

# Preview of the 2009 Comprehensive Revision of the NIPAs

## Statistical Changes

By Clinton P. McCully and Steven Payson

IN JULY 2009, the Bureau of Economic Analysis (BEA) will release the results of the 13<sup>th</sup> comprehensive, or benchmark, revision of the national income and product accounts (NIPAs). The last such revision was released in December 2003.

This article, which describes statistical changes, is the fourth in a series of SURVEY OF CURRENT BUSINESS articles about the comprehensive revision. [An article in the March 2008 issue](#) described the effects of incorporating the 2002 benchmark input-output (I-O) accounts and identified some of the proposals being considered for this comprehensive revision.<sup>1</sup> [An article in May 2008](#) described a new classification system for personal consumption expenditures (PCE).<sup>2</sup> [An article in the March 2009 SURVEY](#) covered changes in definitions and in the presentation of data, including the change in reference year from 2000 to 2005 for the chain-type quantity and price indexes and for the chained-dollar estimates.<sup>3</sup> Following the release of the comprehensive revision results in July, an article in the September 2009 SURVEY will describe the revised NIPA estimates and present and discuss the effects of the changes in definitions and the statistical changes.

Statistical changes are changes in estimation procedure that are generally made to incorporate new methods or techniques, to incorporate data from new sources, or to address data gaps and other shortcomings. Major statistical changes in this comprehensive revision include the following:

- Incorporates the 2002 benchmark I-O accounts, which provide the most thorough and detailed information on the structure of the U.S. economy. These accounts are used to benchmark the expendi-

ture components of gross domestic product (GDP) and some of the income components.

- Improves the estimates of PCE for consumer electronics by using new retail point-of-sale scanner data from a trade source.
- Improves estimates of wages and salaries by incorporating new information on employee cafeteria plans.
- Improves estimates of proprietors' income by updating adjustments for the underreporting and nonreporting of income using more recent Internal Revenue Service (IRS) data and Census Bureau data.

The remainder of this article describes these newly available and revised source data and the major methodological changes that will be incorporated in this comprehensive revision (table 1).

### Newly Available and Revised Source Data

In this comprehensive revision, estimates are revised for the years since the 1997 benchmark I-O estimates and for additional years for changes in definitions and classifications and for statistical changes. In contrast, in annual NIPA revisions, only the estimates for the 3 most recent years have typically been revised.<sup>4</sup> Consequently, newly available and revised source data that became available for periods outside the scope of annual revisions will be incorporated in this comprehensive revision. Source data that have become available since the 2003 comprehensive revision that would not normally be fully incorporated in a regular annual NIPA revision are referred to as "regular benchmark source data." These data are usually available with a long lag but generally go back no further than 10 years, which is typical, for example, of the data from the decennial and quinquennial censuses.

This comprehensive revision also includes the data that are normally incorporated in the annual NIPA

1. Kurt Kunze and Stephanie H. McCulla, "Preview of Revised NIPA Estimates for 2002: Effects of Incorporating the 2002 Benchmark I-O Accounts and Proposed Definition and Statistical Changes," SURVEY OF CURRENT BUSINESS 88 (March 2008): 10–17.

2. Clinton P. McCully and Teresita D. Teensma, "Preview of the 2009 Comprehensive Revision of the National Income and Product Accounts: New Classifications for Personal Consumption Expenditures," SURVEY 88 (May 2008): 6–17.

3. Eugene P. Seskin and Shelly Smith, "Preview of the 2009 Comprehensive Revision of the National Income and Product Accounts: Changes in Definitions and Presentations," SURVEY 89 (March 2009): 10–27.

4. In 2010, BEA will introduce "flexible" annual revisions that will retain the features of the current annual revisions, but will also allow for the kinds of improvements that have been reserved for comprehensive revisions. See "Improving BEA's Accounts Through Flexible Annual Revisions," SURVEY 88 (June 2008): 29–32.

revision. These source data are referred to as “regular source data for 2006–2008.” An example is the 2007 *Statistics of Income (SOI)* data for business tax returns from the IRS.

The most important step in preparing this comprehensive NIPA revision is the incorporation of the 2002 levels for key components from BEA’s 2002 benchmark I-O accounts, which are adjusted to reflect any changes in definitions and classifications in the NIPA estimates.<sup>5</sup> In addition, detailed industry and commodity information from the I-O accounts is used to revise the proportions of final and intermediate purchases that are used to extrapolate product-side estimates for years

5. For the reclassification of PCE, the benchmark I-O estimates used the new classifications, so no further adjustments will be necessary for this comprehensive revision.

after 2002. The NIPA estimates are also revised to account for newly available and revised source data.

### Regular benchmark source data

The revised NIPA estimates will incorporate the following regular benchmark source data: data from BEA’s benchmark 2002 I-O accounts, selected data from the most recent quinquennial economic censuses, housing data from the decennial census and from the related Residential Finance Survey, and annual source data that were not available in time for incorporation during the annual NIPA revisions.

**The 2002 benchmark I-O accounts.** For comprehensive revisions of the NIPAs, the benchmark I-O accounts are the most important data source. They are used to establish the NIPA level of GDP for the

