

Preview of the 2013 Comprehensive Revision of the Industry Economic Accounts

By Erich H. Strassner and David B. Wasshausen

IN DECEMBER 2013, the Bureau of Economic Analysis (BEA) will release the results of the 2013 comprehensive revision of the industry economic accounts (IEAs). The last comprehensive revision of the IEAs was released in May 2010.

Comprehensive revisions, which are typically conducted at 5-year intervals, tend to have a more expansive scope than annual revisions. Comprehensive revisions provide an opportunity to update the accounts to better reflect the evolving nature of the U.S. economy. Typically, these revisions incorporate two major types of improvements: (1) changes in definitions and classifications and (2) statistical changes. Changes in definitions and classifications update the accounts to more accurately portray the dynamic U.S. economy and to better facilitate international comparisons with economic data available from other countries. With this comprehensive revision, the accounts will be updated to reflect the updated international guidelines for national economic accounts *The System of National Accounts 2008 (SNA)*.¹ Statistical changes update the accounts through the use of new and improved estimation methods and newly available and revised source data.

A key feature of this comprehensive revision of the IEAs is the integration of the 2007 benchmark input-output (I-O) accounts with the annual industry accounts and the national income and product accounts (NIPAs). Integration of the benchmark I-O accounts with the annual industry accounts will achieve the full integration of the IEAs with the NIPAs, which was first suggested in a March 2004 article in the *SURVEY OF CURRENT BUSINESS* and more fully described by Lawson, Moyer, Okubo, and Planting in *A New Architecture for*

U.S. National Accounts.² The enhanced integration will allow for a higher degree of consistency among the NIPAs, the benchmark I-O accounts, and the annual industry accounts.³ In addition, future flexible annual revisions and comprehensive revisions will result in revisions to the 2007 benchmark I-O accounts, as the IEAs will be maintained as a consistent time series fully integrated with the NIPAs.

The following sections of this article include a discussion of the benefits of integrating the benchmark I-O accounts with the annual industry accounts, a summary of the major changes in definitions, changes in industry classification, and a reference to the improved estimation methods, with a particular focus on changes in statistical methods and source data. Appendix A includes a proposed list of industries and commodities to be published in the 2007 benchmark I-O accounts and in the corresponding underlying detail for annual gross output.

Benefits of Integration

Beginning with the 2007 benchmark I-O accounts, the benchmark I-O accounts will be fully integrated with the time series of the annual industry accounts and of the NIPAs. As a result, the 2007 benchmark I-O accounts will be released along with a revised time series of annual industry statistics after the release of the results of the 2013 comprehensive NIPA revision.

2. Brian C. Moyer, Mark A. Planting, Mahnaz Fahim-Nader, and Sherlene K.S. Lum, "Preview of the Comprehensive Revision of the Annual Industry Accounts: Integrating the Annual Input-Output Accounts and Gross Domestic Product by Industry Accounts," *SURVEY OF CURRENT BUSINESS* 84 (March 2004): 38–51; Ann M. Lawson, Brian C. Moyer, Sumiye Okubo, and Mark A. Planting, "Integrating Industry and National Economic Accounts: First Steps and Future Improvements," in *A New Architecture for U.S. National Accounts*, ed. Dale W. Jorgenson, J. Steven Landefeld, and William D. Nordhaus (Chicago: University of Chicago Press, 2006).

3. Brian C. Moyer, "Future Directions for the Industry Accounts," *SURVEY* 89 (March 2009): 29–32.

1. The latest edition of the *System of National Accounts 2008* is available at unstats.un.org.

Going forward, benchmark I-O accounts will be revised to reflect revisions stemming from the NIPAs, and they will be published with the revisions to the time series of the IEAs.

Benchmark I-O accounts, which are released approximately every 5 years, provide the most comprehensive information available on the production of goods and services (commodities) by industries and the flow of these goods and services (1) to industries for use in their production processes and (2) to final users in the economy. These accounts, which are primarily based on data from the economic censuses, are used to establish the level of gross domestic product (GDP) for benchmark years and to provide critical information for estimating GDP for periods after benchmark years.

Traditionally, benchmark I-O accounts have been released before the comprehensive revision of the NIPAs and have not been revised to reflect the results of comprehensive revisions. As a consequence, benchmark I-O accounts have not been fully consistent with the NIPAs or with the annual industry accounts. This has resulted in mixed usefulness of the benchmark I-O accounts: they have provided an accurate and detailed set of inter-industry relationships to analyze structural changes, and they have been used to benchmark the NIPAs and annual industry accounts. Their relevance, however, has been somewhat diminished because they have lacked a time series dimension.

Benchmark I-O accounts will continue to be a critical source of information to benchmark the NIPAs and the time series of IEAs because benchmark I-O accounts, which are prepared using detailed establishment-level data on industries and commodities, are the single most important statistical source for the comprehensive revisions of the NIPAs. Benchmark I-O accounts provide a comprehensive measure of the amount of total gross output by commodity that is sold as final expenditures in the economy. Thus, these accounts provide the basis for a more detailed understanding of the NIPAs; the 2007 account will be used to establish the level and the commodity composition of GDP by final use category and the level of some income components for 2007 in the upcoming comprehensive revision of the NIPAs.⁴

The integration will also allow for a higher degree of consistency among the NIPAs, the benchmark I-O accounts, and the annual industry accounts. For example

in using the fully integrated IEAs, data users will be able to track time series trends in a NIPA final expenditure category at a detailed commodity level in benchmark years and at a slightly higher level of commodity aggregation for nonbenchmark years. Users interested in more detailed statistics on outputs, inputs, and value added at the industry level will be able to cross-walk between a time series of benchmark statistics and a slightly higher level of industry aggregation for nonbenchmark years.

Changes in Definitions

As part of the comprehensive revision of the IEAs, several major definitional changes will be incorporated into both the IEAs and NIPAs that reflect a highly collaborative effort by both IEA and NIPA staff.⁵ These changes include the following:

- The recognition of research and development (R&D) expenditures as capital,
- The capitalization of entertainment, literary, and other artistic originals,
- The expansion of the capitalization of the ownership transfer costs of residential fixed assets, and
- The use of an improved measure of transactions for defined benefit pension plans.

Expenditures for intellectual property products—such as R&D and entertainment, literary, and other artistic originals—provide long-lasting services to businesses, nonprofit institutions, and government agencies that use them. These expenditures have many characteristics of other fixed assets—they have ownership rights that can be established, they are long lasting, and they can be used repeatedly in production processes. The recognition of expenditures for R&D and entertainment, literary, and other artistic originals as fixed investment is an important step towards fully recognizing the contribution of intellectual property products to economic growth and towards bringing the IEAs into fuller compliancy with the 2008 *System of National Accounts*. In the *SNA*, “An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another” (*SNA 2008*, 42, paragraph 3.30). By recording R&D and entertainment originals as investment, the contribution of these important innovative activities to economic growth can be measured.

4. For the details, see Nicole M. Mayerhauser and Sarah J. Pack, “Preview of the Comprehensive Revision of the National Income and Product Accounts: Statistical Changes,” *SURVEY 93* (May): 6–14.

5. For the details, see “Preview of the Comprehensive Revision of the National Income and Product Accounts: Changes in Definitions and Presentations,” *SURVEY 93* (March 2013): 13–39.

Capitalization of R&D expenditures

R&D expenditures fit the criterion for an asset: benefits accrued from R&D have defined economic ownership and are long lasting (more than a year). The new treatment will recognize expenditures for both purchased and own-account R&D by businesses, by nonprofit institutions serving households (NPISHs), and by general government as fixed investment, and the depreciation of these assets in consumption of fixed capital (CFC). Government R&D expenditures will be treated as investment regardless of whether the R&D is protected or made freely available to the public, because the provision of public services is part of the economic benefits generated by government R&D.

As a result of this new treatment, GDP will be boosted by the amount of business R&D investment and by the CFC associated with R&D investment by NPISHs and by general government (table 1). Gross private domestic investment will be boosted by the amount of business and NPISH R&D expenditures. Personal consumption expenditures (PCE) will be reduced by the reclassification of NPISH R&D expenditures to private investment, and it will be increased by the additional CFC associated with the R&D expenditures. Government consumption expenditures and gross investment will be boosted by the CFC associated with the R&D investment; R&D spending will be reclassified from consumption expenditures to gross investment, and the additional CFC will be recorded in consumption expenditures.

