Gross Domestic Product by State Estimation Methodology

Acknowledgments

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Executive Summary

THIS volume presents the conceptual framework, the data sources, and the statistical methodologies used by the Regional Economic Analysis Division of the Bureau of Economic Analysis (BEA) to estimate gross domestic product (GDP) by industry for all U.S. states for 1963–2005. GDP by state is the state equivalent of GDP for the nation.

In theory, the measurement of GDP for the nation is equal to gross domestic income (GDI). However, because GDP and GDI are measured using different source data, they usually are not equal. The difference between GDP and GDI is displayed in the National Income and Product Accounts (NIPAs) as the statistical discrepancy. GDP is measured as the expenditures of households on goods and services plus business investment, government expenditures, and net exports. GDI is measured as the factor incomes earned (labor and capital income) and other costs incurred in production. GDP by state is measured as the factor incomes incurred in production, as is GDI. Although GDP by state is measured like GDI, the factor incomes are reconciled with GDP as the final step in the estimation process.
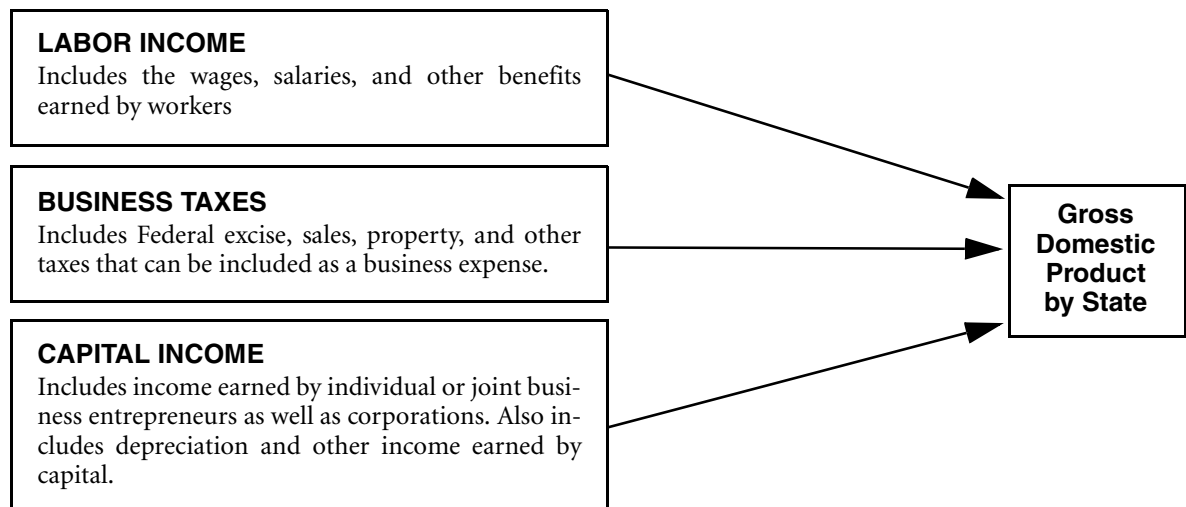
Measuring GDP by state

Gross domestic product by state cannot be measured by adding the number of goods and services produced by the states' economies because GDP by state consists of a variety of goods and services. Not only do the goods vary in size and quality, but it is difficult, if not impossible, to generate a unit measure of diverse services. Even goods that seem similar, such as automobiles, are not because they have different options and are priced differently. Therefore, the only way to meaningfully measure GDP by state is in dollars. The GDP by state dollar value is necessarily measured by either the amount of expenditures on it, or by the amount of incomes earned by the factors of production in producing it.

Theoretically, it should be an easy task determining the value added by the industries in the states. One method would be to survey all the companies in the states and compile a list of the value of the goods and services they produced and what it cost to produce them. Or, one could go to a central state statistical agency and ask them for the value added for each and every company in the state and then add them all up. Unfortunately, neither of these is an option, because it is too expensive to conduct an annual economic census by state, and no state statistical agency exists that compiles such data. Therefore, value added by industry must be derived from information that already exists.

Estimating GDP by state involves collecting and assembling data from Federal and state and local government agencies and bureaus, other BEA accounts, and private companies. These data must be incorporated in the proper order according to a national income accounting blueprint that assures consistency with BEA's GDP estimates.

GDP by state, like GDI for the nation, is measured as the factor incomes earned and the costs of production.