**Table 1. Major Methodological Changes**

Changes	Components	Initial year of change
<b>Product side</b>		
Change in coverage of retail-control method.....	PCE	2003
Use of consumer electronics scanner data .....	PCE	2003
Improved estimates of imputed rental value of owner-occupied nonfarm housing	PCE, rental income of persons	2002
Use of Service Annual Survey data for estimates of hospitals and telecommunications services.....	PCE	2003
Use of Quarterly Services Survey data for tax-exempt hospital and nursing home revenue .....	PCE	2005
Removal of electricity commodity tax .....	PCE	1968
Improved interpolation of change in private inventories .....	Change in private inventories	1997
Seasonal adjustment of petroleum import prices .....	Imports	1991
<b>Income side</b>		
Improved estimates of employee contributions to cafeteria plans.....	Wages and salaries	1986
Improved estimates of industry distribution of employer contributions for old-age, survivors, and disability insurance .....	Employer contributions for government social insurance by industry	1998
2002 NAICS-based industry estimates .....	All income estimates	1998
Improved distribution of employer contributions for health insurance by industry	Employer contributions for employee pension and insurance funds by industry	1998
Improved misreporting adjustments .....	Nonfarm proprietors’ income, wages and salaries	1984
Improved allocation of business meals and entertainment expenses .....	Corporate profits, nonfarm proprietors’ income	1987
Improved estimates of capital gains and indirect commissions of securities brokers and dealers .....	Corporate profits, PCE	1988
Improved estimates of the profits of Indian casinos .....	Current surplus of government enterprises	1989
NAICS-based taxes on production and imports and nontax payments.....	National income by industry; gross value added of financial and nonfinancial domestic corporate business; national income by sector, legal form of organization, and type of income; PCE	1998
<b>Quantity and price indexes</b>		
Monthly input cost indexes .....	PCE	2001
Improved pricing methods for Strategic Petroleum Reserve transactions.....	Government consumption expenditures and gross investment, change in private inventories	1998
<b>Consumption of fixed capital</b>		
New classification of improvements in farm owner-occupied housing .....	Net housing value added, net farm value added	1929
<b>Changes carried back from the 2004–2008 annual revisions <sup>1</sup></b>		
Improved estimates of motor vehicle valuation (2008) .....	PCE, private equipment and software, change in private inventories	2002
Use of grocery store scanner data (2008).....	PCE	2003
Updated ratios to allocate federal nondefense expenditures (2005) .....	Federal nondefense consumption expenditures and gross investment	1993
Seasonal adjustment of federal nondefense motor vehicles (2006).....	Federal nondefense gross investment	1993
Seasonal adjustment of petroleum imports (2004) .....	Imports	1989
Improved prices for state and local government “other health services” (2007)....	State and local government consumption expenditures	2000
Improved estimates of benefits paid by the Pension Benefit Guarantee Corporation (2006) <sup>2</sup> .....	Government social benefits	1985

1. The year in parentheses refers to the August SURVEY OF CURRENT BUSINESS in which the change was described.

2. The change was incorporated in the 2006 annual revision, but it was not described in the August 2006 SURVEY article.

NAICS North American Industry Classification System  
PCE Personal consumption expenditures

benchmark year and provide essential information for estimating GDP for periods after the benchmark year.<sup>6</sup> For NIPA benchmark year estimates, the I-O accounts provide information on the portion of the value of gross domestic output going to final uses. As a result, the estimate of GDP avoids double-counting (of, for example, the semiconductors that go into computers or the flour that goes into bread).<sup>7</sup>

The 2002 I-O accounts provide the benchmark for the estimates of PCE, private fixed investment (PFI), and parts of several income components, and they provide the commodity weights for the change in private inventories and the type-of-product detail for state and local government consumption expenditures and gross investment. The I-O estimates are used as benchmarks because they are based on detailed industry and commodity statistics collected by the Census Bureau in the quinquennial economic censuses and because they are prepared within an internally consistent framework that tracks the flows of inputs and outputs in the economy.<sup>8</sup> In addition, the 2002 I-O estimates must be modified to account for the changes in definitions and classifications that affect GDP, such as the new measure of insurance services provided by government enterprises.<sup>9</sup> The incorporation of the 2002 benchmark I-O accounts will result in revisions to NIPA estimates for selected components, beginning with 1998; estimates from the 1997 benchmark I-O accounts were incorporated in the 2003 comprehensive revision of the NIPAs.

**Other regular benchmark source data.** This comprehensive revision will incorporate data on inventories, on the receipts and expenses of business establishments and of governments, on sales by detailed commodity and by product line, on final industry and product shipments from the 2002 Economic Census, and on trade margins from both the 2002 Economic Census and from the 2002 annual surveys of merchant wholesale and retail trade. The data on manufacturing, wholesale trade, and retail trade—which have also been incorporated into the corresponding annual and monthly surveys—will affect estimates of PCE for goods and food services, of private fixed investment in equipment, and of the change in private inventories, beginning with 1998.

6. Benchmark years occur at 5-year intervals, for years ending in 2 and 7. Quinquennial economic censuses are taken for these years, and benchmark estimates are prepared using data from these censuses.

7. For background on the distinction between GDP and gross output, see “Concepts and Methods of the U.S. National Income and Product Accounts” (July 2008); [www.bea.gov/national/pdf/NIPAHandbookch1-4.pdf](http://www.bea.gov/national/pdf/NIPAHandbookch1-4.pdf).

8. See Ricky L. Stewart, Jessica Brede Stone, and Mary L. Streitwieser, “U.S. Benchmark Input-Output Accounts, 2002,” *SURVEY* 87 (October 2007): 19–48.

9. See Seskin and Smith, 2009, 17–18.

In addition, annual series that became available too late for the annual NIPA revisions in 2004 through 2008 will be incorporated. NIPA estimates that are based on the international transactions accounts (ITAs)—primarily net exports of goods and services and rest-of-the-world income receipts and payments—will be revised to reflect improvements to the ITAs that were introduced since 2003 and that affected years not covered by the annual NIPA revisions.<sup>10</sup> Other data that will be incorporated into the NIPAs include revised data on the expenditures and receipts of state and local governments for fiscal years 2001–2005 from the Census Bureau, and final data on employer pension and profit-sharing plans for 1999–2006 from the Department of Labor.

Benchmark source data of particular significance are the 2000 Census of Housing and 2001 Residential Finance Survey (RFS), each of which is conducted every 10 years. Estimates of rental payments for tenant- and owner-occupied dwellings that are based on these data will be revised, beginning with 1991. These estimates enter into the calculation of PCE for housing services and of the rental income of persons.

