

# BENCHMARK INPUT-OUTPUT ACCOUNTS OF THE UNITED STATES, 1992

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William M. Daley, *Secretary*



ECONOMICS AND STATISTICS ADMINISTRATION

Robert J. Shapiro, *Under Secretary for Economic Affairs*



BUREAU OF ECONOMIC ANALYSIS

J. Steven Landefeld, *Director*

Rosemary D. Marcuss, *Deputy Director*

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Ann Lawson directed the preparation of the volume and authored the summary and detailed series text. Karen Horowitz, with assistance from Belinda Bonds, Tara L. O'Brien, Alexandra E. Karaer, and Charlita R. Fickus, prepared "Appendix C: Measures of Output," "Appendix D: Products Included in Personal Consumption Expenditure Categories," and "Appendix E: Products Included in Producers' Durable Equipment Expenditure Categories."

Other staff contributors from the Industry Economics Division were William A. Allen, Timothy D. Aylor, Alvin D. Blake, Felicia V. Candela, Michael C. Craw, Sergio Delgado, Carole Henry, Thuy Hia, David Huether, Myles J. Levin, Sherlene K. S. Lum, Fritz Mayhew, William McCarthy, Donna McComber, Cheryl Miner, Edward T. Morgan, Brian C. Moyer, Diane E. Nisson, Robert S. Robinowitz, Darlene C. Robinson, Mary L. Roy, Timothy F. Slaper, John Spring, Robert A. Sylvester, Diane Young, and Robert E. Yuskavage.

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# Introduction

This publication presents the 1992 benchmark input-output (I-O) accounts for the U.S. economy. It provides the estimates for both the summary (that is, at the I-O two-digit level) and the detailed (I-O six-digit level) industries and commodities in one publication. It also provides information on the uses of I-O accounts and on the methods underlying them.

## *Organization of the publication*

The text consists of two parts and six appendixes. The first part of the text combines the text of the article “[Benchmark Input-Output Accounts for the U.S. Economy, 1992: Make, Use, and Supplementary Tables](#),” which appeared in the November 1997 issue of the SURVEY OF CURRENT BUSINESS, with that of the article “[Benchmark Input-Output Accounts for the U.S. Economy, 1992: Requirements Tables](#),” which appeared in the December 1997 SURVEY. This part describes the preparation of the 1992 I-O accounts and some of the improvements made to the tables, the concepts and methods underlying the U.S. I-O accounts, and how the I-O accounts are used. It also includes supplementary tables that relate the I-O accounts to the national income and product accounts (NIPA’s); these tables permit more extensive analysis with the I-O estimates. The second part of the text describes how to read the detailed tables, which appear in the general format that was used for the publication *Benchmark Input-Output Accounts of the United States, 1987*.

The text also presents the two appendixes that previously appeared in the November 1997 SURVEY. [Appendix](#)

[A](#) provides a concordance between the codes used in the I-O accounts and the 1987 Standard Industrial Classification (SIC) system, and [appendix B](#) provides a list of the value-added and final-use components that are included in the I-O accounts. This volume includes four additional appendixes: [Appendix C](#), which describes the measures of output; [appendixes D and E](#), which list the products included in the NIPA personal consumption expenditure (PCE) and producers’ durable equipment (PDE) expenditure categories, respectively; and [appendix F](#), which provides the mathematical derivation of the I-O total requirements tables.

The tables presenting the 1992 I-O benchmark estimates are divided into two complementary parts. The first part presents the summary estimates as they were presented in the November and December issues of the SURVEY. The second part presents the corresponding detailed estimates. It provides the I-O estimates for the make and use tables and the estimates of the total output requirements from industries and commodities to meet demand, as well as the 15 largest industries or commodities and their contributions to meeting that demand for a commodity. It also contains detailed estimates for I-O commodity composition of the NIPA PCE and PDE categories.

All estimates developed for the 1992 benchmark I-O study are available on diskette (see the box “[Data Availability](#)” on page M-3). For other assistance, contact the Industry Economics Division at (202) 606-5584, or write to the Industry Economics Division, BE-51, Bureau of Economic Analysis, U.S. Department of Commerce, Washington D.C. 20230.

# Overview, Framework, and Summary Accounts

The I-O accounts show the production of commodities (goods and services) by each industry, the use of commodities by each industry, the commodity composition of gross domestic product (GDP), and the industry distribution of value added. These I-O accounts are used in a variety of analytical and statistical contexts, including in studies of interindustry relationships within the economy and as the framework and benchmarks for other statistical accounts.

This publication presents the 1992 benchmark I-O accounts for the U.S. economy.<sup>1</sup> This part of the publication is in two sections. The first section describes the preparation of the 1992 I-O accounts and discusses some of the improvements that have been made. The second section describes the I-O tables, illustrates how they are used, and discusses the concepts and methods underlying the I-O accounts.

The 1992 I-O estimates are presented in this part in summary form; that is, they are aggregated to 97 I-O industries from 498-industry detail. The make (production) of commodities by industries is shown in table 1; the use (consumption) of commodities by industries, in table 2.1; and the components of value added by industries, in table 2.2. The commodity-by-industry direct requirements for a dollar of industry output are shown in table 3.1, and the component detail for the value-added input coefficients in table 3.2. The commodity-by-commodity total requirements, direct and indirect, for a dollar of delivery to final use are shown in table 4. The industry-by-commodity total requirements, direct and indirect, for a dollar of delivery to final use are shown in table 5. These tables are available at the summary and detailed levels on diskette (see the box “Data Availability” on page M–3).

This part also presents supplementary tables that link the I-O accounts to the national income and product accounts (NIPA’s).<sup>2</sup> These tables permit more extensive analyses with the I-O estimates.

1. Earlier benchmark I-O accounts covered 1947, 1958, 1963, 1967, 1972, 1977, 1982, and 1987. The 1987 I-O accounts were presented in the April and May 1994 issues of the SURVEY OF CURRENT BUSINESS.

2. The 1992 I-O estimates will be incorporated into the NIPA’s during the next comprehensive NIPA revision. See Leon W Taub and Robert P. Parker, “Preview of Revised NIPA Estimates for 1992 From the 1992 I-O Accounts,” SURVEY 77 (December 1997): 11–15.

## The 1992 Benchmark I-O Accounts

In response to user needs—as expressed, for example, by the Interagency Working Group on the Quality of Economic Statistics—the Bureau of Economic Analysis (BEA) implemented a program to speed up the availability of benchmark I-O accounts.<sup>3</sup> This goal was later formalized in BEA’s Strategic Plan, which was developed with data users and data suppliers in 1995. The Strategic Plan included making the benchmark I-O accounts available to users within five years of the date of an economic census or within one year after the release of all the data from that census, as part of the goal to develop new and improved measures of output and prices.<sup>4</sup> The 1992 benchmark I-O accounts have met this goal.<sup>5</sup>

### Source data and procedures

The benchmark I-O accounts are based primarily on data collected from the economic censuses conducted every five years by the Bureau of the Census. The economic censuses provide comprehensive data—including information on industry and commodity production, materials consumed, and operating expenses—that are not available on a more frequent basis. The 1992 benchmark I-O accounts used data from economic censuses of the following industries: Mining; manufacturing; wholesale trade; retail trade; transportation, communications, and utilities; finance, insurance, and real estate; and services. In addition, the I-O accounts used data from the 1992

3. See “Improving the Quality of Economic Statistics: The 1992 Economic Statistics Initiative,” SURVEY 71 (March 1991): 4–5.

4. See “Mid-Decade Strategic Review of BEA’s Accounts: Maintaining and Improving Their Performance,” SURVEY 75 (February 1995): 36–66; “Mid-Decade Strategic Review of BEA’s Economic Accounts: An Update,” SURVEY 75 (April 1995): 48–56; and “BEA’s Mid-Decade Strategic Plan: A Progress Report,” SURVEY 76 (June 1996): 52–55.

5. The 1987 benchmark I-O accounts were released in the spring of 1994—seven years after the 1987 economic census and three years after the publication of the 1982 benchmark I-O accounts. To speed up the availability of the 1987 I-O accounts, BEA devised a set of procedures that captured the most important parts of the 1987 economic census data but abbreviated the process of assembling the wide variety of other non-census data needed to complete a full benchmark. The use of these abbreviated procedures to prepare the 1987 benchmark I-O accounts enabled BEA to more quickly turn its resources towards preparing a complete set of benchmark accounts for 1992.

Census of Agriculture, the 1992 Census of Construction Industries, and the 1992 Census of Governments.

In preparing the 1992 benchmark I-O accounts, BEA first estimated industry and commodity outputs for the I-O make and use tables. The industry and commodity outputs are represented by the shaded cells in the I-O make table, shown in the upper panel of [chart 1](#), and in the I-O use table, shown in the lower panel. Where there are gaps in coverage by the economic censuses, BEA used data from other sources, such as the U.S. Department of Agriculture, U.S. Department of Energy, U.S. Department of Transportation, U.S. Department of Treasury, Office of Management and Budget, other Government agencies, and private organizations.

Second, BEA prepared estimates of the commodity inputs required by an industry to produce its output. In the use table shown in [chart 1](#), commodity inputs are represented by the upper cells in an industry column. Most of the detailed data available to estimate commodity inputs are obtained from the economic censuses, which included selected purchased services for most industries and materials consumed for manufacturing. When only aggregate data were available, BEA combined that information (for example, purchases of fuel by manufacturing industries) with information on purchases of individual commodities (for example, purchases of petroleum products, natural gas, and coal in the category of purchased fuels) to estimate purchases of specific commodities by an industry (for example, purchases of natural gas by a manufacturing industry).

Third, BEA prepared estimates of value added by all industries. In the I-O accounts, value added consists of three components—compensation of employees, indi-

rect business tax and nontax liability, and “other value added”—which are represented by the lower cells in an industry column of the use table. To estimate compensation of employees and indirect business tax and nontax liability, BEA used data from the NIPA’s and from the Bureau of Labor Statistics, Bureau of the Census, Office of Management and Budget, and the U.S. Department of Treasury. BEA then derived other value added as a residual by subtracting total intermediate inputs, compensation of employees, and indirect business tax and nontax liability from total industry output.

Finally, BEA completed the estimates of detailed final-use categories. Most of the estimates of personal consumption expenditures and gross private fixed investment were prepared using the commodity-flow method.<sup>6</sup> For example, using the commodity-flow method, office equipment for private investment was estimated as a residual after government investment was subtracted from the total supply of office equipment. The estimates of inventories held by industries were based primarily on economic census data; these estimates were then distributed to commodities based on information from the 1987 benchmark I-O accounts. The estimates of exports and imports of commodities were based on data from the Bureau of the Census and BEA’s U.S. balance of payments accounts. For the estimates of Federal Government and State and local government, total consumption and investment expenditures by type of purchase were obtained from the NIPA’s; these estimates were then distributed to I-O commodities based on information from

6. See the box “Personal Consumption Expenditures and Producers’ Durable Equipment” on page M-5.

### Data Availability

The summary estimates and more detailed estimates for 498 industries at the I-O six-digit level, including a discussion of the matrix algebra underlying the derivation of the tables, are available on the following diskettes:

- The summary estimates for the make, use, and requirements tables, including estimates of make and use on an approximate 1987 Standard Industrial Classification (SIC) basis—product number NDN-0180, one diskette, for \$20.
- The estimates of make, use, and direct requirements at the I-O six-digit level—product number NDN-0178, three diskettes, for \$60.
- The alternative estimates of make and use on an approximate SIC basis at the I-O six-digit level—product number NDN-0179, two diskettes, for \$40.
- The estimates of industry-by-commodity total requirements at the I-O six-digit level—product number NDN-0183, one diskette, for \$20.

- The estimates of commodity-by-commodity total requirements at the I-O six-digit level—product number NDN-0184, one diskette, for \$20.
- The estimates of the I-O commodity composition of final demand in the national income and product accounts (NIPA’s) at the I-O six-digit level—product number NDN-0185, one diskette, for \$20.
- The estimates of the I-O commodity composition of NIPA personal consumption expenditures and producers’ durable equipment at the I-O six-digit level—product number NDN-0186, one diskette, for \$20.

To order these diskettes using MasterCard or Visa, call the BEA Order Desk at 1-800-704-0415 (outside the United States, call 202-606-9666). To order by mail, send a check payable to “Bureau of Economic Analysis, BE-53” to BEA Order Desk, Bureau of Economic Analysis, BE-53, U.S. Department of Commerce, Washington, DC 20230.

**CHART 1**

**The U.S. Input-Output Accounts**

**MAKE TABLE: INDUSTRIES PRODUCING COMMODITIES**

		COMMODITIES									TOTAL INDUSTRY OUTPUT
		Agricultural products	Minerals	Construction	Manufactured products	Transportation	Trade	Finance	Services	Other*	
INDUSTRIES	Agriculture	■									
	Mining		■								
	Construction			■							
	Manufacturing				■						
	Transportation					■					
	Trade						■				
	Finance							■			
	Services								■		
	Other*									■	
TOTAL COMMODITY OUTPUT											

**USE TABLE: COMMODITIES USED BY INDUSTRIES AND FINAL USES**

		INDUSTRIES										FINAL USES (GDP)							TOTAL COMMODITY OUTPUT				
		Agriculture	Mining	Construction	Manufacturing	Transportation	Trade	Finance	Services	Other*	Total intermediate use	Personal consumption expenditures	Gross private fixed investment	Change in business inventories	Exports of goods and services	Imports of goods and services	Government consumption expenditures and gross investment	GDP					
COMMODITIES	Agricultural products																						
	Minerals																						
	Construction																						
	Manufactured products																						
	Transportation																						
	Trade																						
	Finance																						
	Services																						
	Other*																						
	Noncomparable imports																						
Total intermediate inputs																							
VALUE ADDED	Compensation of employees																						
	Indirect business tax and nontax liability																						
	Other value added**																						
	Total																						
TOTAL INDUSTRY OUTPUT																							

■ TOTAL COMMODITY OUTPUT

■ PRIMARY PRODUCT OF THE INDUSTRY

■ TOTAL INDUSTRY OUTPUT

\* The input-output (I-O) accounts use two classification systems, one for industries and another for commodities, but both generally use the same I-O numbers and titles. "Other" consists of government enterprises and other I-O special industries; for more information see "Appendix A: Classification of Industries in the 1992 Benchmark Input-Output Accounts."

\*\* "Other value added" consists of the following national income and product accounts components of gross domestic income: Consumption of fixed capital, net interest, proprietors' income, corporate profits, rental income of persons, business transfer payments, and subsidies less current surplus of government enterprises.

the 1987 benchmark I-O accounts and the 1992 economic censuses.

### ***Improvements and changes***

The 1992 I-O accounts incorporated three types of changes: Definitional and classificational, to more accurately reflect the evolving U.S. economy; methodological, to increase the accuracy and reliability of the estimates; and statistical, to introduce newly available and revised source data.

***Major definitional and classificational changes.***—The 1992 I-O accounts incorporated the definitional changes that were introduced as part of the comprehensive NIPA revision released in January 1996.<sup>7</sup> Of this type, the

7. See “Preview of the Comprehensive Revision of the National Income and Product Accounts: New and Redesigned Tables,” SURVEY 75 (October 1995): 30–39. Also see “Improved Estimates of the National and Product

change that most affected the I-O accounts was the new treatment of government purchases that distinguishes between government investment and consumption expenditures and that is symmetrical with the treatment of private fixed assets.<sup>8</sup>

Accounts for 1959–95: Results of the Comprehensive Revision,” SURVEY 76 (January/February 1996): 1–31.

8. The services of general government fixed assets, measured as depreciation, are now included in government consumption expenditures. However, the use of depreciation as a measure of the value of services of government fixed assets is only a partial measure of the total value. In theory, the service value of an asset should equal the reduction in the value of the asset due to its use during the current period (depreciation) plus a return equal to the current value the asset could earn if invested elsewhere (net return). The consumption of fixed capital by government does not provide an estimate of the full value of the services of government fixed assets, because the net rate of return on these assets is assumed to be zero. See Robert P. Parker and Jack E. Triplett, “Preview of the Comprehensive Revision of the National Income and Product Accounts: Recognition of Government Investment and Incorporation of a New Methodology for Calculating Depreciation,” SURVEY 75 (September 1995): 33–41.

## **Personal Consumption Expenditures and Producers’ Durable Equipment**

The estimates of personal consumption expenditures (PCE) and producers’ durable equipment (PDE) and the other components of final uses are presented in the input-output (I-O) accounts as purchases of commodities. In the presentation of PCE and PDE in the national income and product accounts (NIPA’s), these commodities are grouped into categories either by type of product or by type of expenditure.<sup>1</sup> Two methods are used to prepare the I-O benchmark estimates of PCE and PDE: The direct estimation method and the commodity-flow method.

### ***Direct estimation method***

Selected commodities in the PCE and PDE categories are directly estimated from source data. Direct estimation is used when by definition the commodity is purchased only by persons for consumption or by business for investment; for example, the rental value of owner-occupied dwellings is attributed exclusively to persons. Direct estimation is also used when the underlying estimation method results in a more accurate and reliable estimate; for example, estimates of gasoline and oil purchases by persons are based on unit sales and average prices for these commodities.

### ***Commodity-flow method***

The estimates for many commodities included in the PCE and PDE categories are calculated using the commodity-flow method. This method, which consists of seven steps, converts domestic output (the value of sales of commodities produced by domestic establishments) in producers’ prices to domestic supply (the value of production available for sale to domestic purchasers) in purchasers’

prices and therefore includes imports and excludes exports. The domestic supply is then allocated to domestic purchasers—that is, to persons, business, and government.

In step 1, commodities purchased by persons for consumption or by business for investment are identified. The commodities purchased by persons are identified on the basis of the nature of the product from the titles of products included in the quinquennial economic censuses or in the *Standard Industrial Classification Manual, 1987*. The commodities purchased by businesses are identified on the basis of two criteria: (1) The commodity has a life of more than one year and is normally capitalized in business accounting records, and (2) the commodity is not an integral part of a structure and therefore is not included in the value of that structure (for example, an elevator in an apartment building).

In step 2, an estimate of total domestic output—that is, shipments, revenues, or receipts—is prepared for each commodity. The value of the domestic output is in producers’ prices—that is, it includes excise taxes and tips but excludes transportation costs and wholesale and retail trade margins.

In step 3, imports are added, and in step 4, trade margins and transportation costs are added. Step 4 converts supply into purchasers’ prices, which is the valuation used for the commodity-flow estimates.

In step 5, exports, which include transportation costs and trade margins, are subtracted because they are recorded in the NIPA’s as a separate final-demand component.

In step 6, changes in inventories are subtracted because not all goods that are produced or imported in a period are consumed in the same period. In some commodity-flow estimates, a percentage of domestic supply in purchasers’ prices—the result of step 2 through 6—is then allocated to users.

In step 7, government consumption expenditures and gross investment and purchases by business on current account (intermediate purchases) are subtracted from the domestic supply in purchasers’ prices to obtain a residual that reflects purchases either by persons for consumption or by businesses for investment.

1. Supplementary tables D and E show the I-O commodity compositions of the NIPA PCE and PDE categories. For the other NIPA expenditure components—not shown in tables D and E—private and government structures are presented by type, inventory change is presented by industry of the establishment holding the inventories, and net exports of good and services and government consumption and investment expenditures are shown by type of product.

Additional definitional and classificational changes that were incorporated into the 1992 I-O accounts included the following:

- Expansion of industry detail for construction;
- Expansion of detail for service-producing industries in the detailed I-O accounts; and
- Improved classification of imported goods that were previously identified as noncomparable.

For the 1992 I-O accounts, BEA has also prepared a set of *alternative* benchmark make and use tables that are more closely based on the Standard Industrial Classification (SIC) system. For more information, see the box “[Alternative I-O Tables](#)” below.

**Major methodological changes.**—The 1992 I-O accounts also incorporated the results of the major methodological changes that were introduced as part of the comprehensive NIPA revision. For example, the improved estimates of purchases of new autos and of

investment in nonresidential structures were incorporated into the estimates of final uses, and the new estimates of voluntary contributions to thrift savings plans were incorporated into the estimates of compensation of employees.

For estimates of indirect business tax and nontax liability, the 1992 I-O accounts incorporated the improved industry assignment of commodity taxes that was introduced in the comprehensive revision of gross product originating (GPO) released in August 1996.<sup>9</sup> Of the new assignments, the one with the largest impact is the shift of the Federal excise tax on gasoline and gasohol from petroleum refining in manufacturing to wholesale trade. These taxes are now classified in a more consistent and comprehensive manner than in the previous benchmark accounts.

In addition, the 1992 I-O accounts incorporated improved measures of output and inputs for the transportation industries and improved measures of the freight

9. See Robert E. Yuskavage, “Improved Estimates of Gross Product by Industry, 1959–94,” SURVEY 76 (August 1996): 140.

### Alternative I-O Tables

The Bureau of Economic Analysis (BEA) has expanded the *traditional* 1992 benchmark I-O accounts to include a set of *alternative* 1992 benchmark make and use tables that are more closely based on the 1987 Standard Industrial Classification (SIC) of industries. The major difference between the traditional I-O tables and the alternative I-O tables is in the treatment of some secondary products produced by industries. The primary purpose of the new alternative tables is to facilitate comparisons of industry data from the 1992 benchmark accounts with other SIC-based data, such as the gross domestic product by industry and capital stock data that are prepared by BEA and the employment and other industry data that are prepared by the Bureau of the Census and the Bureau of Labor Statistics.

#### Traditional I-O tables

For the traditional I-O tables, BEA begins with industry data from the economic censuses conducted by the Bureau of the Census and classified using the SIC system and then changes the data for selected industries to conform to special I-O requirements. The purpose of these changes is to assure that each resulting I-O industry has a unique output and production process—represented by the mix of inputs—compared with other industries. These changes involve only the outputs and related inputs of some secondary products produced by SIC industries, where the secondary product has a different input mix and production process from the SIC industry’s primary product. For example, hotel and lodging places typically provide eating and drinking services as a secondary product to their primary product of hotel and lodging services. The inputs and production processes for these two activities, however, are very different and need to be separated in the traditional I-O accounts for the purpose of preparing total requirements tables. Consequently, the output and inputs associated with eating and drinking services

provided by the hotels and lodging places industry are redefined to the eating and drinking industry for the traditional I-O tables.

#### Alternative I-O tables

In contrast with the traditional I-O accounts, the alternative I-O accounts conform to the current SIC establishment-based data collection system by showing products—primary and secondary—in the industries where they are produced. For example, the alternative I-O accounts do *not* separate the eating and drinking services from the hotels and lodging places industry activities. Only the industry definitions, which are used to determine the columns of the use table and the rows of the make table, are different from the traditional I-O tables. The commodity definitions, which are used to determine the rows of the use table and the columns of the make table, are the same as those in the traditional tables. Because SIC-defined industries include heterogeneous input mixes and production processes, they are not appropriate for constructing total requirements tables.

The differences between the traditional and alternative tables are large for some industries. For example, redefined auto repair output from the retail trade industry makes up almost 40 percent of the I-O auto repair industry output. Generally, these differences include the following: Manufacturing activities in nonmanufacturing industries (for example, bread-making in the retail trade industry); trade activities in nontrade industries (for example, buying and selling without further processing by manufacturing establishments); and service activities in industries where they are not primary (for example, eating and drinking-related activities in the hotels and lodging places industry). An exception is made for construction activities performed by nonconstruction industries, which are redefined to construction in both the traditional and alternative tables.

charges incurred to transport commodities by different modes. These improvements resulted from a review of the methods and source data used to prepare transportation estimates for the I-O accounts by the staff of the Department of Transportation.<sup>10</sup> Where feasible, BEA incorporated suggested improvements from this review into the 1992 I-O accounts.

**Major statistical changes.**—The 1992 I-O accounts incorporated newly expanded data from the 1992 economic censuses, which covered about 95 new industries and marked the most significant expansion in scope of the census in the past 50 years. These data were collected primarily in the two new economic censuses—Financial, Insurance, and Real Estate and Transportation, Communications, and Utilities. The I-O accounts also incorporated newly expanded data for the expenses of auxiliary establishments and for the expenses of manufacturing, wholesale trade, retail trade, and service industries. These data, together with data from new annual surveys for transportation and for communications, were used to estimate inputs for these industries.

## Introduction to the I-O Accounts

The I-O accounts for the U.S. economy show the production of commodities by each of 498 industries in the make table and the consumption of commodities by these industries in the use table. The use table also shows the commodity composition of gross domestic product (GDP) and the industry distribution of value added.

The I-O accounts show the relationships between all the industries in the economy and all the commodities that these industries produce and use. The estimates of the commodities are shown in producers' prices.<sup>11</sup> When producers' prices are used, transportation costs and wholesale and retail trade margins are treated separately as commodities that are produced and used by industries (see the section "[Definitions and conventions for valuation of transactions](#)," beginning on page M-15).

The I-O accounts consist of five basic tables: (1) Make, (2) use, (3) commodity-by-industry direct requirements,

(4) commodity-by-commodity total requirements, and (5) industry-by-commodity total requirements.<sup>12</sup>

**The make table.**—The make table (shown as a schematic in the upper panel of [chart 1](#) and with estimates in [table 1](#)) shows the value in producers' prices of each commodity produced by each industry. In each row, one "diagonal" cell shows the value of the production of the commodity for which the industry has been designated the "primary" producer; in [chart 1](#), these cells are shaded in the interior of the make table. The entries in the other cells in the row show the values of the production of commodities for which the industry is a "secondary" producer.<sup>13</sup> For example, the *industry* "newspapers and periodicals" (row 26A in [table 1](#)) is the primary producer of the *commodity* "newspapers and periodicals" (column 26A in [table 1](#)). This industry is also a secondary producer of the following commodities: Other printing and publishing (column 26B); scientific and controlling instruments (column 62); advertising (column 73D); and scrap, used and second-hand goods (column 81). The sum of all the entries in the row is the total output of that industry.

The entries in each column of the make table represent the production by both primary and secondary producers of the commodity in the column. For example, computer and data processing services (column 73A) includes the outputs by the primary producer—the industry "computer and data processing services" (row 73A)—and by the following secondary producers: Computer and office equipment (row 51); legal, engineering, accounting, and related services (row 73B); and other business and professional services, except medical (row 73C). The sum of all the entries in the column is the total output of that commodity.

An industry's share of the production of a commodity can be determined from the values in the make table by calculating the entry in a given column as a percentage of the column total. For example, the production of the commodity "scientific and controlling instruments" (column 62) totaled \$107.9 billion, of which the industry "scientific and controlling instruments" (row 62) produced \$100.5 billion or about 93 percent of the total commodity output.

The estimates of industry and commodity output are based primarily on data from the quinquennial economic censuses conducted by the Bureau of the Census.

10. The staff of BEA and of the Bureau of Transportation Statistics of the U.S. Department of Transportation have developed a set of transportation satellite accounts for the United States based on the 1992 benchmark I-O accounts. See Bingsong Fang, Xiaoli Han, Ann M. Lawson, and Sherlene K.S. Lum, "U.S. Transportation Satellite Accounts for 1992," *SURVEY* 78 (April 1998): 16–27.

11. Estimates of purchases of I-O commodities in purchasers' prices can be derived by adding transportation costs and wholesale and retail trade margins to the values in producers' prices. These estimates are shown in [table C](#) for all I-O commodities included in NIPA final demand; in [table D](#), for all I-O commodities included in personal consumption expenditure categories; and in [table E](#), for all I-O commodities included in producers' durable equipment categories.

12. In the designation that is used for I-O tables, the content of the rows is referred to first and that of the columns, second. For example, in a "commodity-by-industry" table, the commodities are in the rows, and the industries are in the columns.

13. Primary and secondary products and the classification of industries are discussed further in the section "[Definitions and conventions for classification](#)," beginning on page M-14.

(Table A shows the principal data sources used to estimate industry and commodity outputs for the 1992 I-O accounts.) Economic census data are used for most industries, but data from other Government agencies and private sources are used for the I-O industries that are not covered by the economic census data, such as ed-

ucation and religious organizations. In addition, data from other Government agencies are used to supplement the economic census data for some industries; for example, data on financial statistics for major private electric utilities from the U.S. Department of Energy are used to supplement the data on electric utilities from

**Table A.—Principal Data Sources for Industry or Commodity Outputs**

Industry or Commodity	Source
Agriculture, forestry, and fisheries .....	U.S. Department of Agriculture, Forest Service and Economic Research Service farm data National Oceanic and Atmospheric Administration <i>Fisheries of the United States</i>
Mining .....	Census Bureau 1992 Census of Mineral Industries
Construction .....	Census Bureau 1992 Census of Construction Industries, 1992 Census of Service Industries, value of construction put-in-place series, and 1992 Census of Financial, Insurance, and Real Estate Industries
Manufacturing .....	Census Bureau 1992 Census of Manufactures
Transportation .....	Association of American Railroads <i>Freight Commodity Statistics</i> Census Bureau 1992 Census of Transportation, Communications, and Utilities, <i>Motor Freight Transportation and Warehousing Survey, and Service Annual Survey</i> U.S. Army Corps of Engineers <i>1992 Waterborne Commerce of the United States</i> Department of Transportation <i>Air Carrier Financial Statistics and National Transportation Statistics</i>
Communications .....	Census Bureau 1992 Census of Transportation, Communications, and Utilities
Utilities .....	Department of Energy <i>Financial Statistics of Major United States Investor-Owned Electric Utilities, 1992, and Financial Statistics of Major U.S. Publicly Owned Electric Utilities, 1992 and 1993</i> Census Bureau 1992 Census of Transportation, Communications, and Utilities Rural Electrification Administration <i>1992 Statistical Report, Rural Electric Borrowers</i>
Wholesale and retail trade .....	Census Bureau 1992 Census of Wholesale Trade, 1992 Census of Retail Trade, <i>1992 Combined Annual and Revised Monthly Retail Trade, 1992 Annual Wholesale Trade, and 1993 Annual Retail Trade Survey</i>
Finance .....	Census Bureau 1992 Census of Financial, Insurance, and Real Estate Industries Federal Deposit Insurance Corporation <i>Statistics on Banking</i> Federal Home Loan Bank Board financial reports National Credit Union Administration <i>Yearend Statistics for Federally Insured Credit Unions</i> New York Stock Exchange Annual Report Securities and Exchange Commission FOCUS Report and Annual Report
Insurance .....	Health Care Financing Administration private health insurance data A. M. Best and Company <i>Best's 1992 Aggregate and Averages Property/Casualty Insurance</i> Mortgage Insurance Companies of America 1994-1995 <i>Factbook</i> U.S. Department of Labor, Pension Welfare Benefits Administration American Council of Life Insurers <i>1992 Life Insurance Fact Book</i>
Real estate .....	Census Bureau 1992 Census of Financial, Insurance, and Real Estate Industries Bureau of Economic Analysis, National Income and Product Accounts data U.S. Department of Agriculture Economic Research Service farm data Census Bureau expense data for industries
Services .....	Census Bureau 1992 Census of Retail Trade, 1992 Census of Service Industries, <i>1992 Service Annual Survey, 1993 Annual Retail Trade Survey</i> U.S. Department of Education <i>Digest of Educational Statistics</i> <i>The Economic Report on Veterinarians &amp; Veterinary Practices</i>
Government enterprises .....	Federal and State and local government agency reports U.S. Office of Management and Budget data Bureau of Economic Analysis, National Income and Product Accounts data
Noncomparable imports .....	Bureau of Economic Analysis, Balance of Payments Accounts data
Scrap .....	Census Bureau 1992 Census of Manufactures
General government .....	Bureau of Economic Analysis, National Income and Product Accounts data
Household .....	Bureau of Economic Analysis, National Income and Product Accounts data
Inventory valuation adjustment .....	Bureau of Economic Analysis, National Income and Product Accounts data Census Bureau 1992 economic census data

the 1992 Census of Transportation, Communications, and Utilities.

BEA makes two adjustments to the economic census data. First, it adds estimates of the output for establishments that are not covered by the economic censuses. This adjustment includes estimates for nonpayroll firms in mining, manufacturing, and wholesale trade and for noncensus-covered industries in agriculture, forestry, and fisheries, in services (such as education and religious organizations), and in transportation (such as railroads). Second, BEA adjusts the data for misreported tax return information, because the Census Bureau data for receipts reflect tax return records in some cases rather than information collected from surveys. Therefore, the tax return data must be adjusted to account for nonfilers and for filers who misreport receipts to the Internal Revenue Service.<sup>14</sup> The largest adjustments are to the data for the services industries in which partnerships and sole proprietorships are more prevalent.

After these adjustments are made, BEA redefines the SIC-based economic census data using the I-O classification system in order to attain greater similarity in the input structures for commodities produced by an I-O industry. For example, restaurants in hotels are redefined to the “eating and drinking places” industry. (See the section “Definitions and conventions for classification.”)

**The use table.**—The data in the use table (shown as a schematic in the lower panel of [chart 1](#)) are presented in two parts: Table 2.1 shows the value in producers’ prices of each commodity used by each industry or by each final user (represented by the upper left and right quadrants of the use table in [chart 1](#)); table 2.2 shows detail on the components of value added and total intermediate inputs that are used by each industry to produce its output (represented by the lower left quadrant of [chart 1](#)). In table 2.1, the entry in each row shows the commodity that is used by the industry or final user in the column. For example, the commodity “radio and TV broadcasting services” (row 67) is used by the industries “communications, except radio and TV” (column 66), “radio and TV broadcasting” (column 67), and “advertising” (column 73D) and by persons in “personal consumption expenditures” (column 91).

To facilitate the presentation, the rows and columns of table 2.2 are reversed from those shown in [chart 1](#) as follows: The industries are shown in the rows, and the total intermediate inputs, the components of value added, and the total output for each industry are shown in the columns. For example, for the industry “radio and TV

broadcasting” (row 67), compensation of employees was \$8.4 billion, indirect business tax and nontax liability was \$0.5 billion, and “other value added” was \$2.9 billion. Total intermediate inputs was \$17.6 billion, which is the sum of the intermediate inputs for the industry shown in table 2.1. The total output for this industry was \$29.4 billion.

The column total for industries in table 2.1 equals the industry output in table 2.2. For example, the industry output for the “radio and TV broadcasting” industry (column 67) in table 2.1 equals the total industry output for that industry (row 67) in table 2.2, or \$29.4 billion.

In table 2.1, the sum of the intermediate uses of the commodity by industries (upper left quadrant of [chart 1](#)) and all sales to final users (upper right quadrant of [chart 1](#)) equals total commodity output. The sum of the intermediate inputs consumed by each industry—that is, the raw materials, semifinished products, and services that the industry purchased—and the value added by the industry equals total industry output. In the I-O accounts, GDP can be measured either as the sum of final uses of commodities or as the sum of value added by industries.

The use table shows the variation in the share of commodity output that is sold to final users. In table 2.1, some commodities, such as “apparel” (row 18), were sold almost entirely to final users; therefore, the demand for these commodities is affected primarily by changes in the buying patterns of the final users. Other commodities, such as “industrial and other chemicals” (row 27A), were used almost entirely as intermediate inputs; for these commodities, production is indirectly connected to final uses.

The use table also shows the variation in the usage of commodities by industries. For example, in table 2.1, the commodity “paper and allied products, except containers” (row 24), with a total commodity output of \$98.5 billion, was used by most industries. The largest user was “other printing and publishing” (column 26B), which used \$16.1 billion, or 16 percent of the total commodity output. In contrast, “metal containers” (row 39), with \$13.2 billion of commodity output, were used by only 17 industries. The largest user was the industry “food and kindred products” (column 14), which used \$9.4 billion, or 71 percent of the total commodity output.

Finally, the use table shows the variation in the use of total value-added inputs by industries to produce their outputs. For example, in table 2.2, the industry “real estate and royalties” (row 71B) required \$412.2 billion of value-added inputs, or 75 percent of its total output; of this total, \$48.4 billion was for compensation of employees, \$79.7 billion was for indirect business tax and nontax liability, and \$284.2 billion was for “other value added.”

14. See Robert P. Parker, “Improved Adjustments for Misreporting of Tax Return Information Used to Estimate the National Income and Product Accounts, 1977,” SURVEY 64 (June 1984): 17–25.

In contrast, the industry “livestock and livestock products” (row 1) required \$15.6 billion of total value-added inputs, or 17 percent of its total output; of this total, \$4.5 billion was for compensation of employees, \$1.3 billion was for indirect business tax and nontax liability, and \$9.8 billion was for “other value added.”

The estimates of intermediate inputs in the use table are primarily based on data from the economic censuses. Much of these data are for broad expense categories, such as office supplies, that must be allocated to I-O commodities, such as postal services, paper, and envelopes. In cases in which estimates of expenses are not available, BEA uses commodity shipments and other related information. For example, the estimates of the purchases of spark plugs are allocated using the stock of cars, trucks, and buses by industry. (Table B shows the principal sources and methods used to estimate intermediate and value-added inputs for 1992 I-O industries.)

The estimates of final uses of commodities are prepared from source data on purchases or by using the commodity-flow method. For example, the estimates of exports and imports are based on source data from the Census Bureau and BEA’s U.S. balance of payments accounts. In the commodity-flow method, which is used mainly for personal consumption expenditures and producers’ durable equipment, domestic output is adjusted for exports and imports; trade margins and transportation costs are added to estimate supply in purchasers’ value. Then, either a percentage of this supply is attributed to final users, or

the supply is adjusted for intermediate purchases and the residual attributed to final users.<sup>15</sup>

Two of the components of value added by industry are estimated directly using a variety of data sources (table B). Most of the estimates of compensation of employees by industry are based on census data. The estimates of indirect business tax and nontax liability by industry are prepared in two parts: For excise and general sales taxes, the values are estimated as part of each industry’s output; for other indirect business taxes, such as property taxes, estimates are distributed on the basis of a variety of source data, including State government tax collections and highway statistics. The remaining component is shown as “other value added,” which is derived as a residual by subtracting the total intermediate inputs, compensation of employees, and indirect business tax and nontax liability from total industry output.

**The commodity-by-industry direct requirements table.**

—The commodity-by-industry direct requirements for a dollar of industry output are presented in two parts: Table 3.1 shows the input coefficients for each commodity that an industry requires to produce a dollar of output; table 3.2 shows component detail for the value-added input coefficients that an industry requires to produce a dollar of output. The input coefficients in both tables

15. For more detailed information, see U.S. Department of Commerce, Bureau of Economic Analysis, *Personal Consumption Expenditures*, Methodology Paper Series MP-6 (Washington, DC: U.S. Government Printing Office, June 1990): 31–34.

**Table B.—Principal Data Sources and Methods for Estimating Intermediate Inputs and Value-Added Inputs**

Component	Source or method
Intermediate inputs .....	For most census-covered industries, selected purchased services (legal; communications; electricity; repair of buildings; repair of equipment; rental of buildings; rental of equipment; accounting, auditing, and bookkeeping; advertising; and data processing and computer services) and purchased fuels; in addition, for manufacturing and mining, materials consumed and contract work, from 1992 economic censuses. For agriculture industries, inputs from U.S. Department of Agriculture. For most remaining industries, a combination of selected inputs from trade sources and 1987 estimates extrapolated by change in industry output. All inputs adjusted to balance to commodity outputs.
Value-added inputs: Compensation of employees .....	For census-covered industries, payroll and benefits from Census Bureau 1992 economic censuses, adjusted for misreporting and I-O industry definitions. For noncensus-covered industries, tabulations of wages and salaries covered by State unemployment insurance, BEA estimates of benefits, adjusted for misreporting and I-O industry definition. All estimates adjusted to balance to total compensation, estimated as part of the national income and product accounts.
Indirect business tax and nontax liability .....	For excise taxes and commodity taxes, estimates are from output controls. For other tax and nontax liability, distributed to industries using indirect techniques. All estimates adjusted to balance to total indirect business tax and nontax liability, estimated as part of the national income and product accounts.
Other value added .....	For most industries, residual method: Total industry output less total intermediate inputs, compensation of employees, and indirect business tax and nontax liability. For government enterprises, other value added is the current surplus.

are also referred to as “direct requirements coefficients.” The sum of the coefficients for total intermediate inputs and for the total value added for each industry is equal to 1.00000.

Tables 3.1 and 3.2 are derived from tables 2.1 and 2.2, respectively, by dividing each industry’s commodity or value-added input by that industry’s total output. However, table 3.1, unlike table 2.1, does not include the components of final uses or gross domestic product.

In table 3.1, each column shows, for the industry named at the head of the column, the input coefficients for the commodities and for the total value added that an industry directly requires to produce a dollar of output. Each row shows the commodity or the total value added that the industry requires. For example, to produce a dollar of output, the industry “radio and TV broadcasting” (column 67) has direct requirements for 2.1 cents (calculated as  $100 \text{ cents} \times 0.02064$  from the table) of the commodity “radio and TV broadcasting” (row 67) and 2.8 cents of the commodity “advertising” (row 73D).

In table 3.2, industries are shown in the rows, and the total output, the total intermediate inputs, and the components of value added that are required to produce a dollar of output are shown in the columns. For example, to produce a dollar of output, the industry “radio and TV broadcasting” (row 67) has direct requirements for 40.2 cents of total value added; these requirements consist of 28.6 cents of compensation of employees, 1.8 cents of indirect business tax and nontax liability, and 9.8 cents of “other value added.” The industry has direct requirements of 59.8 cents of intermediate inputs, which are shown in detail in column 67 of table 3.1.

