

Preview of the Benchmark Input-Output Accounts for 2002

Preliminary Estimates of Gross Output

Proposed Classification Framework

By Karla L. Stanley-Allen, Nicholas R. Empey, Douglas S. Meade, Stanislaw J. Rzeznik, Mary L. Streitwieser, and Monica S. Strople

THIS article presents BEA's preliminary estimates of gross output for the 2002 benchmark input-output (I-O) accounts.¹ These estimates provide a comprehensive view of the distribution of gross output in the U.S. economy for 2002 and a first look at the proposed classification framework for the industries and commodities to be presented in the final 2002 benchmark I-O accounts.

The final estimates of the Bureau of Economic Analysis' 2002 benchmark input-output accounts will be published in the summer of 2007. These accounts will provide a detailed picture of the interdependent struc-

ture of the U.S. economy.² BEA's I-O accounts—both the benchmark accounts and the annual industry accounts—provide detailed information on the production of goods and services (commodities) by industry, the use of the commodities required to produce the output, and the distribution to final users. The I-O accounts also provide the basis for a more detailed understanding of the national income and product accounts (NIPAs), showing the commodity composition of GDP by final use category and the distribution of value added by industry on an establishment basis.

These preliminary benchmark estimates are being

1. Gross output is a measure of what is produced in the domestic economy. It reflects the value of intermediate inputs (energy, materials, and purchased services) and the value added created by the industry's labor and capital. Gross output includes both the value of what is produced and then used by others in their production processes as well as the value of what is produced and sold to final users. Gross output for the economy reflects double counting and is much higher than GDP; in the benchmark I-O accounts it is measured in nominal dollars.

2. The 2002 benchmark I-O accounts will be the tenth in a series of such accounts published by BEA. The nine previous benchmark accounts covered 1958, 1963, 1967, 1972, 1977, 1982, 1987, 1992, and 1997. The 1997 accounts were presented in the December 2002 issue of the *SURVEY OF CURRENT BUSINESS*, and were the first set of accounts classified according to the 1997 North American Industry Classification System (NAICS). The new accounts will be classified according to the 2002 NAICS. Classification changes arising from the 2002 NAICS revision are discussed in a section below.

Plans for the 2002 Benchmark Input-Output Accounts

The preliminary 2002 benchmark I-O industry and commodity outputs released in this article and on BEA's Web site represent the first preview of the final I-O table scheduled for final release in 2007. Other major milestones include the following:

- Spring 2006: BEA will incorporate newly revised economic census data, imports and exports, and input estimates for broad input categories. BEA will conduct a preliminary reconciliation of value added estimates between the benchmark and annual I-O accounts.
- June 1, 2006: The latest date that BEA will entertain comments on the proposed industry classification framework.
- Summer 2006: BEA will publish revised sets of industry and commodity output in more detail on BEA's

Web site.

- Summer 2006: Preliminary estimates of final uses will be developed and reconciled with the national income and product accounts (NIPAs).
- Fall 2006: Value added and final uses estimates will be reconciled with NIPAs and annual I-O.
- January–February 2007: The table will undergo final balancing and review.
- Summer 2007: The accounts will be published in the *SURVEY* and on the BEA Web site.

The 2002 benchmark table will be released with an alternative presentation based on the System of National Accounts (SNA), which comprises a supply table and a use table. Before the final publication date, BEA will provide interim status reports and discussions of methodology in the *SURVEY*.

released 3 years after the reference year. Previously, estimates on industry and commodity gross output were released only with the final publication of the accounts, 5 years after the reference year. The release of these data provides information regarding the growth of production for 1997–2002.

This article also proposes a list of the industries and commodities that will be presented in the 2002 benchmark I-O accounts. BEA plans to publish greater industry and commodity detail in services sectors and less detail in the goods producing sectors. This revision reflects a number of factors. First, the Census Bureau's expansion of data collection for the service sectors enables BEA to expand the level of detail in the I-O accounts. Second, BEA proposes combining industries with small (less than \$3 billion) and declining gross output with larger, similar industries; this impacts primarily the agriculture and manufacturing sectors. Lastly, a decrease in the number of construction industries is proposed to make the benchmark I-O accounts consistent with BEA's NIPA categories. BEA welcomes comments on this issue, as it will play an important role in determining the final industry classification framework.

The remainder of this article consists of three sections. The first section compares these preliminary 2002 benchmark I-O estimates and the annual I-O accounts. The second section reviews the proposed detailed classification scheme for the final published accounts and describes changes in the 2002 North American Industry Classification System (NAICS). And the third section provides a summary of the methodology used to prepare these preliminary output estimates; it also describes the effects of the 2003 comprehensive NIPA revisions.

Comparison of Benchmark I-O and Annual I-O Accounts

The benchmark I-O accounts include a comprehensive and detailed presentation of estimates of gross output by industry. The benchmark I-O accounts set “best levels” for industry and commodity output levels for the annual I-O accounts, which are prepared using less detailed and less comprehensive source data.³ After the final benchmark estimates are published, BEA revises

3. The concept of best-level is implicit in the term “benchmark,” which means a fixed or known point of reference. Both the benchmark I-O and the NIPA benchmark are based on the more reliable Economic Census data. Annual I-O and annual NIPA estimates are “best-change,” since they are estimated using extrapolators that are considered the most reliable estimates of year-to-year growth. When the next Economic Census data are completely incorporated into the accounts, the “best-change” estimates are revised so as to minimize the change from the original estimates, yet pass through the best-level estimate.

the annual estimates to ensure the two sets of estimates are consistent.

These preliminary 2002 benchmark gross output estimates make clear that the annual estimates did a relatively good job of capturing overall growth across industries.

Gross output increased at an average annual rate of 4.4 percent in 1997–2002, from \$15.1 trillion to \$18.8 trillion, according to the preliminary estimates (table A). The estimates confirm the general economic picture previously presented by the annual industry accounts. Notably, the services sector increased its share of total U.S. gross output from 64 percent in 1997 to 69 percent in 2002, and the goods sector's share declined from 36 percent to 31 percent—the same as in the annual industry accounts (chart 1).

For the aggregate economy, the growth rate of gross output estimates in 1997–2002 differs only slightly from the annual industry accounts. The average annual growth rate for benchmark gross output was 4.4 percent compared with 4.5 percent for the annual industry accounts (table 1). In addition, the growth rates of industries in the benchmark and annual I-O accounts are highly correlated, with a correlation coefficient of 0.92. The mean absolute difference in growth is 1.1 percent, and 39 of the 60 industries differ by less than this amount.

Relative growth rates in both sets of accounts are highly similar. Of the 10 fastest growing industries in the preliminary benchmark estimates, 9 were also in the top 10 in the annual estimates. The exception was the “other transportation and support activities” in-

Table A. Gross Output by Major NAICS Sector

Line	NAICS code	Industry	Gross output		Average annual growth rate 1997–2002
			1997	2002	
			Billions of dollars		Percent
1		Total output	15,141.2	18,810.8	4.4
2	11	Agriculture, forestry, fishing, and hunting	290.7	270.6	-1.4
3	21	Mining	169.6	179.1	1.1
4	22	Utilities	289.8	314.7	1.7
5	23	Construction	676.1	909.2	6.1
6		Durable-goods manufacturing ¹	2,108.6	2,080.5	-0.3
7		Nondurable-goods manufacturing ¹	1,663.8	1,758.7	1.1
8	42	Wholesale trade	747.3	866.6	3.0
9	44	Retail trade	825.0	1,046.0	4.9
10	48	Transportation and warehousing	503.4	603.6	3.7
11	51	Information	669.1	956.6	7.4
12	52	Finance, insurance, real estate, rental, and leasing	2,427.6	3,358.0	6.7
13	54	Professional, scientific, and technical services	743.5	1,052.1	7.2
14	55	Management of companies and enterprises	242.0	297.8	4.2
15	56	Administrative and waste management services	348.2	488.5	7.0
16	61–62	Educational services, health care, and social assistance	927.9	1,310.8	7.2
17	71–72	Arts, entertainment, recreation, accommodation, and food service	533.7	709.3	5.9
18	81	Other services, except public administration	348.0	452.7	5.4
19		Government	1,626.9	2,156.2	5.8

1. Durable-goods and nondurable-goods manufacturing are recombinations of North American Industry Classification System (NAICS) subsectors 311–339. Durable goods comprise subsectors 33, 321, and 327. Nondurable goods comprise subsectors 31–2, excluding 321 and 327.