### Regular source data for 2006–2008

The revised estimates for 2006–2008 will reflect the incorporation of newly available and revised source data that became available after the last annual NIPA revision in July 2008. The most important of these data sources are Census Bureau annual surveys of state and local governments for fiscal year 2006 (revised) and fiscal year 2007 (preliminary), of manufacturers for 2006 (revised), of merchant wholesale trade and of retail trade for 2006 (revised) and 2007 (preliminary), and of services and of the value of construction put-in-place for 2006 and 2007 (revised) and 2008 (preliminary); federal government budget data for fiscal years 2008 and 2009; ITA data for 2006–2008 (revised); Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) for 2006–2008 (revised); IRS tabulations of corporate tax returns for 2006 (revised) and 2007 (preliminary) and of sole proprietorship and partnership tax returns for 2007; and U.S. Department of Agriculture (USDA) farm statistics for 2006–2008 (revised).<sup>11</sup>

10. The annual revisions of the ITAs are usually published in the July issue of the *SURVEY*, most recently in Christopher L. Bach, “Annual Revision of the U.S. International Accounts, 1974–2007” *SURVEY* 88 (July 2008): 36–52.

11. For a more detailed list of the “regular source data” incorporated in an annual revision, see “Updated Summary NIPA Methodologies,” *SURVEY* 88 (November 2008): 8–25.

## Changes in Methodology

This section describes the new and improved methodologies that will be introduced in this comprehensive revision.<sup>12</sup> The discussion includes changes to product- and income-side components, to price and quantity measures, and to estimates of consumption of fixed capital, and includes extensions of several methodology changes that were incorporated in the 2005–2008 annual NIPA revisions.

### Product-side changes

**Retail-control method for personal consumption expenditures (PCE).** In nonbenchmark years, the retail-control method is used to estimate PCE for most goods and for food services using retail and food services sales data. In these years, the estimate of total PCE for most goods and for food services, known as the PCE control group, is derived by extrapolation from the benchmark year using a total of sales for most kinds of retail and food services businesses, known as the retail-control group, from the Census Bureau's monthly and annual surveys.<sup>13</sup> In this comprehensive revision, the PCE control group will exclude tobacco and motor vehicle fuels, lubricants, and fluids, and the retail-control group will exclude tobacco stores and gasoline stations. The major consequence of this change will be to eliminate the volatility in the estimate of food sold at gasoline stations, which is calculated as a residual in the current procedure based on the difference between Census Bureau retail sales data for gasoline stations and the independently determined estimate of motor fuel. The motor fuel estimate is based on price and quantity data from the Energy Information Administration (EIA), and the volatility in food sales at gasoline stations is caused by measurement differences between the EIA data and the Census Bureau retail sales data. With the exclusion of motor fuel estimates from the PCE control group, food sales at gasoline service stations will now be extrapolated by food sales at grocery stores and other retail industries that sell food.

**Consumer electronics scanner data.** Beginning with data for 2003, within PCE for goods, estimates of the annual composition of goods sold at electronics stores will be based on retail point-of-sale scanner data from a trade source. The new method captures varia-

tions in the composition of goods sold by these stores, unlike the current method, and alters the composition of commodities within PCE goods. The annual scanner data will be used to adjust the composition of commodities sold for each of three retail industries: radio, television, and electronics stores; computer and software stores; and camera and photographic supplies stores.<sup>14</sup> The primary goods sold through these industries are televisions, other video equipment, audio equipment, computers and peripherals, telephones and facsimile equipment, other information processing equipment, and cameras and other photographic equipment.

Currently, sales by product line for electronics stores are based on retail sales by kind of business from the Census Bureau and on commodity sales data from the most recent quinquennial economic census. The percentages used to allocate sales to commodities by kind of business are fixed until the next economic census data become available. The allocations used thus do not capture any variations in the composition of sales by kind of business between economic census years.

The value of total sales of electronics stores used in the PCE estimates will continue to be based on the Census Bureau's monthly and annual surveys of retail trade, and the total current-dollar value of PCE goods estimates based on retail sales will not be affected by the new use of scanner data. With this comprehensive revision change, annual scanner data will now be used to capture variations in the composition of sales of grocery stores and of electronics stores.<sup>15</sup>

**Average rental value of owner-occupied nonfarm housing.** Beginning with data for 2002, BEA will use annual data from the BLS Consumer Expenditure Survey (CEX) in the estimation of the imputed space rental value of owner-occupied permanent-site nonfarm housing. BEA measures the imputed rental value of these units by multiplying the number of units by an imputed average rental value. The average rental value of owner-occupied dwellings from the CEX will be used to extrapolate benchmarked average rent estimates derived from the 2001 Census Bureau decennial Residential Finance Survey (RFS). The CEX measure of the average rental value is based on a question that asks homeowners participating in the survey

12. These changes update the methodologies that are described in "Updated Summary NIPA Methodologies" and in the series of NIPA methodology papers.

13. The PCE control group as currently defined includes PCE goods except for motor vehicles, imputed food and clothing expenditures, meals at schools, and net expenditures abroad by U.S. residents. The retail-control group includes total retail and food services sales except for automobile dealers, building material and garden equipment and supplies dealers, office supply and stationery stores, manufactured (mobile) home dealers, food service contractors, and mobile food services.

14. The NAICS codes for these industries are 443112 (radio, television, and electronics stores), 443120 (computer and software stores), and 443130 (camera and photographic supplies stores).

15. The use of scanner data to estimate the composition of goods bought at grocery stores was introduced in the 2008 annual revision and will be carried back to 2003 in this comprehensive revision. See Eugene P. Seskin and Shelly Smith, "Annual Revision of the National Income and Product Accounts: Annual Estimates for 2005–2007 and Quarterly Estimates for 2005:1–2008:1," SURVEY 88 (August 2008): 18 and the section, "Extending the changes from the annual NIPA revisions" in this article.

to estimate the monthly rental value of their homes.