Because NPISHs and general government produce services that are not generally sold at market prices, the value of these services is measured as the costs incurred in producing them; therefore, purchases of R&D are removed from the expenses of NPISHs and general government, so their gross output will be lowered by the amount of the R&D expenditure. Gross output for NPISHs and general government increases by the amount of CFC associated with their R&D, and it de-

creases by the amount of purchased R&D. Value added for NPISHs and general governments increases by the amount of CFC associated with their R&D.

Gross output for businesses increases by the amount of their own-account R&D, but it is unaffected by purchases of R&D that are reclassified from an intermediate expense to fixed investment. Value added for businesses increases by the amount of purchased and own-account R&D investment.

BEA has been producing R&D statistics since 1994 when it first published an R&D satellite account that examined the effect of R&D expenditures on the U.S. economy.⁶ The methods used to develop and to periodically update these statistics have evolved significantly, and the resulting improvements have been tracked in a series of papers and SURVEY articles available on BEA's Web site at www.bea.gov. The R&D satellite accounts were produced with valuable support from the National Science Foundation, which continues to work with BEA in the development of R&D source data for estimating investment in the core economic accounts.

Capitalization of entertainment, literary, and other artistic originals

Capitalizing entertainment, literary, and other artistic originals is another important step towards fully recognizing the contribution of intellectual property products to GDP and value added.⁷ Entertainment originals that are designed for mass reproduction for

6. For more information, see Carol S. Carson, Bruce T. Grimm, and Carol E. Moylan, "A Satellite Account for Research and Development," SURVEY 74 (November 1994): 37–71. For the most recent update, see Jennifer Lee and Andrew G. Schmidt, "Research and Development Satellite Account Update: Estimates for 1959–2007" SURVEY 90 (December 2010): 16–27.

7. For details, see Rachel H. Soloveichik, "Artistic Originals as Capital Assets," SURVEY 91 (June 2011): 43–51. See also SNA 2008, 207, paragraph 10.115 and "Entertainment, Literary, and Artistic Originals," in *the Handbook on Deriving Capital Measures of Intellectual Property Products* (Paris: Organisation for Economic Co-operation and Development, October 2010): 150–166.

Table 1. Effects of Recognizing R&D Expenditures as Investment

	Gross output	Intermediate inputs	Value added
Business expenditures for R&D purchases ¹	No change	Decreases by amount of R&D expenditures	Increases by amount of R&D expenditures
NPISHs and general government expenditures for R&D	Increases by the amount of R&D CFC Decreases by the amount of purchased R&D ²	Decreases by the amount of purchased R&D	Increases by the amount of R&D CFC
R&D produced by business on own-account ¹	Increases by amount of own-account R&D	Unchanged	Increases by amount of own-account
R&D produced by NPISH and general government on own-account ¹	Increases by the amount of R&D CFC	Unchanged	Increases by the amount of R&D CFC

1. Business includes government enterprises.
2. Gross output for NPISH is measured as the sum of current operating expenses. Reclassifying R&D to capital lowers operating expenses, thereby lowering NPISH output.

CFC Consumption of fixed capital
NPISHs Nonprofit institutions serving households
R&D Research and development

sale to the general public and have a useful lifespan of more than 1 year will be treated as capital. These originals include movies, long-lived television programs, music, books, stock photography, greeting cards, and live performances. Unlike R&D, all fixed investment in entertainment originals is produced on own-account in a few selected private sectors. Capitalizing entertainment original expenses for businesses will result in increasing gross output and value added by the amount of the new fixed investment.

Capitalization of ownership transfer costs of residential fixed assets

The final change in definition that affects the fixed asset boundary is the expansion of capitalized ownership transfer costs of residential fixed assets. Currently, only brokers' commissions on the sale of residential structures are included in residential fixed investment. Under the new treatment, BEA will recognize additional nonfinancial ownership transfer costs (including both the acquisition and expected disposal costs) associated with the purchase of a residential asset as capital transactions and will record these transactions as gross investment. Expenses associated with financing a purchase of a residential asset—such as loan origination fees, credit reports, and adjustment and collection expenses—will continue to be recorded as current expenses, because these expenses represent financial services and are not necessary to purchase a dwelling.⁸

Defined benefit pension plans on an accrual basis

The last major definitional change to be introduced as part of the 2013 comprehensive IEA revision is an improved measure of transactions of defined benefit pension plans. BEA will change its recording of the transactions of defined benefit pension plans from a cash-accounting basis to an accrual-accounting basis. Accrual accounting is the preferred method for compiling national accounts because it matches incomes earned from production with the corresponding productive activity, and it records both in the same period. The recording of these transactions on an accrual basis will better align pension-related compensation with the timing of when employees earned the benefit entitlements and will avoid the volatility that arises if sporadic cash payments made by employers into defined benefit pension plans are used to measure compensation.⁹ With this improvement, both compensation and

8. For a discussion of the recommended treatment of these costs, see *SNA 2008*, 200–201, paragraphs 10.48–10.55 and 211–212, paragraph 10.158.

9. For preliminary research on accrual-based estimates of these transactions, see Marshall B. Reinsdorf and David G. Lenze, "Defined Benefit Pensions and Household Income and Wealth," *SURVEY* (August 2009): 50–62.

gross operating surplus will be affected. In compensation, supplements to wages and salaries will reflect the addition of the imputed employer contributions based on normal costs. In gross operating surplus, corporate profits will change, reflecting the difference between cash-based compensation and accrual-based compensation and the interest costs of any underfunded or overfunded actuarial liabilities.

Interest paid by private establishments will also change, reflecting the imputed interest payments by employers for underfunded or overfunded actuarial liabilities. In addition, interest and dividend payments will increase to reflect the imputed interest and dividend payments by pension plans to persons, passing through the interest and dividend receipts. Income receipts on assets will increase, reflecting the monetary interest and dividends received by pension plans, as well as the imputed interest received by pension plans from employers for underfunded or overfunded actuarial liabilities.

Proposed Classification Changes

IEA statistics released as part of the 2013 comprehensive revision will be classified and presented on the basis of the 2007 North American Industry Classification System (NAICS); currently, the statistics are classified and presented on a 2002 NAICS basis. Overall, changes stemming from using the 2007 NAICS are small.

The information sector has a number of changes; however, none of them involves reclassifications to another sector (table 2). The subsector "internet publishing and broadcasting" has been reclassified to the subsector "other information services." The subsector "internet service providers, web search portals, and data processing" has been renamed "data processing, hosting, and related services." The industry "internet

Table 2. Effects of Incorporating 2007 NAICS on the Information Sector

BEA codes	Current presentation	2002 NAICS codes
511	Publishing industries (includes software)	511, 516
512	Motion picture and sound recording industries	512
513	Broadcasting and telecommunications	515, 517
514	Information and data processing services	518, 519
BEA codes	Proposed presentation	2007 NAICS codes
511	Publishing industries, except Internet (includes software)	511
512	Motion picture and sound recording industries	512
513	Broadcasting and telecommunications	515, 517
514	Data processing, Internet publishing, and other information services	518, 519

NAICS North American Industry Classification System

service providers” have been reclassified to the “telecommunications” subsector, and the “web search portals” industry has been reclassified to the subsector “other information services.”

In two instances, incorporating 2007 NAICS results in changes in classification between sectors. First, real estate investment trusts (REITS) were split between equity REITS and mortgage REITS; previously, all REITS were classified in the finance and insurance sector (52). Under the 2007 NAICS, mortgage REITS remain under the finance and insurance sector, however, equity REITS are reclassified to the real estate subsector (531). Second, “executive search services” were reclassified from the “professional, scientific, and technical services” sector (54) to the “administrative and support services” subsector (561).

In addition to NAICS-based changes to the proposed presentations, in a number of instances, selected industries in a sector have been aggregated, including agriculture, forestry, fishing and hunting; mining; and manufacturing. Similarly, in a number of instances, industries have been disaggregated in order to show more detail within a sector, including construction; wholesale and retail trade; and healthcare and social assistance.

