	.000000	.654806
121	526	.686961	.000000	.642368

- NOTES -

IMPACT ANALYSIS COMBINING EXPENDITURE PATTERNS AND RESPONSE COEFFICIENTS

Greg Alward
and
John E. Wagner

INTRODUCTION

The input-output (I/O) accounting system contains the various components used to calculate the expenditures and receipts for production, institutional consumption and accumulation, and trade (Appendix A). Developing expenditure patterns uses the information already within the I/O accounting system as a starting point for economic impact analysis. Micro IMPLAN (MI), an I/O model, is a useful tool for developing expenditure patterns because it allows the analyst ready access to the various components of the I/O accounts. The purpose of this paper is to discuss how expenditure patterns and response coefficients can be constructed using MI and how they can be applied to policy analysis.

BACKGROUND

The structure of a regional economy can be described by the relationships between various actors¹ who perform economic activities. Within this structure each actor's expenditures are another's receipts and these transactions define economic linkages among the actors. This paper focuses upon backward linkages, the interconnections of actors to those actors from which purchases of input supplies are made. Backward linkages are composed of direct, indirect, and induced components and may be described in terms of total industry output, factor incomes, and employment. The direct component identifies the initial effects due to a change in final demand. Indirect components capture the backward linked effects among supplier that occur as a consequence of the direct component. Induced components identify the backward linked effects that arise from the changes in household consumption spending caused by changes in household incomes that result from the direct and indirect components.

POLICY ANALYSIS USING INPUT-OUTPUT

The typical applications of I/O models, the total (direct, indirect, and induced) economic effects are estimated by (1) determining a vector of changes in final demand, and (2) applying the I/O multiplier model. In standard applications, a final

¹ Economic actors include industries and institutions such as households and governments.

demand vector is estimated for each specific policy issue. This procedure can produce detailed information about the distribution of the policy's economic consequences throughout the structure of an economy. But this detailed information may be unnecessary for some studies. An alternative procedure, described here, develops normalized vectors of final demand changes for policy issues.

EXPENDITURE PATTERNS

Expenditure patterns describe the percent of industry's or household's total outlay used to purchase various commodities and/or services. An industry must purchase combinations of various commodities and services (including labor) in order to produce its output. For example, for every \$1.00 of total outlay spent by industry A, \$0.20 is spent on commodity B, \$0.30 is spent on commodity C, and \$0.50 is spent as payments to labor. The expenditure pattern for an industry may be divided into two expenditure patterns. One expenditure pattern would enumerate the percent of an industry's total outlay spent on purchasing each commodity used in production. Since labor payments are often a large component of an industry's total outlay, the feedback effects of spending labor income via household consumption can be significant and are enumerated in a second expenditure pattern.

Since the definition of the expenditure pattern for a household is the same as for an industry and that the expenditure pattern for an industry defines that industry's production function, a household's expenditure pattern also defines a production function. For example, for every \$1.00 of total outlay spent by a household, \$0.45 is spent on housing, \$0.30 is spent on food, \$0.10 is spent on entertainment, and \$0.15 is spent on insurance. This analogy is important when examining the impacts of recreation and similar activities. Instead of developing a recreation industry (e.g., a downhill skiing resort industry), the analogy states the individual skier is the recreation industry and his/hers expenditures for skiing denote the production function for the skiing experience.

RESPONSE COEFFICIENTS

A response coefficient is a scaled I/O (output, income, employment, etc.) multiplier. An I/O multiplier has the same units in both the numerator and denominator. A response coefficient has different units in the numerator and denominator. For example, MI calculates output multipliers in terms of millions of dollars (MM\$) of change in gross output of industry i per MM\$ change in final demand. A type I output response coefficient, as calculated by MI, would define changes in MM\$ of gross output of industry per 1 million board feet of timber harvested or per 1000 MM\$. The scaling factor would then be 1 million board feet (MMBF) of timber harvested or 1000 MM\$.

For example, if the type I output multiplier for industry i , as calculated by MI, is 3.25 and 1 MM\$ of final demand is equal to 2 MMBF of timber harvested, then the type I output response coefficient is 1.63. This response coefficient states that there is 1.63 MM\$ change in gross output of industry i per 1 MMBF of timber harvested.

Response coefficients are developed using traditional economic impact analysis, but takes advantage of two assumptions: 1) the predicted responses (in terms of industry output, etc.) of I/O model are linear given a Leontief multiplier inverse, and 2) the composition of the final demand changes (i.e., the expenditure patterns) are fixed for given magnitudes of change. This first assumption is true of all input-output models. The second is an added assumption of response coefficients. Applying these assumptions, the responses predicted in for output, employment, and income, etc. are constant for small or marginal changes in the magnitude of the final demand vector. That is no changes in the composition (e.g., the commodities or industries directly affected and the percent spent on each commodity) of the expenditure pattern is necessary. Large changes in magnitude of the final demand vector may suggest changes in the compositions of the expenditure patterns. These needs could be met by developing a family of response coefficients to analyze a wide range of policy questions.

THE CONCEPTUAL MODEL

The conceptual model develops the theoretical background of identifying and using expenditure patterns in impact analysis. All the information necessary to develop expenditure patterns are contained in a general set of I/O accounts (Appendix A). In addition, this model is used to show how MI can be used to approximate this procedure. An industry example will be used to develop the conceptual model, however the example will also illustrate how to develop expenditure patterns for households.

The model can be described in four steps. The first step is the calculation of the matrix of direct coefficients, denoted by matrix A . The A matrix is the product of the regional market shares (M) and the regional absorption (B) matrix. If the regional economy can be described by n industries and k commodities, then the regional market shares matrix is n by k , the regional absorption matrix is k by n , and the A matrix is an n by n . Figure 1 shows the multiplication and Figure 2 shows a picture of the A matrix.

$$\begin{array}{c} \text{R} \\ \text{e} \\ \text{c} \\ \text{e} \\ \text{i} \\ \text{p} \\ \text{t} \\ \text{s} \end{array} \quad \begin{array}{|c|} \hline \text{M} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{B} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{A} \\ \hline \end{array}$$

Expenditures

Figure 1. Calculating the A matrix

A row of the regional market shares matrix defines the percent of industry i's receipts made up of the k commodities. A column of the regional absorption matrix defines the percent of industry i's total outlay spent on the k commodities.

$$\begin{array}{c} \text{R} \\ \text{e} \\ \text{c} \\ \text{e} \\ \text{i} \\ \text{p} \\ \text{t} \\ \text{s} \end{array} \quad \begin{array}{|c|} \hline \text{A} \\ \hline \end{array}$$

Expenditures

Figure 2. The industry by industry matrix of direct coefficients or the A matrix

A column of the A matrix, figure 2, defines the expenditure pattern for industry i's purchase of intermediate inputs from the study area's endogenous industries or industry i's production function.

The second step enumerates expenditures by industries to labor and the spending of labor income via household consumption. This is shown by Figure 3.

		Expenditures	
R e c e i p t s			
		l E	h E
	A		
	l_R	0	0
	h_R	s 1	s 2

Figure 3. The augmented A matrix, or A^+ matrix

The column vector, l_E , defines the percent of labor's expenditures used purchase goods and services produced by industries, labor, and households. Labor's expenditures to industries and labor have no economic interpretations while labor's expenditures to households are given by T_{32} found in Appendix A. The column vector, h_E , defines the percent of a household's expenditures used to purchase the goods and services produced by industries, labor, and households. The h_E vector can be derived from T_{13} found in Appendix A. The row vector, l_R , defines labor's receipts from industries, labor, and households. The vector l_R can be derived from T_{21} found in Appendix A. The row vector, h_R , defines households receipts from industries, labor, and households. Household's receipts from industries has no economic interpretation while household's receipts from labor and households can be derived from T_{32} and T_{33} found in Appendix A, respectively. The intersection of these two rows and columns defines a small social accounting matrix (SAM).

In order to interpret Figure 3, a distinction needs to be made between labor and households' expenditures and receipts. Industries purchase labor not households. Therefore, industries expenditures on wages, salaries, employer and employee contributions to social security, and other labor income are receipts by labor. Labor does not purchase goods from industries. Households purchase goods from industries. Therefore, labor's expenditures define percent of labor's receipts distributed among households, governments, etc. This is

shown by element s_1 of Figure 3. The value of this element is usually less than one due to, among other things, taxes taken out by the government.

The household expenditure column vector can be interpreted in the same manner as any column vector of the A matrix (i.e., a production function). The element s_2 of the SAM defines household's purchases of services from households (i.e., babysitting). The element s_2 can be derived from T_{33} found in Appendix A. The only nonzero element in the labor expenditure column of Figure 3 is s_1 which defines the percent of labor receipts distributed to households. The element s_1 can be derived from T_{32} found in Appendix A. Receipts to labor are given by the row vector, l_R . The only nonzero elements of the row vector h_R are the elements s_1 and s_2 .

The third step is to rearrange the A matrix to segregate the expenditures and receipts of the industry(ies) of interest. The row(s) and column(s) of the industry(ies) are rearranged to create a "boundary" for the A matrix. This new matrix, A^+ , is shown in Figure 4.

Expenditures

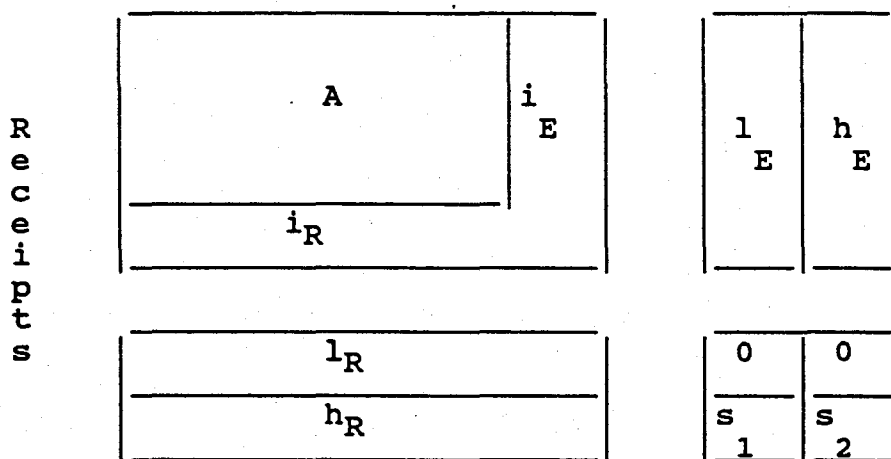


Figure 4. The rearranged A^+ matrix

If there are n industries in the A matrix, the A^+ matrix is an $n+2$ by $n+2$ matrix. The expenditures of industry i are found in the column vector i_E and the receipts are found in the row vector i_R .

The A^+ matrix may be defined as the sum of four matrices to take advantage of the arrangement shown in Figure 4. This is given by equation (1):

$$A^+ = C + D + L + H \quad (1)$$

where D is a matrix defining the expenditures of industry i, L is a matrix defining the expenditures of labor, H is a matrix defining the expenditures of households, and C contains the remaining parts of the A^+ matrix. Figures 5a, 5b, 5c, 5d contain pictures of matrices T, D, L, and H.

		Expenditures		
R e c e i p t s		0	0	0
		0	0	0
		0	0	0
		0	0	0
		.	.	.
		.	.	.
	i_R	.	0	0
	l_R	.	0	0
	h_R	0	0	0

Figure 5a. The C matrix

The C matrix is defined as the A^+ matrix with the last three columns of the A^+ matrix zero filled.

		Expenditures		
R e c e i p t s	0 0 0 0	i E	0	0
	0 0 0 0		0	0
			0	0
			0	0
	0 0 0 0		.	.
	0 0 0 0		0	0
	0 0 0 0		0	0
	0 0 0 0		0	0

Figure 5b. The D matrix

The D matrix is zero filled except for the expenditure vector of industry i. This includes expenditures to itself, labor and households.

Expenditures													
R e c e i p t s	0	0	.	.	.	.	.	.	0	0	0		0
	0	0	.	.	.	.	.	.	0	0	0		0
	.	.	.						.	.	.		0
	.	.				.			.	.	.		0
	0	0	.	.	.	.	.	.	0	0	.		.
											.	l	.
	0	0	0	0	.	.	.	.	.	.	.	E	0
											.		0
	0	0	0	0	.	.	.	.	.	.	0		0
											0	s	0
0	0	0	0	.	.	.	.	.	.	0	1		

Figure 5c. The L matrix

The L matrix is zero filled except for labor's expenditures including element s_1 of the SAM matrix.

Expenditures														
R e c e i p t s	0	0	.	.	.	.	.	.	0	0	0	0		
	0	0	.	.	.	.	.	.	0	0	0	0		
	.	.	.						.	.	.	.		
	.	.							.	.	.	.		
	0	0	.	.	.	.	.	.	0	0	.	.	h	
											.	.	E	.
	0	0	0	0	.	.	.	.	.	.	.	.	.	
											.	.	.	.
0	0	0	0	.	.	.	.	.	.	.	.	.		
										0	0			
0	0	0	0	.	.	.	.	.	.	.	0	0	s	
										0	0		2	

Figure 5d. The H matrix

The H matrix is zero filled except for the household expenditure vector including element s_2 of the SAM.

The fourth step is to calculate $(I-A^+)^{-1}$. The A^+ matrix can be defined as the sum of C, D, L, H give by equation (1). The Sherman-Morrison formula (Golub and Van Loan 1983) can be used to find the inverse of a sum of two matrices given one is invertable and the other is of rank one. Since A^+ is the sum of four matrices, equation (2) defines $(I-A^+)$ as a sum of these matrices:

$$(I - A^+) = I - C - D - L - H \quad (2)$$

where I is an $n+2$ by $n+2$ identity matrix. To simplify equation (2), let $Z = I - C$ and rewrite the equation as:

$$(I - A^+) = Z + D + L + H. \quad (3)$$

Z is an invertable matrix and D , L , and H are matrices of rank one. Three iterations are required to calculate $(I-A^+)^{-1}$ using the Sherman-Morrison formula:

Iteration 1:

$$X_1^{-1} = (Z + D)^{-1} = Z^{-1} - \phi_D$$

where ϕ_D is a multiplier matrix associated with the effects of industry i 's expenditures on intermediate inputs;

Iteration 2:

$$X_2^{-1} = (X_1^{-1} + L)^{-1} = (X_1^{-1})^{-1} - \phi_L$$

where ϕ_L is a multiplier matrix associated with the effects of labor expenditures;

Iteration 3:

$$X_3^{-1} = (X_2^{-1} + H)^{-1} = (X_2^{-1})^{-1} - \phi_H$$

where ϕ_H is a multiplier matrix associated with the effects of household expenditures;

with $(I-A^+)^{-1} = X_3^{-1}$.

Each iteration, of the above inversion, shows the effects of expenditures by an industry, labor, and households on the multipliers; conceptually, identifying the effects of industry i 's purchase of intermediate inputs and of household consumption. The inversion, $(I-A^+)^{-1}$, contains the induced effects of household consumption.

Currently, MI neither explicitly allow defining A^+ nor does the output multiplier matrix used by MI, $(I-A)^{-1}$, contain the induced effects of household consumption. MI calculates the induced effects via an iterative process. Equation (5) shows the relationship between the conceptual model and MI:

$$(I-A^+)^{-1}dy - (I-A)^{-1}dy \quad (5)$$

where dy defines a final demand change in industry i ; $(I-A)^{-1}dy$ defines the direct, indirect, and induced effects as calculated by MI; and $(I-A^+)^{-1}dy$ defines the direct, indirect and induced effects as calculated by the conceptual model. The

relationship is not an equality because MI currently does not account for the information contained in the SAM matrix in calculating direct, indirect, or induced effects. Therefore, MI does not account for the element s_1 of the vector l_E nor the element s_2 of the vector h_E , and for industry i 's expenditures to labor.

Equation (5) and the Sherman-Morrison formula also imply that the total effects, as calculated by MI, are an additive function of the total effects of industry i 's purchase of intermediate inputs (including the direct effects of purchases from itself) plus the total effects of payments to labor via household consumption. Both expenditure vectors for industry i 's purchase of intermediate inputs and a household consumption vector can be identified using MI (i_E and h_E of Figure 4). Let dg define the column vector i_E of industry i 's intermediate purchases, and dp define the column vector h_E of household expenditures. Equation (6) shows the relationship between the conceptual model and the application using MI:

$$\begin{aligned} (I-A^+)^{-1}dy &- (I-A)^{-1}dy \\ &- (I-A)^{-1}dg + (I-A)^{-1}dp \\ &\quad + \text{direct effect} \end{aligned} \tag{6}$$

where the direct effect is defined as the direct effects of $(I-A)^{-1}dy$ or industry i 's purchasing inputs from itself.

METHODS

An example will be used to show how expenditure patterns can be developed using MI. Suppose, the Forest Service is considering an increase in the allowable sales quantity as an alternative; forest and local planners would like to know the economic effects of this change.

DEVELOPING THE EXPENDITURE PATTERNS

The expenditure patterns developed are based on accounting identities used in calculating the Leontief inverse of output multipliers. The rationale is to use the information contained and reported within the MI system to facilitate analyzing changes in final demand due to a policy or some other event. In this respect it is the distribution (who gets the money) of industry's or household's expenditures, rather than the magnitudes of the actual numbers, that is important. We will first discuss developing an industry's expenditure patterns and then for household expenditures.

Industry Expenditure Patterns

Developing an industry's expenditure pattern involves three steps. The first step identifies the MI industry which contains the sawmill establishment. In this case, the industry number is 161, "Sawmills and Planning Mills".

The second step involves constructing the industry's expenditure pattern for purchasing intermediate requirements. The information used in this step can be obtained from an MI accounts report, #12A: "Industry Balance Sheet, Part II". Appendix B, "Industry Balance Sheet Part II - Inputs" for Industry 161, is an example of the industry balance sheet. The expenditure pattern for industry 161 is given by the column titled "Regional Absorption Coefficients" or RAC. This column identifies the purchases of intermediate requirements produced by endogenous industries. For example, for every \$1.00 of total outlay spent by industry 161, \$0.43 worth of inputs are purchased from commodity 160 and \$0.003 worth of commodities are purchased from itself. The sum of the elements of this column show the percent of the industry's total outlay spent on intermediate requirements or commodities and services used in the production process. The remaining portion of the industry's total outlay is spent on purchasing imports to meet intermediate requirements and primary factor requirements (i.e., employment compensation, indirect business taxes, proprietary income, and other property income)²

An industry's RAC for a commodity is the product of the industry's total absorption coefficient for a commodity and the commodity's regional purchase coefficient (RPC). The total absorption coefficients are a column from the national absorption matrix. The national absorption coefficients (NAC) are calculated from a composite of all the production functions of industries within an MI classified industry. While adjustments are made for differing levels of total industry output, the same production function is used for all industries within an MI classified industry. The RPCs define the proportion of gross regional commodity demand met by net regional commodity supply or production. RPCs identify the proportion of the total outlay spent on a commodity is for imports.

The analyst may change the expenditures found in the RAC column to customize the expenditure pattern for intermediate inputs to fit a particular establishment. A change in the RAC implies changing either the NAC or the RPC; or both. If the analyst assumes a change in the NAC, then the a rule of thumb is

² The regional absorption coefficients are on a commodity basis. To convert the commodity based expenditure pattern to an industry-based expenditure pattern, the vector of regional absorption coefficients should be pre-multiplied by the regional market shares matrix (see Figure 1.). This was not done in this example which introduces some error.

that the NAC plus the sum of the primary factor requirements divided by total industry output equals one. A change in the RPC implies changing the amount of total outlay spent on imports. An increase (decrease) in the RPC implies less (more) of the commodity is imported to satisfy intermediate requirements.

The third step is to construct an expenditure pattern which shows the spending of labor income via household consumption. This is important since labor payments are usually a large component of an industry's total outlay and the feedback effects of household consumption can be significant. MI calculates the effects of household consumption using a vector of per capita personal consumption expenditures and the direct, indirect, and induced changes in population resulting from increased employment due to changes in final demand. This process starts by identifying the household expenditures due to changes in population and employment from the initial change in final demand. An example of the six calculations is contained in Appendix C.

The first calculation requires determining a population to employment ratio. This information is contained in MI impact report #6.111, "Base Year Standard TIO-related Flows". An example of this report is contained in Appendix D. The second calculation is to identify the direct employment multiplier from MI invert report #5.440, "Employment Multipliers". An example of this report is contained in Appendix E. This defines the change in employment for per million dollar change in final demand. The third calculation is to scale the per capita consumption expenditures, given in units of 1 dollar from MI invert report #5.300, "Output Multipliers" (Appendix E), in terms of millions of dollars. The fourth calculation is to determine the change in population. This is calculated by multiplying the result of calculation 1 by the result of calculation 2. The final calculation is to multiply the change in population (calculation 4) by the scaled per capita consumption vector (calculation 3). This is a matrix vector multiplication and results in the personal consumption expenditure pattern.

The analyst may also change the household consumption expenditure pattern to better model a particular policy question. Changes in the household consumption expenditure pattern could be accomplished in a manner similar to that of the expenditure pattern for intermediate requirements. This would be done by using one or all of the three personal consumption expenditure categories, from the MI's study area data base, to develop a vector of coefficients similar to the NAC vector. Expenditures to non-competitive plus competitive imports to final demand, MI accounts' reports #9.0 and #11.0, would be analogous to the RPC values. A change in the household expenditures would then be due to either a change in the amount spent for a particular commodity or a change in the amount of the commodity purchased locally; or both.

Household Expenditure Patterns

Income level-specific or general expenditure pattern for households can be developed using MI. If the policy in question is targeted to adjusting household expenditures of a particular income level then a procedure similar to developing the household expenditure pattern used to account for labor payments can be developed using MI. There are three general levels of personal consumption expenditures (PCE) based on three levels of annual household income contained within the MI's study area data base. The three annual income levels are low (< \$10,000 annually), medium (\$10,000 to \$30,000 annually), and high (> \$30,000 annually). Appendix F contains a work sheet displaying all the calculations. The objective is to develop coefficients analogous to the RAC.

The household expenditure patterns are developed by first identifying the affected income level based on the policy in question. For example, the target level of household expenditures might be the low income level, or an average of the the three income levels. The PCE's do not distinguish between expenditures on commodities that are imported versus those that are produced locally and are defined as gross expenditures. The sum of the PCE vector defines the gross expenditures spent by household for purchasing commodities. Appendix G contains an example of personal consumption expenditure vectors from the MI study area data base. To adjust for imports, expenditures for non-competitive and competitive imports to final demand are identified. Appendix H contains an example of non-competitive imports to final demand MI accounts report #9.0, and regional competitive imports to consumption demand MI accounts report #11.0. The difference between the gross expenditures (the PCE vector) and imports to final demand defines the net expenditures by households on commodities produced locally. The coefficients analogous to the RAC are calculated by dividing expenditures net of imports to final demand by the sum of the gross expenditures.

As with an industry's expenditure pattern for intermediate requirements, a household's expenditure pattern can be customized if better household expenditure data is available. Changing a coefficient implies either changing a gross expenditure or the amount spent on imports to final demand; or both. The sum of the elements of the household expenditure pattern is less than or equal to one. If the particular household of interest spends no money on imports the sum of the elements their expenditure pattern is one. Therefore, changing the elements of a household's expenditure implies more or less is spent on imports.

If the policy deals with the impacts of recreation and similar activities, the household expenditure pattern defines the production function for the recreational experience. MI does not provide a data base containing these types of expenditures. However, MI does provide a list of 528 commodities a person might purchase while recreating. The analyst would determine what percent of the budget was spent on each commodity. This would

define the expenditure pattern. For completeness, this vector should be premultiplied by the regional market shares matrix to convert the commodity based expenditures to an industry based expenditure pattern.

DEVELOPING RESPONSE COEFFICIENTS

There is one rule of thumb for calculating response coefficients using expenditure patterns: The smallest percentage in the expenditure pattern multiplied by the final demand change should not be less than 1. For example, if the smallest percentage is 0.001 then the change in final demand should be at least 1000.0 in magnitude. This increases the precision of the estimated induced effects. Appendix I contains an example impact input file for developing response coefficients using 1000 million dollar (MM\$) final demand for sector 161 using the created expenditure patterns.

Each set of response coefficients (for an industry or household) is calculated once and reflects a specific expenditure pattern. The impacts of marginal policy changes are easily determined. For example, to determine the effects of varying the allowable sales quantity requires first changing millions of board feet (MMBF) into dollars by equations (6a):

$$(MMBF) * (\$/MMBF) = \$ \quad (6a)$$

Second, scaling the dollar amount to the units associated with the response coefficients. This is given by equation (6b):

$$\$/ (1000 \text{ MM\$}) = \text{FD} \quad (6b)$$

where FD denotes a new change in final demand. The response coefficients are then multiplied by the result from equation (6b) to determine the direct, indirect, and induced effects. The result of equation (6b) is a scalar. The effects on an industry would be a scalar matrix multiplication.

Appendix J displays the direct, indirect, and induced effects of a 1000 MM\$ change in final demand using the expenditure patterns (Appendix H) created for MI sector 161 and a no expenditure pattern analysis. In addition, Appendix J shows the relationship between an expenditure pattern analysis and a nonexpenditure pattern analysis.

RESPONSE COEFFICIENTS AND SPREADSHEETS

MI allows the components of a policy to be examined separately as well as together. Transporting set(s) of response coefficients (direct, indirect, induced, and total) into a spreadsheet allows a policy analyst the freedom to analyze both marginal and nonmarginal alternative policy changes more efficiently. Spreadsheets allow the analyst to remove the structured MI output containing the response coefficients so the combined responses of the components of any policy can be analyzed.

Appendix A: A Generalized Social Accounting Matrix

	<u>Prod</u>		<u>Consump</u>			<u>Trade</u>	<u>Total</u>
	Act	Fact	HH	Govt	Corp	Exports	Receipt
<u>Prod</u> Act	T ₁₁	-	T ₁₃	T ₁₄	T ₁₅	T ₁₆	t ₁
Fact	T ₂₁	-	-	-	-	T ₂₆	t ₂
<u>Acc</u> HH	-	T ₃₂	T ₃₃	T ₃₄	T ₃₅	T ₃₆	t ₃
Govt	-	T ₄₂	T ₄₃	T ₄₄	T ₄₅	T ₄₆	t ₄
Corp	-	T ₅₂	T ₅₃	T ₅₄	T ₅₅	T ₅₆	t ₅
<u>Trade</u> Imp	T ₆₁	T ₆₂	T ₆₃	T ₆₄	T ₆₅	T ₆₆	t ₆
<u>Total</u> Exp	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	

Figure 1. A generalized Social Accounting Matrix³

The columns of figure 1 are expenditures and the rows are receipts. Figure 1 is a definitional tool and the " - " represents parts of the social accounting matrix with no economic interpretation.

Definitions:

Prod = Production;
 Act = Activities or industries;
 Fact = Factors are labor, capital, and government services;
 Consump = Consumption by institutions;
 HH = Households;
 Govt = State, local, and federal governments;
 Corp = Corporations;
 Acc = Accumulation by institutions;
 Imp = Imports;
 Exp = Expenditures;

³ For a more complete explanation of incorporating a social accounting matrix format into IMPLAN see: Alward, G.S. 1985. Extending the IMPLAN I/O System: The Social Accounting Matrix. A paper given at the Midwest Forest Economist's Meeting in Ames, Iowa. May 30-31, 1985.