LABOR INCOME
Includes the wages, salaries, and other benefits earned by workers

BUSINESS TAXES
Includes Federal excise, sales, property, and other taxes that can be included as a business expense.

CAPITAL INCOME
Includes income earned by individual or joint business entrepreneurs as well as corporations. Also includes depreciation and other income earned by capital.

Gross Domestic Product by State

The incomes earned by the factors of production—typically labor and capital—are shown in the top and bottom boxes of the diagram on page *ii* as labor income and capital income, respectively. The middle box—business taxes—represents part of the costs of production. GDP by state equals the sum of these components and each component is estimated by industry.

No matter how a GDP by state component is estimated, it is always adjusted to be consistent with BEA's definition of value added. This means that much of the GDP by state regional source data acquired from sources outside of BEA are adjusted to BEA's product and income definitions and concepts.

Overview of the GDP by state methodology

The GDP by state estimation process can be divided into eight consecutive steps as follows:

1. Estimate labor income using data from BEA's state personal income (SPI) accounts.
2. Estimate non-corporate capital income also using data from BEA's SPI accounts.
3. Estimate business taxes less subsidies paid to business by government using data from the Census Bureau, other federal agencies, and state government agencies.
4. Estimate total GDP by state for goods-producing industries (crop and animal production, mining, construction, and manufacturing) based on value-added data from the Department of Agriculture and the Census Bureau.
5. Estimate corporate capital income for the services-producing industries (forestry, fishing, and related activities; utilities; wholesale and retail trade; transportation and warehousing, excluding postal service; information; finance and insurance; real estate, rental, and leasing; professional and technical services; management of companies and enterprises; administrative and waste services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and other services) using financial data reported by company for regulated industries and Census Bureau gross receipts and payroll data for non-regulated industries. For government enterprises, capital income is based on revenues and expenditures data from the Census Bureau.
6. Compute the remaining component, GDP by state or corporate capital income. For the goods-producing industries in step 4, the corporate capital income component of GDP by state is computed as the difference between GDP by state and the sum of labor income, noncorporate capital income, and business taxes less subsidies. For the services-producing industries in step 5, GDP by state is computed as the sum of labor income, business taxes less subsidies, and capital income.
7. Scale GDP by state and its components to the national estimates of GDP by industry produced by BEA's Annual Industry Accounts.
8. Finally, compute real GDP by state by applying national chain-weighted price deflators to current-dollar GDP by state estimates.

Much of the source data used to estimate GDP by state come from the economic censuses compiled by the Census Bureau every five years. The first year GDP by state (formally known as gross state product, or GSP) is available is 1963, a census year. Census years are known as benchmark years in the estimation process because of the breadth of the Census Bureau source data used for estimating GDP by state. For GDP by state, the benchmark years are 1963, 1967, 1972, 1977, 1982, 1987, 1992, 1997 and 2002. All other years are nonbenchmark years for generating the estimates. Non-benchmark year's estimates involve interpolation and extrapolation techniques using indicator series that mirror the movement in the GDP by state component being estimated. For a more complete discussion of the GDP by state estimation methodologies, refer to the full-text document that accompanies this summary.

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Real Per Capita GDP by State, 2005

New England
NH $38,685
VT $33,870
ME $30,073
MA $46,883
RI $35,825
CT $49,300

Mideast
NY $45,032
PA $34,620
NJ $44,219
DE $56,448
MD $38,602
DC $127,783

Great Lakes
WI $35,130
MI $33,856
IL $39,132
IN $34,135
OH $34,449

Plains
ND $32,794
SD $35,660
NE $35,130
KS $33,769
MN $40,900
IA $34,232
MO $33,143

Rocky Mountain
MT $27,232
ID $30,466
WY $40,556
UT $32,058
CO $41,293

Southwest
AZ $33,299
NM $31,044
OK $28,409
TX $36,987

Southeast
WV $25,154
VA $41,505
KY $29,840
NC $35,517
TN $34,058
SC $29,222
AR $27,677
MS $23,851
AL $29,008
GA $36,092
LA $29,923
FL $33,494

Far West
WA $38,055
OR $37,522
NV $39,997
CA $40,713
AK $45,020
HI $36,705

U.S. = $37,231

U.S. Bureau of Economic Analysis

I. Overview

IN May 1985, the Bureau of Economic Analysis (BEA) published experimental estimates of gross domestic product by state (GDP by state) for years 1963, 1967, 1972, and 1977, culminating a research effort that began in 1982. The experimental estimates were built upon BEA's state personal income (SPI) accounts and its GDP by industry accounts.[1] Since then, BEA has continued improving its GDP by state estimates by incorporating additional source data, improving the underlying estimation methodology, and more closely integrating the GDP by state estimates with the national estimates of the annual industry accounts and the national input-output (I-O) accounts. Further, the release of prototype advance estimates in December 2004 significantly improved the timeliness of the GDP by state estimates.