The criteria used to decide whether to aggregate or disaggregate industries include the reliability of underlying source data and the magnitude of the series. Accordingly, with the release of the 2013 IEA comprehensive revision, BEA plans to publish 404 industries in the 2007 benchmark I-O accounts, compared with 426 industries in the 2002 benchmark I-O accounts. The manufacturing sector will see the largest reduction; BEA plans to publish 239 industries, compared with 279 industries. Retail trade and construction will see the largest expansions. For retail trade, BEA plans to publish 12 industries; previously, BEA only published a total retail trade aggregate. For construction, BEA plan to publish 12 industries, compared with 7 industries. Appendix A presents the proposed list of industries and commodities to be published in the 2007 benchmark I-O accounts and the underlying detail for annual gross output.¹⁰

Statistical Improvements

Statistical improvements are changes in estimation procedures in order to incorporate new and improved

10. A proposed expansion for utilities, wholesale trade, and retail trade will be presented in the detailed annual gross output tables. The expansion of the presentation of industries for these sectors in the make and use tables of the benchmark I-O accounts is still under consideration.

estimation methods and newly available and revised source data.¹¹ A number of notable improvements in statistical methods will be introduced with the release of the 2013 comprehensive revision of the IEAs. Some of the major improvements that will affect the 2007 benchmark I-O accounts are described in this section. One key improvement is the integration of the 2007 benchmark I-O accounts with the annual industry accounts and the NIPAs. This integration affects the industry distribution of value added, specifically compensation of employees and “taxes on production and imports, less subsidies.” The first part of this section discusses these improvements and one other improvement to the value-added components. Other significant improvements are discussed in the next part and include improved estimates of construction, of insurance, and of intermediate inputs at the commodity level and an improved table balancing process. The final part briefly discusses the source data that will be used to prepare the comprehensive revision of the IEAs. A more comprehensive discussion on improved statistical methods, including the annual industry accounts, will be presented with the revised statistics in a forthcoming SURVEY article.

Value-added components

Compensation. For the first time, compensation by industry in a benchmark I-O account will match compensation by industry at the level of aggregation published in the NIPAs and the annual industry accounts. This improvement in methodology will ensure full consistency of compensation by industry in the benchmark I-O accounts with annual measures of compensation by industry published in the 2013 comprehensive NIPA revision as well as the annual industry accounts. It will allow users to easily move from the more aggregated level of compensation for the annual national and industry accounts to the more detailed benchmark level of detail for the 2007 benchmark year.

BEA’s annual wages and salary measures are based primarily on wage data from the Bureau of Labor Statistics’ Quarterly Census of Employment and Wages (QCEW), adjusted to account for misreporting of wages on tax returns and for differences in definitions

11. For additional information on estimation methods, see Karen J. Horowitz and Mark A. Planting, *Concepts and Methods of the U.S. Input-Output Accounts* (2006) at www.bea.gov, and Nicole M. Mayerhauser and Erich H. Strassner, “Preview of the Comprehensive Revision of the Annual Industry Accounts: Changes in Definitions, Classification, and Statistical Methods,” SURVEY 90 (March 2010): 21–34.

and coverage.¹² In the 2007 benchmark I-O accounts, industry distributions of compensation for more detailed levels than those published in the NIPAs or the annual industry accounts will be based on the industry distributions of wages for QCEW covered industries. For non-QCEW covered industries, the distribution of wages is based on Census Bureau economic census data, data for expenses from the services annual survey (SAS), and the 2007 business expenses supplement (BES).

Traditionally in the benchmark I-O accounts, total compensation for the economy was controlled to economywide compensation as published in the NIPAs, but the underlying industry distributions differed. For industries covered by Census Bureau surveys, payroll and benefits data reported on the economic census and BES were used to estimate industry compensation. For noncensus-covered industries, tabulations from the QCEW were used, and estimates of the benefits were developed using NIPA data.

Taxes on production and imports, less subsidies. Similar to compensation, “taxes on production and imports, less subsidies” by industry now will match taxes on production and imports, less subsidies by industry at the level of aggregation published in the NIPAs and the annual industry accounts. Traditionally in the benchmark accounts, taxes on production and imports, less subsidies were equal to the same total, but industry distributions differed. The underlying source data used for estimation remains unchanged.

Gross operating surplus. Gross operating surplus in the 2007 benchmark I-O accounts will reflect the improvements introduced into gross domestic income as part of the 2013 comprehensive revision of NIPAs. Gross operating surplus is initially derived in the benchmark accounts residually as the difference between gross output and the sum of intermediate inputs, compensation, and taxes on production and imports less subsidies, and the final estimate will be reconciled to, and informed by, gross operating surplus presented as part of NIPA gross domestic income. As a result, as part of the 2013 comprehensive NIPA revision, two important improvements will be introduced to the measurement of proprietors’ income and will be reflected in gross operating surplus in the 2007 benchmark I-O accounts: (1) more accurately ac-

counting for the capital gains and losses attributable to corporate partners, and (2) updated adjustments for the underreporting and nonreporting of income using updated data from the Internal Revenue Service.

Other statistical improvements

Construction. For the 2007 benchmark I-O accounts, in the construction sector, the output measure for maintenance and repair and the industry distribution for intermediate inputs and for own-account statistics will be improved.

In the 2002 benchmark I-O accounts, new construction output was derived from the Census Bureau’s Value Put in Place (VPIP) survey, and the output measures for maintenance and repair and for own-account construction were based on the 1997 to 2002 trend in new construction. The industry distributions for maintenance and repair, for own-account construction, and for intermediate inputs were derived from construction distributions from the 1997 benchmark I-O accounts.

For the 2007 benchmark I-O accounts, the output for maintenance and repair will be based on economic census data. The economic census data provide detailed intermediate inputs for construction by NAICS industry. Additionally, the economic census data break down contractor receipts according to the type of structure built. These two tables have been cross-referenced to create intermediate input estimates by type of structure.

Own-account construction output will be improved by replacing judgmental trend estimates with data from VPIP. The distribution of own-account activity will also be improved, using BLS Occupational Employment Statistics data on construction workers by industry to determine the amount of construction activity performed by nonconstruction establishments.

Insurance. Statistics for the insurance industry (and related commodities) will reflect significant improvements with the release of the 2007 benchmark I-O accounts. New and improved source data will be introduced into the estimation of the insurance industry (and related commodities) for a number of insurance lines, including the incorporation of Medical Expenditure Panel Survey data from the Department of Health and Human Services, premiums data for income loss insurance from General Re Corporation, and data on title insurance from the American Land Title Association. In addition to improved source data, a number of methodological improvements will be

12. For complete details on BEA’s measures of compensation by industry, including supplements to wages and salaries, see “[Compensation of Employees](#),” in *NIPA Handbook: Concepts and Methods of the U.S. National Income and Product Accounts*.

introduced, including the expansion of an adaptive expectations model to several lines of insurance, such as multiperil crop, mortgage guaranty, and mutual and fraternal life insurance. The introduction of this methodology will bring the treatment of these services in line with the rest of the property and casualty insurance industry.

Intermediate inputs by industry at the commodity level. In the 2007 benchmark I-O accounts, intermediate inputs by industry at the commodity level will be based on a conversion of intermediate inputs at the same level of detail that underlie the published annual industry accounts for 2007. These intermediate inputs will be updated through balancing the use table to make these estimates more consistent with estimates of intermediate inputs by industry for broad expense categories developed using economic census data, business expense data from the SAS and BES, and other sources.¹³ Traditionally, initial intermediate inputs by industry at the commodity level were based on a conversion of the prior-benchmark input structure before being updated to be consistent with expense data tabulated on the economic census, BES, and other sources.

Balancing process. The use table is balanced with a biproportional adjustment procedure; that is, a procedure that sequentially adjusts the columns and rows of the use table to equal a set of predetermined control totals. In a series of iterations, the adjustments are made (1) until the use of commodities by industries, PCE, private investment, and government consumption and investment equals the domestic supply of commodities, (2) until the sum of value added by industry and intermediate inputs by industry equals gross output by industry, and (3) until the sum of value added across all industries equals the final expenditure measure of GDP. The predetermined con-

trols include industry and commodity gross output, value added at the 65-industry level of NAICS detail, and the commodity composition of final expenditure categories published as part of the NIPAs.

The use of a biproportional scaling procedure to balance the 2007 use table is consistent with the methodology used to produce the time series of annual industry accounts, but this procedure differs from that used to prepare the published benchmark I-O accounts for 2002. For the 2002 benchmark accounts, a generalized least squares method was used, whereby initial estimates of intermediate inputs by industry and commodity and value added below the published level of detail were adjusted based on the relative quality or reliability of the initial estimate.¹⁴ While this “reconciliation” method is still used to establish the level of value added in the benchmark year, biproportional scaling is used to balance the table primarily because of the limited availability of statistical indicators of quality at this level of detail.