T_{11} = The interindustry transaction matrix is the standard I/O matrix;
 T_{13} = A matrix whose columns define household consumptions expenditures to industries;
 T_{14} = A matrix whose columns define state, local, and federal governments expenditures to industries;
 T_{15} = A matrix whose columns define expenditures by institutions on inventories and investment;
 T_{16} = A matrix whose columns define foreign institutions expenditures for commodities;
 t_1 = A vector of total receipts (expenditures) by industries for intermediate (intermediate and primary) factor production, consumption demand by institutions, and foreign exports (imports);
 T_{21} = A matrix whose columns define expenditures by industries on primary factors of production: labor, capital, and government services;
 T_{26} = A matrix whose columns define expenditures by foreign institutions on primary factors of production;
 t_2 = A vector of total receipts (expenditures) by primary factors of production from industries (institutions) and foreign exports (imports) of primary factors;
 T_{32} = A matrix whose columns define the expenditures by the primary factors of production on households (e.g., wages, salaries, and dividends);
 T_{33} = A matrix whose columns define the expenditures by households on the goods and services produced by households (e.g., babysitting);
 T_{34} = A matrix whose columns define the expenditures by governments on households (e.g., unemployment compensation);
 T_{35} = A matrix whose columns define the expenditures by corporations on households;
 T_{36} = A matrix whose columns define the expenditures by foreign institutions on households (e.g., wages, salaries, and dividends);
 t_3 = A vector of total receipts (expenditures) by households;
 T_{42} = A matrix whose columns define expenditures by primary factors of production on governments (e.g., taxes);
 T_{43} = A matrix whose columns define expenditures by households to governments;
 T_{52} = A matrix whose columns define expenditures by primary factors of production on corporations;
 T_{53} = A matrix whose columns define expenditures by households on corporations;
 T_{54} = A matrix whose columns define expenditures by governments on corporations;
 T_{55} = A matrix whose columns define expenditures by corporations on corporations (e.g., profits earned by corporations);

- T_{56} = A matrix whose columns define foreign institution's expenditures on corporations. (e.g., foreign profits earned by corporations);
- t_5 = A vector of total receipts (expenditures) by corporations;
- T_{61} = A matrix of industries' expenditures on imports for intermediate factors of production;
- T_{62} = A matrix of expenditures on imports for primary factors of production;
- T_{63} = A matrix of expenditures by households on imports for consumption demand;
- T_{64} = A matrix of expenditures by governments on imports for consumption demand;
- T_{65} = A matrix of expenditures by corporations on imports for consumptions demand;
- T_{66} = A matrix of expenditures on imports for exports (i.e., transshipments);
- t_6 = A vector of total receipts (expenditures) on imports.

Appendix B: ACCOUNT REPORT #12A
INDUSTRY BALANCE SHEET, PART II - INPUTS
INDUSTRY 161: SAWMILLS AND PLANING MILLS, GENERAL

COMMODITY	TOTAL ABSORPTION COEFFICIENT	REGIONAL PURCHASE COEFF	REGIONAL ABSORPTION COEFF
26	.0005382	.00000	.0000000
27	.0000468	.00000	.0000000
40	.0000083	.00000	.0000000
74	.0047696	.00000	.0000000
79	.0000087	.00000	.0000000
114	.0000224	.00000	.0000000
.	.	.	.
.	.	.	.
488	.0007761	.00000	.0000000
489	.0005966	.00000	.0000000
490	.0004996	.00000	.0000000
491	.0027021	.90152	.0024360
492	.0006010	.00000	.0000000
493	.0010850	.00004	.0000000
508	.0002626	.90324	.0002372
510	.0003488	.00000	.0000000
513	.0000110	.00340	.0000000
516	.0005614	.90468	.0005079
521	.0000723	.00000	.0000000
522	.0000700	.00030	.0000000
TOTAL	.6429684		.4769813

EMPLOYMENT COMPENSATION (\$MM)			.2367
INDIRECT BUSINESS TAXES (\$MM)			.0118
PROPRIETARY INCOME (\$MM)			.0078
OTHER PROPERTY INCOME (\$MM)			.0457
TOTAL VALUE ADDED (\$MM)			.3020
TOTAL INDUSTRY OUTPUT (\$MM)			.8458

Appendix C: WORKSHEET FOR GENERAL PERSONAL EXPENDITURES

STEP 1:
POPULATION TO EMPLOYMENT RATIO FOR
SECTOR 161 FROM BASE YEAR REPORT (POP/EMP)
108610/36203.04 = 3.000024

STEP 2:
EMPLOYMENT MULTIPLIER FOR
SECTOR 161 (JOBS/\$MM)
32.9338

STEP 3:
CALCULATE THE CHANGE IN EMPLOYMENT
FOR A 1 \$MM CHANGE (JOBS/\$MM)*\$MM = JOBS
32.9338 * 1 = 32.9338

STEP 4:
CONVERT THE PER CAPITA PERSONAL
CONSUMPTION TO PER CAPITA PERSONAL
PER 1 \$MM (PCC*\$MM/POP)

ENDOGENOUS SECTOR	PER CAPITA CONSUMPTION	PER CAPITA CONSUMPTION PER 1 \$MM
1	20	0.00002
24	0	0
45	0	0
66	0	0
69	0	0
82	146	0.000146
160	0	0
161	0	0
164	0	0
269	0	0
448	45	0.000045
454	124	0.000124
459	4	0.000004
460	25	0.000025
461	464	0.000464
462	116	0.000116
463	1064	0.001064
464	237	0.000237
467	133	0.000133
468	0	0
470	495	0.000495
471	86	0.000086
491	732	0.000732
504	252	0.000252
507	28	0.000028
508	51	0.000051
516	21	0.000021
517	23	0.000023
525	0	0

526	0	0
527	0	0
528	0	0

STEP 5:
 CALCULATE THE CHANGE IN POPULATION
 STEP 1 * STEP 3
 $3.000024 * 32.9338 = 98.80219$

ENDOGENOUS STEP 6:
 SECTOR CALCULATE THE PER CAPITA CONSUMPTION
 PER 1 \$MM FOR THE POPULATION CHANGE OF STEP 5

1	0.001976
24	0
45	0
66	0
69	0
82	0.014425
160	0
161	0
164	0
269	0
448	0.004446
454	0.012251
459	0.000395
460	0.002470
461	0.045844
462	0.011461
463	0.105125
464	0.023416
467	0.013140
468	0
470	0.048907
471	0.008496
491	0.072323
504	0.024898
507	0.002766
508	0.005038
516	0.002074
517	0.002272
525	0
526	0
527	0
528	0

Appendix D: IMPACT REPORT #6.111
1982 BASE YEAR DATA
STANDARD TGO-RELATED FLOWS

EMPLOYMENT	SECTOR	BASE YEAR		VALUE ADDED
		TGO (MM\$)	(MM\$)	(NUMBER OF JOBS)
1	DAIRY FARM PRODUCTS	12.2171	2.9293	174.8420
24	FORESTRY PRODUCTS	.9752	.4957	10.0000
45	CRUSHED AND BROKEN LIMES	2.7182	1.5811	31.2720
66	NEW RESIDENTIAL STRUCTUR	142.0419	44.0785	1381.2440
69	NEW HIGHWAYS AND STREETS	15.9662	5.1637	140.1630
82	MEAT PACKING PLANTS	41.8531	4.2541	110.6930
160	LOGGING CAMPS AND LOGGIN	.9814	.2929	10.3850
161	SAWMILLS AND PLANING MIL	.8458	.3020	27.8550
164	MILLWORK	3.1278	.8244	57.1500
269	READY-MIXED CONCRETE	8.7096	2.5851	63.6190
448	MOTOR FREIGHT TRANSPORT	15.7568	9.3566	363.0850
454	COMMUNICATIONS, EXCEPT R	24.6203	22.0350	357.6800
459	SANITARY SERVICES AND ST	1.0347	.6554	15.7910
460	RECREATIONAL RELATED WHO	3.5831	2.3860	17.0440
461	OTHER WHOLESALE TRADE	90.8743	60.5134	1885.3610
462	RECREATIONAL RELATED RET	13.6191	9.8733	514.1380
463	OTHER RETAIL TRADE	146.2772	106.0450	5659.0660
464	BANKING	39.2255	22.8011	800.1671
467	INSURANCE CARRIERS	17.1437	5.1420	351.9240
468	INSURANCE AGENTS AND BRO	7.1863	4.6920	177.3850
470	REAL ESTATE	135.9170	108.0551	861.8030
471	HOTELS AND LODGING PLACE	24.5446	10.5278	904.1151
491	EATING AND DRINKING PLAC	130.2707	52.9632	5430.4830
504	HOSPITALS	27.5427	13.9735	943.5900
507	ELEMENTARY AND SECONDARY	3.0654	1.4138	332.8710
508	COLLEGES, UNIVERSITIES,	69.0000	42.9455	2118.2960
516	U.S. POSTAL SERVICE	9.7625	7.4048	317.1260
517	FEDERAL ELECTRIC UTILITI	6.1476	1.8507	21.2260
525	GOVERNMENT INDUSTRY	250.1988	250.1988	12892.4200
526	REST OF THE WORLD INDUST	31.0665	31.0665	-16.2140
527	HOUSEHOLD INDUSTRY	2.2440	2.2440	248.4590
528	INVENTORY VALUATION ADJU	-6.8914	-6.8914	.0000
TOTAL		1271.6260	821.7587	36203.0400
POPULATION =		108610.		

Appendix D (cont): IMPACT REPORT #6.112
 1982 BASE YEAR DATA
 STANDARD TGO-RELATED COEFFICIENTS

SECTOR COEFFICIENT	BASE YEAR TGO (MM\$)	VALUE ADDED COEFFICIENT (V.A./MM\$)	EMPLOYMENT (NO. JOBS/MM\$)
1 DAIRY FARM PRODUCTS	12.2171	.2398	14.3113
24 FORESTRY PRODUCTS	.9752	.5083	10.2543
45 CRUSHED AND BROKEN LIMES	2.7182	.5816	11.5045
66 NEW RESIDENTIAL STRUCTUR	142.0419	.3103	9.7242
69 NEW HIGHWAYS AND STREETS	15.9662	.3234	8.7787
82 MEAT PACKING PLANTS	41.8531	.1016	2.6448
160 LOGGING CAMPS AND LOGGIN	.9814	.2984	10.5818
161 SAWMILLS AND PLANING MIL	.8458	.3570	32.9338
164 MILLWORK	3.1278	.2636	18.2715
269 READY-MIXED CONCRETE	8.7096	.2968	7.3045
448 MOTOR FREIGHT TRANSPORT	15.7568	.5938	23.0431
454 COMMUNICATIONS, EXCEPT R	24.6203	.8950	14.5279
459 SANITARY SERVICES AND ST	1.0347	.6334	15.2610
460 RECREATIONAL RELATED WHO	3.5831	.6659	4.7568
461 OTHER WHOLESALE TRADE	90.8743	.6659	20.7469
462 RECREATIONAL RELATED RET	13.6191	.7250	37.7513
463 OTHER RETAIL TRADE	146.2772	.7250	38.6873
464 BANKING	39.2255	.5813	20.3992
467 INSURANCE CARRIERS	17.1437	.2999	20.5279
468 INSURANCE AGENTS AND BRO	7.1863	.6529	24.6839
470 REAL ESTATE	135.9170	.7950	6.3407
471 HOTELS AND LODGING PLACE	24.5446	.4289	36.8356
491 EATING AND DRINKING PLAC	130.2707	.4066	41.6861
504 HOSPITALS	27.5427	.5073	34.2592
507 ELEMENTARY AND SECONDARY	3.0654	.4612	108.5894
508 COLLEGES, UNIVERSITIES,	69.0000	.6224	30.6999
516 U.S. POSTAL SERVICE	9.7625	.7585	32.4840
517 FEDERAL ELECTRIC UTILITI	6.1476	.3011	3.4527
525 GOVERNMENT INDUSTRY	250.1988	1.0000	51.5287
526 REST OF THE WORLD INDUST	31.0665	1.0000	-.5219
527 HOUSEHOLD INDUSTRY	2.2440	1.0000	110.7207
528 INVENTORY VALUATION ADJU	-6.8914	1.0000	.0000

Appendix E: INVERT REPORT #5.300
OUTPUT MULTIPLIERS

SECTOR	TYPE I	TYPE III	PER CAPITA PERSONAL CONSUMPTION EXPENDITURES
1 DAIRY FARM PRODUCTS	1.0944	1.3143	20.
24 FORESTRY PRODUCTS	1.0569	1.2168	0.
45 CRUSHED AND BROKEN	1.0992	1.2819	0.
66 NEW RESIDENTIAL STR	1.1951	1.3991	0.
69 NEW HIGHWAYS AND ST	1.0847	1.2298	0.
82 MEAT PACKING PLANTS	1.1054	1.1581	146.
160 LOGGING CAMPS AND LOR	1.1502	1.3248	0.
161 SAWMILLS AND PLANINL	1.5519	2.0999	0.
164 MILLWORK	1.2128	1.5270	0.
269 READY-MIXED CONCRET	1.1395	1.2818	0.
448 MOTOR FREIGHT TRANSUS	1.1612	1.5283	45.
454 COMMUNICATIONS, EXCV	1.0200	1.2249	124.
459 SANITARY SERVICES A	1.0925	1.3293	4.
460 RECREATIONAL RELATEDE	1.1165	1.2213	25.
461 OTHER WHOLESALE TRA	1.1165	1.4416	464.
462 RECREATIONAL RELATE	1.0890	1.6274	116.
463 OTHER RETAIL TRADE	1.0890	1.6403	1064.
464 BANKING	1.1247	1.4443	237.
467 INSURANCE CARRIERS	1.5579	2.0200	133.
468 INSURANCE AGENTS AN	1.1188	1.4901	0.
470 REAL ESTATE	1.0965	1.1996	495.
471 HOTELS AND LODGING	1.1337	1.6699	86.
491 EATING AND DRINKING	1.1768	1.7826	732.
504 HOSPITALS	1.1241	1.6239	252.
507 ELEMENTARY AND SECO	1.1487	2.6726	28.
508 COLLEGES, UNIVERSIT	1.1233	1.5687	51.
516 U.S. POSTAL SERVICE	1.0567	1.5169	21.
517 FEDERAL ELECTRIC UT	1.0387	1.0958	23.
525 GOVERNMENT INDUSTRY	1.0000	1.7098	0.
526 REST OF THE WORLD I	1.0000	.9928	0.
527 HOUSEHOLD INDUSTRY	1.0000	2.5251	0.
528 INVENTORY VALUATION	1.0000	1.0000	0.

Appendix E (cont): INVERT REPORT #5.440
EMPLOYMENT MULTIPLIERS

SECTOR	DIRECT
1 DAIRY FARM PRODUCTS	14.3113
24 FORESTRY PRODUCTS	10.2543
45 CRUSHED AND BROKEN	11.5045
66 NEW RESIDENTIAL STR	9.7242
69 NEW HIGHWAYS AND ST	8.7787
82 MEAT PACKING PLANTS	2.6448
160 LOGGING CAMPS AND LTOR	10.5818
161 SAWMILLS AND PLANINAL	32.9338
164 MILLWORK	18.2715
269 READY-MIXED CONCRET	7.3045
448 MOTOR FREIGHT TRANSOUS	23.0431
454 COMMUNICATIONS, EXCTV	14.5279
459 SANITARY SERVICES AY	15.2610
460 RECREATIONAL RELATEADE	4.7568
461 OTHER WHOLESALE TRA	20.7469
462 RECREATIONAL RELATE	37.7513
463 OTHER RETAIL TRADE	38.6873
464 BANKING	20.3992
467 INSURANCE CARRIERS	20.5279
468 INSURANCE AGENTS AN	24.6839
470 REAL ESTATE	6.3407
471 HOTELS AND LODGING	36.8356
491 EATING AND DRINKING	41.6861
504 HOSPITALS	34.2592
507 ELEMENTARY AND SECO	108.5894
508 COLLEGES, UNIVERSIT	30.6999
516 U.S. POSTAL SERVICE	32.4840
517 FEDERAL ELECTRIC UT	3.4527
525 GOVERNMENT INDUSTRY	51.5287
526 REST OF THE WORLD I	-.5219
527 HOUSEHOLD INDUSTRY	110.7207
528 INVENTORY VALUATION	.0000

Appendix F: WORKSHEET FOR PCE EXPENDITURE PATTERN

CMDTY	PCE-MED OR GROSS EXPEND	NON-COMPET IMPORTS TO FINAL DEMAND	COMPETITIVE IMPORTS TO FINAL DEMAND	NET EXPEND	EXPENDITURE PATTERN FOR PCE-MED
	(GE)	(NCI)	(CI)	NE = NCI-CI	EP=NE/752.943
1	0.0439	0	0.0094	0.0345	0.000045
2	1.005465	1.0055	0	-0.00003	-0.00000
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0.260502	0.2605	0	0.000002	0.000000
10	0	0	0	0	0
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
510	0.340591	0.3406	0	-0.00000	-0.00000
511	2.026893	2.0269	0	-0.00000	-0.00000
512	3.572886	3.5729	0	-0.00001	-0.00000
513	2.022561	2.0157	0	0.006861	0.000009
514	1.03223	1.0322	0	0.00003	0.000000
515	4.852663	4.8527	0	-0.00003	-0.00000
516	1.304872	0	0.1244	1.180472	0.001567
517	0	0	0	0	0
518	0	0	0	0	0
519	0	0	0	0	0
520	0	0	0	0	0
521	2.385957	2.386	0	-0.00004	-0.00000
522	5.968197	5.9664	0	0.001797	0.000002
523	-0.46130	0	0	-0.46130	-0.00061
524	3.125245	1.6162	0	1.509045	0.002004
525	0	0	0	0	0
526	-5.25449	0	0	-5.25449	-0.00697
527	1.281589	0	1.2816	-0.00001	-0.00000
528	0	0	0	0	0
TOTAL	752.9430				

Appendix F: WORKSHEET FOR PCE EXPEDITURE PATTERN (cont.)

ENDOG IND	IMPACT EXPENDITURE PATTERN FOR PCE - MED
1	0.000045
24	0.000025
45	0
66	0
69	0
82	0.008259
160	0
161	0
164	0
269	0
448	0.003100
454	0.009805
459	0.000390
460	0.001671
461	0.034882
462	0.008424
463	0.080006
464	0.016886
467	0.009371
468	0
470	0.042058
471	0.005589
491	0.059778
504	0.019137
507	0.003228
508	0.003645
516	0.001567
517	0
525	0
526	-0.00697
527	-0.00000
528	0

Appendix G: Study Area data

	PCE - LOW	PCE - MED	PCE - HIG
1 DAIRY FARM PRODUCTS	0.012176	0.0439	0.025203
2 POULTRY AND EGGS	0.349827	1.005465	0.479635
3 RANCH FED CATTLE	0	0	0
4 RANGE FED CATTLE	0	0	0
5 CATTLE FEEDLOTS	0	0	0
6 SHEEP, LAMBS AND GO	0	0	0
7 HOGS, PIGS AND SWIN	0	0	0
8 OTHER MEAT ANIMAL P	0	0	0
9 MISCELLANEOUS LIVES	0.069944	0.260502	0.130424
10 COTTON	0	0	0
.	.	.	.
.	.	.	.
507 ELEMENTARY AND SECO	0.663623	2.777819	2.111143
508 COLLEGES, UNIVERSIT	0.725902	3.038495	2.309222
509 OTHER EDUCATIONAL S	0.225968	0.945864	0.718854
510 BUSINESS ASSOCIATIO	0.081864	0.340591	0.260591
511 LABOR AND CIVIC ORG	0.487138	2.026893	1.550946
512 RELIGIOUS ORGANIZAT	1.607264	3.572886	4.330648
513 OTHER NONPROFIT ORG	0.909847	2.022561	2.451539
514 RESIDENTIAL CARE	0.212163	1.03223	1.051476
515 SOCIAL SERVICES, N.	1.554113	4.852663	5.211935
516 U.S. POSTAL SERVICE	0.345436	1.304872	0.857361
517 FEDERAL ELECTRIC UT	0	0	0
518 OTHER FEDERAL GOVER	0	0	0
519 LOCAL GOVERNMENT PA	0	0	0
520 STATE AND LOCAL ELE	0	0	0
521 OTHER STATE AND LOC	0.631629	2.385957	1.567683
522 NONCOMPARABLE IMPOR	1.579946	5.968197	3.921378
523 SCRAP	-0.12211	-0.46130	-0.30309
524 USED AND SECONDHAND	0.827338	3.125245	2.053429
525 GOVERNMENT INDUSTRY	0	0	0
526 REST OF THE WORLD I	-1.39101	-5.25449	-3.45244
527 HOUSEHOLD INDUSTRY	0.263417	1.281589	1.305486
528 INVENTORY VALUATION	0	0	0

Appendix H: REGIONAL NON-COMPETITIVE IMPORTS
TO CONSUMPTION DEMAND
(MILLIONS OF 1982 DOLLARS)

-----HOUSEHOLDS-----			
-----PERSONAL CONSUMPTION-----			
CMDTY	LOW	MEDIUM	HIGH
2	.3498	1.0055	.4796
3	.0000	.0000	.0000
4	.0000	.0000	.0000
6	.0000	.0000	.0000
7	.0000	.0000	.0000
8	.0000	.0000	.0000
9	.0699	.2605	.1304
10	.0000	.0000	.0000
.	.	.	.
.	.	.	.
.	.	.	.
509	.1893	.7925	.6023
510	.0819	.3406	.2606
511	.4871	2.0269	1.5509
512	1.6073	3.5729	4.3306
513	.9068	2.0157	2.4432
514	.2122	1.0322	1.0515
515	1.5541	4.8527	5.2119
517	.0000	.0000	.0000
518	.0000	.0000	.0000
519	.0000	.0000	.0000
520	.0000	.0000	.0000
521	.6316	2.3860	1.5677
522	1.5795	5.9664	3.9202
524	.4278	1.6162	1.0619
TOTALS	91.0535	361.2583	260.0442

Table I: Impact Input File
 #new outputs by sector fd 2 32

1 24 45 66 69
 82 160 161 164 269
 448 454 459 460 461
 462 463 464 467 468
 470 471 491 504 507
 508 516 517 525 526
 527 528

Input expenditure pattern \$MM

0 0 0 0 0
 0 0.434751 0.003915 0 0
 0.003699 0.000489 0.000185 0.000068 0.023424
 0.000024 0.000413 0.002473 0.001116 0
 0.001378 0.000108 0.002436 0 0
 0.000237 0.000507 0 0 0
 0 0

Wage expenditure pattern \$MM

0.001976 0 0 0 0
 0.014425 0 0 0 0
 0.004446 0.012251 0.000395 0.002470 0.045844
 0.011461 0.105125 0.023416 0.013140 0
 0.048907 0.008496 0.072323 0.024898 0.002766
 0.005038 0.002074 0.002272 0 0
 0 0

#print options bkby

#alternative fd expenditure pattern impact \$MM
 1000 1000

Appendix J: Direct, Indirect, Induced, and Total effects
(Expenditure Pattern for MI industry 161)

IMPACT REPORT #6.221

ALTERNATIVE 1: expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

DIRECT CHANGE IN STANDARD TGO-RELATED FLOWS

	FINAL DEMAND (MM\$)	TGO (MM\$)	EMPLOY INCOME (MM\$)	COMP INCOME (MM\$)	PROPERTY INCOME (MM\$)	TOTAL INCOME (MM\$)	VALUE ADDED (MM\$)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL	876.9459	876.9459	241.2993	113.6061	354.9054	395.5553	17123.07	
CHANGE IN POPULATION =			51370.					

IMPACT REPORT #6.222

ALTERNATIVE 1: expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

INDIRECT CHANGE IN STANDARD TGO-RELATED FLOWS

	FINAL DEMAND (MM\$)	TGO (MM\$)	EMPLOY INCOME (MM\$)	COMP INCOME (MM\$)	PROPERTY INCOME (MM\$)	TOTAL INCOME (MM\$)	VALUE ADDED (MM\$)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL	.0000	124.3553	30.2668	27.2962	57.5629	64.4284	1928.63	
CHANGE IN POPULATION =			5786.					

IMPACT REPORT #6.223

ALTERNATIVE 1: expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

INDUCED CHANGE IN STANDARD TGO-RELATED FLOWS (10 ITERATIONS--FINAL REPORT)

	FINAL DEMAND (MM\$)	TGO (MM\$)	EMPLOY INCOME (MM\$)	COMP INCOME (MM\$)	PROPERTY INCOME (MM\$)	TOTAL INCOME (MM\$)	VALUE ADDED (MM\$)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL	373.8657	422.1921	143.6287	73.9248	217.5535	253.9950	11600.89	
CHANGE IN POPULATION =			34803.					

IMPACT REPORT #6.224

ALTERNATIVE 1: expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

TOTAL CHANGE IN STANDARD TGO-RELATED FLOWS

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL 1250.8120	1423.4940	415.1947	214.8271	630.0219	713.9787	30652.59
CHANGE IN POPULATION =		91959.				

Appendix J: Direct, Indirect, Induced, and Total effects (cont)
(No Expenditure Pattern for MI industry 161)

IMPACT REPORT #6.221

ALTERNATIVE 1: No expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

DIRECT CHANGE IN STANDARD TGO-RELATED FLOWS

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL 1000.0000	1000.0000	279.8219	63.2404	343.0623	357.0316	32933.79
CHANGE IN POPULATION =		98802.				

IMPACT REPORT #6.222

ALTERNATIVE 1: No expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

INDIRECT CHANGE IN STANDARD TGO-RELATED FLOWS

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL .0000	551.9255	118.8752	61.5461	180.4214	188.9043	6848.29
CHANGE IN POPULATION =		20545.				

IMPACT REPORT #6.223

ALTERNATIVE 1: No expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

INDUCED CHANGE IN STANDARD TGO-RELATED FLOWS (11 ITERATIONS--FINAL REPORT)

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL 780.7023	811.6172	299.9240	154.3690	454.2931	530.3897	24224.85
CHANGE IN POPULATION =		72675.				

IMPACT REPORT #6.224

ALTERNATIVE 1: No expenditure pattern impact \$MM

ANALYSIS OF CHANGE IN FINAL DEMAND

TOTAL CHANGE IN STANDARD TGO-RELATED FLOWS

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
TOTAL 1780.7030	2433.5430	698.6210	279.1557	977.7769	1076.3260	64006.92
CHANGE IN POPULATION =		192022.				

Appendix J: The relationship between expenditure pattern and no expenditure analysis

FINAL DEMAND (MMS)	TGO (MMS)	EMPLOY COMP INCOME (MMS)	PROPERTY INCOME (MMS)	TOTAL INCOME (MMS)	VALUE ADDED (MMS)	EMPLOYMENT (NUMBER OF JOBS)
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The total effect of the expenditure pattern analysis

TOTAL 1250.8120	1423.4940	415.1947	214.8271	630.0219	713.9787	30652.59
CHANGE IN POPULATION =		91959.				

Plus

The direct effect of the no expenditure pattern analysis

TOTAL 1000.0000	1000.0000	279.8219	63.2404	343.0623	357.0316	32933.79
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CHANGE IN POPULATION = 98802.

TOTAL 2250.8120	2423.4940	695.0166	278.0675	973.0842	1071.0103	63586.38
CHANGE IN POPULATION =		190761.				

TOTAL 1780.7030	2433.5430	698.6210	279.1557	977.7769	1076.3260	64006.92
CHANGE IN POPULATION =		192022.				

Micro IMPLAN Release 89-03
File Extension Descriptions

Model Files

Extension	Description	ASCII	Binary
UDF	Unformatted state or county data	X	
ODF	Formatted State or County data		X
MDF	Modified state or county data	X	
DFD	State or County documentation	X	
STS	Model status		X
DOC*	Model construction documentation	X	
RG1	Study Area output		X
AP5*	Accounts construction modifications	X	
MKT	Regional market shares matrix		X
USE	Regional use matrix		X
RG2	Accounts parameters		X
SI5	Social Accounts input	X	
AL5	Accounts reports selection	X	
SYM	IxI Direct Coefficient matrix output		X
AGG	Aggregate I-O matrix input	X	
SMS	Aggregated I-O matrix output		X
SMH	Aggregation scheme	X	
IP5	Derive multipliers input	X	
MTX	Inverted I-O matrix		X
PRM	Inverted I-O parameters		X
IC5	Multiplier report selections	X	
IM5*	Impact analysis input	X	
TPL	Aggregation template	X	

* These files (DOC, AP5, and IM5) should only be edited from within Micro IMPLAN. DO NOT attempt to edit them from a DOS command line; all other ASCII model files should NOT be edited.