The information in table 3.1 can be used with the information in the make table (table 1) to trace the changes in an industry’s output, as well as the changes in that industry’s total requirements for other industries’ outputs that result from a change in final uses of a commodity. For example, tables 1 and 3.1 can be used to trace the direct effects of a \$1 billion increase in sales of household appliances to final users on all industries producing household appliances.

In table 1, total output of the commodity “household appliances” (column 54) was \$16,833 million. The industry “household appliances” (row 54) produced \$16,033 million, or 95.2 percent, of this commodity; the industry “audio, video, and communication equipment” (row 56) produced \$268 million, or 1.6 percent, and 18 other industries produced the rest. Based on these proportions, production in the household appliances industry would initially increase \$952 million ( $\$1 \text{ billion} \times 0.952$ ) to meet the \$1 billion increase in household appliances sold to final users. Production in the audio, video, and

communication equipment industry would increase \$16 million ( $\$1 \text{ billion} \times 0.016$ ), and production in the 18 other industries would increase \$32 million.

Table 3.1 can then be used to determine the commodity inputs required by each industry to produce its share of the \$1 billion of household appliances sold to final users. The commodities required by the household appliances industry will be traced first. For example, column 54 in table 3.1 shows that the household appliances industry would require, in addition to other commodity inputs, \$1.2 million ( $\$952.0 \text{ million} \times 0.00126$ ) of the commodity “household appliances” (row 54); to provide this commodity input, the industry’s production would have to increase an additional \$1.1 million ( $\$1.2 \text{ million} \times 0.952$ ). Thus, the increase in the production of the household appliances industry would be \$953.1 ( $\$952.0 \text{ million for final users plus } \$1.1 \text{ million for its own intermediate use}$ ). In turn, this production would require \$65.1 million ( $\$953.1 \text{ million} \times 0.06835$ ) of primary iron and steel manufacturing (row 37), \$83.0 million ( $\$953.1 \text{ million} \times 0.08710$ ) of rubber and miscellaneous plastics products (row 32), and so on down the column. From table 3.2, the value added required by the household appliances industry would total \$335.9 million ( $\$953.1 \text{ million} \times 0.35243$ ). Of this total, \$200.9 million ( $\$953.1 \text{ million} \times 0.21075$ ) is for compensation of employees, \$7.4 million ( $\$953.1 \text{ million} \times 0.00781$ ) is for indirect business tax and nontax liability, and \$127.6 million ( $\$953.1 \text{ million} \times 0.13387$ ) is for “other value added.”

The information in tables 1 and 3.1 can now be used to trace the continuing repercussions of the \$953.1 million of additional output produced by the household appliances industry on the output of other industries. For example, to supply the primary iron and steel required by the household appliances industry, the industry “primary iron and steel manufacturing” (column 37 in table 3.1) requires \$12.0 million ( $\$65.1 \text{ million} \times 0.18508$ ) of the commodity “primary iron and steel manufacturing” (row 37 in table 3.1)—of which it produces \$11.8 million ( $\$12.0 \text{ million} \times 0.987$  derived from table 1) and all other industries produce \$0.2 million ( $\$12.0 \text{ million} \times 0.013$ ). Other commodities required by the primary iron and steel manufacturing industry include \$1.3 million ( $\$76.9 \text{ million} \times 0.01663$ ) of general industrial machinery and equipment (row 49), \$1.4 million ( $\$76.9 \text{ million} \times 0.01762$ ) of coal mining (row 7), and so on. Similarly, all the other industries that produce primary iron and steel manufacturing (column 37 in table 1) as secondary products—such as primary nonferrous metals manufacturing (row 38 in table 1)—would also require commodities to produce their shares of the output of

primary iron and steel manufacturing that is required by the household appliances industry.

Similarly, the continuing effects on each industry producing its share of the \$1 billion of household appliances sold to final users can be traced, and the increase in production required from each industry can be derived. For each industry that produces household appliances, either as a primary product or as a secondary product, the direct requirements coefficients corresponding to that industry are used from tables 3.1. For example, for household appliances as a primary product of the household appliances industry, the direct requirements coefficients from column 54 in table 3.1 are used; for household appliances as a secondary product of the audio, video, and communication equipment industry, the coefficients from column 56 are used.

***The commodity-by-commodity total requirements table.***

—The commodity-by-commodity total requirements table (table 4) shows the inputs of each commodity that are directly and indirectly required to deliver a dollar of the commodity to final users. It combines the information in tables 1 and 3.1 to completely trace and summarize as a multiplier the continuing repercussions of a dollar change in the final use of a specified commodity on total commodity outputs. Each column shows the commodity delivered to final users, and each row shows the total production of the commodity that is required. The coefficients in this table are referred to as “commodity-by-commodity total requirements coefficients.” The table is derived from both the make and use tables.<sup>16</sup>

In the household appliances example, the total requirements for each commodity can be calculated from the entries in column 54. Providing consumers with \$1 billion of household appliances would require \$1,001.3 million ( $\$1 \text{ billion} \times 1.00133$ ) of household appliances (row 54) from all industries. Similarly, it would require \$15.3 million ( $\$1 \text{ billion} \times 0.01530$ ) of paperboard containers and boxes (row 25), \$51.5 million ( $\$1 \text{ billion} \times 0.05153$ ) of plastics and synthetic materials (row 28), and so on.

The total at the bottom of each column in table 4 is the sum of all the changes in commodity outputs that are

required to deliver a dollar of a commodity to final users. Because each total change is a dollar multiple of the initial dollar spent for the output of the given commodity, the total change in output is often called the total commodity output multiplier.

These multipliers can be used to estimate the impact of changes in the final uses of commodities on total commodity output. For example, for the household appliances commodity (column 54), the total commodity output multiplier is 2.33419 (the sum of all the entries in the column). The total dollar change in all commodity output that is required for an additional \$1 billion of household appliances delivered to final users is \$2,334.2 million ( $\$1 \text{ billion} \times 2.33419$ ).

***The industry-by-commodity total requirements table.***

—The industry-by-commodity total requirements table (table 5) shows the input requirements coefficients for the output from each industry that is directly and indirectly required to deliver a dollar of a commodity to final users. Each column shows the commodity delivered to final users, and each row shows the total production that is required from an industry. The coefficients in this table are referred to as “industry-by-commodity total requirements coefficients.” The table is derived from both the make and use tables.

The calculations made using this table are similar to those using the commodity-by-commodity total requirements table. For example, to provide final users with an additional \$1 billion of household appliances, the household appliances industry (row 54) is required to produce \$954.3 million ( $\$1 \text{ billion} \times 0.95433$ ) of industry output; the paperboard containers and boxes industry (row 25) is required to produce \$15.5 million ( $\$1 \text{ billion} \times 0.01545$ ) of industry output, the plastics and synthetic materials industry (row 28) is required to produce \$45.1 million ( $\$1 \text{ billion} \times 0.04510$ ) of industry output, and so on.

The total at the bottom of each column in table 5 is the sum of all the changes in industry outputs that are required to deliver a dollar of a commodity to final users. Because each total change is a dollar multiple of the initial dollar spent for the output of the given industry, the total change in output is often called the total industry output multiplier.

These multipliers can be used to estimate the impact of changes in the final uses of commodities on total industry output. For example, the total industry output multiplier for the household appliances commodity (column 54) is 2.31873 (the sum of all the entries in the column). The total dollar change in the output of all industries that is required for an additional \$1 billion of household

16. The final-use multipliers presented, including the commodity-by-commodity total requirements table (table 4) and industry-by-commodity total requirements table (table 5), identify the cumulative effects on total industry and commodity outputs that result from a change in final use. In contrast to conventional macroeconomic multipliers that measure the cumulative impact on final output of a policy change, such as the decline in GDP that results from a reduction in government spending, these final-use multipliers measure the impact of a change in final demand (uses) on gross output (final and intermediate output). Indeed, shifts in the composition of final uses can have a “multiple” impact on industry and commodity output but can have no effect on the level of total GDP.

appliances delivered to final uses is \$2,318.7 million (\$1 billion  $\times$  2.31873).

**Comparison of total multipliers.**—The total multipliers in tables 4 and 5 are similar but not identical. The main reason for the difference is that the commodity multipliers in table 4 includes “noncomparable imports,” which by definition do not have a domestic industry counterpart and are not included in the total industry output multipliers in table 5.

When using the two total requirements tables, one should be aware that the amount of output required to deliver a dollar of commodity to final users may include both imported commodities and domestically produced commodities. However, both the total commodity output multiplier and the total industry output multiplier represent the output required as if all of the commodity were domestically supplied. Therefore, if a portion of the commodity was imported, the impact on domestic output would be lower than that implied by the multiplier.

### *The uses of the I-O accounts*

The I-O accounts have a variety of uses that range from an analytical tool to study industry production to a framework for benchmarking other economic statistics programs. This section describes the uses of the I-O accounts in studying interindustry relationships in the U.S. economy and in preparing economic statistics. It also describes some of the assumptions that analysts must make when they use I-O accounts as an economic tool for analysis.

**Analytical uses.**—The I-O accounts are an important analytical tool because they show the interdependence among the producers and consumers in the economy. Using the I-O accounts, analysts can estimate the direct and indirect effects of changes in final uses on industries and commodities.

For example, the I-O accounts can show how an increase in consumer demand for motor vehicles will affect the rest of the economy. It will likely cause an increase in the production of motor vehicles, which could result in increased steel production and which, in turn, could require increases in the production of chemicals, iron ore, limestone, and coal. It could also require an increase in the production of upholstery fabrics, which could require more natural fibers, more synthetic fibers, and more plastics and which, in turn, could require increases in the production of “electric services (utilities)” and “plastics materials and resins.” In the

I-O accounts, these effects are quantified in the total requirements tables.<sup>17</sup>

Similarly, the requirements tables can be used to estimate the effects of a strike or natural disaster on the economy or, supplemented with additional information, to estimate the effects of an increase in demand for U.S. exports on employment. The Federal Emergency Management Agency, the Department of Defense, and the Census Bureau, among others, have used the I-O accounts for such studies.

When the I-O accounts are augmented with regional data from BEA, they can show economic effects by region. For example, the regional I-O accounts can be used to estimate the potential impact of a planned Federal Government shutdown of a military base.<sup>18</sup> When the I-O accounts are augmented with international data, they can be used to estimate the effects of exchange-rate changes on the profitability and activities of manufacturing industries that rely on imported inputs.<sup>19</sup>

Analysts using the I-O tables to estimate the effects of changes in final uses on industries and commodities need to be aware of the underlying I-O assumptions. For example, the I-O tables are based on a set of relationships that exist between producers and consumers in a given year; these relationships reflect constant technology and relative prices. The interindustry relationships reflect the average input structure in each industry for that year, but these relationships do not necessarily reflect those of an additional unit of production. Therefore, for analyses that require alternative assumptions, other economic tools may be required.

**Statistical uses.**—The I-O accounts are used in several ways to prepare economic statistics. For example, the final-use components of personal consumption expenditures and of gross private domestic investment—adjusted to reflect the definitional, classificational, and statistical changes made after the completion of the benchmark I-O accounts—provide the benchmarks for the NIPA’s.

17. In an open economy, the production effects are likely to be reflected as an increase in both domestic production and imports. To separate the effects on domestic production from those on imports, analysts generally use a special set of I-O tables that includes an import matrix that identifies the intermediate purchases by producers that are obtained from foreign sources.

18. Estimates of regional economic effects derived from BEA’s Regional Input-Output Modeling System are based mainly on two data sources: The U.S. benchmark I-O accounts and BEA’s county estimates of wage and salary disbursements at the four-digit SIC level. These estimates are available from BEA’s Regional Economic Analysis Division. For more information, see U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II), Third Edition* (Washington, DC: U.S. Government Printing Office, 1997).

19. Jose Campa and Linda S. Goldberg, “The Evolving External Orientation of Manufacturing: A Profile of Four Countries,” *Economic Policy Review* 2 (1997): 53–81.

The benchmark I-O accounts are also used as a framework to weight and to calculate index numbers for price, volume, and value. For example, the Bureau of Labor Statistics uses data from the I-O accounts as weights in compiling industry price indexes.

### *Definitions and conventions for classification*

The I-O accounts use two classification systems—one for industries and another for commodities—and both systems generally use the same I-O numbers and titles. This section discusses first the I-O industry classification system and then the I-O commodity classification system.

**The I-O industry classification system.**—This system is based on the Standard Industrial Classification (SIC) system, which classifies establishments into industries on the basis of the primary activities of the establishments. Establishments are defined as economic units that are typically at a single location where business is conducted or where services or industrial operations are performed.<sup>20</sup>

The I-O industry classification system differs from the SIC system in three major ways. First, the I-O industry system redefines some secondary production of some SIC industries to other industries. Second, the I-O industry classification system includes “special industries” that are not considered to be industries in the SIC system. Third, because of data limitations, the I-O industry system includes three industries—agriculture, construction, and real estate—that are defined on an activity basis rather than an establishment basis.

*Redefinitions* result in the shift of output and inputs related to the secondary activities of some establishments to the SIC industries in which they are primary activities. (A primary activity must make up the largest proportion of the establishment’s output; all the other activities are secondary.) The I-O industry classification system only redefines the secondary activities of an SIC industry for which the related inputs are very different from those required for the industry’s primary activity. For example, both the output and related inputs of restaurants in hotels are moved from the SIC industry “hotels and lodging places” (in which “hotels and lodging” is the primary activity) to the industry “eating and drinking places” (in which “eating and drinking” is the primary activity), because the input structure of “meals and beverages” is very different from that of the industry’s primary activity. After the redefinition is completed, the total outputs for both

I-O *industries*—that is, “eating and drinking places” and “hotels and lodging places”—are different from their SIC industry counterparts. However, total outputs for the I-O *commodities* remain unchanged from their counterparts in the SIC system. The purpose of redefinitions in the I-O analytical framework is to attain a greater degree of homogeneity in the inputs required by an I-O industry to produce its commodities.

The following activities are redefined:

- Construction work (both new and maintenance and repair) performed by all establishments (including government) is redefined to the construction industries. Construction work performed by and for establishments classified in nonconstruction industries is referred to as “force-account construction.”
- Manufacturing in trade and service establishments is redefined to the appropriate manufacturing industries.
- Retail trade in service establishments is redefined to the retail trade industry. Services in trade establishments are redefined to service industries. Some services are also redefined among service industries.
- Manufacturers’ sales of purchased goods (resales) are redefined to the wholesale trade industry.
- Rental activities of all establishments are redefined to the real estate and rental industries.
- The preparation of meals and beverages in most establishments is redefined to the eating and drinking industry.

Redefinitions affected most industries, but the total output that was redefined for most industries was small for the 1992 I-O accounts. Redefinitions had a significant effect on the following industries: Automotive repair and services (I-O industry 75) has \$138.4 billion in total industry output after \$1.0 billion was removed and \$48.1 billion was added from wholesale and retail trade; eating and drinking places (I-O industry 74) has \$280.7 billion in total output after \$1.0 billion was removed and \$45.6 billion was added; wholesale trade (I-O industry 69A) has \$569.0 billion in total output after \$51.0 billion was removed and \$31.0 billion was added; and retail trade (I-O 69B) has \$522.5 billion in total output after \$82.7 billion was removed and \$13.9 billion was added.

*Special industries* are included in the I-O system, but they are not considered industries in the SIC system. In the SIC, government establishments engaged in business-like activities (classified in SIC industry divisions 1–8), such as the U.S. Postal Service and the local water authorities, are classified in the same SIC industry as private establishments. In the I-O system, these establishments

20. Appendix A provides a list of I-O industries and the relationships of these industries to the 1987 SIC codes. For more information on the SIC, see Office of Management and Budget, Statistical Policy Division, *Standard Industrial Classification Manual, 1987* (Washington, DC: U.S. Government Printing Office, 1987): 11–18.

are classified in Federal Government enterprises (I-O 78) and State and local government enterprises (I-O 79).<sup>21</sup>

Another special industry created for the I-O accounts, general government (I-O 82), covers all other government establishments and is similar in scope to SIC industry division 9, public administration. The output and value added of this industry are defined as compensation of employees and consumption of fixed capital of general government agencies.

The I-O system also includes a special industry for the inventory valuation adjustment (I-O 85), which is an adjustment needed to eliminate inventory profits or losses from the change in the inventory component of output.

*Activity-based industries* are necessary for agriculture, construction, and real estate. Agriculture industries are classified by commodity, such as dairy farm products, because the quality of the source data on the production of agriculture commodities is believed to be better than data available by type of establishment or farm.

Construction is classified by type of activity, such as the construction of new highways and streets, rather than by the type of construction contractor, such as heavy construction contractors who pave asphalt roads, for two reasons. First, source data are not available, but more importantly, construction is an atypical activity in that it is performed in almost all industries; most establishments perform maintenance and repairs, and some perform their own new construction. This type of activity is referred to as force-account construction.

To adequately represent construction activities in the U.S. economy, the output associated with all construction activities performed by the nonconstruction industries is redefined to the construction industry. Similarly, the intermediate and value-added inputs for this work are moved to the construction industries.

The real estate industry includes all real estate rental receipts and all imputed rents for owner-occupied housing and for buildings and equipment owned and used by non-profit institutions primarily serving households. Rental receipts are included in this industry because of a lack of data for individual industries. Imputed rents are included in the I-O accounts to make them consistent with the NIPA's.

***The I-O commodity classification system.***—In this system, each commodity is assigned the code of the industry in which the commodity is the primary product. This code is then used to group the production of the com-

modity in the industry in which it is the primary product with its production in other industries in which it is a secondary product. In a few cases, the I-O system reclassifies SIC-defined commodity groups, and a secondary product is created from an SIC-defined primary product. The output of the SIC-defined product is moved to the I-O-defined primary product group; therefore, the output represents the total output of the product, regardless of the classification of the establishments that produce it.

For example, in the SIC system, the primary product of the newspaper industry is defined as newspaper sales and newspaper advertising. In the I-O system, the primary product of the newspaper industry is newspaper sales. The advertising component is considered to be a secondary activity; therefore, advertising receipts or output are moved to the advertising commodity group. The total output for the I-O newspaper *industry* remains unchanged.

Reclassifications affected a small percentage of commodities, and for most of these commodities, the values were not very large. However, some commodities had significant reclassified sales. For example, the commodity “newspapers and periodicals” (I-O 26A) has \$19.9 billion in total commodity output after \$35.4 billion was moved to the advertising commodity (I-O 73D).

In several cases, there is no I-O commodity classification that corresponds to an industry classification. If a commodity is the primary product of more than one SIC industry, then the commodity is reclassified and given the I-O commodity number that corresponds to the I-O industry that is the largest producer of the commodity. As a result, the following detailed I-O commodities have no commodity output: Forest products (commodity 2.0701); knit outerwear mills (commodity 18.0201); knit underwear and nightwear mills (commodity 18.0202); knitting mills, not elsewhere classified (n.e.c.) (commodity 18.0203); fertilizers, mixing only (commodity 27.0202); cold-rolled steel sheet, strip, and bars (commodity 37.0104); steel pipe and tubes (commodity 37.0105); secondary nonferrous metals (commodity 38.0600); copper foundries (commodity 38.1200); nonferrous castings, n.e.c. (commodity 38.1300); Federal Government electric utilities (78.0200); State and local government passenger transit (commodity 79.0100); and State and local government electric utilities (commodity 79.0200).

### ***Definitions and conventions for valuation of transactions***

This section describes the underlying definitions and conventions for valuation that are used in preparing the

21. Establishments defined as government enterprises follow the same classification used in the NIPA's. For more information, see U.S. Department of Commerce, Bureau of Economic Analysis, *Government Transactions*, Methodology Paper Series MP-5 (Washington, DC: U.S. Government Printing Office, November 1988): 6.

Table C.—Input-Output Commodity Composition of Final Uses,

[Millions]

Commodity number	Personal consumption expenditures				Gross private fixed investment				Change in business inventories				Exports of goods and services				Imports of goods and services	
	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs
1	3,709	101	1,290	5,100					857	1	-1	857	800	15	3	818	-2,061	
2	19,531	3,547	17,859	40,937					4,035	29	50	4,114	16,116	1,516	3,740	21,372	-6,860	
3	3,085	18	846	3,949					-45		-1	-46	2,880	36	317	3,233	-5,659	
4	729			729								61				61	-21	
5+6					50	20	1	71	-24	-1	3	-22	1,104	53	16	1,173	1,488	
7	68	28	69	165					-3	8	4	9	3,122	1,095	88	4,305	-133	
8									17	4	4		3,290	294	66	3,650	-43,984	
9+10	39	47	23	109					-105	17	4	-84	686	494	6	1,186	-898	
11					339,916			339,916										
12					20,362			20,362										
13	1,473	6	1,023	2,502					-1,855		-3	-1,858		23	43	3,658	-809	
14	248,010	6,759	133,135	387,904					150	39	-71	118	19,630	841	1,791	22,262	-21,850	
15	30,395	181	17,432	48,008					2,137	12	126	2,275	5,874	25	275	6,174	-1,587	
16	1,683	39	2,403	4,125					477	18	40	535	2,359	30	169	2,558	-4,397	
17	5,578	242	5,150	10,970					19	6	12	37	1,724	66	172	1,962	-1,879	
18	80,934	627	86,794	168,355	2,343	107	895	3,345	3,897	40	494	4,431	4,065	8	498	4,571	-38,484	
19	11,189	99	9,872	21,160					470	2	56	528	810	4	87	901	-2,870	
20+21	2,529	67	2,559	5,155	4,661		1,340	6,001	663	111	171	945	5,965	467	749	7,181	-7,143	
22+23	21,623	163	19,848	41,634	16,091	182	3,930	20,203	185	4	13	202	2,633	19	286	2,938	-2,026	
24	14,921	389	7,314	22,624					771	65	87	923	8,567	710	635	9,912	-10,715	
25	381		262	643					277	18	40	335	691	32	47	770	-247	
26A	14,339	653	6,018	21,010					-62	3		-59	653	39	94	786	-199	
26B	15,282	790	13,733	29,805					753	45	135	933	2,984	57	349	3,390	-1,783	
27A	2,154	311	1,724	4,189	1,957			1,957	729	60	45	834	17,292	1,233	1,060	19,585	-14,375	
27B	920	48	690	1,658					-153	-7	-34	-194	3,341	105	886	4,332	-2,330	
28									239	22	8	269	8,477	993	357	9,827	-8,827	
29A	43,864	242	25,022	69,128					1,292	10	115	1,417	7,272	22	1,016	8,310	-13,193	
29B	30,098	1,167	19,323	50,588					186	27	71	284	2,591	73	300	2,964	-2,052	
30	480	32	226	738					42	5	9	56	745	43	106	894	-200	
31	53,355	3,105	59,579	116,039					46	24	26	96	9,084	555	858	10,497	-11,582	
32	15,051	2,754	18,831	36,636	215	10	52	277	995	139	202	1,336	6,905	553	1,146	8,604	-13,253	
33+34	16,991	43	17,686	34,312					331	2	53	386	1,464	24	103	1,591	-12,824	
35	979	43	1,158	2,180					185	10	23	218	1,544	46	225	1,815	-2,159	
36	2,570	104	3,002	5,676					-196	-11	6	-201	1,713	160	158	2,031	-4,551	
37	36	7	36	79	16			16	-339	16	15	-308	3,505	134	394	4,033	-10,893	
38	71	3	53	127	52	1	8	61	-392	20	7	-365	6,379	118	775	7,272	-10,228	
39					38	1	3	42	10			10	341	7	25	373	201	
40	326	12	229	567	3,612	26	387	4,025	-110	-3	6	-107	2,061	19	203	2,293	-1,008	
41	1,345	16	1,509	2,870					217	5	49	271	2,171	28	269	2,468	-2,628	
42	4,266	136	3,979	8,381	2,415	108	434	2,957	67	14	40	121	4,849	161	794	5,804	-6,510	
43	169	3	45	217	3,271	48	75	3,394	-184	1	-6	-189	5,419	80	292	5,791	-2,413	
44+45	400	7	510	917	17,803	915	6,709	25,427	277	34	158	469	9,002	631	2,356	11,989	-4,754	
46					5,743	184	1,298	7,225	-41	-1	-12	-54	1,302	41	287	1,630	-1,468	
47	687	4	960	1,651	17,652	338	2,629	20,619	18	8	9	35	3,686	51	444	4,181	-5,127	
48	237	2	227	466	16,820	332	2,433	19,585	-106	-3	-4	-110	4,510	63	574	5,147	-5,881	
49					11,300	156	1,221	12,677	-80	2	-8	-86	7,834	107	873	8,814	-7,796	
50	136	7	109	252	700	15	91	806	-59	11	-6	-54	1,962	97	221	2,280	-1,895	
51	5,368	64	3,838	9,270	36,169	441	8,331	44,941	-1,241	-1	-77	-1,319	22,925	239	3,696	26,860	-32,687	
52	910	16	684	1,610	7,376	112	1,878	9,366	165	1	40	206	3,320	44	629	3,993	-2,243	
53	200	3	189	392	6,826	187	1,078	8,091	77	12	31	120	4,083	52	663	4,798	-295	
54	13,100	623	7,869	21,592	2,668	121	1,475	4,284	-96	25	4	-67	2,329	95	214	2,638	-4,072	
55	2,023	99	2,624	4,746	283	7	66	356	141	19	84	244	2,839	74	500	3,413	-4,985	
56	21,682	301	14,852	36,835	24,513	176	3,122	27,811	374	22	49	445	9,551	90	1,062	10,703	-25,409	
57	216		114	330					-51	2	12	-37	16,150	120	2,075	18,345	-20,574	
58	6,298	332	5,859	12,489	2,058	42	397	2,497	-149	12	14	-123	5,702	129	1,058	6,899	-8,062	
59A	105,552	2,844	18,294	126,690	75,132	2,028	8,916	86,076	1,114	30	45	1,189	16,336	423	568	17,327	-58,285	
59B	4,277	132	3,318	7,727	4,981	65	361	5,407	-220	-3	-4	-227	16,995	483	1,725	19,203	-21,743	
60	4,465	1	57	523	13,676	33	90	13,799	-8,011	-19	-30	-8,060	40,656	279	435	41,370	-12,153	
61	11,958	86	4,277	16,321	4,741	90	358	5,189	-298	4	7	-287	3,354	23	109	3,486	-693	
62	5,479	33	5,047	10,559	43,637	258	5,651	49,546	-228	6	114	-108	17,864	67	2,120	20,051	-14,773	
63	6,240	37	9,019	15,296	6,915	53	3,113	10,081	368	7	156	531	3,453	13	1,134	4,600	-8,153	
64	36,410	754	43,551	80,715	5,365	596	1,673	7,634	765	34	189	988	4,427	137	1,182	5,746	-23,335	
65A	16,447		16,447										633			633	-164	
65B	6,238		6,238										1,981			1,981	-2,059	
65C	4,975		4,975										9,182			9,182	3,530	
65D	33,929		33,929										21,745			21,745	-8,544	
65E	2,814		2,814										2,528			2,528		
66	90,397		90,397		5,065			5,065					3,596			3,596		
67	1,839		1,839															
68A	79,337		79,337										267			267	-695	
68B	29,537		29,537										337			337		
68C	20,464		20,464										65			65		
69A													2,812			2,812	18,317	
69B	313	3		316									20			20		
70A	198,007			198,007									17,142			17,142	-265	
70B	138,181			138,181									1,685			1,685	-1,136	
71A	457,250			457,250														
71B	166,640		1,994	168,634	28,407			28,407					20,683			20,683	-11	
72A	29,881			29,881									48			48		
72B	65,602		8	65,610									42			42		
73A	2,444	2		3,271	3,441			3,441	-41		-2	-43	3,092			3,092	-225	
73B	45,781		825	45,781	15,785			15,785					5,013			5,013	-839	
73C	20,917		814	21,731									5,677			5,677	-1,632	
73D	676			676									531			531	-615	
74	242,151			242,151									328			328		
75	90,099		165	90,264														

**in Producers' and Purchasers' Prices**

of dollars]

Imports of goods and services		Federal Government consumption expenditures and gross investment, national defense				Federal Government consumption expenditures and gross investment, nondefense				State and local government consumption expenditures and gross investment, education				State and local government consumption expenditures and gross investment, other				Commodity number	
Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices			
.....	-2,061	2	.....	.....	2	5	.....	.....	5	40	.....	.....	40	154	.....	16	170	1	
.....	-6,880	.....	.....	.....	.....	-358	-28	3	-383	297	73	70	440	643	95	92	830	2	
.....	-5,659	-1	.....	.....	-1	-1,168	.....	.....	-1,168	9	.....	10	-516	.....	1	-515	.....	3	
.....	-21	19	.....	.....	19	20	.....	.....	20	377	.....	.....	377	1,310	.....	1,310	.....	4	
.....	1,488	-148	-17	-5	-170	1	.....	.....	1	41	.....	.....	32	20	.....	21	.....	5+6	
.....	-133	1	.....	.....	1	28	12	1	41	28	4	.....	.....	.....	.....	.....	21	7	
.....	-43,984	.....	.....	.....	.....	-202	-40	-10	-252	.....	.....	.....	.....	.....	.....	.....	.....	8	
.....	-898	-3	-4	-7	-7	5	.....	.....	9	6	.....	.....	.....	.....	.....	.....	.....	9+10	
.....	.....	5,234	.....	5,234	10,569	.....	.....	.....	10,569	20,251	.....	.....	20,251	80,809	.....	80,809	.....	11	
.....	.....	6,649	.....	6,649	3,780	.....	.....	.....	3,780	6,802	.....	.....	6,802	25,263	.....	25,263	.....	12	
.....	-809	16,479	51	52	16,582	2,698	.....	.....	2,698	.....	.....	.....	145	1	7	153	.....	13	
.....	-21,850	269	3	29	301	195	7	29	231	4,061	89	515	4,665	4,593	108	1,053	5,754	14	
.....	-1,587	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	
.....	-4,397	51	.....	7	58	12	.....	.....	12	73	1	5	79	143	2	9	154	16	
.....	-1,879	3	.....	.....	3	46	1	4	51	18	1	19	57	1	11	69	.....	17	
.....	-38,484	505	4	73	582	1	.....	.....	6	62	67	6	7	1,085	7	154	1,246	18	
.....	-2,870	150	4	18	172	56	.....	.....	6	62	67	6	7	379	3	46	428	19	
.....	-7,143	14	.....	.....	14	17	.....	.....	17	75	6	17	98	101	2	9	112	20+21	
.....	-6,026	10	.....	1	11	188	.....	34	222	1,601	8	329	1,938	1,065	2	340	1,407	22+23	
.....	-10,715	98	1	10	109	601	16	47	664	1,654	113	177	1,944	1,606	89	161	1,856	24	
.....	-247	40	.....	2	42	51	1	3	55	39	2	2	43	159	8	13	180	25	
.....	-199	12	.....	1	13	99	5	9	113	406	23	53	482	246	8	24	278	26A	
.....	-1,783	290	2	16	308	706	27	82	815	4,346	146	502	4,994	2,124	27	172	2,323	26B	
.....	-14,375	3,109	88	35	3,232	1,159	32	26	1,217	826	45	50	921	2,711	180	185	3,076	27A	
.....	-2,330	8	.....	.....	9	19	.....	.....	21	146	5	50	201	354	16	96	466	27B	
.....	-3,827	11	.....	1	12	6	.....	.....	6	6	.....	.....	1	1	.....	1	28	28	
.....	-13,193	365	2	58	425	165	.....	6	171	119	.....	18	137	4,817	28	760	5,605	29A	
.....	-2,052	126	.....	17	145	54	4	16	74	136	9	38	183	592	28	101	721	29B	
.....	-200	.....	.....	.....	6	.....	.....	1	7	296	.....	47	362	116	7	18	141	30	
.....	-11,582	2,771	137	287	3,195	338	14	29	381	5,385	240	506	6,131	6,683	309	625	7,617	31	
.....	-13,253	423	62	77	562	202	15	39	256	110	19	18	147	1,802	125	349	2,276	32	
.....	-12,824	41	.....	6	48	4	.....	.....	4	.....	.....	.....	160	3	3	9	172	33+34	
.....	-2,159	16	1	1	17	151	.....	1	152	73	1	7	81	309	3	34	346	35	
.....	-4,551	30	4	3	37	64	2	12	78	80	2	9	100	5	3	117	36	36	
.....	-10,893	221	22	8	251	9	1	10	7	10	2	10	80	9	9	98	37	37	
.....	-10,228	84	1	5	90	158	1	15	174	5	1	1	73	30	4	107	38	38	
.....	-201	15	.....	1	16	.....	.....	.....	.....	.....	.....	.....	5	5	.....	5	39	39	
.....	-1,008	342	11	9	362	335	3	23	361	3	.....	.....	11	.....	1	12	40	40	
.....	-2,628	122	1	32	155	71	.....	5	76	59	.....	4	43	87	.....	11	98	41	
.....	-8,510	426	8	72	506	208	12	31	251	452	29	75	556	1,039	53	176	1,268	42	
.....	-2,413	677	8	11	696	287	4	3	294	96	.....	9	105	294	2	14	310	43	
.....	-4,754	473	28	101	602	33	1	5	39	86	3	28	1,577	94	342	2,013	44+45	44	
.....	-1,468	50	2	17	69	15	.....	4	19	9	.....	3	112	6	1	7	46	46	
.....	-5,127	24	1	2	27	40	.....	40	222	22	5	36	263	178	3	20	201	47	
.....	-5,881	23	4	4	27	135	.....	1	136	249	2	38	289	7	1	8	48	48	
.....	-7,796	244	4	35	283	48	.....	2	50	147	1	7	155	338	3	37	378	49	
.....	-1,895	584	25	21	630	267	14	17	298	170	10	9	189	92	3	3	98	50	
.....	-32,687	1,185	13	179	1,377	1,679	9	189	1,877	1,969	17	501	2,487	1,962	12	433	2,407	51	
.....	-2,243	100	1	10	111	57	1	12	70	698	8	172	878	479	3	112	594	52	
.....	-3,295	502	3	52	557	300	4	66	370	257	4	30	291	449	11	91	551	53	
.....	-4,072	31	.....	1	32	9	.....	.....	9	136	4	10	150	70	6	76	54	54	
.....	-4,985	227	1	8	236	112	2	38	153	393	7	146	546	331	3	105	439	55	
.....	-25,409	5,904	16	107	6,027	1,628	7	62	1,697	314	1	24	339	407	.....	24	431	56	
.....	-20,574	1,660	.....	77	1,737	260	.....	11	271	81	.....	6	87	156	.....	7	163	57	
.....	-8,062	1,196	18	165	1,379	251	.....	20	271	283	4	64	351	151	2	25	178	58	
.....	-58,285	1,579	43	58	1,680	525	14	18	557	1,364	36	48	1,448	4,523	113	162	4,798	59A	
.....	-21,743	417	8	20	445	422	4	2	428	669	16	69	754	1,001	20	106	1,127	59B	
.....	-12,153	35,971	170	205	36,346	1,575	4	3	1,582	.....	8	.....	45	.....	.....	45	60	60	
.....	-2,893	8,638	26	41	8,705	203	.....	1	204	218	9	16	242	694	10	13	717	61	
.....	-14,773	21,840	114	1,096	23,050	4,293	12	279	4,584	561	9	54	616	3,702	14	392	4,108	62	
.....	-8,153	1,258	3	172	1,433	77	.....	16	93	1,102	8	403	1,513	1,896	9	718	2,623	63	
.....	-23,335	149	14	52	215	-127	3	-44	-168	1,271	73	425	1,769	999	25	300	1,324	64	
.....	-164	576	.....	.....	576	235	.....	.....	235	3,578	.....	.....	3,578	365	.....	.....	365	65A	
.....	-2,059	3,892	.....	.....	3,892	869	.....	.....	869	193	.....	.....	193	300	.....	.....	300	65B	
.....	3,530	1,479	.....	.....	1,479	91	.....	.....	91	.....	.....	.....	.....	224	.....	.....	224	65C	
.....	-8,544	2,442	.....	.....	2,442	577	.....	.....	577	871	3	.....	871	2,016	.....	2,016	.....	65D	
.....	.....	1,471	.....	.....	1,471	1,848	.....	.....	1,848	3,585	.....	.....	3,585	4,905	.....	4,905	.....	66	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67	67
.....	-695	1,949	.....	.....	1,949	502	.....	.....	502	5,534	.....	.....	5,534	9,933	.....	9,933	.....	68A	
.....	.....	346	.....	.....	346	152	.....	.....	152	2,023	.....	.....	2,023	1,622	.....	1,622	.....	68B	
.....	.....	495	.....	.....	495	541	.....	.....	541	1,395	.....	.....	1,395	253	.....	253	.....	68C	
.....	18,317	.....	.....	.....	.....	15	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	69A	69A
.....	-265	.....	.....	.....	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	69B	69B
.....	-1,136	17	.....	.....	17	1,030	.....	1,030	2,280	351	.....	.....	.....	11,106	.....	11,106	.....	70A	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	181	.....	181	.....	70B	70B
.....	-11	512	.....	.....	512	3,179	.....	.....	3,179	806	.....	.....	806	9,226	.....	9,226	.....	71A	71A
.....	.....	967	.....	.....	967	149	.....	.....	149	-2,697	.....	.....	-2,697	3,328	.....	3,328	.....	71B	71B
.....	.....	51	.....	.....	51	18	.....	.....	18	1,060	.....	.....	1,060	1,664	.....	1,664	.....	72B	72B
.....	-225	7,913	.....	.....	7,913	8,806	.....	24	8,830	2,003	.....	17	2,020	6,876	.....	6,876	.....	73A	73A
.....	-839	3,126	60	.....	3,126	607	.....	.....	607	1,908	.....	.....	1,908	2,080	71	2,080	.....	73B	73B
.....	-1,632	14,210	.....	.....	14,210	7,034	.....	.....	7,034	5,595	.....	.....	5,595	9,534	.....	9,534	.....	73C	73C
.....	-615	55	.....	.....	55	12	.....	.....	12	621	.....	.....	621	886	.....	886	.....	73D	73D
.....	.....	505	.....	.....	50														

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
<b>3</b>	<b>Food purchased for off-premise consumption (n.d.):</b>					<b>15</b>	<b>Men's and boys' clothing and accessories, except shoes (n.d.):</b>				
	Total .....	259,465	9,661	144,583	413,709		Total .....	33,851	296	31,128	65,275
	1 Livestock and livestock products .....	1,866	21	615	2,502		16 Broad and narrow fabrics, yarn and thread mills .....	131	2	191	324
	2 Other agricultural products .....	14,987	2,972	10,929	28,888		18 Apparel .....	32,557	264	29,714	62,535
	3 Forestry and fishery products .....	867	17	389	1,273		32 Rubber and miscellaneous plastics products .....	17	1	19	37
	9+10 Nonmetallic minerals mining .....	6	8	4	18		33+34 Footwear, leather, and leather products .....	1,150	17	834	2,001
	14 Food and kindred products ...	241,859	6,605	132,382	380,846		64 Miscellaneous manufacturing	110	12	148	270
	27A Industrial and other chemicals .....	599	38	264	901		69B Retail trade .....	43			43
	69B Retail trade .....	2			2		72B Personal and repair services (except auto) .....	38			38
	81 Scrap, used and secondhand goods .....	-721			-721		81 Scrap, used and secondhand goods .....	-195		222	27
<b>4</b>	<b>Purchased meals and beverages (n.d.):</b>					<b>16</b>	<b>Standard clothing issued to military personnel (n.d.):</b>				
	Total .....	245,963			245,963		Total .....	218		26	244
	65A Railroads and related services; passenger ground transportation .....	60			60		18 Apparel .....	170		23	193
	65D Air transportation .....	24			24		19 Miscellaneous fabricated textile products .....	8			8
	74 Eating and drinking places ...	242,151			242,151		33+34 Footwear, leather, and leather products .....	40		3	43
	76 Amusements .....	3,633			3,633	<b>17</b>	<b>Cleaning, storage, and repair of clothing and shoes (s.):</b>				
	77B Educational and social services, and membership organizations .....	95			95		Total .....	11,365			11,365
<b>5</b>	<b>Food furnished to employees (including military) (n.d.):</b>						72A Hotels and lodging places	222			222
	Total .....	6,091	193	802	7,086		72B Personal and repair services (except auto) .....	11,143			11,143
	1 Livestock and livestock products .....	127	1		128	<b>18</b>	<b>Jewelry and watches (d.):</b>				
	2 Other agricultural products .....	180	38	47	265		Total .....	13,153	58	18,434	31,645
	3 Forestry and fishery products .....	19		2	21		62 Scientific and controlling instruments .....	1,611	17	2,094	3,722
	14 Food and kindred products ...	5,765	154	753	6,672		64 Miscellaneous manufacturing	12,312	41	15,704	28,057
<b>6</b>	<b>Food produced and consumed on farms (n.d.):</b>						81 Scrap, used and secondhand goods .....	-770		636	-134
	Total .....	590			590	<b>19</b>	<b>Other misc. personal, clothing and jewelry services (s.):</b>				
	1 Livestock and livestock products .....	88			88		Total .....	16,042			16,042
	2 Other agricultural products .....	116			116		72B Personal and repair services (except auto) .....	16,022			16,022
	14 Food and kindred products ...	386			386		73C Other business and professional services, except medical .....	20			20
<b>7</b>	<b>Tobacco products (n.d.):</b>					<b>21</b>	<b>Toilet articles and preparations (n.d.):</b>				
	Total .....	30,395	181	17,432	48,008		Total .....	21,996	613	15,294	37,903
	15 Tobacco products .....	30,395	181	17,432	48,008		19 Miscellaneous fabricated textile products .....	89		56	145
<b>12</b>	<b>Shoes and other footwear (n.d.):</b>						29B Cleaning and toilet preparations .....	19,370	410	13,313	33,093
	Total .....	14,926	121	17,856	32,903		32 Rubber and miscellaneous plastics products .....	45	2	43	90
	32 Rubber and miscellaneous plastics products .....	3,749	67	4,560	8,376		42 Other fabricated metal products .....	843	32	577	1,452
	33+34 Footwear, leather, and leather products .....	11,177	54	13,255	24,486		54 Household appliances .....	648	33	316	997
	81 Scrap, used and secondhand goods .....			41	41		58 Miscellaneous electrical machinery and supplies .....	511	68	504	1,083
<b>14</b>	<b>Women's and children's clothing and accessories, except shoes (n.d.):</b>						64 Miscellaneous manufacturing	490	68	485	1,043
	Total .....	57,151	540	65,715	123,406	<b>22</b>	<b>Barbershops, beauty parlors, and health clubs (s.):</b>				
	16 Broad and narrow fabrics, yarn and thread mills .....	1,344	30	2,047	3,421		Total .....	20,065			20,065
	18 Apparel .....	48,207	363	57,057	105,627		72A Hotels and lodging places	1,114			1,114
	19 Miscellaneous fabricated textile products .....	201	2	187	390		72B Personal and repair services (except auto) .....	15,601			15,601
	24 Paper and allied products, except containers .....	3,349	37	1,615	5,001		76 Amusements .....	3,350			3,350
	26B Other printing and publishing .....	208	37	396	641	<b>24</b>	<b>Owner-occupied nonfarm dwellings-space rent (s.):</b>				
	32 Rubber and miscellaneous plastics products .....	24	2	39	65		Total .....	451,983			451,983
	33+34 Footwear, leather, and leather products .....	3,663	45	3,201	6,909		71A Owner-occupied dwellings	451,983			451,983
	64 Miscellaneous manufacturing	274	24	460	758	<b>25</b>	<b>Tenant-occupied nonfarm dwellings-rent (s.):</b>				
	69B Retail trade .....	88		2	90		Total .....	160,733			160,733
	72B Personal and repair services (except auto) .....	25			25		71B Real estate and royalties ...	160,733			160,733
	81 Scrap, used and secondhand goods .....	-232		711	479						