The annual GDP by state series consists of estimates for 1963–1997 for Standard Industrial Classification (SIC-based) industries and 1997–2005 for North American Industry Classification (NAICS-based) industries (as of June 2006). The GDP by state data are

revised and updated twice annually, with benchmark revisions occurring approximately every five years, usually in conjunction with major revisions in BEA's estimates of GDP and GDP by Industry.

The GDP by state estimates are the state counterpart of gross domestic product and as such, provide a comprehensive measure of a state's production. The following table delineates the differences between GDP by state and SPI.

The GDP by state estimates are used widely in both the public and private sectors. For example, the U. S. Department of the Treasury uses GDP by state in its calculation of a state's Total Taxable Resources and in formulas used to distribute federal grants among the states for Community Mental Health Services and Substance Abuse Prevention and Treatment block grants. GDP by state estimates are also used by consulting firms and universities for use in econometric forecasting models, by state revenue departments for budget planning, and by state and local economic development offices for attracting new businesses to their states.

The estimate of GDP by state for each state is derived as the sum of the gross domestic product originating in all industries in the state. In concept, an

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1. For a discussion of the methodology used to compute state personal income see "State Personal Income: 2004 Methodology." Online methodology publication (October 2005): <http://www.bea.gov/bea/regional/articles/spi2004/Complete_Methodology.pdf>.

The Relation of Gross Domestic Product by State and Personal Income, 2003

[Billions of dollars]

Component	GDP by state	Personal income
Compensation of employees..	**6,268.7**	**6,271.5**
Wages and salaries...	5,092.4	5,095.2 ([1])
Supplements to wages and salaries..	1,176.3	1,176.3
Employer contributions for employee pension and insurance funds	800.6	800.6
Employer contributions for government social insurance	375.7	375.7
Taxes on production and imports (TOPI)..	**798.1**	....
Less: Subsidies	**46.7**	....
Gross operating surplus [2]..	**3,903.8**	....
Proprietors' income [3]	....	839.1
Equals: Earnings by place of work	....	**7,110.6**
Less: Contributions for government social insurance	....([4])	**771.5** ([5])
Personal contributions for government social insurance	....	395.8
Employer contributions for government social insurance	....	375.7
Plus: Adjustment for residence [6]	....	**−1.2**
Plus: Dividends, interest, and rent [7]	....([8])	**1,475.4**
Plus: Personal current transfer receipts	....	**1,335.3**
Total..	**10,923.8**	**9,148.7**

1. Includes the wage and salary disbursements of U.S. residents employed by international organizations and foreign embassies and consulates in the United States.

2. Includes consumption of fixed capital (CFC), proprietors' income with the IVA and the CCA, rental income of persons with the CCAdj, corporate profits with the IVA and the CCAdj, and other mainly capital-related charges.

3. Proprietors' income includes the IVA and the CCAdj.

4. Contributions for government social insurance are included in gross domestic product by state so they are not shown here.

5. Contributions for government social insurance are included in earnings by type and industry, but they are excluded from personal income.

6. The adjustment for residence is the net inflow of the earnings of interarea commuters. For the United States, it consists of adjustments for border workers: wage and salary disbursements to U.S. residents commuting to Canada less wages and salary disbursements to Canadian and Mexican residents commuting into the United States.