Source data

Principal sources of data used to construct current-dollar estimates for benchmark and nonbenchmark years can be found in tables A and B. A number of source data improvements will be incorporated into the fully integrated annual industry accounts time series, including expanded use of both Census Bureau SAS data for measuring gross output and BLS producer price indexes (PPIs) to deflate both intermediate inputs and output. PPIs will replace a variety of price indicators, including PCE price indexes and implicit price deflators based on average wages per employee. Additional details, including a table presenting principal sources of data used to construct prices, will be included in a forthcoming article that will describe the results of the 2013 comprehensive revision of the industry economic accounts.

13. The use of previously published intermediate inputs for a given year in updating the accounts with revised data for the same year is consistent with the methodology used in the annual industry accounts and was introduced as part of the 2011 flexible annual revision of the industry accounts. See Teresa L. Gilmore, Amanda S. Lyndaker, Sarah J. Pack, and Simon N. Randrianarivelo, “Annual Industry Accounts: Revised Statistics for 2003–2010,” *SURVEY* 91 (December 2011): 15–27.

14. See Dylan G. Rassier, Thomas F. Howells III, Edward T. Morgan, Nicholas R. Empey, and Conrad E. Roesch, “Integrating the 2002 Benchmark Input-Output Accounts and the 2002 Annual Industry Accounts,” *SURVEY* 87 (December 2007): 14–22.

Tables A and B and Appendix A follow.

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

Industry or commodity	2007 Benchmark-year source	Nonbenchmark-year source
Agriculture, forestry, fishing and hunting	USDA, Forest Service, Economic Research Service and National Agriculture Statistical Service NOAA, National Marine Fisheries Service, <i>Fisheries of the United States</i> Census Bureau, Statistics of United States Businesses	USDA, Forest Service, Economic Research Service and National Agriculture Statistical Service NOAA, National Marine Fisheries Service, <i>Fisheries of the United States</i> Census Bureau, ASM Bureau of Economic Analysis, NIPAs
Mining.....	Census Bureau, 2007 Economic Census, NAICS Sector 21, Mining	DOE, Energy Information Administration USGS Mineral Commodity Summaries
Utilities.....	Census Bureau, 2007 Economic Census, NAICS Sector 22, Utilities DOE, Energy Information Administration	Census Bureau, SAS DOE, Energy Information Administration
Construction	Census Bureau, Value of Construction Put In Place Statistics	Census Bureau, Value of Construction Put In Place Statistics
Manufacturing.....	Census Bureau, 2007 Economic Census, NAICS Sector 31–33, Manufacturing Census Bureau, 2007 Current Industrial Reports	Census Bureau, ASM
Wholesale trade	Census Bureau, 2007 Economic Census, NAICS Sector 42, Wholesale Trade Census Bureau, 2007 Annual Wholesale Trade Survey	Census Bureau, Annual Wholesale Trade Survey
Retail trade	Census Bureau, 2007 Economic Census, NAICS Sector 44–45, Retail Trade Census Bureau, 2007 Annual Retail Trade Survey	Census Bureau, Annual Retail Trade Survey
Transportation and warehousing	Census Bureau, 2007 Economic Census, NAICS Sector 48–49, Transportation and Warehousing DOT, Bureau of Transportation Statistics DOT, Surface Transportation Board <i>Amtrak 2007 Annual Report</i>	Census Bureau, SAS DOT, Bureau of Transportation Statistics DOT, Surface Transportation Board Amtrak Annual Reports
Information	Census Bureau, 2007 Economic Census, NAICS Sector 51, Information	Census Bureau, SAS
Finance, insurance, real estate, rental and leasing	Census Bureau, 2007 Economic Census, NAICS Sector 52, Finance and Insurance Census Bureau, 2007 Economic Census, NAICS Sector 53, Real Estate and Rental and Leasing Federal Deposit Insurance Corporation, <i>2003 Statistics on Banking</i> New York Stock Exchange, 2007 Annual Report Federal Reserve Board, Flow of Funds Accounts Internal Revenue Service, Statistics of Income Department of Health and Human Services, <i>Medical Expenditure Panel Survey</i> A M Best Company statistics Mortgage Insurance Companies of America, <i>Fact Book</i> American Council of Life Insurers, <i>Life Insurance Fact Book</i> BEA, NIPAs	Census Bureau, SAS SEC Focus Reports Federal Deposit Insurance Corporation, <i>Statistics on Banking</i> Office of Thrift Supervision data Federal Reserve Board, Flow of Funds Accounts National Credit Union Administration BLS, QCEW Internal Revenue Service, Statistics of Income National Association of Insurance Commissioners statistics A M Best Company statistics Mortgage Insurance Companies of America, <i>Fact Book</i> American Council of Life Insurers, <i>Life Insurance Fact Book</i> BEA, NIPAs
Professional and business services	Census Bureau, 2007 Economic Census, NAICS Sector 54, Professional, Scientific, and Technical Services Census Bureau, 2007 Economic Census, NAICS Sector 55, Management of Companies and Enterprises Census Bureau, 2007 Economic Census, NAICS Sector 56, Administrative and Support and Waste Management and Remediation Services	Census Bureau, SAS BLS, QCEW
Educational services, health care, and social assistance.....	USDOE, National Center for Education Statistics, <i>2007 Digest of Education Statistics</i> Census Bureau, 2007 Economic Census, NAICS Sector 61, Educational Services Census Bureau, 2007 Economic Census, NAICS Sector 62, Health Care and Social Assistance National Association of College Store, <i>Vending Times</i>	USDOE, National Center for Education Statistics Census Bureau, SAS BEA, NIPAs

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

Industry or commodity	2007 Benchmark-year source	Nonbenchmark-year source
Arts, entertainment, recreation, accommodation, and food services	Census Bureau, 2007 Economic Census, NAICS Sector 71, Arts, Entertainment, and Recreation Census Bureau, 2007 Economic Census, NAICS Sector 72, Accommodation and Food Services	Census Bureau, SAS BEA, NIPAs Census Bureau, Annual Retail Trade Survey
Other services, except government.....	Census Bureau, 2007 Economic Census, NAICS Sector 81, Other Services BEA, NIPAs	Census Bureau, SAS BEA, NIPAs BLS, QCEW National Center for Charitable Statistics
Government.....	Census Bureau, 2007 Census of Governments Census Bureau, 2007 Government Finances Census Bureau, 2007 Public Employment Federal Budget Data and Federal Government Agency Reports Center for Medicare and Medicaid Services U.S. Postal Service receipts, DOE, Energy Information Administration BEA, NIPAs	Department of Defense data U.S. Postal Service receipts DOE, Energy Information Administration Census Bureau, Value of Construction Put In Place Statistics BEA, NIPAs Census Bureau, Survey of Government Finances BLS, QCEW

ASM Annual Survey of Manufactures
 BEA Bureau of Economic Analysis
 BLS Bureau of Labor Statistics
 DOE Department of Energy
 DOT Department of Transportation
 NAICS North American Industry Classification System
 NIPAs National Income and Product Accounts

NOAA National Oceanic and Atmospheric Administration
 QCEW Quarterly Census of Employment and Wages
 SAS Service Annual Survey
 SEC Securities and Exchange Commission
 USDA United States Department of Agriculture
 USDOE U.S. Department of Education
 USGS United States Geological Survey