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
26	<b>Rental value of farm dwellings (s.):</b>						53 Electrical industrial equipment and apparatus .....	102	1	90	193
	Total .....	5,349			5,349		55 Electric lighting and wiring equipment .....	932	76	1,136	2,144
	71A Owner-occupied dwellings .....	5,267			5,267		56 Audio, video, and communication equipment .....	1,119	10	1,132	2,261
	71B Real estate and royalties .....	82			82		61 Other transportation equipment .....	79	3	71	153
27	<b>Other housing (s.):</b>						62 Scientific and controlling instruments .....	408	3	430	841
	Total .....	24,509			24,509		64 Miscellaneous manufacturing .....	1,207	58	1,668	2,933
	72A Hotels and lodging places .....	24,509			24,509		69B Retail trade .....	113			113
29	<b>Furniture, including mattresses and bedsprings (d.):</b>						81 Scrap, used and secondhand goods .....	78		1,587	1,665
	Total .....	20,041	122	18,794	38,957	33	<b>Semidurable house furnishings (n.d.):</b>				
	22+23 Furniture and fixtures .....	19,943	122	18,235	38,300		Total .....	12,918	318	12,336	25,572
	81 Scrap, used and secondhand goods .....	98		559	657		16 Broad and narrow fabrics, yarn and thread mills .....	208	7	165	380
30	<b>Kitchen and other household appliances (d.):</b>						17 Miscellaneous textile goods and floor coverings .....	243	2	192	437
	Total .....	14,508	626	9,153	24,287		19 Miscellaneous fabricated textile products .....	9,783	86	8,709	18,578
	38 Primary nonferrous metals manufacturing .....	61	1	41	103		20+21 Lumber and wood products .....	275	6	244	525
	40 Heating, plumbing, and fabricated structural metal products .....	302	12	207	521		26B Other printing and publishing .....	118		99	217
	52 Service industry machinery .....	742	13	530	1,285		32 Rubber and miscellaneous plastics products .....	653	24	650	1,327
	54 Household appliances .....	12,342	584	7,474	20,400		35 Glass and glass products .....	127	1	133	261
	58 Miscellaneous electrical machinery and supplies .....	1,020	16	757	1,793		37 Primary iron and steel manufacturing .....	36	7	36	79
	81 Scrap, used and secondhand goods .....	41		144	185		41 Screw machine products and stampings .....	117	3	199	319
31	<b>China, glassware, tableware, and utensils (d.):</b>						54 Household appliances .....	92	5	71	168
	Total .....	8,156	227	11,194	19,577		64 Miscellaneous manufacturing .....	1,264	177	1,798	3,239
	20+21 Lumber and wood products .....	595	14	768	1,377		69B Retail trade .....	2		1	3
	32 Rubber and miscellaneous plastics products .....	3,667	110	5,618	9,395		81 Scrap, used and secondhand goods .....			39	39
	35 Glass and glass products .....	424	22	591	1,037						
	36 Stone and clay products .....	747	16	852	1,615		34	<b>Cleaning and polishing preparations, and miscellaneous household supplies and paper products (n.d.):</b>			
	38 Primary nonferrous metals manufacturing .....	10	2	12	24		Total .....	25,213	1,367	14,480	41,060
	41 Screw machine products and stampings .....	1,228	13	1,310	2,551		3 Forestry and fishery products .....	33		8	41
	42 Other fabricated metal products .....	857	50	1,107	2,014		9+10 Nonmetallic minerals mining .....	33	39	19	91
	64 Miscellaneous manufacturing .....	573		710	1,283		17 Miscellaneous textile goods and floor coverings .....	129	1	46	176
	69B Retail trade .....	44			44		24 Paper and allied products, except containers .....	8,946	303	4,060	13,309
	81 Scrap, used and secondhand goods .....	11		226	237		25 Paperboard containers and boxes .....	381		262	643
32	<b>Other durable house furnishings (d.):</b>						26B Other printing and publishing .....	12		4	16
	Total .....	18,088	599	20,106	38,793		27A Industrial and other chemicals .....	239	42	138	419
	17 Miscellaneous textile goods and floor coverings .....	5,143	237	4,850	10,230		27B Agricultural fertilizers and chemicals .....	920	48	690	1,658
	19 Miscellaneous fabricated textile products .....	454	4	432	890		29B Cleaning and toilet preparations .....	10,728	757	6,010	17,495
	20+21 Lumber and wood products .....	1,554	45	1,451	3,050		30 Paints and allied products .....	480	32	226	738
	22+23 Furniture and fixtures .....	1,680	41	1,613	3,334		32 Rubber and miscellaneous plastics products .....	322	15	133	470
	26B Other printing and publishing .....	41		35	76		36 Stone and clay products .....	374	39	192	605
	32 Rubber and miscellaneous plastics products .....	222	9	258	489		42 Other fabricated metal products .....	551	2	193	746
	33+34 Footwear, leather, and leather products .....	125	6	119	250		53 Electrical industrial equipment and apparatus .....	87	2	93	182
	35 Glass and glass products .....	414	20	423	857		55 Electric lighting and wiring equipment .....	939	22	1,357	2,318
	36 Stone and clay products .....	1,143	27	1,043	2,213		58 Miscellaneous electrical machinery and supplies .....	740	24	612	1,376
	40 Heating, plumbing, and fabricated structural metal products .....	24		22	46		64 Miscellaneous manufacturing .....	299	41	437	777
	42 Other fabricated metal products .....	1,548	40	1,733	3,321	35	<b>Stationery and writing supplies (n.d.):</b>				
	44+45 Farm, construction, and mining machinery .....	400	7	510	917		Total .....	6,043	409	8,398	14,850
	47 Metalworking machinery and equipment .....	687	4	960	1,651		24 Paper and allied products, except containers .....	601	14	597	1,212
	48 Special industry machinery and equipment .....	237	2	227	466		26B Other printing and publishing .....	4,312	271	5,960	10,543
	50 Miscellaneous machinery, except electrical .....	110	2	90	202		27A Industrial and other chemicals .....	573	120	717	1,410
	51 Computer and office equipment .....	268	4	226	498						

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
	32 Rubber and miscellaneous plastics products .....	4		7	11		58 Miscellaneous electrical machinery and supplies .....	167	5	241	413
	64 Miscellaneous manufacturing	550	4	1,109	1,663		62 Scientific and controlling instruments .....	1,313	5	1,682	3,000
	81 Scrap, used and secondhand goods .....	3		8	11		63 Ophthalmic and photographic equipment .....	3,140	14	6,421	9,575
<b>37</b>	<b>Electricity (s.):</b>						81 Scrap, used and secondhand goods .....	13			13
	Total .....	79,337			79,337						
	68A Electric services (utilities) ....	79,337			79,337	<b>47</b>	<b>Physicians (s.):</b>				
<b>38</b>	<b>Gas (s.):</b>						Total .....	166,429			166,429
	Total .....	29,537			29,537		77A Health services .....	166,429			166,429
	68B Gas production and distribution (utilities) .....	29,537			29,537	<b>48</b>	<b>Dentists (s.):</b>				
<b>39</b>	<b>Water and other sanitary services (s.):</b>						Total .....	37,636			37,636
	Total .....	30,293			30,293		77A Health services .....	37,636			37,636
	68C Water and sanitary services	20,426			20,426	<b>49</b>	<b>Other professional medical services (s.):</b>				
	79 State and local government enterprises .....	9,867			9,867		Total .....	85,216			85,216
<b>40</b>	<b>Fuel oil and coal (n.d.):</b>						65A Railroads and related services; passenger ground transportation .....	2,507			2,507
	Total .....	6,235	435	5,495	12,165		73C Other business and professional services, except medical .....	1,042			1,042
	7 Coal mining .....	68	28	69	165		77A Health services .....	81,667			81,667
	20+21 Lumber and wood products .....	105	2	96	203	<b>52</b>	<b>Nonprofit hospitals (s.):</b>				
	27A Industrial and other chemicals .....	345	39	276	660		Total .....	184,823			184,823
	31 Petroleum refining and related products .....	5,679	366	5,054	11,099		77A Health services .....	184,823			184,823
	68C Water and sanitary services	38			38	<b>53</b>	<b>Proprietary hospitals (s.):</b>				
<b>41</b>	<b>Telephone and telegraph (s.):</b>						Total .....	30,345			30,345
	Total .....	70,669			70,669		77A Health services .....	30,345			30,345
	66 Communications, except radio and TV .....	70,129			70,129	<b>54</b>	<b>Government hospitals (s.):</b>				
	72A Hotels and lodging places ....	540			540		Total .....	55,154			55,154
							77A Health services .....	55,154			55,154
<b>42</b>	<b>Domestic service (s.):</b>					<b>55</b>	<b>Nursing homes (s.):</b>				
	Total .....	11,356			11,356		Total .....	50,166			50,166
	73C Other business and professional services, except medical .....	1,269			1,269		77A Health services .....	50,166			50,166
	84 Household industry .....	10,087			10,087	<b>56</b>	<b>Health insurance (s.):</b>				
<b>43</b>	<b>Other household operation (s.):</b>						Total .....	43,224			43,224
	Total .....	27,116			27,116		70B Insurance .....	43,224			43,224
	65B Motor freight transportation and warehousing .....	6,065			6,065	<b>61</b>	<b>Brokerage charges and investment counseling (s.):</b>				
	65C Water transportation .....	162			162		Total .....	28,719			28,719
	65D Air transportation .....	33			33		70A Finance .....	28,719			28,719
	70B Insurance .....	-244			-244	<b>62</b>	<b>Bank service charges, trust services, and safe deposit box rental (s.):</b>				
	72B Personal and repair services (except auto) .....	5,477			5,477		Total .....	30,934			30,934
	73C Other business and professional services, except medical .....	8,922			8,922		70A Finance .....	30,934			30,934
	78 Federal Government enterprises .....	6,690			6,690	<b>63</b>	<b>Services furnished without payment by financial intermediaries except life insurance carriers and private noninsured pension plans (s.):</b>				
	81 Scrap, used and secondhand goods .....	11			11		Total .....	137,479			137,479
<b>45</b>	<b>Drug preparations and sundries (n.d.):</b>						70A Finance .....	137,479			137,479
	Total .....	48,402	310	27,182	75,894	<b>64</b>	<b>Expense of handling life insurance (s.):</b>				
	19 Miscellaneous fabricated textile products .....	23		12	35		Total .....	69,380			69,380
	24 Paper and allied products, except containers .....	1,894	22	920	2,836		70B Insurance .....	69,380			69,380
	27A Industrial and other chemicals .....	53	9	42	104	<b>65</b>	<b>Legal services (s.):</b>				
	29A Drugs .....	43,864	242	25,022	69,128		Total .....	44,864			44,864
	31 Petroleum refining and related products .....	38	2	20	60		73B Legal, engineering, accounting, and related services .....	44,864			44,864
	32 Rubber and miscellaneous plastics products .....	517	27	372	916	<b>66</b>	<b>Funeral and burial expenses (s.):</b>				
	54 Household appliances .....	18	1	8	27		Total .....	9,994	24	944	10,962
	55 Electric lighting and wiring equipment .....	7		5	12		36 Stone and clay products .....	306	22	915	1,243
	62 Scientific and controlling instruments .....	1,988	7	781	2,776		42 Other fabricated metal products .....	15	2	29	46
<b>46</b>	<b>Ophthalmic products and orthopedic appliances (d.):</b>										
	Total .....	4,633	24	8,344	13,001						

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
	65D Air transportation .....	120			120	<b>75</b>	<b>Gasoline and oil (n.d.):</b>				
	71B Real estate and royalties .....	2,625			2,625		Total .....	47,638	2,737	54,505	104,880
	72B Personal and repair services (except auto) .....	6,928			6,928		31 Petroleum refining and related products .....	47,638	2,737	54,505	104,880
<b>67</b>	<b>Other personal business (s.):</b>					<b>76</b>	<b>Bridge, tunnel, ferry, and road tolls (s.):</b>				
	Total .....	18,891			18,891		Total .....	2,839			2,839
	66 Communications, except radio and TV .....	385			385		79 State and local government enterprises .....	2,839			2,839
	70A Finance .....	875			875	<b>77</b>	<b>Motor vehicle insurance (s.):</b>				
	70B Insurance .....	91			91		Total .....	25,728			25,728
	72B Personal and repair services (except auto) .....	1,971			1,971		70B Insurance .....	25,728			25,728
	73B Legal, engineering, accounting, and related services .....	917			917	<b>79</b>	<b>Mass transit systems (s.):</b>				
	73C Other business and professional services, except medical .....	2,747			2,747		Total .....	6,463			6,463
	73D Advertising .....	676			676		65A Railroads and related services; passenger ground transportation .....	6,463			6,463
	77B Educational and social services, and membership organizations .....	10,922			10,922	<b>80</b>	<b>Taxicab (s.):</b>				
	78 Federal Government enterprises .....	191			191		Total .....	2,586			2,586
	80 Noncomparable imports .....	116			116		65A Railroads and related services; passenger ground transportation .....	2,586			2,586
<b>70</b>	<b>New autos (d.):</b>					<b>82</b>	<b>Railway (s.):</b>				
	Total .....	64,878	1,748	11,390	78,016		Total .....	647			647
	59A Motor vehicles (passenger cars and trucks) .....	64,878	1,748	11,390	78,016		65A Railroads and related services; passenger ground transportation .....	647			647
<b>71</b>	<b>Net purchases of used autos (d.):</b>					<b>83</b>	<b>Bus (s.):</b>				
	Total .....	17,223		13,954	31,177		Total .....	1,595			1,595
	81 Scrap, used and secondhand goods .....	17,223		13,954	31,177		65A Railroads and related services; passenger ground transportation .....	1,595			1,595
<b>72</b>	<b>Other motor vehicles (d.):</b>					<b>84</b>	<b>Airline (s.):</b>				
	Total .....	47,383	1,112	12,028	60,523		Total .....	21,281			21,281
	59A Motor vehicles (passenger cars and trucks) .....	40,674	1,096	6,904	48,674		65D Air transportation .....	21,281			21,281
	61 Other transportation equipment .....	4,747	16	1,333	6,096	<b>85</b>	<b>Other intercity transportation (s.):</b>				
	81 Scrap, used and secondhand goods .....	1,962		3,791	5,753		Total .....	3,592			3,592
<b>73</b>	<b>Tires, tubes, accessories, and other parts (d.):</b>						65A Railroads and related services; passenger ground transportation .....	408			408
	Total .....	13,063	2,756	14,704	30,523		65B Motor freight transportation and warehousing .....	173			173
	19 Miscellaneous fabricated textile products .....	6		5	11		65C Water transportation .....	197			197
	32 Rubber and miscellaneous plastics products .....	5,580	2,443	6,866	14,889		65E Pipelines, freight forwarders, and related services .....	2,814			2,814
	35 Glass and glass products .....	14		11	25	<b>87</b>	<b>Books and maps (d.):</b>				
	42 Other fabricated metal products .....	96		77	173		Total .....	9,795	363	6,990	17,148
	50 Miscellaneous machinery, except electrical .....	26	5	19	50		26B Other printing and publishing .....	9,778	363	6,768	16,909
	52 Service industry machinery .....	168	3	154	325		69B Retail trade .....	21			21
	55 Electric lighting and wiring equipment .....	92		74	166		81 Scrap, used and secondhand goods .....	-4		222	218
	56 Audio, video, and communication equipment .....	920	9	812	1,741	<b>88</b>	<b>Magazines, newspapers, and sheet music (n.d.):</b>				
	57 Electronic components and accessories .....	5		3	8		Total .....	14,755	772	6,432	21,959
	58 Miscellaneous electrical machinery and supplies .....	2,436	193	2,823	5,452		26A Newspapers and periodicals .....	14,339	653	6,018	21,010
	59B Truck and bus bodies, trailers, and motor vehicles parts .....	4,277	132	3,318	7,727		26B Other printing and publishing .....	711	119	406	1,236
	81 Scrap, used and secondhand goods .....	-557	-29	542	-44		81 Scrap, used and secondhand goods .....	-295		8	-287
<b>74</b>	<b>Repair, greasing, washing, parking, storage, rental and leasing (s.):</b>					<b>89</b>	<b>Nondurable toys and sport supplies (n.d.):</b>				
	Total .....	90,128		165	90,293		Total .....	18,158	371	17,994	36,523
	75 Automotive repair and services .....	90,099		165	90,264		1 Livestock and livestock products .....	218	11	137	366
	76 Amusements .....	6			6		3 Forestry and fishery products .....	754			398
	77B Educational and social services, and membership organizations .....	23			23		13 Ordnance and accessories .....	599	6	371	976
							17 Miscellaneous textile goods and floor coverings .....	63	2	62	127
							24 Paper and allied products, except containers .....	131	13	122	266
							26B Other printing and publishing .....	102		65	167

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
	27A Industrial and other chemicals .....	345	63	287	695		2 Other agricultural products	4,248	537	6,883	11,668
	32 Rubber and miscellaneous plastics products .....	123	5	117	245		73C Other business and professional services, except medical .....	293			293
	53 Electrical industrial equipment and apparatus ...	11		6	17	<b>95</b>	<b>Motion picture theaters (s.):</b>				
	55 Electric lighting and wiring equipment .....	53	1	52	106		Total .....	4,939			4,939
	58 Miscellaneous electrical machinery and supplies .....	349	4	295	648		65D Air transportation .....	3			3
	63 Ophthalmic and photographic equipment .....	1,923	14	1,606	3,543		76 Amusements .....	4,808			4,808
	64 Miscellaneous manufacturing .....	13,472	252	14,465	28,189	<b>96</b>	<b>Legitimate theaters and opera, and entertainments of nonprofit institutions (except athletics) (s.):</b>				
	72B Personal and repair services (except auto) .....	15		8	23		Total .....	6,037			6,037
	81 Scrap, used and secondhand goods .....			3	3		76 Amusements .....	5,854			5,854
<b>90</b>	<b>Wheel goods, sports and photographic equipment, boats, and pleasure aircraft (d.):</b>						77B Educational and social services, and membership organizations .....	128			128
	Total .....	17,347	217	12,528	30,092	<b>97</b>	<b>Spectator sports (s.):</b>				
	13 Ordnance and accessories	874		652	1,526		Total .....	5,131			5,131
	19 Miscellaneous fabricated textile products .....	625	7	471	1,103		76 Amusements .....	2,838			2,838
	32 Rubber and miscellaneous plastics products .....	128	49	149	326		77B Educational and social services, and membership organizations .....	2,293			2,293
	33+34 Footwear, leather, and leather products .....	306	13	253	572	<b>98</b>	<b>Clubs and fraternal organizations (s.):</b>				
	42 Other fabricated metal products .....	356	10	263	629		Total .....	10,667			10,667
	43 Engines and turbines .....	169	3	45	217		76 Amusements .....	7,774			7,774
	58 Miscellaneous electrical machinery and supplies .....	31		7	38		77B Educational and social services, and membership organizations .....	2,893			2,893
	60 Aircraft and parts .....	465	1	57	523	<b>99</b>	<b>Commercial participant amusements (s.):</b>				
	61 Other transportation equipment .....	7,132	67	2,873	10,072		Total .....	29,885			29,885
	62 Scientific and controlling instruments .....	159	1	60	220		65A Railroads and related services; passenger ground transportation .....	2,181			2,181
	63 Ophthalmic and photographic equipment .....	1,177	9	992	2,178		65C Water transportation .....	1,373			1,373
	64 Miscellaneous manufacturing .....	4,992	57	5,760	10,809		65D Air transportation .....	91			91
	73C Other business and professional services, except medical .....	666		414	1,080		70B Insurance .....	2			2
	81 Scrap, used and secondhand goods .....	267		532	799		73C Other business and professional services, except medical .....	64			64
<b>91</b>	<b>Video and audio products, computing equipment, and musical instruments (d.):</b>						76 Amusements .....	26,023			26,023
	Total .....	33,796	387	22,857	57,040	<b>100</b>	<b>Pari-mutuel net receipts (s.):</b>				
	33+34 Footwear, leather, and leather products .....	30		21	51		Total .....	3,366			3,366
	51 Computer and office equipment .....	5,100	60	3,612	8,772		76 Amusements .....	3,366			3,366
	56 Audio, video, and communication equipment	19,643	282	12,908	32,833	<b>101</b>	<b>Other recreational expenditures (s.):</b>				
	57 Electronic components and accessories .....	211		111	322		Total .....	74,579	69	1,454	76,102
	58 Miscellaneous electrical machinery and supplies .....	1,044	22	620	1,686		1 Livestock and livestock products .....	1,410	68	538	2,016
	64 Miscellaneous manufacturing .....	867	20	807	1,694		3 Forestry and fishery products .....	1,412	1	49	1,462
	71B Real estate and royalties	3,200		1,994	5,194		4 Agricultural, forestry, and fishery services .....	729			729
	73A Computer and data processing services .....	2,137	2	825	2,964		66 Communications, except radio and TV .....	19,883			19,883
	76 Amusements .....	1,368	1	1,552	2,921		67 Radio and TV broadcasting .....	1,839			1,839
	81 Scrap, used and secondhand goods .....	196		407	603		72A Hotels and lodging places .....	3,496			3,496
<b>92</b>	<b>Radio and television repair (s.):</b>						72B Personal and repair services (except auto) .....	5,318			5,318
	Total .....	3,438			3,438		73A Computer and data processing services .....	307			307
	72B Personal and repair services (except auto) .....	3,064			3,064		73C Other business and professional services, except medical .....	5,520		400	5,920
	73C Other business and professional services, except medical .....	374			374		76 Amusements .....	18,734			18,734
<b>93</b>	<b>Flowers, seeds, and potted plants (n.d.):</b>						77A Health services .....	5,108			5,108
	Total .....	4,541	537	6,883	11,961		77B Educational and social services, and membership organizations .....	982			982

**Table D.—Input-Output Commodity Composition of NIPA Personal Consumption Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

(Millions of dollars)

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
	79 State and local government enterprises .....	9,783			9,783	<b>108</b>	<b>Foreign travel by U.S. residents (s.):</b>				
	81 Scrap, used and secondhand goods .....	58		467	525		Total .....	45,943			45,943
<b>103</b>	<b>Higher education (s.):</b>						65C Water transportation .....	3,243			3,243
	Total .....	52,428			52,428		65D Air transportation .....	12,377			12,377
	77B Educational and social services, and membership organizations .....	52,428			52,428	<b>109</b>	80 Noncomparable imports .....	30,323			30,323
<b>104</b>	<b>Nursery, elementary, and secondary schools (s.):</b>						<b>Expenditures abroad by U.S. residents (n.d.):</b>				
	Total .....	23,311			23,311		Total .....	2,570			2,570
	77B Educational and social services, and membership organizations .....	23,311			23,311		80 Noncomparable imports .....	2,570			2,570
<b>105</b>	<b>Other private education and research (s.):</b>					<b>110</b>	<b>Expenditures in the United States by nonresidents (s.):</b>				
	Total .....	20,738			20,738		Total .....	-64,871			-64,871
	76 Amusements .....	712			712		83 Rest of the world adjustment to final uses .....	-64,871			-64,871
	77B Educational and social services, and membership organizations .....	20,026			20,026	<b>111</b>	<b>Personal remittances in kind to nonresidents (n.d.):</b>				
<b>106</b>	<b>Religious and welfare activities (s.):</b>						Total .....	-1,610			-1,610
	Total .....	112,314			112,314		83 Rest of the world adjustment to final uses .....	-1,610			-1,610
	77B Educational and social services, and membership organizations .....	112,314			112,314		<b>Total personal consumption expenditures .....</b>	<b>3,551,945</b>	<b>27,193</b>	<b>629,580</b>	<b>4,208,718</b>
							<b>Total durable commodities (d.) .....</b>	<b>282,064</b>	<b>8,239</b>	<b>180,476</b>	<b>470,779</b>
							<b>Total nondurable commodities (n.d.) .....</b>	<b>855,509</b>	<b>18,861</b>	<b>446,541</b>	<b>1,320,911</b>
							<b>Total services (s.) .....</b>	<b>2,414,372</b>	<b>93</b>	<b>2,563</b>	<b>2,417,028</b>

1. The NIPA category refers to the line number associated with the PCE category in NIPA table 2.4.

estimates of transactions in commodities. It also describes the valuation used in wholesale trade, retail trade, imports of goods and services, exports of goods and services, and the change in business inventories.

*Transactions in commodities* are valued at producers' prices in the I-O accounts. These prices exclude wholesale and retail trade margins and transportation costs, but they include excise taxes collected and remitted by producers. Transportation costs and trade margins are shown as separate purchases by the users of the commodities. The sum of the producers' value, transportation costs, and trade margins equals the purchasers' value. Thus, the flows of commodities for resale to and from wholesale trade and retail trade are not shown. If trade were shown as buying and reselling commodities, industrial and final users would make most of their purchases from a single source—trade.

To show the relationship between the production of commodities and their purchase by intermediate and final users, commodities are shown as if they move directly to users. Wholesale and retail trade margins on commodities are shown as purchases by users and are included in the trade rows of use table 2.1 (rows 69A and 69B). Transportation costs are the freight charges paid to move the commodity from the producer to the intermediate user

or the final user. All transportation costs are shown as a purchase by users and are included in the transportation rows of the use table (rows 65A-E and 68B).

*Wholesale trade* has one primary product—distributive services for the sales of goods to retailers, intermediate users, and final users (other than persons). Distributive services provided by wholesalers include merchandise handling, stocking, selling, and billing. Wholesale trade output consists of trade margins and nonmargin output; both exclude the cost of resales. Margin output is included in the purchasers' prices of the goods that are purchased, but not in the producers' prices of those goods. Nonmargin output, which includes all customs duties, is assumed to be purchased by the producer of the goods being sold and is thus reflected in the producers' prices of the goods. Both the margin and nonmargin outputs are included in the wholesale trade row of use table 2.1 (row 69A).

Margin output is calculated in two parts. For merchant wholesalers (establishments that primarily buy and resell products manufactured by other firms) and agents and brokers (when selling goods on their own account), the trade margin is calculated as wholesale sales less the cost of goods sold plus taxes collected by the distributor. For manufacturers' sales branches (wholesale trade

**Table E.—Input-Output Commodity Composition of NIPA Producers' Durable Equipment Expenditure Categories, in Producers' and Purchasers' Prices**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
5	<b>Computers and peripheral equipment:</b>					12	73B Legal, engineering, accounting, and related services .....	563			563
	Total .....	36,139	390	7,051	43,580		<b>Engines and turbines:</b>				
	51 Computer and office equipment .....	32,698	390	7,051	40,139		Total .....	3,540	48	75	3,663
6	73A Computer and data processing services .....	3,441			3,441	43 Engines and turbines .....	3,271	48	75	3,394	
	<b>Office equipment except computers:</b>					73B Legal, engineering, accounting, and related services .....	269			269	
	Total .....	4,360	63	1,727	6,150	13	<b>Metalworking machinery:</b>				
	50 Miscellaneous machinery, except electrical .....	539	13	34	586		Total .....	17,733	302	2,466	20,501
	51 Computer and office equipment .....	3,317	50	1,260	4,627		47 Metalworking machinery and equipment .....	16,651	302	2,466	19,419
73B Legal, engineering, accounting, and related services .....	451			451	73B Legal, engineering, accounting, and related services .....		1,135			1,135	
81 Scrap, used and secondhand goods .....	53		433	486	81 Scrap, used and secondhand goods .....		-53			-53	
7	<b>Communication equipment:</b>					14	<b>Special industry machinery, n.e.c.:</b>				
	Total .....	43,664	253	3,889	47,806		Total .....	19,487	351	2,992	22,830
	13 Ordnance and accessories .....	29			29		32 Rubber and miscellaneous plastics products .....	130	6	32	168
	38 Primary nonferrous metals manufacturing .....	52	1	8	61		42 Other fabricated metal products .....	27		10	37
	51 Computer and office equipment .....	154	1	20	175		48 Special industry machinery and equipment .....	16,820	332	2,433	19,585
	56 Audio, video, and communication equipment .....	24,445	175	3,098	27,718		49 General industrial machinery and equipment .....	1,029	11	124	1,164
	58 Miscellaneous electrical machinery and supplies .....	1,304	15	280	1,599		52 Service industry machinery .....	1			1
	62 Scientific and controlling instruments .....	9,693	61	483	10,237		58 Miscellaneous electrical machinery and supplies .....	95	2	20	117
	66 Communications, except radio and TV .....	5,065			5,065		73B Legal, engineering, accounting, and related services .....	1,379			1,379
	73B Legal, engineering, accounting, and related services .....	2,905			2,905		81 Scrap, used and secondhand goods .....	6		373	379
8	81 Scrap, used and secondhand goods .....	17			17	15	<b>General industrial, including materials handling, equipment:</b>				
	<b>Instruments:</b>						Total .....	17,244	332	3,356	20,932
	Total .....	22,759	113	3,691	26,563		44+45 Farm, construction, and mining machinery .....	35	2	7	44
	62 Scientific and controlling instruments .....	21,462	113	3,691	25,266		46 Materials handling machinery and equipment .....	5,738	184	1,298	7,220
9	73B Legal, engineering, accounting, and related services .....	1,269			1,269	49 General industrial machinery and equipment .....	10,250	145	1,094	11,489	
	81 Scrap, used and secondhand goods .....	28			28	50 Miscellaneous machinery, except electrical .....	120	1	56	177	
	<b>Photocopy and related equipment:</b>					73B Legal, engineering, accounting, and related services .....	1,127			1,127	
	Total .....	9,277	58	3,236	12,571	81 Scrap, used and secondhand goods .....	-26		901	875	
11	62 Scientific and controlling instruments .....	1,406	5	123	1,534	16	<b>Electrical transmission, distribution, and industrial apparatus:</b>				
	63 Ophthalmic and photographic equipment .....	6,915	53	3,113	10,081		Total .....	13,084	250	1,516	14,850
	73B Legal, engineering, accounting, and related services .....	904			904		47 Metalworking machinery and equipment .....	1,001	36	163	1,200
	81 Scrap, used and secondhand goods .....	52			52		53 Electrical industrial equipment and apparatus .....	6,826	187	1,078	8,091
	<b>Fabricated metal products:</b>						62 Scientific and controlling instruments .....	4,256	27	275	4,558
Total .....	8,629	155	815	9,599	73B Legal, engineering, accounting, and related services .....	1,001			1,001		
5+6 Metallic ores mining .....	50	20	1	71	18	<b>Trucks, buses, and truck trailers:</b>					
27A Industrial and other chemicals .....	1,957			1,957		Total .....	31,253	823	4,079	36,155	
37 Primary iron and steel manufacturing .....	16			16		59A Motor vehicles (passenger cars and trucks) .....	27,995	758	3,236	31,989	
39 Metal containers .....	38	1	3	42		59B Truck and bus bodies, trailers, and motor vehicles parts .....	4,981	65	361	5,407	
40 Heating, plumbing, and fabricated structural metal products .....	3,612	26	387	4,025		81 Scrap, used and secondhand goods .....	-1,723		482	-1,241	
42 Other fabricated metal products .....	2,388	108	424	2,920							
46 Materials handling machinery and equipment .....	5			5							

**Table E.—Input-Output Commodity Composition of NIPA Producers' Durable Equipment Expenditure Categories, in Producers' and Purchasers' Prices—Continued**

[Millions of dollars]

NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices	NIPA category <sup>1</sup>	NIPA description and I-O descriptions	Producers' prices	Transportation costs	Wholesale and retail trade margins	Purchasers' prices
19	<b>Autos:</b>						49 General industrial machinery and equipment .....	21		3	24
	Total .....	24,685	1,270	6,074	32,029		73B Legal, engineering, accounting, and related services .....	72			72
	59A Motor vehicles (passenger cars and trucks) .....	47,137	1,270	5,680	54,087		81 Scrap, used and secondhand goods .....	1		169	170
	81 Scrap, used and secondhand goods .....	-22,452		394	-22,058						
20	<b>Aircraft:</b>					29	<b>Service industry machinery:</b>	8,116	113	1,879	10,108
	Total .....	13,536	43	142	13,721		Total .....	41	1	1	43
	22+23 Furniture and fixtures .....	214	3	10	227		50 Miscellaneous machinery, except electrical .....	7,375	112	1,878	9,365
	60 Aircraft and parts .....	13,676	33	90	13,799		52 Service industry machinery .....	673			673
	62 Scientific and controlling instruments .....	695	7	42	744		73B Legal, engineering, accounting, and related services .....	27			27
81 Scrap, used and secondhand goods .....	-1,049			-1,049	81 Scrap, used and secondhand goods .....						
21	<b>Ships and boats:</b>					30	<b>Electrical equipment, n.e.c.:</b>	8,102	90	1,225	9,417
	Total .....	1,116	2	59	1,177		Total .....	374	13	25	412
	61 Other transportation equipment .....	1,085	2	42	1,129		54 Household appliances .....	283	7	66	356
81 Scrap, used and secondhand goods .....	31		17	48	55 Electric lighting and wiring equipment .....	659	25	97	781		
22	<b>Railroad equipment:</b>					31	<b>Other nonresidential equipment:</b>	10,660	763	4,122	15,545
	Total .....	2,858	43	109	3,010		Total .....	1,151	53	438	1,642
	61 Other transportation equipment .....	2,648	43	20	2,711		17 Miscellaneous textile goods and floor coverings .....	1			1
	73B Legal, engineering, accounting, and related services .....	206			206		20+21 Lumber and wood products .....	70	3	12	85
81 Scrap, used and secondhand goods .....	4		89	93	32 Rubber and miscellaneous plastics products .....	2,301	66	1,703	4,070		
24	<b>Furniture and fixtures:</b>					32	<b>Sale of equipment scrap, excluding autos:</b>	-2,006			-2,006
	Total .....	17,016	179	4,081	21,276		Total .....	-2,006			-2,006
	22+23 Furniture and fixtures .....	15,686	179	3,862	19,727		81 Scrap, used and secondhand goods .....				
	73B Legal, engineering, accounting, and related services .....	1,402			1,402						
81 Scrap, used and secondhand goods .....	-72		219	147	33	<b>Residential (landlord durables):</b>	3,760	164	1,997	5,921	
25	<b>Tractors:</b>						Total .....	1,192	54	457	1,703
	Total .....	4,188	183	2,355		6,726	17 Miscellaneous textile goods and floor coverings .....	191		58	249
	44+45 Farm, construction, and mining machinery .....	4,249	183	2,149		6,581	22+23 Furniture and fixtures .....	15	1	8	24
	81 Scrap, used and secondhand goods .....	-61		206		145	32 Rubber and miscellaneous plastics products .....	2,294	108	1,450	3,852
26	<b>Agricultural machinery, except tractors:</b>					54 Household appliances .....	68	1	24	93	
	Total .....	4,850	211	2,071	7,132	56 Audio, video, and communication equipment .....					
	44+45 Farm, construction, and mining machinery .....	4,430	211	1,445	6,086						
	73B Legal, engineering, accounting, and related services .....	412			412						
81 Scrap, used and secondhand goods .....	8		626	634	28	<b>Mining and oilfield machinery:</b>					
27	<b>Construction machinery, except tractors:</b>						Total .....	909	38	350	1,297
	Total .....	6,385	415	1,642		8,442	8 Crude petroleum and natural gas .....	23			23
	44+45 Farm, construction, and mining machinery .....	5,996	415	1,227		7,638	44+45 Farm, construction, and mining machinery .....	792	38	178	1,008
	73B Legal, engineering, accounting, and related services .....	478			478						
81 Scrap, used and secondhand goods .....	-89		415	326							
28	<b>Mining and oilfield machinery:</b>					<b>Total producers durable equipment .....</b>	<b>331,344</b>	<b>6,652</b>	<b>60,999</b>	<b>398,995</b>	
	Total .....	909	38	350	1,297	<b>Total nonresidential equipment ..</b>	<b>327,584</b>	<b>6,488</b>	<b>59,002</b>	<b>393,074</b>	
	8 Crude petroleum and natural gas .....	23			23	<b>Total residential equipment .....</b>	<b>3,760</b>	<b>164</b>	<b>1,997</b>	<b>5,921</b>	
	44+45 Farm, construction, and mining machinery .....	792	38	178	1,008						

1. The NIPA category refers to the corresponding line number associated with the PDE category in NIPA table 5.8.

establishments that primarily buy and resell goods manufactured by the same firm), it is calculated as operating expenses plus taxes collected by the sales branches.<sup>22</sup>

Nonmargin output occurs when the wholesale trade service is purchased separately from the commodity, such as when a wholesaler acts as a broker between buyer and seller. It is calculated in four parts: Operating expenses of manufacturers' sales offices, commissions on goods sold through agents and brokers, taxes collected, and customs duties. Customs duties are considered to be taxes collected by wholesale trade establishments and are included in nonmargin output.

*Retail trade* has one primary product—distributive services for the sale of goods primarily to persons. Its output includes primarily retail trade margins, which are measured as retail sales less the cost of goods sold plus the taxes collected by retail trade establishments. It also includes some nonmargin output, which consists mostly of mailing and handling charges of retailers. All retail trade margins are included in the retail trade row of use table 2.1 (row 69B).

Retail trade margins apply primarily to purchases by persons. However, some retail trade margins are applied to purchases by business and government—for example, some purchases of personal computers by business. Retail trade margins also are applied to some intermediate purchases by business—for example, office supplies and gasoline.

*Imports of goods and services*, a component of final uses, are measured by individual commodity at domestic port values. The domestic port value of an imported commodity, which includes customs duties, is considered to be equivalent to the producers' price of a domestically produced commodity. Adjustments to convert the sum total of all commodity imports of goods to foreign port value are included in the imports of transportation and wholesale trade. For example, the imports of the individual commodity apparel (row 18, column 95) in table 2.1 is -\$38.5 billion, the value of imports at the port of entry to the United States. This value consists of a foreign port value of -\$31.8 billion, vessel charges of -\$0.7 billion, air charges of -\$0.9 billion, and customs duty of -\$5.1 billion. The vessel and air charges are subtracted from the transportation rows (rows 65C and 65D, column 95) to be netted against balance of payments estimates of the total imports of transportation services. The duty is subtracted from the wholesale trade row (row 69A, column 95). The sum of the domestic port values for all commodities less the transportation charges and duty in

the transportation and wholesale rows is the foreign port value for all imports.

Imports of services are valued at producers' prices. There are no margins or transport costs associated with services.