Table 1. Gross Output by Industry

Line	Industry (NAICS code)	Gross output 1997	Benchmark accounts 2002	Annual accounts 2002	Difference between benchmark and annual	Average annual growth rate, 1997-2002	
						Benchmark	Annual
						Percent	
Billions of dollars							
1	All industries ¹	15,141.2	18,810.8	18,831.9	-21.1	4.4	4.5
2	Private industries	13,514.3	16,654.6	16,676.2	-21.6	4.3	4.3
3	Agriculture, forestry, fishing, and hunting	290.7	270.6	266.3	4.3	-1.4	-1.7
4	Farms ² (111-2)	242.0	220.4	218.4	2.0	-1.9	-2.0
5	Forestry, fishing, and related activities (113-5)	48.8	50.1	47.8	2.3	0.6	-0.4
6	Mining	169.6	179.1	194.1	-15.0	1.1	2.7
7	Oil and gas extraction (211)	91.6	103.7	111.8	-8.1	2.5	4.1
8	Mining, except oil and gas (212)	52.6	48.0	49.5	-1.5	-1.8	-1.2
9	Support activities for mining (213)	25.4	27.4	32.8	-5.4	1.6	5.3
10	Utilities (22)	289.8	314.7	333.7	-19.0	1.7	2.9
11	Construction (23)	676.1	909.2	909.2	0.0	6.1	6.1
12	Manufacturing	3,772.4	3,839.2	3,831.0	8.1	0.4	0.3
13	Durable goods	2,108.6	2,080.5	2,083.9	-3.4	-0.3	-0.2
14	Wood products (321)	88.6	87.5	87.8	-0.3	-0.3	-0.2
15	Nonmetallic mineral products (327)	85.3	93.0	87.4	5.6	1.7	0.5
16	Primary metals (331)	166.6	138.2	134.4	3.8	-3.7	-4.2
17	Fabricated metal products (332)	238.7	243.4	246.9	-3.5	0.4	0.7
18	Machinery (333)	260.9	241.2	245.9	-4.6	-1.6	-1.2
19	Computer and electronic products (334)	425.6	353.2	383.1	-29.9	-3.7	-2.1
20	Electrical equipment, appliances, and components (335)	109.4	100.5	99.7	0.8	-1.7	-1.8
21	Motor vehicles, bodies and trailers, and parts (3361-3)	416.7	463.6	436.1	27.5	2.2	0.9
22	Other transportation equipment (3364-6, 9)	152.7	162.8	170.7	-7.9	1.3	2.3
23	Furniture and related products (337)	63.3	74.2	68.6	5.6	3.2	1.6
24	Miscellaneous manufacturing (339)	100.7	122.7	123.2	-0.6	4.0	4.1
25	Nondurable goods	1,663.8	1,758.7	1,747.2	11.5	1.1	1.0
26	Food and beverage and tobacco products (311-2)	517.8	562.3	572.2	-9.9	1.7	2.0
27	Textile mills and textile product mills (313-4)	89.2	75.2	75.7	-0.4	-3.3	-3.2
28	Apparel and leather and allied products (315-6)	76.7	47.7	57.9	-10.2	-9.1	-5.5
29	Paper products (322)	148.2	151.8	149.1	2.7	0.5	0.1
30	Printing and related support activities (323)	96.6	94.7	97.4	-2.6	-0.4	0.2
31	Petroleum and coal products (324)	173.7	212.4	206.6	5.8	4.1	3.5
32	Chemical products (325)	405.1	444.8	412.7	32.0	1.9	0.4
33	Plastics and rubber products (326)	156.5	169.8	175.7	-5.8	1.7	2.3
34	Wholesale trade (42)	747.3	866.6	874.1	-7.5	3.0	3.2
35	Retail trade (44-5)	825.0	1,046.0	1,090.1	-44.1	4.9	5.7
36	Transportation and warehousing	503.4	603.6	572.5	31.1	3.7	2.6
37	Air transportation (481)	104.2	98.1	101.2	-3.1	-1.2	-0.6
38	Rail transportation (482)	42.3	45.5	44.7	0.8	1.5	1.1
39	Water transportation (483)	24.6	23.7	28.1	-4.3	-0.7	2.7
40	Truck transportation (484)	168.2	202.3	204.1	-1.8	3.8	4.0
41	Transit and ground passenger transportation (485)	24.7	31.6	25.5	6.1	5.1	0.6
42	Pipeline transportation (486)	27.5	28.0	31.7	-3.7	0.3	2.9
43	Other transportation and support activities (487-8, 492)	84.7	129.9	99.2	30.7	8.9	3.2
44	Warehousing and storage (493)	27.2	44.5	38.1	6.4	10.3	7.0
45	Information	669.1	956.6	1,005.1	-48.5	7.4	8.5
46	Publishing industries (includes software) (511)	183.4	251.3	240.2	11.1	6.5	5.5
47	Motion picture and sound recording industries (512)	61.4	81.6	81.0	0.6	5.9	5.7
48	Broadcasting and telecommunications (515-7)	377.1	525.6	586.4	-60.8	6.9	9.2
49	Information and data processing services (518)	47.3	98.2	97.5	0.7	15.7	15.6
50	Finance, insurance, real estate, rental, and leasing (52-3)	2,427.6	3,358.0	3,245.6	112.4	6.7	6.0
59	Professional and business services	1,333.7	1,838.4	1,917.6	-79.1	6.6	7.5
60	Professional, scientific, and technical services	743.5	1,052.1	1,129.9	-77.8	7.2	8.7
61	Legal services (5411)	152.7	215.7	202.7	13.0	7.2	5.8
62	Computer systems design and related services (5415)	101.5	171.5	161.6	9.9	11.1	9.8
63	Miscellaneous professional, scientific, and technical services (5412-4, 6-9)	489.3	664.9	765.6	-100.7	6.3	9.4
64	Management of companies and enterprises (55)	242.0	297.8	291.5	6.4	4.2	3.8
65	Administrative and waste management services	348.2	488.5	496.2	-7.7	7.0	7.3
66	Administrative and support services (561)	306.3	435.0	444.3	-9.3	7.3	7.7
67	Waste management and remediation services (562)	42.0	53.5	52.0	1.6	5.0	4.4
68	Educational services, health care, and social assistance	927.9	1,310.8	1,296.4	14.4	7.2	6.9
69	Educational services (61)	111.5	152.9	157.4	-4.5	6.5	7.1
70	Health care and social assistance	816.4	1,157.9	1,139.0	18.9	7.2	6.9
71	Ambulatory health care services (621)	381.2	526.8	526.7	0.1	6.7	6.7
72	Hospitals and nursing and residential care facilities (622-3)	368.3	523.4	506.7	16.6	7.3	6.6
73	Social assistance (624)	66.9	107.7	105.6	2.2	10.0	9.5
74	Arts, entertainment, recreation, accommodation, and food services	533.7	709.3	682.7	26.6	5.9	5.1
75	Arts, entertainment, and recreation	124.0	175.7	163.6	12.0	7.2	5.7
76	Performing arts, spectator sports, museums, and related activities (711-2)	55.4	82.3	75.9	6.4	8.2	6.5
77	Amusements, gambling, and recreation industries (713)	68.6	93.4	87.7	5.6	6.4	5.1
78	Accommodation and food services	409.8	533.6	519.1	14.5	5.4	4.8
79	Accommodation (721)	110.0	143.7	132.2	11.5	5.5	3.8
80	Food services and drinking places (722)	299.8	389.9	386.8	3.0	5.4	5.2
81	Other services, except public administration (81)	348.0	452.7	458.0	-5.3	5.4	5.7
82	Government	1,626.9	2,156.2	2,155.7	0.5	5.8	5.8
83	Federal	541.4	685.2	684.5	0.7	4.8	4.8
84	General government	466.8	601.8	601.8	0.0	5.2	5.2
85	Government enterprises	74.6	83.4	82.7	0.7	2.3	2.1
86	State and local	1,085.5	1,471.0	1,471.2	-0.2	6.3	6.3
87	General government	954.3	1,301.8	1,301.8	0.0	6.4	6.4
88	Government enterprises	131.2	169.2	169.4	-0.2	5.2	5.2
89	Addenda:						
89	Private goods-producing industries ³	4,908.7	5,198.1	5,200.7	-2.6	1.2	1.2
90	Private services-producing industries ⁴	8,605.6	11,456.5	11,475.6	-19.0	5.9	5.9

1. These annual estimates exclude the inventory valuation adjustment, which was included in the previously published annual estimates.

2. These benchmark and annual estimates of farm output include nonpurchased feed and seed, which were excluded from the annual estimates.

3. Consists of agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing.

4. Consists of utilities; wholesale trade; retail trade; transportation and warehousing; information; finance; insurance, real estate, rental, and leasing; professional, scientific and technical services; management of companies and enterprises; administrative and waste management services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and other services, except public administration.

dustry, which grew at only a moderate rate according to the annual estimates. The fastest growing industry according to both sets of estimates was the information and data processing services industry, which grew at an annual average rate of 15.7 percent according to the benchmark estimates and 15.6 percent according to the annual estimates.

Of the ten slowest growing industries according to the preliminary benchmark estimates, nine also ranked among the slowest growing industries in the annual accounts. The exception was the water transportation industry, which grew at a moderate rate according to the annual estimates.