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

Input component	Source data and methods used in 2007 benchmark year
Intermediate inputs ¹	<p>Agriculture, forestry, fishing, and hunting Inputs to the agriculture, forestry, fishing and hunting industries were estimated from U.S. Department of Agriculture's 2007 Census of Agriculture or by extrapolating 2002 benchmark input-output (I-O) estimates.</p> <p>Mining Inputs to the mining industries were estimated primarily from the 2007 Economic Census mining sector reports. Detailed expense data used to estimate intermediate inputs included accounting, auditing, and bookkeeping services; advertising and promotional expenses; communication services; legal services; purchased electricity; purchased fuels consumed; rental payments for buildings and other structures; rental payments for machinery and equipment; supplies used and minerals received; and all other operating expenses. Inputs were also extrapolated using the 2002 benchmark I-O estimates.</p> <p>Construction Inputs to the construction industries were estimated primarily from 2007 Economic Census construction data.</p> <p>Manufacturing Inputs to the manufacturing industries were estimated primarily from the 2007 Economic Census manufacturing sector reports. Detailed expense data used to estimate intermediate inputs included accounting, auditing, and bookkeeping services; advertising and promotional services; communication services; legal services; management consulting and administrative services; materials, parts, containers, packaging, etc., used; purchased computer services; purchased electricity; purchased fuels; refuse removal services; rental payments for buildings and other structures; rental payments for machinery and equipment; repair and maintenance services of buildings and/or machinery; and all other operating expenses. Inputs were also extrapolated using the 2002 benchmark I-O estimates.</p> <p>Wholesale and retail trade Inputs to the wholesale and retail trade industries were estimated primarily from the Census Bureau's 2007 Annual Wholesale Trade Survey (AWTS) and Annual Retail Survey (ARTS). Detailed expense data used to estimate intermediate inputs included packaging materials and containers; data processing and other purchased computer services; communication services; repairs and maintenance to machinery and equipment; repairs and maintenance to buildings, structures, and offices; rental payments for machinery and equipment; rental payments for buildings, offices, stores; purchased electricity; purchased fuels (except motor fuels); water, sewer, refuse removal, and other utility payments; purchased transportation, shipping and warehousing services; purchased advertising and promotional services; and purchased professional and technical services. Inputs were also extrapolated using the 2002 benchmark I-O estimates.</p> <p>Services, transportation and warehousing, and utilities For selected census-covered industries, information from the 2007 Service Annual Survey (SAS) on operating expenses was used. Detailed expense data used to estimate intermediate inputs included materials, parts and supplies (not for resale); purchased electricity; purchased fuels (except motor fuels); rental payments for machinery, equipment, and other tangible items; rental payments for buildings, structures, and land; repairs and maintenance to machinery and equipment; repairs and maintenance to buildings, structures, and offices; advertising and promotional services; printing services; data processing and other purchased computer services; communication services; water, sewer, refuse removal and other utilities; professional and technical services; and all other operating expenses. For industries not covered by census, inputs were estimated from a variety of sources, including data from the 2009 SAS on operating expenses, and data from Amtrak, Department of Transportation, Department of Energy, Federal Reserve Board, and the Securities Exchange Commission. Inputs were also estimated by extrapolating 2002 benchmark I-O estimates by the change in output from 2002 to 2007.</p>
Value added:	
Compensation of employees	<p>Tabulations of wages and salaries from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) program, and estimates of supplements to wages and salaries from the national income and product accounts (NIPAs) were used; data were adjusted for misreporting and I-O industry definitions. For industries not covered by the QCEW, payroll data from the 2007 Economic Censuses were used; data were adjusted for misreporting and I-O industry definitions. Benefits data were based on the relationship between the Economic Census, SAS, and 2007 Business Expense Supplement reported benefits and payroll data, applied to the 2007 QCEW wage and salary data. For the remaining industries, benefits were estimated using indirect techniques. All estimates were adjusted to balance to total compensation by industry in the NIPAs.</p>
Taxes on production and imports less subsidies	<p>The estimates by industry were prepared in two parts: For excise and general sales taxes, the values were estimated as part of each industry's output; for other taxes, assessments and license fees, the estimates were distributed on the basis of a variety of source data, including state government tax collections statistics, the Annual Survey of Manufactures, ARTS, AWTS, and SAS. For all other tax liabilities, estimates were distributed to industries using indirect techniques. All estimates were adjusted to balance to total taxes on production and imports, less subsidies, by industry in the NIPAs.</p>
Gross operating surplus	<p>For most industries, gross operating surplus reflects a quality-weighted average of a residual estimate (total industry output less total intermediate inputs, compensation of employees, and taxes on production and imports, less subsidies) and a direct-estimate based on summing up the components of gross operating surplus from the NIPAs, adjusted to an establishment basis. ²</p>

1. Estimates for intermediate inputs were adjusted during the process of balancing commodity purchases across industries with commodity output totals.

2. See Rassier, Howells III, Morgan, Empey, and Roesch, "Integrating the 2002 Bench-

mark Input-Output Accounts with the 2002 Annual Industry Accounts," SURVEY OF CURRENT BUSINESS 87 (December): 14-22.

Appendix A. Proposed Industries in the 2007 Benchmark Input-Output Accounts—Continues

I-O industry code and title	Related 2007 NAICS codes	I-O industry code and title	Related 2007 NAICS codes
AGRICULTURE, FORESTRY, FISHING AND HUNTING			
1110 Crop production		311520 Ice cream and frozen dessert manufacturing	31152
1111A0 Oilseed farming	11111-2	31161A Animal (except poultry) slaughtering, rendering, and processing	311611-3
1111B0 Grain farming	11113-6, 11119	311615 Poultry processing	311615
111200 Vegetable and melon farming	1112	311700 Seafood product preparation and packaging	3117
111300 Fruit and tree nut farming	1113	311810 Bread and bakery product manufacturing	31181
111400 Greenhouse, nursery, and floriculture production	1114	3118A0 Cookie, cracker, pasta, and tortilla manufacturing	31182-3
111900 Other crop farming	1119	311910 Snack food manufacturing	31191
1120 Animal production		311920 Coffee and tea manufacturing	31192
1121A0 Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	11211, 11213	311930 Flavoring syrup and concentrate manufacturing	31193
112120 Dairy cattle and milk production	11212	311940 Seasoning and dressing manufacturing	31194
112A00 Animal production, except cattle and poultry and eggs	1122, 1124-5, 1129	311990 All other food manufacturing	31199
112300 Poultry and egg production	1123	3121 Beverage manufacturing	
1130 Forestry and logging		312110 Soft drink and ice manufacturing	31211
113000 Forestry and logging	113	312120 Breweries	31212
1140 Fishing, hunting, and trapping		312130 Wineries	31213
114000 Fishing, hunting, and trapping	114	312140 Distilleries	31214
1150 Support activities for agriculture and forestry		3122 Tobacco manufacturing	
115000 Support activities for agriculture and forestry	115	312200 Tobacco manufacturing	3122
MINING			
2110 Oil and gas extraction		3130 Textile mills	
211000 Oil and gas extraction	211	313100 Fiber, yarn, and thread mills	3131
2121 Coal mining		313200 Fabric mills	3132
212100 Coal mining	2121	313300 Textile and fabric finishing and fabric coating mills	3133
2122 Metal ores mining		3140 Textile product mills	
2122A0 Iron, gold, silver, and other metal ore mining	21221, 21222, 21229	314110 Carpet and rug mills	31411
212230 Copper, nickel, lead, and zinc mining	21223	314120 Curtain and linen mills	31412
2123 Nonmetallic mineral mining and quarrying		314900 Other textile product mills	3149
212310 Stone mining and quarrying	21231	3150 Apparel manufacturing	
2123A0 Other nonmetallic mineral mining and quarrying	21232, 21239	315000 Apparel manufacturing	315
2130 Support activities for mining		3160 Leather and allied product manufacturing	
213111 Drilling oil and gas wells	213111	316000 Leather and allied product manufacturing	316
21311A Other support activities for mining	213112-5	3210 Wood product manufacturing	
UTILITIES			
2211 Electric power generation, transmission, and distribution		321100 Sawmills and wood preservation	3211
221112 Fossil fuel electric power generation	221112	321200 Veneer, plywood, and engineered wood product manufacturing	3212
221113 Nuclear electric power generation	221113	321910 Millwork	32191
22111A Other electric power generation, including hydroelectric	221111, 221119	3219A0 All other wood product manufacturing	32192-9
221120 Electric power transmission, control, and distribution	22112	3221 Pulp, paper, and paperboard mills	
2212 Natural gas distribution		322110 Pulp mills	32211
221200 Natural gas distribution	2212	322120 Paper mills	32212
2213 Water, sewage and other systems		322130 Paperboard mills	32213
221300 Water, sewage and other systems	2213	3222 Converted paper product manufacturing	
CONSTRUCTION			
2301 New nonresidential construction		322210 Paperboard container manufacturing	32221
2332A0 Commercial structures, including farm structures	23*	322220 Paper bag and coated and treated paper manufacturing	32222
233210 Health care structures	23*	322230 Stationery product manufacturing	32223
233230 Manufacturing structures	23*	322291 Sanitary paper product manufacturing	322291
233240 Power and communication structures	23*	322299 All other converted paper product manufacturing	322299
233262 New educational and vocational structures	23*	3230 Printing and related support activities	
233293 Highways and streets	23*	323110 Printing	32311
2332B0 Other nonresidential structures	23*	323120 Support activities for printing	32312
2302 New residential construction		3240 Petroleum and coal products manufacturing	
233411 New single-family residential structures	23*	324110 Petroleum refineries	32411
233412 New multifamily residential structures	23*	324121 Asphalt paving mixture and block manufacturing	324121
2334A0 Other residential structures	23*	324122 Asphalt shingle and coating materials manufacturing	324122
2303 Maintenance and repair construction		324190 Other petroleum and coal products manufacturing	32419
230301 Nonresidential maintenance and repair	23*	3251 Basic chemical manufacturing	
230302 Residential maintenance and repair	23*	325110 Petrochemical manufacturing	32511
MANUFACTURING			
3110 Food manufacturing		325120 Industrial gas manufacturing	32512
311111 Dog and cat food manufacturing	311111	325130 Synthetic dye and pigment manufacturing	32513
311119 Other animal food manufacturing	311119	325180 Other basic inorganic chemical manufacturing	32518
311210 Flour milling and malt manufacturing	31121	325190 Other basic organic chemical manufacturing	32519
311221 Wet corn milling	311221	3252 Resin, rubber, and artificial fibers manufacturing	
31122A Soybean and other oilseed processing	311222-3	325211 Plastics material and resin manufacturing	325211
311225 Fats and oils refining and blending	311225	3252A0 Synthetic rubber and artificial and synthetic fibers and filaments manufacturing	325212, 32522
311230 Breakfast cereal manufacturing	31123	3253 Agricultural chemical manufacturing	
311300 Sugar and confectionery product manufacturing	3113	325310 Fertilizer manufacturing	32531
311410 Frozen food manufacturing	31141	325320 Pesticide and other agricultural chemical manufacturing	32532
311420 Fruit and vegetable canning, pickling, and drying	31142	3254 Pharmaceutical and medicine manufacturing	
31151A Fluid milk and butter manufacturing	311511-2	325411 Medicinal and botanical manufacturing	325411
311513 Cheese manufacturing	311513	325412 Pharmaceutical preparation manufacturing	325412
311514 Dry, condensed, and evaporated dairy product manufacturing	311514	325413 In-vitro diagnostic substance manufacturing	325413
		325414 Biological product (except diagnostic) manufacturing	325414
		3255 Paint, coating, and adhesive manufacturing	
		325510 Paint and coating manufacturing	32551
		325520 Adhesive manufacturing	32552
		3256 Soap, cleaning compound, and toiletry manufacturing	
		325610 Soap and cleaning compound manufacturing	32561
		325620 Toilet preparation manufacturing	32562