Currently, annual estimates of average rents are extrapolated from RFS-based benchmark estimates using the consumer price index (CPI) for owners' equivalent rent and the per unit value of the real net housing stock (in prices of the reference year) derived from BEA fixed assets estimates and housing unit estimates. For the most recent year, the real net stock is estimated by adding to the previous year's stock, the real sales of new owner-occupied housing and of residential improvements and by subtracting real depreciation.

The decision to adopt the CEX average rent data was made in part to compensate for the discontinuation of the RFS. Historical growth rates in the RFS-benchmarked average rent and the CEX average rent are very similar. Estimates affected by the change are PCE for the imputed rental value of nonfarm owner-occupied dwellings, rental income of persons with capital consumption adjustment, and gross housing value added. Because the CEX data are not available until the second annual revision, estimates for the most recent year will be extrapolated, as they are currently.

**Service Annual Survey data for hospital and telecommunications services.** Beginning with data for 2003, Census Bureau Service Annual Survey (SAS) data will be used to estimate annual changes in two PCE components: hospital services and telecommunication services. In both cases, the SAS data are consistent with the economic census data used for benchmark PCE estimates.

In the case of hospital services, SAS data on revenues of private taxable and tax-exempt hospitals and on expenses of tax-exempt hospitals are currently used for estimates of the most recent year but are replaced by data from the American Hospital Association's (AHA) "Hospital Statistics," which lag by a year, when these become available. The SAS data will now be used for all vintages of the annual estimate. The SAS data are annual data, while the AHA data are fiscal year data that must be converted to a calendar year basis. In addition, the receipts of taxable hospitals used for the PCE estimates must be derived by converting AHA expenses data using fixed ratios, while the SAS directly provides receipts data for taxable hospitals.

For estimation of landline telephone services, the SAS data will replace data from the Federal Communications Commission (FCC) Revenue Report. The SAS product detail for telecommunications industries using North American Product Classification System categories allow for more precise estimation of telephone services by a variety of service providers. In particular, the SAS data capture broadband telephone services, which the FCC data on regulated carriers do not.

**Tax-exempt hospital and nursing home revenues.**

Census Bureau Quarterly Services Survey (QSS) revenue data will be used for quarterly estimates of non-profit hospital services and nursing home services to households. These data will be required because of the inclusion of household purchases from nonprofit institutions serving households (NPISH) in the new PCE classification. The use of the QSS data, which were first reported for the fourth quarter of 2004, will begin with the data for the first quarter of 2005.

**Electricity commodity tax.** Beginning with data for 1968, commodity taxes will be removed from estimates of PCE for electricity. These taxes were determined to be incorporated in the residential electricity revenue data from EIA that are used for these estimates.

**Change in private inventories (CIPI).** Beginning with data for 1997, a new method will be used for the annual benchmarking of CIPI estimates. Benchmarking reconciles monthly industry-level CIPI estimates to annual estimates.<sup>16</sup> The new method will provide more accurate annual estimates of real CIPI, improve consistency requirements between annual current-dollar and chained-dollar CIPI estimates and prices, and avoid including holding gains and losses in the current-dollar CIPI estimates while preserving as much of the original monthly patterns as possible.

For each industry, the more accurate annual estimates of real CIPI will be based on annual inventory stocks and the annual average of monthly prices. Currently, annual real CIPI is summed from monthly estimates based on benchmarked current-dollar CIPI deflated by monthly price indexes. The current procedure adjusts each monthly current-dollar CIPI by the same amount, equal to one-twelfth of the annual difference, and monthly price indexes are then used to calculate benchmarked estimates of real CPI. The new method takes advantage of the superior accuracy and reliability of the annual stocks data, which are taken largely from annual Census Bureau surveys of manufacturing and trade industries that have larger sample sizes than the Census Bureau surveys used for the monthly estimates and in which respondents often use more precise methods to value their inventory stocks.

For each industry, the new method will adjust monthly estimates of real CIPI for each industry by one-twelfth of the difference between the annual estimate and the sum of the monthly estimates and by an additional amount equal to a proportion of the difference between the monthly price and the annual average of the monthly prices, based on statistical

16. CIPI is estimated monthly but only quarterly estimates are published in the NIPAs. Monthly estimates are published in the underlying detail tables.

regressions.<sup>17</sup> The monthly adjustments will thus vary based on price differences. In cases of high correlations between estimates of real CIPI and prices, the proportions applied to the price differences will be reduced in order to avoid including the holding gains and losses reflected in current-dollar CIPI. This approach will retain most of the original pattern of the monthly estimates.

**Seasonal adjustment of petroleum import prices.** Petroleum import prices will be seasonally adjusted beginning with 1991. Petroleum import prices, measured as dollars per barrel, display a seasonal pattern in which prices tend to be relatively higher in the second and third quarters than in the first and fourth quarters. In the current procedure, seasonally adjusted current-dollar petroleum imports are divided by prices that are not seasonally adjusted, resulting in seasonality in the estimates of real petroleum imports.<sup>18</sup> The new procedure will eliminate this seasonality by seasonally adjusting both current-dollar petroleum imports and petroleum import prices, thus leading to less volatile estimates of real petroleum imports.

### Income-side changes

**Employee contributions to cafeteria plans.** Beginning with data for 1986, estimates of wages and salaries will incorporate new information on employee benefit plans, commonly called “cafeteria plans.” Under these plans, employees may use a portion of their salaries on a pretax basis to pay for health insurance and to contribute to “flexible spending arrangements” (FSAs), which reimburse them for medical care and dependent care expenses.<sup>19</sup> Because employees’ participation is voluntary, these contributions are included as part of NIPA wages and salaries.

Wage data from the QCEW are the basis for BEA’s estimates of wages and salaries. The QCEW wage data do not include employee contributions to cafeteria plans whenever the state laws do not count them as wages for unemployment insurance purposes. This underreporting of total wages in certain states only applies to private sector and state and local government employees; federal employee contributions are reported as wages in all states.