Benchmark and Annual Accounts Background

The benchmark accounts are based primarily on 2002 Economic Census data, which provide detailed and comprehensive coverage of economic activity on an establishment basis. The annual I-O accounts are based on levels from the 1997 benchmark I-O accounts, which are extrapolated forward using more current, but less detailed, survey data.⁴

The annual I-O accounts are published one year after the reference year, using survey data to extrapolate from the prior benchmark I-O accounts. This publication schedule requires annual source data that are published relatively soon after their reference period. This means that sources other than the quinquennial Economic Census must be used to compile the annual ac-

4. For more information on differences in methodology between the benchmark and annual I-O accounts, see Brian C. Moyer, Mark A. Planting, Mahnaz Fahim-Nader, and Sherlene K.S. Lum, "Preview of the Comprehensive Revision of the Annual Industry Accounts," SURVEY 84 (March 2004): 38-51.

counts, including the Services Annual Survey (SAS), Census M3 data, and the Annual Survey of Manufacturers (ASM).

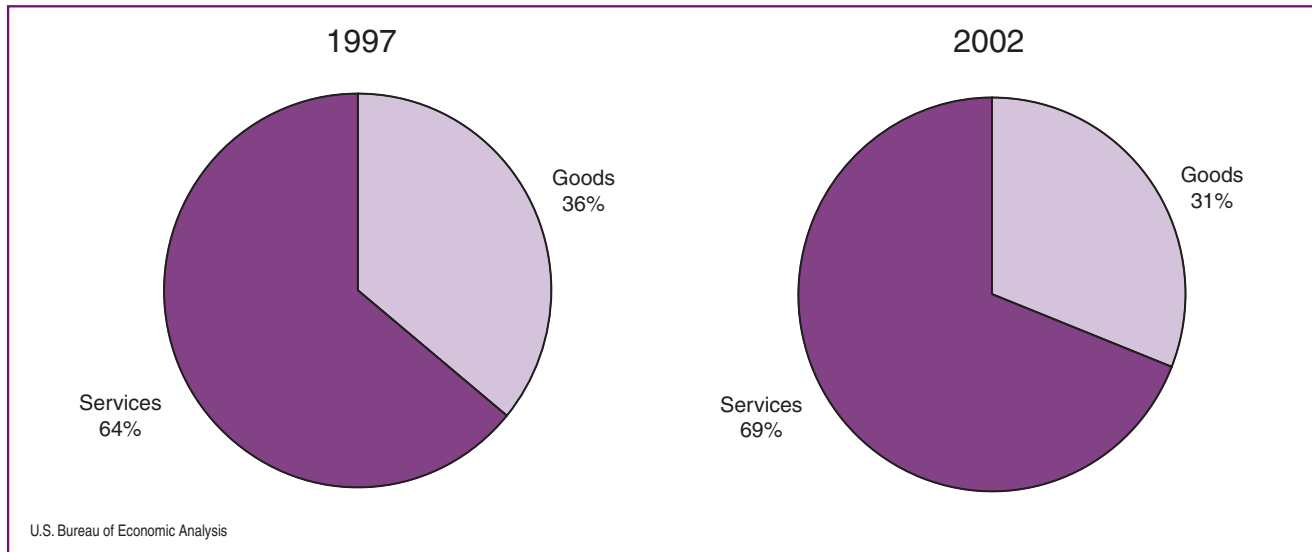
Whenever possible the annual I-O accounts use data at the same level of detail as the benchmark. However, if data on the same level are not available, the best available extrapolators are used. The samples for the annual surveys are designed to provide unbiased estimates, but have a higher sampling error than the Economic Census.

The Economic Census collects detailed industry and commodity output data for the entire universe of establishments. Thus, the Economic Census can be used to correct misclassifications and omissions in annual surveys. The Census Bureau reviews the results of an-

Table B. Benchmark Industries' Growth Rates

Line	Industry	Gross output		Average annual growth rate 1997-2002
		1997	2002	
		Billions of dollars		Percent
Fastest growing industries				
1	Information and data processing services	47.3	98.2	15.7
2	Computer systems design and related services	101.5	171.5	11.1
3	Warehousing and storage	27.2	44.5	10.3
4	Social assistance	66.9	107.7	10.0
5	Other transportation and support activities.....	84.7	129.9	8.9
6	Performing arts, spectator sports, museums, and related activities...	55.4	82.3	8.2
7	Hospitals and nursing and residential care facilities	368.3	523.4	7.3
8	Administrative and support services	306.3	435.0	7.3
9	Legal services.....	152.7	215.7	7.2
10	Broadcasting and telecommunications.....	377.1	525.6	6.9
11	Slowest growing industries			
12	Apparel, leather, and allied product manufacturing.....	76.7	47.7	-9.1
13	Primary metal manufacturing	166.6	138.2	-3.7
14	Computer and electronic product manufacturing.....	425.6	353.2	-3.7
15	Textile and textile product mills.....	89.2	75.2	-3.3
16	Farms.....	242.0	220.4	-1.9
17	Mining, except oil and gas	52.6	48.0	-1.8
18	Electrical equipment, appliance, and component manufacturing.....	109.4	100.5	-1.7
19	Machinery manufacturing.....	260.9	241.2	-1.6
20	Air transportation	104.2	98.1	-1.2
21	Water transportation	24.6	23.7	-0.7
22				

Chart 1. Distribution of Private Industry Gross Output, 1997 and 2002



nual surveys such as the M3, the ASM, and the SAS, in light of the results of the Economic Census. If survey data are inconsistent with the results of the Economic Census, revisions are made to match previously published data to the levels shown in the Economic Census.

The comparison of gross output estimates between the benchmark and annual I-O accounts highlights industries where the annual extrapolators may need additional scrutiny. The revision of output levels in the annual I-O accounts after the publication of the Economic Census is part of a broad revision of BEA statistics to incorporate the best and most accurate data possible.

Proposed classification for 2002 Benchmark

The 2002 benchmark I-O accounts and the 1997 benchmark I-O accounts, although both on a NAICS basis, differ in their coverage of goods-producing industries and services-providing industries. The larger proportion of services industries in the 2002 benchmark accounts is intended to reflect both the increased information now available for these industries and the shifting focus of U.S. economic activity from goods-producing to services-producing industries (Appendix A). The number of detailed goods producing industries in the 2002 accounts has decreased for a number of reasons (table C). BEA is proposing to combine industries that are small (gross output less than 3 billion dollars) and declining with larger, similar industries. This impacted the agriculture and manufacturing sectors. In addition, the number of construction industries is reduced to be consistent with the NIPA construction categories. The total number of industries has decreased, from 490 to 432.

Until June 1, 2006, BEA is soliciting public feedback regarding its proposed sectoring plan. To provide comments to BEA, please visit BEA's Web site at <www.bea.gov/bea/dn2/home/benchmark.htm> and click on the appropriate link in the "Questions and Comments" section, or send e-mail directly to <benchmarkio@bea.gov>.

Table C. Summary of Industry Coverage

	1997 benchmark	2002 benchmark
Total detailed industries	490	432
Goods producing.....	389	322
Services providing.....	101	110
Total summary industries	130	133
Goods producing.....	69	66
Services providing.....	61	67

Effects of the 2002 NAICS revisions

The 2002 benchmark I-O accounts will incorporate the 2002 NAICS revision. The 2002 NAICS identified

new, emerging, and advanced technology industries, made adjustments to various sectors for better comparability among the United States, Canada, and Mexico, and incorporated numerous recommendations from data users. As a result of the incorporation of the 2002 NAICS, the 2002 benchmark I-O account will be better able to measure the rapidly changing industry structure of the U.S. economy.

The 2002 NAICS revision included important changes:

- A new industry in the wholesale trade sector to identify business-to-business (B2B) electronic markets was created.
- Changes were made to reflect differences in the nature of the products of merchant wholesalers and agents and brokers. The industries are now separated, yielding a clearer picture of trade margin activity in the I-O accounts.
- Revisions in the retail trade sector were intended to better capture new areas of growing activity. Discount department stores were moved out of the department stores industry and into a separate new industry. In addition, there is a more detailed breakdown of business-to-consumer electronic markets that includes electronic shopping, electronic auctions and mail-order houses.
- The information sector was reorganized to recognize industries involved in Internet activity, moving Internet publishing and broadcasting into a new industry. In addition, a new industry was created to incorporate newly expanded data for internet service providers (ISP) and Web search portals.