Report Files (ASCII)

Extension	Description	Report No.
PRN	Study Area spreadsheet data	No Number
MMP	Study Area ASCII output	" "
001	Regional Transshipments	0.5
002	Regional Supply & Foreign Exports	1.0
003	Absorption Adjustment, RPC's & SDP	1.5
004	Modified Trade Data	1.5
005	Regional Import and Export Trade	2.0
006	Regional Industries & Commodities	No Number
OPT	User Input Options Summary	" "
ERR	Account Modifications Error File	" "
101	Regional Use Matrix	2.0

102	Regional Absorption Matrix	2.1
103	Regional Make Matrix	3.0
104	Regional Market Shares Matrix	4.0
105	Regional Byproducts Matrix	5.0
106	Regional Consumption Demand	6.0
	Regional Investment & Trade Demand	6.1
107	Regional Factors and Trade Matrix	7.0
108	Regional Non-competitive imports to intermediate demand	8.0
109	Regional Non-competitive imports to:	
	Consumptive demand	9.0
	Investment and trade	9.1
	Purchases from non-industrial sources	
	Consumptive demand	9.0-S
	Investment and Trade	9.1-S
110	Regional Competitive commodity imports imports to intermediate demand	10.0
111	Regional Competitive commodity imports to:	
	Consumptive demand	11.0
	Investment and trade	11.1
112	Industry Balance Sheet	
	Part I	12
	Part II - Inputs	12A
113	Commodity Balance Sheet	
	Part I	13
	Part II	13A
114	Social Accounting Matrix	No Number
301	Regional Direct Coefficients Matrix	3.500
302	Regional Transactions Matrix	3.400
303	Regional Consumption Demand	6.0
	" Investment and Trade Demand	6.1
401	Aggregated Direct Coefficients Matrix	3.500
402	Aggregated Transactions Matrix	3.400
403	Aggregated Consumption Demand	6.0
	" Investment and Trade Demand	6.1
601	Regional Leontief Multiplier Matrix	5.200
602	Regional Output Multipliers	5.300
603	Regional Personal Income Multipliers	5.410
604	Regional Total Income Multipliers	5.420
605	Regional Value Added Multipliers	5.430
606	Regional Employment Multipliers	5.440
901	Base Year Data (flows)	6.111
	" " " (coefficients)	6.112
902	Description of the Alternative	6.210
903	Direct Effects of the Alternative	6.221
904	Indirect Effects of the Alternative	6.222
905	Induced Effects of the Alternative	6.223
906	Total Effects of the Alternative	6.224
IME	Impact Analysis Error file	No Number

APPENDIX J: Data Accuracy

In developing the IMPLAN 2.0 data base a top-down approach was adopted that guarantees consistency: the estimation of a complete 1982 national table was followed by the estimation of state data for 16 different economic magnitudes, sufficient for the construction of state tables, which was in turn followed by the estimation of county data for the same 16 economic magnitudes. A similar approach was adopted for the construction of aggregate social accounting matrices (SAMs). It is important to notice that this procedure establishes "upper bounds" of accuracy: state estimates can at best be as accurate as national estimates. County and state estimates relate in the same way. Data availability, and hence estimate accuracy, deteriorates as one proceeds from top to bottom.

The methodology used to develop the estimates differs by level of geographical disaggregation and economic magnitude. Details are provided in the main body of this document. However, there are certain fundamental characteristics that are present throughout the entire methodology.

Ideally, published data would provide all the necessary details that are needed for the estimation of the entire data base. Clearly, this was not the case. The main differences between published and required data were as follows:

- i. Published data were available for magnitudes that are similar, but not exactly identical to those estimated. A typical example is the CBP data on payrolls considered closely associated to total industry output (TIO). The related notion of proxy magnitudes has already been discussed in the main body of the text.

- ii. Published data were available in less detail than that desired (i.e. the i528 sectoring scheme). For example, national value added data were published by the NIPA division of BEA for some 63 sectors rather than the IMPLAN 528 sectors.
- iii. Definitions and conventions underlying published data differed from those in the database being estimated. The most characteristic example was that of NIPA-based and I/O-based employment (and payroll) definitions, discussed in the main body of the text.
- iv. Published data were available at the required level of detail, but for a year other than that for which the estimates were being derived. A illustration was the availability of 1977 use and make coefficients at the US level from the BEA study.

Published data are transformed to the required estimates by a corresponding set of assumptions and procedures:

- i. It was assumed that the ratio between the required and the "similar" (proxy) published data was fixed across geographical regions. Accordingly, the distribution of the required data across regions was imputed on the basis of the distribution of the corresponding proxy. The validity, or "accuracy", of this assumption varies with the particular economic magnitude for which it was adopted. For instance, the assertion that payrolls is a good proxy for total industry output is reasonably accurate in that it implies that each dollar of output of a particular industry embodies a fixed payroll proportion across the US. Note that the accuracy of the this assumption partly depends on the level of sectoral disaggregation. This is because the technology mix, and hence the payrolls to output ratio, in finer sectoral classifications tends to become standard and not vary across

regions. However, practically achievable levels of sectoral detail do not establish absolute technological homogeneity across regions, and this introduced some inaccuracy to the output estimates. Additional inaccuracy is introduced by the fact that the assumption disregards interregional price and wage differentials by industry. Similar inaccuracies were present in all cases where proxies were used in lieu of required data. Note, however, that the data estimated by use of proxies are accurate in an aggregate sense, in that they add up to given (published or previously derived) totals.

ii. In the case of data published in insufficient detail, there is a correspondence between each published figure and a group of figures that were estimated, as reflected in a bridge between the published and the required sectoral schemes: the sum of the estimates adds up to individual published figures. Accordingly, individual estimates are accurate in a partially additive sense. The accuracy of each individual estimate depends on the validity of the method used to impute it.

iii. Differences in conventions can be a serious source of confusion and errors in the construction of nonsurvey data bases. Unfortunately, even the careful analyst who recognizes such differences is bound to encounter substantial difficulties in attempting to reconcile them.

The situation typically encountered was as follows:

- * Published data that reconcile differences in conventions were available at the national level.
- * Such national data were outdated by five years relative to the date for which the IMPLAN data base was constructed.
- * Such outdated national data were unavailable in sufficient sectoral detail.

Such data could only be used under rather simplistic assumptions that inevitably introduced inaccuracies in the final estimates: national data used at all regional levels, price-updated from 1977 to 1982, mapped from the available to the required sectoral scheme according to a corresponding bridge. Thus the reconciliation of definitional differences could not be achieved without accuracy sacrifices.

iv. The availability of sufficiently detailed but outdated data was not without its problems. As a first step such data were price-updated to the relevant year, for example from 1977 to 1982, by use of official sectoral price relatives. Then they were proportionately or biproportionately adjusted to conform with published totals depending on data availability. In either case the 1977 structure was retained as closely as possible. Accordingly, the resulting estimates may be considered quite accurate if no structural changes have taken place between 1977 and 1982. Clearly, often this was not the case. In fact, one of the main reasons underlying the update of economic data, national and regional, from years for which they are officially available to more recent years, is precisely because structural changes have taken place. Thus, the technique of price-updating and adjusting outdated data is bound to introduce inaccuracies to the final estimates.

It follows from the above discussion that every time available published data are transformed to required estimates, some inaccuracy is introduced into the data base. Inaccuracy introduced at any level of the top-down estimation approach is retained in subsequent levels, where additional inaccuracy can be introduced, depending on data availability and the adopted imputation methodology. In spite of this "accumulation" of inaccuracies, two points should be made and appropriately stressed: first, the IMPLAN 2.0 data base makes

optimal use of available published information and revised techniques for developing non-survey regional economic data bases; second, the data in IMPLAN 2.0 are absolutely accurate at least in an aggregate sense, in that they are consistent with all published 1982 totals at the national and regional level.

-NOTES-

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
1 DAIRY FARM PRODUCTS	100.0	97.0	103.5	88.8	90.4
2 POULTRY AND EGGS	100.0	97.0	103.5	88.8	90.4
3 RANCH FED CATTLE	100.0	97.0	103.5	88.8	90.4
4 RANGE FED CATTLE	100.0	97.0	103.5	88.8	90.4
5 CATTLE FEEDLOTS	100.0	97.0	103.5	88.8	90.4
6 SHEEP, LAMBS AND GOATS	100.0	97.0	103.5	88.8	90.4
7 HOGS, PIGS AND SWINE	100.0	97.0	103.5	88.8	90.4
8 OTHER MEAT ANIMAL PRODUCTS	100.0	97.0	103.5	88.8	90.4
9 MISCELLANEOUS LIVESTOCK	100.0	97.0	103.5	88.8	90.4
10 COTTON	100.0	102.9	93.2	78.0	69.0
11 FOOD GRAINS	100.0	102.9	93.2	78.0	69.0
12 FEED GRAINS	100.0	102.9	93.2	78.0	69.0
13 HAY AND PASTURE	100.0	102.9	93.2	78.0	69.0
14 GRASS SEEDS	100.0	102.9	93.2	78.0	69.0
15 TOBACCO	100.0	102.9	93.2	78.0	69.0
16 FRUITS	100.0	102.9	93.2	78.0	69.0
17 TREE NUTS	100.0	102.9	93.2	78.0	69.0
18 VEGETABLES	100.0	102.9	93.2	78.0	69.0
19 SUGAR CROPS	100.0	102.9	93.2	78.0	69.0
20 MISCELLANEOUS CROPS	100.0	102.9	93.2	78.0	69.0
21 OIL BEARING CROPS	100.0	102.9	93.2	78.0	69.0
22 FOREST PRODUCTS	100.0	102.9	93.2	78.0	69.0
23 GREENHOUSE AND NURSERY PRODU	100.0	102.9	93.2	78.0	69.0
24 FORESTRY PRODUCTS	100.0	103.7	94.7	98.5	98.7
25 COMMERCIAL FISHING	100.0	103.7	94.7	98.5	98.7
26 AGRICULTURAL, FORESTRY, FISH	100.0	103.7	94.7	98.5	98.7
27 LANDSCAPE AND HORTICULTURAL	100.0	103.7	94.7	98.5	98.7
28 IRON ORES	100.0	104.8	104.8	100.9	94.1
29 FERROALLOY ORES, EXCEPT VANA	100.0	104.8	104.8	100.9	94.1
30 COPPER ORES	100.0	104.8	104.8	100.9	94.1
31 LEAD AND ZINC ORES	100.0	104.8	104.8	100.9	94.1
32 GOLD ORES	100.0	104.8	104.8	100.9	94.1
33 SILVER ORES	100.0	104.8	104.8	100.9	94.1
34 BAUXITE AND OTHER ALUMINUM O	100.0	104.8	104.8	100.9	94.1
35 METAL MINING SERVICES	100.0	104.8	104.8	100.9	94.1
36 MERCURY ORES	100.0	104.8	104.8	100.9	94.1
37 URANIUM-RADIUM-VANADIUM ORES	100.0	104.8	104.8	100.9	94.1
38 METAL ORES, NOT ELSEWHERE CLA	100.0	104.8	104.8	100.9	94.1
39 ANTHRACITE AND ANTHRACITE MI	100.0	94.6	96.3	96.3	94.7
40 BITUMINOUS AND LIGNITE MININ	100.0	94.6	96.3	96.3	94.7
41 NATURAL GAS	100.0	96.1	96.1	89.4	49.6
42 CRUDE PETROLEUM	100.0	96.1	96.1	89.4	49.6
43 NATURAL GAS LIQUIDS	100.0	96.1	96.1	89.4	49.6
44 DIMENSION STONE	100.0	101.0	104.8	108.1	109.6
45 CRUSHED AND BROKEN LIMESTONE	100.0	101.0	104.8	108.1	109.6
46 CRUSHED AND BROKEN GRANITE	100.0	101.0	104.8	108.1	109.6
47 CRUSHED AND BROKEN STONE, N.	100.0	101.0	104.8	108.1	109.6
48 CONSTRUCTION SAND AND GRAVEL	100.0	101.0	104.8	108.1	109.6
49 INDUSTRIAL SAND	100.0	101.0	104.8	108.1	109.6
50 BENTONITE	100.0	101.0	104.8	108.1	109.6
51 FIRE CLAY	100.0	101.0	104.8	108.1	109.6
52 FULLER'S EARTH	100.0	101.0	104.8	108.1	109.6
53 KAOLIN AND BALL CLAY	100.0	101.0	104.8	108.1	109.6
54 CLAY, CERAMIC, REFRACTORY MI	100.0	101.0	104.8	108.1	109.6
55 NONMETALLIC MINERALS (EXCEPT	100.0	101.0	104.8	108.1	109.6
56 GYPSUM	100.0	101.0	104.8	108.1	109.6
57 TALC, SOAPSTONE, AND BORATE	100.0	101.0	104.8	108.1	109.6
58 MISC. NONMETALLIC MINERALS,	100.0	101.0	104.8	108.1	109.6
59 BARITE	100.0	101.0	104.8	108.1	109.6
60 FLOURSPAR	100.0	101.0	104.8	108.1	109.6
61 POTASH, SODA, AND BORATE MIN	100.0	101.0	104.8	108.1	109.6
62 PHOSPHATE ROCK	100.0	101.0	104.8	108.1	109.6
63 ROCK SALT	100.0	101.0	104.8	108.1	109.6
64 SULFUR	100.0	101.0	104.8	108.1	109.6
65 CHEMICAL, FERTILIZER MINERAL	100.0	101.0	104.8	108.1	109.6
66 NEW RESIDENTIAL STRUCTURES	100.0	102.0	106.6	108.3	112.7
67 NEW INDUSTRIAL AND COMMERCIA	100.0	108.3	108.8	112.2	115.7
68 NEW UTILITY STRUCTURES	100.0	100.8	102.8	105.8	110.0
69 NEW HIGHWAYS AND STREETS	100.0	98.1	102.1	113.8	115.5
70 NEW FARM STRUCTURES	100.0	102.6	106.2	108.6	110.3
71 NEW MINERAL EXTRACTION FACIL	100.0	99.7	100.6	98.6	94.4
72 NEW GOVERNMENT FACILITIES	100.0	101.4	104.0	107.5	109.7
73 MAINTENANCE AND REPAIR, RESI	100.0	103.3	106.6	109.0	114.1
74 MAINTENANCE AND REPAIR OTHER	100.0	103.3	106.6	109.0	114.1
75 MAINTENANCE AND REPAIR OIL A	100.0	80.8	77.3	78.0	135.5
76 COMPLETE GUIDED MISSILES	100.0	102.9	104.6	106.4	110.6

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
77 AMMUNITION, EXCEPT FOR SMALL	100.0	100.6	99.5	106.3	109.1
78 TANKS AND TANK COMPONENTS	100.0	96.7	86.5	88.5	91.1
79 SMALL ARMS	100.0	100.6	99.5	106.3	109.1
80 SMALL ARMS AMMUNITION	100.0	100.6	99.5	106.3	109.1
81 OTHER ORDNANCE AND ACCESSORI	100.0	100.6	99.5	106.3	109.1
82 MEAT PACKING PLANTS	100.0	97.0	100.8	94.7	96.2
83 SAUSAGES AND OTHER PREPARED	100.0	97.0	100.8	94.7	96.2
84 POULTRY DRESSING PLANTS	100.0	97.0	100.8	94.7	96.2
85 POULTRY AND EGG PROCESSING	100.0	97.0	100.8	94.7	96.2
86 CREAMERY BUTTER	100.0	100.7	101.2	100.3	100.1
87 CHEESE, NATURAL AND PROCESSE	100.0	100.7	101.2	100.3	100.1
88 CONDENSED AND EVAPORATED MIL	100.0	100.7	101.2	100.3	100.1
89 ICE CREAM AND FROZEN DESSERT	100.0	100.7	101.2	100.3	100.1
90 FLUID MILK	100.0	100.7	101.2	100.3	100.1
91 CANNED AND CURED SEA FOODS	100.0	100.7	108.4	110.6	112.5
92 CANNED SPECIALTIES	100.0	102.3	108.4	115.0	108.6
93 CANNED FRUITS AND VEGETABLES	100.0	102.3	108.4	115.0	108.6
94 DEHYDRATED FOOD PRODUCTS	100.0	102.3	108.4	115.0	108.6
95 PICKLES, SAUCES, AND SALAD D	100.0	102.3	108.4	115.0	108.6
96 FRESH OR FROZEN PACKAGED FIS	100.0	100.7	108.4	110.6	112.5
97 FROZEN FRUITS, JUICES AND VE	100.0	102.3	108.4	115.0	108.6
98 FROZEN SPECIALTIES	100.0	102.3	108.4	115.0	108.6
99 FLOUR AND OTHER GRAIN MILL P	100.0	107.9	108.7	97.6	87.4
100 CEREAL PREPARATIONS	100.0	107.9	108.7	97.6	87.4
101 BLENDED AND PREPARED FLOUR	100.0	107.9	108.7	97.6	87.4
102 DOG, CAT, AND OTHER PET FOOD	100.0	107.9	108.7	97.6	87.4
103 PREPARED FEEDS, N.E.C	100.0	107.9	108.7	97.6	87.4
104 RICE MILLING	100.0	107.9	108.7	97.6	87.4
105 WET CORN MILLING	100.0	107.9	108.7	97.6	87.4
106 BREAD, CAKE, AND RELATED PRO	100.0	103.8	108.4	112.1	114.4
107 COOKIES AND CRACKERS	100.0	103.8	108.4	112.1	114.4
108 SUGAR	100.0	109.9	115.2	111.3	113.1
109 CONFECTIONERY PRODUCTS	100.0	109.9	115.2	111.3	113.1
110 CHOCOLATE AND COCOA PRODUCTS	100.0	109.9	115.2	111.3	113.1
111 CHEWING GUM	100.0	109.9	115.2	111.3	113.1
112 MALT LIQUORS	100.0	103.7	106.4	108.6	111.5
113 MALT	100.0	103.7	106.4	108.6	111.5
114 WINES, BRANDY, AND BRANDY SP	100.0	103.7	106.4	108.6	111.5
115 DISTILLED LIQUOR, EXCEPT BRA	100.0	103.7	106.4	108.6	111.5
116 BOTTLED AND CANNED SOFT DRIN	100.0	103.1	106.9	108.1	110.1
117 FLAVORING EXTRACTS AND SYRUP	100.0	103.1	106.9	108.1	110.1
118 COTTONSEED OIL MILLS	100.0	107.9	108.7	97.6	87.4
119 SOYBEAN OIL MILLS	100.0	107.9	108.7	97.6	87.4
120 VEGETABLE OIL MILLS, N.E.C	100.0	107.9	108.7	97.6	87.4
121 ANIMAL AND MARINE FATS AND O	100.0	107.9	108.7	97.6	87.4
122 ROASTED COFFEE	100.0	100.7	108.4	110.6	112.5
123 SHORTENING AND COOKING OILS	100.0	107.9	108.7	97.6	87.4
124 MANUFACTURED ICE	100.0	100.7	108.4	110.6	112.5
125 MACARONI AND SPAGHETTI	100.0	100.7	108.4	110.6	112.5
126 FOOD PREPARATIONS, N.E.C	100.0	100.7	108.4	110.6	112.5
127 CIGARETTES	100.0	111.4	119.8	129.6	141.5
128 CIGARS	100.0	111.4	119.8	129.6	141.5
129 CHEWING AND SMOKING TOBACCO	100.0	111.4	119.8	129.6	141.5
130 TOBACCO STEMMING AND REDRYIN	100.0	111.4	119.8	129.6	141.5
131 BROADWOVEN FABRIC MILLS AND	100.0	101.5	104.7	103.1	102.4
132 NARROW FABRIC MILLS	100.0	101.5	104.7	103.1	102.4
133 YARN MILLS AND FINISHING OF	100.0	101.5	104.7	103.1	102.4
134 THREAD MILLS	100.0	101.5	104.7	103.1	102.4
135 FLOOR COVERINGS	100.0	101.9	104.5	103.8	106.4
136 FELT GOODS, N.E.C	100.0	99.9	103.7	103.8	102.4
137 LACE GOODS	100.0	99.9	103.7	103.8	102.4
138 PADDING AND UPHOLSTERY FILLI	100.0	99.9	103.7	103.8	102.4
139 PROCESSED TEXTILE WASTE	100.0	99.9	103.7	103.8	102.4
140 COATED FABRICS, NOT RUBBERIZ	100.0	99.9	103.7	103.8	102.4
141 TIRE CORD AND FABRIC	100.0	99.9	103.7	103.8	102.4
142 CORDAGE AND TWINE	100.0	99.9	103.7	103.8	102.4
143 NONWOVEN FABRICS	100.0	99.9	103.7	103.8	102.4
144 TEXTILE GOODS, N.E.C	100.0	99.9	103.7	103.8	102.4
145 WOMENS HOSIERY, EXCEPT SOCKS	100.0	101.1	103.5	103.1	103.2
146 HOSIERY, N.E.C	100.0	101.1	103.5	103.1	103.2
147 KNIT OUTERWEAR MILLS	100.0	101.1	103.5	103.1	103.2
148 KNIT UNDERWEAR MILLS	100.0	101.1	103.5	103.1	103.2
149 KNITTING MILLS, N.E.C	100.0	101.1	103.5	103.1	103.2
150 KNIT FABRIC MILLS	100.0	101.1	103.5	103.1	103.2
151 APPAREL MADE FROM PURCHASED	100.0	101.6	103.6	105.0	106.2
152 CURTAINS AND DRAPERIES	100.0	100.1	102.2	102.7	102.9

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
153 HOUSEFURNISHINGS, N.E.C	100.0	100.1	102.2	102.7	102.9
154 TEXTILE BAGS	100.0	100.1	102.2	102.7	102.9
155 CANVAS PRODUCTS	100.0	100.1	102.2	102.7	102.9
156 PLEATING AND STITCHING	100.0	100.1	102.2	102.7	102.9
157 AUTOMOTIVE AND APPAREL TRIMM	100.0	100.1	102.2	102.7	102.9
158 SCHIFFI MACHINE EMBROIDERIES	100.0	100.1	102.2	102.7	102.9
159 FABRICATED TEXTILE PRODUCTS,	100.0	100.1	102.2	102.7	102.9
160 LOGGING CAMPS AND LOGGING CO	100.0	113.6	112.5	111.3	109.4
161 SAWMILLS AND PLANING MILLS,	100.0	114.1	113.9	110.8	111.9
162 HARDWOOD DIMENSION AND FLOOR	100.0	114.1	113.9	110.8	111.9
163 SPECIAL PRODUCT SAWMILLS, N.	100.0	114.1	113.9	110.8	111.9
164 MILLWORK	100.0	106.5	108.3	110.5	112.5
165 WOOD KITCHEN CABINETS	100.0	106.5	108.3	110.5	112.5
166 VENEER AND PLYWOOD	100.0	108.3	106.6	104.7	106.4
167 STRUCTURAL WOOD MEMBERS, N.E	100.0	106.5	108.3	110.5	112.5
168 PREFABRICATED WOOD BUILDINGS	100.0	107.6	110.5	111.9	114.8
169 WOOD PRESERVING	100.0	103.7	106.2	108.0	109.7
170 WOOD PALLETS AND SKIDS	100.0	103.7	106.2	108.0	109.7
171 PARTICLEBOARD	100.0	103.7	106.2	108.0	109.7
172 WOOD PRODUCTS, N.E.C	100.0	103.7	106.2	108.0	109.7
173 WOOD CONTAINERS	100.0	103.7	106.2	108.0	109.7
174 WOOD HOUSEHOLD FURNITURE					
175 HOUSEHOLD FURNITURE, N.E.C	100.0	102.4	105.8	108.9	110.7
176 WOOD TV AND RADIO CABINETS	100.0	102.4	105.8	108.9	110.7
177 UPHOLSTERED HOUSEHOLD FURNIT	100.0	102.4	105.8	108.9	110.7
178 METAL HOUSEHOLD FURNITURE	100.0	102.4	105.8	108.9	110.7
179 MATTRESSES AND BEDSPRINGS	100.0	102.4	105.8	108.9	110.7
180 WOOD OFFICE FURNITURE	100.0	103.7	106.5	110.5	113.8
181 METAL OFFICE FURNITURE	100.0	103.7	106.5	110.5	113.8
182 PUBLIC BUILDING FURNITURE	100.0	103.7	106.5	110.5	113.8
183 WOOD PARTITIONS AND FIXTURES	100.0	104.0	108.0	112.7	116.0
184 METAL PARTITIONS AND FIXTURE	100.0	104.0	108.0	112.7	116.0
185 BLINDS, SHADES, AND DRAPERY	100.0	103.7	106.5	110.5	113.8
186 FURNITURE AND FIXTURES, N.E.	100.0	103.7	106.5	110.5	113.8
187 PULP MILLS	100.0	98.4	107.8	107.3	108.2
188 PAPER MILLS, EXCEPT BUILDING	100.0	98.4	107.8	107.3	108.2
189 PAPERBOARD MILLS	100.0	98.4	107.8	107.3	108.2
190 ENVELOPES	100.0	99.8	104.7	107.9	108.7
191 SANITARY PAPER PRODUCTS	100.0	99.8	104.7	107.9	108.7
192 BUILDING PAPER AND BOARD MIL	100.0	98.4	107.8	107.3	108.2
193 PAPER COATING AND GLAZING	100.0	99.8	104.7	107.9	108.7
194 BAGS, EXCEPT TEXTILE	100.0	99.8	104.7	107.9	108.7
195 DIE-CUT PAPER AND BOARD	100.0	99.8	104.7	107.9	108.7
196 PRESSED AND MOLDED PULP GOOD	100.0	99.8	104.7	107.9	108.7
197 STATIONERY PRODUCTS	100.0	99.8	104.7	107.9	108.7
198 CONVERTED PAPER PRODUCTS, N.	100.0	99.8	104.7	107.9	108.7
199 PAPERBOARD CONTAINERS AND BO	100.0	100.0	106.6	110.6	118.4
200 NEWSPAPERS	100.0	109.3	116.7	124.4	130.7
201 PERIODICALS	100.0	108.2	116.2	124.1	131.3
202 BOOK PUBLISHING	100.0	105.0	110.1	115.9	121.7
203 BOOK PRINTING	100.0	105.0	110.1	115.9	121.7
204 MISCELLANEOUS PUBLISHING	100.0	99.8	106.2	109.4	114.4
205 COMMERCIAL PRINTING	100.0	100.7	105.6	109.8	111.6
206 LITHOGRAPHIC PLATEMAKING AND	100.0	102.7	107.0	112.6	116.9
207 MANIFOLD BUSINESS FORMS	100.0	100.7	105.6	109.8	111.6
208 BLANKBOOKS AND LOOSELEAF BIN	100.0	102.1	108.8	114.5	118.9
209 GREETING CARD PUBLISHING	100.0	101.1	105.2	110.7	115.0
210 ENGRAVING AND PLATE PRINTING	100.0	100.7	105.6	109.8	111.6
211 BOOKBINDING AND RELATED WORK	100.0	102.1	108.8	114.5	118.9
212 TYPESETTING	100.0	102.7	107.0	112.6	116.9
213 PHOTOENGRAVING	100.0	102.7	107.0	112.6	116.9
214 ELECTROTYPING AND STEREOTYPI	100.0	102.7	107.0	112.6	116.9
215 INDUSTRIAL INORGANIC, ORGANI	100.0	97.9	99.2	98.3	93.7
216 NITROGENOUS AND PHOSPHATIC F	100.0	91.7	92.1	91.0	89.2
217 FERTILIZERS, MIXING ONLY	100.0	91.7	92.1	91.0	89.2
218 AGRICULTURAL CHEMICALS, N.E.	100.0	91.7	92.1	91.0	89.2
219 GUM AND WOOD CHEMICALS	100.0	97.9	99.2	98.3	93.7
220 ADHESIVES AND SEALANTS	100.0	96.6	94.7	96.3	95.0
221 EXPLOSIVES	100.0	96.6	94.7	96.3	95.0
222 PRINTING INK	100.0	96.6	94.7	96.3	95.0
223 CARBON BLACK	100.0	96.6	94.7	96.3	95.0
224 CHEMICAL PREPARATIONS, N.E.C	100.0	96.6	94.7	96.3	95.0
225 PLASTICS MATERIALS AND RESIN	100.0	99.3	103.2	101.9	99.0
226 SYNTHETIC RUBBER	100.0	99.3	103.2	101.9	99.0
227 CELLULOSIC MAN-MADE FIBERS	100.0	99.3	103.2	101.9	99.0
228 ORGANIC FIBERS, NONCELLULOSI	100.0	99.3	103.2	101.9	99.0