To correct for the underestimate of wages and salaries attributable to unreported contributions to cafeteria plans, BEA will estimate employee contributions for health insurance and to FSAs for medical care and for dependent care. Estimates will be based on enrollments and average annual contributions from which a national total will be determined and will then be distributed to states based on employment levels. Contributions from states whose laws require the reporting of cafeteria plan contributions will then be removed to derive the unreported cafeteria plan contributions. Estimates will be made using this method beginning with 1990 estimates; estimates from the beginning of the program in 1986 through 1989 will be made by interpolating between a zero level in 1985 and the 1990 level. Estimates for the 2 most recent years will be extrapolated using BEA employment estimates.

For health insurance contributions, enrollments will be estimated using BEA national employment and estimated eligibility rates and enrollment rates. For 1990 to 1998, eligibility rates will be based on BLS data from the National Compensation Survey, and beginning with 2001 on data from the Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey (MEPS). Enrollment rates for 1990–98 will be based on data from the Kaiser Family Foundation Employer Health Benefits Annual Summary. Enrollment for 1999 and 2000 will be interpolated.

For 1990 to 2000, average contributions of private employees will be based on 1993 state data from the Centers for Disease Control National Employer Health Survey; estimates for other years will be based on changes in health care premiums from the Kaiser Family Foundation Employer Health Benefits Annual Summary. State and local government employee contributions for 1990–2000 will be estimated by deflating the 2001 average contributions by the BLS employment cost index for health insurance. Average contributions beginning with 2001 will be based on MEPS data.

For contributions to FSAs, estimates will be made of eligibility rates, enrollment rates, and average contributions, which will be based on data from the Mercer National Survey of Employer-Sponsored Health Care for 1990–2006 and from the Employee Benefit Research Institute, Facts from EBRI for 2003. Average private employee contributions for medical care and for dependent care will be used for both private employees and state and local government employees. Identifying the states for which cafeteria plan contributions are in QCEW wage data will be based on Bureau of National Affairs information on state unemployment insurance laws.

17. See Marshall Reinsdorf and Jennifer Ribarsky, “How Should Inventory Investment be Measured in National Accounts?” BEA working paper (July 2007); [www.bea.gov/papers/working\\_papers.htm](http://www.bea.gov/papers/working_papers.htm).

18. Seasonal adjustment of current-dollar petroleum imports began in the 2004 annual revision and will be carried back to 1989 in this comprehensive revision. See the section “Changes from the annual NIPA revisions” in this article.

19. Under such plans, contributions from an employee’s salary are not subject to federal income taxes, federal unemployment taxes, social security taxes, or Medicare taxes. These plans must meet the requirements of section 125 of the Internal Revenue Code.

**Old-age, survivors, and disability insurance (OASDI).** Beginning with data for 1998, annual estimates of the industry distribution of private employer contributions for OASDI will be improved using detailed information on employment levels by hourly wage rates. The employment distributions will be used to estimate taxable wages and to allocate aggregate OASDI contributions to industries. Under the OASDI program, also known as social security, employers pay taxes at a rate of 6.2 percent on employee wages up to an annual limit set by law, which in 2008 was \$102,000.<sup>20</sup> Wages above this limit are not taxed.

National estimates of private employer OASDI contributions are based on data from the Social Security Administration. Estimates by industry are based on BEA wage and salary disbursements data. However, because the wage and salary data include wages above the taxable limit, the current methodology overstates employer contributions to OASDI for high-wage industries. Under the new methodology, industry estimates will be prepared by state and summed to obtain national estimates by industry. Taxable wages for each state-level industry will be estimated as the total wages for employees in that state and industry whose wages are within the OASDI limit plus the number of employees above the limit times the OASDI limit. These estimates of taxable wages will be used to allocate employer contributions to OASDI.

The data used for these estimates will be BEA employment data by state and industry, data on the distribution of employment by hourly wage rate intervals by state and industry from the BLS Occupational Employment Survey (OES), and data on the distribution of employment by hours worked per week by industry from the Current Population Survey (CPS), which is conducted by the Census Bureau for BLS. OES data on a NAICS basis will be used, beginning with 2002 data. Taxable wages for 1998 through 2001 will be made by applying the 2002 OES factors.

**Conversion of income and employment by industry from 1997 to 2002 NAICS basis.** Annual estimates of income and employment by industry will be converted to the 2002 NAICS basis from the 1997 NAICS basis, starting with 1998 estimates, and the quarterly estimates will be presented on a 2002 NAICS basis, starting with 2001 estimates. Through 2000, the annual and quarterly estimates will continue to be presented on the 1987 Standard Industrial Classification (SIC) basis.

**Employer contributions for health insurance by industry.** Beginning with 1998, the industry distribu-

tion for employer contributions for health insurance will be based on industry data from the Medical Expenditure Panel Survey (MEPS). Wages and salaries was the previous indicator for the industry distribution. MEPS data will continue to be used for estimates of total employer contributions to private health insurance plans.

**Misreporting adjustments.** Estimates of nonfarm proprietors' income (NFPI) and of wages and salaries will incorporate updated misreporting adjustments.<sup>21</sup> These adjustments account for underreported income on tax returns and for nonreported income for nonfilers. Estimates of underreported income will be revised using IRS National Research Program (NRP) data for 2001 and IRS data for certain earlier years that have not been previously incorporated. Estimates of nonreported income will be updated using newly available data from the Census Bureau's "exact-match" studies, which compare records from the CPS with individual IRS tax returns to estimate nonfiler income for individuals.