Methodology

This section summarizes the methods used in compiling industry and commodity output estimates, discusses the treatment of secondary products, and reviews statistical and classification changes to be introduced in the 2002 benchmark I-O table.⁵

Measuring industry and commodity output

The basic unit of accounting for BEA's I-O accounts is the establishment, which is a single business unit or location for which Census or survey data may be collected. Each establishment is assigned a NAICS industry classification according to its largest share of production and the nature of its production process. Industry output is defined and measured as the total value of all goods and services being produced by the establishments in a given industry. Commodities are

5. For more detailed information on methods and concepts for the benchmark I-O, refer to Ann M. Lawson, Kurt S. Bersani, Mahnaz Fahim-Nader, and Jiemin Guo, "Benchmark Input-Output Accounts of the United States, 1997," *SURVEY* 82 (December 2002): 19-109.

defined as the different goods and services which are produced by establishments. Each establishment may produce one or more commodities which are not primary to that industry, or in other words, do not constitute that industry's standard or main product. These commodities are called secondary products or services.

The primary sources of data for industry output are shipments (for mining and manufacturing industries), expenses (for nonprofit industries serving households), commodities (for agricultural crops or livestock), receipts less cost of goods sold (for wholesale and retail trade), and receipts (for most other industries, especially services).⁶ (Table D shows the main sources of data for gross output for the major NAICS sectors.) Data from the Economic Census are supplemented with data based on administrative records for nonemployers and misreporters. For industries not covered by the Economic Census, data from other government agencies and trade associations are used. In addition, BEA makes imputations for industries where information is not directly available, such as for owner-occupied housing, own-account construction, and own-account software.⁷ To calculate commodity output, all similar primary and secondary activities are combined. For example, if a plant that primarily produces milk also produces some ice cream, then the shipments of milk and ice cream would both be included in the output of the milk industry. However, the milk production would be included in milk commodity output, and the ice cream in ice cream commodity output.

Final data are not currently available for all areas of the economy for 2002. In these cases, estimates were compiled using other information, such as extrapolators from annual surveys. In some cases, such as industries for which Economic Census data have previously been released, the data may still be subject to upcoming revisions which will later be incorporated by BEA.

The most significant changes in the final release will be limited to a few NAICS industries. The following sectors will receive revised or newly available 2002 data from Census: construction, auxiliaries, and wholesale trade. Some revised 2002 data will be received from other divisions within BEA prior to the final publication. These data include nonfiler misreporting adjustments, data for life insurance carriers, rail transportation, state and local government enterprises, state and local general government, Federal government enterprises, and Federal general government.

6. Expenses are also used when shipments or receipts data are unavailable in certain industries.

7. Own-account construction and software are construction and software development performed by a firm's own employees, rather than purchased in a market transaction.

BEA will also receive revised data on state and local sales taxes.

Finally, a new methodology is currently being developed to estimate royalties, and new data sources are currently being identified to be used for education and hospitals.

Effect of the NIPA comprehensive revision on the benchmark estimates

Several statistical and methodological changes introduced in the 2002 benchmark are the result of the 2003 comprehensive revision of the NIPAs.⁸ The 2002 benchmark accounts incorporate the NIPA revisions to provide measures of output that are consistent with the NIPAs. The benchmark will be used in turn in the next comprehensive revision of the NIPAs. Major definitional changes from the NIPA comprehensive revision include the following:

- The new treatment of insurance services recognizes the income earned through insurers' investment of premiums as a supplement to premiums and will use normal losses instead of actual losses to compute insurance gross output. The effect of this change is to smooth the industry's gross output and reduce the effect of natural disasters on industry output.
- An important service provided by commercial banks is financial intermediation—the repackaging of funds collected from depositors or lenders to

8. For a detailed discussion of the NIPA Comprehensive Revision, see Brent R. Moulton and Eugene P. Seskin, "Preview of the 2003 Comprehensive Revision of the National Income and Product Accounts: Changes in Definitions and Classifications," *SURVEY* 83 (June 2003): 17–34, and Eugene P. Seskin and Daniel Larkins, "Improved Estimates of the National Income and Product Accounts for 1929–2002: Results of the Comprehensive Revision," *SURVEY* 84 (February 2004): 7–29.

Data Availability

The 2002 preliminary output estimates for the 60 industries and commodities included in table 1 of this article are available as a table in either MS Excel or HTML format on BEA's Web site at <www.bea.gov>. Select "Benchmark Input-Output Accounts" under the "Industry" column on the BEA home page.

Users will be able to find an input-output make table matrix, containing output estimates before industry redefinitions, for the 60 industries and commodities included in table 1.

In the spring of 2006, BEA will make preliminary output estimates for all 432 industries and commodities listed in Appendix A available on its Web site. These more detailed estimates will incorporate revisions made by the U.S. Census Bureau to the source data used in the production of the preliminary output estimates.

Table D. Principal Data Sources for the 2002 Benchmark I-O Accounts

Industry	Source
Agriculture, forestry, fishing, and mining	U. S. Department of Agriculture, Forest Service and Economic Research Service and National Agriculture Statistical Service National Oceanic and Atmospheric Administration, National Marine Fisheries Service, <i>Fisheries of the United States</i> Census Bureau Statistics of United States Businesses and 2002 Economic Census, NAICS Sector 21, Mining
Construction	Bureau of Economic Analysis, Industry Economics Division, Annual Industry Accounts
Manufacturing.....	2002 Economic Census, NAICS Sector 31–33, Manufacturing and Census Bureau 2003 Current Industrial Reports
Utilities and transportation and warehousing.....	2002 Economic Census, NAICS Sector 48–49, Transportation and Warehousing U.S. Department of Transportation: <i>Air Carrier Financial Statistics Quarterly</i> and Bureau of Transportation Statistics Association of American Railroads, <i>2004 Railroad Facts</i> 2002 Economic Census, NAICS Sector 22, Utilities U.S. Department of Energy, Energy Information Administration Alaska Railroad (AKRR) <i>2004 Annual Report</i> Amtrak <i>2004 Annual Report</i>
Wholesale and retail trade	2002 Economic Census, NAICS Sector 42, Wholesale Trade and NAICS Sector 44–45, Retail Trade Census Bureau 2002 Annual Retail Trade Survey and 2002 Annual Wholesale Trade Survey
Information	2002 Economic Census, NAICS Sector 51, Information Census Bureau 2002 Service Annual Survey
Finance, insurance, real estate, rental, and leasing	2002 Economic Census, NAICS Sector 52, Finance and Insurance Federal Deposit Insurance Corporation, <i>2003 Statistics on Banking</i> New York Stock Exchange, <i>2002 Annual Report</i> Federal Reserve Board, <i>Flow of Funds Accounts</i> A. M. Best and Company, <i>Best's 2003 Aggregate and Averages, Property/Casualty Insurance</i> Mortgage Insurance Companies of America, <i>2003–2004 Factbook</i> American Council of Life Insurers, <i>2003 Life Insurance Fact Book</i> Bureau of Economic Analysis, National Income and Product Accounts 2002 Economic Census, NAICS Sector 53, Real Estate and Rental and Leasing
Professional and business services.....	2002 Economic Census, NAICS Sector 54, Professional, Scientific, and Technical Services, and NAICS Sector 55, Management of Companies and Enterprises, and NAICS Sector 56, Administrative and Support Services and Waste Management and Remediation Services
Educational services, health care, and social assistance services.....	U.S. Department of Education, National Center for Education Statistics, <i>2002 Digest of Education Statistics</i> 2002 Economic Census, NAICS Sector 61, Educational Services and NAICS Sector 62, Health Care and Social Assistance
Arts, entertainment, recreation, accommodation, and food services.....	2002 Economic Census, NAICS Sector 71, Arts, Entertainment, and Recreation and NAICS Sector 72, Accommodation and Food Services
Other services, except public administration	2002 Economic Census, NAICS Sector 81, Other Services (except Public Administration) Bureau of Economic Analysis, National Income and Product Accounts
Government.....	Census Bureau 2002 Census of Governments, 2002 Government Finances, 2002 Public Employment, and 2002 Monthly Construction Statistics Federal Budget Data and Federal Government Agency Reports Center for Medicare and Medicaid Services Bureau of Economic Analysis, National Income and Product Accounts
Noncomparable imports.....	Bureau of Economic Analysis, International Transactions Accounts
Households.....	Bureau of Economic Analysis, National Income and Product Accounts
Scrap	2002 Economic Census, NAICS Sector 31–33, Manufacturing
Inventory valuation adjustment.....	Bureau of Economic Analysis, National Income and Product Accounts 2002 Economic Census

meet the needs of borrowers. The new treatment of commercial bank services recognizes that both depositors and borrowers receive these implicit services and now allocates a portion to the borrowers. This change reduces gross output of banks by reallocating a portion of implicit services from final expenditures to intermediate consumption, reflecting the larger share of borrowed funds attributed to business.

- The new treatment of government as a producer makes the treatment of government inputs identical to the treatment of intermediate inputs in the private sector. Government purchases of goods and services will appear as intermediate inputs to the

general government services industry instead of as final uses purchases by Federal and state and local government. The commodity output of government is purchased by government final uses.