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
229 DRUGS	100.0	106.9	112.1	119.7	127.5
230 SOAP AND OTHER DETERGENTS	100.0	107.7	109.6	112.2	112.8
231 POLISHES AND SANITATION GOOD	100.0	107.7	109.6	112.2	112.8
232 SURFACE ACTIVE AGENTS	100.0	107.7	109.6	112.2	112.8
233 TOILET PREPARATIONS	100.0	107.7	109.6	112.2	112.8
234 PAINTS AND ALLIED PRODUCTS	100.0	100.8	104.2	106.2	107.5
235 PETROLEUM REFINING	100.0	91.4	87.8	83.6	53.5
236 LUBRICATING OILS AND GREASES	100.0	98.3	104.8	108.3	103.1
237 PETROLEUM AND COAL PRODUCTS,	100.0	98.3	104.8	108.3	103.1
238 PAVING MIXTURES AND BLOCKS	100.0	98.3	104.8	108.3	103.1
239 ASPHALT FELTS AND COATINGS	100.0	98.3	104.8	108.3	103.1
240 TIRES AND INNER TUBES	100.0	96.1	95.5	94.1	92.9
241 RUBBER AND PLASTICS FOOTWEAR	100.0	102.5	104.4	106.8	108.6
242 RECLAIMED RUBBER	100.0	102.5	104.4	106.8	108.6
243 FABRICATED RUBBER PRODUCTS,	100.0	102.5	104.4	106.8	108.6
244 MISCELLANEOUS PLASTICS PRODU	100.0	101.8	105.4	105.5	106.2
245 RUBBER AND PLASTICS HOSE AND	100.0	102.5	104.4	106.8	108.6
246 LEATHER TANNING AND FINISHIN	100.0	103.6	110.7	114.6	114.4
247 FOOTWEAR CUT STOCK	100.0	101.8	103.0	105.0	107.1
248 SHOES, EXCEPT RUBBER	100.0	101.8	103.0	105.0	107.1
249 HOUSE SLIPPERS	100.0	101.8	103.0	105.0	107.1
250 LEATHER GLOVES AND MITTENS	100.0	103.6	110.7	114.6	114.4
251 LUGGAGE	100.0	103.6	110.7	114.6	114.4
252 WOMENS HANDBAGS AND PURSES	100.0	103.6	110.7	114.6	114.4
253 PERSONAL LEATHER GOODS	100.0	103.6	110.7	114.6	114.4
254 LEATHER GOODS, N.E.C	100.0	103.6	110.7	114.6	114.4
255 GLASS AND GLASS PRODUCTS, EX	100.0	102.1	104.8	106.6	108.5
256 GLASS CONTAINERS	100.0	102.1	104.8	106.6	108.5
257 CEMENT, HYDRAULIC	100.0	100.5	104.1	106.1	104.2
258 BRICK AND STRUCTURAL CLAY TI	100.0	102.7	105.2	107.8	108.6
259 CERAMIC WALL AND FLOOR TILE	100.0	102.7	105.2	107.8	108.6
260 CLAY REFRACTORIES	100.0	102.7	105.2	107.8	108.6
261 STRUCTURAL CLAY PRODUCTS, N.	100.0	102.7	105.2	107.8	108.6
262 VITREOUS PLUMBING FIXTURES	100.0	102.7	105.2	107.8	108.6
263 VITREOUS CHINA FOOD UTENSILS	100.0	102.7	105.2	107.8	108.6
264 FINE EARTHENWARE FOOD UTENSI	100.0	102.7	105.2	107.8	108.6
265 PORCELAIN ELECTRICAL SUPPLIE	100.0	102.7	105.2	107.8	108.6
266 POTTERY PRODUCTS, N.E.C	100.0	102.7	105.2	107.8	108.6
267 CONCRETE BLOCK AND BRICK	100.0	102.2	106.3	103.7	111.6
268 CONCRETE PRODUCTS, N.E.C	100.0	102.2	106.3	103.7	111.6
269 READY-MIXED CONCRETE	100.0	102.2	106.3	103.7	111.6
270 LIME	100.0	102.2	106.3	103.7	111.6
271 GYPSUM PRODUCTS	100.0	102.2	106.3	103.7	111.6
272 CUT STONE AND STONE PRODUCTS	100.0	102.7	105.2	107.8	108.6
273 ABRASIVE PRODUCTS	100.0	102.7	105.2	107.8	108.6
274 ASBESTOS PRODUCTS	100.0	102.7	105.2	107.8	108.6
275 GASKETS, PACKING AND SEALING	100.0	102.7	105.2	107.8	108.6
276 MINERALS, GROUND OR TREATED	100.0	102.7	105.2	107.8	108.6
277 MINERAL WOOL	100.0	102.7	105.2	107.8	108.6
278 NONCLAY REFRACTORIES	100.0	102.7	105.2	107.8	108.6
279 NONMETALLIC MINERAL PRODUCTS	100.0	102.7	105.2	107.8	108.6
280 BLAST FURNACES AND STEEL MIL	100.0	101.1	104.6	104.8	99.7
281 ELECTROMETALLURGICAL PRODUCT	100.0	101.1	104.6	104.8	99.7
282 STEEL WIRE AND RELATED PRODU	100.0	101.1	104.6	104.8	99.7
283 COLD FINISHING OF STEEL SHAP	100.0	101.1	104.6	104.8	99.7
284 STEEL PIPE AND TUBES	100.0	101.1	104.6	104.8	99.7
285 IRON AND STEEL FOUNDRIES	100.0	102.5	105.5	106.9	107.3
286 IRON AND STEEL FORGINGS	100.0	100.3	102.8	102.2	101.3
287 METAL HEAT TREATING	100.0	108.8	107.0	93.0	93.4
288 PRIMARY METAL PRODUCTS, N.E.	100.0	108.8	107.0	93.0	93.4
289 PRIMARY COPPER	100.0	104.7	96.6	91.1	91.6
290 PRIMARY LEAD	100.0	104.7	96.6	91.1	91.6
291 PRIMARY ZINC	100.0	104.7	96.6	91.1	91.6
292 PRIMARY ALUMINUM	100.0	101.7	103.6	98.0	98.0
293 PRIMARY NONFERROUS METALS, N	100.0	104.7	96.6	91.1	91.6
294 SECONDARY NONFERROUS METALS	100.0	108.8	107.0	93.0	93.4
295 COPPER ROLLING AND DRAWING	100.0	105.8	105.8	104.9	106.2
296 ALUMINUM ROLLING AND DRAWING	100.0	102.1	112.3	106.8	101.7
297 NONFERROUS ROLLING AND DRAWI	100.0	105.2	94.5	88.2	91.2
298 NONFERROUS WIRE DRAWING AND	100.0	101.0	100.0	99.7	100.6
299 ALUMINUM CASTINGS	100.0	101.6	108.1	107.2	104.0
300 BRASS, BRONZE, AND COPPER CA	100.0	101.6	107.1	108.9	109.7
301 NONFERROUS CASTINGS, N.E.C.	100.0	101.6	107.1	108.9	109.7
302 NONFERROUS FORGINGS	100.0	100.3	102.8	102.2	101.3
303 METAL CANS	100.0	99.8	104.4	105.5	106.4
304 METAL BARRELS, DRUMS AND PAI	100.0	99.8	104.4	105.5	106.4

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
305 METAL SANITARY WARE	100.0	103.2	107.2	110.2	113.9
306 PLUMBING FIXTURE FITTINGS AN	100.0	103.2	107.2	110.2	113.9
307 HEATING EQUIPMENT, EXCEPT EL	100.0	103.2	107.2	110.2	113.9
308 FABRICATED STRUCTURAL METAL	100.0	98.7	101.0	102.3	102.7
309 METAL DOORS, SASH, AND TRIM	100.0	98.7	101.0	102.3	102.7
310 FABRICATED PLATE WORK (BOILE	100.0	98.7	101.0	102.3	102.7
311 SHEET METAL WORK	100.0	98.7	101.0	102.3	102.7
312 ARCHITECTURAL METAL WORK	100.0	98.7	101.0	102.3	102.7
313 PREFABRICATED METAL BUILDING	100.0	98.7	101.0	102.3	102.7
314 MISCELLANEOUS METAL WORK	100.0	98.7	101.0	102.3	102.7
315 SCREW MACHINE PRODUCTS AND B	100.0	98.9	101.8	102.7	102.3
316 AUTOMOTIVE STAMPINGS	100.0	98.5	104.4	109.8	106.8
317 CROWNS AND CLOSURES	100.0	104.3	109.2	110.2	112.0
318 METAL STAMPINGS, N.E.C.	100.0	104.3	109.2	110.2	112.0
319 CUTLERY	100.0	103.4	105.6	109.3	111.9
320 HAND AND EDGE TOOLS, N.E.C.	100.0	103.4	105.6	109.3	111.9
321 HAND SAWS AND SAW BLADES	100.0	103.4	105.6	109.3	111.9
322 HARDWARE, N.E.C.	100.0	103.4	105.6	109.3	111.9
323 PLATING AND POLISHING	100.0	103.4	107.0	109.9	111.5
324 METAL COATING AND ALLIED SER	100.0	103.4	107.0	109.9	111.5
325 MISCELLANEOUS FABRICATED WIR	100.0	100.7	103.3	106.1	107.6
326 STEEL SPRINGS, EXCEPT WIRE	100.0	100.7	103.3	106.1	107.6
327 PIPE, VALVES, AND PIPE FITTI	100.0	100.7	103.3	106.1	107.6
328 METAL FOIL AND LEAF	100.0	100.7	103.3	106.1	107.6
329 FABRICATED METAL PRODUCTS, N	100.0	100.7	103.3	106.1	107.6
330 STEAM ENGINES AND TURBINES	100.0	103.5	104.7	105.7	107.1
331 INTERNAL COMBUSTION ENGINES,	100.0	103.5	104.7	105.7	107.1
332 FARM MACHINERY AND EQUIPMENT	100.0	103.8	106.7	107.3	107.8
333 LAWN AND GARDEN EQUIPMENT	100.0	103.8	106.7	107.3	107.8
334 CONSTRUCTION MACHINERY AND E	100.0	103.1	104.6	107.1	108.3
335 MINING MACHINERY, EXCEPT OIL	100.0	98.2	97.9	98.7	97.0
336 OIL FIELD MACHINERY	100.0	98.2	97.9	98.7	97.0
337 ELEVATORS AND MOVING STAIRWA	100.0	99.6	101.0	102.8	103.6
338 CONVEYORS AND CONVEYING EQUI	100.0	99.6	101.0	102.8	103.6
339 HOISTS, CRANES, AND MONORAIL	100.0	99.6	101.0	102.8	103.6
340 INDUSTRIAL TRUCKS AND TRACTO	100.0	99.6	101.0	102.8	103.6
341 MACHINE TOOLS, METAL CUTTING	100.0	101.5	103.7	106.2	108.1
342 MACHINE TOOLS, METAL FORMING	100.0	101.5	103.7	106.2	108.1
343 SPECIAL DIES AND TOOLS AND A	100.0	101.5	103.7	106.2	108.1
344 POWER DRIVEN HAND TOOLS	100.0	101.5	103.7	106.2	108.1
345 ROLLING MILL MACHINERY	100.0	101.5	103.7	106.2	108.1
346 METALWORKING MACHINERY, N.E.	100.0	101.5	103.7	106.2	108.1
347 FOOD PRODUCTS MACHINERY	100.0	103.6	107.1	110.7	114.1
348 TEXTILE MACHINERY	100.0	103.6	107.1	110.7	114.1
349 WOODWORKING MACHINERY	100.0	103.6	107.1	110.7	114.1
350 PAPER INDUSTRIES MACHINERY	100.0	103.6	107.1	110.7	114.1
351 PRINTING TRADES MACHINERY	100.0	103.6	107.1	110.7	114.1
352 SPECIAL INDUSTRY MACHINERY,	100.0	103.6	107.1	110.7	114.1
353 PUMPS AND COMPRESSORS	100.0	100.7	102.6	104.6	106.2
354 BALL AND ROLLER BEARINGS	100.0	100.7	102.6	104.6	106.2
355 BLOWERS AND FANS	100.0	100.7	102.6	104.6	106.2
356 INDUSTRIAL PATTERNS	100.0	100.7	102.6	104.6	106.2
357 POWER TRANSMISSION EQUIPMENT	100.0	100.7	102.6	104.6	106.2
358 INDUSTRIAL FURNACES AND OVEN	100.0	100.7	102.6	104.6	106.2
359 GENERAL INDUSTRIAL MACHINERY	100.0	100.7	102.6	104.6	106.2
360 CARBURETORS, PISTONS, RINGS,	100.0	104.0	108.7	110.3	110.9
361 MACHINERY, EXCEPT ELECTRICAL	100.0	104.0	108.7	110.3	110.9
362 ELECTRONIC COMPUTING EQUIPME	100.0	77.0	71.9	56.1	44.1
363 CALCULATING AND ACCOUNTING M	100.0	100.0	99.0	99.0	99.3
364 SCALES AND BALANCES	100.0	100.0	99.0	99.0	99.3
365 TYPEWRITERS AND OFFICE MACHI	100.0	100.0	99.0	99.0	99.3
366 AUTOMATIC MERCHANDISING MACH	100.0	103.5	105.7	107.7	108.8
367 COMMERCIAL LAUNDRY EQUIPMENT	100.0	103.5	105.7	107.7	108.8
368 REFRIGERATION AND HEATING EQ	100.0	103.5	105.7	107.7	108.8
369 MEASURING AND DISPENSING PUM	100.0	103.5	105.7	107.7	108.8
370 SERVICE INDUSTRY MACHINES, N	100.0	103.5	105.7	107.7	108.8
371 INSTRUMENTS TO MEASURE ELECT	100.0	105.0	110.2	111.9	113.6
372 TRANSFORMERS	100.0	102.4	105.3	107.2	108.5
373 SWITCHGEAR AND SWITCHBOARD A	100.0	102.4	105.3	107.2	108.5
374 MOTORS AND GENERATORS	100.0	103.4	105.6	109.0	109.8
375 INDUSTRIAL CONTROLS	100.0	103.4	105.6	109.0	109.8
376 WELDING APPARATUS, ELECTRIC	100.0	103.4	105.6	109.0	109.8
377 CARBON AND GRAPHITE PRODUCTS	100.0	103.4	105.6	109.0	109.8
378 ELECTRICAL INDUSTRIAL APPARA	100.0	103.4	105.6	109.0	109.8
379 HOUSEHOLD COOKING EQUIPMENT	100.0	104.0	106.2	106.9	105.9
380 HOUSEHOLD REFRIGERATORS AND	100.0	104.0	106.2	106.9	105.9

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
381 HOUSEHOLD LAUNDRY EQUIPMENT	100.0	104.0	106.2	106.9	105.9
382 ELECTRIC HOUSEWARES AND FANS	100.0	104.0	106.2	106.9	105.9
383 HOUSEHOLD VACUUM CLEANERS	100.0	104.0	106.2	106.9	105.9
384 SEWING MACHINES	100.0	104.0	106.2	106.9	105.9
385 HOUSEHOLD APPLIANCES, N.E.C.	100.0	104.0	106.2	106.9	105.9
386 ELECTRIC LAMPS	100.0	103.7	109.5	112.1	116.2
387 LIGHTING FIXTURES AND EQUIPM	100.0	103.7	109.5	112.1	116.2
388 WIRING DEVICES	100.0	103.7	109.5	112.1	116.2
389 RADIO AND TV RECEIVING SETS	100.0	99.2	97.0	95.4	96.4
390 PHONOGRAPH RECORDS AND TAPE	100.0	99.2	97.0	95.4	96.4
391 TELEPHONE AND TELEGRAPH APPA	100.0	102.4	103.9	106.0	107.6
392 RADIO AND TV COMMUNICATION E	100.0	105.0	109.4	111.6	113.3
393 ELECTRON TUBES	100.0	101.4	103.8	115.3	118.6
394 SEMICONDUCTORS AND RELATED D	100.0	106.1	109.9	109.1	110.7
395 ELECTRONIC COMPONENTS, N.E.C	100.0	102.8	106.5	109.9	113.0
396 STORAGE BATTERIES	100.0	98.5	98.9	100.7	103.0
397 PRIMARY BATTERIES, DRY AND W	100.0	103.6	104.9	104.2	106.0
398 X-RAY APPARATUS AND TUBES	100.0	104.6	106.0	108.6	108.7
399 ENGINE ELECTRICAL EQUIPMENT	100.0	98.5	98.9	100.7	103.0
400 ELECTRICAL EQUIPMENT, N.E.C.	100.0	103.6	104.9	104.2	106.0
401 TRUCK AND BUS BODIES	100.0	100.6	104.2	106.9	110.0
402 TRUCK TRAILERS	100.0	100.6	104.2	106.9	110.0
403 MOTOR VEHICLES	100.0	102.4	104.9	107.5	111.4
404 MOTOR VEHICLE PARTS AND ACCE	100.0	101.7	102.1	102.6	103.4
405 AIRCRAFT	100.0	106.6	112.1	114.0	118.5
406 AIRCRAFT AND MISSILE ENGINES	100.0	104.2	106.8	108.6	112.9
407 AIRCRAFT AND MISSILE EQUIPME	100.0	104.2	106.8	108.6	112.9
408 SHIP BUILDING AND REPAIRING	100.0	104.2	107.3	110.7	115.4
409 BOAT BUILDING AND REPAIRING	100.0	104.2	107.3	110.7	115.4
410 RAILROAD EQUIPMENT	100.0	101.3	104.5	105.9	106.2
411 MOTORCYCLES, BICYCLES, AND P	100.0	96.7	86.5	88.5	91.1
412 TRAVEL TRAILERS AND CAMPERS	100.0	96.7	86.5	88.5	91.1
413 MOBILE HOMES	100.0	100.9	100.9	101.8	102.8
414 MOTOR HOMES	100.0	100.6	104.2	106.9	110.0
415 TRANSPORTATION EQUIPMENT, N.	100.0	96.7	86.5	88.5	91.1
416 ENGINEERING AND SCIENTIFIC I	100.0	104.5	103.9	107.0	109.7
417 MECHANICAL MEASURING DEVICES	100.0	105.0	110.2	111.9	113.6
418 AUTOMATIC TEMPERATURE CONTRO	100.0	105.0	110.2	111.9	113.6
419 SURGICAL AND MEDICAL INSTRUM	100.0	103.1	108.0	111.0	115.7
420 SURGICAL APPLIANCES AND SUPP	100.0	103.1	108.0	111.0	115.7
421 DENTAL EQUIPMENT AND SUPPLIE	100.0	103.1	108.0	111.0	115.7
422 WATCHES, CLOCKS, AND PARTS	100.0	104.5	107.0	107.2	107.1
423 OPTICAL INSTRUMENTS AND LENS	100.0	100.6	95.3	96.3	98.6
424 OPHTHALMIC GOODS	100.0	100.6	95.3	96.3	98.6
425 PHOTOGRAPHIC EQUIPMENT AND S	100.0	101.0	103.0	103.6	104.3
426 JEWELRY, PRECIOUS METAL	100.0	108.2	101.8	101.0	102.9
427 JEWELERS MATERIALS AND LAPID	100.0	108.2	101.8	101.0	102.9
428 SILVERWARE AND PLATED WARE	100.0	108.2	101.8	101.0	102.9
429 COSTUME JEWELRY	100.0	101.6	104.4	112.4	113.5
430 MUSICAL INSTRUMENTS	100.0	101.6	104.4	112.4	113.5
431 GAMES, TOYS, AND CHILDRENS V	100.0	101.3	100.8	103.2	105.7
432 DOLLS	100.0	101.3	100.8	103.2	105.7
433 SPORTING AND ATHLETIC GOODS,	100.0	101.3	100.8	103.2	105.7
434 PENS AND MECHANICAL PENCILS	100.0	101.6	104.4	112.4	113.5
435 LEAD PENCILS AND ART GOODS	100.0	101.6	104.4	112.4	113.5
436 MARKING DEVICES	100.0	101.6	104.4	112.4	113.5
437 CARBON PAPER AND INKED RIBBO	100.0	101.6	104.4	112.4	113.5
438 ARTIFICIAL TREES AND FLOWERS	100.0	101.6	104.4	112.4	113.5
439 BUTTONS	100.0	101.6	104.4	112.4	113.5
440 NEEDLES, PINS, AND FASTENERS	100.0	101.6	104.4	112.4	113.5
441 BROOMS AND BRUSHES	100.0	101.6	104.4	112.4	113.5
442 HARD SURFACE FLOOR COVERINGS	100.0	101.6	104.4	112.4	113.5
443 BURIAL CASKETS AND VAULTS	100.0	101.6	104.4	112.4	113.5
444 SIGNS AND ADVERTISING DISPLA	100.0	101.6	104.4	112.4	113.5
445 MANUFACTURING INDUSTRIES, N.	100.0	101.6	104.4	112.4	113.5
446 RAILROADS AND RELATED SERVIC	100.0	97.7	99.5	99.8	98.6
447 LOCAL, INTERURBAN PASSENGER	100.0	104.3	117.3	124.4	134.8
448 MOTOR FREIGHT TRANSPORT AND	100.0	99.8	102.1	111.0	105.9
449 WATER TRANSPORTATION	100.0	106.9	107.7	117.3	115.4
450 AIR TRANSPORTATION	100.0	104.8	111.2	118.1	108.0
451 PIPE LINES, EXCEPT NATURAL G	100.0	105.8	98.6	109.3	98.4
452 TRANSPORTATION SERVICES	100.0	100.0	93.1	93.1	95.5
453 ARRANGEMENT OF PASSENGER TRA	100.0	100.0	93.1	93.1	95.5
454 COMMUNICATIONS, EXCEPT RADIO	100.0	106.4	115.3	119.8	125.7
455 RADIO AND TV BROADCASTING	100.0	104.5	112.3	119.3	126.5
456 ELECTRIC SERVICES	100.0	102.9	106.5	108.9	109.1

APPENDIX K. Commodity Deflator Indices

Commodity	1982	1983	1984	1985	1986
457 GAS PRODUCTION AND DISTRIBUTION	100.0	114.4	114.4	114.1	108.6
458 WATER SUPPLY AND SEWERAGE SYSTEMS	100.0	108.3	115.5	122.4	128.9
459 SANITARY SERVICES AND STEAM	100.0	108.3	115.5	122.4	128.9
460 RECREATIONAL RELATED WHOLESALERS	100.0	102.0	105.0	104.8	104.4
461 OTHER WHOLESALE TRADE	100.0	102.0	105.0	104.8	104.4
462 RECREATIONAL RELATED RETAIL	100.0	103.1	106.0	110.5	111.8
463 OTHER RETAIL TRADE	100.0	103.1	106.0	110.5	111.8
464 BANKING	100.0	108.5	119.3	125.9	128.5
465 CREDIT AGENCIES	100.0	99.9	120.1	125.1	127.7
466 SECURITY AND COMMODITY BROKERS	100.0	96.6	94.7	99.0	99.5
467 INSURANCE CARRIERS	100.0	105.9	112.8	123.5	132.4
468 INSURANCE AGENTS AND BROKERS	100.0	104.4	109.1	112.9	121.0
469 OWNER-OCCUPIED DWELLINGS	100.0	105.7	111.1	117.8	123.7
470 REAL ESTATE	100.0	106.1	112.3	118.1	125.7
471 HOTELS AND LODGING PLACES	100.0	103.7	111.2	119.1	123.6
472 LAUNDRY, CLEANING AND SHOE REPAIR	100.0	105.4	110.4	116.3	121.0
473 FUNERAL SERVICE AND CREMATORIA	100.0	113.4	124.0	132.0	140.7
474 PORTRAIT AND PHOTOGRAPHIC STUDIOS	100.0	106.1	111.5	116.9	123.5
475 ELECTRICAL REPAIR SERVICES	100.0	104.9	110.6	115.1	118.6
476 WATCH, CLOCK, JEWELRY AND FUR	100.0	105.2	110.1	115.5	119.6
477 BEAUTY AND BARBER SHOPS	100.0	104.9	109.3	114.0	117.7
478 MISCELLANEOUS REPAIR SHOPS	100.0	110.7	122.7	130.2	137.1
479 SERVICES TO BUILDINGS	100.0	104.9	110.7	119.4	123.5
480 PERSONNEL SUPPLY SERVICES	100.0	104.9	110.7	119.4	123.5
481 COMPUTER AND DATA PROCESSING	100.0	104.9	110.7	119.4	123.5
482 MANAGEMENT AND CONSULTING SERVICES	100.0	104.9	110.7	119.4	123.5
483 DETECTIVE AND PROTECTIVE SERVICES	100.0	104.9	110.7	119.4	123.5
484 EQUIPMENT REPAIR AND LEASING	100.0	104.9	110.7	119.4	123.5
485 PHOTOFINISHING, COMMERCIAL PHOTOGRAPHY	100.0	104.9	110.7	119.4	123.5
486 OTHER BUSINESS SERVICES	100.0	104.9	110.7	119.4	123.5
487 ADVERTISING	100.0	104.9	110.7	119.4	123.5
488 LEGAL SERVICES	100.0	113.5	123.9	132.0	140.8
489 ENGINEERING, ARCHITECTURAL SERVICES	100.0	104.7	109.3	113.3	119.3
490 ACCOUNTING, AUDITING AND BOOKKEEPING	100.0	113.3	123.6	131.8	140.3
491 EATING AND DRINKING PLACES	100.0	104.4	109.0	113.6	118.3
492 AUTOMOBILE RENTAL AND LEASING	100.0	107.0	113.6	119.4	125.3
493 AUTOMOBILE REPAIR AND SERVICE	100.0	110.7	122.7	130.2	137.1
494 AUTOMOBILE PARKING AND CAR WASHES	100.0	110.7	122.7	130.2	137.1
495 MOTION PICTURES	100.0	107.1	114.2	120.8	126.2
496 DANCE HALLS, STUDIOS AND SHOWS	100.0	103.3	106.4	110.3	116.0
497 THEATRICAL PRODUCERS, BANDS	100.0	107.0	114.3	120.8	126.2
498 BOWLING ALLEYS AND POOL HALLS	100.0	106.2	111.9	118.0	124.8
499 COMMERCIAL SPORTS EXCEPT RACING	100.0	105.8	115.2	121.8	125.7
500 RACING AND TRACK OPERATION	100.0	105.8	115.2	121.8	125.7
501 MEMBERSHIP SPORTS AND RECREATION	100.0	103.3	106.4	110.3	116.0
502 AMUSEMENT AND RECREATION SERVICES	100.0	103.3	106.4	110.3	116.0
503 DOCTORS AND DENTISTS	100.0	107.3	114.9	121.8	129.7
504 HOSPITALS	100.0	106.7	113.1	119.5	124.7
505 NURSING AND PROTECTIVE CARE	100.0	108.7	115.3	122.2	131.6
506 OTHER MEDICAL AND HEALTH SERVICES	100.0	108.7	115.3	122.2	131.6
507 ELEMENTARY AND SECONDARY SCHOOLS	100.0	104.2	107.9	111.9	116.2
508 COLLEGES, UNIVERSITIES, SCHOOLS	100.0	104.2	107.9	111.9	116.2
509 OTHER EDUCATIONAL SERVICES	100.0	104.2	107.9	111.9	116.2
510 BUSINESS ASSOCIATIONS	100.0	113.4	123.9	132.0	135.5
511 LABOR AND CIVIC ORGANIZATION	100.0	102.8	106.0	107.6	110.6
512 RELIGIOUS ORGANIZATIONS	100.0	102.7	106.2	107.8	110.6
513 OTHER NONPROFIT ORGANIZATION	100.0	102.7	106.2	107.8	110.6
514 RESIDENTIAL CARE	100.0	102.9	106.6	108.0	110.8
515 SOCIAL SERVICES, N.E.C.	100.0	106.3	113.0	114.5	117.5
516 U.S. POSTAL SERVICE	100.0	99.9	97.1	105.6	107.0
517 FEDERAL ELECTRIC UTILITIES	100.0	98.7	109.3	111.8	112.0
518 OTHER FEDERAL GOVERNMENT ENTERPRISES	100.0	103.1	106.0	110.5	109.0
519 LOCAL GOVERNMENT PASSENGER TRANSPORTATION	100.0	103.6	110.9	113.3	122.8
520 STATE AND LOCAL ELECTRIC UTILITIES	100.0	116.7	120.8	123.5	123.7
521 OTHER STATE AND LOCAL GOVT ENTERPRISES	100.0	107.4	120.3	130.3	140.2
522 NONCOMPARABLE IMPORTS					
523 SCRAP					
524 USED AND SECONDHAND GOODS					
525 GOVERNMENT INDUSTRY					
526 REST OF THE WORLD INDUSTRY					
527 HOUSEHOLD INDUSTRY	100.0	100.4	101.4	102.5	103.6
528 INVENTORY VALUATION ADJUSTMENTS					