The revised underreporting estimates will incorporate the 2001 NRP data, updated tax gap measures for 1972–85 from a 1988 IRS Taxpayer Compliance Measurement Program (TCMP) report, and updated measures for 1985 and 1988 and projections for 1992, from a 1996 TCMP report.<sup>22</sup> Revised estimates of underreporting will begin with 1984 data for sole proprietors and partnerships, and with 1979 data for wages and salaries. Revised estimates of NFPI and of wages and salaries will be interpolated between TCMP and NRP years and judgmentally trended after 2001. Revised estimates for nonfilers will incorporate the results of the 2003 through 2007 exact-match studies. Nonreporting estimates for NFPI and for wages and salaries will be interpolated between 1999 and 2003, and estimates for 2008 will be judgmentally trended.

**Business meals and entertainment.** Estimates of corporate profits and nonfarm proprietors' income will reflect a change in how nondeductible meal and entertainment expenses are allocated. Estimates of business income from IRS tabulations of business tax returns on which NIPA estimates are based reflect

21. For a description of previous adjustments, see Robert P. Parker, "Improved Adjustments for Misreporting of Tax Return Information Used to Estimate the National Income and Product Accounts, 1977," *SURVEY* 64 (June 1984): 17–25; "The Comprehensive Revision of the U.S. National Income and Product Accounts: A Review of Revisions and Major Statistical Changes," *SURVEY* 71 (December 1991): 39–40; and "Improved Estimates of the National Income and Product Accounts for 1959–95: Results of the Comprehensive Revision," *SURVEY* 76 (January/February 1996): 24–25.

22. The TCMP was the predecessor to the NRP. The two TCMP reports are IRS, *Income Tax Compliance Research: Supporting Appendices to Publication 7285*, IRS publication no. 1415 (Washington, DC, July 1988); and IRS, *Federal Tax Compliance Research: Individual Income Tax Gap Estimates for 1985, 1988, and 1992*, IRS publication no. 1415 (Washington, DC, revised April 1996); [www.irs.gov/pub/irs-soi/p141596.pdf](http://www.irs.gov/pub/irs-soi/p141596.pdf).

20. Social Security Administration, *Contribution and Benefit Base*, [www.ssa.gov/OACT/COLA/cbb.html](http://www.ssa.gov/OACT/COLA/cbb.html).

statutory requirements for expense deductibility, and business meal and entertainment expenses are only partially deductible. These expenses were 100 percent deductible before 1987, 80 percent deductible in 1987–1993, and 50 percent deductible since 1994.

Total business expenses for meals and entertainment are based on estimates of business intermediate consumption from the benchmark I-O accounts, which are interpolated and extrapolated using as primary indicators, food services sales from Census Bureau retail trade surveys. Estimates of total and non-deductible meal and entertainment expenses of sole proprietorships, are from IRS tabulations. The remaining meal and entertainment expenses are accounted for by corporations and by partnerships, which are included with sole proprietorships in nonfarm proprietors' income.

Currently, partnership expenses are estimated by first calculating the ratio of total business meal and entertainment expenses of sole proprietorships to their total deductions and by then applying this ratio to partnership deductions. Corporate meal and entertainment expenses are then calculated by subtracting sole proprietor and partnership expenses from total business expenses. Nondeductible expenses for partnerships and for corporations are estimated by applying the statutory nondeductible percentage to estimated total expenses.

Under the new method, BEA will directly estimate corporate expenses on meals and entertainment beginning with 2005, using data from Schedules M–1 and M–3 of IRS Form 1120 for corporate income tax returns. Schedule M–1 is filed by corporations with assets of less than \$10 million, and Schedule M–3 by corporations with assets above \$10 million.<sup>23</sup> For 1987 to 2004 data, corporate meal and entertainment expenses will be extrapolated using total expenses. Sole proprietors' expenses on meals and entertainment will be measured as before, based on IRS data, while the expenses by partnerships will be estimated as the residual when the expenses of proprietorships and corporations are subtracted from the total for all businesses.

**Securities trading adjustments.** NIPA estimates of corporate profits are based on source data that follow the rules of tax accounting. To create estimates of profits that are consistent with national accounting concepts, various adjustments need to be made to the source data.<sup>24</sup> The securities trading adjustment converts tax data, which treat expenses for brokers' com-

missions as a reduction in future capital gains income, to a current-period expense for the purchases of brokers' services. Capital gains and losses are also excluded from all national accounts measures of income because they represent changes in the value of existing assets rather than income from current production.

Most corporate capital gains are excluded by subtracting net gains reported on IRS tax forms using IRS source data associated with Schedule D of IRS Form 1120. However, this adjustment does not include capital gains on own-account trading of securities brokers and dealers, which reflect the imputed financial service charge paid by corporations to domestic securities dealers who do not charge an explicit commission.<sup>25</sup> Thus, a separate adjustment is needed to exclude these types of capital gains.

Starting with 1988 data, estimates of securities trading costs and capital gains used to adjust corporate profits from a tax-reporting to a NIPA basis will be revised based on 2002 estimates derived from economic census and SAS data. The securities trading costs adjustment treats commissions to brokers, commercial banks, and savings institutions from securities trading as an expense in the current period rather than as a reduction in future capital gains income. The trading cost adjustment applies to both explicit commissions and commissions indirectly charged through markups or "spreads" between the cost of acquiring a security and its same-day sales value.

The 2002 estimates of trading costs will be based on product-line data on gains from brokering and dealing equities, debt securities, and derivatives from Census Bureau economic census data. These data will be used to estimate total indirect commissions received. These indirect commissions, which are treated as expenses of those corporations purchasing securities from broker-dealers, are allocated by type of buyer using Federal Reserve Board flow-of-funds data on securities holdings. Estimates of direct commissions will be derived similarly. The 2002 estimates of capital gains of securities brokers and dealers will be based on SAS data on gains from dealing and trading accounts less indirect commissions. For commercial banks and for savings institutions, capital gains will be estimated as total trading account gains and fees and securities gains from Federal Deposit Insurance Corporation (FDIC) data, less indirect commissions from the economic census.