- A new government enterprise, Indian gaming, was created to show the output of Indian tribal casino and hotel activities, which boosted government output. Meanwhile, output was reduced in the amusements, gambling, and recreation industry, the hotel industry, and nonprofit institutions serving households, where these activities were previously counted.

Appendix A follows.

Acknowledgments

This article and the completion of the 2002 preliminary output estimates represent the contributions of many members of the Industry Accounts staff. Sumiye Okubo, Associate Director Industry Accounts, Ann M. Lawson, Chief of the Industry Economics Division, and Douglas S. Meade, Deputy Chief of the Industry Economics Division, supervised the preparation of the accounts. Mary L. Streitwieser, Chief of the Benchmark I-O Branch, planned and coordinated the staff of the branch to produce these estimates. Mark A. Planting and Karen J. Horowitz provided invaluable technical support and assistance in reviewing the estimates.

Douglas S. Meade and Mary L. Streitwieser coordinated and wrote sections of the article. Karla L. Stanley-Allen, Stanislaw Rzeznik, Nicholas Empey and Monica Stropole contributed text and tables. Mahnaz Fahim-Nader contributed tables and assisted with coordination with publication staff.

The following staff members of the Industry Economics Division contributed significantly to the development of the preliminary output estimates for the 2002 Benchmark input-output (I-O) accounts

Agriculture, Forestry, Fishing, Hunting: Belinda L. Bonds, Lisa C. Phares, Stanislaw Rzeznik.

Mining: Belinda L. Bonds, Lisa C. Phares, Stanislaw Rzeznik.

Utilities: Bill McCarthy, Alvin Blake.

Construction: Belinda L. Bonds, Nicholas Empey.

Manufacturing: Belinda L. Bonds, Lisa C. Phares, Stanislaw Rzeznik, Nicholas Empey, Eric Bryda.

Wholesale Trade: Bill McCarthy, Simon Njaka Randri-anarivelo.

Retail Trade: Bill McCarthy, Ricky L. Stewart.

Transportation and Warehousing: Bill McCarthy, Alvin Blake.

Information: Edward T. Morgan, Darlene C. Robinson-Smith.

Finance and Insurance: Edward T. Morgan, Karla L. Stanley-Allen.

Real Estate and Rental and Leasing: Edward T. Morgan, Yuen Lau, Kevin Muck, Emily Thompson.

Professional, Scientific, and Technical Services: Edward T. Morgan, Emily Thompson, Kevin Muck.

Management of Companies and Enterprises: Edward T. Morgan.

Administrative and Waste Services: Edward T. Morgan, Yuen Lau.

Educational Services: Patricia W. Coles, Jessica Brede.

Health Care and Social Assistance: Patricia W. Coles, Charles Hedden.

Arts, Entertainment, and Recreation: Patricia W. Coles, Jessica Brede.

Accommodation and Food Services: Patricia W. Coles, Nathan Klouda.

Other Services, except public administration and private households: Patricia W. Coles, Monica S. Stropole.

Federal Government and Enterprises: Patricia W. Coles, Charles Hedden, Monica S. Stropole.

State and Local Government and Enterprises: Patricia W. Coles, Jessica Brede, Nathan Klouda.

Taxes on Production and Imports: Patricia W. Coles, Charles Hedden.

Foreign Transactions: Edward T. Morgan, Robert Robinson, Karla Allen.

Misreporting filer adjustment, nonemployer filer adjustment and nonfiler adjustment: Patricia W. Coles, Bill McCarthy, Edward T. Morgan, Yuen Lau, Ricky L. Stewart, Monica S. Stropole.

The following staff members of the Office of the Chief Information Officer coordinated the computer programming and processing system: Brian D. Kajutti, Paul A. Kilday, Ross F. Metzger, and Janice E. Townsend.

From the Industry Economics Division, Douglas Meade, assisted by Nicholas Empey, Nathan Klouda, Lisa C. Phares, Monica S. Stropole, and Eric Weiss, updated and tested the database used for the 2002 benchmark accounts.

Appendix A. Proposed industries for the 2002 Benchmark Input-Output Accounts—Continues

I-O Industry code and title		Related 2002 NAICS codes	I-O Industry code and title		Related 2002 NAICS codes
AGRICULTURE, FORESTRY, FISHING, AND HUNTING					
1110	Crop production				
	1111A0 Oilseed farming.....	11111-2	311615	Poultry processing.....	311615
	1111B0 Grain farming.....	11113-6, 11119	311700	Seafood product preparation and packaging.....	3117
	111200 Vegetable and melon farming.....	1112	311810	Bread and bakery product manufacturing.....	31181
	1113A0 Fruit farming.....	11131-2, 111331-4, 111336*, 111339	311820	Cookie, cracker, and pasta manufacturing.....	31182
			311830	Tortilla manufacturing.....	31183
			311910	Snack food manufacturing.....	31191
	111335 Tree nut farming.....	111335, 111336*	311920	Coffee and tea manufacturing.....	31192
	111400 Greenhouse, nursery, and floriculture production.....	1114	311930	Flavoring syrup and concentrate manufacturing.....	31193
	111910 Tobacco farming.....	11191	311940	Seasoning and dressing manufacturing.....	31194
	111920 Cotton farming.....	11192	311990	All other food manufacturing.....	31199
	1119A0 Sugarcane and sugar beet farming.....	11193, 111991	3121	Beverage manufacturing	
	1119B0 All other crop farming.....	11194, 111992, 111998	312110	Soft drink and ice manufacturing.....	31211
			312120	Breweries.....	31212
			312130	Wineries.....	31213
			312140	Distilleries.....	31214
1120	Animal production		3122	Tobacco manufacturing	
	1121A0 Cattle ranching and farming.....	11211, 11213	3122A0	Tobacco product manufacturing.....	3122
	112120 Dairy cattle and milk production.....	11212			
	112A00 Animal production, except cattle and poultry and eggs.....	1122, 1124-5, 1129	3130	Textile mills	
	112300 Poultry and egg production.....	1123	313100	Fiber, yarn, and thread mills.....	3131
1130	Forestry and logging		313210	Broadwoven fabric mills.....	31321
	113A00 Forest nurseries, forest products, and timber tracts.....	1131-2	313220	Narrow fabric mills and schiffli machine embroidery.....	31322
	113300 Logging.....	1133	313230	Nonwoven fabric mills.....	31323
1140	Fishing, hunting and trapping		313240	Knit fabric mills.....	31324
	114100 Fishing.....	1141	313310	Textile and fabric finishing mills.....	31331
	114200 Hunting and trapping.....	1142	313320	Fabric coating mills.....	31332
1150	Support activities for agriculture and forestry		3140	Textile product mills	