Imports also include a special category referred to as "noncomparable imports." Noncomparable imports consist of goods purchased by U.S. residents abroad and of service imports with no domestic counterparts, such as port expenditures by U.S. airlines in other countries. These imports are distributed directly to industries and final users and are shown as noncomparable imports in use table 2.1 (row 80). All other imports are assumed either to be consumed within the U.S. boundaries or to have domestic equivalents.

In past benchmarks, noncomparable imports also included domestically consumed imported goods, such as bananas and coffee, that had no significant domestic counterparts. However, most imported goods now have domestic counterparts, so the 1992 benchmark I-O accounts do not include domestically consumed imports of goods in this category.

*Exports of goods and services*, a component of final uses, are measured by commodity at producers' prices—the same as other domestically produced commodities. Transportation and trade commodities, which are required to move exports from the producer to the port of exit, are included in the transportation and trade rows of use table 2.1. For example, exports of computer and office equipment are \$22.9 billion (row 51, column 94), which represents the value of the computer and office equipment in producers' prices. The transportation costs, \$0.2 billion, and the trade margins, \$3.7 billion (row 51 and under the column exports of goods and services in table C), required to move the exports of computers and

**Table F.—Relationship of Exports and Imports in the Input-Output Accounts to the National Income and Product Accounts, 1992**

	Total	Goods	Services
<b>Total exports, NIPA's</b> .....	<b>639,416</b>	<b>448,671</b>	<b>190,745</b>
Less: U.S merchandise returned .....	11,817	11,817	.....
Re-exports .....	22,392	22,392	.....
Foreign-to-foreign transactions .....	582	.....	582
Statistical differences, I-O <sup>1</sup> .....	2,015	.....	2,015
<b>Equals: Exports, I-O</b> .....	<b>602,610</b>	<b>414,462</b>	<b>188,148</b>
<b>Total imports, NIPA's</b> .....	<b>668,959</b>	<b>544,855</b>	<b>124,104</b>
Less: U.S merchandise returned .....	11,817	11,817	.....
Re-exports .....	22,392	22,392	.....
Foreign-to-foreign transactions .....	582	.....	582
Statistical differences, I-O <sup>1</sup> .....	2,531	.....	2,531
<b>Equals: Imports, I-O</b> .....	<b>631,637</b>	<b>510,646</b>	<b>120,991</b>
Net exports, NIPA's .....	-29,543	-96,184	66,641
Net exports, I-O .....	-29,027	-96,184	67,157

22. Expenses are used because there are no data on cost of goods sold for these wholesale trade establishments.

1. Consist of statistical revisions in the balance of payments accounts that had not yet been incorporated in the NIPA's at the time of the release of the 1992 benchmark I-O accounts in late 1997.  
NIPA National income and product accounts  
I-O Input-output accounts

office equipment from producer to the port of exit are included in the rows for transportation (rows 65A-E and 68B) and for trade (rows 69A and 69B) in table 2.1.

*Change in business inventories*, another component of final uses, is measured by commodity at the book-value change reported by industries in the economic censuses. The inventory valuation adjustment, which is needed to remove inventory profits or losses from total gross domestic product in the I-O accounts, is shown as a single entry in table 2.1 (row 85, column 93). In the 1992 I-O accounts, the inventory valuation adjustment is  $-\$8.0$  billion.

### *Supplementary tables*

Four supplementary tables are also presented in tables C, D, E, and F. Tables C, D, and E are bridges between the I-O accounts and the NIPA's. They present the I-O commodity composition of NIPA final demand in producers' and purchasers' prices. Specifically, [table C](#) presents the composition of all NIPA final-demand components; [table D](#), the composition of personal consumption expenditure categories shown in NIPA table

2.4; and [table E](#), the composition of NIPA producers' durable equipment expenditure categories shown in NIPA table 5.8.<sup>23</sup>

[Table F](#) presents a reconciliation of the I-O estimates of exports and imports with those in the NIPA's. Both exports and imports are adjusted so that total GDP is unchanged. The adjustments are necessary because the NIPA's—unlike the I-O accounts—include the U.S. merchandise that is returned to the United States from other countries in imports and because the NIPA exports include the foreign merchandise that is reexported from the United States to other countries.<sup>24</sup>

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23. NIPA tables 2.4 and 5.8 are published annually in the SURVEY, most recently in the August 1998 issue.

24. Returned U.S. merchandise consists of domestically produced goods that were exported for processing, or assembly, or both and then returned to the United States. Reexports consist of the commodities that were previously imported into the United States and then exported from the United States in substantially the same condition as when they were imported. A timing adjustment is made for reexports that entered the country in an earlier year. The I-O accounts measure this value as general imports less imports for consumption, and the value is shown as a transaction between noncomparable imports and inventory change.

# Detailed Accounts

## *How to read the tables*

The detailed tables with I-O estimates at the six-digit I-O level cover 498 industries and commodities, as well as 40 types of final uses. These tables, which begin on page 45, are presented in columnar form with zeros omitted, so that they are easy to use, especially for users who are interested in only a few industries or commodities. This presentation is in contrast to that for the tables showing the summary (I-O two-digit level) I-O estimates, which are typically presented in matrix form, where all estimates can be viewed simultaneously.

## *The make table for industries*

The make table for industries (table 1A (rows) of the “Detailed Tables”) shows the industries and the commodities that they produced, in millions of dollars at producers’ prices, for six-digit industries and commodities.<sup>25</sup> This table presents information that corresponds to that presented in the rows in the summary I-O make table (table 1 of the “Summary Tables”).

The information for each industry is contained in three columns. The first column shows the I-O code for the six-digit producing industry. The second column shows the I-O codes for the six-digit commodities that the industry produced. The third column shows the total value of the commodities that the industry produced and then the value of the output of the commodities listed in the second column. For example, the first entry in the table shows, in the first column, the six-digit *industry* 1.0100, dairy farm products. The second column shows that this industry produced four commodities: 1.0100, dairy farm products; 4.0001, agricultural, forestry, and fishery services; 14.0600, fluid milk; and 76.0206, other amusement and recreation services.<sup>26</sup> The third column shows that the total value of commodities produced by the dairy

farm products industry was \$20,285 million in producers’ prices in 1992. This total consisted of \$19,646 million, \$86 million, \$365 million, and \$188 million for the commodities shown in the second column.

## *The make table for commodities*

The make table for commodities (table 1B (columns) of the “Detailed Tables”) shows the commodities and the industries that produced them, in millions of dollars at producers’ prices, for six-digit commodities and industries. This table presents information that corresponds to that presented in the columns in the summary I-O make table (table 1 of the “Summary Tables”).

The information for each commodity is contained in three columns. The first column shows the I-O code for the six-digit commodity that was produced. The second column shows the I-O codes for the six-digit industries that produced the commodity, either as a primary producer or as a secondary producer. The third column shows the total value of the output of that commodity and then the values of the commodity output produced by the industries listed in the second column. For example, the first entry in the table shows, in the first column, the six-digit *commodity* 1.0100, dairy farm products. The second column shows that there was only one producing industry, the six-digit *industry* 1.0100, dairy farm products. The third column shows that the total value of dairy farm products produced by the dairy farm products industry was \$19,646 million in producers’ prices in 1992.

Similarly, moving down the first column to the first multiple-industry entry, we see that for the *commodity* 3.0001, forestry products, the total value of output of this commodity was \$8,129 million (shown in the third column). This output was produced by three *industries* (shown in the second column): 1.0302, miscellaneous livestock, which produced \$205 million; 2.0701, forest products, \$2,047 million; and 3.0001, forestry products, \$5,877 million.

## *The use table for commodities*

The use table for commodities (table 2A (rows) of the “Detailed Tables”) shows for each commodity the dollar

25. The I-O accounts use two classification systems, one for industries and another for commodities, but both systems generally use the same I-O numbers and titles. For further information, see the section “Definitions and conventions for classification” on page M-14 and “Appendix A: Classification of Industries in the 1992 Benchmark Input-Output Accounts,” which begins on page M-32.

26. The other amusement and recreation services commodity consists of receipts that the dairy farm products industry receives for services provided at public golf courses, amusement parks, and the like. The full list of service areas is provided by the related SIC codes shown in [appendix A](#).

value used by each industry and final user, in millions of dollars at producers' prices, for six-digit commodities, industries, and final uses. This table presents information that corresponds to that presented in the rows in the summary I-O use table (table 2.1 of the "Summary Tables").

The information for each commodity is contained in three columns. The first column shows the I-O code for the six-digit commodity that was used. The second column shows the I-O codes for the six-digit industries and the final users of the commodity. The third column shows the total value of the commodity that the industries used and then the value of the commodity used by each industry and final user listed in the second column. For example, the first entry in the table shows, in the first column, the six-digit *commodity* 1.0100, dairy farm products. The second and third columns show that most of the \$19,646 million of this commodity was used by six *industries*, but that some of it was sold to final users (that is, PCE), some went into inventories, and some was exported and imported. For example, \$183 million of the commodity was used by 1.0301, the meat animals industry; \$87 million by 14.0200, the creamery butter industry; \$7,105 million by 14.0300, the natural, processed, and imitation cheese industry; \$1,618 million by 14.0400, the dry, condensed, and evaporated dairy products industry; \$490 million by 14.0500, the ice cream and frozen desserts industry; \$10,027 million by 14.0600, the fluid milk industry; \$78 million was sold to 91.0000, PCE; \$44 million went to 93.0000, change in business inventories; \$42 million went to 94.0000, exports; and \$28 million was from 95.0000, imports.

### ***The use table for industries***

The use table for industries (table 2B (columns) of the "Detailed Tables") shows the industries and the commodities and value added components that they used, in millions of dollars at producers' prices, for six-digit industries and commodities. This table presents information that corresponds to that presented in the columns in the summary I-O use table (tables 2.1 and 2.2 of the "Summary Tables").

The information for each industry is contained in three columns. The first column shows the I-O code for a six-digit industry or final user. The second column shows the I-O codes for the six-digit commodities and value added components that were used. The third column shows the total value of the commodities and value added that the industry used and then the values for each commodity and value added component. For example, the first entry in the table shows, in the first column, the six-digit

*industry* 1.0100, dairy farm products. The second and third columns show that this industry used 80 different commodities and 3 value added components to produce its output. For example, of the \$20,285 million in *commodities* and *value added* that it used, \$48 million was in food grains, 2.0201; \$7,878 million in feed grains, 2.0202; \$1,001 million in agricultural, forestry, and fishery services, 4.0001; \$1,212 million in compensation of employees, 88.0000; and \$2,055 million in other value added, 90.0000, which includes components such as consumption of fixed capital, corporate profits, and business transfer payments.

### ***Commodity output requirements for each commodity***

The commodity requirements for each commodity table (table 4A of the "Detailed Tables") shows the six-digit commodities that were required directly and indirectly to deliver a dollar of a commodity to final users. This table presents information that corresponds to that presented in the summary I-O commodity-by-commodity total requirements table (table 4 of the "Summary Tables"); however, this table presents only the 15 largest required commodities and an "all other" category that summarizes the requirements for the remaining commodities.<sup>27</sup> For a majority of the commodities, the largest 15 required account for at least 80 percent of the total requirements. At the maximum, the "all other" category accounts for approximately 33 percent of the total multiplier (for I-O 11.0101, new residential 1-unit-structures, nonfarm). The largest coefficient in any "all other" category is 0.02989 (for I-O 34.0301, leather gloves and mittens, where it accounts for slightly more than 1 percent of the multiplier). The coefficients in this table are referred to as "commodity-by-commodity total requirements coefficients."

The information for each commodity is contained in three columns. The first column shows the I-O code for the six-digit commodity that was delivered to final users. The second column shows the I-O codes for the 15 largest six-digit commodities that were required directly and indirectly to deliver a dollar of this commodity to final users. The third column shows the total commodity output required to deliver a dollar of the commodity listed in the first column to final users, and then the requirements for the 15 commodities and the "all other" group that appear in the second column. For example, the first entry in the table shows, in the first column, the six-digit *commodity* 1.0100, dairy farm products, that was delivered

27. Multipliers for all commodities are contained on the diskettes offered for sale; see the box "Data Availability" on page M-3.

to final users. The second column shows that among the *commodities* required to deliver a dollar of this commodity to final users were, for example, 1.0100, dairy farm products; 2.0202, feed grains; and 4.0001, agricultural, forestry, and fishery services. The third column shows that the total *commodity* output required to deliver a dollar of the *commodity* dairy farm products was \$2.74911. The requirements for dairy farm products were \$1.00032; for feed grains, \$0.42183; for agricultural, forestry, and fishery services, \$0.08312; and for “all other,” \$0.50560.

### ***Industry output requirements for each commodity***

The industry output requirements for each commodity table (table 5A of the “Detailed Tables”) shows the output required directly and indirectly from each industry to deliver a dollar of a commodity to final users. This table presents information that corresponds to that presented in the summary I-O industry-by-commodity total requirements table (table 5 of the “Summary Tables”); however, this table presents only the 15 largest producing industries and an “all other” group, which summarizes the requirements for the remaining industries that produced output used in the commodity. For a majority of the commodities, the largest 15 required account for at least 80 percent of the total requirements. At the maximum, the “all other” category accounts for approximately 40 percent of the total multiplier (for I-O 14.3202, food preparations, n.e.c.). The largest coefficient in any “all other” category is 0.031253 (for I-O 1.0200, poultry and eggs, where it accounts for slightly more than 1 percent of the multiplier). The coefficients in this table are referred to as “industry-by-commodity total requirements coefficients.”

The information for each industry is contained in three columns. The first column shows the I-O code for the six-digit commodity that was delivered to final users. The second column shows the I-O codes for the 15 largest six-digit industries that produced outputs used, directly and indirectly, in the production of the commodity listed in the first column. The third column shows the total industry output multiplier, which is the total amount of industry output required to deliver a dollar of the commodity listed in the first column to final users, and then the requirements for the 15 largest industries and the “all other” group that appear in the second column. For example, the first entry in the table shows, in the first column, the six-digit *commodity* 1.0100, dairy farm products, which was delivered to final users. The second column shows, for example, that the *industries* 1.0100, dairy farm products; 2.0202, feed grains; and 2.0600, oil bearing crops,

produced outputs used in the production of this commodity. The third column shows that the total *industry* output required to deliver a dollar of the *commodity* dairy farm products was \$2.74320. Of this, the dairy farm products industry was required to produce \$1.00083; feed grains, \$0.42383; oil bearing crops, \$0.03120; and “all other” industries, \$0.51927.

### ***I-O commodity composition of NIPA PCE***

The I-O commodity composition of NIPA PCE table (table D.1 of the “Detailed Tables”) shows the six-digit I-O commodity composition of each NIPA PCE category (as listed by line number code in NIPA table 2.4) in millions of dollars valued at producers’ prices. The table also provides information by six-digit I-O code for transportation costs and wholesale and retail trade margins for the sum of the commodities within each PCE category. By providing these costs and margins, the table provides a bridge between I-O commodities valued in producers’ prices and NIPA PCE valued in purchasers’ prices. This table presents information that corresponds to that presented in the summary I-O commodity composition of PCE table (table D, beginning on page M-18).

The information for each PCE category is contained in two columns under each NIPA code number and title. The first column shows the six-digit codes for the I-O commodities, transportation costs, and wholesale and retail trade margins that constituted the NIPA category. The second column shows, as the first entry, the total for the I-O commodity composition of the NIPA PCE category valued in purchasers’ prices; this total is composed of the sum of the commodities valued in producers’ prices and the transportation costs and trade margins in the category. The second entry is the total for the six-digit I-O commodities valued in producers’ prices. This entry is followed by the values for the individual commodities, the total for transportation costs and for wholesale and retail trade margins, and the values for the individual transportation costs and wholesale and retail trade margins for the NIPA category.

For example, the first entry in the table shows the NIPA code 3 and category title “Food purchased for off-premise consumption (n.d.)” As shown in the first column, in 1992 this category consisted of I-O *commodities* such as 1.0200, poultry and eggs; 2.0202, feed grains; 2.0401, fruits; and *transportation costs* and *trade margins* such as 65.0100, railroads and related services, and 69.0100, wholesale trade. The second column shows that the total value of the commodities in the NIPA category, in purchasers’ prices, was \$413,709 million. The total value of the six-digit commodities in the category, in pro-

ducers' prices, was \$259,465 million, which consisted of \$1,866 million for poultry and eggs, \$354 million for feed grains, \$6,626 million for fruits, and so on down the column. The entry for transportation costs and trade margins shows that they totaled \$154,244 million and consisted of \$1,208 million for railroads and related services, \$43,688 million for wholesale trade, and so on.

### ***I-O commodity composition of NIPA PDE expenditures***

The I-O commodity composition of NIPA PDE expenditures table (table E.1 of the "Detailed Tables") shows the six-digit I-O commodity composition of each NIPA PDE category (as listed by line number code in NIPA table 5.8) in millions of dollars valued at producers' prices. The table also provides information by six-digit I-O code for transportation costs and wholesale and retail trade margins for the sum of the commodities within each PDE category. By providing these costs and margins, the table provides a bridge between I-O commodities valued in producers' prices and NIPA PDE valued in purchasers' prices. This table presents information that corresponds to that presented in the summary I-O commodity composition of PDE expenditures table (table E, on page M-24).

The information for each PDE category is contained in two columns under each NIPA code number and title. The first column shows the six-digit codes for the I-O commodities, transportation costs, and wholesale and retail trade margins that constituted the NIPA category. The

second column shows, as the first entry, the total for the I-O commodity composition of the NIPA PDE category valued in purchasers' prices; this total is composed of the sum of the commodities valued in producers' prices and the transportation costs and trade margins in the category. The second entry is the total for the six-digit I-O commodities valued in producers' prices. This entry is followed by the values for the individual commodities, the total for transportation costs and for wholesale and retail trade margins, and the values for the individual transportation costs and wholesale and retail trade margins for the NIPA category.

For example, the first entry in the table shows the NIPA code 5 and title "Computers and peripheral equipment." As shown in the first column, in 1992 this category consisted of the I-O *commodities* 51.0103, electronic computers; 51.0104, computer peripheral equipment; 73.0104, computer and data processing services; and *transportation costs* and *trade margins* such as 65.0100, railroads and related services, and 69.0100, wholesale trade. The second column shows that the total value of the commodities in the NIPA category, in purchasers' prices, was \$43,580 million. The total value of the six-digit commodities in the category, in producers' prices, was \$36,139 million, which consisted of \$15,819 million for electronic computers and \$16,879 million for computer peripheral equipment, and \$3,441 million for computer and data processing services. The entry for transportation costs and trade margins shows that they totaled \$7,441 million and consisted of \$2 million for railroads and related services, \$5,934 million for wholesale trade, and so on.

# Appendix A

## Classification of Industries in the 1992 Benchmark Input-Output Accounts

[The titles in boldface represent the industries used for the summary version of the 1992 tables. An asterisk preceding a Standard Industrial Classification (SIC) code indicates that the SIC industry is included in more than one I-O industry. For a description of the systems used in the I-O accounts, see the section "Definitions and conventions for classification."]

I-O industry number and title	Related 1987 SIC codes	I-O industry number and title	Related 1987 SIC codes
<b>AGRICULTURE, FORESTRY, AND FISHERIES</b>		4.0002 Landscape and horticultural services ....	078
<b>1 Livestock and livestock products:</b>		<b>MINING</b>	
1.0100 Dairy farm products .....	024, *019, *0259, *029	<b>5+6 Metallic ores mining:</b>	
1.0200 Poultry and eggs .....	0251-3, *0259, *019, *0219, *029	5.0001 Iron and ferroalloy ores, and miscellaneous metal ores, n.e.c.	101, 106, 1099
1.0301 Meat animals .....	0211-4, *0219, *019, *0259, *029	6.0100 Copper ore .....	102
1.0302 Miscellaneous livestock .....	0271-3, *0279, *019, *0219, *0259, *029	6.0200 Nonferrous metal ores, except copper	103-4, 1094, *108
<b>2 Other agricultural products:</b>		<b>7 Coal mining:</b>	
2.0100 Cotton .....	0131, *019, *0219, *0259, *029	7.0000 Coal .....	122-3, *124
2.0201 Food grains .....	*011, *019, *0219, *0259, *029	<b>8 Crude petroleum and natural gas:</b>	
2.0202 Feed grains .....	*011, *0139, *019, *0219, *0259, *029	8.0001 Crude petroleum and natural gas .....	131-2, *138
2.0203 Grass seeds .....	*0139, *019, *0219, *0259, *029	<b>9+10 Nonmetallic minerals mining:</b>	
2.0300 Tobacco .....	0132, *019, *0219, *0259, *029	9.0001 Dimension, crushed and broken stone	141-2
2.0401 Fruits .....	0171-2, 0174-5, *0179, *019, *0219, *0259, *029	9.0002 Sand and gravel .....	144
2.0402 Tree nuts .....	0173, *0179, *019, *0219, *0259, *029	9.0003 Clay, ceramic, and refractory minerals	145
2.0501 Vegetables .....	0134, *0139, 016, *019, *0219, *0259, *029, *0119	9.0004 Nonmetallic mineral services and miscellaneous minerals.	*148, 149
2.0502 Sugar crops .....	0133, *019, *0219, *0259, *029	10.0000 Chemical and fertilizer minerals .....	147
2.0503 Miscellaneous crops .....	*0119, *0139, *019, *0219, *0259, *029	<b>CONSTRUCTION</b>	
2.0600 Oil bearing crops .....	0116, *0119, *0139, *0219, *0259, *029	<b>11 New construction:</b>	
2.0701 Forest products .....	*018, *019, *0219, *0259, *029	11.0101 New residential 1-unit structures, nonfarm.	*15, *17, *6552
2.0702 Greenhouse and nursery products .....	*018, *019, *0219, *0259, *029	11.0102 New residential 2-4 unit structures, nonfarm.	*15, *17
<b>3 Forestry and fishery products:</b>		11.0105 New residential additions and alterations, nonfarm.	*15, *17
3.0001 Forestry products .....	081, 083, 097	11.0108 New residential garden and high-rise apartments.	*15, *17, *6552
3.0002 Commercial fishing .....	091	11.0400 Highways and streets .....	*16-17
<b>4 Agricultural, forestry, and fishery services:</b>		11.0501 New farm housing units and additions and alterations.	*15, *17
4.0001 Agricultural, forestry, and fishery services.	0254, *0279, 071-2, 075-6, 085, 092	11.0601 Petroleum and natural gas well drilling	*138
		11.0602 Petroleum, natural gas, and solid mineral exploration.	*138, *108, *124, *148
		11.0603 Access structures for solid mineral development.	*108, *124, *148
		11.0800 Office, industrial, and commercial buildings.	*15, *17
		11.0900 Other new construction .....	*15-17
		<b>12 Maintenance and repair construction:</b>	
		12.0101 Maintenance and repair of farm and nonfarm residential structures.	*15, *17
		12.0214 Maintenance and repair of highways and streets.	*16-17
		12.0215 Maintenance and repair of petroleum and natural gas wells.	*138
		12.0300 Other maintenance and repair .....	*15-17
		<b>MANUFACTURING</b>	
		<b>13 Ordnance and accessories:</b>	
		13.0100 Guided missiles and space vehicles ...	3761
		13.0200 Ammunition, except for small arms, n.e.c.	3483
		13.0300 Tanks and tank components .....	3795
		13.0500 Small arms .....	3484
		13.0600 Small arms ammunition .....	3482
		13.0700 Ordnance and accessories, n.e.c. ....	3489

I-O industry number and title	Related 1987 SIC codes	I-O industry number and title	Related 1987 SIC codes
<b>14 Food and kindred products:</b>		19.0302 Canvas and related products .....	2394
14.0101 Meat packing plants .....	2011	19.0303 Pleating and stitching .....	2395
14.0102 Sausages and other prepared meat products.	2013	19.0304 Automotive and apparel trimmings .....	2396
14.0105 Poultry slaughtering and processing ...	2015	19.0305 Schiffli machine embroideries .....	2397
14.0200 Creamery butter .....	2021	19.0306 Fabricated textile products, n.e.c. ....	2399
14.0300 Natural, processed, and imitation cheese.	2022	<b>20+21 Lumber and wood products:</b>	
14.0400 Dry, condensed, and evaporated dairy products.	2023	20.0100 Logging .....	241
14.0500 Ice cream and frozen desserts .....	2024	20.0200 Sawmills and planing mills, general ....	2421
14.0600 Fluid milk .....	2026	20.0300 Hardwood dimension and flooring mills	2426
14.0700 Canned and cured fish and seafoods	2091	20.0400 Special product sawmills, n.e.c. ....	2429
14.0800 Canned specialties .....	2032	20.0501 Millwork .....	2431
14.0900 Canned fruits, vegetables, preserves, jams, and jellies.	2033	20.0502 Wood kitchen cabinets .....	2434
14.1000 Dehydrated fruits, vegetables, and soups.	2034	20.0600 Veneer and plywood .....	2435-6
14.1100 Pickles, sauces, and salad dressings	2035	20.0701 Structural wood members, n.e.c. ....	2439
14.1200 Prepared fresh or frozen fish and seafoods.	2092	20.0702 Prefabricated wood buildings and components.	2452
14.1301 Frozen fruits, fruit juices, and vegetables.	2037	20.0703 Mobile homes .....	2451
14.1302 Frozen specialties, n.e.c. ....	2038	20.0800 Wood preserving .....	2491
14.1401 Flour and other grain mill products .....	2041	20.0901 Wood pallets and skids .....	2448
14.1402 Cereal breakfast foods .....	2043	20.0903 Wood products, n.e.c. ....	2499
14.1403 Prepared flour mixes and doughs .....	2045	20.0904 Reconstituted wood products .....	2493
14.1501 Dog and cat food .....	2047	21.0000 Wood containers, n.e.c. ....	2441, 2449
14.1502 Prepared feeds, n.e.c. ....	2048	<b>22+23 Furniture and fixtures:</b>	
14.1600 Rice milling .....	2044	22.0101 Wood household furniture, except upholstered.	2511
14.1700 Wet corn milling .....	2046	22.0102 Household furniture, n.e.c. ....	2519
14.1801 Bread, cake, and related products .....	2051	22.0103 Wood television and radio cabinets ....	2517
14.1802 Cookies and crackers .....	2052	22.0200 Upholstered household furniture .....	2512
14.1803 Frozen bakery products, except bread	2053	22.0300 Metal household furniture .....	2514
14.1900 Sugar .....	2061-3	22.0400 Mattresses and bedsprings .....	2515
14.2002 Chocolate and cocoa products .....	2066	23.0100 Wood office furniture .....	2521
14.2004 Salted and roasted nuts and seeds ....	2068	23.0200 Office furniture, except wood .....	2522
14.2005 Candy and other confectionery products, including chewing gum.	2064, 2067	23.0300 Public building and related furniture ....	253
14.2101 Malt beverages .....	2082	23.0400 Wood partitions and fixtures .....	2541
14.2102 Malt .....	2083	23.0500 Partitions and fixtures, except wood ....	2542
14.2103 Wines, brandy, and brandy spirits .....	2084	23.0600 Drapery hardware and window blinds and shades.	2591
14.2104 Distilled and blended liquors .....	2085	23.0700 Furniture and fixtures, n.e.c. ....	2599
14.2200 Bottled and canned soft drinks .....	2086	<b>24 Paper and allied products, except containers:</b>	
14.2300 Flavoring extracts and flavoring syrups, n.e.c.	2087	24.0100 Pulp mills .....	261
14.2400 Cottonseed oil mills .....	2074	24.0400 Envelopes .....	2677
14.2500 Soybean oil mills .....	2075	24.0500 Sanitary paper products .....	2676
14.2600 Vegetable oil mills, n.e.c. ....	2076	24.0701 Paper coating and glazing .....	2671-2
14.2700 Animal and marine fats and oils .....	2077	24.0702 Bags, except textile .....	2673-4
14.2800 Roasted coffee .....	2095	24.0703 Die-cut paper and paperboard and cardboard.	2675
14.2900 Edible fats and oils, n.e.c. ....	2079	24.0705 Stationery, tablets, and related products.	2678
14.3000 Manufactured ice .....	2097	24.0706 Converted paper products, n.e.c. ....	2679
14.3100 Macaroni, spaghetti, vermicelli, and noodles.	2098	24.0800 Paper and paperboard mills .....	262-3
14.3201 Potato chips and similar snacks .....	2096	<b>25 Paperboard containers and boxes:</b>	
14.3202 Food preparations, n.e.c. ....	2099	25.0000 Paperboard containers and boxes .....	265
<b>15 Tobacco products:</b>		<b>26A Newspapers and periodicals:</b>	
15.0101 Cigarettes .....	211	26.0100 Newspapers .....	271
15.0102 Cigars .....	212	26.0200 Periodicals .....	272
15.0103 Chewing and smoking tobacco and snuff.	213	<b>26B Other printing and publishing:</b>	
15.0200 Tobacco stemming and redrying .....	214	26.0301 Book publishing .....	2731
<b>16 Broad and narrow fabrics, yarn and thread mills:</b>		26.0302 Book printing .....	2732
16.0100 Broadwoven fabric mills and fabric finishing plants.	221-3, 2261-2	26.0400 Miscellaneous publishing .....	274
16.0200 Narrow fabric mills .....	224	26.0501 Commercial printing .....	275
16.0300 Yarn mills and finishing of textiles, n.e.c.	2269, 2281-2	26.0601 Manifold business forms .....	276
16.0400 Thread mills .....	2284	26.0602 Blankbooks, looseleaf binders and devices.	2782
<b>17 Miscellaneous textile goods and floor coverings:</b>		26.0700 Greeting cards .....	277
17.0100 Carpets and rugs .....	227	26.0802 Bookbinding and related work .....	2789
17.0600 Coated fabrics, not rubberized .....	2295	26.0803 Typesetting .....	2791
17.0700 Tire cord and fabrics .....	2296	26.0806 Platemaking and related services .....	2796
17.0900 Cordage and twine .....	2298	<b>27A Industrial and other chemicals:</b>	
17.1001 Nonwoven fabrics .....	2297	27.0100 Industrial inorganic and organic chemicals.	281, 2865, 2869
17.1100 Textile goods, n.e.c. ....	2299	27.0401 Gum and wood chemicals .....	2861
<b>18 Apparel:</b>		27.0402 Adhesives and sealants .....	2891
18.0101 Women's hosiery, except socks .....	2251	27.0403 Explosives .....	2892
18.0102 Hosiery, n.e.c. ....	2252	27.0404 Printing ink .....	2893
18.0201 Knit outerwear mills .....	2253	27.0405 Carbon black .....	2895
18.0202 Knit underwear and nightwear mills ....	2254	27.0406 Chemicals and chemical preparations, n.e.c.	2899
18.0203 Knitting mills, n.e.c. ....	2259	<b>27B Agricultural fertilizers and chemicals:</b>	
18.0300 Knit fabric mills .....	2257-8	27.0201 Nitrogenous and phosphatic fertilizers	2873-4
18.0400 Apparel made from purchased materials.	231-8	27.0202 Fertilizers, mixing only .....	2875
<b>19 Miscellaneous fabricated textile products:</b>		27.0300 Pesticides and agricultural chemicals, n.e.c.	2879
19.0100 Curtains and draperies .....	2391	<b>28 Plastics and synthetic materials:</b>	
19.0200 Housefurnishings, n.e.c. ....	2392	28.0100 Plastics materials and resins .....	2821
19.0301 Textile bags .....	2393	28.0200 Synthetic rubber .....	2822
		28.0300 Cellulosic manmade fibers .....	2823
		28.0400 Manmade organic fibers, except cellulosic.	2824

I-O industry number and title	Related 1987 SIC codes	I-O industry number and title	Related 1987 SIC codes
<b>29A Drugs:</b>		<b>39 Metal containers:</b>	
29.0100 Drugs .....	283	39.0100 Metal cans .....	3411
<b>29B Cleaning and toilet preparations:</b>		39.0200 Metal shipping barrels, drums, kegs, and pails.	3412
29.0201 Soap and other detergents .....	2841	<b>40 Heating, plumbing, and fabricated structural metal products:</b>	
29.0202 Polishes and sanitation goods .....	2842	40.0100 Enameled iron and metal sanitary ware.	3431
29.0203 Surface active agents .....	2843	40.0200 Plumbing fixture fittings and trim .....	3432
29.0300 Toilet preparations .....	2844	40.0300 Heating equipment, except electric and warm air furnaces.	3433
<b>30 Paints and allied products:</b>		40.0400 Fabricated structural metal .....	3441
30.0000 Paints and allied products .....	285	40.0500 Metal doors, sash, frames, molding, and trim.	3442
<b>31 Petroleum refining and related products:</b>		40.0600 Fabricated plate work (boiler shops) ...	3443
31.0101 Petroleum refining .....	291	40.0700 Sheet metal work .....	3444
31.0102 Lubricating oils and greases .....	2992	40.0800 Architectural and ornamental metal work.	3446
31.0103 Products of petroleum and coal, n.e.c.	2999	40.0901 Prefabricated metal buildings and components.	3448
31.0200 Asphalt paving mixtures and blocks ...	2951	40.0902 Miscellaneous structural metal work ...	3449
31.0300 Asphalt felts and coatings .....	2952	<b>41 Screw machine products and stampings:</b>	
<b>32 Rubber and miscellaneous plastics products:</b>		41.0100 Screw machine products, bolts, etc ....	345
32.0100 Tires and inner tubes .....	301	41.0201 Automotive stampings .....	3465
32.0200 Rubber and plastics footwear .....	302	41.0202 Crowns and closures .....	3466
32.0300 Fabricated rubber products, n.e.c. ....	306	41.0203 Metal stampings, n.e.c. ....	3469
32.0400 Miscellaneous plastics products, n.e.c.	308	<b>42 Other fabricated metal products:</b>	
32.0500 Rubber and plastics hose and belting	3052	42.0100 Cutlery .....	3421
32.0600 Gaskets, packing, and sealing devices	3053	42.0201 Hand and edge tools, except machine tools and hand saws.	3423
<b>33+34 Footwear, leather, and leather products:</b>		42.0202 Saw blades and hand saws .....	3425
33.0001 Leather tanning and finishing .....	311	42.0300 Hardware, n.e.c. ....	3429
34.0100 Boot and shoe cut stock and findings	313	42.0401 Plating and polishing .....	3471
34.0201 Shoes, except rubber .....	3143-4, 3149	42.0402 Coating, engraving, and allied services, n.e.c.	3479
34.0202 House slippers .....	3142	42.0500 Miscellaneous fabricated wire products	3495-6
34.0301 Leather gloves and mittens .....	315	42.0700 Steel springs, except wire .....	3493
34.0302 Luggage .....	316	42.0800 Pipe, valves, and pipe fittings .....	3491-2, 3494, 3498
34.0303 Women's handbags and purses .....	3171	42.1000 Metal foil and leaf .....	3497
34.0304 Personal leather goods, n.e.c. ....	3172	42.1100 Fabricated metal products, n.e.c. ....	3499
34.0305 Leather goods, n.e.c. ....	319	<b>43 Engines and turbines:</b>	
<b>35 Glass and glass products:</b>		43.0100 Turbines and turbine generator sets ...	3511
35.0100 Glass and glass products, except containers.	321, 3229, 323	43.0200 Internal combustion engines, n.e.c. ....	3519
35.0200 Glass containers .....	3221	<b>44+45 Farm, construction, and mining machinery:</b>	
<b>36 Stone and clay products:</b>		44.0001 Farm machinery and equipment .....	3523
36.0100 Cement, hydraulic .....	324	44.0002 Lawn and garden equipment .....	3524
36.0200 Brick and structural clay tile .....	3251	45.0100 Construction machinery and equipment.	3531
36.0300 Ceramic wall and floor tile .....	3253	45.0200 Mining machinery, except oil field .....	3532
36.0400 Clay refractories .....	3255	45.0300 Oil and gas field machinery and equipment.	3533
36.0500 Structural clay products, n.e.c. ....	3259	<b>46 Materials handling machinery and equipment:</b>	
36.0600 Vitreous china plumbing fixtures .....	3261	46.0100 Elevators and moving stairways .....	3534
36.0701 Vitreous china table and kitchenware	3262	46.0200 Conveyors and conveying equipment	3535
36.0702 Fine earthenware table and kitchenware.	3263	46.0300 Hoists, cranes, and monorails .....	3536
36.0800 Porcelain electrical supplies .....	3264	46.0400 Industrial trucks and tractors .....	3537
36.0900 Pottery products, n.e.c. ....	3269	<b>47 Metalworking machinery and equipment:</b>	
36.1000 Concrete block and brick .....	3271	47.0100 Machine tools, metal cutting types .....	3541
36.1100 Concrete products, except block and brick.	3272	47.0200 Machine tools, metal forming types ....	3542
36.1200 Ready-mixed concrete .....	3273	47.0300 Special dies and tools and machine tool accessories.	3544-5
36.1300 Lime .....	3274	47.0401 Power-driven handtools .....	3546
36.1400 Gypsum products .....	3275	47.0402 Rolling mill machinery and equipment	3547
36.1500 Cut stone and stone products .....	328	47.0404 Electric and gas welding and soldering equipment.	3548
36.1600 Abrasive products .....	3291	47.0405 Industrial patterns .....	3543
36.1700 Asbestos products .....	3292	47.0500 Metalworking machinery, n.e.c. ....	3549
36.1900 Minerals, ground or treated .....	3295	<b>48 Special industry machinery and equipment:</b>	
36.2000 Mineral wool .....	3296	48.0100 Food products machinery .....	3556
36.2100 Nonclay refractories .....	3297	48.0200 Textile machinery .....	3552
36.2200 Nonmetallic mineral products, n.e.c. ...	3299	48.0300 Woodworking machinery .....	3553
<b>37 Primary iron and steel manufacturing:</b>		48.0400 Paper industries machinery .....	3554
37.0101 Blast furnaces and steel mills .....	3312	48.0500 Printing trades machinery and equipment.	3555
37.0102 Electrometallurgical products, except steel.	3313	48.0600 Special industry machinery, n.e.c. ....	3559
37.0103 Steel wire drawing and steel nails and spikes.	3315	<b>49 General industrial machinery and equipment:</b>	
37.0104 Cold-rolled steel sheet, strip, and bars	3316	49.0100 Pumps and compressors .....	3561, 3563
37.0105 Steel pipe and tubes .....	3317	49.0200 Ball and roller bearings .....	3562
37.0200 Iron and steel foundries .....	332	49.0300 Blowers and fans .....	3564
37.0300 Iron and steel forgings .....	3462	49.0500 Mechanical power transmission equipment.	3566, 3568
37.0401 Metal heat treating .....	3398	49.0600 Industrial process furnaces and ovens	3567
37.0402 Primary metal products, n.e.c. ....	3399	49.0700 General industrial machinery and equipment, n.e.c.	3569
<b>38 Primary nonferrous metals manufacturing:</b>		49.0800 Packaging machinery .....	3565
38.0100 Primary smelting and refining of copper.	3331	<b>50 Miscellaneous machinery, except electrical:</b>	
38.0400 Primary aluminum .....	3334	50.0100 Carburetors, pistons, rings, and valves	3592
38.0501 Primary nonferrous metals, n.e.c. ....	3339		
38.0600 Secondary nonferrous metals .....	334		
38.0700 Rolling, drawing, and extruding of copper.	3351		
38.0800 Aluminum rolling and drawing .....	3353-5		
38.0900 Nonferrous rolling and drawing, n.e.c.	3356		
38.1000 Nonferrous wire drawing and insulating	3357		
38.1100 Aluminum castings .....	3363, 3365		
38.1200 Copper foundries .....	3366		
38.1300 Nonferrous castings, n.e.c. ....	3364, 3369		
38.1400 Nonferrous forgings .....	3463		