-NOTES-



SURVEY OF CURRENT BUSINESS

Table 3.—Employment Before and After Adjustments for Redefinitions and Force-Account Construction by Input-Output Industry, 1977

(Thousands)

Industry number and description	Employment before adjustments	Adjustments			Employment after adjustments
		Redefinitions		Force-account construction	
		Out	In		
Total	90,966.0	1,700.9	1,700.9	0	90,966.0
1 Livestock and livestock products	443.2	0	0	0	443.2
2 Other agricultural products	893.8	0	0	0	893.8
3 Forestry and fishery products	65.6	0	0	-3.2	62.4
4 Agricultural, forestry, and fishery services	364.5	4.2	30.0	-1.1	391.2
5 Iron and ferrous alloy ore mining	23.7	(*)	0	-1.7	24.0
6 Nonferrous metal ore mining	61.9	3.3	0	-2.8	55.8
7 Coal mining	246.5	2.1	0	-3.7	240.7
8 Crude petroleum and natural gas	154.2	1	3.1	-12.9	144.3
9 Stone and clay mining and quarrying	93.4	1.2	7	-1.1	91.8
10 Chemical and fertilizer mineral mining	24.6	(*)	0	-6	23.9
11 New construction	3,327.2	64.3	96.4	294.4	3,835.7
12 Maintenance and repair construction	999.0	0	4.3	915.9	1,919.2
13 Ordnance and accessories	186.0	3	0	-4	187.3
14 Food and kindred products	1,610.4	47.1	43.3	-8	1,685.8
15 Tobacco manufactures	68.0	1.0	0	(*)	67.0
16 Broad and narrow fabric, yarn and thread mills	537.8	5	22.7	-4	559.6
17 Miscellaneous textile goods and floor coverings	124.9	1.0	4	(*)	124.3
18 Apparel	1,406.5	3.8	7.7	-1	1,410.3
19 Miscellaneous fabricated textile products	187.2	1.3	0	(*)	185.9
20 Lumber and wood products, except containers	647.7	5.6	4	-7	641.8
21 Wood containers	18.0	1	0	-1	17.8
22 Household furniture	313.8	1.7	0	-6	313.5
23 Other furniture and fixtures	155.2	2.4	0	-8	152.0
24 Paper and allied products, except containers	459.1	4.4	0	-4.5	450.2
25 Paperboard containers and boxes	204.9	1.4	0	-2	203.3
26 Printing and publishing	1,120.5	5.7	0	-3	1,114.5
27 Chemicals and selected chemical products	487.1	15.0	0	-8.3	463.8
28 Plastics and synthetic materials	206.9	1.4	0	-1.1	203.4
29 Drugs, cleaning and toilet preparations	293.5	8.8	0	-1.1	283.6
30 Paints and allied products	65.9	3.5	0	-3	61.5
31 Petroleum refining and related industries	213.0	5.3	9	-7.4	201.2
32 Rubber and miscellaneous plastics products	739.3	8.0	0	-9	730.4
33 Leather tanning and finishing	23.8	1	0	(*)	23.7
34 Footwear and other leather products	234.8	1.6	0	(*)	233.0
35 Glass and glass products	199.8	8	0	-3	196.9
36 Stone and clay products	453.3	7.1	2.4	-5	448.1
37 Primary iron and steel manufacturing	842.2	2.3	0	-9.6	830.3
38 Primary nonferrous metals manufacturing	354.9	2.3	5.5	-8	353.3
39 Metal containers	81.4	2.7	0	-3	78.4
40 Heating, plumbing, and fabricated structural metal products	496.8	17.5	1.2	-3.7	476.8
41 Screw machine products and stampings	349.8	2.0	0	-5	347.3
42 Other fabricated metal products	560.9	7.1	0	-1.1	542.7
43 Engines and turbines	133.3	1.8	0	-4	131.1
44 Farm and garden machinery	165.0	2.1	0	-3	162.6
45 Construction and mining machinery	282.8	4.9	0	-4	257.5
46 Materials handling machinery and equipment	90.2	5.9	0	-2	84.1
47 Metalworking machinery and equipment	300.0	2.8	0	-3	297.1
48 Special industry machinery and equipment	187.8	2.8	0	-3	184.7
49 General industrial machinery and equipment	318.5	4.0	0	-4	314.1
50 Miscellaneous machinery, except electrical	223.8	7	3.5	-5	228.1
51 Office, computing, and accounting machines	293.1	8.1	0	-1	284.9
52 Service industry machines	196.9	3.8	0	-5	192.6
53 Electric industrial equipment and apparatus	410.3	3.7	0	-5	406.1
54 Household appliances	167.0	1.0	0	-5	163.5
55 Electric lighting and wiring equipment	165.4	1.2	4	-2	164.4
56 Radio, TV, and communication equipment	635.3	6.0	0	-7	628.6
57 Electronic components and accessories	385.2	6.6	0	-6	378.0
58 Miscellaneous electrical machinery and supplies	168.3	3.3	9	-1	165.8
59 Motor vehicles and equipment	922.2	4.0	7.7	-1.3	924.6
60 Aircraft and parts	468.9	4.7	0	-5	460.7
61 Other transportation equipment	413.0	1.3	9.7	-9	420.5
62 Scientific and controlling instruments	329.2	8.1	0	-3	329.8
63 Optical, ophthalmic, and photographic equipment	185.6	3.1	0	-1	182.4
64 Miscellaneous manufacturing	455.7	8.1	8.5	-9	455.2
65 Transportation and warehousing	2,801.6	36.0	8.3	-92.6	2,681.3
66 Communications, except radio and TV	1,021.9	25.3	32.0	-131.7	896.9
67 Radio and TV broadcasting	169.0	0	0	-2	168.8
68 Electric, gas, water, and sanitary services	750.1	0	1	-158.9	591.3
69 Wholesale and retail trade	15,228.5	908.7	328.2	-18.7	14,629.3
70 Finance and insurance	3,665.0	20.4	9	-2.3	3,643.2
71 Real estate and rental	902.0	0	0	-140.8	761.2
72 Hotels, personal and repair services (except auto)	2,161.7	79.2	158.5	-6.8	2,234.2
73 Business services	3,789.1	22.6	296.0	-1.8	4,080.7
74 Eating and drinking places	3,976.1	13.6	424.9	-2.9	4,384.5
75 Automobile repair and services	562.1	7.6	144.1	-8.4	680.2
76 Amusements	853.5	202.5	34.9	-11.2	674.7
77 Health, educational, and social services and nonprofit organizations	8,283.2	40.4	19.1	-25.1	8,236.8
78 Federal Government enterprises	851.3	0	0	-28.7	804.6
79 State and local government enterprises	679.0	0	2.2	-114.7	564.5
82 Government industry	16,961.7	0	0	-385.0	16,576.7
83 Rest of the world industry	-20.0	0	0	0	-20.0
84 Household industry	1,938.0	0	0	0	1,938.0
85 Inventory valuation adjustment	0	0	0	0	0

* Less than 50 employees.

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- NOTES -

FIPS Codes

FIPS Codes

FIPS Codes

FIPS Codes

ALABAMA

ARKANSAS

CALIFORNIA

ARIZONA

ARKANSAS

05	049	FULTON
05	051	GARLAND
05	053	GRANT
05	055	GREENE
05	057	HEMPSTEAD
05	059	HOT SPRING
05	061	HOWARD
05	063	INDEPENDENCE
05	065	IZARD
05	067	JACKSON
05	069	JEFFERSON
05	071	JOHNSON
05	073	LAFAYETTE
05	075	LAWRENCE
05	077	LEE
05	079	LINCOLN
05	081	LITTLE RIVER
05	083	LOGAN
05	085	LONOKE
05	087	MADISON
05	089	MARION
05	091	MILLER
05	093	MISSISSIPPI
05	095	MONROE
05	097	MONTGOMERY
05	099	NEVADA
05	101	NEWTON
05	103	OUACHITA
05	105	PERRY
05	107	PHILLIPS
05	109	PIKE
05	111	POINSETT
05	113	POLK
05	115	POPE
05	117	PRAIRIE
05	119	PULASKI
05	121	RANDOLPH
05	123	ST. FRANCIS
05	125	SALINE
05	127	SCOTT
05	129	SEARCY
05	131	SEBASTIAN
05	133	SEVIER
05	135	SHARP
05	137	STONE
05	139	UNION
05	141	VAN BUREN
05	143	WASHINGTON
05	145	WHITE
05	147	WOODRUFF
05	149	YELL

CALIFORNIA

06	001	ALAMEDA
06	003	ALPINE
06	005	AMADOR
06	007	BUTTE
06	009	CALAVERAS
06	011	COLUSA
06	013	CONTRA COSTA
06	015	DEL NORTE
06	017	EL DORADO
06	019	FRESNO
06	021	GLENN
06	023	HUMBOLDT
06	025	IMPERIAL
06	027	INYO

06	029	KERN
06	031	KINGS
06	033	LAKE
06	035	LASSEN
06	037	LOS ANGELES
06	039	MADERA
06	041	MARIN
06	043	MARIPOSA
06	045	MENDOCINO
06	047	MERCED
06	049	MODOC
06	051	MONO
06	053	MONTEREY
06	055	NAPA
06	057	NEVADA
06	059	ORANGE
06	061	PLACER
06	063	PLUMAS
06	065	RIVERSIDE
06	067	SACRAMENTO
06	069	SAN BENITO
06	071	SAN BERNARDINO
06	073	SAN DIEGO
06	075	SAN FRANCISCO
06	077	SAN JOAQUIN
06	079	SAN LUIS OBISPO
06	081	SAN MATEO
06	083	SANTA BARBARA
06	085	SANTA CLARA
06	087	SANTA CRUZ
06	089	SHASTA
06	091	SIERRA
06	093	SISKIYOU
06	095	SOLANO
06	097	SONOMA
06	099	STANISLAUS
06	101	SUTTER
06	103	TEHAMA
06	105	TRINITY
06	107	TULARE
06	109	TUOLUMNE
06	111	VENTURA
06	113	YOLO
06	115	YUBA

COLORADO

08	001	ADAMS
08	003	ALAMOSA
08	005	ARAPAHOE
08	007	ARCHULETTA
08	009	BACA
08	011	BENT
08	013	BOULDER
08	015	CHAFFEE
08	017	CHEYENNE
08	019	CLEAR CREEK
08	021	CONEJOS
08	023	COSTILLA
08	025	CROWLEY
08	027	CUSTER
08	029	DELTA
08	031	DENVER
08	033	DOLORES
08	035	DOUGLAS
08	037	EAGLE
08	039	ELBERT
08	041	EL PASO

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Code		FIPS Codes	
St. Cty.	County	St. Cty.	County	St. Cty.	County	St. Cty.	County
COLORADO		FLORIDA		GEORGIA		GEORGIA	
08 043	FREMONT	12 001	ALACHUA	13 001	APPLING	13 141	HANCOCK
08 045	GARFIELD	12 003	BAKER	13 003	ATKINSON	13 143	HARALSON
08 047	GILPIN	12 005	BAY	13 005	BACON	13 145	HARRIS
08 049	GRAND	12 007	BRADFORD	13 007	BAKER	13 147	HART
08 051	GUNNISON	12 009	BREVARD	13 009	BALDWIN	13 149	HEARD
08 053	HINSDALE	12 011	BROWARD	13 011	BANKS	13 151	HENRY
08 055	HUERFANO	12 013	CALHOUN	13 013	BARROW	13 153	HOUSTON
08 057	JACKSON	12 015	CHARLOTTE	13 015	BARTOW	13 155	IRWIN
08 059	JEFFERSON	12 017	CITRUS	13 017	BEN HILL	13 157	JACKSON
08 061	KIOWA	12 019	CLAY	13 019	BERRIEN	13 159	JASPER
08 063	KIT CARSON	12 021	COLLIER	13 021	BIBB	13 161	JEFF DAVIS
08 065	LAKE	12 023	COLUMBIA	13 023	BLECKLEY	13 163	JEFFERSON
08 067	LA PLATA	12 025	DADE	13 025	BRANTLEY	13 165	JENKINS
08 069	LARIMER	12 027	DE SOTO	13 027	BROOKS	13 167	JOHNSON
08 071	LAS ANIMAS	12 029	DIXIE	13 029	BRYAN	13 169	JONES
08 073	LINCOLN	12 031	DUVAL	13 031	BULLOCH	13 171	LAMAR
08 075	LOGAN	12 033	ESCAMBIA	13 033	BURKE	13 173	LANIER
08 077	MESA	12 035	FLAGLER	13 035	BUTTS	13 175	LAURENS
08 079	MINERAL	12 037	FRANKLIN	13 037	CALHOUN	13 177	LEE
08 081	MOFFAT	12 039	GADSDEN	13 039	CAMDEN	13 179	LIBERTY
08 083	MONTEZUMA	12 041	GILCHRIST	13 043	CANDLER	13 181	LINCOLN
08 085	MONTROSE	12 043	GLADES	13 045	CARROLL	13 183	LONG
08 087	MORGAN	12 045	GULF	13 047	CATOOSA	13 185	LOWNDES
08 089	OTERO	12 047	HAMILTON	13 049	CHARLTON	13 187	LUMPKIN
08 091	OURAY	12 049	HARDEE	13 051	CHATHAM	13 189	MC DUFFIE
08 093	PARK	12 051	HENRY	13 053	CHATTAHOOCHEE	13 191	MCINTOSH
08 095	PHILLIPS	12 053	HERNANDO	13 055	CHATTOOGA	13 193	MACON
08 097	PITKIN	12 055	HIGHLANDS	13 057	CHEROKEE	13 195	MADISON
08 099	PROWERS	12 057	HILLSBOROUGH	13 059	CLARKE	13 197	MARION
08 101	PUEBLO	12 059	HOLMES	13 061	CLAY	13 199	MERIWETHER
08 103	RIO BLANCO	12 061	INDIAN RIVER	13 063	CLAYTON	13 201	MILLER
08 105	RIO GRANDE	12 063	JACKSON	13 065	CLINCH	13 205	MITCHELL
08 107	ROUTT	12 065	JEFFERSON	13 067	COBB	13 207	MONROE
08 109	SAGUACHE	12 067	LAFAYETTE	13 069	COFFEE	13 209	MONTGOMERY
08 111	SAN JUAN	12 069	LAKE	13 071	COLQUITT	13 211	MORGAN
08 113	SAN MIGUEL	12 071	LEE	13 073	COLUMBIA	13 213	MURRAY
08 115	SEDGWICK	12 073	LEON	13 075	COOK	13 215	MUSCOGEE
08 117	SUMMIT	12 075	LEVY	13 077	COWETA	13 217	NEWTON
08 119	TELLER	12 077	LIBERTY	13 079	CRAWFORD	13 219	OCONEE
08 121	WASHINGTON	12 079	MADISON	13 081	CRISP	13 221	OGLETHORPE
08 123	WELD	12 081	MANATEE	13 083	DADE	13 223	PAULDING
08 125	YUMA	12 083	MARION	13 085	DAWSON	13 225	PEACH
		12 085	MARTIN	13 087	DECATUR	13 227	PICKENS
		12 087	MONROE	13 089	DE KALB	13 229	PIERCE
		12 089	NASSAU	13 091	DODGE	13 231	PIKE
		12 091	OKALOOSA	13 093	DOOLY	13 233	POLK
		12 093	OKEECHOBEE	13 095	DOUGHERTY	13 235	PULASKI
		12 095	ORANGE	13 097	DOUGLAS	13 237	PUTNAM
		12 097	OSCEOLA	13 099	EARLY	13 239	QUITMAN
		12 099	PALM BEACH	13 101	ECHOLS	13 241	RABUN
		12 101	PASCO	13 103	EFFINGHAM	13 243	RANDOLPH
		12 103	PINELLAS	13 105	ELBERT	13 245	RICHMOND
		12 105	POLK	13 107	EMANUEL	13 247	ROCKDALE
		12 107	PUTNAM	13 109	EVANS	13 249	SCHLEY
		12 109	ST. JOHNS	13 111	FANNIN	13 251	SCREVEN
		12 111	ST. LUCIE	13 113	FAYETTE	13 253	SEMINOLE
		12 113	SANTA ROSA	13 115	FLOYD	13 255	SPALDING
		12 115	SARASOTA	13 117	FORSYTH	13 257	STEPHENS
		12 117	SEMINOLE	13 119	FRANKLIN	13 259	STEWART
		12 119	SUMTER	13 121	FULTON	13 261	SUMTER
		12 121	SUWANNEE	13 123	GILMER	13 263	TALBOT
		12 123	TAYLOR	13 125	GLASCOCK	13 265	TALIAFERRO
		12 125	UNION	13 127	GLYNN	13 267	TATTNALL
		12 127	VOLUSIA	13 129	GORDON	13 269	TAYLOR
		12 129	WAKULLA	13 131	GRADY	13 271	TELFAIR
		12 131	WALTON	13 133	GREENE	13 273	TERRELL
		12 133	WASHINGTON	13 135	GWINETT	13 275	THOMAS
				13 137	HABERSHAM	13 277	TIFT
				13 139	HALL	13 279	TOOMBS
CONNECTICUT							
09 001	FAIRFIELD						
09 003	HARTFORD						
09 005	LITCHFIELD						
09 007	MIDDLESEX						
09 009	NEW HAVEN						
09 011	NEW LONDON						
09 013	TOLLAND						
09 015	WINDHAM						
DELAWARE							
10 001	KENT						
10 003	NEW CASTLE						
10 005	SUSSEX						
DISTRICT OF COLUMBIA							
11 001	DISTRICT OF COL.						

FIPS Codes

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APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes			FIPS Codes			FIPS Codes			FIPS Codes		
St. Cty.	County		St. Cty.	County		St. Cty.	County		St. Cty.	County	
INDIANA			IOWA			KANSAS			KANSAS		
18 177	WAYNE		19 121	MADISON		20 001	ALLEN		20 137	NORTON	
18 179	WELLS		19 123	MAHASKA		20 003	ANDERSON		20 139	OSAGE	
18 181	WHITE		19 125	MARION		20 005	ATCHISON		20 141	OSBORNE	
18 183	WHITLEY		19 127	MARSHALL		20 007	BARBER		20 143	OTTAWA	
			19 129	MILLS		20 009	BARTON		20 145	PAWNEE	
			19 131	MITCHELL		20 011	BOURBON		20 147	PHILLIPS	
			19 133	MONONA		20 013	BROWN		20 149	POTTAWATOMIE	
			19 135	MONROE		20 015	BUTLER		20 151	PRATT	
			19 137	MONTGOMERY		20 017	CHASE		20 153	RAWLINS	
			19 139	MUSCATINE		20 019	CHAUTAUQUA		20 155	RENO	
			19 141	O BRIEN		20 021	CHEROKEE		20 157	REPUBLIC	
			19 143	OSCEOLA		20 023	CHEYENNE		20 159	RICE	
			19 145	PAGE		20 025	CLARK		20 161	RILEY	
			19 147	PALO ALTO		20 027	CLAY		20 163	ROOKS	
			19 149	PLYMOUTH		20 029	CLOUD		20 165	RUSH	
			19 151	POCAHONTAS		20 031	COFFEY		20 167	RUSSELL	
			19 153	POLK		20 033	COMANCHE		20 169	SALINE	
			19 155	POTTAWATTAMIE		20 035	COWLEY		20 171	SCOTT	
			19 157	POWESHIEK		20 037	CRAWFORD		20 173	SEDGWICK	
			19 159	RINGGOLD		20 039	DECATUR		20 175	SEWARD	
			19 161	SAC		20 041	DICKINSON		20 177	SHAWNEE	
			19 163	SCOTT		20 043	DONIPHAN		20 179	SHERIDAN	
			19 165	SHELBY		20 045	DOUGLAS		20 181	SHERMAN	
			19 167	SIOUX		20 047	EDWARDS		20 183	SMITH	
			19 169	STORY		20 049	ELK		20 185	STAFFORD	
			19 171	TAMA		20 051	ELLIS		20 187	STANTON	
			19 173	TAYLOR		20 053	ELLSWORTH		20 189	STEVENS	
			19 175	UNION		20 055	FINNEY		20 191	SUMNER	
			19 177	VAN BUREN		20 057	FORD		20 193	THOMAS	
			19 179	WAPELLO		20 059	FRANKLIN		20 195	TREGO	
			19 181	WARREN		20 061	GEARY		20 197	WABAUNSEE	
			19 183	WASHINGTON		20 063	GOVE		20 199	WALLACE	
			19 185	WAYNE		20 065	GRAHAM		20 201	WASHINGTON	
			19 187	WEBSTER		20 067	GRANT		20 203	WICHITA	
			19 189	WINNEBAGO		20 069	GRAY		20 205	WILSON	
			19 191	WINNESHIEK		20 071	GREELEY		20 207	WOODSON	
			19 193	WOODBURY		20 073	GREENWOOD		20 209	WYANDOTTE	
			19 195	WORTH		20 075	HAMILTON				
			19 197	WRIGHT		20 077	HARPER				
						20 079	HARVEY				
						20 081	HASKELL				
						20 083	HODGEMAN				
						20 085	JACKSON				
						20 087	JEFFERSON				
						20 089	JEWELL				
						20 091	JOHNSON				
						20 093	KEARNY				
						20 095	KINGMAN				
						20 097	KIOWA				
						20 099	LABETTE				
						20 101	LANE				
						20 103	LEAVENWORTH				
						20 105	LINCOLN				
						20 107	LINN				
						20 109	LOGAN				
						20 111	LYON				
						20 113	MCPHERSON				
						20 115	MARION				
						20 117	MARSHALL				
						20 119	MEADE				
						20 121	MIAMI				
						20 123	MITCHELL				
						20 125	MONTGOMERY				
						20 127	MORRIS				
						20 129	MORTON				
						20 131	NEMAHA				
						20 133	NEOSHO				
						20 135	NESS				

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes St. Cty.	County	FIPS Codes St. Cty.	County	FIPS Codes St. Cty.	County	FIPS Codes St. Cty.	County
KENTUCKY		KENTUCKY		LOUISIANA		MAINE	
21 001	ADAIR	21 133	LETCHER	22 067	MOREHOUSE	23 001	ANDROSCOGGIN
21 003	ALLEN	21 135	LEWIS	22 069	NATCHITOCHE	23 003	AROOSTOOK
21 005	ANDERSON	21 137	LINCOLN	22 071	ORLEANS	23 005	CUMBERLAND
21 007	BALLARD	21 139	LIVINGSTON	22 073	OUACHITA	23 007	FRANKLIN
21 009	BARREN	21 141	LOGAN	22 075	PLAQUEMINES	23 009	HANCOCK
21 011	BATH	21 143	LYON	22 077	POINTE COUPEE	23 011	KENNEBEC
21 013	BELL	21 145	MCCRACKEN	22 079	RAPIDES	23 013	KNOX
21 015	BOONE	21 147	MCCREARY	22 081	RED RIVER	23 015	LINCOLN
21 017	BOURBON	21 149	MCLEAN	22 083	RICHLAND	23 017	OXFORD
21 019	BOYD	21 151	MADISON	22 085	SABINE	23 019	PENOBSCOT
21 021	BOYLE	21 153	MAGOFFIN	22 087	ST. BERNARD	23 021	PISCATAQUIS
21 023	BRACKEN	21 155	MARION	22 089	ST. CHARLES	23 023	SAGadahoc
21 025	BREATHITT	21 157	MARSHALL	22 091	ST. HELENA	23 025	SOMERSET
21 027	BRECKINRIDGE	21 159	MARTIN	22 093	ST. JAMES	23 027	WALDO
21 029	BULLITT	21 161	MASON	22 095	ST. JOHN THE BAPTIST	23 029	WASHINGTON
21 031	BUTLER	21 163	MEADE	22 097	ST. LANDRY	23 031	YORK
21 033	CALDWELL	21 165	MENIFEE	22 099	ST. MARTIN		
21 035	CALLOWAY	21 167	MERCER	22 101	ST. MARY		
21 037	CAMPBELL	21 169	METCALFE	22 103	ST. TAMMANY		
21 039	CARLISLE	21 171	MONROE	22 105	TANGIPAHOA	MARYLAND	
21 041	CARROLL	21 173	MONTGOMERY	22 107	TENSAS	24 001	ALLEGANY
21 043	CARTER	21 175	MORGAN	22 109	TERREBONNE	24 003	ANNE ARUNDEL
21 045	CASEY	21 177	MUHLNBERG	22 111	UNION	24 005	BALTIMORE
21 047	CHRISTIAN	21 179	NELSON	22 113	VERMILION	24 009	CALVERT
21 049	CLARK	21 181	NICHOLAS	22 115	VERNON	24 011	CAROLINE
21 051	CLAY	21 183	OHIO	22 117	WASHINGTON	24 013	CARROLL
21 053	CLINTON	21 185	OLDHAM	22 119	WEBSTER	24 015	CECIL
21 055	CRITTENDEN	21 187	OWEN	22 121	WEST BATON ROUGE	24 017	CHARLES
21 057	CUMBERLAND	21 189	OWSLEY	22 123	WEST CARROLL	24 019	DORCHESTER
21 059	DAVISS	21 191	PENDLETON	22 125	WEST FELICIANA	24 021	FREDERICK
21 061	EDMONSON	21 193	PERRY	22 127	WINN	24 023	GARRETT
21 063	ELLIOTT	21 195	PIKE	22 001	ACADIA	24 025	HARFORD
21 065	ESTILL	21 197	POWELL	22 003	ALLEN	24 027	HOWARD
21 067	FAYETTE	21 199	PULASKI	22 005	ASCENSION	24 029	KENT
21 069	FLEMING	21 201	ROBERTSON	22 007	ASSUMPTION	24 031	MONTGOMERY
21 071	FLOYD	21 203	ROCKCASTLE	22 009	AVOYELLES	24 033	PRINCE GEORGES
21 073	FRANKLIN	21 205	ROWAN	22 011	BEAUREGARD	24 035	QUEEN ANNES
21 075	FULTON	21 207	RUSSELL	22 013	BIENVILLE	24 037	ST. MARYS
21 077	GALLATIN	21 209	SCOTT	22 015	BOSSIER	24 039	SOMERSET
21 079	GARRARD	21 211	SHELBY	22 017	CADDO	24 041	TALBOT
21 081	GRANT	21 213	SIMPSON	22 019	CALCASIEU	24 043	WASHINGTON
21 083	GRAVES	21 215	SPENCER	22 021	CALDWELL	24 045	WICOMICO
21 085	GRAYSON	21 217	TAYLOR	22 023	CAMERON	24 047	WORCESTER
21 087	GREEN	21 219	TODD	22 025	CATAHOULA	24 510	BALTIMORE - INDEP
21 089	GREENUP	21 221	TRIGG	22 027	CLAIBORNE		
21 091	HANCOCK	21 223	TRIMBLE	22 029	CONCORDIA		
21 093	HARDIN	21 225	UNION	22 031	DE SOTO		
21 095	HARLAN	21 227	WARREN	22 033	EAST BATON ROUGE		
21 097	HARRISON	21 229	WASHINGTON	22 035	EAST CARROLL		
21 099	HART	21 231	WAYNE	22 037	EAST FELICIANA		
21 101	HENDERSON	21 233	WEBSTER	22 039	EVANGELINE		
21 103	HENRY	21 235	WHITLEY	22 041	FRANKLIN		
21 105	HICKMAN	21 237	WOLFE	22 043	GRANT		
21 107	HOPKINS	21 239	WOODFORD	22 045	IBERIA		
21 109	JACKSON			22 047	IBERVILLE		
21 111	JEFFERSON			22 049	JACKSON		
21 113	JESSAMINE			22 051	JEFFERSON		
21 115	JOHNSON			22 053	JEFFERSON DAVIS		
21 117	KENTON			22 055	LAFAYETTE		
21 119	KNOTT			22 057	LAFOURCHE		
21 121	KNOX			22 059	LA SALLE		
21 123	LARUE			22 061	LINCOLN		
21 125	LAUREL			22 063	LIVINGSTON		
21 127	LAWRENCE			22 065	MADISON		
21 129	LEE						
21 131	LESLIE						