	115000 Support activities for agriculture and forestry.....	115	314110	Carpet and rug mills.....	31411
			314120	Curtain and linen mills.....	31412
			314910	Textile bag and canvas mills.....	31491
			314990	All other textile product mills.....	31499
2110	Oil and gas extraction		3150	Apparel manufacturing	
	211000 Oil and gas extraction.....	211	315110	Hosiery and sock mills.....	31511
2121	Coal mining		315190	Other apparel knitting mills.....	31519
	212100 Coal mining.....	2121	315210	Cut and sew apparel contractors.....	31521
2122	Metal ores mining		315220	Men's and boys' cut and sew apparel manufacturing.....	31522
	212210 Iron ore mining.....	21221	315230	Women's and girls' cut and sew apparel manufacturing.....	31523
	2122A0 Gold, silver, and other metal ore mining.....	21222, 21229	315290	Other cut and sew apparel manufacturing.....	31529
	212230 Copper, nickel, lead, and zinc mining.....	21223	315900	Apparel accessories and other apparel manufacturing.....	3159
2123	Nonmetallic mineral mining and quarrying		3160	Leather and allied product manufacturing	
	212310 Stone mining and quarrying.....	21231	316100	Leather and hide tanning and finishing.....	3161
	212320 Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying.....	21232	316200	Footwear manufacturing.....	3162
	212390 Other nonmetallic mineral mining and quarrying.....	21239	316900	Other leather and allied product manufacturing.....	3169
2130	Support activities for mining		3210	Wood product manufacturing	
	213111 Drilling oil and gas wells.....	213111	321100	Sawmills and wood preservation.....	3211
	213112 Support activities for oil and gas operations.....	213112	32121A	Veneer and plywood manufacturing.....	321211-2
	21311A Support activities for other mining.....	213113-5	32121B	Engineered wood member and truss manufacturing.....	321213-4
			321219	Reconstituted wood product manufacturing.....	321219
			321910	Wood windows and doors and millwork.....	32191
			321920	Wood container and pallet manufacturing.....	32192
			321991	Manufactured home (mobile home) manufacturing.....	321991
			321992	Prefabricated wood building manufacturing.....	321992
			321999	All other miscellaneous wood product manufacturing.....	321999
2211	Electric power generation, transmission, and distribution		3221	Pulp, paper, and paperboard mills	
	221100 Electric power generation, transmission, and distribution.....	2211	322110	Pulp mills.....	32211
2212	Natural gas distribution		322120	Paper mills.....	32212
	221200 Natural gas distribution.....	2212	322130	Paperboard mills.....	32213
2213	Water, sewage, and other systems		3222	Converted paper product manufacturing	
	221300 Water, sewage, and other systems.....	2213	322210	Paperboard container manufacturing.....	32221
			32222A	Coated and laminated paper, packaging paper, and plastics film manufacturing.....	322221-2
			32222B	All other paper bag and coated and treated paper manufacturing.....	322223-6
			322230	Stationery product manufacturing.....	32223
			322291	Sanitary paper product manufacturing.....	322291
			322299	All other converted paper product manufacturing.....	322299
2301	New nonresidential construction		3230	Printing and related support activities	
	230101 Nonresidential commercial and health care structures.....	23*	323110	Printing.....	32311
	230102 Nonresidential manufacturing structures.....	23*	323120	Support activities for printing.....	32312
	230103 Other nonresidential structures.....	23*	3240	Petroleum and coal products manufacturing	
2302	New residential construction		324110	Petroleum refineries.....	32411
	230201 Residential permanent site single- and multi-family structures.....	23*	324121	Asphalt paving mixture and block manufacturing.....	324121
	230202 Other residential structures.....	23*	324122	Asphalt shingle and coating materials manufacturing.....	324122
2303	Maintenance and repair construction		324191	Petroleum lubricating oil and grease manufacturing.....	324191
	230301 Nonresidential maintenance and repair.....	23*	324199	All other petroleum and coal products manufacturing.....	324199
	230302 Residential maintenance and repair.....	23*	3251	Basic chemical manufacturing	
			325110	Petrochemical manufacturing.....	32511
			325120	Industrial gas manufacturing.....	32512
			325130	Synthetic dye and pigment manufacturing.....	32513
			325181	Alkalies and chlorine manufacturing.....	325181
			325182	Carbon black manufacturing.....	325182
			325188	All other basic inorganic chemical manufacturing.....	325188
			325190	Other basic organic chemical manufacturing.....	32519
3110	Food manufacturing		3252	Resin, rubber, and artificial fibers manufacturing	
	311111 Dog and cat food manufacturing.....	311111	325211	Plastics material and resin manufacturing.....	325211
	311119 Other animal food manufacturing.....	311119	325212	Synthetic rubber manufacturing.....	325212
	311210 Flour milling and malt manufacturing.....	31121	325220	Artificial and synthetic fibers and filaments manufacturing.....	32522
	311221 Wet corn milling.....	311221	3253	Agricultural chemical manufacturing	
	31122A Soybean and other oilseed processing.....	311222-3	325311	Nitrogenous fertilizer manufacturing.....	325311
	311225 Fats and oils refining and blending.....	311225	325312	Phosphatic fertilizer manufacturing.....	325312
	311230 Breakfast cereal manufacturing.....	311230	325314	Fertilizer (mixing only) manufacturing.....	325314
	31131A Sugar cane mills and refining.....	311311-2	325320	Pesticide and other agricultural chemical manufacturing.....	325320
	31131B Beet sugar manufacturing.....	311313			
	311320 Chocolate and confectionery manufacturing from cacao beans.....	31132			
	311330 Confectionery manufacturing from purchased chocolate.....	31133			
	311340 Nonchocolate confectionery manufacturing.....	31134			
	311410 Frozen food manufacturing.....	31141			
	311420 Fruit and vegetable canning, pickling, and drying.....	31142			
	31151A Fluid milk and butter manufacturing.....	311511-2			
	311513 Cheese manufacturing.....	311513			
	311514 Dry, condensed, and evaporated dairy product manufacturing.....	311514			
	311520 Ice cream and frozen dessert manufacturing.....	311520			
	31161A Animal (except poultry) slaughtering, rendering, and processing.....	311611-3			