I-O industry number and title	Related 1987 SIC codes	I-O industry number and title	Related 1987 SIC codes
50.0200 Fluid power equipment .....	3593-4	62.0800 X-ray apparatus and tubes .....	3844
50.0300 Scales and balances, except laboratory.	3596	62.0900 Electromedical and electrotherapeutic apparatus.	3845
50.0400 Industrial and commercial machinery and equipment, n.e.c.	3599	62.1000 Laboratory and optical instruments .....	3826-7
<b>51 Computer and office equipment:</b>		62.1100 Instruments to measure electricity .....	3825
51.0102 Calculating and accounting machines	3578	<b>63 Ophthalmic and photographic equipment:</b>	
51.0103 Electronic computers .....	3571	63.0200 Ophthalmic goods .....	385
51.0104 Computer peripheral equipment .....	3572, 3575, 3577	63.0300 Photographic equipment and supplies	386
51.0400 Office machines, n.e.c. ....	3579	<b>64 Miscellaneous manufacturing:</b>	
<b>52 Service industry machinery:</b>		64.0101 Jewelry, precious metal .....	3911
52.0100 Automatic vending machines .....	3581	64.0102 Jewelers' materials and lapidary work	3915
52.0200 Commercial laundry equipment .....	3582	64.0104 Silverware and plated ware .....	3914
52.0300 Refrigeration and heating equipment	3585	64.0105 Costume jewelry .....	3961
52.0400 Measuring and dispensing pumps .....	3586	64.0200 Musical instruments .....	393
52.0500 Service industry machinery, n.e.c. ....	3589	64.0301 Games, toys, and children's vehicles	3944
<b>53 Electrical industrial equipment and apparatus:</b>		64.0302 Dolls and stuffed toys .....	3942
53.0200 Power, distribution, and specialty transformers.	3612	64.0400 Sporting and athletic goods, n.e.c. ....	3949
53.0300 Switchgear and switchboard apparatus	3613	64.0501 Pens, mechanical pencils, and parts ...	3951
53.0400 Motors and generators .....	3621	64.0502 Lead pencils and art goods .....	3952
53.0500 Relays and industrial controls .....	3625	64.0503 Marking devices .....	3953
53.0700 Carbon and graphite products .....	3624	64.0504 Carbon paper and inked ribbons .....	3955
53.0800 Electrical industrial apparatus, n.e.c. ...	3629	64.0700 Fasteners, buttons, needles, and pins	3965
<b>54 Household appliances:</b>		64.0800 Brooms and brushes .....	3991
54.0100 Household cooking equipment .....	3631	64.0900 Hard surface floor coverings, n.e.c. ....	3996
54.0200 Household refrigerators and freezers	3632	64.1000 Burial caskets .....	3995
54.0300 Household laundry equipment .....	3633	64.1100 Signs and advertising specialties .....	3993
54.0400 Electric housewares and fans .....	3634	64.1200 Manufacturing industries, n.e.c. ....	3999
54.0500 Household vacuum cleaners .....	3635	<b>TRANSPORTATION, COMMUNICATIONS, AND UTILITIES</b>	
54.0700 Household appliances, n.e.c. ....	3639	<b>65A Railroads and related services; passenger ground transportation:</b>	
<b>55 Electric lighting and wiring equipment:</b>		65.0100 Railroads and related services .....	40, 474
55.0100 Electric lamp bulbs and tubes .....	3641	65.0200 Local and suburban transit and interurban highway passenger transportation.	41
55.0200 Lighting fixtures and equipment .....	3645-8	<b>65B Motor freight transportation and warehousing:</b>	
55.0300 Wiring devices .....	3643-4	65.0301 Trucking and courier services, except air.	421, 423
<b>56 Audio, video, and communication equipment:</b>		65.0302 Warehousing and storage .....	422
56.0100 Household audio and video equipment	3651	<b>65C Water transportation:</b>	
56.0200 Prerecorded records and tapes .....	3652	65.0400 Water transportation .....	44
56.0300 Telephone and telegraph apparatus ....	3661	<b>65D Air transportation:</b>	
56.0500 Communication equipment .....	3663, 3669	65.0500 Air transportation .....	45
<b>57 Electronic components and accessories:</b>		<b>65E Pipelines, freight forwarders, and related services:</b>	
57.0100 Electron tubes .....	3671	65.0600 Pipelines, except natural gas .....	46
57.0200 Semiconductors and related devices ...	3674	65.0701 Freight forwarders and other transportation services.	473, 478
57.0300 Other electronic components .....	3672, 3675-9	65.0702 Arrangement of passenger transportation.	472
<b>58 Miscellaneous electrical machinery and supplies:</b>		<b>66 Communications, except radio and TV:</b>	
58.0100 Storage batteries .....	3691	66.0100 Telephone and telegraph communications, and communications services, n.e.c.	481-2, 489
58.0200 Primary batteries, dry and wet .....	3692	66.0200 Cable and other pay television services.	484
58.0400 Electrical equipment for internal combustion engines.	3694	<b>67 Radio and TV broadcasting:</b>	
58.0600 Magnetic and optical recording media	3695	67.0000 Radio and TV broadcasting .....	483
58.0700 Electrical machinery, equipment, and supplies, n.e.c.	3699	<b>68A Electric services (utilities):</b>	
<b>59A Motor vehicles (passenger cars and trucks):</b>		68.0100 Electric services (utilities) .....	491, 4931
59.0301 Motor vehicles and passenger car bodies.	3711	<b>68B Gas production and distribution (utilities):</b>	
<b>59B Truck and bus bodies, trailers, and motor vehicles parts:</b>		68.0201 Natural gas transportation .....	4922, *4923
59.0100 Truck and bus bodies .....	3713	68.0202 Natural gas distribution .....	*4923, 4924, 4925, 4932, 4939
59.0200 Truck trailers .....	3715	<b>68C Water and sanitary services:</b>	
59.0302 Motor vehicle parts and accessories ...	3714	68.0301 Water supply and sewerage systems	494, 4952
<b>60 Aircraft and parts:</b>		68.0302 Sanitary services, steam supply, and irrigation systems.	4953, 4959, 496-7
60.0100 Aircraft .....	3721	<b>WHOLESALE AND RETAIL TRADE</b>	
60.0200 Aircraft and missile engines and engine parts.	3724, 3764	<b>69A Wholesale trade:</b>	
60.0400 Aircraft and missile equipment, n.e.c.	3728, 3769	69.0100 Wholesale trade .....	50, 51
<b>61 Other transportation equipment:</b>		<b>69B Retail trade:</b>	
61.0100 Ship building and repairing .....	3731	69.0200 Retail trade, except eating and drinking.	52-7, 59
61.0200 Boat building and repairing .....	3732	<b>FINANCE, INSURANCE, AND REAL ESTATE</b>	
61.0300 Railroad equipment .....	374	<b>70A Finance:</b>	
61.0500 Motorcycles, bicycles, and parts .....	375	70.0100 Banking .....	60
61.0601 Travel trailers and campers .....	3792	70.0200 Credit agencies other than banks .....	61, 67 (excl. 6732)
61.0603 Motor homes .....	3716	70.0300 Security and commodity brokers .....	62
61.0700 Transportation equipment, n.e.c. ....	3799		
<b>62 Scientific and controlling instruments:</b>			
62.0101 Search and navigation equipment .....	381		
62.0102 Laboratory apparatus and furniture .....	3821		
62.0200 Mechanical measuring devices .....	3823-4, 3829		
62.0300 Environmental controls .....	3822		
62.0400 Surgical and medical instruments and apparatus.	3841		
62.0500 Surgical appliances and supplies .....	3842		
62.0600 Dental equipment and supplies .....	3843		
62.0700 Watches, clocks, watchcases, and parts.	387		

I-O industry number and title	Related 1987 SIC codes	I-O industry number and title	Related 1987 SIC codes
<b>70B Insurance:</b>		76.0201 Theatrical producers (except motion picture), bands, orchestras, and entertainers.	792
70.0400 Insurance carriers .....	63	76.0202 Bowling centers .....	793
70.0500 Insurance agents, brokers, and services.	64	76.0203 Professional sports clubs and promoters.	7941
<b>71A Owner-occupied dwellings:</b>		76.0204 Racing, including track operation .....	7948
71.0100 Owner-occupied dwellings .....		76.0205 Physical fitness facilities and membership sports and recreation clubs.	7991, 7997
<b>71B Real estate and royalties:</b>		76.0206 Other amusement and recreation services.	791, 7992-3, 7996, 7999
71.0201 Real estate agents, managers, operators, and lessors.	65 (excl. 6552)		
71.0202 Royalties .....		<b>77A Health services:</b>	
<b>SERVICES</b>		77.0100 Doctors and dentists .....	801-3, 8041
<b>72A Hotels and lodging places:</b>		77.0200 Hospitals .....	806
72.0101 Hotels .....	701	77.0301 Nursing and personal care facilities .....	805
72.0102 Other lodging places .....	702-4	77.0303 Home health care services .....	808
<b>72B Personal and repair services (except auto):</b>		77.0304 Veterinary services .....	074
72.0201 Laundry, cleaning, garment services, and shoe repair.	721, 725	77.0305 Other medical and health services .....	8042, 8043, 8049, 807, 809
72.0202 Funeral service and crematories .....	726	<b>77B Educational and social services, and membership organizations:</b>	
72.0203 Portrait photographic studios, and other miscellaneous personal services.	722, 729	77.0401 Elementary and secondary schools .....	821
72.0204 Electrical repair shops .....	762	77.0402 Colleges, universities, and professional schools.	822
72.0205 Watch, clock, jewelry, and furniture repair.	763-4	77.0403 Private libraries, vocational schools, and educational services, n.e.c.	823-4, 829
72.0300 Beauty and barber shops .....	723-4	77.0501 Business associations and professional membership organizations.	861-2
<b>73A Computer and data processing services:</b>		77.0502 Labor organizations, civic, social, and fraternal associations.	863-4
73.0104 Computer and data processing services.	737	77.0503 Religious organizations .....	866
<b>73B Legal, engineering, accounting, and related services:</b>		77.0504 Other membership organizations .....	84, 865, 869, 8733, 6732
73.0301 Legal services .....	81	77.0600 Job training and related services .....	833
73.0302 Engineering, architectural, and surveying services.	871	77.0700 Child day care services .....	835
73.0303 Accounting, auditing, and bookkeeping, and miscellaneous services, n.e.c.	872, 89	77.0800 Residential care .....	836
<b>73C Other business and professional services, except medical:</b>		77.0900 Social services, n.e.c. ....	832, 839
73.0101 Miscellaneous repair shops .....	769	<b>SPECIAL INDUSTRIES</b>	
73.0102 Services to dwellings and other buildings.	734	<b>78 Federal Government enterprises:</b>	
73.0103 Personnel supply services .....	736	78.0100 U.S. Postal Service .....	(1)
73.0106 Detective and protective services .....	7381-2	78.0200 Federal electric utilities .....	(1)
73.0107 Miscellaneous equipment rental and leasing.	735	78.0500 Other Federal Government enterprises	(1)
73.0108 Photofinishing labs and commercial photography.	7335-6, 7384	<b>79 State and local government enterprises:</b>	
73.0109 Other business services .....	732, 7331, 7334, 7338, 7383, 7389	79.0100 State and local government passenger transit.	(1)
73.0111 Management and consulting services	874	79.0200 State and local government electric utilities.	(1)
73.0112 Testing and research labs .....	8731-2, 8734	79.0300 Other State and local government enterprises.	(1)
<b>73D Advertising:</b>		<b>80 Noncomparable imports:</b>	
73.0200 Advertising .....	731	80.0000 Noncomparable imports .....	(2)
<b>74 Eating and drinking places:</b>		<b>81 Scrap, used and secondhand goods:</b>	
74.0000 Eating and drinking places .....	58	81.0001 Scrap .....	(3)
<b>75 Automotive repair and services:</b>		81.0002 Used and secondhand goods .....	(3)
75.0001 Automotive rental and leasing, without drivers.	751	<b>82 General government industry:</b>	
75.0002 Automotive repair shops and services	753, 7549	82.0000 General government industry .....	(4)
75.0003 Automobile parking and car washes ...	752, 7542	<b>83 Rest of the world adjustment to final uses:</b>	
<b>76 Amusements:</b>		83.0000 Rest of the world adjustment to final uses.	(5)
76.0101 Motion picture services and theaters ...	781-3	<b>84 Household industry:</b>	
76.0102 Video tape rental .....	784	84.0000 Household industry .....	(6)
		<b>85 Inventory valuation adjustment:</b>	
		85.0000 Inventory valuation adjustment .....	(7)

1. The SIC assigns the same codes to the activities regardless of whether the establishment is owned by private firms and government agencies, but the SIC codes in the I-O accounts are only used for classifying private activities.

2. Noncomparable imports include imported services that are not commercially produced in the United States, and goods and services that are produced abroad and used abroad by U.S. residents—for example, U.S. Federal Government defense spending abroad.

3. Industry output is zero because there is no primary producing industry. Scrap is a secondary product of many industries, and used goods are sales and purchases typically between final uses. The sales are shown as negative values in the use table.

4. Industry output is defined as the compensation of employees and consumption of fixed capital of general government agencies. The compensation of employees engaged in construction work is included in the construction industry.

5. The commodity entries include adjustments among PCE and government expenditures to eliminate counting the expenditures by foreign residents in both exports and PCE or government expenditures.

6. Industry output is defined as the compensation of domestic household workers.

7. The inventory valuation adjustment is an adjustment needed to eliminate inventory profits or losses from the change in inventory component of gross output.

## Appendix B

# Classification of Value Added and Final Uses in the 1992 Benchmark Input-Output Accounts

[The titles in boldface represent the value added and final use components used for the summary version of the 1992 tables.]

I-O number	I-O title	I-O number	I-O title
	<b>VALUE ADDED</b>		
<b>VA</b>	<b>Total value added:</b>	<b>99C</b>	<b>State and local government consumption expenditures, other:</b>
88.0000	Compensation of employees	99.10C1	State and local government consumption expenditures, hospitals and categorical health programs
89.0000	Indirect business tax and nontax liability	99.10C2	State and local government consumption expenditures, public welfare institutions and activities
90.0000	Other value added	99.10C4	State and local government consumption expenditures, sanitation
	<b>FINAL USES</b>	99.20C1	State and local government consumption expenditures, police
<b>91</b>	<b>Personal consumption expenditures:</b>	99.20C2	State and local government consumption expenditures, fire fighting organizations and auxiliary services
91.0000	Personal consumption expenditures	99.20C3	State and local government consumption expenditures, correctional institutions
<b>92</b>	<b>Gross private fixed investment:</b>	99.30C1	State and local government consumption expenditures, public highways (excluding non-capital expenditures of toll roads)
92.0000	Gross private fixed investment	99.30C8	State and local government consumption expenditures, natural and agricultural resources and recreation facilities
<b>93</b>	<b>Change in business inventories:</b>	99.30C9	State and local government consumption expenditures, other general government activities n.e.c.
93.0000	Change in business inventories	<b>99I</b>	<b>State and local government gross investment, other:</b>
<b>94</b>	<b>Exports of goods and services:</b>	99.10I1	State and local government gross investment, hospitals and categorical health programs
94.0000	Exports of goods and services	99.10I2	State and local government gross investment, public welfare institutions and activities
<b>95</b>	<b>Imports of goods and services:</b>	99.10I3	State and local government gross investment, public sewerage systems
95.0000	Imports of goods and services	99.10I4	State and local government gross investment, sanitation
<b>96C</b>	<b>Federal Government consumption expenditures, national defense:</b>	99.20I1	State and local government gross investment, police
96.00C0	Federal Government consumption expenditures, national defense	99.20I2	State and local government gross investment, fire fighting organizations and auxiliary services
<b>96I</b>	<b>Federal Government gross investment, national defense:</b>	99.20I3	State and local government gross investment, correctional institutions
96.00I0	Federal Government gross investment, national defense	99.30I1	State and local government gross investment, public highways
<b>97C</b>	<b>Federal Government consumption expenditures, nondefense:</b>	99.30I2	State and local government gross investment, waterports and airports
97.00C0	Federal Government consumption expenditures, nondefense	99.30I3	State and local government gross investment, government-operated transit systems
<b>97I</b>	<b>Federal Government gross investment, nondefense:</b>	99.30I4	State and local government gross investment, other commerce activities, n.e.c.
97.00I0	Federal Government gross investment, nondefense	99.30I5	State and local government gross investment, gas and electric utilities
<b>98C</b>	<b>State and local government consumption expenditures, education:</b>	99.30I6	State and local government gross investment, government-operated water supply facilities
98.00C1	State and local government consumption expenditures, elementary and secondary public school systems	99.30I7	State and local government gross investment, redevelopment projects
98.00C2	State and local government consumption expenditures, public educational facilities beyond high school	99.30I8	State and local government gross investment, natural and agricultural resources and recreation facilities
98.00C3	State and local government consumption expenditures, other education and libraries	99.30I9	State and local government gross investment, other general government activities n.e.c.
<b>98I</b>	<b>State and local government gross investment, education:</b>		
98.00I1	State and local government gross investment, elementary and secondary public school systems		
98.00I2	State and local government gross investment, public educational facilities beyond high school		
98.00I3	State and local government gross investment, other education and libraries		

# Appendix C

## Measures of Output

This appendix supplements information provided in [table A](#) in the text, which shows the principal data sources used for industry and commodity outputs for the 1992 benchmark input-output (I-O) accounts. The tables in this appendix provide detailed information on the measures of industry and commodity output used for the 1992 I-O accounts. For each major I-O industry group, a description of the most important definitions and conventions used to derive output is provided. The tables that follow show how industry output is derived on an “approximate” Standard Industrial Classification (SIC) basis (the basis on which most source data are available) and how this measure is converted to the “traditional” I-O basis.<sup>1</sup> It also shows how commodity output is derived.

Generally, industry output includes all production of establishments classified in an industry as listed in [appendix A](#), beginning on page M–32, and commodity output includes all production of a commodity regardless of the industry that produces it. As noted in the text, although the I-O industries are based on SIC industries, I-O industries reflect numerous redefinitions and reclassifications that are necessary for preparing the total requirements tables.<sup>2</sup>

The measures of industry and commodity output for the I-O accounts are prepared from different types of source data—value of shipments, receipts or revenue, and operating expenses. Value-of-shipments data, adjusted for changes in inventories, are used for goods-producing industries and their related commodities. Receipts or revenue data from goods and services sold are used for most other industries; these data are combined with data on receipts by type of service for the related commodities. A special case is the output of the wholesale and retail trade industries, which is measured generally as the difference between receipts or revenues and the cost of goods sold—this difference is referred to as “margin.”

1. For the 1992 benchmark, the Bureau of Economic Analysis expanded the I-O accounts to include an “alternative” set of industry estimates that are based more closely on the SIC system. For a discussion of the new I-O estimates, see the box “[Alternative I-O Tables](#)” on page M–6.

2. For a discussion of I-O adjustment to SIC-based data, see the section “[Definitions and conventions for classification](#)” on page M–14.

Expense data are used to estimate output when either value-of-shipments data and receipts or revenue data are not available or when output is defined as expenses (for example, the output of nonprofit institutions that serve households).

The tables in this appendix provide information in two columns. The first column shows how industry output is calculated both on an approximate SIC basis and on a traditional I-O basis. The second column shows how commodity output is derived; there is no distinction between SIC-based and I-O-based commodity output. For example, in the table for industry “14. Food and kindred products,” which is part of major industry group “Manufacturing,” the first column shows that the measure for SIC-based industry output is based on industry shipments, including miscellaneous receipts, adjusted for the change in inventories of work-in-process and finished goods. Estimates for undercoverage of source data, for services provided to foreign affiliates, and for manufacturers’ excise taxes are then added, and an estimate for the cost of merchandise resales is subtracted to derive SIC-based industry output.

The traditional measure of I-O industry output for food and kindred products requires four additional adjustments to the SIC-based output measure. These include adding the output for custom slaughter of meat animals (moved from agricultural, forestry, and fishery services, I-O 4), for food processing by wholesalers (moved from wholesale trade, I-O 69A), and for production of bakery products by retailers (moved from retail trade, I-O 69B); and subtracting the margin on merchandise resales (moved to wholesale trade, I-O 69A).

The second column of each table shows how commodity output is derived. Continuing with the same example, the second column shows that the commodity estimate starts with commodity shipments, plus miscellaneous receipts and change in inventories of work-in-process and finished goods. In this case, most of the adjustments to derive the measure of commodity output are similar to those required to derive the measure of I-O industry out-

put, although the industry and commodity measures are not equivalent.

## I-O 1-4 Agriculture, Forestry, and Fisheries

The industry measure of agriculture, forestry, and fisheries output is activity-based rather than establishment-based. This measure is used because the quality of the

data by commodity or product is believed to be better than that available by type of establishment or farm.

When output of agriculture, forestry, and fisheries is estimated on an activity basis, two assumptions are made. First, it is assumed that each agricultural commodity is produced by a single industry. For example, the dairy farm products industry is assumed to produce all milk. Second, it is assumed that agriculture industries produce some secondary products that must be estimated and included in the output measure. For example, the dairy

### 1. Livestock and livestock products

Cash marketings of products  
*Plus:* Change in inventories of finished products  
 Farm-home consumption\*  
 Recreational services  
 Custom work  
 Custom feeding fees  
 Interfarm, intrastate shipments of livestock  
***Equals: SIC-based industry output***  
***Equals: I-O industry output***

I-O industry output  
*Less:* Fur pelts (included in I-O 3)  
 Custom work (included in I-O 4)  
 Farm-home consumption\* (included in I-O 14)  
 Processed bulk milk and packaged milk (included in I-O 14)  
 Slaughtering and processing of meat (included in I-O 14)  
 Recreational services (included in I-O 76)

***Equals: Commodity output***

### 2. Other agricultural products

Cash marketings of products  
*Plus:* Change in inventories of finished products (including CCC collateral)  
 Farm-home consumption\*  
 Produced and consumed feed and seed\*  
 Recreational services  
 Custom work  
 Farm product warehousing and storage for CCC  
 Forest products (including stumpage, Christmas trees, saw logs, and firewood)  
*Less:* Net CCC loans  
***Equals: SIC-based industry output***  
***Equals: I-O industry output***

I-O industry output  
*Less:* Forest products (included in I-O 3)  
 Custom work (included in I-O 4)  
 Saw logs and firewood (included in I-O 20+21)  
 Farm product warehousing and storage for CCC (included in I-O 65B)  
 Recreational services (included in I-O 76)

***Equals: Commodity output***

### 3. Forestry and fishery products

Stumpage, less government production (split between I-O's 2 and 3)  
*Plus:* Christmas trees (split between I-O's 2 and 3)  
 Game preserve products  
 Forest nursery products  
 Forest products (split between I-O's 2 and 3)  
 Fishery landings  
***Equals: SIC-based industry output***  
***Equals: I-O industry output***

I-O industry output  
*Plus:* Fur pelts (from I-O 1)  
 Forest products (from I-O 2)

***Equals: Commodity output***

### 4. Agricultural, forestry, and fishery services

Poultry hatcheries  
 Agricultural services  
 Forestry services  
 Fish hatcheries  
 Landscape and horticultural services  
*Plus:* Employee tips  
 Landscaping services provided by construction establishments (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
***Equals: SIC-based industry output***  
*Plus:* Farm product preparation services (redefined from I-O 69A)  
 Service receipts and labor charges (redefined from 69A)  
 Grooming and boarding of pets at pet shops (redefined from I-O 69B)  
 Landscape services (redefined from I-O's 69B and 73B)  
*Less:* Custom slaughter of meat animals (redefined to I-O 14)  
 Margin on merchandise resales (redefined to I-O 69B)  
***Equals: I-O industry output***

I-O industry output  
*Plus:* Custom work (from I-O's 1 and 2)

***Equals: Commodity output***

\* Imputation

farm industry is assumed to provide recreational services and custom work, as well as to produce food that is processed on farms and then is either consumed or sold by dairy farmers.

Agriculture, forestry, and fisheries output excludes the farm products produced by households and the value of fish and game caught for sport or personal use. It also excludes cash subsidies paid directly to farmers.

The forest products industry in other agricultural products (I-O 2) has no commodity output because its production is considered to be primary to other industries and is therefore moved to commodity groups in forestry and fishery products (I-O 3); agricultural, forestry, and fishery services (I-O 4); and lumber and wood products (I-O 20+21). See the section “**Definitions and conventions for classification,**” beginning on page M-14, for details.

Agricultural, forestry, and fishery services (I-O 4) excludes veterinary services in both the SIC-based and I-O-based measures of industry output. The I-O accounts include these services in health services (I-O 77A).

## I-O 5–10 Mining

The industry measure of mining output is based on the value of shipments, adjusted for changes in inventories of mined or quarried products. Shipments include primary and secondary products and miscellaneous re-

ceipts of establishments with payroll. Estimates are added for nonemployer establishments and for other economic activities not covered by the census of mineral industries—for example, receipts for research and development performed by auxiliaries and paid for by the Federal Government and services provided to foreign affiliates.<sup>3</sup> Output excludes the cost of merchandise resales.

A number of activities defined as mining by the SIC system are defined as construction (I-O’s 11 and 12) by the I-O classification system. The most important of these are mining operations to develop mineral properties—that is, activities resulting in permanent improvements to the mine site. For the “solid” mineral industries (I-O’s 5+6, 7, and 9+10), the following activities are moved from mining to construction: Exploration work, including geophysical and other exploratory surveying; prospect and test drilling; and sinking mine shafts and driving mine tunnels. For the crude petroleum and natural gas industry (I-O 8), the following activities are moved from mining to construction: Cementing, surveying, and acidizing;

3. Two types of establishments are distinguished in the SIC: Operating establishments that primarily produce goods and services for personal or household use or for use by other enterprises, and auxiliary establishments that primarily perform management or support services within the same enterprise. For the I-O accounts, the only receipts of auxiliaries included in the measure of output are from federally funded research and development. The addition to output for services to foreign affiliates is for services included in the balance of payments accounts that are not captured as receipts in census data.

### 5+6. Metallic ores mining

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (redefined to I-O 11)  
 New access structures (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (included in I-O 11)  
 New access structures (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

### 7. Coal mining

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (redefined to I-O 11)  
 New access structures (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (included in I-O 11)  
 New access structures (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**8. Crude petroleum and natural gas**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Force-account construction activity\*  
*Less:* Cost of merchandise resales  
 Oil and gas well drilling (redefined to I-O 11)  
 Oil and gas well repair and maintenance (redefined to I-O 12)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Oil and gas well drilling (included in I-O 11)  
 Ethane, propane, butane, gas mixtures, and other natural gas liquids (included in I-O 31)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**9+10. Nonmetallic minerals mining**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (redefined to I-O 11)  
 New access structures (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of mined or quarried products  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Solid mineral exploration (included in I-O 11)  
 New access structures (included in I-O 11)  
 Potash, soda, and borate minerals (included in I-O 27A)  
 Processed feldspar, mica, talc, and gypsum (included in I-O 36)  
 Barite (included in I-O 36)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

\* Imputation

hydrofracturing; perforating casings; running; cutting; and drilling-in. Drilling operations, such as pumping wells and installation of equipment, are considered to be mining activities and remain in mining.

The margins from reselling activities are moved from mining to wholesale trade (I-O 69A) for I-O-based measures of output. Also, when a product is made by both a mining industry and by a manufacturing industry, the output remains in the industry where it is produced, but the commodity is considered to be a manufacturing commodity. For example, the industry output of processed feldspar is included in the nonmetallic minerals mining industry (I-O 9+10), but the commodity output is included in the manufacturing commodity stone and clay products (I-O 36).

**I-O 11–12 Construction**

The industry measure of construction output is activity-based. All construction work is assumed to be performed by the construction industry, and all other activities of construction industries are moved to other industries. Therefore, industry output and commodity output are the same for construction.

Construction output is measured by type of project or building. It includes receipts from contract construction as well as estimates of force-account construction—that is, construction activities performed by an establish-

ment's own employees.<sup>4</sup> Adjustments are made to exclude double-counting of subcontractors in the source data and to include receipts not reported in the source data, such as the receipts of nonemployers.

Construction includes both new construction and maintenance and repair construction. It includes installations of elevators and other similar structural components, as well as sidewalks, roads, and utility connections, plus plumbing, heating, and electrical work. For utilities, construction estimates are based on data reported to regulatory agencies and include what is designated as structures for those reports. Construction also includes certain types of equipment, such as boilers and overhead traveling cranes, and site-fabricated equipment that is not housed in a building, such as a petroleum refinery or comparable chemical plant. Output also includes various mining-related activities, such as drilling and exploration and improvements to mine sites, which are defined as construction by the I-O classification system and as mining by the SIC system. Engineering and architectural services that are capitalized are also included in new construction output.

4. Force-account construction also includes new residential construction activities by households.

**11. New construction**

Contract construction receipts

*Plus:* Force-account construction activity\*

Revenues of land subdividers and developers

Estimate of undercoverage of source data, including nonemployers

Engineering and architectural services included in value of construction

New construction activities excluded from mining industries (from I-O's 5+6, 7, 8, and 9+10)

Installation receipts of manufacturers (redefined from I-O's 22+23, 36, 40, 46, 49, and 52)

Construction and installation work by wholesalers and retailers (redefined from I-O's 69A and 69B)

Construction receipts of engineering, architectural, and surveying establishments (redefined from I-O 73B)

*Less:* Cost of merchandise resales

Double counting of subcontractors

Landscaping services (redefined to I-O 4)

Millwork (redefined to I-O 20+21)

Paving mixtures (redefined to I-O 31)

Concrete products and ready-mix concrete (redefined to I-O 36)

Fabricated structural metal and sheet metal work (redefined to I-O 40)

Trucking receipts (redefined to I-O 65B)

Margin on merchandise resales (redefined to I-O's 69A and 69B)

Property management receipts (redefined to I-O 71B)

Engineering and architectural services (redefined to I-O 73B)

Equipment rental (redefined to I-O 73C)

***Equals:* SIC-based industry output*****Equals:* I-O industry output**

I-O industry output

***Equals:* Commodity output****12. Maintenance and repair construction**

Contract construction receipts

*Plus:* Force-account construction activity\*

Estimate of undercoverage of source data, including nonemployers

Maintenance and repair construction activities excluded from mining industries (redefined from I-O 8)

Construction receipts of property managers (redefined from I-O 71B)

Repair of central air-conditioning equipment (redefined from I-O 72B)

Construction receipts from services to dwellings and other buildings (redefined from I-O 73C)

*Less:* Repair services (redefined to I-O 73C)***Equals:* SIC-based industry output*****Equals:* I-O industry output**

I-O industry output

***Equals:* Commodity output**

\* Imputation

## I-O 13–64 Manufacturing

The industry measure of manufacturing output is generally based on the value of shipments, adjusted for change in inventories of work-in-process and of finished goods. Shipments include primary and secondary products and miscellaneous receipts of establishments with payroll.<sup>5</sup> Estimates are added for nonemployer establishments, for receipts from other economic activities not covered by the census of manufactures (for example, for receipts from research and development performed by auxiliaries

and paid for by the Federal Government and for services provided to foreign affiliates), and for excise taxes levied directly on manufacturers. Finally, the cost of merchandise resales are subtracted.

The I-O-based and SIC-based measures of manufacturing industry output are significantly different for some industries. These industries include food and kindred products (I-O 14), where bakery products produced by grocery stores and retail bakeries and prepared animal feeds mixed by wholesalers are included in the I-O measure of industry output but not in the SIC-based measure; and broad and narrow fabrics, yarn and thread mills (I-O 16), where commission finishing by wholesalers is included in the I-O measure but not in the SIC-based measure. Additionally, margins on reselling activities are

5. For a few industries, the value of production is reported rather than the value of shipments in the census of manufactures; for these industries, an adjustment is made to finished product inventories to convert back to a shipments concept. For the 1992 census of manufactures, the value of production was reported for the following SIC industries: 2032, 2033, 2035, 2037, 2038, 2085, 2091, 2092, 2111, 2121, 2131, 2141, and 3731.

moved to wholesale trade (I-O 69A) for the I-O measure but not for the SIC-based measure.

The commodity measure of manufacturing output is generally based on value of shipments wherever made, adjusted for change in inventories. It excludes sales of scrap, which are moved to the commodity scrap (I-O 81).

By convention, some manufacturing commodities have no output because they are considered to be primary products of other industries, and therefore their outputs are moved to the commodity groups of the primary-producing industries. See the section “**Definitions and conventions for classification**,” beginning on page M-14, for more details. These manufacturing commodities include the following: Knit outerwear mills, knit underwear and nightwear mills, and knitting mills, n.e.c.,

are moved to apparel made from purchased materials, another detailed commodity group within apparel (I-O 18), and to housefurnishings, n.e.c., a detailed commodity group within miscellaneous fabricated textile products (I-O 19); fertilizers, mixing only, is moved to nitrogenous and phosphatic fertilizers, both of which are in agricultural fertilizers and chemicals (I-O 27B); cold-rolled steel sheet, strip, and bars and steel pipe and tubes are moved to blast furnaces and steel mills, all of which are included in primary iron and steel manufacturing (I-O 37); and secondary nonferrous metals are moved to primary smelting and refining of copper, primary aluminum, and primary nonferrous metals, n.e.c., and copper foundries and nonferrous castings, n.e.c., are moved to aluminum castings, all of which are included in primary nonferrous metals manufacturing (I-O 38).

### 13. Ordnance and accessories

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

### 14. Food and kindred products

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Custom slaughter of meat animals (redefined from I-O 4)  
 Food processing by wholesalers (redefined from I-O 69A)  
 Bakery products baked by retailers (redefined from I-O 69B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Farm-home consumption (from I-O 1)  
 Processed foods produced on farms (from I-O 1)  
 Custom slaughter of meat animals (from I-O 4)  
 Food processing by wholesalers (from I-O 69A)  
 Bakery products baked by retailers (from I-O 69B)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

### 15. Tobacco products

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Tobacco stemming and redrying at wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Manufacturers' excise taxes  
 Tobacco stemming and redrying at wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**16. Broad and narrow fabrics, yarn and thread mills**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Commission finishing by wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Commission finishing by wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Miscellaneous housefurnishings (included in I-O 19)  
 Textured, crimped, or bulked filament yarns made from purchased yarns (included in I-O 28)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**17. Miscellaneous textile goods and floor coverings**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**18. Apparel**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Custom made garments (redefined from I-O 69B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Dressed and dyed furs (from I-O 64)  
 Custom made garments (from I-O 69B)  
*Less:* Cost of merchandise resales  
 Miscellaneous housefurnishings (included in I-O 19)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**19. Miscellaneous fabricated textile products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Miscellaneous housefurnishings (from I-O's 16 and 18)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**20+21. Lumber and wood products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Logs and bolts\*  
 Millwork (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Millwork (redefined from 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Logs and bolts\*  
 Saw logs and firewood (from I-O 2)  
 Bark and mill residue (from I-O 24)  
 Millwork (from I-O's 11 and 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**22+23. Furniture and fixtures**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**24. Paper and allied products, except containers**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Service receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Service receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Bark and mill residue (included in I-O 20+21)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**25. Paperboard containers and boxes**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**26A. Newspapers and periodicals**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Advertising receipts (included in I-O 73D)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**26B. Other printing and publishing**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Printing by wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Printing by wholesalers (from I-O 69A)  
 Printing by direct mail advertisers (from I-O 73C)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Lithographic printing of advertising, including calendar, map, and newspaper (included in I-O 73D)  
 Telephone directory, shopping news, catalog, and directory printing and publishing (included in I-O 73D)  
 Letterpress and screen printing for advertising (included in I-O 73D)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**27A. Industrial and other chemicals**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Adjustment for government-owned, company-operated establishments  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise tax  
 Adjustment for government-owned, company-operated establishments  
 Potash, soda, and borate minerals (from I-O 9+10)  
 Aromatics and liquefied refinery gases, made in refineries, for chemical uses (from I-O 31)  
 Coke oven tar (from I-O 37)  
*Less:* Cost of merchandise resales  
 Aromatics and liquefied refinery gases, not made in refineries, not for chemical uses (included in I-O 31)  
 Aluminum oxide (included in I-O 38)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**27B. Agricultural fertilizers and chemicals**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Ammonia (from I-O 37)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**28. Plastics and synthetic materials**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Textured, crimped, or bulked filament yarns made from purchased yarns (from I-O 16)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**29A. Drugs**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**29B. Cleaning and toilet preparations**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**30. Paints and allied products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**31. Petroleum refining and related products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Paving mixtures (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Ethane, propane, butane, gas mixtures, and other natural gas liquids (from I-O 8)  
 Paving mixtures (from I-O 11)  
 Aromatics and liquefied refinery gases, not made in refineries, not for chemical uses (from I-O 27A)  
*Less:* Cost of merchandise resales  
 Aromatics and liquefied refinery gases, made in refineries, for chemical uses (included in I-O 27A)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**32. Rubber and miscellaneous plastics products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**33+34. Footwear, leather, and leather products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**35. Glass and glass products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**36. Stone and clay products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Concrete products and ready-mix concrete (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Processed feldspar, mica, talc, and gypsum (from I-O 9+10)  
 Barite (from I-O 9+10)  
 Concrete products and ready-mix concrete (from I-O 11)  
 South Dakota Cement Plant sales (from I-O 79)  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**37. Primary iron and steel manufacturing**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Coke oven tar (included in I-O 27A)  
 Ammonia (included in I-O 27B)  
 Ferrous wire products made in wiredrawing plants (included in I-O 42)  
 Coke oven gas (included in I-O 68B)  
 Margin on merchandise resales (included in 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**38. Primary nonferrous metals manufacturing**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Aluminum oxide (from I-O 27A)  
 Apparatus wire and cordage (from I-O 58)  
*Less:* Cost of merchandise resales  
 Nonferrous wire cloth (included in I-O 42)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**39. Metal containers**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**40. Heating, plumbing, and fabricated structural metal products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Fabricated structural metal and sheet metal work (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Fabricated structural metal and sheet metal work (from I-O 11)  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**41. Screw machine products and stampings**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**42. Other fabricated metal products**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Plus:* Service receipts (redefined from I-O 69A)  
 Jewelry engraving (redefined from I-O 69B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Ferrous wire products made in wiredrawing plants (from I-O 37)  
 Nonferrous wire cloth (from I-O 38)  
 Service receipts (from I-O 69A)  
 Jewelry engraving (from I-O 69B)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**43. Engines and turbines**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**44+45. Farm, construction, and mining machinery**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals:* SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals:* I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Equipment rental and leasing (included in I-O 73C)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals:* Commodity output**

**46. Materials handling machinery and equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**47. Metalworking machinery and equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**48. Special industry machinery and equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**49. General industrial machinery and equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**50. Miscellaneous machinery, except electrical**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**51. Computer and office equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals: SIC-based industry output***  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals: I-O industry output***

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Computer-related services, including packaged software (included in I-O 73A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals: Commodity output***

**52. Service industry machinery**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Installation receipts (redefined to I-O 11)  
***Equals: SIC-based industry output***  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals: I-O industry output***

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Installation receipts (included in I-O 11)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals: Commodity output***

**53. Electrical industrial equipment and apparatus**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals: SIC-based industry output***  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals: I-O industry output***

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
***Equals: Commodity output***

**54. Household appliances**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals: SIC-based industry output***  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
***Equals: I-O industry output***

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
***Equals: Commodity output***

**55. Electric lighting and wiring equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
***Equals: SIC-based industry output***  
*Less:* Margin on merchandise resales (redefined to I-O 69A)

***Equals: I-O industry output***

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
***Equals: Commodity output***

**56. Audio, video, and communication equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Prerecorded video tapes (included in I-O 76)  
**Equals: Commodity output**

**57. Electronic components and accessories**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**58. Miscellaneous electrical machinery and supplies**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Custom built parts (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Custom built parts (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Apparatus wire and cordage (included in I-O 38)  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**59A. Motor vehicles (passenger cars and trucks)**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Vehicles produced on purchased chassis (from I-O 59B)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**59B. Truck and bus bodies, trailers, and motor vehicles parts**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
 Vehicles produced on purchased chassis (included in I-O 59A)  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**60. Aircraft and parts**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**61. Other transportation equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Railroad equipment manufactured for own use by railroads (redefined from I-O 65A)  
 Boat repair at marinas (redefined from I-O 65C)  
 Boat repair at boat dealers (redefined from I-O 69B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Railroad equipment manufactured for own use by railroads (from I-O 65A)  
 Boat repair at marinas (from I-O 65C)  
 Boat repair at boat dealers (from I-O 69B)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**62. Scientific and controlling instruments**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**63. Ophthalmic and photographic equipment**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Installation receipts of wholesalers (redefined from I-O 69A)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Installation receipts of wholesalers (from I-O 69A)  
*Less:* Cost of merchandise resales  
 Margin on merchandise resales (included in I-O 69A)  
**Equals: Commodity output**

**64. Miscellaneous manufacturing**

Industry shipments, including miscellaneous receipts  
*Plus:* Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Lapidary work (redefined from I-O 69A)  
 Cutting and setting stones to order (redefined from I-O 69B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

Commodity shipments  
*Plus:* Miscellaneous receipts  
 Change in inventories of work-in-process and finished goods  
 Estimate of undercoverage of source data, including nonemployers  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Manufacturers' excise taxes  
 Lapidary work (from I-O 69A)  
 Cutting and setting stones to order (from I-O 69B)  
*Less:* Cost of merchandise resales  
 Dressed and dyed furs (included in I-O 18)  
 Margin on merchandise resales (included in I-O 69A)  
 Advertising displays and specialties (included in I-O 73D)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

## I-O 65A–68C Transportation, Communications, and Utilities

The industry measure of transportation, communications, and utilities output is based on revenues of establishments with and without payroll, plus estimates for tips received by employees and for economic activities not covered by the census of transportation, communications, and utilities. Government subsidies are not included.

For railroads and related services, passenger ground transportation (I-O 65A), industry and commodity output include Amtrak revenues, which are not separately identified in the table but which are added to the census data. Commodity output also includes the Long Island Railroad and Alaska Railroad and publicly owned local transit systems, which are moved from State and local government enterprises (I-O 79).

For motor freight transportation and warehousing (I-O 65B), the I-O-based measure of industry output and the measure of commodity output include delivery and storage revenues, which are moved from retail trade (I-O 69B). Commodity output also includes express and freight revenues of bus companies, which are moved from the commodity railroads and related services, passenger ground transportation (I-O 65A), but it excludes revenues for trash and garbage hauling, which are moved to the commodity water and sanitary services (I-O 68C). Output does not include transportation services produced by businesses for their own use.<sup>6</sup>

For water transportation (I-O 65C), the I-O-based measure of industry output and the measure of commodity output include docking at boat dealers, which is moved from retail trade (I-O 69B), but exclude boat repairs and the margin on merchandise sales at marinas, which are moved to other transportation equipment (I-O 61) and retail trade (I-O 69B), respectively. Commodity output also includes the revenues of the Alaska Ferry, which are moved from State and local government enterprises (I-O 79).