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes			FIPS Codes			FIPS Codes			FIPS Codes		
St. Cty.	County		St. Cty.	County		St. Cty.	County		St. Cty.	County	
MASSACHUSETTS			MICHIGAN			MINNESOTA			MINNESOTA		
25 001	BARNSTABLE		26 067	IONIA		27 001	AITKIN		27 103	NICOLLET	
25 003	BERKSHIRE		26 069	IOSCO		27 003	ANOKA		27 105	NOBLES	
25 005	BRISTOL		26 071	IRON		27 005	BECKER		27 107	NORMAN	
25 007	DUKES		26 073	ISABELLA		27 007	BELTRAMI		27 109	OLMSTED	
25 009	ESSEX		26 075	JACKSON		27 009	BENTON		27 111	OTTER TAIL	
25 011	FRANKLIN		26 077	KALAMAZOO		27 011	BIG STONE		27 113	PENNINGTON	
25 013	HAMPDEN		26 079	KALKASKA		27 013	BLUE EARTH		27 115	PINE	
25 015	HAMPSHIRE		26 081	KENT		27 015	BROWN		27 117	PIPESTONE	
25 017	MIDDLESEX		26 083	KEWEENAW		27 017	CARLTON		27 119	POLK	
25 019	NANTUCKET		26 085	LAKE		27 019	CARVER		27 121	POPE	
25 021	NORFOLK		26 087	LAPEER		27 021	CASS		27 123	RAMSEY	
25 023	PLYMOUTH		26 089	LEELANAU		27 023	CHIPPEWA		27 125	RED LAKE	
25 025	SUFFOLK		26 091	LENAWEE		27 025	CHISAGO		27 127	REDWOOD	
25 027	WORCESTER		26 093	LIVINGSTON		27 027	CLAY		27 129	RENVILLE	
			26 095	LUCE		27 029	CLEARWATER		27 131	RICE	
			26 097	MACKINAC		27 031	COOK		27 133	ROCK	
			26 099	MACOMB		27 033	COTTONWOOD		27 135	ROSEAU	
MICHIGAN			26 101	MANISTEE		27 035	CROW WING		27 137	ST. LOUIS	
26 001	ALCONA		26 103	MARQUETTE		27 037	DAKOTA		27 139	SCOTT	
26 003	ALGER		26 105	MASON		27 039	DODGE		27 141	SHERBURNE	
26 005	ALLEGAN		26 107	MECOSTA		27 041	DOUGLAS		27 143	SIBLEY	
26 007	ALPENA		26 109	MENOMINEE		27 043	FARIBAULT		27 145	STEARNS	
26 009	ANTRIM		26 111	MIDLAND		27 045	FILLMORE		27 147	STEELE	
26 011	ARENAC		26 113	MISSAUKEE		27 047	FREEBORN		27 149	STEVENS	
26 013	BARAGA		26 115	MONROE		27 049	GOODHUE		27 151	SWIFT	
26 015	BARRY		26 117	MONTCALM		27 051	GRANT		27 153	TODD	
26 017	BAY		26 119	MONTMORENCY		27 053	HENNEPIN		27 155	TRAVERSE	
26 019	BENZIE		26 121	MUSKEGON		27 055	HOUSTON		27 157	WABASHA	
26 021	BERRIEN		26 123	NEWAYGO		27 057	HUBBARD		27 159	WADENA	
26 023	BRANCH		26 125	OAKLAND		27 059	ISANTI		27 161	WASECA	
26 025	CALHOUN		26 127	OCEANA		27 061	ITASCA		27 163	WASHINGTON	
26 027	CASS		26 129	OGEMAW		27 063	JACKSON		27 165	WATONWAN	
26 029	CHARLEVOIX		26 131	ONTONAGON		27 065	KANABEC		27 167	WILKIN	
26 031	CHEBOYGAN		26 133	OSCEOLA		27 067	KANDIYOHI		27 169	WINONA	
26 033	CHIPPEWA		26 135	OSCODA		27 069	KITTSOON		27 171	WRIGHT	
26 035	CLARE		26 137	OTSEGO		27 071	KOOCHICHIING		27 173	YELLOW MEDICINE	
26 037	CLINTON		26 139	OTTAWA		27 073	LAC QUI PARLE				
26 039	CRAWFORD		26 141	PRESQUE ISLE		27 075	LAKE				
26 041	DELTA		26 143	ROSCOMMON		27 077	LAKE OF THE WOODS				
26 043	DICKINSON		26 145	SAGINAW		27 079	LE SUEUR				
26 045	EATON		26 147	ST. CLAIR		27 081	LINCOLN				
26 047	EMMET		26 149	ST. JOSEPH		27 083	LYON				
26 049	GENESEE		26 151	SANILAC		27 085	MCLEOD				
26 051	GLADWIN		26 153	SCHOOLCRAFT		27 087	MAHNOMEN				
26 053	GOGEBIC		26 155	SHIAWASSEE		27 089	MARSHALL				
26 055	GRAND TRAVERSE		26 157	TUSCOLA		27 091	MARTIN				
26 057	GRATIOT		26 159	VAN BUREN		27 093	MEEKER				
26 059	HILLSDALE		26 161	WASHTENAW		27 095	MILLE LACS				
26 061	HOUGHTON		26 163	WAYNE		27 097	MORRISON				
26 063	HURON		26 165	WEXFORD		27 099	MOWER				
26 065	INGHAM					27 101	MURRAY				

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Codes		FIPS Codes	
St. Cty.	County	St. Cty.	County	St. Cty.	County	St. Cty.	County
MISSISSIPPI		MISSISSIPPI		MISSOURI		MONTANA	
28 001	ADAMS	28 133	SUNFLOWER	29 095	JACKSON	30 001	BEAVERHEAD
28 003	ALCORN	28 135	TALLAHATCHIE	29 097	JASPER	30 003	BIG HORN
28 005	AMITE	28 137	TATE	29 099	JEFFERSON	30 005	BLAINE
28 007	ATTALA	28 139	TIPPAH	29 101	JOHNSON	30 007	BROADWATER
28 009	BENTON	28 141	TISHOMINGO	29 103	KNOX	30 009	CARBON
28 011	BOLIVAR	28 143	TUNICA	29 105	LACLEDE	30 011	CARTER
28 013	CALHOUN	28 145	UNION	29 107	LAFAYETTE	30 013	CASCADE
28 015	CARROLL	28 147	WALTHALL	29 109	LAWRENCE	30 015	CHOUTEAU
28 017	CHICKASAW	28 149	WARREN	29 111	LEWIS	30 017	CUSTER
28 019	CHOCTAW	28 151	WASHINGTON	29 113	LINCOLN	30 019	DANIELS
28 021	CLAIBORNE	28 153	WAYNE	29 115	LINN	30 021	DAWSON
28 023	CLARKE	28 155	WEBSTER	29 117	LIVINGSTON	30 023	DEER LODGE
28 025	CLAY	28 157	WILKINSON	29 119	MCDONALD	30 025	FALLON
28 027	COAHOMA	28 159	WINSTON	29 121	MACON	30 027	FERGUS
28 029	COPIAH	28 161	YALOBUSHA	29 123	MADISON	30 029	FLATHEAD
28 031	COVINGTON	28 163	YAZOO	29 125	MARIES	30 031	GALLATIN
28 033	DE SOTO			29 127	MARION	30 033	GARFIELD
28 035	FORREST			29 129	MERCER	30 035	GLACIER
28 037	FRANKLIN	MISSOURI		29 131	MILLER	30 037	GOLDEN VALLEY
28 039	GEORGE			29 133	MISSISSIPPI	30 039	GRANITE
28 041	GREENE	29 001	ADAIR	29 135	MONITEAU	30 041	HILL
28 043	GRENADA	29 003	ANDREW	29 137	MONROE	30 043	JEFFERSON
28 045	HANCOCK	29 005	ATCHISON	29 139	MONTGOMERY	30 045	JUDITH BASIN
28 047	HARRISON	29 007	AUDRAIN	29 141	MORGAN	30 047	LAKE
28 049	HINDS	29 009	BARRY	29 143	NEW MADRID	30 049	LEWIS AND CLARK
28 051	HOLMES	29 011	BARTON	29 145	NEWTON	30 051	LIBERTY
28 053	HUMPHREYS	29 013	BATES	29 147	NODAWAY	30 053	LINCOLN
28 055	ISSAQUEUA	29 015	BENTON	29 149	OREGON	30 055	MC CONE
28 057	ITAWAMBA	29 017	BOLLINGER	29 151	OSAGE	30 057	MADISON
28 059	JACKSON	29 019	BOONE	29 153	OZARK	30 059	MEAGHER
28 061	JASPER	29 021	BUCHANAN	29 155	PEMISCOT	30 061	MINERAL
28 063	JEFFERSON	29 023	BUTLER	29 157	PERRY	30 063	MISSOULA
28 065	JEFFERSON DAVIS	29 025	CALDWELL	29 159	PETTIS	30 065	MUSSELSHELL
28 067	JONES	29 027	CALLAWAY	29 161	PHELPS	30 069	PETROLEUM
28 069	KEMPER	29 029	CAMDEN	29 163	PIKE	30 071	PHILLIPS
28 071	LAFAYETTE	29 031	CAPE GIRARDEAU	29 165	PLATTE	30 073	PONDERA
28 073	LAMAR	29 033	CARROLL	29 167	POLK	30 075	POWDER RIVER
28 075	LAUDERDALE	29 035	CARTER	29 169	PULASKI	30 077	POWELL
28 077	LAWRENCE	29 037	CASS	29 171	PUTNAM	30 079	PRAIRIE
28 079	LEAKE	29 039	CEDAR	29 173	RALLS	30 081	RAVALLI
28 081	LEE	29 041	CHARITON	29 175	RANDOLPH	30 083	RICHLAND
28 083	LEFLORE	29 043	CHRISTIAN	29 177	RAY	30 085	ROOSEVELT
28 085	LINCOLN	29 045	CLARK	29 179	REYNOLDS	30 087	ROSEBUD
28 087	LOWNDES	29 047	CLAY	29 181	RIPLEY	30 089	SANDERS
28 089	MADISON	29 049	CLINTON	29 183	ST. CHARLES	30 091	SHERIDAN
28 091	MARION	29 051	COLE	29 185	ST. CLAIR	30 093	SILVER BOW
28 093	MARSHALL	29 053	COOPER	29 186	STE. GENEVIEVE	30 095	STILLWATER
28 095	MONROE	29 055	CRAWFORD	29 187	ST. FRANCOIS	30 097	SWEET GRASS
28 097	MONTGOMERY	29 057	DADE	29 189	ST. LOUIS	30 099	TETON
28 099	NESHOBA	29 059	DALLAS	29 195	SALINE	30 101	TOOLE
28 101	NEWTON	29 061	DAVIESS	29 197	SCHUYLER	30 103	TREASURE
28 103	NOXUBEE	29 063	DE KALB	29 199	SCOTLAND	30 105	VALLEY
28 105	OKTIBBEHA	29 065	DENT	29 201	SCOTT	30 107	WHEATLAND
28 107	PANOLA	29 067	DOUGLAS	29 203	SHANNON	30 109	WIBAUX
28 109	PEARL RIVER	29 069	DUNKLIN	29 205	SHELBY	30 111	YELLOWSTONE
28 111	PERRY	29 071	FRANKLIN	29 207	STODDARD	30 901	PARK(INCL.YLWST
28 113	PIKE	29 073	GASCONADE	29 209	STONE		
28 115	PONTOTOC	29 075	GENTRY	29 211	SULLIVAN		
28 117	PRENTISS	29 077	GREENE	29 213	TANEY		
28 119	QUITMAN	29 079	GRUNDY	29 215	TEXAS		
28 121	RANKIN	29 081	HARRISON	29 217	VERNON		
28 123	SCOTT	29 083	HENRY	29 219	WARREN		
28 125	SHARKEY	29 085	HICKORY	29 221	WASHINGTON		
28 127	SIMPSON	29 087	HOLT	29 223	WAYNE		
28 129	SMITH	29 089	HOWARD	29 225	WEBSTER		
28 131	STONE	29 091	HOWELL	29 227	WORTH		
		29 093	IRON	29 229	WRIGHT		
				29 510	ST. LOUIS IND. - INDEPEN		

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes			FIPS Codes			FIPS Codes			FIPS Codes		
St.	Cty.	County	St.	Cty.	County	St.	Cty.	County	St.	Cty.	County
NEBRASKA			NEBRASKA			NEW JERSEY			NEW YORK		
31	001	ADAMS	31	135	PERKINS	34	001	ATLANTIC	36	001	ALBANY
31	003	ANTELOPE	31	137	PHELPS	34	003	BERGEN	36	003	ALLEGANY
31	005	ARTHUR	31	139	PIERCE	34	005	BURLINGTON	36	005	BRONX
31	007	BANNER	31	141	PLATTE	34	007	CAMDEN	36	007	BROOME
31	009	BLAINE	31	143	POLK	34	009	CAPE MAY	36	009	CATTARAUGUS
31	011	BOONE	31	145	RED WILLOW	34	011	CUMBERLAND	36	011	CAYUGA
31	013	BOX BUTTE	31	147	RICHARDSON	34	013	ESSEX	36	013	CHAUTAUQUA
31	015	BOYD	31	149	ROCK	34	015	GLOUCESTER	36	015	CHEMUNG
31	017	BROWN	31	151	SALINE	34	017	HUDSON	36	017	CHENANGO
31	019	BUFFALO	31	153	SARPY	34	019	HUNTERDON	36	019	CLINTON
31	021	BURT	31	155	SAUNDERS	34	021	MERCER	36	021	COLUMBIA
31	023	BUTLER	31	157	SCOTTS BLUFF	34	023	MIDDLESEX	36	023	CORTLAND
31	025	CASS	31	159	SEWARD	34	025	MONMOUTH	36	025	DELAWARE
31	027	CEDAR	31	161	SHERIDAN	34	027	MORRIS	36	027	DUTCHESS
31	029	CHASE	31	163	SHERMAN	34	029	OCEAN	36	029	ERIE
31	031	CHERRY	31	165	SIOUX	34	031	PASSAIC	36	031	ESSEX
31	033	CHEYENNE	31	167	STANTON	34	033	SALEM	36	033	FRANKLIN
31	035	CLAY	31	169	THAYER	34	035	SOMERSET	36	035	FULTON
31	037	COLFAX	31	171	THOMAS	34	037	SUSSEX	36	037	GENESEE
31	039	CUMING	31	173	THURSTON	34	039	UNION	36	039	GREENE
31	041	CUSTER	31	175	VALLEY	34	041	WARREN	36	041	HAMILTON
31	043	DAKOTA	31	177	WASHINGTON	NEW MEXICO			36	043	HERKIMER
31	045	DAWES	31	179	WAYNE	35	001	BERNALILLO	36	045	JEFFERSON
31	047	DAWSON	31	181	WEBSTER	35	003	CATRON	36	047	KINGS
31	049	DEUEL	31	183	WHEELER	35	005	CHAVES	36	049	LEWIS
31	051	DIXON	31	185	YORK	35	007	COLFAX	36	051	LIVINGSTON
31	053	DODGE	NEVADA			35	009	CURRY	36	053	MADISON
31	055	DOUGLAS	32	003	CLARK	35	011	DE BACA	36	055	MONROE
31	057	DUNDY	32	005	DOUGLAS	35	013	DONA ANA	36	057	MONTGOMERY
31	059	FILLMORE	32	007	ELKO	35	015	EDDY	36	059	NASSAU
31	061	FRANKLIN	32	009	ESMERELDA	35	017	GRANT	36	061	NEW YORK
31	063	FRONTIER	32	011	EUREKA	35	019	GUADALUPE	36	063	NIAGARA
31	065	FURNAS	32	013	HUMBOLDT	35	021	HARDING	36	065	ONEIDA
31	069	GARDEN	32	015	LANDER	35	023	HIDALGO	36	067	ONONDAGA
31	071	GARFIELD	32	017	LINCOLN	35	025	LEA	36	069	ONTARIO
31	073	GOSPER	32	019	LYON	35	027	LINCOLN	36	071	ORANGE
31	075	GRANT	32	021	MINERAL	35	028	LOS ALAMOS	36	073	ORLEANS
31	077	GREELEY	32	023	NYE	35	029	LUNA	36	075	OSWEGO
31	079	HALL	32	027	PERSHING	35	031	MCKINLEY	36	077	OTSEGO
31	081	HAMILTON	32	029	STOREY	35	033	MORA	36	079	PUTNAM
31	083	HARLAN	32	031	WASHOE	35	035	OTERO	36	081	QUEENS
31	085	HAYES	32	033	WHITE PINE	35	037	QUAY	36	083	RENSSELAER
31	087	HITCHCOCK	32	510	CARSON CITY	35	039	RIO ARRIBA	36	085	RICHMOND
31	089	HOLT	NEW HAMPSHIRE			35	041	ROOSEVELT	36	087	ROCKLAND
31	091	HOOKE	33	001	BELKNAP	35	043	SANDOVAL	36	089	ST. LAWRENCE
31	093	HOWARD	33	003	CARROLL	35	045	SAN DOVAL	36	091	SARATOGA
31	095	JEFFERSON	33	005	CHESHIRE	35	047	SAN MIGUEL	36	093	SCHENECTADY
31	097	JOHNSON	33	007	COOS	35	049	SANTA FE	36	095	SCHOHARIE
31	099	KEARNEY	33	009	GRAFTON	35	051	SIERRA	36	097	SCHUYLER
31	101	KEITH	33	011	HILLSBOROUGH	35	053	SOCORRO	36	099	SENECA
31	103	KEYA PAHA	33	013	MERRIMACK	35	055	TAOS	36	101	STEBEN
31	105	KIMBALL	33	015	ROCKINGHAM	35	057	TORRANCE	36	103	SUFFOLK
31	107	KNOX	33	017	STRAFFORD	35	059	UNION	36	105	SULLIVAN
31	109	LANCASTER	33	019	SULLIVAN	35	061	VALENCIA	36	107	TIOGA
31	111	LINCOLN							36	109	TOMPKINS
31	113	LOGAN							36	111	ULSTER
31	115	LOUP							36	113	WARREN
31	117	MCPHERSON							36	115	WASHINGTON
31	119	MADISON							36	117	WAYNE
31	121	MERRICK							36	119	WESTCHESTER
31	123	MORRILL							36	121	WYOMING
31	125	NANCE							36	123	YATES
31	127	NEMAH									
31	129	NUCKOLLS									
31	131	OTOE									

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Codes		FIPS Codes	
St. Cty.	County	St. Cty.	County	St. Cty.	County	St. Cty.	County
NORTH CAROLINA		NORTH CAROLINA		NORTH DAKOTA		OHIO	
37 001	ALAMANCE	37 133	ONslow	38 035	GRAND FORKS	39 045	FAIRFIELD
37 003	ALEXANDER	37 135	ORANGE	38 037	GRANT	39 047	FAYETTE
37 005	ALLEGHANY	37 137	PAMLICO	38 039	GRIGGS	39 049	FRANKLIN
37 007	ANSON	37 139	PASQUOTANK	38 041	HETTINGER	39 051	FULTON
37 009	ASHE	37 141	PENDER	38 043	KIDDER	39 053	GALLIA
37 011	AVERY	37 143	PERQUIMANS	38 045	LA MOURE	39 055	GEAUGA
37 013	BEAUFORT	37 145	PERSON	38 047	LOGAN	39 057	GREENE
37 015	BERTIE	37 147	PITT	38 049	MCHENRY	39 059	GUERNSEY
37 017	BLADEN	37 149	POLK	38 051	MCINTOSH	39 061	HAMILTON
37 019	BRUNSWICK	37 151	RANDOLPH	38 053	MCKENZIE	39 063	HANCOCK
37 021	BUNCOMBE	37 153	RICHMOND	38 055	MCLEAN	39 065	HARDIN
37 023	BURKE	37 155	ROBESON	38 057	MERCER	39 067	HARRISON
37 025	CABARRUS	37 157	ROCKINGHAM	38 059	MORTON	39 069	HENRY
37 027	CALDWELL	37 159	ROWAN	38 061	MOUNTRAIL	39 071	HIGHLAND
37 029	CAMDEN	37 161	RUTHERFORD	38 063	NELSON	39 073	HOCKING
37 031	CARTERET	37 163	SAMPSON	38 065	OLIVER	39 075	HOLMES
37 033	CASWELL	37 165	SCOTLAND	38 067	PEMBINA	39 077	HURON
37 035	CATAWBA	37 167	STANLY	38 069	PIERCE	39 079	JACKSON
37 037	CHATHAM	37 169	STOKES	38 071	RAMSEY	39 081	JEFFERSON
37 039	CHEROKEE	37 171	SURRY	38 073	RANSOM	39 083	KNOX
37 041	CHOWAN	37 173	SWAIN	38 075	RENVILLE	39 085	LAKE
37 043	CLAY	37 175	TRANSYLVANIA	38 077	RICHLAND	39 087	LAWRENCE
37 045	CLEVELAND	37 177	TYRRELL	38 079	ROLETTE	39 089	LICKING
37 047	COLUMBUS	37 179	UNION	38 081	SARGENT	39 091	LOGAN
37 049	CRAVEN	37 181	VANCE	38 083	SHERIDAN	39 093	LORAIN
37 051	CUMBERLAND	37 183	WAKE	38 085	SIOUX	39 095	LUCAS
37 053	CURRITUCK	37 185	WARREN	38 087	SLOPE	39 097	MADISON
37 055	DARE	37 187	WASHINGTON	38 089	STARK	39 099	MAHONING
37 057	DAVIDSON	37 189	WATAUGA	38 091	STEELE	39 101	MARION
37 059	DAVIE	37 191	WAYNE	38 093	STUTSMAN	39 103	MEDINA
37 061	DUPLIN	37 193	WILKES	38 095	TOWNER	39 105	MEIGS
37 063	DURHAM	37 195	WILSON	38 097	TRAILL	39 107	MERCER
37 065	EDGEcombe	37 197	YADKIN	38 099	WALSH	39 109	MIAMI
37 067	FORSYTH	37 199	YANCEY	38 101	WARD	39 111	MONROE
37 069	FRANKLIN			38 103	WELLS	39 113	MONTGOMERY
37 071	GASTON			38 105	WILLIAMS	39 115	MORGAN
37 073	GATES					39 117	MORROW
37 075	GRAHAM					39 119	MUSKINGUM
37 077	GRANVILLE					39 121	NOBLE
37 079	GREENE					39 123	OTTAWA
37 081	GUILFORD					39 125	PAULDING
37 083	HALIFAX					39 127	PERRY
37 085	HARNETT					39 129	PICKAWAY
37 087	HAYWOOD					39 131	PIKE
37 089	HENDERSON					39 133	PORTAGE
37 091	HERTFORD					39 135	PREBLE
37 093	HOKE					39 137	PUTNAM
37 095	HYDE					39 139	RICHLAND
37 097	IREDELL					39 141	ROSS
37 099	JACKSON					39 143	SANDUSKY
37 101	JOHNSTON					39 145	SCIOTO
37 103	JONES					39 147	SENECA
37 105	LEE					39 149	SHELBY
37 107	LENOIR					39 151	STARK
37 109	LINCOLN					39 153	SUMMIT
37 111	MCDOWELL					39 155	TRUMBULL
37 113	MACON					39 157	TUSCARAWAS
37 115	MADISON					39 159	UNION
37 117	MARTIN					39 161	VAN WERT
37 119	MECKLENBURG					39 163	VINTON
37 121	MITCHELL					39 165	WARREN
37 123	MONTGOMERY					39 167	WASHINGTON
37 125	MOORE					39 169	WAYNE
37 127	NASH					39 171	WILLIAMS
37 129	NEW HANOVER					39 173	WOOD
37 131	NORTHAMPTON					39 175	WYANDOT

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Codes		FIPS Codes	
St.	Cty.	St.	Cty.	St.	Cty.	St.	Cty.
OKLAHOMA		OKLAHOMA		PENNSYLVANIA		RHODE ISLAND	
40	001	40	133	42	001	44	001
40	003	40	135	42	003	44	003
40	005	40	137	42	005	44	005
40	007	40	139	42	007	44	007
40	009	40	141	42	009	44	009
40	011	40	143	42	011		
40	013	40	145	42	013		
40	015	40	147	42	015		
40	017	40	149	42	017		
40	019	40	151	42	019		
40	021	40	153	42	021		
40	023			42	023		
40	025			42	025		
40	027			42	027		
40	029			42	029		
40	031			42	031		
40	033			42	033		
40	035			42	035		
40	037			42	037		
40	039			42	039		
40	041			42	041		
40	043			42	043		
40	045			42	045		
40	047			42	047		
40	049			42	049		
40	051			42	051		
40	053			42	053		
40	055			42	055		
40	057			42	057		
40	059			42	059		
40	061			42	061		
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40	067			42	067		
40	069			42	069		
40	071			42	071		
40	073			42	073		
40	075			42	075		
40	077			42	077		
40	079			42	079		
40	081			42	081		
40	083			42	083		
40	085			42	085		
40	087			42	087		
40	089			42	089		
40	091			42	091		
40	093			42	093		
40	095			42	095		
40	097			42	097		
40	099			42	099		
40	101			42	101		
40	103			42	103		
40	105			42	105		
40	107			42	107		
40	109			42	109		
40	111			42	111		
40	113			42	113		
40	115			42	115		
40	117			42	117		
40	119			42	119		
40	121			42	121		
40	123			42	123		
40	125			42	125		
40	127			42	127		
40	129			42	129		
40	131			42	131		
				42	133		