See the note at the end of the table.

Appendix A. Proposed Industries in the 2007 Benchmark Input-Output Accounts—Continues

I-O industry code and title	Related 2007 NAICS codes	I-O industry code and title	Related 2007 NAICS codes
3259 Other chemical product and preparation manufacturing		3332 Industrial machinery manufacturing	
325910 Printing ink manufacturing	32591	33329A Other industrial machinery manufacturing	33321, 333291-4, 333298
3259A0 All other chemical product and preparation manufacturing	32592, 32599	333220 Plastics and rubber industry machinery manufacturing	33322
3260 Plastics and rubber products manufacturing		333295 Semiconductor machinery manufacturing	333295
326110 Plastics packaging materials and un laminated film and sheet manufacturing	32611	3333 Commercial and service industry machinery manufacturing	
326120 Plastics pipe, pipe fitting, and un laminated profile shape manufacturing	32612	33331A Vending, commercial, industrial, and office machinery manufacturing	333311-3
326130 Laminated plastics plate, sheet (except packaging), and shape manufacturing	32613	333314 Optical instrument and lens manufacturing	333314
326140 Polystyrene foam product manufacturing	32614	333315 Photographic and photocopying equipment manufacturing	333315
326150 Urethane and other foam product (except polystyrene) manufacturing	32615	333319 Other commercial and service industry machinery manufacturing	333319
326160 Plastics bottle manufacturing	32616	3334 HVAC and commercial refrigeration equipment manufacturing	
326190 Other plastics product manufacturing	32619	33341A Air purification and ventilation equipment manufacturing	333411-2
326210 Tire manufacturing	32621	333414 Heating equipment (except warm air furnaces) manufacturing	333414
326220 Rubber and plastics hoses and belting manufacturing	32622	333415 Air conditioning, refrigeration, and warm air heating equipment manufacturing	333415
326290 Other rubber product manufacturing	32629	3335 Metalworking machinery manufacturing	
3270 Nonmetallic mineral product manufacturing		333511 Industrial mold manufacturing	333511
327100 Clay product and refractory manufacturing	3271	33351A Metal cutting and forming machine tool manufacturing	333512-3
327200 Glass and glass product manufacturing	3272	333514 Special tool, die, jig, and fixture manufacturing	333514
327310 Cement manufacturing	32731	33351B Cutting and machine tool accessory, rolling mill, and other metalworking machinery manufacturing	333515, 333516, 333518
327320 Ready-mix concrete manufacturing	32732	3336 Engine, turbine, and power transmission equipment manufacturing	
327330 Concrete pipe, brick, and block manufacturing	32733	333611 Turbine and turbine generator set units manufacturing	333611
327390 Other concrete product manufacturing	32739	333612 Speed changer, industrial high-speed drive, and gear manufacturing	333612
327400 Lime and gypsum product manufacturing	3274	333613 Mechanical power transmission equipment manufacturing	333613
327910 Abrasive product manufacturing	32791	333618 Other engine equipment manufacturing	333618
327991 Cut stone and stone product manufacturing	327991	3339 Other general purpose machinery manufacturing	
327992 Ground or treated mineral and earth manufacturing	327992	33391A Pump and pumping equipment manufacturing	333911, 333913
327993 Mineral wool manufacturing	327993	333912 Air and gas compressor manufacturing	333912
327999 Miscellaneous nonmetallic mineral products	327999	333920 Material handling equipment manufacturing	33392
331A Iron and steel mills and manufacturing from purchased steel		333991 Power-driven handtool manufacturing	333991
331100 Iron and steel mills and ferroalloy manufacturing	3311	33399A Other general purpose machinery manufacturing	333992, 333997, 333999
331200 Steel product manufacturing from purchased steel	3312	333993 Packaging machinery manufacturing	333993
331B Nonferrous metal production and processing		333994 Industrial process furnace and oven manufacturing	333994
33131A Alumina refining and primary aluminum production	331311-2	33399B Fluid power process machinery	333995-6
331314 Secondary smelting and alloying of aluminum	331314	3341 Computer and peripheral equipment manufacturing	
33131B Aluminum product manufacturing from purchased aluminum	331315, 331316, 331319	334111 Electronic computer manufacturing	334111
331411 Primary smelting and refining of copper	331411	334112 Computer storage device manufacturing	334112
331419 Primary smelting and refining of nonferrous metal (except copper and aluminum)	331419	33411A Computer terminals and other computer peripheral equipment manufacturing	334113, 334119
331420 Copper rolling, drawing, extruding, and alloying	33142	334A Audio, video, and communications equipment manufacturing	
331490 Nonferrous metal (except copper and aluminum) rolling, drawing, extruding, and alloying	33149	334210 Telephone apparatus manufacturing	33421
3315 Foundries		334220 Broadcast and wireless communications equipment	33422
331510 Ferrous metal foundries	33151	334290 Other communications equipment manufacturing	33429
331520 Nonferrous metal foundries	33152	334300 Audio and video equipment manufacturing	3343
3321 Forging and stamping		334A Semiconductor and other electronic component manufacturing	
33211A All other forging, stamping, and sintering	332111-2, 332117	334413 Semiconductor and related device manufacturing	334413
332114 Custom roll forming	332114	334418 Printed circuit assembly (electronic assembly) manufacturing	334418
33211B Crown and closure manufacturing and metal stamping	332115-6	33441A Other electronic component manufacturing	334411, 334412, 334414-7, 334419
3322 Cutlery and handtool manufacturing		3345 Electronic instrument manufacturing	
332200 Cutlery and handtool manufacturing	3322	334510 Electromedical and electrotherapeutic apparatus manufacturing	334510
3323 Architectural and structural metals manufacturing		334511 Search, detection, and navigation instruments manufacturing	334511
332310 Plate work and fabricated structural product manufacturing	33231	334512 Automatic environmental control manufacturing	334512
332320 Ornamental and architectural metal products manufacturing	33232	334513 Industrial process variable instruments manufacturing	334513
3324 Boiler, tank, and shipping container manufacturing		334514 Totalizing fluid meter and counting device manufacturing	334514
332410 Power boiler and heat exchanger manufacturing	33241	334515 Electricity and signal testing instruments manufacturing	334515
332420 Metal tank (heavy gauge) manufacturing	33242	334516 Analytical laboratory instrument manufacturing	334516
332430 Metal can, box, and other metal container (light gauge) manufacturing	33243	334517 Irradiation apparatus manufacturing	334517
332A Ordnance and accessories manufacturing		33451A Watch, clock, and other measuring and controlling device manufacturing	334518-9
33299A Ammunition, arms, ordnance, and accessories manufacturing	332992-5	3346 Manufacturing and reproducing magnetic and optical media	
332B Other fabricated metal product manufacturing		334610 Manufacturing and reproducing magnetic and optical media	33461
332500 Hardware manufacturing	3325	3351 Electric lighting equipment manufacturing	
332600 Spring and wire product manufacturing	3326	335110 Electric lamp bulb and part manufacturing	33511
332710 Machine shops	33271	335120 Lighting fixture manufacturing	33512
332720 Turned product and screw, nut, and bolt manufacturing	33272	3352 Household appliance manufacturing	
332800 Coating, engraving, heat treating, and allied activities	3328	335210 Small electrical appliance manufacturing	33521
33291A Valve and fittings other than plumbing	332911-2, 332919	335221 Household cooking appliance manufacturing	335221
332913 Plumbing fixture fitting and trim manufacturing	332913	335222 Household refrigerator and home freezer manufacturing	335222
332991 Ball and roller bearing manufacturing	332991	335224 Household laundry equipment manufacturing	335224
332996 Fabricated pipe and pipe fitting manufacturing	332996	335228 Other major household appliance manufacturing	335228
33299B Other fabricated metal manufacturing	332997-9		
3331 Agriculture, construction, and mining machinery manufacturing			
333111 Farm machinery and equipment manufacturing	333111		
333112 Lawn and garden equipment manufacturing	333112		
333120 Construction machinery manufacturing	33312		
333130 Mining and oil and gas field machinery manufacturing	33313		