Appendix A. Proposed industries for the 2002 Benchmark Input-Output Accounts—Continues

I-O Industry code and title	Related 2002 NAICS codes	I-O Industry code and title	Related 2002 NAICS codes
3254 Pharmaceutical and medicine manufacturing		33291A Valve and fittings other than plumbing.....	33291-2, 332919
325411 Medicinal and botanical manufacturing.....	325411	332913 Plumbing fixture fitting and trim manufacturing.....	332913
325412 Pharmaceutical preparation manufacturing.....	325412	332991 Ball and roller bearing manufacturing.....	332991
325413 In-vitro diagnostic substance manufacturing.....	325413	332996 Fabricated pipe and pipe fitting manufacturing.....	332996
325414 Biological product (except diagnostic) manufacturing.....	325414	33299C Other fabricated metal manufacturing.....	332997-9
3255 Paint, coating, and adhesive manufacturing		3331 Agriculture, construction, and mining machinery manufacturing	
325510 Paint and coating manufacturing.....	32551	333111 Farm machinery and equipment manufacturing.....	333111
325520 Adhesive manufacturing.....	32552	333112 Lawn and garden equipment manufacturing.....	333112
3256 Soap, cleaning compound, and toiletry manufacturing		333120 Construction machinery manufacturing.....	33312
325610 Soap and cleaning compound manufacturing.....	32561	333130 Mining and oil and gas field machinery manufacturing.....	33313
325620 Toilet preparation manufacturing.....	32562	3332 Industrial machinery manufacturing	
3259 Other chemical product and preparation manufacturing		33329A Other industrial machinery manufacturing.....	33321, 333291-4, 333298
325910 Printing ink manufacturing.....	32591	333220 Plastics and rubber industry machinery manufacturing.....	33322
3259A0 All other chemical product and preparation manufacturing.....	32592, 32599	333295 Semiconductor machinery manufacturing.....	333295
3260 Plastics and rubber products manufacturing		3333 Commercial and service industry machinery manufacturing	
326110 Plastics packaging materials and unlaminated film and sheet manufacturing.....	32611	33331A Vending, commercial, industrial, and office machinery manufacturing.....	333311-3
326121 Unlaminated plastics profile shape manufacturing.....	326121	333314 Optical instrument and lens manufacturing.....	333314
326122 Plastics pipe and pipe fitting manufacturing.....	326122	333315 Photographic and photocopying equipment manufacturing.....	333315
326130 Laminated plastics plate, sheet (except packaging), and shape manufacturing.....	32613	333319 Other commercial and service industry machinery manufacturing.....	333319
326140 Polystyrene foam product manufacturing.....	32614	3334 HVAC and commercial refrigeration equipment manufacturing	
326150 Urethane and other foam product (except polystyrene) manufacturing.....	32615	33341A Air purification and ventilation equipment manufacturing.....	333411-2
326160 Plastics bottle manufacturing.....	32616	333414 Heating equipment (except warm air furnaces) manufacturing.....	333414
32619A Other plastics product manufacturing.....	32619	333415 Air conditioning, refrigeration, and warm air heating equipment manufacturing.....	333415
326210 Tire manufacturing.....	32621	3335 Metalworking machinery manufacturing	
326220 Rubber and plastics hoses and belting manufacturing.....	32622	333511 Industrial mold manufacturing.....	333511
326290 Other rubber product manufacturing.....	32629	33351A Metal cutting and forming machine tool manufacturing.....	333512-3
3270 Nonmetallic mineral product manufacturing		333514 Special tool, die, jig, and fixture manufacturing.....	333514
32711A Pottery, ceramics, and vitreous plumbing fixture manufacturing.....	32711	333515 Cutting tool and machine tool accessory manufacturing.....	333515
32712A Brick, tile, and other structural clay product manufacturing.....	327121-3	33351B Rolling mill and other metalworking machinery manufacturing.....	333516, 333518
32712B Clay and nonclay refractory manufacturing.....	327124-5	3336 Engine, turbine, and power transmission equipment manufacturing	
327211 Flat glass manufacturing.....	327211	333611 Turbine and turbine generator set units manufacturing.....	333611
327212 Other pressed and blown glass and glassware manufacturing.....	327212	333612 Speed changer, industrial high-speed drive, and gear manufacturing.....	333612
327213 Glass container manufacturing.....	327213	333613 Mechanical power transmission equipment manufacturing.....	333613
327215 Glass product manufacturing made of purchased glass.....	327215	333618 Other engine equipment manufacturing.....	333618
327310 Cement manufacturing.....	32731	3339 Other general purpose machinery manufacturing	
327320 Ready-mix concrete manufacturing.....	32732	333911 Pump and pumping equipment manufacturing.....	333911, 333913
327330 Concrete pipe, brick, and block manufacturing.....	32733	333912 Air and gas compressor manufacturing.....	333912
327390 Other concrete product manufacturing.....	32739	333920 Material handling equipment manufacturing.....	333921-4
3274A0 Lime and gypsum product manufacturing.....	3274	333991 Power-driven handtool manufacturing.....	333991
327910 Abrasive product manufacturing.....	32791	33399A Other general purpose machinery manufacturing.....	333992, 333997, 333999
327991 Cut stone and stone product manufacturing.....	327991	333993 Packaging machinery manufacturing.....	333993
327992 Ground or treated mineral and earth manufacturing.....	327992	333994 Industrial process furnace and oven manufacturing.....	333994
327993 Mineral wool manufacturing.....	327993	33399B Fluid power process machinery.....	333995-6
327999 Miscellaneous nonmetallic mineral products.....	327999	3341 Computer and peripheral equipment manufacturing	
331A Iron and steel mills and manufacturing from purchased steel		334111 Electronic computer manufacturing.....	334111
331110 Iron and steel mills and ferroalloy manufacturing.....	3311	334112 Computer storage device manufacturing.....	334112
331210 Iron and steel pipe and tube manufacturing from purchased steel.....	33121	33411A Computer terminals and other computer peripheral equipment manufacturing.....	334113, 334119
331220 Rolling and drawing of purchased steel.....	33122	334A Audio, video, and communications equipment manufacturing	
331B Nonferrous metal production and processing		334210 Telephone apparatus manufacturing.....	33421
33131A Alumina refining and primary aluminum production.....	331311-2	334220 Broadcast and wireless communications equipment.....	33422
331314 Secondary smelting and alloying of aluminum.....	331314	334290 Other communications equipment manufacturing.....	33429
33131B Aluminum sheet, plate, and foil manufacturing and aluminum rolling and drawing.....	331315, 331319	334300 Audio and video equipment manufacturing.....	3343
331316 Aluminum extruded product manufacturing.....	331316	3344 Semiconductor and other electronic component manufacturing	
331411 Primary smelting and refining of copper.....	331411	334411 Electron tube manufacturing.....	334411
331419 Primary smelting and refining of nonferrous metal (except copper and aluminum).....	331419	334412 Bare printed circuit board manufacturing.....	334412
331420 Copper rolling, drawing, extruding, and alloying.....	33142	334413 Semiconductor and related device manufacturing.....	334413
331490 Nonferrous metal (except copper and aluminum) rolling, drawing, extruding, and alloying.....	33149	33441A Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing.....	334414-6
3315 Foundries		334417 Electronic connector manufacturing.....	334417
331510 Ferrous metal foundries.....	33151	334418 Printed circuit assembly (electronic assembly) manufacturing.....	334418
33152A Aluminum foundries.....	331521, 331524	334419 Other electronic component manufacturing.....	334419
33152B Nonferrous foundries, except aluminum.....	331522, 331525, 331528	3345 Electronic instrument manufacturing	
3321 Forging and stamping		334510 Electromedical and electrotherapeutic apparatus manufacturing.....	334510
33211A All other forging, stamping, and sintering.....	332111-2, 332117	334511 Search, detection, and navigation instruments manufacturing.....	334511
332114 Custom roll forming.....	332114	334512 Automatic environmental control manufacturing.....	334512
33211B Crown and closure manufacturing and metal stamping.....	332115-6	334513 Industrial process variable instruments manufacturing.....	334513
3322 Cutlery and handtool manufacturing		334514 Totalizing fluid meters and counting devices manufacturing.....	334514
33221A Cutlery, utensil, pot, and pan manufacturing.....	332211, 332214	334515 Electricity and signal testing instruments manufacturing.....	334515
33221B Handtool manufacturing.....	332212-3	334516 Analytical laboratory instrument manufacturing.....	334516
3323 Architectural and structural metals manufacturing		334517 Irradiation apparatus manufacturing.....	334517
332310 Plate work and fabricated structural product manufacturing.....	33231	33451A Watch, clock, and other measuring and controlling device manufacturing.....	334518-9
332320 Ornamental and architectural metal products manufacturing.....	33232	3346 Manufacturing and reproducing magnetic and optical media	
3324 Boiler, tank, and shipping container manufacturing		33461A Software, audio, and video media reproducing.....	334611-2
332410 Power boiler and heat exchanger manufacturing.....	33241	334613 Magnetic and optical recording media manufacturing.....	334613
332420 Metal tank (heavy gauge) manufacturing.....	33242	3351 Electric lighting equipment manufacturing	
332430 Metal can, box, and other metal container (light gauge) manufacturing.....	33243	335110 Electric lamp bulb and part manufacturing.....	33511
332A Ordnance and accessories manufacturing		335120 Lighting fixture manufacturing.....	33512
33299A Ammunition manufacturing.....	332992-3	3352 Household appliance manufacturing	
33299B Arms, ordnance, and accessories manufacturing.....	332994-5	335210 Small electrical appliance manufacturing.....	33521
332B Other fabricated metal product manufacturing		335221 Household cooking appliance manufacturing.....	335221
332500 Hardware manufacturing.....	3325	335222 Household refrigerator and home freezer manufacturing.....	335222
332600 Spring and wire product manufacturing.....	3326	335224 Household laundry equipment manufacturing.....	335224
332710 Machine shops.....	33271	335228 Other major household appliance manufacturing.....	335228
332720 Turned product and screw, nut, and bolt manufacturing.....	33272		
332800 Coating, engraving, heat treating and allied activities.....	3328		

Appendix A. Proposed Industries for the 2002 Benchmark Input-Output Accounts—Continues