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Codes		FIPS Codes	
St. Cty.	County	St. Cty.	County	St. Cty.	County	St. Cty.	County
SOUTH DAKOTA		TENNESSEE		TENNESSEE		TEXAS	
46 003	AURORA	47 001	ANDERSON	47 133	OVERTON	48 071	CHAMBERS
46 005	BEADLE	47 003	BEDFORD	47 135	PERRY	48 073	CHEROKEE
46 007	BENNETT	47 005	BENTON	47 137	PICKETT	48 075	CHILDRESS
46 009	BON HOMME	47 007	BLED SOE	47 139	POLK	48 077	CLAY
46 011	BROOKINGS	47 009	BLOUNT	47 141	PUTNAM	48 079	COCHRAN
46 013	BROWN	47 011	BRADLEY	47 143	RHEA	48 081	COKE
46 015	BRULE	47 013	CAMPBELL	47 145	ROANE	48 083	COLEMAN
46 017	BUFFALO	47 015	CANNON	47 147	ROBERTSON	48 085	COLLIN
46 019	BUTTE	47 017	CARROLL	47 149	RUTHERFORD	48 087	COLLINGSWORTH
46 021	CAMPBELL	47 019	CARTER	47 151	SCOTT	48 089	COLORADO
46 023	CHARLES MIX	47 021	CHEATHAM	47 153	SEQUATCHIE	48 091	COMAL
46 025	CLARK	47 023	CHESTER	47 155	SEVIER	48 093	COMANCHE
46 027	CLAY	47 025	CLAIBORNE	47 157	SHELBY	48 095	CONCHO
46 029	CODINGTON	47 027	CLAY	47 159	SMITH	48 097	COOKE
46 031	CORSON	47 029	COCKE	47 161	STEWART	48 099	CORYELL
46 033	CUSTER	47 031	COFFEE	47 163	SULLIVAN	48 101	COTTLE
46 035	DAVISON	47 033	CROCKETT	47 165	SUMNER	48 103	CRANE
46 037	DAY	47 035	CUMBERLAND	47 167	TIPTON	48 105	CROCKETT
46 039	DEUEL	47 037	DAVIDSON	47 169	TROUSDALE	48 107	CROSBY
46 041	DEWEY	47 039	DECATUR	47 171	UNICOI	48 109	CULBERSON
46 043	DOUGLAS	47 041	DEKALB	47 173	UNION	48 111	DALLAM
46 045	EDMUNDS	47 043	DICKSON	47 175	VAN BUREN	48 113	DALLAS
46 047	FALL RIVER	47 045	DYER	47 177	WARREN	48 115	DAWSON
46 049	FAULK	47 047	FAYETTE	47 179	WASHINGTON	48 117	DEAF SMITH
46 051	GRANT	47 049	FENTRESS	47 181	WAYNE	48 119	DELTA
46 053	GREGORY	47 051	FRANKLIN	47 183	WEAKLEY	48 121	DENTON
46 055	HAAKON	47 053	GIBSON	47 185	WHITE	48 123	DE WITT
46 057	HAMLIN	47 055	GILES	47 187	WILLIAMSON	48 125	DICKENS
46 059	HAND	47 057	GRAINGER	47 189	WILSON	48 127	DIMITT
46 061	HANSON	47 059	GREENE			48 129	DONLEY
46 063	HARDING	47 061	GRUNDY	TEXAS		48 131	DUVAL
46 065	HUGHES	47 063	HAMBLEN	48 001	ANDERSON	48 133	EASTLAND
46 067	HUTCHINSON	47 065	HAMILTON	48 003	ANDREWS	48 135	ECTOR
46 069	HYDE	47 067	HANCOCK	48 005	ANGELINA	48 137	EDWARDS
46 071	JACKSON	47 069	HARDEMAN	48 007	ARANSAS	48 139	ELLIS
46 073	JERAULD	47 071	HARDIN	48 009	ARCHER	48 141	EL PASO
46 075	JONES	47 073	HAWKINS	48 011	ARMSTRONG	48 143	ERATH
46 077	KINGSBURY	47 075	HAYWOOD	48 013	ATASCOSA	48 145	FALLS
46 079	LAKE	47 077	HENDERSON	48 015	AUSTIN	48 147	FANNIN
46 081	LAWRENCE	47 079	HENRY	48 017	BAILEY	48 149	FAYETTE
46 083	LINCOLN	47 081	HICKMAN	48 019	BANDERA	48 151	FISHER
46 085	LYMAN	47 083	HOUSTON	48 021	BASTROP	48 153	FLOYD
46 087	MCCOOK	47 085	HUMPHREYS	48 023	BAYLOR	48 155	FOARD
46 089	MCPHERSON	47 087	JACKSON	48 025	BEE	48 157	FORT BEND
46 091	MARSHALL	47 089	JEFFERSON	48 027	BELL	48 159	FRANKLIN
46 093	MEADE	47 091	JOHNSON	48 029	BEXAR	48 161	FREESTONE
46 095	MELLETTTE	47 093	KNOX	48 031	BLANCO	48 163	FRIO
46 097	MINER	47 095	LAKE	48 033	BORDEN	48 165	GAINES
46 099	MINNEHAHA	47 097	LAUDERDALE	48 035	BOSQUE	48 167	GALVESTON
46 101	MOODY	47 099	LAWRENCE	48 037	BOWIE	48 169	GARZA
46 103	PENNINGTON	47 101	LEWIS	48 039	BRAZORIA	48 171	GILLESPIE
46 105	PERKINS	47 103	LINCOLN	48 041	BRAZOS	48 173	GLASSCOCK
46 107	POTTER	47 105	LOUDON	48 043	BREWSTER	48 175	GOLIAD
46 109	ROBERTS	47 107	MCMINN	48 045	BRISCOE	48 177	GONZALES
46 111	SANBORN	47 109	MCNAIRY	48 047	BROOKS	48 179	GRAY
46 113	SHANNON	47 111	MACON	48 049	BROWN	48 181	GRAYSON
46 115	SPINK	47 113	MADISON	48 051	BURLESON	48 183	GREGG
46 117	STANLEY	47 115	MARION	48 053	BURNET	48 185	GRIMES
46 119	SULLY	47 117	MARSHALL	48 055	CALDWELL	48 187	GUADALUPE
46 121	TODD	47 119	MAURY	48 057	CALHOUN	48 189	HALE
46 123	TRIPP	47 121	MEIGS	48 059	CALLAHAN	48 191	HALL
46 125	TURNER	47 123	MONROE	48 061	CAMERON	48 193	HAMILTON
46 127	UNION	47 125	MONTGOMERY	48 063	CAMP	48 195	HANSFORD
46 129	WALWORTH	47 127	MOORE	48 065	CARSON	48 197	HARDEMAN
46 131	WASHABAUGH	47 129	MORGAN	48 067	CASS	48 199	HARDIN
46 133	YANKTON	47 131	OBION	48 069	CASTRO	48 201	HARRIS
46 137	ZIEBACH					48 203	HARRISON
						48 205	HARTLEY

APPENDIX M. FIPS Codes for States and Counties, continued.

FIPS Codes		FIPS Codes		FIPS Codes		FIPS Codes	
St. Cty.	County	St. Cty.	County	St. Cty.	County	St. Cty.	Cour
TEXAS		TEXAS		TEXAS		VIRGINIA	
48 207	HASKELL	48 343	MORRIS	48 477	WASHINGTON	51 001	ACCOMACK
48 209	HAYS	48 345	MOTLEY	48 479	WEBB	51 003	ALBEMARLE
48 211	HEMPHILL	48 347	NACOGDOCHES	48 481	WHARTON	51 005	ALLEGHANY
48 213	HENDERSON	48 349	NAVARRO	48 483	WHEELER	51 007	AMELIA
48 215	HIDALGO	48 351	NEWTON	48 485	WICHITA	51 009	AMHERST
48 217	HILL	48 353	NOLAN	48 487	WILBARGER	51 011	APPOMATTOX
48 219	HOCKLEY	48 355	NUECES	48 489	WILLACY	51 013	ARLINGTON
48 221	HOOD	48 357	OCHILTREE	48 491	WILLIAMSON	51 015	AUGUSTA
48 223	HOPKINS	48 359	OLDHAM	48 493	WILSON	51 017	BATH
48 225	HOUSTON	48 361	ORANGE	48 495	WINKLER	51 019	BEDFORD
48 227	HOWARD	48 363	PALO PINTO	48 497	WISE	51 021	BLAND
48 229	HUDSPETH	48 365	PANOLA	48 499	WOOD	51 023	BOTETOURT
48 231	HUNT	48 367	PARKER	48 501	YOAKUM	51 025	BRUNSWICK
48 233	HUTCHINSON	48 369	PARMER	48 503	YOUNG	51 027	BUCHANAN
48 235	IRION	48 371	PECOS	48 505	ZAPATA	51 029	BUCKINGHAM
48 237	JACK	48 373	POLK	48 507	ZAVALA	51 031	CAMPBELL
48 239	JACKSON	48 375	POTTER			51 033	CAROLINE
48 241	JASPER	48 377	PRESIDIO			51 035	CARROLL
48 243	JEFF DAVIS	48 379	RAINS	UTAH		51 036	CHARLES CITY
48 245	JEFFERSON	48 381	RANDALL	49 001	BEAVER	51 037	CHARLOTTE
48 247	JIM HOGG	48 383	REAGAN	49 003	BOX ELDER	51 041	CHESTERFIELD
48 249	JIM WELLS	48 385	REAL	49 005	CACHE	51 043	CLARKE
48 251	JOHNSON	48 387	RED RIVER	49 007	CARBON	51 045	CRAIG
48 253	JONES	48 389	REEVES	49 009	DAGGETT	51 047	CULPEPER
48 255	KARNES	48 391	REFUGIO	49 011	DAVIS	51 049	CUMBERLAND
48 257	KAUFMAN	48 393	ROBERTS	49 013	DUCHESNE	51 051	DICKENSON
48 259	KENDALL	48 395	ROBERTSON	49 015	EMERY	51 053	DINWIDDIE
48 261	KENEDY	48 397	ROCKWALL	49 017	GARFIELD	51 057	ESSEX
48 263	KENT	48 399	RUNNELS	49 019	GRAND	51 059	FAIRFAX
48 265	KERR	48 401	RUSK	49 021	IRON	51 061	FAUQUIER
48 267	KIMBLE	48 403	SABINE	49 023	JUAB	51 063	FLOYD
48 269	KING	48 405	SAN AUGUSTINE	49 025	KANE	51 065	FLUVANNA
48 271	KINNEY	48 407	SAN JACINTO	49 027	MILLARD	51 067	FRANKLIN
48 273	KLEBERG	48 409	SAN PATRICIO	49 029	MORGAN	51 069	FREDERICK
48 275	KNOX	48 411	SAN SABA	49 031	PIUTE	51 071	GILES
48 277	LAMAR	48 413	SCHLEICHER	49 033	RICH	51 073	GLOUCESTER
48 279	LAMB	48 415	SCURRY	49 035	SALT LAKE	51 075	GOOCHLAND
48 281	LAMPASAS	48 417	SHACKELFORD	49 037	SAN JUAN	51 077	GRAYSON
48 283	LA SALLE	48 419	SHELBY	49 039	SANPETE	51 079	GREENE
48 285	LAVACA	48 421	SHERMAN	49 041	SEVIER	51 081	GREENSVILLE
48 287	LEE	48 423	SMITH	49 043	SUMMIT	51 083	HALIFAX
48 289	LEON	48 425	SOMERVELL	49 045	TOOELE	51 085	HANOVER
48 291	LIBERTY	48 427	STARR	49 047	UINTAH	51 087	HENRICO
48 293	LIMESTONE	48 429	STEPHENS	49 049	UTAH	51 089	HENRY
48 295	LIPSCOMB	48 431	STERLING	49 051	WASATCH	51 091	HIGHLAND
48 297	LIVE OAK	48 433	STONEWALL	49 053	WASHINGTON	51 093	ISLE OF WIGHT
48 299	LLANO	48 435	SUTTON	49 055	WAYNE	51 095	JAMES CITY
48 301	LOVING	48 437	SWISHER	49 057	WEBER	51 097	KING AND QUEEN
48 303	LUBBOCK	48 439	TARRANT			51 099	KING GEORGE
48 305	LYNN	48 441	TAYLOR			51 101	KING WILLIAM
48 307	MCCULLOCH	48 443	TERRELL			51 103	LANCASTER
48 309	MCLENNAN	48 445	TERRY	VERMONT		51 105	LEE
48 311	MCMULLEN	48 447	THROCKMORTON	50 001	ADDISON	51 107	LOUDOUN
48 313	MADISON	48 449	TITUS	50 003	BENNINGTON	51 109	LOUISA
48 315	MARION	48 451	TOM GREEN	50 005	CALEDONIA	51 111	LUNENBERG
48 317	MARTIN	48 453	TRAVIS	50 007	CHITTENDEN	51 113	MADISON
48 319	MASON	48 455	TRINITY	50 009	ESSEX	51 115	MATHEWS
48 321	MATAGORDA	48 457	TYLER	50 011	FRANKLIN	51 117	MECKLENBURG
48 323	MAVERICK	48 459	UPSHUR	50 013	GRAND ISLE	51 119	MIDDLESEX
48 325	MEDINA	48 461	UPTON	50 015	LAMOILLE	51 121	MONTGOMERY
48 327	MENARD	48 461	UPTON	50 017	ORANGE	51 125	NELSON
48 329	MIDLAND	48 463	UVALDE	50 019	ORLEANS	51 127	NEW KENT
48 331	MILAM	48 465	VAL VERDE	50 021	RUTLAND	51 131	NORTHAMPTON
48 333	MILLS	48 467	VAN ZANDT	50 023	WASHINGTON	51 133	NORTHUMBERLAND
48 335	MITCHELL	48 469	VICTORIA	50 025	WINDHAM	51 135	NOTTOWAY
48 337	MONTAGUE	48 471	WALKER	50 027	WINDSOR	51 137	ORANGE
48 339	MONTGOMERY	48 473	WALLER			51 139	PAGE
48 341	MOORE	48 475	WARD			51 141	PATRICK

O.S.

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-NOTES-

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
1	DAIRY FARM PRODUCTS	(1.0100)	0241 Also : part of 0191, 0259, 0291
2	POULTRY AND EGGS	(1.0200)	0251 0252 0253 Also : part of 0191, 0219, 0259, 0291
3	RANCH FED CATTLE	(1.0311)	part of 0191, 0212, 0219, 0259, 0291
4	RANGE FED CATTLE	(1.0312)	part of 0191, 0212, 0219, 0259, 0291
5	CATTLE FEEDLOTS	(1.0313)	0211 Also : part of 0191, 0219, 0259, 0291
6	SHEEP, LAMBS AND GOATS	(1.0314)	0214 Also : part of 0191, 0219, 0259, 0291
7	HOGS, PIGS AND SWINE	(1.0315)	0213 Also : part of 0191, 0219, 0259, 0291
8	OTHER MEAT ANIMAL PRODUCTS	(1.0316)	part of 0191, 0219, 0259, 0291
9	MISCELLANEOUS LIVESTOCK	(1.0302)	0271 0272 Also : part of 0191, 0219, 0259, 0279, 0291
10	COTTON	(2.0100)	0131 Also : part of 0191, 0219, 0259, 0291
11	FOOD GRAINS	(2.0201)	0111 0112 Also : part of 0191, 0219, 0259, 0291
12	FEED GRAINS	(2.0221)	0115 Also : part of 0139, 0191, 0219, 0259, 0291
13	HAY AND PASTURE	(2.0222)	part of 0139, 0191, 0219, 0259, 0291
14	GRASS SEEDS	(2.0203)	part of 0139, 0191, 0219, 0259, 0291
15	TOBACCO	(2.0300)	0132 Also : part of 0191, 0219, 0259, 0291
16	FRUITS	(2.0401)	0171 0172 0174 0175 Also : part of 0179, 0191, 0219, 0259, 0291
17	TREE NUTS	(2.0402)	part of 0173, 0179, 0191, 0219, 0259, 0291
18	VEGETABLES	(2.0501)	0134 0161 Also : part of 0119, 0139, 0191, 0219, 0259, 0291
19	SUGAR CROPS	(2.0502)	0133 Also : part of 0191, 0219, 0259, 0291
20	MISCELLANEOUS CROPS	(2.0503)	part of 0119, 0139, 0191, 0219, 0259, 0291
21	OIL BEARING CROPS	(2.0600)	0116 Also : part of 0119, 0139, 0173, 0219, 0259, 0291
22	FOREST PRODUCTS	(2.0701)	part of 0181, 0191, 0219, 0259, 0291
23	GREENHOUSE AND NURSERY PRODUCTS	(2.0702)	0182 0189 Also : part of 0181, 0191, 0219, 0259, 0291
24	FORESTRY PRODUCTS	(3.0001)	0810 0820 0840 0970
25	COMMERCIAL FISHING	(3.0002)	0910
26	AGRICULTURAL, FORESTRY, FISHERY SERVICES	(4.0001)	0710 0720 0750 0760 0254 0850 0920 Also : part of 0279
27	LANDSCAPE AND HORTICULTURAL SERVICES	(4.0002)	0780
28	IRON ORES	(5.0100)	1011
29	FERROALLOY ORES, EXCEPT VANADIUM	(5.0200)	1061
30	COPPER ORES	(6.0100)	1021
31	LEAD AND ZINC ORES	(6.0201)	1031
32	GOLD ORES	(6.0202)	1041
33	SILVER ORES	(6.0203)	1044
34	BAUXITE AND OTHER ALUMINUM ORES	(6.0204)	1051
35	METAL MINING SERVICES,	(6.0205)	1081
36	MERCURY ORES	(6.0306)	1092
37	URANIUM-RADIUM-VANADIUM ORES	(6.0207)	1094
38	METAL ORES, NOT ELSEWHERE CLASSIFIED	(6.0208)	1099
39	ANTHRACITE AND ANTHRACITE MINING SERVICES	(7.0100)	1111 Also : part of 1112
40	BITUMINOUS AND LIGNITE MINING, SERVICES	(7.0200)	1211 Also : part of 1213
41	NATURAL GAS	(8.0101)	Caution : 1310 is split between 8.0101 and 8.0102
42	CRUDE PETROLEUM	(8.0102)	1310 Caution : 1310 is split between 8.0101 and 8.0102
43	NATURAL GAS LIQUIDS	(8.0200)	1321
44	DIMENSION STONE	(9.0100)	1411
45	CRUSHED AND BROKEN LIMESTONE	(9.0201)	1422
46	CRUSHED AND BROKEN GRANITE	(9.0202)	1423
47	CRUSHED-AND-BROKEN STONE, N. E. C.	(9.0203)	1429
48	CONSTRUCTION SAND AND GRAVEL	(9.0301)	1442
49	INDUSTRIAL SAND	(9.0302)	1446

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
50	BENTONITE	(9.0400)	1452
51	FIRE CLAY	(9.0500)	1453
52	FULLER'S EARTH	(9.0600)	1454
53	KAOLIN AND BALL CLAY	(9.0700)	1455
54	CLAY, CERAMIC, REFRACTORY MINERALS, N.E.C.	(9.0800)	1459
55	NONMETALLIC MINERALS (EXCEPT FUELS) SERVICE	(9.0900)	1481
56	GYP SUM	(9.1000)	1492
57	TALC, SOAPSTONE, AND BORATE MINERALS	(9.1100)	1496
58	MISC. NONMETALLIC MINERALS, N.E.C.	(9.1200)	1499
59	BARITE	(10.0100)	1472
60	FLOURSPAR	(10.0200)	1473
61	POTASH, SODA, AND BORATE MINERALS	(10.0300)	1474
62	PHOSPHATE ROCK	(10.0400)	1475
63	ROCK SALT	(10.0500)	1476
64	SULFUR	(10.0600)	1477
65	CHEMICAL, FERTILIZER MINERAL MINING, N.E.C.	(10.0700)	1479
66	NEW RESIDENTIAL STRUCTURES	(11.0100)	1521 1522 1530 In reality : pt. of the corresponding SICs
67	NEW INDUSTRIAL AND COMMERCIAL BUILDINGS	(11.0200)	1541 1542 In reality pt. of the corresponding SICs
68	NEW UTILITY STRUCTURES	(11.0300)	1623 Also : part of 1629
69	NEW HIGHWAYS AND STREETS	(11.0400)	1611 1622
70	NEW FARM STRUCTURES	(11.0500)	
71	NEW MINERAL EXTRACTION FACILITIES	(11.0600)	part of 108, 1112, 1213, 136, 148
72	NEW GOVERNMENT FACILITIES	(11.0700)	1629 In reality pt. of 1629
73	MAINTENANCE AND REPAIR, RESIDENTIAL	(12.0100)	
74	MAINTENANCE AND REPAIR OTHER FACILITIES	(12.0200)	
75	MAINTENANCE AND REPAIR OIL AND GAS WELLS	(12.0215)	1380 In reality pt. of 138
76	COMPLETE GUIDED MISSILES	(13.0100)	3761
77	AMMUNITION, EXCEPT FOR SMALL ARMS, N.E.C	(13.0200)	3483
78	TANKS AND TANK COMPONENTS	(13.0300)	3795
79	SMALL ARMS	(13.0500)	3484
80	SMALL ARMS AMMUNITION	(13.0600)	3482
81	OTHER ORDNANCE AND ACCESSORIES	(13.0700)	3489
82	MEAT PACKING PLANTS	(14.0101)	2011
83	SAUSAGES AND OTHER PREPARED MEATS	(14.0102)	2013
84	POULTRY DRESSING PLANTS	(14.0103)	2016
85	POULTRY AND EGG PROCESSING	(14.0104)	2017
86	CREAMERY BUTTER	(14.0200)	2021
87	CHEESE, NATURAL AND PROCESSED	(14.0300)	2022
88	CONDENSED AND EVAPORATED MILK	(14.0400)	2023
89	ICE CREAM AND FROZEN DESSERTS	(14.0500)	2024
90	FLUID MILK	(14.0600)	2026
91	CANNED AND CURED SEA FOODS	(14.0700)	2091
92	CANNED SPECIALTIES	(14.0800)	2032
93	CANNED FRUITS AND VEGETABLES	(14.0900)	2033
94	DEHYDRATED FOOD PRODUCTS	(14.1000)	2034
95	PICKLES, SAUCES, AND SALAD DRESSINGS	(14.1100)	2035
96	FRESH OR FROZEN PACKAGED FISH	(14.1200)	2092
97	FROZEN FRUITS, JUICES AND VEGETABLES	(14.1301)	2037
98	FROZEN SPECIALTIES	(14.1302)	2038
99	FLOUR AND OTHER GRAIN MILL PRODUCTS	(14.1401)	2041
100	CEREAL PREPARATIONS	(14.1402)	2043
101	BLENDED AND PREPARED FLOUR	(14.1403)	2045
102	DOG, CAT, AND OTHER PET FOOD	(14.1501)	2047
103	PREPARED FEEDS, N.E.C	(14.1502)	2048
104	RICE MILLING	(14.1600)	2044
105	WET CORN MILLING	(14.1700)	2046
106	BREAD, CAKE, AND RELATED PRODUCTS	(14.1801)	2051
107	COOKIES AND CRACKERS	(14.1802)	2052
108	SUGAR	(14.1900)	2061 2062 2063
109	CONFECTIONERY PRODUCTS	(14.2001)	2065
110	CHOCOLATE AND COCOA PRODUCTS	(14.2002)	2066
111	CHEWING GUM	(14.2003)	2067
112	MALT LIQUORS	(14.2101)	2082

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
113	MALT	(14.2102)	2083
114	WINES, BRANDY, AND BRANDY SPIRITS	(14.2103)	2084
115	DISTILLED LIQUOR, EXCEPT BRANDY	(14.2104)	2085
116	BOTTLED AND CANNED SOFT DRINKS	(14.2200)	2086
117	FLAVORING EXTRACTS AND SYRUPS, N.E.C	(14.2300)	2087
118	COTTONSEED OIL MILLS	(14.2400)	2074
119	SOYBEAN OIL MILLS	(14.2500)	2075
120	VEGETABLE OIL MILLS, N.E.C	(14.2600)	2076
121	ANIMAL AND MARINE FATS AND OILS	(14.2700)	2077
122	ROASTED COFFEE	(14.2800)	2095
123	SHORTENING AND COOKING OILS	(14.2900)	2079
124	MANUFACTURED ICE	(14.3000)	2097
125	MACARONI AND SPAGHETTI	(14.3100)	2098
126	FOOD PREPARATIONS, N.E.C	(14.3200)	2099
127	CIGARETTES	(15.0101)	2110
128	CIGARS	(15.0102)	2120
129	CHEWING AND SMOKING TOBACCO	(15.0103)	2130
130	TOBACCO STEMMING AND REDRYING	(15.0200)	2140
131	BROADWOVEN FABRIC MILLS AND FINISHING	(16.0100)	2210 2220 2230 2261 2262
132	NARROW FABRIC MILLS	(16.0200)	2240
133	YARN MILLS AND FINISHING OF TEXTILES NEC	(16.0300)	2269 2281 2282 2283
134	THREAD MILLS	(16.0400)	2284
135	FLOOR COVERINGS	(17.0100)	2270
136	FELT GOODS, N.E.C	(17.0200)	2291
137	LACE GOODS	(17.0300)	2292
138	PADDING AND UPHOLSTERY FILLING	(17.0400)	2293
139	PROCESSED TEXTILE WASTE	(17.0500)	2294
140	COATED FABRICS, NOT RUBBERIZED	(17.0600)	2295
141	TIRE CORD AND FABRIC	(17.0700)	2296
142	CORDAGE AND TWINE	(17.0900)	2298
143	NONWOVEN FABRICS	(17.1001)	2297
144	TEXTILE GOODS, N.E.C	(17.1002)	2299
145	WOMENS HOSIERY, EXCEPT SOCKS	(18.0101)	2251
146	HOSIERY, N.E.C	(18.0102)	2252
147	KNIT OUTERWEAR MILLS	(18.0201)	2253
148	KNIT UNDERWEAR MILLS	(18.0202)	2254
149	KNITTING MILLS, N.E.C	(18.0203)	2259
150	KNIT FABRIC MILLS	(18.0300)	2257 2258
151	APPAREL MADE FROM PURCHASED MATERIALS	(18.0400)	2310 2320 2330 2340 2350 2360 2370 2380 Also : part of 3999
152	CURTAINS AND DRAPERIES	(19.0100)	2391
153	HOUSEFURNISHINGS, N.E.C	(19.0200)	2392
154	TEXTILE BAGS	(19.0301)	2393
155	CANVAS PRODUCTS	(19.0302)	2394
156	PLEATING AND STITCHING	(19.0303)	2395
157	AUTOMOTIVE AND APPAREL TRIMMINGS	(19.0304)	2396
158	SCHIFFI MACHINE EMBROIDERIES	(19.0305)	2397
159	FABRICATED TEXTILE PRODUCTS, N.E.C	(19.0306)	2399
160	LOGGING CAMPS AND LOGGING CONTRACTORS	(20.0100)	2410
161	SAWMILLS AND PLANING MILLS, GENERAL	(20.0200)	2421
162	HARDWOOD DIMENSION AND FLOORING MILLS	(20.0300)	2426
163	SPECIAL PRODUCT SAWMILLS, N.E.C	(20.0400)	2429
164	MILLWORK	(20.0501)	2431
165	WOOD KITCHEN CABINETS	(20.0502)	2434
166	VENEER AND PLYWOOD	(20.0600)	2435 2436
167	STRUCTURAL WOOD MEMBERS, N.E.C	(20.0701)	2439
168	PREFABRICATED WOOD BUILDINGS	(20.0702)	2452
169	WOOD PRESERVING	(20.0800)	2491
170	WOOD PALLETS AND SKIDS	(20.0901)	2448
171	PARTICLEBOARD	(20.0902)	2492
172	WOOD PRODUCTS, N.E.C	(20.0903)	2499
173	WOOD CONTAINERS	(21.0000)	2441 2449
174	WOOD HOUSEHOLD FURNITURE	(22.0101)	2511
175	HOUSEHOLD FURNITURE, N.E.C	(22.0102)	2519
176	WOOD-TV AND RADIO CABINETS	(22.0103)	2517
177	UPHOLSTERED HOUSEHOLD FURNITURE	(22.0200)	2512
178	METAL HOUSEHOLD FURNITURE	(22.0300)	2514
179	MATTRESSES AND BEDSPRINGS	(22.0400)	2515