See the note at the end of the table.

Appendix A. Proposed Industries in the 2007 Benchmark Input-Output Accounts—Continues

I-O industry code and title	Related 2007 NAICS codes	I-O industry code and title	Related 2007 NAICS codes
3353 Electrical equipment manufacturing		RETAIL TRADE	
335311 Power, distribution, and specialty transformer manufacturing.....	335311	4A00 Retail trade	
335312 Motor and generator manufacturing.....	335312	441000 Motor vehicle and parts dealers.....	441
335313 Switchgear and switchboard apparatus manufacturing.....	335313	442000 Furniture and home furnishings stores.....	442
335314 Relay and industrial control manufacturing.....	335314	443000 Electronics and appliance stores.....	443
3359 Other electrical equipment and component manufacturing		444000 Building material and garden equipment and supplies dealers.....	444
335911 Storage battery manufacturing.....	335911	445000 Food and beverage stores.....	445
335912 Primary battery manufacturing.....	335912	446000 Health and personal care stores.....	446
335920 Communication and energy wire and cable manufacturing.....	33592	447000 Gasoline stations.....	447
335930 Wiring device manufacturing.....	33593	448000 Clothing and clothing accessories stores.....	448
335991 Carbon and graphite product manufacturing.....	335991	451000 Sporting goods, hobby, book, and music stores.....	451
335999 All other miscellaneous electrical equipment and component manufacturing.....	335999	452000 General merchandise stores.....	452
		453000 Miscellaneous store retailers.....	453
		454000 Nonstore retailers.....	454
3361 Motor vehicle manufacturing		TRANSPORTATION AND WAREHOUSING, EXCLUDING POSTAL SERVICE	
336111 Automobile manufacturing.....	336111	4810 Air transportation	
336112 Light truck and utility vehicle manufacturing.....	336112	481000 Air transportation.....	481
336120 Heavy duty truck manufacturing.....	33612	4820 Rail transportation	
336A Motor vehicle body, trailer, and parts manufacturing		482000 Rail transportation.....	482
336211 Motor vehicle body manufacturing.....	336211	4830 Water transportation	
336212 Truck trailer manufacturing.....	336212	483000 Water transportation.....	483
336213 Motor home manufacturing.....	336213	4840 Truck transportation	
336214 Travel trailer and camper manufacturing.....	336214	484000 Truck transportation.....	484
336310 Motor vehicle gasoline engine and engine parts manufacturing.....	33631	4850 Transit and ground passenger transportation	
336320 Motor vehicle electrical and electronic equipment manufacturing.....	33632	485000 Transit and ground passenger transportation.....	485
3363A0 Motor vehicle steering, suspension component (except spring), and brake systems manufacturing.....	33633-4	4860 Pipeline transportation	
336350 Motor vehicle transmission and power train parts manufacturing.....	33635	486000 Pipeline transportation.....	486
336360 Motor vehicle seating and interior trim manufacturing.....	33636	48A0 Scenic and sightseeing transportation and support activities	
336370 Motor vehicle metal stamping.....	33637	48A000 Scenic and sightseeing transportation and support activities for transportation.....	487, 488
336390 Other motor vehicle parts manufacturing.....	33639	4920 Couriers and messengers	
3364 Aerospace product and parts manufacturing		492000 Couriers and messengers.....	492
336411 Aircraft manufacturing.....	336411	4930 Warehousing and storage	
336412 Aircraft engine and engine parts manufacturing.....	336412	493000 Warehousing and storage.....	493
336413 Other aircraft parts and auxiliary equipment manufacturing.....	336413	INFORMATION	
336414 Guided missile and space vehicle manufacturing.....	336414	5111 Newspaper, periodical, book, and directory publishers	
33641A Propulsion units and parts for space vehicles and guided missiles.....	336415, 336419	511110 Newspaper publishers.....	51111
336B Other transportation equipment manufacturing		511120 Periodical publishers.....	51112
336500 Railroad rolling stock manufacturing.....	3365	511130 Book publishers.....	51113
336611 Ship building and repairing.....	336611	5111A0 Directory, mailing list, and other publishers.....	51114, 51119
336612 Boat building.....	336612	5112 Software publishers	
336991 Motorcycle, bicycle, and parts manufacturing.....	336991	511200 Software publishers.....	51121
336992 Military armored vehicle, tank, and tank component manufacturing.....	336992	5120 Motion picture and sound recording industries	
336999 All other transportation equipment manufacturing.....	336999	512100 Motion picture and video industries.....	5121
3370 Furniture and related product manufacturing		512200 Sound recording industries.....	5122
337110 Wood kitchen cabinet and countertop manufacturing.....	33711	5151 Radio and television broadcasting (except Internet)	
337121 Upholstered household furniture manufacturing.....	337121	515100 Radio and television broadcasting.....	5151
337122 Nonupholstered wood household furniture manufacturing.....	337122	5152 Cable and other subscription programming (except Internet)	
33712A Metal and other household furniture (except wood) manufacturing.....	337124-5	515200 Cable and other subscription programming.....	5152
337127 Institutional furniture manufacturing.....	337127	5170 Telecommunications	
337129 Wood television, radio, and sewing machine cabinet manufacturing.....	337129	517110 Wired telecommunications carriers.....	5171
33721A Office furniture and custom architectural woodwork and millwork manufacturing.....	337211, 337212, 337214	517210 Wireless telecommunications carriers (except satellite).....	5172
337215 Showcase, partition, shelving, and locker manufacturing....	337215	517A00 Satellite, telecommunications resellers, and all other telecommunications.....	5174-9
337900 Other furniture related product manufacturing.....	3379	5180 Data processing, hosting, and related services	
3391 Medical equipment and supplies manufacturing		518200 Data processing, hosting, and related services.....	5182
339112 Surgical and medical instrument manufacturing.....	339112	5190 Other information services	
339113 Surgical appliance and supplies manufacturing.....	339113	519130 Internet publishing and broadcasting and Web search portals.....	51913
339114 Dental equipment and supplies manufacturing.....	339114	5191A0 News syndicates, libraries, archives, and all other information services.....	51911-2, 51919
339115 Ophthalmic goods manufacturing.....	339115	FINANCE AND INSURANCE	
339116 Dental laboratories.....	339116	52A0 Monetary authorities, credit intermediation and related activities	
3399 Other miscellaneous manufacturing		52A000 Monetary authorities and depository credit intermediation....	521, 5221
339910 Jewelry and silverware manufacturing.....	33991	522A00 Nondepository credit intermediation and related activities....	5222-3
339920 Sporting and athletic goods manufacturing.....	33992	5230 Securities, commodity contracts, investments, and related activities	
339930 Doll, toy, and game manufacturing.....	33993	523A00 Securities and commodity contracts intermediation and brokerage.....	5231-2
339940 Office supplies (except paper) manufacturing.....	33994	523900 Other financial investment activities.....	5239
339950 Sign manufacturing.....	33995		
339990 All other miscellaneous manufacturing.....	33999		
WHOLESALE TRADE			
4200 Wholesale trade			
423000 Merchant wholesalers, durable goods.....	423		
424000 Merchant wholesalers, nondurable goods.....	424		
425000 Wholesale electronic markets and agents and brokers.....	425		
42XXXX Wholesale trade adjustments.....	n.a.		