Between 1987 and 2002, the difference between the published and revised 2002 estimates and the

23. The M–3 schedule was introduced on a voluntary basis in tax year 2004 and was mandatory starting in tax year 2005.

24. See NIPA table 7.16 on "Relation of Corporate Profits, Taxes, and Dividends in the National Income and Product Accounts to Corresponding Measures as Published by the Internal Revenue Service."

25. For additional information on BEA's treatment of capital gains in the NIPAs, see "Corporate Profits: Profits Before Tax, Profits Tax Liability, and Dividends," Methodology paper (September 2002); [www.bea.gov/scb/pdf/national/nipa/methpap/methpap2.pdf](http://www.bea.gov/scb/pdf/national/nipa/methpap/methpap2.pdf).



unrevised 1987 estimate will be interpolated, and the interpolated difference will be added to the currently published estimate for each year. After 2002, estimates of indirect commissions for security brokers and dealers will be extrapolated using the same data on trading volume for equities, debt securities, and options used in the current estimates. Capital gains for 2003 and 2004 will use the same procedure as 2002; estimates after 2004 will be extrapolated with own-account trading gains from the SAS. For commercial banking and for savings institutions, data from FDIC securities gains and trading gains will be used.

**Profits of Indian casinos.** Beginning with data for 1989, annual estimates of the surplus of Indian casinos will use new source data. In the NIPAs, Indian tribal governments are classified as local governments and Indian casinos as local government enterprises. The surplus of these enterprises is equal to net earnings less payments to federal, state, and other local governments and represents payments accruing to tribal governments.

These earnings will be estimated as the product of Indian casino gaming revenues and a net earnings ratio. Indian casino gaming revenues are included in PCE for casino gambling, based on data from the National Indian Gaming Commission (NIGC). Net earnings ratios, beginning with those for 1999, are from the *Indian Gaming: Cost of Doing Business Report*, published by Joseph Eve, Certified Public Accountants. The net earnings ratio for 1989 to 1998 will be based on the average of the net earnings ratios for 1999 forward.

Payments to state, local, and federal governments will be estimated as the product of Indian casino gaming revenues and ratios for each of the government levels. The ratios beginning with 2004 are from the Analysis Group's *Indian Gaming Industry Report*. Ratios for 1989 to 2003 will be based on the 2004 ratios. Payments to the federal government are used to finance the NIGC, while payments to state and other local governments tend to support improvements to the infrastructure near casinos.

**Taxes on production and imports (TOPI) and nontax payments.** Estimates of the industry distribution of TOPI and of other government receipts from business will be estimated directly on a NAICS basis rather than converting data to NAICS from the earlier SIC basis. The changes will affect NIPA estimates of gross value added of corporate business and personal consumption expenditures but will not affect total TOPI.

TOPI consists of excise taxes and customs duties and of state and local sales taxes, property taxes, motor

vehicle licenses, severance taxes, special assessments, and other taxes. Other government receipts from business include current transfer receipts and rents and royalties. Current transfer receipts consist of deposit insurance premiums, fines, fees such as regulatory and inspection fees, settlements received from tobacco companies, donations, and net insurance settlements. Rents and royalties are included in interest and miscellaneous receipts. An example of rents and royalties is funds received by the Department of the Interior from oil and gas leases.<sup>26</sup>

National totals of TOPI and other government receipts from business are estimated as part of government current receipts and are allocated to states by industry, using state and local government finance data from the Census Bureau, published and unpublished data from several federal agencies, data from state revenue departments, and information provided by private industry. The currently used allocations are done on an SIC basis and then converted to a NAICS basis using the 1997 economic census national concordance.

For estimates other than general sales taxes, the conversion to a direct NAICS basis will be relatively straightforward because many of the data sources have been classified on both an SIC and a NAICS basis. For general sales taxes, accounting for about 30 percent of TOPI, the conversion to direct estimates on a NAICS basis is facilitated by the increased availability of data from state revenue departments on a NAICS basis. The majority of states now report sales tax data on a NAICS basis; for those remaining on the SIC basis, the SIC to NAICS conversion will still be necessary.

The new methodology will lead to revisions beginning with 1998 data for national income by industry, sector, legal form of organization, and type of income; gross value added of corporate business by financial and nonfinancial business; and PCE. The PCE revisions will result from the use of retail sales tax estimates as the indicator series for most of the PCE goods estimates. The estimates of TOPI by industry are published as part of BEA's annual industry accounts, and the revised estimates will be available in the comprehensive revision of those accounts, which is scheduled for the spring of 2010. The revisions to estimates of overall TOPI and other government receipts from business estimates will be minimal.

## Quantities and prices

**Monthly input cost indexes.** Monthly input cost indexes will be incorporated for the gross output for all

26. For additional information on TOPI and other government receipts from business, see *Government Transactions* (September 2005); [www.bea.gov/national/pdf/mp5.pdf](http://www.bea.gov/national/pdf/mp5.pdf).

categories of nonprofit institutions serving households and for expenses of life insurance and of pension funds. The indexes will be weighted averages of indexes of compensation costs and of purchased materials and services. Weights for the indexes will be based on the 2002 benchmark I-O estimates. Indexes of compensation costs will be based on average wages by industry from quarterly QCEW data except for hospitals and nursing homes, which will be based on the BLS Employment Cost Index. Current-dollar estimates of expenses will use QCEW total industry wages for each PCE category except for hospitals and nursing homes and some trended series. Current-dollar estimates for hospitals and nursing homes will be based on QSS data. Monthly interpolation of the quarterly compensation indexes and extrapolation for current estimates will be done for all categories except education with average hourly earnings from the BLS Current Employment Survey (CES); indexes for education categories will be interpolated and extrapolated with CES employment times the BLS all-items CPI. For purchased materials and services, producer price indexes (PPIs) and CPIs will be used for the associated expenses, and for expenses that cannot be associated with specific price indexes, the all-items CPI will be used.