For air transportation (I-O 65D), industry and commodity output include excise taxes on freight and passenger transportation and air travel facilities. Commodity output also includes landing and other fees collected by State and local government airports, which are moved from State and local government enterprises (I-O 79).

For pipelines, freight forwarders, and related services (I-O 65E), industry and commodity output include

the pipeline transportation of petroleum and other commodities, excluding natural gas. For freight forwarders, industry output includes revenues for transportation services; commodity output excludes the transportation services, which are moved to the various transportation service commodities.

For communications, except radio and TV (I-O 66), industry and commodity output include Federal and State and local government excise taxes on telephone and telegraph services, installation revenues, and the imputed value of installations performed by an establishment's own workers. The I-O-based measure of industry output and the measure of commodity output exclude revenues from directory advertising, which are moved to advertising (I-O 73D). Commodity output also excludes cable and pay TV advertising revenues, which are also moved to advertising (I-O 73D).

For radio and TV broadcasting (I-O 67), SIC-based and I-O-based industry output include advertising revenues. Commodity output excludes advertising revenues, which are moved to advertising (I-O 73D).

For electric services (utilities) (I-O 68A), industry and commodity output exclude electricity that is resold and rate refunds.<sup>7</sup> Commodity output also includes electricity generated by Federal Government enterprises (I-O 78) and State and local government enterprises (I-O 79).

For gas production and distribution (utilities) (I-O 68B), industry and commodity output include gas sold to final users, gas sold for resale, and natural gas pipeline transportation costs; industry output includes only private establishments. Commodity output also includes sales of gas by State and local government utilities (I-O 79). Output does not include natural gas used as a raw material.

For water and sanitary services (I-O 68C), industry output includes only private establishments. Commodity output excludes private sewerage systems, which are moved to State and local government enterprises (I-O 79). Commodity output includes the revenues of State and local government water utilities, which are moved from State and local government enterprises (I-O 79), and the value of trash hauled by trucking firms, which is moved from motor freight transportation and warehousing (I-O 65B).

6. See Bingsong Fang, Xiaoli Han, Ann M. Lawson, and Sherlene K.S. Lum, "U.S. Transportation Satellite Accounts for 1992," SURVEY 78 (April 1998): 16–27. The study introduces a new industry, "own-account transportation." The output of this new industry is identified as the aggregation of transportation services provided by all industries for their own use.

7. For electricity, the 1992 Census of Transportation, Communications, and Utilities did not contain information on purchases of electricity for resale, so other sources were used. The data used include revenues from both imported and domestically produced electricity, so imports were removed to measure domestic output.

**65A. Railroads and related services; passenger ground transportation**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Manufacture of own railroad equipment\*  
 Scrap revenue  
 Tips on taxicab service  
 Tips on railroad food service  
 Rental payments to US railroads by foreign residents  
*Less:* Rental income (redefined to I-O 71B)  
 Rental payments by US railroads to foreign residents  
**Equals: SIC-based industry output**  
*Less:* Manufacture of own railroad equipment\* (redefined to I-O 61)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Freight forwarder rail transportation (from I-O 65E)  
 Long Island Railroad freight revenue (from I-O 79)  
 Alaska Railroad operating revenue (from I-O 79)  
 Publicly-owned local transit revenue (from I-O 79)  
*Less:* Express and freight revenue of transit companies (included in I-O 65B)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

**65B. Motor freight transportation and warehousing**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Taxes on services  
 Employee tips  
 Trucking receipts of construction firms (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
 Rental income (redefined to I-O 71B)  
**Equals: SIC-based industry output**  
*Plus:* Warehousing revenue of wholesalers (redefined from I-O 69A)  
 Delivery charges of retailers (redefined from I-O 69B)  
 Storage charges of retailers (redefined from I-O 69B)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Farm product warehousing and storage (from I-O 2)  
 Express revenue of local bus industry (from I-O 65A)  
 Freight revenue of intercity bus industry (from I-O 65A)  
 Freight forwarder truck transportation (from I-O 65E)  
 Freight forwarder warehousing (from I-O 65E)  
 Truck rental with drivers (from I-O 75)  
*Less:* Trash and garbage hauling (included in I-O 68C)  
**Equals: Commodity output**

**65C. Water transportation**

Revenue of establishments with payroll  
*Plus:* Domestic imported water freight revenues  
 Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Taxes on merchandise sales  
 Federal excise tax on cruise ship receipts  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Docking services (redefined from I-O 69B)  
 Cleaning and maintenance of boats (redefined from I-O 69B)  
*Less:* Boat repair at marinas (redefined to I-O 61)  
 Margin and taxes on merchandise resales (redefined to I-O 69B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Freight forwarder water transportation (from I-O 65E)  
 Marine cargo handling (from I-O 79)  
 Alaska Ferry passenger transportation receipts (from I-O 79)  
**Equals: Commodity output**

**65D. Air transportation**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Federally funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Federal taxes on air fares, air freight, and air facilities  
 Employee tips  
**Equals: SIC-based industry output**  
*Plus:* Charter services by wholesalers (redefined from I-O 69A)  
 Services, including labor and parts, provided by wholesalers and retailers (redefined from I-O's 69A and 69B)  
 Aircraft storage by retailers (redefined from I-O 69B)  
*Less:* Aircraft rental or leasing (redefined to I-O 73C)  
 Flight training and instruction (redefined to I-O 77B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Freight forwarder air transportation (from I-O 65E)  
 Landing fees and other revenue of State and local government airports (from I-O 79)  
**Equals: Commodity output**

**65E. Pipelines, freight forwarders, and related services**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Services provided to foreign affiliates  
 Sales taxes  
*Less:* Rental receipts (redefined to I-O 71B)  
**Equals: SIC-based industry output**  
*Plus:* Pipeline transportation (redefined from I-O 69A)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Packing and crating for shipping (from I-O 73C)  
*Less:* Freight forwarder rail transportation (included in I-O 65A)  
 Freight forwarder truck transportation (included in I-O 65B)  
 Freight forwarder warehousing (included in I-O 65B)  
 Freight forwarder water transportation (included in I-O 65C)  
 Freight forwarder air transportation (included in I-O 65D)  
**Equals: Commodity output**

**66. Communications, except radio and TV**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Federal excise taxes on telephone services  
 State and local excise taxes on telephone services  
 Force account installation\*  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Less:* Margin and taxes on merchandise resales (redefined to I-O's 69A and 69B)  
 Telephone directory advertising revenue (redefined to I-O 73D)  
**Equals: I-O industry output**

I-O industry output  
*Less:* Cable and pay TV advertising revenue (included in I-O 73D)

**Equals: Commodity output****67. Radio and TV broadcasting**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
**Equals: SIC-based industry output**  
**Equals: I-O industry output**

I-O industry output  
*Less:* Advertising revenue of radio and TV broadcasting (included in I-O 73D)

**Equals: Commodity output****68A. Electric services (utilities)**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Taxes  
*Less:* Cost of merchandise resales  
 Cost of purchased power  
 Rate refunds to consumers  
 Imports from Mexico and Canada  
 Rental income (redefined to I-O 71B)  
 Royalty receipts (redefined to I-O 71B)  
**Equals: SIC-based industry output**  
*Plus:* Electricity sales by gas utilities (redefined from I-O 68B)  
*Less:* Gas sales by electric utilities (redefined to I-O 68B)  
 Water sales by electric utilities (redefined to I-O 68C)  
 Margin on merchandise resales (redefined to I-O 69B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Federal electric utility revenues, adjusted for cost of purchased power (from I-O 78)  
 State and local electric utility revenues, adjusted for cost of purchased power (from I-O 79)  
*Less:* Sales of steam (included in I-O 68C)

**Equals: Commodity output****68B. Gas production and distribution (utilities)**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
 Taxes  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Gas sales by electric utilities (redefined from I-O 68A)  
*Less:* Electricity sales by gas utilities (redefined to I-O 68A)  
 Water and steam sales by gas utilities (redefined to I-O 68C)  
 Margin on merchandise resales (redefined to I-O 69B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Coke oven gas (from I-O 37)  
 State and local government gas revenue (from I-O 79)

**Equals: Commodity output****68C. Water and sanitary services**

Revenue of establishments with payroll  
*Plus:* Estimate of undercoverage of source data, including nonemployers  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Water sales by electric utilities (redefined from I-O 68A)  
 Water and steam sales by gas utilities (redefined from I-O 68B)  
*Less:* Margin on merchandise resales (redefined to I-O 69A)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Trash and garbage hauling (from I-O 65B)  
 Steam sales by electric and gas utilities (from I-O's 68A and 68B)  
 Water sales by gas utilities (from I-O 68B)  
 State and local water utility revenue (from I-O 79)  
*Less:* Private sewerage system revenues (included in I-O 79)  
 Sales of scrap and refuse (included in I-O 81)  
**Equals: Commodity output**

\* Imputation

## I-O 69A-69B Wholesale and Retail Trade

The industry measure of wholesale and retail trade output is based on the sum of margins on goods bought and resold and nonmargin output.<sup>8</sup> For wholesale trade, margin is measured as receipts less the cost of merchandise resales plus taxes collected or, when receipts data are not available, as operating expenses plus taxes collected. Nonmargin output is measured as commissions on goods sold or as operating expenses for manufacturers' sales offices. It also includes all customs duties on imports.

For wholesale trade, margin output is included in the purchasers' prices of the goods but not in the producers'

8. The definitions and different treatments of trade output are discussed in detail in "Definitions and conventions for valuation of transactions" on page M-15.

prices of those goods. It is distributed to commodities and their purchasers using census information on the goods sold through wholesale establishments.

In contrast, nonmargin output is assumed to be purchased by producers of the goods being sold (for example, commissions paid to agents and brokers by the manufacturers of products). Therefore, it is included in the producers' prices of the goods sold and is not purchased separately by the purchaser of the good.

Output excludes government liquor stores, which are included in State and local government enterprises (I-O 79), and service contracts of wholesalers, which are assumed to be included in revenues of the related manufacturing or service industry.

The SIC-based and I-O wholesale measures of industry output are significantly different. These differences generally involve margin output from resale activities by

### 69A. Wholesale trade

Receipts of merchant wholesalers and agents and brokers on own-account

*Plus:* Commissions of agents and brokers  
Expenses of manufacturers' sales branches and offices  
Customs duties on imports  
Estimate of undercoverage of source data, including nonemployers  
Federally-funded research and development at auxiliaries  
Services provided to foreign affiliates  
Sales taxes collected by wholesalers  
Excise taxes levied on wholesalers  
Margin on merchandise resales by construction (redefined from I-O 11)

*Less:* Cost of merchandise resales for merchant wholesalers and agents and brokers on own account  
Service contracts (to avoid double counting)  
Government enterprise liquor stores (to avoid double counting)  
Construction and installation work (redefined to I-O 11)

#### **Equals: SIC-based industry output**

*Plus:* Margin on merchandise resales occurring in non-trade industries

*Less:* Farm product preparation services (redefined to I-O 4)  
Service receipts and labor (redefined to I-O's 4 and 24)  
Food processing (redefined to I-O 14)  
Tobacco stemming and redrying (redefined to I-O 15)  
Commission finishing (redefined to I-O 16)  
Millwork (redefined to I-O 20+21)  
Installation of furniture and fixtures (redefined to I-O 22+23)  
Printing work (redefined to I-O 26B)  
Custom built parts (redefined to I-O 58)  
Installation of equipment (redefined to I-O's 42, 47, 51, 52, 56, 60, 62, 63)  
Lapidary work (redefined to I-O 64)  
Warehousing revenues (redefined to I-O 65B)  
Aircraft charter services (redefined to I-O 65D)  
Repair of aircraft, including parts (redefined to I-O 65D)  
Pipeline transportation (redefined to I-O 65E)  
Personal and repair services, including taxes (redefined to I-O 72B)  
Computer services, including taxes (redefined to I-O 73A)  
Equipment rental, including taxes (redefined to I-O 73C)  
Repair services, including parts and taxes (redefined to I-O 73C)  
Photocopying (redefined to I-O 73C)  
Automotive repair services, including parts and taxes (redefined to I-O 75)  
Auto and truck rental (redefined to I-O 75)  
Rental of recreational equipment (redefined to I-O 76)  
Veterinary services (redefined to I-O 77A)  
Flight training (redefined to I-O 77B)

#### **Equals: I-O industry output**

I-O industry output

#### **Equals: Commodity output**

SIC-based mining, manufacturing, and service industries that are moved to the I-O wholesale trade industry, as well as manufacturing and service activities by SIC-based wholesale trade that are moved to the I-O manufacturing and service industries.

For retail trade, margin output is measured as receipts less the cost of merchandise resales plus taxes collected. Nonmargin output, which is relatively small, is generally based on revenues from mailing and handling charges. Output excludes revenues from service contracts because they are assumed to be included in the revenues of the related manufacturing or service industry. The commodity output for retail trade includes margin output from

Federal Government enterprise establishments (for example, margin output generated by post exchanges, which is moved to retail from other Federal Government enterprises, I-O 78), and margin output from State and local government enterprise establishments (for example, margin output generated by State-owned liquor stores, which is moved to retail from other State and local government enterprises, I-O 79).

Retail margin is distributed to commodities by type of purchaser, using census information on the goods sold through retail establishments. Retail margin is largely distributed to household consumers, although some is distributed to businesses. For example, some businesses buy

### 69B. Retail trade

Receipts of establishments with and without payroll

*Plus:* Estimate of undercoverage of source data

Federally-funded research and development at auxiliaries

Services provided to foreign affiliates

Sales tax collected by retailers

Excise tax levied on retailers

Tips on beauty and barber shop services

Tips on meals and snacks

Margin on merchandise resales by construction (redefined from I-O 11)

*Less:* Cost of merchandise resales

Commissions on sale of credit life insurance

Photofinishing and other services contracted out (to avoid double counting)

Service contracts (to avoid double counting)

Government enterprise liquor stores (to avoid double counting)

Construction and installation work (redefined to I-O 11 and 12)

Space and mobile home rental receipts (redefined to I-O 71B)

#### ***Equals:* SIC-based industry output**

*Plus:* Margin on merchandise resales and vending machine sales by nonretail establishments (redefined from I-O's 4, 65C, 66, 68A, 68B, 71B, 72A, 72B, 73A, 73B, 73C, 73D, 74, 75, 76, 77A, and 77B)

*Less:* Grooming and boarding of pets (redefined to I-O 4)

Landscape services (redefined to I-O 4)

Bakery products baked by retailers (redefined to I-O 14)

Custom made garments (redefined to I-O 18)

Jewelry engraving (redefined to I-O 42)

Boat repair (redefined to I-O 61)

Cutting and setting stones to order (redefined to I-O 64)

Delivery and storage charges (redefined to I-O 65B)

Cleaning and maintenance of boats (redefined to I-O 65C)

Docking services (redefined to I-O 65C)

Aircraft repair (redefined to I-O 65D)

Aircraft storage receipts (redefined to I-O 65D)

Commissions for arrangement of auto financing (redefined to I-O 70A)

Personal and repair services, including taxes (redefined to I-O 72B)

Computer services, including taxes (redefined to I-O 73A)

Miscellaneous business services (redefined to I-O 73C)

Other repair and related services (redefined to I-O 73C)

Equipment rental receipts (redefined to I-O 73C)

Photofinishing in retail establishments (redefined to I-O 73C)

Meal and beverage receipts (redefined to I-O 74)

Automotive repair services, including parts and taxes (redefined to I-O 75)

Auto and truck rental (redefined to I-O 75)

Video tape rental (redefined to I-O 76)

Coin-operated amusement devices (redefined to I-O 76)

Sports instruction and rental of recreational equipment (redefined to I-O 76)

Medical services of optometrists (redefined to I-O 77A)

Boat operation, flight, music, camera, and sewing instruction (redefined to I-O 77B)

#### ***Equals:* I-O industry output**

I-O industry output

*Plus:* Margin on sales at government enterprise establishments (from I-O's 78 and 79)

#### ***Equals:* Commodity output**

computers through retail establishments, and many lumber yards are considered retail establishments although they sell to construction firms.

The SIC-based and I-O retail measures of industry output are also significantly different, because there are many activities that are moved from the SIC-based retail trade industry to the I-O industries where the activities are primary. Generally, these movements involve services provided by SIC-based retail trade establishments that are moved to the I-O service industries where the activities are primary and retail activities in SIC-based service industries that are included in the I-O retail industry.

Eating and drinking places, which are classified as part of retail trade in the SIC system, are included in services for both the SIC-based and the I-O measures of industry and commodity output.

## I-O 70A–71B Finance, Insurance, and Real Estate

The industry measure of finance, insurance, and real estate output is based on several different types of data and estimating methods. Some estimates are activity-based, and others are establishment-based. For finance (I-O 70A), output is generally based on monetary income (excluding capital gains and interest income), plus imputations for service charges of financial intermediaries, except life insurance carriers and private noninsured pension plans.<sup>9</sup> For insurance (I-O 70B), output of life insurance is generally based on operating expenses, and that of other insurance is generally based on premiums collected less claims paid. For owner-occupied dwellings (I-O 71A), output is based on an imputation for services of owner-occupied housing. For real estate and royalties (I-O 71B), output is based on revenues of commercial establishments but also includes rental activity in all other industries as well as an imputation for the rental value of buildings and equipment owned and used by nonprofit

institutions serving individuals. Output does not include activities of land subdividers and developers, which are included in the construction industry (I-O 11).

For finance, output includes monetary income but excludes capital gains and interest income. Output also includes imputations for service charges of financial intermediaries and for services furnished without payment by domestic securities dealers, plus an estimate of undercoverage of auto leasing revenues in the economic census data. Output for security and commodity brokers was estimated largely using Securities and Exchange Commission data.

Insurance includes both life insurance and all other insurance. For life insurance (including private pension funds), output is based on operating expenses; the fraternal benefit societies and mutual savings banks component is based on premiums collected less claims paid. For all other insurance, output is generally based on premiums collected less claims paid. Commodity output also includes Federal crop and flood insurance and Overseas Private Investment Corporation insurance, which are moved from Federal Government enterprises (I-O 78), and miscellaneous insurance trusts, which are moved from State and local government enterprises (I-O 79).

For owner-occupied dwellings, output is based on an imputed value of the space rent that homeowners would receive if they rented their homes. The imputed space rent does not cover major appliances, furniture, furnishings, and utilities for the home. Owner-occupied dwellings are thus treated as businesses that purchase housing and sell housing services to persons, similar to tenant-occupied dwellings. Dwellings include owner-occupied mobile homes, owner-occupied farm and nonfarm dwellings, and farm dwellings provided to hired laborers.

For real estate, industry output is measured on an activity basis rather than an establishment basis. The output measure is based on revenue data and then augmented to include all rental activity of other industries. Output includes rents, commissions, property management fees, and title abstract and escrow fees. Commodity output also includes rental activity by government enterprises.

For dwellings and equipment owned and used by nonprofit institutions serving individuals, output is defined as an imputed rental charge. It is measured as net interest (mortgage interest), property taxes, and capital consumption allowances.

For royalties, the measures of industry and commodity output are based on receipts for individuals, partnerships, corporations, and governments, adjusted for misreporting. Output includes royalty payments received by nonprofits serving individuals and depletion claimed

9. For intermediaries, output consists of priced services (check collection, wire, transfer, clearing houses, etc.) and reimbursements from the U.S. Treasury for services provided by Federal Reserve banks and imputed service charges. These imputed charges represent charges that the intermediaries do not collect explicitly. An example of this would be checking accounts, for which no regular fee is charged. A bank is considered to receive an imputed charge from the depositor for services for which he does not pay an explicit charge. Imputed service charges are generally measured as monetary interest received less monetary interest paid. These charges are included in the output of the intermediaries and as purchases by depositor—intermediate expenses of businesses or final purchases by persons, governments, or foreigners. In addition, the intermediary pays an imputed interest to the depositors. For more information on imputations, see U.S. Department of Commerce, Bureau of Economic Analysis, *Personal Consumption Expenditures*, Methodology Paper Series MP-6 (Washington, DC: U.S. Government Printing Office, June 1990): 8–12.

**70A. Finance**

Revenue of establishments with payroll  
*Plus:* Imputed service charges of Federal Reserve Banks, central depository institutions, commercial banks, savings institutions, and credit unions\*  
 Estimate of undercoverage of source data, including nonemployers  
*Less:* Interest income  
 Gains (losses) on assets sold or traded  
 Interest and capital gains on trading accounts  
 Net investment income  
 Finance leasing income  
 Loan discount fee income  
***Equals: SIC-based industry output***  
*Plus:* Commissions received for arrangement of financing (redefined from I-O 69B)  
*Less:* Computer processing receipts of self-regulatory organizations (redefined to I-O 73A)  
***Equals: I-O industry output***

I-O industry output  
*Plus:* North Dakota Bank revenue (from I-O 79)  
*Less:* Insurance commissions (included in I-O 70B)  
 Auto and truck leasing (included in I-O 75)

***Equals: Commodity output***

**70B. Insurance**

Revenue of insurance agents, brokers, and services  
*Plus:* Operating expenses and profits of U.S. legal reserve life insurance companies for life insurance activity  
 Expenses of branches of foreign life insurance companies operating in the U.S.  
 Life insurance premiums of fraternal benefit societies and mutual savings banks less benefits paid  
 Premiums earned less claims paid for non-life insurance  
 Administrative costs of Medicare, Medicaid, and CHAMPUS programs  
 Estimate of undercoverage of source data, including nonemployers  
 Capital consumption adjustment for tax-exempt establishments  
 Expenses of private pension funds  
*Less:* Expenses of foreign branches of U.S. life insurance companies  
 Dividends paid to policyholders  
 Savings and investment portion of fraternal benefit society life insurance premiums  
 Rental income  
***Equals: SIC-based industry output***  
*Less:* Real estate brokerage fees and commissions (redefined to I-O 71B)  
***Equals: I-O industry output***

I-O industry output  
*Plus:* Commissions and fees from insurance sales (from I-O's 70A and 71B)  
 Federal crop, flood, and OPIC insurance revenues less claims paid (from I-O 78)  
 Miscellaneous insurance trust revenues less claims paid (from I-O 79)

***Equals: Commodity output***

**71A. Owner-occupied dwellings**

Rental value of owner-occupied permanent site and mobile homes, excluding utilities\*  
*Plus:* Rental value of farm dwellings provided to farm laborers\*  
***Equals: SIC-based industry output***  
***Equals: I-O industry output***

I-O industry output

***Equals: Commodity output***

**71B. Real estate and royalties**

Revenue of real estate establishments with payroll  
*Plus:* Rental value of buildings and equipment owned and used by nonprofits serving individuals\*  
 Royalty receipts of individuals, fiduciaries, businesses, and governments  
 Estimate of undercoverage of source data, including nonemployers  
 Estimate of rental income of all other industries  
 Imputed real estate commissions on sales of new homes by the construction industry\*  
 Depletion claimed by tax-exempt farmers' co-ops  
 Property management performed by construction establishments (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
 Investment and interest income  
 Value of land sold  
 Oil bonus payments for oil rights  
 Construction receipts of property managers (redefined to I-O 12)  
***Equals: SIC-based industry output***  
*Plus:* Real estate brokerage fees and commissions (redefined from I-O 70B)  
*Less:* Margin on merchandise resales (redefined to I-O 69B)  
 Guestroom and unit rentals to transients (redefined to I-O 72A)  
***Equals: I-O industry output***

I-O industry output  
*Plus:* Rental receipts of government enterprises (from I-O's 78 and 79)  
 Residential guestroom rentals (from I-O 72A)  
*Less:* Insurance commissions (included in I-O 70B)

***Equals: Commodity output***

by tax-exempt farmers' co-ops; it excludes oil bonus payments for oil rights.

## I-O 72A-77B Services

The industry measure of services output is generally based on receipts of establishments with and without payroll, plus estimates for tips received by employees and for taxes collected. For nonprofit establishments serving individuals, output is based on expenses. Output also includes estimates for payments in-kind, for misreporting, and for other economic activities not covered by the census of service industries. It excludes the cost of merchandise resales.

For some services, the I-O-based and SIC-based measures of output are significantly different. The most important of these is for receipts for purchased meals and beverages at hotels, which are included in the SIC-based measure of hotels and lodging places (I-O 72A) but which are moved to the eating and drinking places industry (I-O

74) in the I-O-based measures. Other differences include the movement of margin on merchandise resales from all service industries to retail trade (I-O 69B) and the movement of service activities from wholesale and retail trade (I-O's 69A and 69B) to services; the most important of these is auto repair services (including parts and labor) at new car dealers, which are moved from retail trade (I-O 69B) to automotive repair and services (I-O 75).

For advertising (I-O 73D), industry output is generally based on receipts of advertising agencies, but the I-O-based measure also includes revenues from telephone directory advertising and receipts from advertising of professional sports clubs, racing, and amusement parks. In addition, commodity output includes several advertising products that are moved to this commodity, including advertising revenues of periodicals and newspapers; other advertising products, such as maps, catalogs, and signs; radio and TV broadcasting advertising revenues; cable and pay TV advertising revenues; advertising products produced by commercial artists; sign painting; direct mail advertising; advertising receipts of

### 72A. Hotels and lodging places

Receipts of taxable establishments and expenses of tax-exempt establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Capital consumption adjustment for tax-exempt establishments  
 Taxes on services  
 Estimate of margin on for-profit activities of tax-exempt establishments  
 Lodging provided to employees\*  
 Tips for valets, maids, bellboys, and others  
 Tips on food, beverage, and casino service  
*Less:* Cost of merchandise resales  
**Equals: SIC-based industry output**  
*Plus:* Guestroom rental by real estate agents and managers (redefined from I-O 71B)  
 Banquet room rentals and taxes (redefined from I-O 76)  
 Private school dormitory charges (redefined from I-O 77B)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)  
 Meal and beverage receipts and taxes (redefined to I-O 74)  
 Tips on meal and beverage receipts (redefined to I-O 74)  
 Gambling and casino receipts and taxes (redefined to I-O 76)  
 Casino tips (redefined to I-O 76)  
**Equals: I-O industry output**

I-O industry output  
*Less:* Residential guestroom rentals (included in I-O 71B)

**Equals: Commodity output**

### 72B. Personal and repair services (except auto)

Receipts of taxable establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Taxes on services  
 Tips on personal services  
*Less:* Cost of merchandise resales  
 Repair of central air conditioning equipment (redefined to I-O 12)  
 Repayment of cash advances made by funeral parlors  
**Equals: SIC-based industry output**  
*Plus:* Personal and repair services, including labor, parts, and taxes, provided by wholesalers and retailers (redefined from I-O's 69A and 69B)  
 Tips on personal services (redefined from I-O 69B)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)  
 Equipment rental/leasing (redefined to I-O 73C)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Portrait photography (from I-O 73C)  
 Rug and upholstery cleaning (from I-O 73C)  
 Barbershop services (from I-O 78)  
*Less:* Commercial photography at portrait studios (included in I-O 73C)  
 Armature rewinding (included in I-O 73C)  
 Photocopying, blueprinting, and duplicating (included in I-O 73C)  
 Photofinishing at portrait studios (included in I-O 73C)  
 Graphic art and design services (included in I-O 73C)

**Equals: Commodity output**

**73A. Computer and data processing services**

Receipts of taxable establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Taxes on services  
*Less:* Cost of merchandise resales  
 Receipts for finance (equity) leasing  
**Equals: SIC-based industry output**  
*Plus:* Computer services provided by wholesalers and retailers, including taxes (redefined from I-O's 69A and 69B)  
 Computer processing receipts of self-regulatory organizations (redefined from I-O 70A)  
 Computer services including taxes (redefined from I-O's 73B and 73C)  
*Less:* Margin and taxes on merchandise resales (redefined to 69B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Computer services, including packaged software (from I-O's 51, 73B, and 73C)

**Equals: Commodity output**

**73B. Legal, engineering, accounting, and related services**

Receipts of taxable establishments and expenses of tax-exempt establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Capital consumption adjustment for tax-exempt establishments  
 Taxes on services  
 Engineering and architectural services provided by construction establishments (redefined from I-O 11)  
*Less:* Cost of merchandise resales  
 Construction receipts of engineering, architectural, and surveying establishments (redefined to I-O 11)  
 Royalty receipts  
**Equals: SIC-based industry output**  
*Plus:* Engineering services provided commercial research and testing labs (redefined from I-O 73C)  
*Less:* Landscape architecture services (redefined to I-O 4)  
 Margin on merchandise resales (redefined to I-O's 69A and 69B)  
 Computer services (redefined to I-O 73A)  
 Interior design services (redefined to I-O 73C)  
 Research and development and testing services (redefined to I-O 73C)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Engineering and accounting, auditing, and bookkeeping services provided by management and public relations establishments (from I-O 73C)  
*Less:* Computer services of accounting, auditing, and bookkeeping establishments (included in I-O 73A)  
 Management and public relations services of accounting, auditing, and bookkeeping establishments (included in I-O 73C)  
 Construction management services of engineering, architectural, and surveying establishments (included in I-O 73C)

**Equals: Commodity output**

**73C. Other business and professional services, except medical**

Receipts of taxable establishments and revenue of tax-exempt establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Taxes on services  
 Equipment rental (redefined from I-O 11)  
 Repair services (redefined from I-O 12)  
*Less:* Cost of merchandise resales  
 Gifts, grants, contributions included in tax-exempt revenue  
 Receipts for capital, finance, or full-payout leasing  
 Construction receipts from services to dwellings and other buildings (redefined to I-O 12)  
**Equals: SIC-based industry output**  
*Plus:* Aircraft rental (redefined from I-O 65D)  
 Repair services, including parts and taxes (redefined from I-O's 69A and 69B)  
 Equipment rental (redefined from I-O's 69A, 69B, 72B, and 77A)  
 Photocopying (redefined from I-O 69A)  
 Miscellaneous services (redefined from I-O's 69A and 69B)  
 Photofinishing in retail establishments (redefined from I-O 69B)  
 Wire services and commissions of florists (redefined from I-O 69B)  
 Interior design services (redefined from 73B)  
 Research, development, and testing services (redefined from 73B)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O's 69A and 69B)  
 Computer services (redefined to I-O 73A)  
 Engineering services at research, development, and testing establishments (redefined to I-O 73B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Equipment rental receipts (from I-O's 44+45, 75, and 76)  
 Armature rewinding (from I-O 72B)  
 Commercial photography and graphic art and design in portrait studios (from I-O 72B)  
 Photocopying and photofinishing at portrait studios (from I-O 72B)  
 Public relations and management services of accounting, auditing, and bookkeeping establishments (from I-O 73B)  
 Construction management services of engineering, architectural, and surveying establishments (from I-O 73B)  
 Public relations services of advertising agencies (from I-O 73D)  
 Contract research performed by hospitals (from I-O 77A)  
*Less:* Printing by direct mail advertisers (included in I-O 26B)  
 Packing and crating services (included in I-O 65E)  
 Portrait photography (included in I-O 72B)  
 Rug/carpet/upholstery cleaning services (included in I-O 72B)  
 Computer services (included in I-O 73A)  
 Accounting, auditing, and bookkeeping and tax preparation services (included in I-O 73B)  
 Engineering consulting services (included in I-O 73B)  
 Direct mail advertising (included in I-O 73D)  
 Advertising services (included in I-O 73D)  
 Advertising products of sign painters (included in I-O 73D)  
 Auto rental (included in I-O 75)  
 Video tape rental (included in I-O 76)

**Equals: Commodity output**

**73D. Advertising**

Receipts of taxable establishments

*Plus:* Estimate of undercoverage of source data

Services provided to foreign affiliates

Taxes on services

*Less:* Cost of merchandise resales**Equals: SIC-based industry output***Plus:* Telephone directory advertising (redefined from I-O 66)

Advertising receipts of professional sports clubs, racing, and amusement parks (redefined from I-O 76)

*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)**Equals: I-O industry output**

I-O industry output

*Plus:* Newspaper and periodical advertising (from I-O 26A)

Calendar, map, directory, and catalog advertising (from I-O 26B)

Advertising displays and specialties (from I-O 64)

Cable TV advertising (from I-O 66)

Radio and TV advertising (from I-O 67)

Direct mail advertising (from I-O 73C)

Advertising services (from I-O 73C)

Advertising products of sign painters (from I-O 73C)

Motion picture theater screen advertising (from I-O 76)

Bowling center advertising (from I-O 76)

Business association, professional membership organization, and civic, social, and fraternal association advertising (from I-O 77B)

*Less:* Public relations services (from I-O 73C)**Equals: Commodity output****74. Eating and drinking places**

Receipts of taxable establishments

*Plus:* Estimate of undercoverage of source data

Services provided to foreign affiliates

Taxes on services

Employee tips

*Less:* Cost of merchandise resales**Equals: SIC-based industry output***Plus:* Meal and beverage receipts, taxes, and tips of retail establishments (redefined from I-O 69B)

Meal and beverage receipts, taxes, and tips of hotels and lodging places (redefined from I-O 72A)

Meal and beverage receipts, taxes, and tips of amusement and recreational facilities (redefined from I-O 76)

Meal and beverage receipts and taxes of medical facilities (redefined from 77A)

Meal and beverage receipts, taxes, and tips of educational, social service, and membership organizations (redefined from I-O 77B)

*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)

Coin-operated amusement machines (redefined to I-O 76)

**Equals: I-O industry output**

I-O industry output

*Plus:* Meal and beverage receipts and tips of Federal Government enterprises (from I-O 78)*Less:* Sales of scrap grease (included in I-O 81)**Equals: Commodity output****75. Automotive repair and services**

Receipts of taxable establishments

*Plus:* Estimate of undercoverage of source data

Services provided to foreign affiliates

Taxes on services

Employee tips

*Less:* Cost of merchandise resales

Receipts for capital, finance, or full-payout leasing

**Equals: SIC-based industry output***Plus:* Rental services and taxes provided by wholesalers and retailers (redefined from I-O's 69A and 69B)

Repair services, including labor, parts, and taxes provided by wholesalers and retailers (redefined from I-O's 69A and 69B)

Car wash and other automotive services by retailers (redefined from I-O 69B)

*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)**Equals: I-O industry output**

I-O industry output

*Plus:* Leasing revenue (from I-O 70A)

Automotive rental at equipment rental establishments (from I-O 73C)

Municipal parking receipts (from I-O 79)

*Less:* Automotive rental with drivers (included in I-O 65B)

Equipment rental (included in I-O 73C)

**Equals: Commodity output**

**76. Amusements**

Receipts of taxable establishments and expenses of tax-exempt establishments  
*Plus:* Estimate of undercoverage of source data  
 Services provided to foreign affiliates  
 Capital consumption adjustment for tax-exempt establishments  
 Taxes on services  
 State and local government amusement and parimutuel taxes  
 Employee tips  
 Estimate of margin on for-profit activities of tax-exempt establishments  
 Radio and TV broadcast income of racing and professional sports clubs  
 Advertising receipts of racing, professional sports clubs, amusement parks, and motion picture theaters  
*Less:* Cost of merchandise resales  
 Gifts, grants, contributions and other tax-exempt revenue  
 Sales of used videos  
**Equals: SIC-based industry output**  
*Plus:* Video tapes rentals at retail establishments (redefined from I-O 69B)  
 Coin-operated amusement devices at retailers (redefined from I-O 69B)  
 Sports instruction and rental of sports equipment, including taxes (redefined from I-O's 69A and 69B)  
 Gambling and casino receipts of hotels, including taxes and tips (redefined from I-O 72A)  
 Coin-operated amusement machines at eating and drinking places, including taxes (redefined from I-O 74)  
 Receipts from intercollegiate athletics (redefined from I-O 77B)  
*Less:* Margin on merchandise resales, including taxes (redefined to I-O's 69A and 69B)  
 Rental fees from concessionaires (redefined to I-O 71B)  
 Banquet facilities (redefined to I-O 72A)  
 Meal and beverage receipts, including taxes and tips (redefined to I-O 74)  
 Advertising receipts of professional sports clubs, racing, and amusement parks (redefined to I-O 73D)  
 Day care services (redefined to I-O 77B)  
**Equals: I-O industry output**

I-O industry output  
*Plus:* Recreational services of agricultural establishments (from I-O's 1 and 2)  
 Prerecorded video tapes (from I-O 56)  
 Video tape rental receipts of equipment rental establishments (from I-O 73C)  
 Motion picture theater receipts (from I-O 78)  
 Off-track betting (from I-O 79)  
*Less:* Advertising receipts of motion picture theaters and bowling centers (included in I-O 73D)  
 Rental of video equipment including taxes by video rental establishments (included in I-O 73D)

**Equals: Commodity output****77A. Health services**

Receipts of taxable establishments and expenses of tax-exempt establishments  
*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Capital consumption adjustment for tax-exempt establishments  
 Taxes on services  
 Estimate of margin on for-profit activities of tax-exempt establishments  
*Less:* Cost of merchandise resales  
 Estimate of grants, assistance, and benefits included in expenses of tax-exempt establishments  
 Medicaid donations of nonprofit hospitals  
 Double counting of physicians' receipts in hospitals and doctors' offices  
**Equals: SIC-based industry output**  
*Plus:* Veterinary services (redefined from I-O 69A)  
 Fees from eye exams (redefined from I-O 69B)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O 69B)  
 Medical equipment rental receipts (redefined to I-O 73C)  
 Meal and beverage receipts including taxes (redefined to I-O 74)  
**Equals: I-O industry output**

I-O industry output  
*Less:* Contract research performed by tax-exempt hospitals (included in I-O 73C)

**Equals: Commodity output**

**77B. Educational and social services, and membership organizations**

Receipts of taxable establishments, expenses of tax-exempt establishments serving households, and revenue of tax-exempt establishments serving business

*Plus:* Estimate of undercoverage of source data  
 Federally-funded research and development at auxiliaries  
 Services provided to foreign affiliates  
 Capital consumption adjustment for nonprofits  
 Taxes on services  
 State and local amusement tax  
 Employee tips on food service  
 Estimate of margin on for-profit activities of tax-exempt establishments  
 Advertising receipts of tax-exempt organizations  
 Wages paid in-kind\*

*Less:* Cost of merchandise resales  
 Gifts, grants, contributions and other tax-exempt revenue  
 Gifts, assistance, and benefits included in expenses of tax-exempt establishments  
 Scholarships included in operating expenses  
 Hospital expenses included in operating expenses of universities

**Equals: SIC-based industry output**  
*Plus:* Flight training and instruction (redefined from I-O's 65D and 69A)  
 Boat operation, music, and sewing instruction (redefined from I-O 69B)  
 Day care services (redefined from I-O 76)  
*Less:* Margin and taxes on merchandise resales (redefined to I-O's 69A and 69B)  
 Rental receipts (redefined to I-O 71B)  
 Private school dormitory charges (redefined to I-O 72A)  
 Meal and beverage receipts including taxes of schools (redefined to I-O 74)  
 Meal and beverage receipts including taxes and tips of associations and museums (redefined to I-O 74)  
 Receipts from intercollegiate athletics (redefined to I-O 76)

**Equals: I-O industry output**

I-O industry output

*Less:* Advertising receipts including taxes of business associations, professional membership organizations, and civic, social and fraternal organizations (included in I-O 73D)

**Equals: Commodity output**

\* Imputation

movie theaters; and advertising receipts of business associations and professional membership organizations. Commodity output excludes public relations services of advertising agencies.

## I-O 78–79 Government Enterprises

Federal Government enterprises and State and local government enterprises are designated as “special” industries in the I-O accounts. Federal Government enterprises include the U.S. Postal Service, the Tennessee Valley Authority and other Federal electric utilities, and military post exchanges and restaurants. State and local government enterprises include local transit systems, gas and electric utilities, water and sanitary services, and municipal parking facilities.<sup>10</sup>

The industry measure of government enterprise output is generally based on revenues. Revenues are adjusted for the cost of merchandise resales or insurance claims paid, depending upon the type of activity involved. Output

excludes operating subsidies. The SIC-based and I-O-based industry output measures are the same.

The commodity measure of government enterprise output is generally based on industry output, adjusted for such components as rental receipts from subletting of space, which is moved to the commodity real estate and royalties (I-O 71B). In cases where the commodity produced by government enterprises is the same as that produced by a private sector industry, commodity output is moved to the private sector commodity. However, in the case of sewerage systems, the commodity output from the private sector water and sanitary services (I-O 68C) is moved to the government enterprise commodity, because State and local government enterprises produce most of the output.

Some government enterprise commodities have no commodity output because the production of these commodities is considered to be primary to other industries and is therefore moved to the commodity groups of these industries; see the section “[Definitions and conventions for classification](#),” beginning on page M-14, for more details. Within Federal Government enterprises (I-O 78), the commodity output of Federal electric utilities is moved to electric services (utilities) (I-O 68A). Within State and local government enterprises (I-O 79), the com-

10. Establishments defined as government enterprises follow the same classification used in the NIPAs. For more information, see U.S. Department of Commerce, Bureau of Economic Analysis, *Government Transactions*, Methodology Paper Series MP-5 (Washington, DC: U.S. Government Printing Office, November 1988): 6.