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
180	WOOD OFFICE FURNITURE	(23.0100)	2521
181	METAL OFFICE FURNITURE	(23.0200)	2522
182	PUBLIC BUILDING FURNITURE	(23.0300)	2531
183	WOOD PARTITIONS AND FIXTURES	(23.0400)	2541
184	METAL PARTITIONS AND FIXTURES	(23.0500)	2542
185	BLINDS, SHADES, AND DRAPERY HARDWARE	(23.0600)	2591
186	FURNITURE AND FIXTURES, N.E.C	(23.0700)	2599
187	PULP MILLS	(24.0100)	2610
188	PAPER MILLS, EXCEPT BUILDING PAPER	(24.0200)	2620
189	PAPERBOARD MILLS	(24.0300)	2630
190	ENVELOPES	(24.0400)	2642
191	SANITARY PAPER PRODUCTS	(24.0500)	2647
192	BUILDING PAPER AND BOARD MILLS	(24.0602)	2660
193	PAPER COATING AND GLAZING	(24.0701)	2641
194	BAGS, EXCEPT TEXTILE	(24.0702)	2643
195	DIE-CUT PAPER AND BOARD	(24.0703)	2645
196	PRESSED AND MOLDED PULP GOODS	(24.0704)	2646
197	STATIONERY PRODUCTS	(24.0705)	2648
198	CONVERTED PAPER PRODUCTS, N.E.C	(24.0706)	2649
199	PAPERBOARD CONTAINERS AND BOXES	(25.0000)	2650
200	NEWSPAPERS	(26.0100)	2710
201	PERIODICALS	(26.0200)	2720
202	BOOK PUBLISHING	(26.0301)	2731
203	BOOK PRINTING	(26.0302)	2732
204	MISCELLANEOUS PUBLISHING	(26.0400)	2740
205	COMMERCIAL PRINTING	(26.0501)	2751 2752 2754
206	LITHOGRAPHIC PLATEMAKING AND SERVICES	(26.0502)	2795
207	MANIFOLD BUSINESS FORMS	(26.0601)	2760
208	BLANKBOOKS AND LOOSELEAF BINDERS	(26.0602)	2782
209	GREETING CARD PUBLISHING	(26.0700)	2770
210	ENGRAVING AND PLATE PRINTING	(26.0801)	2753
211	BOOKBINDING AND RELATED WORK	(26.0802)	2789
212	TYPESETTING	(26.0803)	2791
213	PHOTOENGRAVING	(26.0804)	2793
214	ELECTROTYPING AND STEREOTYPING	(26.0805)	2794
215	INDUSTRIAL INORGANIC, ORGANIC CHEMICALS	(27.0100)	2810 2865 2869
216	NITROGENOUS AND PHOSPHATIC FERTILIZERS	(27.0201)	2873 2874
217	FERTILIZERS, MIXING ONLY	(27.0202)	2875
218	AGRICULTURAL CHEMICALS, N.E.C	(27.0300)	2879
219	GUM AND WOOD CHEMICALS	(27.0401)	2861
220	ADHESIVES AND SEALANTS	(27.0402)	2891
221	EXPLOSIVES	(27.0403)	2892
222	PRINTING INK	(27.0404)	2893
223	CARBON BLACK	(27.0405)	2895
224	CHEMICAL PREPARATIONS, N.E.C	(27.0406)	2899
225	PLASTICS MATERIALS AND RESINS	(28.0100)	2821
226	SYNTHETIC RUBBER	(28.0200)	2822
227	CELLULOSIC MAN-MADE FIBERS	(28.0300)	2823
228	ORGANIC FIBERS, NONCELLULOSIC	(28.0400)	2824
229	DRUGS	(29.0100)	2830
230	SOAP AND OTHER DETERGENTS	(29.0201)	2841
231	POLISHES AND SANITATION GOODS	(29.0202)	2842
232	SURFACE ACTIVE AGENTS	(29.0203)	2843
233	TOILET PREPARATIONS	(29.0300)	2844
234	PAINTS AND ALLIED PRODUCTS	(30.0000)	2850
235	PETROLEUM REFINING	(31.0101)	2910
236	LUBRICATING OILS AND GREASES	(31.0102)	2992
237	PETROLEUM AND COAL PRODUCTS, N.E.C.	(31.0103)	2999
238	PAVING MIXTURES AND BLOCKS	(31.0200)	2951
239	ASPHALT FELTS AND COATINGS	(31.0300)	2952
240	TIRES AND INNER TUBES	(32.0100)	3010
241	RUBBER AND PLASTICS FOOTWEAR	(32.0200)	3020
242	RECLAIMED RUBBER	(32.0301)	3030
243	FABRICATED RUBBER PRODUCTS, N.E.C	(32.0302)	3060
244	MISCELLANEOUS PLASTICS PRODUCTS	(32.0400)	3070
245	RUBBER AND PLASTICS HOSE AND BELTING	(32.0500)	3040
246	LEATHER TANNING AND FINISHING	(33.0001)	3110

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
247	FOOTWEAR CUT STOCK	(34.0100)	3130
248	SHOES, EXCEPT RUBBER	(34.0201)	3143 3144 3149
249	HOUSE SLIPPERS	(34.0202)	3142
250	LEATHER GLOVES AND MITTENS	(34.0301)	3150
251	LUGGAGE	(34.0302)	3160
252	WOMENS HANDBAGS AND PURSES	(34.0303)	3171
253	PERSONAL LEATHER GOODS	(34.0304)	3172
254	LEATHER GOODS, N.E.C	(34.0305)	3190
255	GLASS AND GLASS PRODUCTS, EXC CONTAINERS	(35.0100)	3210 3229 3230
256	GLASS CONTAINERS	(35.0200)	3221
257	CEMENT, HYDRAULIC	(36.0100)	3240
258	BRICK AND STRUCTURAL CLAY TILE	(36.0200)	3251
259	CERAMIC WALL AND FLOOR TILE	(36.0300)	3253
260	CLAY REFRACTORIES	(36.0400)	3255
261	STRUCTURAL CLAY PRODUCTS, N.E.C	(36.0500)	3259
262	VITREOUS PLUMBING FIXTURES	(36.0600)	3261
263	VITREOUS CHINA FOOD UTENSILS	(36.0701)	3262
264	FINE EARTHENWARE FOOD UTENSILS	(36.0702)	3263
265	PORCELAIN ELECTRICAL SUPPLIES	(36.0800)	3264
266	POTTERY PRODUCTS, N.E.C	(36.0900)	3269
267	CONCRETE BLOCK AND BRICK	(36.1000)	3271
268	CONCRETE PRODUCTS, N.E.C	(36.1100)	3272
269	READY-MIXED CONCRETE	(36.1200)	3273
270	LIME	(36.1300)	3274
271	GYPSPUM PRODUCTS	(36.1400)	3275
272	CUT STONE AND STONE PRODUCTS	(36.1500)	3280
273	ABRASIVE PRODUCTS	(36.1600)	3291
274	ASBESTOS PRODUCTS	(36.1700)	3292
275	GASKETS, PACKING AND SEALING DEVICES	(36.1800)	3293
276	MINERALS, GROUND OR TREATED	(36.1900)	3295
277	MINERAL WOOL	(36.2000)	3296
278	NONCLAY REFRACTORIES	(36.2100)	3297
279	NONMETALLIC MINERAL PRODUCTS, N.E.C	(36.2200)	3299
280	BLAST FURNACES AND STEEL MILLS	(37.0101)	3312
281	ELECTROMETALLURGICAL PRODUCTS	(37.0102)	3313
282	STEEL WIRE AND RELATED PRODUCTS	(37.0103)	3315
283	COLD FINISHING OF STEEL SHAPES	(37.0104)	3316
284	STEEL PIPE AND TUBES	(37.0105)	3317
285	IRON AND STEEL FOUNDRIES	(37.0200)	3320
286	IRON AND STEEL FORGINGS	(37.0300)	3462
287	METAL HEAT TREATING	(37.0401)	3398
288	PRIMARY METAL PRODUCTS, N.E.C	(37.0402)	3399
289	PRIMARY COPPER	(38.0100)	3331
290	PRIMARY LEAD	(38.0200)	3332
291	PRIMARY ZINC	(38.0300)	3333
292	PRIMARY ALUMINUM	(38.0400)	3334
293	PRIMARY NONFERROUS METALS, N.E.C	(38.0500)	Also part of 2819 3339
294	SECONDARY NONFERROUS METALS	(38.0600)	3340
295	COPPER ROLLING AND DRAWING	(38.0700)	3351
296	ALUMINUM ROLLING AND DRAWING	(38.0800)	3353 3354 3355
297	NONFERROUS ROLLING AND DRAWING, N.E.C	(38.0900)	3356
298	NONFERROUS WIRE DRAWING AND INSULATING	(38.1000)	3357
299	ALUMINUM CASTINGS	(38.1100)	3361
300	BRASS, BRONZE, AND COPPER CASTINGS	(38.1200)	3362
301	NONFERROUS CASTINGS, N.E.C.	(38.1300)	3369
302	NONFERROUS FORGINGS	(38.1400)	3463
303	METAL CANS	(39.0100)	3411
304	METAL BARRELS, DRUMS AND PAILS	(39.0200)	3412
305	METAL SANITARY WARE	(40.0100)	3431
306	PLUMBING FIXTURE FITTINGS AND TRIM	(40.0200)	3432
307	HEATING EQUIPMENT, EXCEPT ELECTRIC	(40.0300)	3433
308	FABRICATED STRUCTURAL METAL	(40.0400)	3441
309	METAL DOORS, SASH, AND TRIM	(40.0500)	3442
310	FABRICATED PLATE WORK (BOILER SHOPS)	(40.0600)	3443
311	SHEET METAL WORK	(40.0700)	3444
312	ARCHITECTURAL METAL WORK	(40.0800)	3446
313	PREFABRICATED METAL BUILDINGS	(40.0901)	3448

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
314	MISCELLANEOUS METAL WORK	(40.0902)	3449
315	SCREW MACHINE PRODUCTS AND BOLTS, ETC	(41.0100)	3450
316	AUTOMOTIVE STAMPINGS	(41.0201)	3465
317	CROWNS AND CLOSURES	(41.0202)	3466
318	METAL STAMPINGS, N.E.C.	(41.0203)	3469
319	CUTLERY	(42.0100)	3421
320	HAND AND EDGE TOOLS, N.E.C.	(42.0201)	3423
321	HAND SAWS AND SAW BLADES	(42.0202)	3425
322	HARDWARE, N.E.C.	(42.0300)	3429
323	PLATING AND POLISHING	(42.0401)	3471
324	METAL COATING AND ALLIED SERVICES	(42.0402)	3479
325	MISCELLANEOUS FABRICATED WIRE PRODUCTS	(42.0500)	3495 3496
326	STEEL SPRINGS, EXCEPT WIRE	(42.0700)	3493
327	PIPE, VALVES, AND PIPE FITTINGS	(42.0800)	3494 3498
328	METAL FOIL AND LEAF	(42.1000)	3497
329	FABRICATED METAL PRODUCTS, N.E.C.	(42.1100)	3499
330	STEAM ENGINES AND TURBINES	(43.0100)	3511
331	INTERNAL COMBUSTION ENGINES, N.E.C.	(43.0200)	3519
332	FARM MACHINERY AND EQUIPMENT	(44.0001)	3523
333	LAWN AND GARDEN EQUIPMENT	(44.0002)	3524
334	CONSTRUCTION MACHINERY AND EQUIPMENT	(45.0100)	3531
335	MINING MACHINERY, EXCEPT OIL FIELD	(45.0200)	3532
336	OIL FIELD MACHINERY	(45.0300)	3533
337	ELEVATORS AND MOVING STAIRWAYS	(46.0100)	3534
338	CONVEYORS AND CONVEYING EQUIPMENT	(46.0200)	3535
339	HOISTS, CRANES, AND MONORAILS	(46.0300)	3536
340	INDUSTRIAL TRUCKS AND TRACTORS	(46.0400)	3537
341	MACHINE TOOLS, METAL CUTTING TYPES	(47.0100)	3541
342	MACHINE TOOLS, METAL FORMING TYPES	(47.0200)	3542
343	SPECIAL DIES AND TOOLS AND ACCESSORIES	(47.0300)	3544 3545
344	POWER DRIVEN HAND TOOLS	(47.0401)	3546
345	ROLLING MILL MACHINERY	(47.0402)	3547
346	METALWORKING MACHINERY, N.E.C.	(47.0403)	3549
347	FOOD PRODUCTS MACHINERY	(48.0100)	3551
348	TEXTILE MACHINERY	(48.0200)	3552
349	WOODWORKING MACHINERY	(48.0300)	3553
350	PAPER INDUSTRIES MACHINERY	(48.0400)	3554
351	PRINTING TRADES MACHINERY	(48.0500)	3555
352	SPECIAL INDUSTRY MACHINERY, N.E.C.	(48.0600)	3559
353	PUMPS AND COMPRESSORS	(49.0100)	3561 3563
354	BALL AND ROLLER BEARINGS	(49.0200)	3562
355	BLOWERS AND FANS	(49.0300)	3564
356	INDUSTRIAL PATTERNS	(49.0400)	3565
357	POWER TRANSMISSION EQUIPMENT	(49.0500)	3566 3568
358	INDUSTRIAL FURNACES AND OVENS	(49.0600)	3567
359	GENERAL INDUSTRIAL MACHINERY, N.E.C.	(49.0700)	3569
360	CARBURETORS, PISTONS, RINGS, VALVES	(50.0001)	3592
361	MACHINERY, EXCEPT ELECTRICAL, N.E.C.	(50.0002)	3599
362	ELECTRONIC COMPUTING EQUIPMENT	(51.0101)	3573
363	CALCULATING AND ACCOUNTING MACHINES	(51.0102)	3574
364	SCALES AND BALANCES	(51.0300)	3576
365	TYPEWRITERS AND OFFICE MACHINES, N.E.C.	(51.0400)	3572 3579
366	AUTOMATIC MERCHANDISING MACHINES	(52.0100)	3581
367	COMMERCIAL LAUNDRY EQUIPMENT	(52.0200)	3582
368	REFRIGERATION AND HEATING EQUIPMENT	(52.0300)	3585
369	MEASURING AND DISPENSING PUMPS	(52.0400)	3586
370	SERVICE INDUSTRY MACHINES, N.E.C.	(52.0500)	3589
371	INSTRUMENTS TO MEASURE ELECTRICITY	(53.0100)	3825
372	TRANSFORMERS	(53.0200)	3612
373	SWITCHGEAR AND SWITCHBOARD APPARATUS	(53.0300)	3613
374	MOTORS AND GENERATORS	(53.0400)	3621
375	INDUSTRIAL CONTROLS	(53.0500)	3622
376	WELDING APPARATUS, ELECTRIC	(53.0600)	3623
377	CARBON AND GRAPHITE PRODUCTS	(53.0700)	3624
378	ELECTRICAL INDUSTRIAL APPARATUS, N.E.C.	(53.0800)	3629
379	HOUSEHOLD COOKING EQUIPMENT	(54.0100)	3631
380	HOUSEHOLD REFRIGERATORS AND FREEZERS	(54.0200)	3632
381	HOUSEHOLD LAUNDRY EQUIPMENT	(54.0300)	3633

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
382	ELECTRIC HOUSEWARES AND FANS	(54.0400)	3634
383	HOUSEHOLD VACUUM CLEANERS	(54.0500)	3635
384	SEWING MACHINES	(54.0600)	3636
385	HOUSEHOLD APPLIANCES, N.E.C.	(54.0700)	3639
386	ELECTRIC LAMPS	(55.0100)	3641
387	LIGHTING FIXTURES AND EQUIPMENT	(55.0200)	3645 3646 3647 3648
388	WIRING DEVICES	(55.0300)	3643 3644
389	RADIO AND TV RECEIVING SETS	(56.0100)	3651
390	PHONOGRAPH RECORDS AND TAPE	(56.0200)	3652
391	TELEPHONE AND TELEGRAPH APPARATUS	(56.0300)	3661
392	RADIO AND TV COMMUNICATION EQUIPMENT	(56.0400)	3662
393	ELECTRON TUBES	(57.0100)	3671 3672 3673
394	SEMICONDUCTORS AND RELATED DEVICES	(57.0200)	3674
395	ELECTRONIC COMPONENTS, N.E.C.	(57.0300)	3675 3676 3677 3678 3679
396	STORAGE BATTERIES	(58.0100)	3691
397	PRIMARY BATTERIES, DRY AND WET	(58.0200)	3692
398	X-RAY APPARATUS AND TUBES	(58.0300)	3693
399	ENGINE ELECTRICAL EQUIPMENT	(58.0400)	3694
400	ELECTRICAL EQUIPMENT, N.E.C.	(58.0500)	3699
401	TRUCK AND BUS BODIES	(59.0100)	3713
402	TRUCK TRAILERS	(59.0200)	3715
403	MOTOR VEHICLES	(59.0301)	3711
404	MOTOR VEHICLE PARTS AND ACCESSORIES	(59.0302)	3714
405	AIRCRAFT	(60.0100)	3721
406	AIRCRAFT AND MISSILE ENGINES AND PARTS	(60.0200)	3724 3764
407	AIRCRAFT AND MISSILE EQUIPMENT, N.E.C.	(60.0400)	3728 3769
408	SHIP BUILDING AND REPAIRING	(61.0100)	3731
409	BOAT BUILDING AND REPAIRING	(61.0200)	3732
410	RAILROAD EQUIPMENT	(61.0300)	3740
411	MOTORCYCLES, BICYCLES, AND PARTS	(61.0500)	3750
412	TRAVEL TRAILERS AND CAMPERS	(61.0601)	3792
413	MOBILE HOMES	(61.0602)	2451
414	MOTOR HOMES	(61.0603)	3716
415	TRANSPORTATION EQUIPMENT, N.E.C.	(61.0700)	3799
416	ENGINEERING AND SCIENTIFIC INSTRUMENTS	(62.0100)	3811
417	MECHANICAL MEASURING DEVICES	(62.0200)	3823 3824 3829
418	AUTOMATIC TEMPERATURE CONTROLS	(62.0300)	3822
419	SURGICAL AND MEDICAL INSTRUMENTS	(62.0400)	3841
420	SURGICAL APPLIANCES AND SUPPLIES	(62.0500)	3842
421	DENTAL EQUIPMENT AND SUPPLIES	(62.0600)	3843
422	WATCHES, CLOCKS, AND PARTS	(62.0700)	3870
423	OPTICAL INSTRUMENTS AND LENSES	(63.0100)	3830
424	OPHTHALMIC GOODS	(63.0200)	3850
425	PHOTOGRAPHIC EQUIPMENT AND SUPPLIES	(63.0300)	3860
426	JEWELRY, PRECIOUS METAL	(64.0101)	3911
427	JEWELERS MATERIALS AND LAPIDARY WORK	(64.0102)	3915
428	SILVERWARE AND PLATED WARE	(64.0104)	3914
429	COSTUME JEWELRY	(64.0105)	3961
430	MUSICAL INSTRUMENTS	(64.0200)	3930
431	GAMES, TOYS, AND CHILDRENS VEHICLES	(64.0301)	3944
432	DOLLS	(64.0302)	3942
433	SPORTING AND ATHLETIC GOODS, N.E.C.	(64.0400)	3949
434	PENS AND MECHANICAL PENCILS	(64.0501)	3951
435	LEAD PENCILS AND ART GOODS	(64.0502)	3952
436	MARKING DEVICES	(64.0503)	3953
437	CARBON PAPER AND INKED RIBBONS	(64.0504)	3955
438	ARTIFICIAL TREES AND FLOWERS	(64.0600)	3962
439	BUTTONS	(64.0701)	3963
440	NEEDLES, PINS, AND FASTENERS	(64.0702)	3964
441	BROOMS AND BRUSHES	(64.0800)	3991
442	HARD SURFACE FLOOR COVERINGS	(64.0900)	3996
443	BURIAL CASKETS AND VAULTS	(64.1000)	3995
444	SIGNS AND ADVERTISING DISPLAYS	(64.1100)	3993
445	MANUFACTURING INDUSTRIES, N.E.C.	(64.1200)	3999
446	RAILROADS AND RELATED SERVICES	(65.0100)	In reality pt. of 3999 4010 4040 4740
447	LOCAL, INTERURBAN PASSENGER TRANSIT	(65.0200)	Also part of 4789 4110 4120 4130 4140 4150 4170

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
448	MOTOR FREIGHT TRANSPORT AND WAREHOUSING	(65.0300)	4210 4220 4230 Also part of 4789
449	WATER TRANSPORTATION	(65.0400)	4410 4420 4430 4440 4450 4460
450	AIR TRANSPORTATION	(65.0500)	4510 4520 4580
451	PIPE LINES, EXCEPT NATURAL GAS	(65.0600)	4610
452	TRANSPORTATION SERVICES	(65.0701)	4710 4723 4780 In reality pt. of 4780
453	ARRANGEMENT OF PASSENGER TRANSPORTATION	(65.0702)	4722
454	COMMUNICATIONS, EXCEPT RADIO AND TV	(66.0000)	4810 4820 4890
455	RADIO AND TV BROADCASTING	(67.0000)	4830
456	ELECTRIC SERVICES	(68.0100)	4910 Also part of 493
457	GAS PRODUCTION AND DISTRIBUTION	(68.0200)	4920 Also part of 493
458	WATER SUPPLY AND SEWERAGE SYSTEMS	(68.0301)	4940 4952
459	SANITARY SERVICES AND STEAM SUPPLY	(68.0302)	4953 4959 4960 4970 Also part of 493
460	RECREATIONAL RELATED WHOLESALE TRADE	(69.0101)	5041 5043
461	OTHER WHOLESALE TRADE	(69.0102)	5010 5020 5030 5042 5050 5060 5070 5080 5090 5100
462	RECREATIONAL RELATED RETAIL TRADE	(69.0201)	5551 5561 5941 5946 5947 5948
463	OTHER RETAIL TRADE	(69.0202)	5200 5300 5400 5510 5520 5530 5540 5570 5590 5600 5700 5910 5920 5930 5942 5943 5944 5945 5949 5960 5980 5990 7396 8042
464	BANKING	(70.0100)	6000
465	CREDIT AGENCIES	(70.0200)	6100 6710 6720 6733 6790
466	SECURITY AND COMMODITY BROKERS	(70.0300)	6200
467	INSURANCE CARRIERS	(70.0400)	6300
468	INSURANCE AGENTS AND BROKERS	(70.0500)	6400
469	OWNER-OCCUPIED DWELLINGS	(71.0100)	
470	REAL ESTATE	(71.0200)	6500 6600 Also pt. of 1531 ; Excluding pt. of 6552.
471	HOTELS AND LODGING PLACES	(72.0100)	7000
472	LAUNDRY, CLEANING AND SHOE REPAIR	(72.0201)	7210 7250
473	FUNERAL SERVICE AND CREMATORIES	(72.0202)	7260
474	PORTRAIT AND PHOTOGRAPHIC STUDIOS	(72.0203)	7220 7290
475	ELECTRICAL REPAIR SERVICES	(72.0204)	7620
476	WATCH, CLOCK, JEWELRY AND FURNITURE REPAIR	(72.0205)	7630 7640
477	BEAUTY AND BARBER SHOPS	(72.0300)	7230 7240
478	MISCELLANEOUS REPAIR SHOPS	(73.0101)	7690
479	SERVICES TO BUILDINGS	(73.0102)	7340
480	PERSONNEL SUPPLY SERVICES	(73.0103)	7360
481	COMPUTER AND DATA PROCESSING SERVICES	(73.0104)	7370
482	MANAGEMENT AND CONSULTING SERVICES	(73.0105)	7391 7392 7397
483	DETECTIVE AND PROTECTIVE SERVICES	(73.0106)	7393
484	EQUIPMENT REPAIR AND LEASING	(73.0107)	7394
485	PHOTOFINISHING, COMMERCIAL PHOTOGRAPHY	(73.0108)	7332 7333 7395
486	OTHER BUSINESS SERVICES	(73.0109)	7320 7331 7339 7350 7399
487	ADVERTISING	(73.0200)	7310
488	LEGAL SERVICES	(73.0301)	8110
489	ENGINEERING, ARCHITECTURAL SERVICES	(73.0302)	8910
490	ACCOUNTING, AUDITING AND BOOKKEEPING	(73.0303)	8930 8990
491	EATING AND DRINKING PLACES	(74.0000)	5800 Also part of 70
492	AUTOMOBILE RENTAL AND LEASING	(75.0001)	7510
493	AUTOMOBILE REPAIR AND SERVICES	(75.0002)	7530 7549
494	AUTOMOBILE PARKING AND CAR WASH	(75.0003)	7520 7542
495	MOTION PICTURES	(76.0100)	7800
496	DANCE HALLS, STUDIOS AND SCHOOLS	(76.0200)	7910
497	THEATRICAL PRODUCERS, BANDS ETC.	(76.0201)	7920
498	BOWLING ALLEYS AND POOL HALLS	(76.0202)	7930
499	COMMERCIAL SPORTS EXCEPT RACING	(76.0203)	7941
500	RACING AND TRACK OPERATION	(76.0204)	7948
501	MEMBERSHIP SPORTS AND RECREATION CLUBS	(76.0205)	7997
502	AMUSEMENT AND RECREATION SERVICES, NEC	(76.0207)	7992 7993 7996 7999
503	DOCTORS AND DENTISTS	(77.0100)	8010 8020 8030 8041
504	HOSPITALS	(77.0200)	8060
505	NURSING AND PROTECTIVE CARE	(77.0301)	8050
506	OTHER MEDICAL AND HEALTH SERVICES	(77.0302)	0740 8049 8070 8080 8090

APPENDIX N. Industry Classification of the Micro-IMPLAN 528 sector Input/Output tables, continued.

No.	Sector Name	BEA Commodity	Standard Industry Classification (SIC)
507	ELEMENTARY AND SECONDARY SCHOOLS	(77.0401)	8210
508	COLLEGES, UNIVERSITIES, SCHOOLS	(77.0402)	8220
509	OTHER EDUCATIONAL SERVICES	(77.0403)	8230 8240 8290
510	BUSINESS ASSOCIATIONS	(77.0501)	8610 8620
511	LABOR AND CIVIC ORGANIZATIONS	(77.0502)	8630 8640
512	RELIGIOUS ORGANIZATIONS	(77.0503)	8660
513	OTHER NONPROFIT ORGANIZATIONS	(77.0504)	8400 8650 8690 6732 8922
514	RESIDENTIAL CARE	(77.0800)	8361
515	SOCIAL SERVICES, N.E.C.	(77.0900)	8321 8399 8331 8351
516	U.S. POSTAL SERVICE	(78.0100)	4311
517	FEDERAL ELECTRIC UTILITIES	(78.0200)	part of 491
518	OTHER FEDERAL GOVERNMENT ENTERPRISES	(78.0400)	--
519	LOCAL GOVERNMENT PASSENGER TRANSIT	(79.0100)	part of 41
520	STATE AND LOCAL ELECTRIC UTILITIES	(79.0200)	part of 491
521	OTHER STATE AND LOCAL GOVT ENTERPRISES	(79.0300)	--
522	NONCOMPARABLE IMPORTS	(80.0000)	--
523	SCRAP	(81.0001)	--
524	USED AND SECONDHAND GOODS	(81.0002)	--
525	GOVERNMENT INDUSTRY	(82.0000)	--
526	REST OF THE WORLD INDUSTRY	(83.0000)	--
527	HOUSEHOLD INDUSTRY	(84.0000)	8800
528	INVENTORY VALUATION ADJUSTMENT	(85.0000)	--

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