I-O Industry code and title	Related 2002 NAICS codes	I-O Industry code and title	Related 2002 NAICS codes
3353 Electrical equipment manufacturing		4920 Couriers and messengers	
335311 Power, distribution, and specialty transformer manufacturing.....	335311	492000 Couriers and messengers.....	492
335312 Motor and generator manufacturing.....	335312	4930 Warehousing and storage	
335313 Switchgear and switchboard apparatus manufacturing.....	335313	493000 Warehousing and storage.....	493
335314 Relay and industrial control manufacturing.....	335314		
3359 Other electrical equipment and component manufacturing			
335911 Storage battery manufacturing.....	335911		
335912 Primary battery manufacturing.....	335912	INFORMATION	
335920 Communication and energy wire and cable manufacturing.....	335920	5111 Newspaper, periodical, book, and directory publishers	
335930 Wiring device manufacturing.....	335930	511110 Newspaper publishers.....	51111
335991 Carbon and graphite product manufacturing.....	335991	511120 Periodical publishers.....	51112
335999 All other miscellaneous electrical equipment and component manufacturing.....	335999	511130 Book publishers.....	51113
		5111A0 Directory, mailing list, and other publishers.....	51114, 51119
3361 Motor vehicle manufacturing		5112 Software publishers	
336111 Automobile manufacturing.....	336111	511200 Software publishers.....	51121
336112 Light truck and utility vehicle manufacturing.....	336112	5120 Motion picture and sound recording industries	
336120 Heavy duty truck manufacturing.....	336120	512100 Motion picture and video industries.....	5121
		512200 Sound recording industries.....	5122
336A Motor vehicle body, trailer, and parts manufacturing		5151 Radio and television broadcasting	
336211 Motor vehicle body manufacturing.....	336211	515100 Radio and television broadcasting.....	5151
336212 Truck trailer manufacturing.....	336212	5152 Cable networks and program distribution	
336213 Motor home manufacturing.....	336213	515200 Cable and other subscription programming.....	5152
336214 Travel trailer and camper manufacturing.....	336214	5161 Internet publishing and broadcasting	
336300 Motor vehicle parts manufacturing.....	3363	516110 Internet publishing and broadcasting.....	516
3364 Aerospace product and parts manufacturing		5170 Telecommunications	
336411 Aircraft manufacturing.....	336411	517000 Telecommunications.....	517
336412 Aircraft engine and engine parts manufacturing.....	336412	5180 Internet service providers, web search portals, and data processing	
336413 Other aircraft parts and auxiliary equipment manufacturing.....	336413	518100 Internet service providers and web search portals.....	5181
336414 Guided missile and space vehicle manufacturing.....	336414	518200 Data processing, hosting, and related services.....	5182
33641A Propulsion units and parts for space vehicles and guided missiles	336415, 336419	5190 Other information services	
336B Other transportation equipment manufacturing		519100 Other information services.....	519
336500 Railroad rolling stock manufacturing.....	3365		
336611 Ship building and repairing.....	336611	FINANCE AND INSURANCE	
336612 Boat building.....	336612	52A0 Monetary authorities, credit intermediation, and related activities	
336991 Motorcycle, bicycle, and parts manufacturing.....	336991	52A000 Monetary authorities and depository credit intermediation.....	521, 5221
336992 Military armored vehicle, tank, and tank component manufacturing.....	336992	52A00 Nondepository credit intermediation and related activities.....	5222-3
336999 All other transportation equipment manufacturing.....	336999	5230 Securities, commodity contracts, investments, and related activities	
3370 Furniture and related product manufacturing		523000 Securities, commodity contracts, investments, and related activities.....	523
337110 Wood kitchen cabinet and countertop manufacturing.....	33711	5240 Insurance carriers and related activities	
337121 Upholstered household furniture manufacturing.....	337121	524100 Insurance carriers.....	5241
337122 Nonupholstered wood household furniture manufacturing.....	337122	524200 Insurance agencies, brokerages, and related activities.....	5242
33712A Metal and other household furniture manufacturing.....	33712A-5, 337129	5250 Funds, trusts, and other financial vehicles	
337127 Institutional furniture manufacturing.....	337127	525000 Funds, trusts, and other financial vehicles.....	525
33721A Office furniture manufacturing.....	33721A, 337214	REAL ESTATE AND RENTAL AND LEASING	
337212 Custom architectural woodwork and millwork manufacturing.....	337212	5310 Real estate	
337215 Showcase, partition, shelving, and locker manufacturing.....	337215	531000 Real estate.....	531
337910 Mattress manufacturing.....	33791	5008 Owner-occupied dwellings	
337920 Blind and shade manufacturing.....	33792	5008 Owner-occupied dwellings.....	n.a.
3391 Medical equipment and supplies manufacturing		5321 Automotive equipment rental and leasing	
339111 Laboratory apparatus and furniture manufacturing.....	339111	532100 Automotive equipment rental and leasing.....	5321
339112 Surgical and medical instrument manufacturing.....	339112	532A Consumer goods and general rental centers	
339113 Surgical appliance and supplies manufacturing.....	339113	532A00 General and consumer goods rental except video tapes and discs.....	53221-2, 53229, 5323
339114 Dental equipment and supplies manufacturing.....	339114	532230 Video tape and disc rental.....	53223
339115 Ophthalmic goods manufacturing.....	339115	5324 Commercial and industrial machinery and equipment rental and leasing	
339116 Dental laboratories.....	339116	532400 Commercial and industrial machinery and equipment rental and leasing.....	5324
3399 Other miscellaneous manufacturing		5330 Lessors of nonfinancial intangible assets	
339910 Jewelry and silverware manufacturing.....	33991	533000 Lessors of nonfinancial intangible assets.....	533
339920 Sporting and athletic goods manufacturing.....	33992	PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES	
339930 Doll, toy, and game manufacturing.....	33993	5411 Legal services	
339940 Office supplies (except paper) manufacturing.....	33994	541100 Legal services.....	5411
339950 Sign manufacturing.....	33995	5412 Accounting, tax preparation, bookkeeping, and payroll services	
339991 Gasket, packing, and sealing device manufacturing.....	339991	541200 Accounting, tax preparation, bookkeeping, and payroll services.....	5412
339992 Musical instrument manufacturing.....	339992	5413 Architectural, engineering, and related services	
33999A All other miscellaneous manufacturing.....	339993, 339995, 339999	541300 Architectural, engineering, and related services.....	5413
339994 Broom, brush, and mop manufacturing.....	339994	5414 Specialized design services	
		541400 Specialized design services.....	5414
WHOLESALE TRADE		5415 Computer systems design and related services	
4200 Wholesale trade		541511 Custom computer programming services.....	541511
420000 Wholesale trade.....	42	541512 Computer systems design services.....	541512
		54151A Other computer related services, including facilities management	541513, 541519
RETAIL TRADE		5416 Management, scientific, and technical consulting services	
4A00 Retail trade		541610 Management, scientific, and technical consulting services.....	54161
4A0000 Retail trade.....	44, 45	5416A0 Environmental and other technical consulting services.....	54162, 54169
TRANSPORTATION AND WAREHOUSING EXCLUDING POSTAL SERVICE		5417 Scientific research and development services	
4810 Air transportation		541700 Scientific research and development services.....	5417
481000 Air transportation.....	481	5418 Advertising and related services	
4820 Rail transportation		541800 Advertising and related services.....	5418
482000 Rail transportation.....	482	5419 Other professional, scientific, and technical services	
4830 Water transportation		5419A0 All other miscellaneous professional, scientific, and technical services.....	54191, 54193, 54199
483000 Water transportation.....	483	541920 Photographic services.....	54192
4840 Truck transportation		541940 Veterinary services.....	54194
484000 Truck transportation.....	484		
4850 Transit and ground passenger transportation			
485000 Transit and ground passenger transportation.....	485		
4860 Pipeline transportation			
486000 Pipeline transportation.....	486		
48A0 Scenic and sightseeing transportation and support activities			
48A000 Scenic and sightseeing transportation and support activities for transportation.....	487, 488		

Appendix A. Proposed industries for the 2002 Benchmark Input-Output Accounts

I-O Industry code and title	Related 2002 NAICS codes	I-O Industry code and title	Related 2002 NAICS codes
MANAGEMENT OF COMPANIES AND ENTERPRISES		7130 Amusements, gambling, and recreation	
5500 Management of companies and enterprises		713A00 Amusement parks, arcades, and gambling industries.....	7131-2
550000 Management of companies and enterprises.....	55	713B00 Other amusement and recreation industries	71391-3, 71399
ADMINISTRATIVE AND WASTE MANAGEMENT SERVICES		713940 Fitness and recreational sports centers	71394
5613 Employment services		713950 Bowling centers	71395
561300 Employment services.....	5613	ACCOMMODATION AND FOOD SERVICES	
5615 Travel arrangement and reservation services		7210 Accommodation	
561500 Travel arrangement and reservation services	5615	7211A0 Hotels and motels, including casino hotels	72111-2
561A All other administrative and support services		721A00 Other accommodations	72119, 7212-3
561100 Office administrative services	5611	7220 Food services and drinking places	
561200 Facilities support services.....	5612	722000 Food services and drinking places.....	722
561400 Business support services.....	5614	OTHER SERVICES, EXCEPT PUBLIC ADMINISTRATION	
561600 Investigation and security services	5616	8111 Automotive repair and maintenance	
561700 Services to buildings and dwellings.....	5617	8111A0 Automotive repair and maintenance, except car washes	81111-2, 811191, 811198
561900 Other support services	5619	811192 Car washes	811192
5620 Waste management and remediation services		811A Electronic, commercial, and household goods repair	
562000 Waste management and remediation services.....	562	811200 Electronic and precision equipment repair and maintenance.....	8112
EDUCATIONAL SERVICES		811300 Commercial and industrial machinery and equipment repair and maintenance.....	8113
6100 Educational services		811400 Personal and household goods repair and maintenance	8114
611100 Elementary and secondary schools.....	6111	8120 Personal and laundry services	
611A00 Junior colleges, colleges, universities, and professional schools...	6112-3	812100 Personal care services	8121
611B00 Other educational services	6114-7	812200 Death care services	8122
HEALTH CARE AND SOCIAL ASSISTANCE		812300 Dry-cleaning and laundry services.....	8123
6210 Ambulatory health care services		812900 Other personal services	8129
621A00 Offices of physicians, dentists, and other health practitioners	6211-3	813A Religious, grantmaking, giving, and social advocacy organizations	
621B00 Medical and diagnostic labs and outpatient and other ambulatory care services.....	6214-5, 6219	813100 Religious organizations.....	8131
621600 Home health care services	6216	813A00 Grantmaking, giving, and social advocacy organizations.....	8132, 8133
6220 Hospitals		813B Civic, social, professional, and similar organizations	
622000 Hospitals	622	813B00 Civic, social, professional, and similar organizations	8134, 8139
6230 Nursing and residential care facilities		8140 Private households	
623000 Nursing and residential care facilities	623	814000 Private households.....	814
6240 Social assistance		GOVERNMENT	
624A00 Individual and family services	6241	S001 Federal Government enterprises	
624200 Community food, housing, and other relief services, including rehabilitation services	6242-3	491000 Postal service	491
624400 Child day care services.....	6244	S00101 Federal electric utilities.....	n.a.
ARTS, ENTERTAINMENT, AND RECREATION		S00102 Other Federal Government enterprises	n.a.
71A0 Performing arts, spectator sports, museums, zoos, and parks		S002 State and local government enterprises	
711100 Performing arts companies.....	7111	S00201 State and local government passenger transit	n.a.
711200 Spectator sports.....	7112	S00202 State and local government electric utilities	n.a.
711A00 Promoters of performing arts and sports and agents for public figures	7113-4	S00203 Other state and local government enterprises	n.a.
711500 Independent artists, writers, and performers	7115	S005 General Federal defense government industry	
712000 Museums, historical sites, zoos, and parks	712	S00500 General Federal defense government industry	n.a.
		S006 General Federal nondefense government industry	
		S00600 General Federal nondefense government industry	n.a.
		S009 General state and local government industry	
		S00900 General state and local government industry	n.a.

n.a. Not applicable.
 Note. The titles in boldface represent the industries used for the summary version of the 2002 input-output (I-O) tables.

An asterisk following a North American Industry Classification System (NAICS) code indicates that the NAICS industry is included in more than one I-O industry.