**78. Federal Government enterprises**

Revenues of Federal Government enterprises

*Plus:* Employee tips*Less:* Cost of merchandise resales

Cost of purchased power

Insurance claims paid

***Equals:* SIC-based industry output*****Equals:* I-O industry output**

I-O industry output

*Less:* Electricity revenues less cost of purchased power (included in I-O 68A)

Margin on merchandise resales by Federal nonappropriated fund activities and VA canteen service (included in I-O 69B)

Margin on government printing office (GPO) sales (included in I-O 69B)

Federal crop, flood, and OPIC insurance revenues less claims paid (included in I-O 70B)

Rental receipts and concession income (included in I-O 71B)

Barber shop receipts (included in I-O 72B)

Meal and beverage receipts of Federal nonappropriated fund activities and VA canteen service (included in I-O 74)

Motion picture theaters of Federal nonappropriated fund activities (included in I-O 76)

***Equals:* Commodity output****79. State and local government enterprises**

Revenues of state and local government enterprises

*Less:* Cost of merchandise resales

Insurance claims paid

Operating subsidies

Cost of purchased electricity

***Equals:* SIC-based industry output*****Equals:* I-O industry output**

I-O industry output

*Plus:* Private sewer system revenues (from I-O 68C)*Less:* South Dakota Cement Plant revenues (included in I-O 36)

Rail passenger and freight revenues (included in I-O 65A)

State and local government passenger transit revenues (included in I-O 65A)

Alaska Ferry revenues (included in I-O 65C)

State and local government waterport revenues (included in I-O 65C)

State and local government airport revenues (included in I-O 65D)

Electricity revenues less cost of purchased power (included in I-O 68A)

Gas utility revenues (included in I-O 68B)

Water utility revenues (included in I-O 68C)

Margins on liquor store sales (included in I-O 69B)

North Dakota Bank revenue (included in I-O 70A)

Miscellaneous insurance trust revenues less claims paid (included in I-O 70B)

Rental receipts and concession income (included in I-O 71B)

Municipal parking facility revenues (included in I-O 75)

Off-track betting revenues (included in I-O 76)

***Equals:* Commodity output**

modity output of State and local government passenger transit is moved to railroads and related services, passenger ground transportation (I-O 65A); and the output of State and local government electric utilities is moved to electric services (utilities) (I-O 68A).

The commodity output for Federal Government enterprises consists of Postal Service revenues and Federal Housing Administration mortgage and loan insurance, excluding rental receipts. The commodity output for State and local government enterprises consists of highway toll revenues, State and local and private sewerage revenues, and State and local lottery revenues.

## I-O 80–85 Special Industries, Excluding Government Enterprises

This group consists of six specially designated “industries,” which are not based on the SIC system: Noncomparable imports (I-O 80); scrap, used and secondhand goods (I-O 81); general government industry

(I-O 82); rest of the world adjustment to final uses (I-O 83); household industry (I-O 84); and inventory valuation adjustment (I-O 85).

For noncomparable imports and rest of the world adjustment to final uses, there are no domestic measures of industry and commodity output, because the production of these commodities is outside of the United States. Noncomparable imports are treated as commodities in the I-O accounts.<sup>11</sup>

For used and secondhand goods, there is no domestic measure of industry and commodity output, because secondhand goods by definition are not produced in the current period. For scrap, there is no industry output, but commodity output is produced by other industries as a part of the production of their output. Used and secondhand goods are treated as commodities bought and sold by other industries and final users. These sales and purchases, in producers’ prices, offset each other unless

11. For more information on noncomparable imports, see the section “Definitions and conventions for valuation of transactions,” beginning on page M-15.

there is a change in inventories. In purchasers' prices, commodity output is the margin on the sale of the used and secondhand goods. It does not include the production of the goods.

The industry measure of general government output is based on employee compensation plus consumption of fixed capital. Employee compensation is adjusted to exclude that of both force-account construction employees and government enterprise employees.<sup>12</sup> Commodity and industry output are the same.

12. In contrast with the I-O accounts, the output of general government in the NIPA's includes compensation of force-account construction workers.

The industry measure of household output is based on employee compensation. Household employees include maids, chauffeurs, and babysitters, among others. Commodity and industry output are the same.

The industry measure of inventory valuation adjustment output is from the NIPA's. It is used to eliminate inventory profits or loss from the change in inventory. Commodity and industry output are the same.

#### 80. Noncomparable imports

No domestic output	No domestic output
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#### 81. Scrap, used and secondhand goods

No domestic output	Scrap produced in other industries <b>Equals: Commodity output</b>
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#### 82. General government industry

Compensation of general government employees <i>Plus:</i> Consumption of fixed capital <i>Less:</i> Force-account compensation of general government <b>Equals: SIC-based industry output</b> <b>Equals: I-O industry output</b>	I-O industry output  <b>Equals: Commodity output</b>
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#### 83. Rest of the world adjustment to final uses

No domestic output	No domestic output
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#### 84. Household industry

Compensation of household workers <b>Equals: SIC-based industry output</b> <b>Equals: I-O industry output</b>	I-O industry output  <b>Equals: Commodity output</b>
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#### 85. Inventory valuation adjustment

NIPA estimate <b>Equals: SIC-based industry output</b> <b>Equals: I-O industry output</b>	I-O industry output  <b>Equals: Commodity output</b>
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# Appendix D

## Products Included in Personal Consumption Expenditure Categories

This appendix identifies the products from the input-output (I-O) commodities making up each personal consumption expenditure (PCE) category in the national income and product accounts (NIPA's). It expands information provided in supplementary table D on page M-18 of this volume.

In what follows, each PCE category is first identified by its line number and descriptor in NIPA table 2.4, "Personal Consumption Expenditures by Type of Expenditure."<sup>1</sup> Information on the composition of the PCE category is contained in three columns. The first column provides the number and the second column the description of each I-O commodity included in the given PCE

category.<sup>2</sup> The third column provides a list of products from the identified I-O commodity that are included in the PCE category.

For example, the first PCE category shown in the table below is "3. Food purchased for off-premise consumption," indicating that this PCE category corresponds to line 3, food purchased for off-premise consumption, in NIPA table 2.4. The first two columns identify eight I-O commodities, including "livestock and livestock products" (I-O 1), "other agricultural products" (I-O 2), and six others, as making up this NIPA category. The third column identifies eggs as the single *product* from the *I-O commodity* "livestock and livestock products" in the *NIPA PCE category* "food purchased for off-premise consumption."

1. Table 2.4, "Personal Consumption Expenditures by Type of Expenditure," was most recently revised and updated in the August 1998 SURVEY.

2. Transportation costs and trade margins are not included in the list of products in this appendix. Information in supplementary table D identifies the various margins and transportation costs for each NIPA PCE category.

I-O code	Description	Products
<b>3. Food purchased for off-premise consumption</b>		
1	Livestock and livestock products	Eggs
2	Other agricultural products .....	Citrus, berries, and other fruits Corn Food crops grown under cover, including mushrooms Oats, sorghum, and hay Peanuts Potatoes and other miscellaneous field crops Tree nuts, including macadamia and pistachio Vegetables and melons
3	Forestry and forestry products ...	Fresh fish Game
9+10	Nonmetallic minerals mining .....	Salt
14	Food and kindred products .....	Animal feeds Baking powder and yeast products Beef, veal, pork, and lamb Bottled water Bread, cake, and related products, including rolls Butter Candy and other confectionery products Canned and cured fish and other seafoods Canned fruits and vegetables

I-O code	Description	Products
		Canned iced tea Canned juices Canned specialties, including baby food, soups, beans, pasta, gravy, mincemeat, Chinese foods, and Spanish foods Catsup and other tomato sauces Cereal breakfast foods Cheese, natural and processed Chewing gum Chocolate and cocoa products Coffee Cookies, toaster pastries, and ice cream cones and cups Corn and other vegetable oils Corn sweeteners Cornmeal and other corn mill products Cottage cheese Crackers, pretzels, biscuits, and related products Dairy product substitutes, including infants' formula Desserts (ready-to-mix) Distilled and blended liquors Dog and cat food Dried and dehydrated fruits, vegetables, and soups Dry, condensed, and evaporated milk products Dry mix preparations, including dips, salad dressings, gravy, frosting, potatoes, and rice Flavoring extracts and syrups Flour and other wheat and grain mill products Flour mixes (pancake, cake, biscuit, bread, etc.) Fresh fruit juices and nectars Fresh or frozen prepared fish and other seafood Frozen bakery products Frozen fruits and vegetables Frozen juices, ades, drinks, and cocktails Frozen specialties, including frozen dinners, entrees, pies, and nationality foods Ice Ice cream mixes and related products Ice cream and frozen desserts Jams, jellies, and preserves Lard Liquid, dried, and frozen eggs Macaroni and noodle products packaged with other ingredients Macaroni, spaghetti, and noodles Malt beverages, including nonalcoholic Milk (fluid), cream, and related products Nuts and seeds Other dairy products Other food preparations, including coconut, honey, and unpopped popcorn Other frozen foods Peanut butter Perishable prepared foods, including salads and sandwiches Pickles, sauces, and salad dressings, including mayonnaise and sandwich spreads Potato chips and similar products, including popcorn Poultry and small game Processed, frozen, or cooked meats and poultry Refrigerated and frozen doughs and batters, including biscuit, cookie, and bread Rice Sausage and other prepared meats, including ham, bacon, frankfurters, and luncheon meats Shortening, cooking oils, and margarine Soft drinks, carbonated and noncarbonated Soy flour and grits Spices Starch and dextrin Sugar Sweetening syrups and molasses Tea Vinegar and cider Wines, brandy, and brandy spirits Yogurt
27A	Industrial and other chemicals ...	Artificial sweeteners Gelatin, except ready-to-eat dessert Salt
69B	Retail trade .....	Fruit baskets
81	Scrap, used and secondhand goods.	Sales of scrap cans

**4. Purchased meals and beverages**

65A	Railroads and related services; passenger ground transportation.	Railroad dining car receipts
65D	Air transportation .....	Alcoholic beverage receipts of airlines

I-O code	Description	Products
74	Eating and drinking places .....	Meal and beverage service Tips for meal and beverage service
76	Amusements .....	Food and beverage service of amusement parks, carnivals, circuses, and fairs Food and beverage service of auto, horse, and dog tracks Food and beverage service of dance studios, schools, and halls Food and beverage service of professional or semi-professional sports clubs Food and beverage service of theaters, including dance and music Motion picture theater food and beverage service
77B	Educational and social services, and membership organizations.	Food and beverage service of museums, art galleries, arboreta, and botanical or zoological gardens

### 5. Food furnished to employees (including military)

1	Livestock and livestock products	Eggs
2	Other agricultural products .....	Citrus, berries, and other fruits Potatoes Vegetables and melons
3	Forestry and fishery products ....	Fresh fish
14	Food and kindred products .....	Beef, veal, pork, and lamb Bottled water Bread, cake, and related products, including rolls Butter Candy and other confectionery products Canned and cured fish and seafood Canned fruits and vegetables Canned juices Canned specialties, including soups, beans, pasta, gravy, mincemeat, Chinese foods, and Spanish foods Catsup and other tomato sauces Cereal breakfast foods Cheese, natural and processed Chocolate and cocoa products Coffee Cookies, toaster pastries, and ice cream cones and cups Corn and other vegetable oils Corn sweeteners Cornmeal and other corn mill products Crackers, pretzels, biscuits, and related products Dairy product substitutes Desserts (ready-to-mix) Dried and dehydrated fruits, vegetables, and soups Dry, condensed, and evaporated milk products Dry mix preparations, including dips, salad dressings, gravy, frosting, potatoes, and rice Flavoring extracts and syrups Flour and other wheat and grain mill products Flour mixes (pancake, cake, biscuit, bread, etc.) Fresh fruit juices and nectars Fresh or frozen prepared fish and other seafood Frozen bakery products Frozen fruits and vegetables Frozen juices, ades, drinks, and cocktails Frozen specialties, including frozen dinners, entrees, pies, and nationality foods Ice cream and frozen desserts Jams, jellies, and preserves Macaroni and noodle products packaged with other ingredients Macaroni, spaghetti, and noodles Milk (fluid), cream, and related products Nuts and seeds Other dairy products Other food preparations, including coconut, honey, and unpopped popcorn Other frozen foods Peanut butter Perishable prepared foods, including salads and sandwiches Pickles, sauces, and salad dressings, including mayonnaise and sandwich spreads Potato chips and similar products, including popcorn Poultry and small game Processed, frozen, or cooked meat and poultry Refrigerated and frozen dough and batters, including biscuit, cookie, and bread Rice Sausage and other prepared meats, including ham, bacon, frankfurters, and luncheon meats Shortening, cooking oils, and margarine Soft drinks, carbonated and noncarbonated Spices Sugar Tea

I-O code	Description	Products
<b>6. Food produced and consumed on farms</b>		
1	Livestock and livestock products	Eggs Milk
2	Other agricultural products .....	Citrus, berries, and other fruits Potatoes Tree nuts, except macadamia and pistachios Vegetables and melons
14	Food and kindred products .....	Beef, veal, lamb, and pork Poultry
<b>7. Tobacco products</b>		
15	Tobacco products .....	Chewing and smoking tobacco, including snuff Cigarettes, including nontobacco cigarettes Cigars
<b>12. Shoes and other footwear</b>		
32	Rubber and miscellaneous plastics products.	Rubber and plastics footwear
33+34	Footwear, leather, and leather products.	Children's footwear, including athletic shoes House slippers Men's footwear, including athletic shoes Women's footwear, including athletic shoes
81	Scrap, used and secondhand goods.	Used footwear
<b>14. Women's and children's clothing and accessories, except shoes</b>		
16	Broad and narrow fabrics, yarn and thread mills.	Fabric Ribbons, tape, and webbing Thread Yarn
18	Apparel .....	Academic caps and gowns, and costumes Baby pants and diaper covers, plastic and rubberized Bras, girdles, and allied products Coats, jackets, and snowsuits Custom made garments Dresses Fur garments Garters, hose supporters, arm bands, and suspenders Gloves and mittens Handkerchiefs Hats, caps, and millinery Hosiery, including socks Lace goods Leather and other belts Leather and sheep-lined clothing Other apparel Other outerwear, including uniforms, jeans, slacks, bathing suits, sweaters, and jogging suits Robes and dressing gowns Raincoats Shirts and blouses Suits, skirts, and coats Underwear and nightwear Waterproof outer garments
19	Miscellaneous fabricated textile products.	Ribbons
24	Paper and allied products, except containers.	Disposable diapers, except adult, including disposable training pants
26B	Other printing and publishing .....	Patterns for clothing
32	Rubber and miscellaneous plastics products.	Rubber clothing, including wet suits, rainwear, and bathing caps
33+34	Footwear, leather, and leather products.	Billfolds, wallets, and other personal leather goods Handbags and purses Leather gloves and mittens Suitcases, briefcases, and bags Trunks and hand trunks
64	Miscellaneous manufacturing .....	Buckles for wearing apparel Buttons Other fasteners and apparel trimming Pins, including hatpins Sewing needles

I-O code	Description	Products
69B	Retail trade .....	Umbrellas, parasols, and canes Zippers and slide fasteners Handling charges of catalog and mail-order houses
72B	Personal and repair services (except auto).	Alterations
81	Scrap, used and secondhand goods.	Used clothing

### 15. Men's and boys' clothing and accessories, except shoes

16	Broad and narrow fabrics, yarn and thread mills.	Fabric Thread Yarn
18	Apparel .....	Academic caps and gowns, and costumes Custom made garments Fur garments Gloves and mittens Handkerchiefs Hats and caps Hosiery, including socks Leather and other belts Leather and sheep-lined clothing Neckwear, including ties, mufflers, and scarves Other outerwear, including swimwear, shorts, sweaters, and jackets Raincoats Robes and dressing gowns, including smoking jackets Shirts Suits and coats Suspenders Trousers and slacks, including jeans Underwear and nightwear Waterproof outer garments Work clothing
32	Rubber and miscellaneous plastics products.	Rubber clothing, including wet suits and rainwear
33+34	Footwear, leather, and leather products.	Billfolds, wallets, and other personal leather goods Leather gloves and mittens Suitcases, briefcases, and bags Trunks and hand trunks
64	Miscellaneous manufacturing .....	Buckles for wearing apparel Buttons Other fasteners and apparel trimming Sewing needles Umbrellas and canes Zippers and slide fasteners
69B	Retail trade .....	Handling charges of catalog and mail-order houses
72B	Personal and repair services (except auto).	Alterations
81	Scrap, used and secondhand goods.	Used clothing

### 16. Standard clothing issued to military personnel

18	Apparel .....	Dresses Gloves and mittens Handkerchiefs Hats and caps Hosiery, including socks Leather and other belts Neckwear, including ties and scarves Other outerwear Raincoats Trousers and slacks Underwear and nightwear Shirts and blouses Suits, skirts, and coats Work clothing
19	Miscellaneous fabricated textile products.	Textile bags Towels and washcloths
33+34	Footwear, leather, and leather products.	Handbags and purses Men's footwear, except athletic Women's footwear, except athletic

I-O code	Description	Products
<b>17. Cleaning, storage, and repair of clothing and shoes</b>		
72A	Hotels and lodging places .....	Laundry services of hotels and lodging places
72B	Personal and repair services (except auto).	Alterations and garment repairs Cleaning, repairing, and storage of fur garments Coin-operated laundry and dry cleaning Diaper services Dry cleaning work Family laundry work Hat cleaning Linen supply service Other laundry, cleaning, and garment services Shoe repair and shoe shines
<b>18. Jewelry and watches</b>		
62	Scientific and controlling instruments.	Watches
64	Miscellaneous manufacturing .....	Costume jewelry and costume novelties, except precious metal Gold chains Jewelry, precious metal Lapidary work and diamond cutting and polishing
81	Scrap, used and secondhand goods.	Sales of precious metal scrap Used jewelry
<b>19. Other miscellaneous personal, clothing and jewelry services</b>		
72B	Personal and repair services (except auto).	Clothing and costume rental services Diet and weight reducing programs Other miscellaneous personal services Tanning salons and massage parlors Watch, clock, and jewelry repair
73C	Other professional and business services, except medical.	Miscellaneous repair services
<b>21. Toilet articles and preparations</b>		
19	Miscellaneous fabricated textile products.	Powder puffs and mitts
29B	Cleaning and toilet preparations	Creams, lotions, and oils (including suntan) Hair preparations, including shampoos Liquid and bar soap Other cosmetics and toilet preparations, including deodorants Perfumes, toilet waters, and colognes Shaving preparations Toothpastes, mouthwashes, gargles, rinses, and other oral hygiene products
32	Rubber and miscellaneous plastics products.	Rubber hair curlers and hairpins
42	Other fabricated metal products	Manicure and pedicure scissors and implements Razor blades and razors, except electric
54	Household appliances .....	Curling irons and hair dryers Electric razors
58	Miscellaneous electrical machinery and supplies.	Storage batteries
64	Miscellaneous manufacturing .....	Hair pieces, toupees, and wigs Hair curlers and hairpins Personal brushes, including toothbrushes and hairbrushes Tobacco pipes, cigar and cigarette lighters
<b>22. Barbershops, beauty parlors, and health clubs</b>		
72A	Hotels and lodging places .....	Beauty and barber shop services of hotels and lodging places, including tips Physical fitness centers of hotels and lodging places
72B	Personal and repair services (except auto).	Beauty and barber shop services, including tips
76	Amusements .....	Physical fitness centers
<b>24. Owner-occupied nonfarm dwellings—space rent</b>		
71A	Owner-occupied dwellings .....	Space rent, owner-occupied nonfarm dwellings

I-O code	Description	Products
<b>25. Tenant-occupied nonfarm dwellings—rent</b>		
71B	Real estate and royalties .....	Residential hotel and guestroom receipts Tenant-occupied nonfarm rent
<b>26. Rental value of farm dwellings</b>		
71A	Owner-occupied dwellings .....	Space rent, owner-occupied farm dwellings
71B	Real estate and royalties .....	Rents paid to operator landlords for farm dwellings
<b>27. Other housing</b>		
72A	Hotels and lodging places .....	College housing Elementary and secondary school housing Employee lodging Membership-basis organization hotels and lodging house rentals Room rentals (hotels and motels) Rooming and boarding house rentals
<b>29. Furniture, including mattresses and bedsprings</b>		
22+23	Furniture and fixtures .....	Bedroom furniture, including cots and bedframes Dining room and kitchen furniture Dual-purpose sleep furniture Hospital beds Infants' and children's furniture Infants' high chairs and car seats Living room, library, family room, and den furniture Mattresses, including crib, and bedsprings Other household furniture Porch, lawn, and other outdoor furniture Reed and rattan furniture (including willow, wicker, and cane) Sewing machine cabinets Sleep system ensembles, excluding water beds Unpainted and ready-to-assemble furniture Upholstered household furniture Wood office furniture
81	Scrap, used and secondhand goods.	Used furniture, including antiques
<b>30. Kitchen and other household appliances</b>		
38	Primary nonferrous metals manufacturing.	Extension and power supply cords
40	Heating, plumbing, and fabricated structural metal products.	Domestic heating stoves, except electric Other heating equipment, except electric
52	Service industry machinery .....	Evaporative air coolers Room air conditioners and dehumidifiers
54	Household appliances .....	Ceiling fans Dishwashing machines Electric, gas, and other ranges, ovens, and cooking equipment, including microwaves Electric irons Floor waxing, polishing, scrubbing machines, and shampooing machines Food waste disposers and trash compactors Other small electromechanical and electrothermal appliances Other household appliances Parts and attachments for household appliances Portable air purifiers, dehumidifiers, and humidifiers Portable air space heaters Range hoods, oven hoods, and other ventilating and exhaust fans Refrigerators and freezers, including combinations Sewing machines and parts Small electric household cooking appliances Vacuum cleaners, including attachments and cleaning tools Washing machines and dryers, including combinations Water heaters Window, desk, and wall bracket fans
58	Miscellaneous electrical machinery and supplies.	Electrical insect killers Other electrical products
81	Scrap, used and secondhand goods.	Used appliances

I-O code	Description	Products
<b>31. China, glassware, tableware, and utensils</b>		
20+21	Lumber and wood products .....	Miscellaneous wooden products Wood household items (tableware and kitchenware)
32	Rubber and miscellaneous plastics products.	Other fabricated plastics products Plastics dinnerware, tableware, kitchenware, and ovenware Plastics foam products (including cups and plates)
35	Glass and glass products .....	Glass containers Lamp globes, shades, chimneys, bowls, and parts Table, kitchen, and novelty glassware
36	Stone and clay products .....	Earthenware table and kitchenware Red unglazed earthenware Stoneware table and kitchen articles Vitreous china table and kitchenware
38	Primary nonferrous metals manufacturing.	Aluminum cooking utensils
41	Screw machine products and stampings.	Aluminum household utensils, bakeware, and camping cookware Metal home canning closures and crowns Stainless steel household utensils and bakeware Tinware and other stamped and spun cooking and kitchen utensils
42	Other fabricated metal products	Kitchen tools, including can openers, peelers, slicers, and dicers Other fabricated metal products Pails, ash cans, garbage cans, and tubs Table and kitchen cutlery Vacuum and insulated bottles, jugs, and chests Wire baskets, wire shelving, wire racks, and other wire products
64	Miscellaneous manufacturing .....	Silverware and plated ware
69B	Retail trade .....	Handling charges at gift, novelty, and souvenir shops
81	Scrap, used and secondhand goods.	Used kitchenware, including antiques and collectibles

**32. Other durable house furnishings**

17	Miscellaneous textile goods and floor coverings.	Carpets, rugs, and artificial grass Felt carpet and rug padding Jute goods used as carpeting or padding
19	Miscellaneous fabricated textile products.	Awnings Carpet tiles Non-camping tents
20+21	Lumber and wood products .....	Cork and cork products Jewelry boxes and silver chests Mirror and picture frames Stepladders and rung ladders Wood household items (bookends, ornaments, and ashtrays)
22+23	Furniture and fixtures .....	Curtain and drapery rods, poles, and fixtures Venetian blinds Window shades, blinds, and accessories
26B	Other printing and publishing .....	Art reproductions and picture prints
32	Rubber and miscellaneous plastics products.	Foam rubber and sponge carpet and rug cushions Individual rubber mats, including stair treads Plastics foam carpet and rug cushions
33+34	Footwear, leather, and leather products.	Leather goods, including desk sets and leather novelties
35	Glass and glass products .....	Mirrors
36	Stone and clay products .....	Art, decorative, and novelty pottery Statuary and art goods
40	Heating, plumbing, and fabricated structural metal products.	Small utility buildings (toolsheds)
42	Other fabricated metal products	Axes, hatchets, chisels, professional and craft edge hand tools Builders' hardware Fireplace fixtures and equipment Handsaws and saw blades Hedge and grass shears and pruners Household scissors and shears Ironing boards Machine tools for woodcutting Mechanics' hand service tools, including pliers, wrenches, and screwdrivers Metal ladders Other hand tools, including shovels, hammers, picks, and hoes

I-O code	Description	Products
44+45	Farm, construction, and mining machinery.	Power saw blades Wire carts Consumer lawn, garden, and snow equipment
47	Metalworking machinery and equipment.	Gas welding and cutting equipment, including parts, attachments, and accessories Machine tools designed primarily for home workshops Power driven hand tools, including parts, attachments, and accessories
48	Special industry machinery and equipment.	Woodworking machinery for home workshops, including parts, attachments, and accessories
50	Miscellaneous machinery, except electrical.	Household and person weighing scales
51	Computer and office equipment	Automatic typing and word processing machines, parts, and attachments Calculators and adding machines Typewriters
53	Electrical industrial equipment and apparatus.	Fractional horsepower motors, including parts and supplies
55	Electric lighting and wiring equipment.	Incandescent hand portable lighting equipment Lamps and lanterns, nonelectric Portable residential lighting fixtures, including parts and accessories
56	Audio, video, and communication equipment.	Answering machines Telephone sets
61	Other transportation equipment	Wheelbarrows
62	Scientific and controlling instruments.	Clocks Household thermometers and barometers Household timing mechanisms
64	Miscellaneous manufacturing .....	Hair clippers (human use) Other miscellaneous products Paint and varnish brushes Pens and mechanical pencils
69B	Retail trade .....	Handling charges for catalog and mail-order houses Handling charges for miscellaneous home furnishings stores
81	Scrap, used and secondhand goods.	Antiques, collectibles, and used durable house furnishings Used floor coverings Used lawn and garden equipment Used tools and hardware Used typewriters

### 33. Semidurable house furnishings

16	Broad and narrow fabrics, yarn and thread mills.	Fabric Thread Yarn
17	Miscellaneous textile goods and floor coverings.	Blankets Cordage and twine Nonwoven fabrics
19	Miscellaneous fabricated textile products.	Apparel trimmings Bedspreads and bedsets Comforters, quilts, and other quilted products Curtains and draperies Embroideries Flags, banners, and similar emblems Laundry, wardrobe, and shoe bags Mops and dusters Other fabricated textile products Other housefurnishings, including blankets, pillows, and mattress protectors Sheets and pillowcases Shower curtains, including plastics Slip covers and fancy pillows Stamped art goods for embroidering, punching, and needlework Table linen and related articles Tarpaulins and other covers Towels and washcloths
20+21	Lumber and wood products .....	Bamboo, rattan, willow and chip, basketwork and wickerwork
26B	Other printing and publishing .....	Decals and pressure sensitives
32	Rubber and miscellaneous plastics products.	Other industrial rubber products Plastics foam products Pressure sensitive tape Rubber gloves Rubber and plastic garden hoses
35	Glass and glass products .....	Art and novelty glassware

I-O code	Description	Products
37	Primary iron and steel manufacturing.	Lamp globes, shades, chimneys, bowls, and parts Nails, spikes, brads, tacks, and staples
41	Screw machine products and stampings.	Bolts, nuts, rivets, and washers
54	Household appliances .....	Electric bed coverings
64	Miscellaneous manufacturing .....	Brooms Feathers, plumes, and artificial flowers Fire extinguishers Household maintenance brushes Lamp shades Needles Other miscellaneous products Zippers and slide fasteners
69B	Retail trade .....	Handling charges for drapery, curtain, and upholstery stores
81	Scrap, used and secondhand goods.	Used curtains and draperies Used seasonal decorations Used sewing, knitting, and needlework goods

### 34. Cleaning and polishing preparations, and miscellaneous household supplies and paper products

3	Forestry and fishery products ....	Rosin Turpentine
9+10	Nonmetallic minerals mining .....	Peat
17	Miscellaneous textile goods and floor coverings.	Nonwoven ribbons and wipers
24	Paper and allied products, except containers.	Coffee filters Doilies, place mats, tray covers or tray doilies Gift wrap paper Gummed products, including tape Molded pulp goods, including food trays Other miscellaneous paper and board products, including fine crepe paper Plastics, laminated, and coated bags Pressure sensitive products, including tape Sanitary tissue paper products, including facial tissues, toilet tissue, napkins, and towels Uncoated paper and multiwall bags Waxed and wax-laminated paper
25	Paperboard containers and boxes.	Other paper and paperboard items, including straws and tablecloths Paper and paperboard plates, dishes, and cups
26B	Other printing and publishing .....	Miscellaneous printing, including seals and tickets
27A	Industrial and other chemicals ...	Household tints and dyes Hydrogen peroxide Lighter fluids Rosin Sodium hydroxide (caustic soda) Water softening compounds
27B	Agricultural fertilizers and chemicals.	Agricultural and household pesticidal preparations Nitrogenous and phosphatic fertilizers
29B	Cleaning and toilet preparations	Air and room fresheners Ammonia Automobile polish and cleaner Bathroom, tub, and tile cleaners, toilet bowl cleaners, and drain solvents Bleach Cat litter Disinfectants Fabric softeners and rinses, laundry starch, and other laundry aids Floor polish Furniture polish and cleaners Glass window cleaning products, including automotive windshield washer fluid Household detergents, including machine dishwashing compounds Other specialized detergents and polishing preparations Oven cleaners Rug and upholstery cleaner Shoe polishes and cleaners
30	Paints and allied products .....	Clear finishes and stains Other allied paint products Paints and architectural coatings
32	Rubber and miscellaneous plastics products.	Plastic wrap
36	Stone and clay products .....	Fuller's earth Metal abrasives, including steel wool and scouring pads Nonmetallic coated abrasive products

I-O code	Description	Products
42	Other fabricated metal products	Household, institutional, and freezer foil Laminated gift wrap
53	Electrical industrial equipment and apparatus.	Fuses
55	Electric lighting and wiring equipment.	Electric lamp bulbs and tubes
58	Miscellaneous electrical machinery and supplies.	Primary cells and batteries
64	Miscellaneous manufacturing .....	Candles, including tapers Matches

### 35. Stationery and writing supplies

24	Paper and allied products, except containers.	Envelopes Stationery, tablets, and related products
26B	Other printing and publishing .....	Blankbooks, including albums, scrapbooks, diaries, appointment books, and address books Checkbooks Greeting cards Looseleaf binders, devices, and forms Picture postcards and souvenir cards Social engraving
27A	Industrial and other chemicals ...	Glues and adhesives
32	Rubber and miscellaneous plastics products.	Stationer's sundries, including erasers
64	Miscellaneous manufacturing .....	Artists' equipment and materials, including brushes Carbon paper and stencil paper Hand stamps, stencils, and other marking devices Inked ribbons Pencils, crayons, and chalk Pens and mechanical pencils
81	Scrap, used and secondhand goods.	Used greeting cards Used school supplies

### 37. Electricity

68A	Electric services (utilities) .....	Electric service (public and private)
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### 38. Gas

68B	Gas production and distribution (utilities).	Natural gas (utilities)
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### 39. Water and other sanitary services

68C	Water and sanitary services .....	Refuse systems, including collection and disposal Water supply (public and private)
79	State and local government enterprises.	Sewerage systems (public and private)

### 40. Fuel oil and coal

7	Coal mining .....	Bituminous, lignite, and anthracite coal
20+21	Lumber and wood products .....	Firewood and fuel wood containing an added binder, including compressed logs
27A	Industrial and other chemicals ...	Hardwood charcoal and charcoal briquets
31	Petroleum refining and related products.	Fireplace logs, made from coal Fuel briquettes Fuel oil (light and heavy) Kerosene Liquefied petroleum gases
68C	Water and sanitary services .....	Steam and air-conditioning supply

### 41. Telephone and telegraph

66	Communications, except radio and TV.	Radiophone services, including cellular and beeper services Telegraph and other message communications services, including facsimile transmission services Telephone services, including local and long distance
72A	Hotels and lodging places .....	Telephone charges at hotels and lodging places

I-O code	Description	Products
<b>42. Domestic service</b>		
73C	Other business and professional services, except medical.	Building cleaning and maintenance services
84	Household industry .....	Services of domestic workers
<b>43. Other household operation</b>		
65B	Motor freight transportation and warehousing.	Household goods warehousing and storage Local and long-distance trucking and moving services, including packing and storage Self-storage and miniwarehouse warehousing
65C	Water transportation .....	Water freight shipping
65D	Air transportation .....	Air freight shipping
70B	Insurance .....	Burglary and theft insurance Fire, allied, and multi-peril insurance Inland marine insurance Property liability insurance
72B	Personal and repair services (except auto).	Carpet and upholstery cleaning Electrical appliance repair Refrigeration and air-conditioning repair Reupholstery and furniture repair
73C	Other business and professional services, except medical.	Appliance and furniture rental and leasing, including rent-to-own Detective and protective services Disinfecting and pest control services Gas appliance repair Interior designing services Other repair and related services, including furnace and chimney cleaning Security system services Telephone answering services Water softening services
78	Federal Government enterprises	Mail revenues, including stamps and other charges
81	Scrap, used and secondhand goods.	Used stamps
<b>45. Drug preparations and sundries</b>		
19	Miscellaneous fabricated textile products.	Miscellaneous fabricated textile products
24	Paper and allied products, except containers.	Other sanitary paper products, including absorbent pads Sanitary napkins and tampons
27A	Industrial and other chemicals ...	Oxygen
29A	Drugs .....	Medicinals, botanicals, and biologicals Pharmaceuticals for human and veterinary use
31	Petroleum refining and related products.	Petrolatum (petroleum jelly)
32	Rubber and miscellaneous plastics products.	Household and surgical gloves Other rubber druggist and medical sundries, including prophylactics, diaphragms, and syringes
54	Household appliances .....	Electric heating pads
55	Electric lighting and wiring equipment.	Health lamp fixtures
62	Scientific and controlling instruments.	Artificial limbs Elastic braces, elastic stockings, and arch supports First aid kits Incontinent pads, bed pads, and adult diapers Other medical supplies, including splints, crutches, canes, and wheel chairs Surgical dressings, including bandages, gauze, and cotton Syringes and hypodermic needles Thermometers, including digital
<b>46. Ophthalmic products and orthopedic appliances</b>		
58	Miscellaneous electrical machinery and supplies.	Primary cells and batteries
62	Scientific and controlling instruments.	Artificial limbs and braces Hearing aids and repair Orthopedic and prosthetic appliances and supplies, including parts
63	Ophthalmic and photographic equipment.	Contact lenses Other ophthalmic goods Prescription eye glasses, including frames and lenses

I-O code	Description	Products
81	Scrap, used and secondhand goods.	Ready-made sun and reading glasses Used medical equipment
<b>47. Physicians</b>		
77A	Health services .....	Services of doctors of medicine, including tests and lab work billed
<b>48. Dentists</b>		
77A	Health services .....	Services of dentists
<b>49. Other professional medical services</b>		
65A	Railroads and related services; passenger ground transportation.	Ambulance or rescue service, except by air
73C	Other business and professional services, except medical.	Medical equipment rental and leasing
77A	Health services .....	Home health care services, including visiting nurses Kidney dialysis centers Other health services, including health screening services, blood banks and donor stations, sperm banks, and childbirth preparation classes Services of chiropractors Services of medical laboratories (not billed by a medical professional) Services of optometrists Services of osteopathic doctors Services of other health practitioners, including physical therapists, psychologists, speech pathologists, and nutritionists Services of podiatrists Specialty outpatient care facilities, including alcohol treatment, drug treatment, and mental health
<b>52. Nonprofit hospitals</b>		
77A	Health services .....	Services of private nonprofit hospitals, including general medical and surgical hospitals, psychiatric hospitals, and specialty hospitals
<b>53. Proprietary hospitals</b>		
77A	Health services .....	Services of private proprietary hospitals, including general medical and surgical hospitals, psychiatric hospitals, and specialty hospitals
<b>54. Government hospitals</b>		
77A	Health services .....	Services of government hospitals, including general medical and surgical hospitals, psychiatric hospitals, and specialty hospitals
<b>55. Nursing homes</b>		
77A	Health services .....	Services of skilled nursing care facilities, intermediate care facilities, and other nursing and personal care facilities
<b>56. Health insurance</b>		
70B	Insurance .....	Accident insurance Income loss insurance Health insurance Workers' compensation insurance
<b>61. Brokerage charges and investment counseling</b>		
70A	Finance .....	Imputed commissions (services provided without payment by securities dealers) Investment advisory services Securities and commodities commissions Services allied with exchange of securities, including security custodians and stock quotation services
<b>62. Bank service charges, trust services, and safe deposit box rental</b>		
70A	Finance .....	Check cashing fees Fiduciary activities of depository institutions Loan origination fees of depository institutions and personal credit institutions Loan servicing fees of commercial banks and savings institutions

I-O code	Description	Products
		Other fees and commissions of depository institutions and personal credit institutions, including safe deposit box rental and ATM fees Service charges on deposit accounts

**63. Services furnished without payment by financial intermediaries except life insurance carriers and private noninsured pension plans**

70A	Finance .....	Services provided without payment by commercial banks, savings institutions, credit unions, and investment companies
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**64. Expense of handling life insurance**

70B	Insurance .....	Foreign and domestic life insurance companies' expenses of handling life insurance in the U.S. Mutual and fraternal life insurance expenses Private pension fund expenses
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**65. Legal services**

73B	Legal, engineering, accounting, and related services.	Legal services provided by taxable and tax-exempt establishments
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**66. Funeral and burial expenses**

36	Stone and clay products .....	Cut stone and stone products for tombstones and burial vaults
42	Other fabricated metal products	Fabricated metal products for burial vaults, grave markers, and other burial related fabrications
65D	Air transportation .....	Air freight shipping
71B	Real estate and royalties .....	Cemetery lots
72B	Personal and repair services (except autos).	Services of funeral parlors, morticians, undertakers, and crematories

**67. Other personal business**

66	Communications, except radio and TV.	Money transfer services
70A	Finance .....	Travel and entertainment card fees
70B	Insurance .....	Surety insurance
72B	Personal and repair services (except auto).	Tax return preparation services (without accounting, auditing, or bookkeeping services)
73B	Legal, engineering, accounting, and related services.	Tax preparation services of accounting, auditing, and bookkeeping establishments
73C	Other business and professional services, except medical.	Detective and protective services Employment agency services (except theatrical agencies and motion picture casting bureaus) Photocopying and duplicating services Secretarial services
73D	Advertising .....	Newspaper classified advertising
77B	Educational and social services, and membership organizations.	Labor unions and similar labor organizations Professional membership organizations such as bar, dental, engineering, medical, and scientific associations
78	Federal Government enterprises	Postal money orders
80	Noncomparable imports .....	Expenditures of U.S. labor unions in Canada

**70. New autos**

59A	Motor vehicles (passenger cars and trucks).	Passenger cars (foreign and domestic)
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**71. Net purchases of used autos**

81	Scrap, used and secondhand goods.	Sales of ferrous scrap Used passenger cars
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**72. Other motor vehicles**

59A	Motor vehicles (passenger cars and trucks).	Light trucks, vans, and sport utility vehicles
61	Other transportation equipment	Automobile and light truck trailers Motor homes, including conventional, chopped van, and van campers Other transportation equipment and parts Travel trailers and campers

I-O code	Description	Products
81	Scrap, used and secondhand goods.	Used recreational vehicles Used trucks

**73. Tires, tubes, accessories, and other parts**

19	Miscellaneous fabricated textile products.	Automobile seat covers
32	Rubber and miscellaneous plastics products.	Gaskets, packing, and sealing devices Inner tubes Motor vehicle transmission belts Motorcycle, motorbike, and moped tires Passenger car and truck tires Rubber and plastics hose for motor vehicles Rubber mats, automotive
35	Glass and glass products .....	Automotive mirrors
42	Other fabricated metal products	Automobile coil springs and hot formed leaf springs for replacement Motor vehicle hardware including lock units, door window handles, window regulators, hinges, and license plate brackets Wire chain
50	Miscellaneous machinery, except electrical.	Carburetors, pistons, rings, and valves
52	Service industry machinery .....	Air conditioning systems for automobiles and trucks
55	Electric lighting and wiring equipment.	Automotive lamps Vehicular lighting equipment
56	Audio, video, and communication equipment.	Automobile radios
57	Electronic components and accessories.	Auto antennas
58	Miscellaneous electrical machinery and supplies.	Battery charging alternators, generators, and regulators Cranking motors (starters) Ignition harness and cable sets Parts for engine electrical or electronic equipment, including armatures and field coils Spark plugs Storage batteries
59B	Truck and bus bodies, trailers, and motor vehicle parts.	Filters (fuel, oil, air, hydraulic, coolant) for motor vehicles New motor vehicle parts and accessories, excluding filters Rebuilt automotive components, excluding carburetors and engine electrical equipment
81	Scrap, used and secondhand goods.	Sales of scrap other than ferrous metal Used tires Used auto parts