**Strategic Petroleum Reserve (SPR) transactions.** Estimates of SPR transactions, which are included in federal government nondefense consumption expenditures and in federal government current receipts, will be improved through the use of a single price measure for all transactions. The SPR, established by an act of Congress to safeguard the nation against disruptions of oil imports, maintains reserves of crude oil through purchases on the open market and, beginning in 1999, through a royalty-in-kind program in which lessees of government-owned property pay their fees by providing oil to the SPR. The SPR also periodically loans or sells crude oil to private companies in the event of a supply disruption or other adverse shock.

In the NIPAs, acquisitions of crude oil for the SPR are included in federal government nondefense consumption expenditures. Loans and sales of oil to private companies are treated as deductions in calculating federal nondefense consumption expenditures. In-kind royalty payments that the SPR receives are recorded as “rents and royalties” in federal current receipts as well as nondefense consumption expenditures.

Because crude oil prices fluctuate substantially, BEA’s valuation of such transactions is highly dependent on the prices applied to the oil added or removed

from the SPR. Currently, SPR transactions are priced using DOE data that apply only to SPR transactions, where purchases and sales are valued at market cost and loans at historical cost. Historical cost reflects the per-barrel average price of all the oil in the reserve, which in many instances is far lower than the market price. Royalty-in-kind payments are priced close to market cost.

SPR transactions are also reflected in CIPI estimates, where loans and sales from the SPR are additions to inventories, and purchases by the SPR are reductions. In the CIPI estimates, transactions with the SPR are valued according to current-replacement costs, based on PPIs from BLS. As a result, there are inconsistencies between SPR withdrawals recorded in the federal estimates and the CIPI estimates. To remedy this inconsistency, BEA will use the same price data for all SPR transactions in the government accounts. It will use DOE data on the “refiner acquisition cost of crude oil,” which is a weighted average of the domestic and imported crude oil cost per barrel that includes transportation and other fees paid by the refiner. The revisions will begin with 1998 estimates because before then, there are no significant inconsistencies.

### **Consumption of fixed capital**

**Classification of improvements in farm owner-occupied housing.** Improvements made by owners of farm residential structures will be reclassified from the farm industry to the real estate industry for consistency with the classification of farm housing. These improvements will also be reclassified from the sole proprietorships and partnerships legal form to the households legal form. As a result, consumption of fixed capital (CFC) will have offsetting revisions between the farm industry and the real estate industry, and CFC by legal form will have offsetting revisions between the business sector and the household sector. The industry reclassification of CFC will increase farm proprietors’ income and will reduce rental income of persons by offsetting amounts.

### **Changes from annual NIPA revisions**

**Motor vehicle valuation.** BEA will carry back to 2002 an improvement in the source data used in the valuation of unit sales and inventory change for new domestic and foreign autos that was incorporated in the 2008 annual revision. During a calendar year, the new autos and trucks sold usually include vehicles for the preceding, current, and next model years. The improved estimates, based on more detailed and comprehensive data from J.D. Power, now incorporate average price data

for all three model years. Previously, the price data for valuing new domestic autos were based on a 2-model-year split from a large auto manufacturer that was then applied to other manufacturers.<sup>27</sup> The price data for valuing new foreign autos were based only on the 1 model year that corresponded to the calendar year. The improved procedure is consistent with the methodology used to value new domestic and foreign light trucks.

**Grocery store scanner data.** BEA will carry back to 2003 the use of annual retail scanner data from trade sources to estimate the commodity composition of grocery store sales introduced in the 2008 annual revision. Scanner data captures the variation in the composition of goods sold by grocery stores (mainly food and beverage items) and alters the composition of commodities in PCE goods. Previously, the composition of PCE food and beverage items was adjusted annually using CEX data, which are not available by industry and are only available with a 1-year lag. Total sales of grocery stores used in the PCE estimates will continue to be based on the Census Bureau's monthly and annual retail trade surveys.

**Federal nondefense expenditures.** BEA will carry back to 1993 a methodological change implemented in the 2005 annual revision that affects the allocation of certain federal nondefense expenditures. This change to annual and quarterly estimates will affect the distribution of nondefense expenditures among intermediate goods and services and investment in equipment and software but will not affect total expenditures. The change will use contract awards data from the General Services Administration to allocate these expenditures.

**Seasonal adjustment of federal nondefense motor vehicles.** BEA will carry back to 1993 the seasonal adjustment of federal nondefense vehicle investment, a change that was incorporated in the 2006 annual revision.

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27. Specifically, for January–July, the current and preceding model years were used; for August–December, the current and next model years were used.

**Seasonal adjustment of petroleum imports.** The seasonal adjustment of petroleum imports, introduced in the 2004 annual revision, will be carried back to 1989.

**Prices of health services by state and local governments.** The use of the PPI for home health care services to deflate state and local government sales of these services, introduced in the 2007 annual revision, will be carried back to 2000. This change is consistent with the deflation of home health care services in the PCE estimates.<sup>28</sup>

**Benefits paid by the Pension Benefit Guarantee Corporation (PBGC).** BEA will carry back to 1985 a new method of estimating government social benefits paid by the PBGC that was incorporated in the 2006 annual revision. The methodology change removes from government social benefits the portion of PBGC payments funded by private pension fund assets, which the NIPAs treat as assets of the household sector.

The PBGC pays pension benefits to participants in failed private pension funds from two funds: a revolving fund and a trust fund. The revolving fund relies on insurance premiums paid by employers with defined benefit pension plans and the investment income that the fund generates. The trust fund relies on assets that the PBGC receives from terminated pension plans. In the NIPAs, assets of the trust fund belong to the household sector, because those funds were originally financed by employees' pension plans. The portion of the PBGC benefits funded by these assets will not be included in government social benefits.

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28. Government sales of health care services are part of PCE, as are all personal health care services purchased from private and public providers, including those financed through government programs, such as Medicare and Medicaid, and through employer-sponsored health insurance.