See the note at the end of the table.

Appendix A. Proposed Industries in the 2007 Benchmark Input-Output Accounts—Continues

I-O industry code and title	Related 2007 NAICS codes	I-O industry code and title	Related 2007 NAICS codes
5240 Insurance carriers and related activities		ADMINISTRATIVE AND WASTE SERVICES	
524100 Insurance carriers.....	5241	561A All other administrative and support services	
524200 Insurance agencies, brokerages, and related activities.....	5242	561100 Office administrative services.....	5611
5250 Funds, trusts, and other financial vehicles		561200 Facilities support services.....	5612
525000 Funds, trusts, and other financial vehicles.....	525	561400 Business support services.....	5614
REAL ESTATE AND RENTAL AND LEASING		561600 Investigation and security services.....	5616
5310 Real estate		561700 Services to buildings and dwellings.....	5617
531000 Real estate.....	531	561900 Other support services.....	5619
S008 Owner-occupied dwellings		5613 Employment services	
S00800 Owner-occupied dwellings.....	n.a.	561300 Employment services.....	5613
5321 Automotive equipment rental and leasing		5615 Travel arrangement and reservation services	
532100 Automotive equipment rental and leasing.....	5321	561500 Travel arrangement and reservation services.....	5615
532A Consumer goods and general rental centers		5620 Waste management and remediation services	
532A00 General and consumer goods rental.....	5322-3	562000 Waste management and remediation services.....	562
5324 Commercial and industrial machinery and equipment rental and leasing		EDUCATIONAL SERVICES	
532400 Commercial and industrial machinery and equipment rental and leasing.....	5324	6100 Educational services	
5330 Lessors of nonfinancial intangible assets		611100 Elementary and secondary schools.....	6111
533000 Lessors of nonfinancial intangible assets.....	533	611A00 Junior colleges, colleges, universities, and professional schools.....	6112-3
PROFESSIONAL AND TECHNICAL SERVICES		611B00 Other educational services.....	6114-7
5411 Legal services		HEALTH CARE AND SOCIAL ASSISTANCE	
541100 Legal services.....	5411	6210 Ambulatory health care services	
5412 Accounting, tax preparation, bookkeeping, and payroll services		621100 Offices of physicians.....	6211
541200 Accounting, tax preparation, bookkeeping, and payroll services.....	5412	621200 Offices of dentists.....	6212
5413 Architectural, engineering, and related services		621300 Offices of other health practitioners.....	6213
541300 Architectural, engineering, and related services.....	5413	621400 Outpatient care centers.....	6214
5414 Specialized design services		621500 Medical and diagnostic laboratories.....	6215
541400 Specialized design services.....	5414	621600 Home health care services.....	6216
5415 Computer systems design and related services		621900 Other ambulatory health care services.....	6219
541511 Custom computer programming services.....	541511	6220 Hospitals	
541512 Computer systems design services.....	541512	622000 Hospitals.....	622
54151A Other computer related services, including facilities management.....	541513, 541519	6230 Nursing and residential care facilities	
5416 Management, scientific, and technical consulting services		623A00 Nursing and community care facilities.....	6231, 6233
541610 Management consulting services.....	54161	623B00 Residential mental retardation, mental health, substance abuse and other facilities.....	6232, 6239
5416A0 Environmental and other technical consulting services.....	54162, 54169	6240 Social assistance	
5417 Scientific research and development services		624100 Individual and family services.....	6241
541700 Scientific research and development services.....	5417	624200 Community food, housing, and other relief services, including rehabilitation services.....	6242-3
5418 Advertising and related services		624400 Child day care services.....	6244
541800 Advertising, public relations, and related services.....	5418	ARTS, ENTERTAINMENT, AND RECREATION	
5419 Other professional, scientific, and technical services		71A0 Performing arts, spectator sports, museums, zoos, and parks	
5419A0 All other miscellaneous professional, scientific, and technical services.....	54191, 54193, 54199	711100 Performing arts companies.....	7111
541920 Photographic services.....	54192	711200 Spectator sports.....	7112
541940 Veterinary services.....	54194	711A00 Promoters of performing arts and sports and agents for public figures.....	7113-4
MANAGEMENT OF COMPANIES AND ENTERPRISES		711500 Independent artists, writers, and performers.....	7115
5500 Management of companies and enterprises		712000 Museums, historical sites, zoos, and parks.....	712
550000 Management of companies and enterprises.....	55	7130 Amusements, gambling, and recreation	
		713100 Amusement parks and arcades.....	7131
		713200 Gambling industries (except casino hotels).....	7132
		713900 Other amusement and recreation industries.....	7139

See the note at the end of the table.

Appendix A. Proposed Industries in the 2007 Benchmark Input-Output Accounts—Table Ends

I-O industry code and title	Related 2007 NAICS codes	I-O industry code and title	Related 2007 NAICS codes
ACCOMMODATION AND FOOD SERVICES		8140 Private households	
7210 Accommodation		814000 Private households	814
721000 Accommodation.....	721		
7220 Food services and drinking places		GOVERNMENT INDUSTRIES	
722110 Full-service restaurants	7221	S001 Federal government enterprises	
722211 Limited-service eating places	7222	491000 Postal service.....	491
722999 All other food and drinking places	7223-4	S00101 Federal electric utilities.....	n.a.
		S00102 Other federal government enterprises	n.a.
OTHER SERVICES EXCEPT PUBLIC ADMINISTRATION		S002 State and local government enterprises	
8111 Automotive repair and maintenance		S00201 State and local government passenger transit.....	n.a.
811100 Automotive repair and maintenance (including car washes)	8111	S00202 State and local government electric utilities	n.a.
		S00203 Other state and local government enterprises.....	n.a.
811A Electronic, commercial, and household goods repair		S005 General federal defense government services	
811200 Electronic and precision equipment repair and maintenance	8112	S00500 General federal defense government services.....	n.a.
811300 Commercial and industrial machinery and equipment repair and maintenance.....	8113	S006 General federal nondefense government services	
811400 Personal and household goods repair and maintenance	8114	S00600 General federal nondefense government services.....	n.a.
8120 Personal and laundry services		S007 General state and local government services	
812100 Personal care services	8121	S00700 General state and local government services.....	n.a.
812200 Death care services.....	8122		
812300 Dry-cleaning and laundry services.....	8123	SPECIAL INDUSTRIES	
812900 Other personal services	8129	S003 Noncomparable imports	
813A Religious, grantmaking, giving, and social advocacy organizations		S00300 Noncomparable imports.....	n.a.
813100 Religious organizations	8131	S004 Scrap, used and secondhand goods	
813A00 Grantmaking, giving, and social advocacy organizations.....	8132, 8133	S00401 Scrap.....	n.a.
813B Civic, social, professional and similar organizations		S00402 Used and secondhand goods	n.a.
813B00 Civic, social, professional, and similar organizations	8134, 8139	S009 Rest of the world adjustment	
		S00900 Rest of the world adjustment	n.a.

n.a. Not applicable.
 NOTE: An asterisk following a (NAICS) code indicates that the NAICS industry is included in more than one I-O industry.