**74. Repair, greasing, washing, parking, storage, rental and leasing**

75	Automotive repair and services	Automobile parking Automotive repair services, including body and paint shops Car rental and leasing Car washes Other automotive services, including towing and rustproofing Tire retreading and repair Truck leasing and rental Utility trailer and recreational vehicle rental
76	Amusements .....	Parking fees at theatrical productions and professional and semi-professional sports clubs
77B	Educational and social services, and membership organizations.	Parking fees at higher education establishments

**75. Gasoline and oil**

31	Petroleum refining and related products.	Aviation gasoline, except jet fuel Light fuel oil Liquefied petroleum gases Lubricating oils and greases Motor gasoline
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**76. Bridge, tunnel, ferry, and road tolls**

79	State and local government enterprises.	Bridge, tunnel, ferry, and road tolls
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I-O code	Description	Products
<b>77. Motor vehicle insurance</b>		
70B	Insurance .....	Auto insurance
<b>79. Mass transit systems</b>		
65A	Railroads and related services; passenger ground transportation.	Local and suburban transit (public and private) Railroad passenger transportation School bus transportation
<b>80. Taxicab</b>		
65A	Railroads and related services; passenger ground transportation.	Taxicab transportation and tips
<b>82. Railway</b>		
65A	Railroads and related services; passenger ground transportation.	Rail passenger transportation and tips, including Amtrak
<b>83. Bus</b>		
65A	Railroads and related services; passenger ground transportation.	Bus charter service, except local Intercity and rural bus transportation
<b>84. Airline</b>		
65D	Air transportation .....	Domestic air transportation, including excess baggage
<b>85. Other intercity transportation</b>		
65A	Railroads and related services; passenger ground transportation.	Rail passenger transportation, including Amtrak Limousine services Vanpool operations
65B	Motor freight transportation and warehousing.	Express commuter bus service
65C	Water transportation .....	Ferry transportation
65E	Pipelines, freight forwarders, and related services.	Tour operators
<b>87. Books and maps</b>		
26B	Other printing and publishing .....	Art reproductions and prints Maps and atlases Other books, including paperback, book clubs, mail-order, pamphlets, and audio books Miscellaneous publications, including almanacs, yearbooks, and travel guides Religious books Technical, scientific, and professional books, including law books and medical books Textbooks, workbooks, tests, and manuals
69B	Retail trade .....	Handling charges of book stores
81	Scrap, used and secondhand goods.	Used books
<b>88. Magazines, newspapers, and sheet music</b>		
26A	Newspapers and periodicals .....	Farm periodicals General and consumer periodicals Newspapers Other periodicals, including specialized business and professional periodicals
26B	Other printing and publishing .....	Business service publications Miscellaneous publications, including racing forms and shopping news Sheet music
81	Scrap, used and secondhand goods.	Sales of scrap paper Used magazines and newspapers
<b>89. Nondurable toys and sport supplies</b>		
1	Livestock and livestock products	Miscellaneous animals including worms
3	Forestry and fishery products ....	Christmas trees

I-O code	Description	Products
13	Ordnance and accessories .....	Small arms ammunition
17	Miscellaneous textile goods and floor coverings.	Fish nets and fish line
24	Paper and allied products, except containers.	Party and holiday goods and accessories
26B	Other printing and publishing .....	Playing cards
27A	Industrial and other chemicals ...	Fireworks and pyrotechnics, including toy pistol caps Swimming pool chemical preparations
32	Rubber and miscellaneous plastics products.	Balloons Rubber toys, including balls
53	Electrical industrial equipment and apparatus.	Fluorescent lamp ballasts and specialty transformers
55	Electric lighting and wiring equipment.	Christmas tree lamps Flash bulbs Photographic lamps, except flash
58	Miscellaneous electrical machinery and supplies.	Electric Christmas tree ornaments
63	Ophthalmic and photographic equipment.	Photo film and paper Photographic chemicals
64	Miscellaneous manufacturing .....	Christmas tree ornaments and decorations, excluding glass and electrical Dolls and stuffed toys Electronic games and toys Feathers, plumes, and artificial flowers Fishing tackle and equipment Nondurable golf equipment, including balls Nondurable team sports equipment, including balls Nondurable wading and above ground pools Non-electronic games Other nondurable sporting and athletic goods, including archery, tennis, and racquetball balls Skateboards Toys and hobbies
72B	Personal and repair services (except auto).	Electrical and electronic repair
81	Scrap, used and secondhand goods.	Used toys, hobby goods, and games

**90. Wheel goods, sports and photographic equipment, boats, and pleasure aircraft**

13	Ordnance and accessories .....	Small arms, including rifles, shotguns, and pistols
19	Miscellaneous fabricated textile products.	Camping tents Gym bags Parachutes Sails and other canvas products Sleeping bags
32	Rubber and miscellaneous plastics products.	Inner tubes Tires, including bicycle Rubber boats and life rafts
33+34	Footwear, leather, and leather products.	Camera and binocular cases Dog collars, leashes, and other leather household pet accessories Leather holsters Saddlery, harness, and accouterments
42	Other fabricated metal products	Marine hardware Pocket and pen knives Wire cages
43	Engines and turbines .....	Outboard motors
58	Miscellaneous electrical machinery and supplies.	Aircraft batteries Electrical outboard motors for boats
60	Aircraft and parts .....	Complete aircraft, except military
61	Other transportation equipment	All-terrain vehicles Bicycles and parts Boat repair Boat trailers Golf carts and parts Inboard motorboats Inboard-outdrive boats Motorcycles, motor scooters, motorbikes, mopeds, and parts Other boats, including sailboats Outboard motorboats Self-propelled golf carts and parts Snowmobiles

I-O code	Description	Products
62	Scientific and controlling instruments.	Binoculars Navigation and guidance systems
63	Ophthalmic and photographic equipment.	Still picture equipment Motion picture equipment
64	Miscellaneous manufacturing .....	Baby carriages and children's vehicles, except bicycles Billiard and pool tables and supplies Bowling balls Durable above ground pools Durable golf equipment, including golf clubs Durable team sports equipment Exercise equipment, including weight lifting equipment, multi-purpose home gyms, rowing machines, and exercise cycles Ice skates and roller skates, excluding clamp-on type roller skates Other durable sporting and athletic goods, including, archery, tennis, and racquetball equipment Other fabricated products Playground equipment, including swing sets, slides, seesaws, and sandboxes Snow ski and other winter sports equipment Surfboards, sailboards, water skis, and SCUBA and scindiving equipment
73C	Other business and professional services, except medical.	Camera repairs Gunsmith services Leather goods repairs Motorcycle and bicycle repairs Other repair services
81	Scrap, used and secondhand goods.	Used aircraft and aircraft engines Used boats Used motorcycles Used optical equipment Used photographic equipment and supplies Used sporting goods

**91. Video and audio products, computing equipment, and musical instruments**

33+34	Footwear, leather, and leather products.	Musical instrument cases
51	Computer and office equipment	Computer storage equipment, including rigid, flexible, and other disk drives Display terminals Impact computer printers, including line-type and serial type Keying equipment, including mouse devices Nonimpact printers, including laser and inkjet Personal computers, workstations, and portable computers Scanning devices, plotters, and monitors
56	Audio, video, and communication equipment.	Amateur radio communications systems Compact and video disc players Home and portable radios Home entertainment equipment kits Household television receivers, including television combinations Loudspeakers, tuners, and receivers Modems Other communications systems and equipment, except broadcast Other consumer audio and video equipment Phonograph records, prerecorded audio tapes, and compact discs Radio-phonograph-tape recorder combinations Tape recorders and players
57	Electronic components and accessories.	Earphones and headsets Home antennas Phonograph cartridges and needles
58	Miscellaneous electrical machinery and supplies.	Blank audio and video tapes Computer disks (magnetic recording media) Consumer electronic equipment Primary cells and batteries
64	Miscellaneous manufacturing .....	Musical instruments, parts, and accessories
71B	Real estate and royalties .....	Royalties on pre-recorded video tapes
73A	Computer and data processing services.	Prepackaged software
76	Amusements .....	Pre-recorded video tapes
81	Scrap, used and secondhand goods.	Used computer hardware, software, and supplies Used musical instruments Used television and audio equipment Used video tapes

**92. Radio and television repair**

72B	Personal and repair services (except auto).	Radio and television repair
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I-O code	Description	Products
73C	Other business and professional services, except medical.	Television rental
<b>93. Flowers, seeds, and potted plants</b>		
2	Other agricultural products .....	Cut flowers Other nursery products Potted plants Seeds
73C	Other business and professional services, except medical.	Florists' telegraph services (FTD, etc.)
<b>95. Motion picture theaters</b>		
65D	Air transportation .....	Fees for movies shown on commercial airlines
76	Amusements .....	Motion picture theaters, including drive-ins
77B	Educational and social services, and membership organizations.	Movies shown by higher education establishments
<b>96. Legitimate theaters and opera, and entertainments of nonprofit institutions (except athletics)</b>		
76	Amusements .....	Dance groups and artists Live theatrical productions Other music and entertainment productions Producers of radio and television shows, except tape (tax-exempt) Services of managers and agents (tax-exempt) Symphony, opera, and chamber music organizations Ticket agencies
77B	Educational and social services, and membership organizations.	Theatrical presentations at higher education establishments
<b>97. Spectator sports</b>		
76	Amusements .....	Exhibition bowling Other sporting events, including spectator sport events held in roller and ice-skating rinks Professional or semi-professional sports events, including baseball, football, basketball, and ice hockey Racetrack admissions, including auto, horse, and dog tracks
77B	Educational and social services, and membership organizations.	Spectator sporting events held by public and private colleges and universities Spectator sporting events held by public and private elementary and secondary school systems
<b>98. Clubs and fraternal organizations</b>		
76	Amusements .....	Membership sports and recreation clubs, including equipment rental Physical fitness facilities, including gymnasiums and athletic clubs
77B	Educational and social services, and membership organizations.	Civic, social, and fraternal associations
<b>99. Commercial participant amusements</b>		
65A	Railroads and related services; passenger ground transportation.	Sightseeing via limousine, bus, and other ground transportation
65C	Water transportation .....	Marinas Sightseeing via boats and ferries
65D	Air transportation .....	Aircraft repair and storage Landing fees Sightseeing via planes and helicopters
70B	Insurance .....	Aircraft insurance
73C	Other business and professional services, except medical.	Airplane rental and leasing
76	Amusements .....	Amusement parks, devices, and rides Bathing beaches and swimming pools Bowling and billiards Coin-operated gambling machines Dance bands Dance studios and halls

I-O code	Description	Products
77B	Educational and social services, and membership organizations.	Gaming at gambling establishments, hotel/motel casinos, Indian reservations, and sports and recreation clubs Gymnasiums and athletic clubs Other music and entertainment presentations Other recreation and amusements Picnic grounds Public golf courses Recreational equipment rental, including rowboats, canoes, and beach chairs Riding stables Shooting galleries Tips on gaming Bowling and billiards at higher education establishments Flying instruction

**100. Pari-mutuel net receipts**

76	Amusements .....	Parimutuel betting, including dog and horse racing Off-track betting
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**101. Other recreational expenditures**

1	Livestock and livestock products	Horses Miscellaneous animals, including cats and dogs
3	Forestry and fishery products ....	Game preserves Miscellaneous marine products, including turtles and frogs
4	Agricultural, forestry, and fishery services.	Pet grooming and boarding
66	Communications, except radio and TV.	Cable and other pay television services
67	Radio and TV broadcasting .....	Public television and radio
72A	Hotels and lodging places .....	Public room rental at hotels Recreational vehicle parks and campsites Sporting and recreational camps
72B	Personal and repair services (except auto).	Portrait studios
73A	Computer and data processing services.	Computer rental and leasing Information retrieval services
73C	Other business and professional services, except medical.	Miscellaneous repair services Party supplies rental and leasing, including dishes, silverware, and tables Photofinishing, including one-hour minilabs Video recorder and player rental
76	Amusements .....	Carnivals, circuses, and fairs Coin-operated amusement devices Gymnasiums and athletic clubs Other amusements and recreation services, including vacation tour guides and tips and government parks and camping Video tape rental
77A	Health services .....	Veterinary services
77B	Educational and social services, and membership organizations.	Arboreta and botanical or zoological gardens Business associations Museums and art galleries Professional membership organizations Public secondary school social (recreational) activities
79	State and local government enterprises.	Lotteries
81	Scrap, used and secondhand goods.	Used stamps and coins

**103. Higher education**

77B	Educational and social services, and membership organizations.	Higher education services, including public and private colleges, universities, theological seminaries, and professional schools
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**104. Nursery, elementary, and secondary schools**

77B	Educational and social services, and membership organizations.	Child daycare services Elementary and secondary education services, including parochial schools and military academies
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I-O code	Description	Products
<b>105. Other private education and research</b>		
76	Amusements .....	Dance schools
77B	Educational and social services, and membership organizations.	Business and secretarial schools Data processing schools Educational and charitable trusts Nonprofit research and development Other schools and educational services, including survival schools, reading schools, drama schools, and Bible schools Other vocational schools, including commercial art schools, correspondence schools, trade schools, and real estate schools Sales and services of higher education establishments incidental to educational activities
<b>106. Religious and welfare activities</b>		
77B	Educational and social services, and membership organizations.	Arboreta and botanical or zoological gardens Child daycare services Civic, social, and fraternal organizations Individual and family social services Job training and vocational rehabilitation services Libraries and information centers Membership organizations, including athletic associations, automobile owners' associations, and art councils Museums and art galleries Political organizations Religious and charitable trusts Religious organizations Residential care Social services, including advocacy groups and community development groups
<b>108. Foreign travel by U.S. residents</b>		
65C	Water transportation .....	International water transportation of passengers
65D	Air transportation .....	International air transportation, including excess baggage charges
80	Noncomparable imports .....	Educational expenditures by U.S. students abroad, including tuition, books, and board Travel by U.S. residents abroad, including meals, lodging, and local transportation
<b>109. Expenditures abroad by U.S. residents</b>		
80	Noncomparable imports .....	Expenditures abroad by U.S. civilians working for U.S. nondefense agencies Expenditures abroad by U.S. residents working for unaffiliated foreigners Purchases abroad by U.S. military personnel
<b>110. Expenditures in the United States by nonresidents</b>		
83	Rest of the world adjustment to final uses.	Expenditures by foreigners in the U.S. working for foreign governments and international organizations Expenditures by Mexican, West Indian, and Puerto Rican workers in the U.S. Expenditures by foreign ocean and air crews in the U.S. Expenditures by foreigners for medical services Foreign student's educational expenditures Travel by foreigners in the U.S.
<b>111. Personal remittances in kind to nonresidents</b>		
83	Rest of the world adjustment to final uses.	Donations for relief Personal gifts sent to foreigners

# Appendix E

## Products Included in Producers' Durable Equipment Expenditure Categories

This appendix identifies the products from the input-output (I-O) commodities making up each producers' durable equipment (PDE) expenditure category in the national income and product accounts (NIPA's). It expands information provided in supplementary table E on page M-24 of this volume.

In what follows, each PDE category is first identified by its line number and descriptor in NIPA table 5.8, "Private Purchases of Producers' Durable Equipment by Type."<sup>1</sup> Information on the composition of the PDE category is contained in three columns. The first column provides the number and the second column the description of each I-O commodity included in the given PDE category.<sup>2</sup> The

third column provides a list of products from the identified I-O commodity that are included in the PDE category.

For example, the first PDE category shown in the table below is "5. Computers and peripheral equipment," indicating that this PDE category corresponds to line 5, computers and peripheral equipment, in NIPA table 5.8. The first two columns identify two I-O commodities—"computer and office equipment" (I-O 51) and "computer and data processing services" (I-O 73A)—as making up this NIPA category. The third column identifies computer storage equipment and display terminals, as well as mainframes and personal computers, as being among the *products* from the *I-O commodity* "computer and office equipment" in the *NIPA PDE category* "computers and peripheral equipment."

1. Table 5.8, "Private Purchases of Producers' Durable Equipment by Type," was most recently revised and updated in the August 1998 SURVEY.

2. Transportation costs and trade margins are not included in the list of products in this appendix. Information in supplementary table E identifies the various margins and transportation costs for each NIPA PDE category.

I-O code	Description	Products
<b>5. Computers and peripheral equipment</b>		
51	Computer and office equipment	Computer storage equipment, including rigid, flexible, and other disk drives Disk, optical, and auxiliary storage systems for multiuser computer systems Display terminals, including graphics type Impact computer printers, including line- and serial-type Keying equipment, digitizers, light pen tablets, and other manual input devices Large-, medium-, and small-scale processing equipment ("mainframes") Nonimpact printers, including laser, inkjet, thermal, and ion deposition Optical disk drives, including CD-ROM and magneto-optical equipment Other computer peripheral equipment Other processing units Personal computers, workstations, and portable computers Remote batch terminals Scanning devices, plotters, and monitors Serial access storage equipment (tape drives) Teleprinters
73A	Computer and data processing services.	Equipment included in computer integrated systems
<b>6. Office equipment except computers</b>		
50	Miscellaneous machinery, except electrical.	Industrial scales Motor truck scales Parts, attachments, and accessories for scales and balances

I-O code	Description	Products
51	Computer and office equipment	Railroad track scales Retail and commercial scales Accounting, bookkeeping, and billing machines Automatic typing and word processing machines Coin and currency handling (counting, dispensing, etc.), cash registers, funds transfer, and point-of-sale devices Duplicating machines Mailing, letter handling, and addressing machines Standard typewriters, dictating, transcribing, recording, and all other office machines
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used computers Used office equipment Used typewriters

### 7. Communication equipment

13	Ordnance and accessories .....	Services on complete space vehicles
38	Primary nonferrous metals manufacturing.	Insulated telephone and telegraph wire and cable
51	Computer and office equipment	Teleprinters
56	Audio, video, and communication equipment.	Aeronautical radio communications systems Amateur radio communications systems Broadcast, studio, and related electronic equipment Carrier line equipment, office and line repeaters Facsimile communications equipment (complete) Fiber optics equipment Household television receivers, including television combinations Intercommunication systems, including inductive paging systems Loudspeakers, microphones, tuners, and receivers Mobile communications systems Modems, voice frequency equipment, answering devices, and key systems Other communications systems and equipment, except broadcast Radio navigational and locational communications systems Railway signals and other railroad signal systems Telephone sets Telephone switching and switchboard equipment Vehicular and pedestrian traffic control equipment
58	Miscellaneous electrical machinery and supplies.	Electronic teaching machines, teaching aids, trainers, and simulators Laser systems and equipment, except communication Other electronic equipment Ultrasonic equipment (except medical and dental)
62	Scientific and controlling instruments.	Search, detection, navigation, and guidance systems
66	Communications, except radio and TV.	Telegraph equipment installation Telephone equipment installation
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used communication equipment Used TVs

### 8. Instruments

62	Scientific and controlling instruments.	Analytical instruments Anesthesia apparatus, blood transfusion equipment, and mechanical therapy appliances Breathing devices, excluding anesthetic apparatus Continuous process instruments for on-steam gas and liquid analysis Counting devices, excluding motor vehicle instruments Dental laboratory equipment and supplies Dental professional equipment and hand instruments Drafting, photogrammetric, and geodetic equipment Electronic systems, industry computers, and all other industrial process instruments Flow and liquid level instruments Gas meters and liquid meters Hospital furniture, excluding beds and chairs Laboratory apparatus and furniture Metabolism, blood pressure, optical diagnostic, and other diagnostic equipment Nuclear radiation detection and monitoring instruments Other surgical and medical instruments and appliances Patient transport devices and wheelchairs Physical properties and kinematic testing and inspection equipment Pneumatic systems, including all system-type control, display, and computing systems Pressure (gauge, absolute vacuum) and draft instruments
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I-O code	Description	Products
73B	Legal, engineering, accounting, and related services.	Repair of analytical instruments Repair of surgical and therapeutic appliances Seismic instruments and all other geophysical instruments and equipment Surgical instruments, orthopedic instruments, and eye, ear, nose, and throat instruments Surveying instruments Temperature and humidity instruments Therapeutic appliances, including hydrotherapy devices
81	Scrap, used and secondhand goods.	Engineering services Used instruments Used medical equipment

### 9. Photocopy and related equipment

62	Scientific and controlling instruments.	Optical test and inspection equipment, including microscopes Telescopes and other astronomical equipment
63	Ophthalmic and photographic equipment.	Microfilming, blueprinting, and whiteprinting equipment Motion picture equipment, including projection screens and processing equipment Photocopying equipment Repair of photographic equipment Still picture equipment, including cameras, projectors, and commercial finishing equipment
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used photographic equipment

### 11. Fabricated metal products

5+6	Metallic ores mining .....	Processed uranium
27A	Industrial and other chemicals ...	Conversion, enrichment, and fabrication of uranium concentrates in government-owned, contractor-operated establishments
37	Primary iron and steel manufacturing.	Primary metal products contract work
39	Metal containers .....	Metal barrels, including milk shipping and delivery, and beer barrels
40	Heating, plumbing, and fabricated structural metal products.	Air-conditioning ducts and stove pipe Air receiver tanks Bins and vats Boiler shops contract work Electronic enclosures Gas cylinders Heat exchangers and steam condensers (except for nuclear applications) Liquefied petroleum gas tanks Metal tanks (nonpressure) Metal tanks and vessels (pressure) Nuclear reactor steam supply systems Other pressure tanks (including anhydrous ammonia tanks) Restaurant and hotel kitchen sheet metal equipment Shielding for use in nuclear reactor buildings
42	Other fabricated metal products	Circular saw blades (metal working) Fabricated metal products contract work Fabricated metal products, including safes, vaults, steel boxes, and metal ladders Fabricated pipe and fittings Industrial valves, excluding water, nuclear, and solenoid Metal fittings, flanges, and unions for piping systems Nuclear valves (n-stamp only) Valves for water works, except fire hydrants Woodworking power saw blades
46	Materials handling machinery and equipment.	Overhead traveling cranes, hoists, and monorail systems contract work
73B	Legal, engineering, accounting, and related services.	Engineering services

### 12. Engines and turbines

43	Engines and turbines .....	Diesel, semi-diesel, and dual-fuel engines Gasoline and gas-gasoline engines Installation of turbines and turbine generator sets Outboard motors Piston-type natural gas engines, except turbines, including LPG engines Wind, steam, hydraulic, gas turbines and turbine generator sets
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I-O code	Description	Products
73B	Legal, engineering, accounting, and related services.	Engineering services

### 13. Metalworking machinery

47	Metalworking machinery and equipment.	Assembly machines Boring machines Drilling machines Gas welding and cutting equipment Gear cutting machines Grinding, polishing, buffing, honing, and lapping machines Industrial molds Installation of metal cutting and metal forming machine tools Lathes Metalworking presses Milling machines Other metal cutting and metal forming machine tools Other metalworking machinery Power driven hand tools, electric, pneumatic, hydraulic, power actuated, and engine driven Punching and shearing machines and bending and forming machines Rebuilt metal cutting and metal forming machine tools Repair of metal cutting machine tools Rolling mill machinery Soldering equipment Special dies and tools, die sets, jigs, and fixtures
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used metalworking machinery

### 14. Special industry machinery, n.e.c.

32	Rubber and miscellaneous plastics products.	Roll coverings and printers' blankets
42	Other fabricated metal products	Machine tools for woodcutting
48	Special industry machinery and equipment.	Ammunition and explosive loading machinery Automotive maintenance equipment, except handtools Cement making machinery Chemical manufacturing machinery and equipment Clay products forming equipment Concrete products forming equipment Cotton ginning machinery Electric battery manufacturing machinery Electroplating and metal finishing equipment, excluding rolling mill Food products machinery Foundry machinery and equipment, excluding patterns and molds Glass making machinery and equipment Industrial sewing machines, excluding shoe sole stitching machines Installation of food products machinery Installation of printing trades machinery Installation of special industry machinery, n.e.c. Installation of textile machinery Machines for working stone, ceramics, or like materials including glass Other special industry machinery Paper industries machinery Petroleum refining machinery Plastics working machinery and equipment, excluding patterns and molds Printed circuit board manufacturing machinery, except testing Printing trades machinery Repair of paper industries machinery Repair of printing trades machinery Repair of textile machinery Repair of woodworking machinery Rubber working machinery and equipment, excluding tire molds Semiconductor manufacturing equipment Textile machinery, including parts and attachments Tobacco processing machinery Woodworking machinery, including parts and attachments
49	General industrial machinery and equipment.	Installation of packaging machinery Packing, packaging, and bottling machinery
52	Service industry machinery .....	Services on commercial laundry equipment
58	Miscellaneous electrical machinery and supplies.	Other electrical products
73B	Legal, engineering, accounting, and related services.	Engineering services

I-O code	Description	Products
81	Scrap, used and secondhand goods.	Used food processing machinery and equipment Used special industry machinery

**15. General industrial, including materials handling, equipment**

44+45	Farm, construction, and mining machinery.	Automobile hoists
46	Materials handling machinery and equipment.	Automatic stacking machines Bulk material handling conveyors and systems, except hoists and farm elevators Hoists Industrial trucks, tractors, and mobile straddle carriers and cranes Installation of conveyors and conveying equipment Unit handling conveyors and conveying systems, except hoists and farm elevators
49	General industrial machinery and equipment.	Air and gas compressors and vacuum pumps Centrifugal blowers and fans Dust collection and air-purification equipment for industrial gas cleaning systems Electric industrial furnaces, ovens, and kilns Electrical heating equipment for industrial use Electrostatic precipitation equipment Filters and strainers, except fluid power Filters for hydraulic and pneumatic fluid power systems Fuel-fired industrial furnaces, ovens, and kilns High-frequency induction and dielectric heating equipment Hot water heating circulator pumps, assembled pump units, and other pumps Industrial pumps, except fluid power pumps Industrial robots and attachments Industrial spraying equipment Other general industrial machinery Packing, packaging, and bottling machinery Pump drivers Repair of general industrial machinery Repair of packaging machinery
50	Miscellaneous machinery, except electrical.	Fluid power pumps and motors
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used general industry equipment

**16. Electrical transmission, distribution, and industrial apparatus**

47	Metalworking machinery and equipment.	Arc welding machines, accessories, and components Repair of welding apparatus Resistance welder electrodes, accessories, and components
53	Electrical industrial equipment and apparatus.	Capacitors for industrial use Commercial, institutional, and industrial general-purpose transformers Controls for adjustable speed drives Definite-purpose contractors and starters Fluorescent lamp ballasts and specialty transformers Fractional horsepower motors Integral horsepower motors and generators Marine and navy auxiliary controls Metal mill, crane, and hoist controls Miscellaneous electrical equipment for industrial use Motion controllers Motor generator sets Other general industrial controls Power and distribution transformers Power circuit breakers Power regulators, boosters, and other transformers Prime mover generator sets, except steam or hydraulic turbine Programmable controllers and other specific-purpose controllers Rectifying apparatus, except battery chargers Rheostats and resistors Switchgear excluding control panels, relays, low-volt assemblies
62	Scientific and controlling instruments.	Instruments to measure electricity Repair of instruments to measure electricity
73B	Legal, engineering, accounting, and related services.	Engineering services

**18. Trucks, buses, and truck trailers**

59A	Motor vehicles (passenger cars and trucks).	Buses and firefighting vehicles Light trucks, vans, and sport utility vehicles Trucks and truck tractors
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I-O code	Description	Products
59B	Truck and bus bodies, trailers, and motor vehicles parts.	Repair of truck and bus bodies Repair of truck trailers Truck trailers and chassis Truck, bus, and other vehicle bodies (except passenger car) for sale separately
81	Scrap, used and secondhand goods.	Used trucks and motor vehicles, excluding cars

**19. Autos**

59A	Motor vehicles (passenger cars and trucks).	Passenger cars
81	Scrap, used and secondhand goods.	Ferrous scrap Used auto parts Used passenger cars

**20. Aircraft**

22+23	Furniture and fixtures .....	Seats for aircraft
60	Aircraft and parts .....	Aircraft engines for civilian aircraft Civilian aircraft Modification, conversion, and overhaul of aircraft for civilian customers Other aeronautical services on complete aircraft
62	Scientific and controlling instruments.	Aeronautical and navigational instruments, except aircraft engine instruments
81	Scrap, used and secondhand goods.	Used aircraft and aircraft engines

**21. Ships and boats**

61	Other transportation equipment	Inboard motorboats Inboard-outdrive boats Nonpropelled ships Other boats, including canoes Outboard motorboats, including commercial Sailboats Self-propelled ships, nonmilitary Ship and boat repair, nonmilitary
81	Scrap, used and secondhand goods.	Used vessels

**22. Railroad equipment**

61	Other transportation equipment	Locomotives, new and rebuilt Other work and service railroad vehicles Passenger and freight train cars, new Rebuilt passenger and freight train cars Self-propelled and nonself-propelled streetcars, subway cars, rapid transit cars, and trolley buses
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used railroad equipment

**24. Furniture and fixtures**

22+23	Furniture and fixtures .....	Bedroom furniture, including cots and bed frames Chairs and seats, including theater, auditorium, and institutional Church pews and other church furniture Dining room and kitchen furniture Dual-purpose sleep furniture Fixtures for stores, banks, and offices, and other miscellaneous fixtures Folding tables, including banquet tables Hospital beds Infants' and children's furniture Infants' high chairs and car seats Library furniture Living room, library, family room, and den furniture Mattresses, including crib, and bedsprings Office furniture Other furniture and fixtures Other household furniture Other public building furniture Partitions (excluding accordion and folding-type doors) Porch, lawn, and other outdoor furniture Reed and rattan furniture (including willow, wicker, and cane)
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I-O code	Description	Products
73B	Legal, engineering, accounting, and related services.	Restaurant, cafeteria, and bar furniture and fixtures School furniture Shelving and lockers Sleep system ensembles, excluding water beds Storage racks and accessories Unpainted and ready-to-assemble furniture Upholstered household furniture Venetian blinds Window shades and accessories
81	Scrap, used and secondhand goods.	Engineering services Used building fixtures Used household furniture Used office furniture

**25. Tractors**

44+45	Farm, construction, and mining machinery.	Contractors' off-highway wheel tractors Crawler tractors Farm-type wheel tractors (2- and 4-wheel drive) Lawn and garden tractors
81	Scrap, used and secondhand goods.	Used construction tractors Used garden tractors

**26. Agricultural machinery, except tractors**

44+45	Farm, construction, and mining machinery.	Consumer nonriding garden equipment Farm machinery and equipment, excluding tractors
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used agricultural machinery

**27. Construction machinery, except tractors**

44+45	Farm, construction, and mining machinery.	Mixers, pavers, and related equipment Other construction machinery and equipment Power cranes, draglines, and shovels, including surface mining equipment, and attachments Scrapers, graders, rollers, and off-highway equipment Tractor shovel loaders
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used construction equipment (excluding tractors)

**28. Mining and oilfield machinery**

8	Crude petroleum and natural gas.	Installation of oil and gas field production equipment
44+45	Farm, construction, and mining machinery.	Mining machinery Oil and gas field derricks and well surveying machinery Oil and gas field production machinery and equipment, including equipment for surface, sub-surface, and subsea, and rod lifting equipment Other oil and gas field drilling machine and equipment Portable drilling rigs and parts Rotary drilling surface equipment
49	General industrial machinery and equipment.	Oil-well and oil-field pumps Subsurface pumps for oil-well pumping
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used mining equipment

**29. Service industry machinery**

50	Miscellaneous machinery, except electrical.	Amusement park equipment, including ferris wheels Installation of amusement park equipment
52	Service industry machinery .....	Automatic merchandising machines Commercial and industrial floor and carpet cleaning equipment Commercial and industrial vacuum cleaners Commercial car, bus, and truck washing equipment

I-O code	Description	Products
		Commercial cooking and food-warming equipment Commercial laundry, dry cleaning, and pressing machinery and equipment Commercial refrigerators and related equipment Compressors, including those over 10hp and ammonia refrigerant Dishwashing machines Garbage and trash compactors Heat transfer equipment, including ice making machines High-pressure cleaning and blasting equipment Measuring and dispensing pumps, including gasoline dispensing pumps and grease guns Other industrial and commercial service machines Other refrigeration and air-conditioning equipment, including soda fountain equipment and beer dispensing equipment Refrigeration condensing units (complete) Room air-conditioners and dehumidifiers Sewer pipe and drain cleaning equipment Water softeners
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used service industry equipment

### 30. Electrical equipment, n.e.c.

54	Household appliances .....	Attachments and cleaning tools for central vacuum systems Ceiling fans Coin-operated laundry equipment Electric, gas, and other ranges, ovens, and cooking equipment, including microwaves Nonelectric water heaters, indirect-fired Other small electromechanical and electrothermal appliances Portable air purifiers, dehumidifiers, and humidifiers Portable air space heaters Range hoods, oven hoods, and other ventilating and exhaust fans Refrigerators, including combination refrigerator-freezers Small electric household cooking appliances Vacuum cleaners Window, desk, and wall bracket fans
55	Electric lighting and wiring equipment.	Choke coils Electric lighting fixtures, commercial, industrial, and institutional Fluorescent lighting equipment, including technical and processing equipment Health lamp fixtures Lightning arrestors Residential lighting fixtures, portable
58	Miscellaneous electrical machinery and supplies.	Optical disks Other electrical products Rigid disks (magnetic recording media) Storage batteries for industrial trucks
62	Scientific and controlling instruments.	Electromedical equipment X-ray apparatus and tubes, including industrial, scientific, medical, and dental
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used electrical equipment Used household appliances

### 31. Other nonresidential equipment

17	Miscellaneous textile goods and floor coverings.	Carpets, rugs, and artificial grass Felt carpet and rug padding
20+21	Lumber and wood products .....	Miscellaneous wooden products
32	Rubber and miscellaneous plastics products.	Foam rubber and sponge carpet and rug cushions Plastics foam carpet and rug cushions
44+45	Farm, construction, and mining machinery.	Consumer nonriding lawn, garden, and snow equipment Farm machinery and equipment excluding tractors Turf and grounds care equipment
61	Other transportation equipment	All-terrain vehicles Automobile and light truck trailers Motorcycles, including three-wheel, motor scooters, motorbikes, and mopeds Self-propelled golf carts and in-plant person carriers Self-propelled snowmobiles Travel trailers and fold down camping trailers
64	Miscellaneous manufacturing .....	Barber and beauty shop furniture and equipment Billiard and pool tables and supplies Bowling alleys, balls, and supplies Chemical fire-extinguishing equipment

I-O code	Description	Products
		Coin-operated amusement machines Electric signs Gymnasium and exercise equipment Ice skates, shoe and roller rink skates, excluding clamp-on type roller skates Nonelectric signs Other musical instruments Pianos and organs Playground equipment, heavy-duty Snow skis and other winter sports equipment Surfboards, sailboards, water skis, and SCUBA and skindiving equipment Team sports equipment, including baseball, football, and soccer
73B	Legal, engineering, accounting, and related services.	Engineering services
81	Scrap, used and secondhand goods.	Used kitchenware Used lawn and garden equipment Used tools

**32. Sale of equipment scrap, excluding autos**

81	Scrap, used and secondhand goods.	Ferrous scrap Scrap other than ferrous metal
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**33. Residential (landlord durables)**

17	Miscellaneous textile goods and floor coverings.	Carpets, rugs, and artificial grass Felt carpet and rug padding
22+23	Furniture and fixtures .....	Bedroom furniture, including cots and bed frames Dining room and kitchen furniture Dual-purpose sleep furniture Infants' and children's furniture Infants' high chairs and car seats Living room, library, family room, and den furniture Mattresses, including crib, and bedsprings Other household furniture Reed and rattan furniture (including willow, wicker, and cane) Sleep system ensembles, excluding water beds Upholstered household furniture
32	Rubber and miscellaneous plastics products.	Foam rubber and sponge carpet and rug cushions Plastics foam carpet and rug cushions
54	Household appliances .....	Dishwashing machines Electric, gas, and other ranges, ovens, and cooking equipment, including microwaves Refrigerators, including combination refrigerator-freezers Small electric household cooking appliances Water heaters, electric and nonelectric Window, desk, and wall bracket fans
56	Audio, video, and communication equipment.	Home and portable radios and radio-phonograph-tape recorder combinations Household television receivers, including television combinations

## Appendix F

# Mathematical Derivation of the Total Requirements Tables

This appendix discusses the matrix algebra underlying the derivation of the I-O total requirements tables.<sup>1</sup> The following definitions are used:

$q$  is a column vector in which each entry shows the total amount of the output of a commodity.

$U$  is a commodity-by-industry matrix in which the column shows for a given industry the amount of each commodity it uses, including noncomparable imports (I-O 80) and scrap and used and secondhand goods (I-O 81). (Hereafter, I-O 81 is designated as scrap.)

This is the intermediate portion of the use table.

$i$  is a unit, or summation, vector; all entries are 1's.

$e$  is a column vector in which each entry shows the total sales to final users for a commodity (from the use table).

$g$  is a column vector in which each entry shows the total amount of an industry's output, including its production of scrap.

$V$  is an industry-by-commodity matrix in which each column shows for a given commodity the amount produced in each industry.  $V$  is the make table, adjusted to show only zero entries in the column for scrap. (Scrap is removed so that demand for it does not generate output in the industries where it originated.)

$h$  is a column vector in which each entry shows the total amount of an industry's production of scrap. (The estimate of  $h$  is contained in column 81 of the make table.)

$B$  is a commodity-by-industry matrix in which each entry in a column shows the amount of a commodity that an industry used per dollar of its output. Matrix  $B$  is derived from matrix  $U$ .

$\hat{\phantom{x}}$  is a symbol that, when placed over a vector, indicates a square matrix in which the elements of the vector

appear in the main diagonal cells and zeros appear in the other cells.

$D$  is an industry-by-commodity matrix in which each entry in a column shows the share of total output of a given commodity produced in each industry. This matrix is the market share matrix and is derived from matrix  $V$ .

$p$  is a column vector in which each entry shows the ratio of the value of scrap produced in an industry to that industry's total output.

$I$  is the identity matrix, a square matrix in which 1's appear in the main diagonal cells and zeros appear in the other cells.

$W$  is an industry-by-commodity matrix in which each entry in a column shows the share of total output of a given commodity produced in each industry, with each industry's commodity share adjusted for scrap produced by the industry. This matrix is the transformation matrix and is derived from matrix  $D$  and vector  $p$ .

The following are identities:

$$(1) \quad q = Ui + e; \text{ and}$$

$$(2) \quad g = Vi + h.$$

The following are assumptions:

First, inputs are required in proportion to output, and the proportions are the same for an industry's primary and secondary products. This is the industry technology assumption.

$$(3) \quad U = B\hat{g}.$$

Second, each commodity (other than scrap) is produced by the various industries in fixed proportions.

$$(4) \quad V = D\hat{q}.$$

1. The notation and derivation of the tables follow the System of National Accounts recommended by the United Nations. See *A System of National Accounts*, Studies in Methods, Series F, No. 2, Rev. 3 (New York: United Nations, 1968); also, R. Stone, M. Bacharach, and J. Bates, "Input-Output Relationships, 1951-1966," *A Programme for Growth*, Vol. 3 (London: Chapman and Hall, 1963).

Third, scrap output in each industry is proportional to total output of the industry.

$$(5) \quad h = \hat{p}g.$$

The model expressed in equations (1) through (5) thus involves three constants ( $B$ ,  $D$ , and  $p$ ) and six variables ( $U$ ,  $V$ ,  $h$ ,  $e$ ,  $q$ , and  $g$ ). The model solution is derived as follows.

Substituting (3) into (1) gives

$$(6) \quad q = Bg + e.$$

Substituting (4) into (2) gives

$$(7) \quad g - h = Dq.$$

Substituting (5) into (7) and solving for  $g$  gives

$$(8) \quad \begin{aligned} g - \hat{p}g &= Dq, \\ (I - \hat{p})g &= Dq, \text{ and} \\ g &= (I - \hat{p})^{-1}Dq. \end{aligned}$$

Let  $(I - \hat{p})^{-1}D = W$ ; then

$$(9) \quad g = Wq.$$

Substituting (9) into (6) and solving for  $q$  gives

$$(10) \quad \begin{aligned} q &= BWq + e, \\ (I - BW)q &= e, \text{ and} \\ q &= (I - BW)^{-1}e. \end{aligned}$$

Substituting (10) into (9) gives

$$(11) \quad g = W(I - BW)^{-1}e.$$

$(I - BW)^{-1}$  is the commodity-by-commodity total requirements matrix, which shows the commodity output required per dollar of each commodity delivered to final users.<sup>2</sup>

$W(I - BW)^{-1}$  is the industry-by-commodity total requirements matrix, which shows the industry output required per dollar of each commodity delivered to final users.<sup>3</sup>

2. Tables are prepared at detailed and summary levels. For the summary tables, the adjustments for secondary production were made at the detailed level and then aggregated before the total requirements tables were calculated.

3. See the previous footnote.