7. Rental income of persons includes the CCAdj.

8. Rental income of persons with the CCAdj is included in gross operating surplus.

IVA Inventory valuation adjustment

CCA Capital consumption allowance

CCAdj Capital consumption adjustment

industry's GDP by state, or its value added, is equal to its gross output (sales or receipts and other operating income, commodity taxes, and inventory change) less the value of its intermediate inputs (consumption of goods and services purchased from other U. S. industries or imported). The sum-of-states NAICS-based GDP by state differs from GDP for the nation for two reasons:

- GDP by state excludes, and the annual industry accounts include, compensation of federal civilian and military personnel stationed abroad and government consumption of fixed capital for military structures located abroad and for military equipment, except domestically located office equipment.
- GDP by state, GDP, and the annual industry accounts have different revision schedules.[2]

For an accounting of the differences between GDP by state for the nation and the annual industry accounts for a representative year, see Appendix A.[3]

GDP by state estimates are prepared for 81 NAICS industries (Appendix B). For each industry, GDP by state is presented in four components:

- Compensation of employees (COMP),
- Taxes on production and imports (TOPI),
- Subsidies (SUB), and
- Gross operating surplus (GOS).[4]

The state estimates of GDP by state and its components for all industries are consistent with national totals of the annual industry accounts and its components for all industries.

In general, there are two procedures for estimating GDP by state and its components, one uses state-level Census Bureau value-added data for the goods-producing industries to estimate GDP by state for these industries, and the other utilizes Census Bureau receipts and payroll data, or company financial data to estimate GOS for the services-producing industries.

For goods-producing industries, except farming, GDP by state is computed as Census Bureau value added, adjusted to BEA's concept of value added. For farming, data on farm expenditures and receipts from the Department of Agriculture are used to compute value added for the industry. The GOS income component for goods-producing industries is computed as a residual:

$$GOS = GDP_s - (COMP + TOPI - SUB).$$

For services-producing industries, Census Bureau receipts and payroll data or company financial data are used to estimate the GOS income component. GDP by state is the sum of the estimated income components:

$$GDP_s = COMP + TOPI - SUB + GOS.$$

The other income components for calculating GDP by state (compensation of employees, taxes on production and imports, and subsidies) are estimated separately for each industry.

The GDP by state estimates are prepared in current and chained (real) dollars. Real GDP by state is an inflation-adjusted measure that is based on national prices for the goods and services produced within each state.

The purpose of this document is to provide readers with a more detailed description of the sources and methods used by BEA to prepare its estimates of GDP by state than is publicly available elsewhere. Sections II–V describe the data and methods used to estimate compensation of employees, taxes on production and imports, subsidies, and gross operating surplus. Section VI shows the calculation of chained-dollar GDP by state. Section VII looks ahead to future improvements planned for the GDP by state estimates. Section VIII presents supplemental technical details about how the GDP by state estimates are prepared. Finally, a series of tabular appendices gives information about the industries for which GDP by state estimates are prepared and the source data used to prepare the estimates.

A document of this length cannot provide a complete enumeration of all the steps involved in estimating GDP by state. While some technical details may be omitted or summarized, the methodological descriptions presented cover all the important steps included in the GDP by state estimation process. The discussion is essentially nonmathematical, to a reasonable extent, with algebra and equations introduced only where necessary or segregated in technical notes at the end of this document.

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2. For SIC-based GDP by state estimates, there is an additional difference between sum-of-states GDP by state and national GDP: SIC-based GDP by state is consistent with gross domestic income (GDI), which differs from GDP by the statistical discrepancy. See Appendix C for a list of industries published for SIC-based GDP by state estimates.

3. See also the box "Gross Domestic Product by Industry: Definition and Relationship to Gross Domestic Product and Other Measures of Output," in Robert J. McCahill and Brian C. Moyer, "Gross Domestic Product by Industry for 1999-2001," Survey of Current Business 82 (November 2002): 23.

4. Gross operating surplus is the sum of corporate profits, proprietors' income, rental income of persons, net interest, capital consumption allowances, business transfer payments, nontax payments, and the current surplus/deficit of government enterprises. Proprietors' income includes some portion of labor compensation that should be included in the employee compensation component of GDP by state, but it is not possible to separate the labor share of proprietors' income from the capital share.

II. Compensation of Employees

COMPENSATION of employees is the largest component of GDP by state, normally accounting for about three-fifths of U. S. GDP by state. Compensation of employees is estimated as the sum of three components:
- Wage and salary accruals,
- Employer contributions for employee pension and insurance funds, and
- Employer contributions for government social insurance.

Wage and salary accruals

The GDP by state estimate of wage and salary accruals is derived directly from the wage and salary disbursements estimated as part of BEA's SPI accounts.[5] The SPI wage and salary disbursements by industry are adjusted to account for wages that have accrued in one calendar year but were disbursed in the following year. This adjustment to put wage and salary disbursements onto an accrual basis is called the "wage accruals less disbursements adjustment," or the WALD adjustment. The WALD adjustment is calculated for each industry and state on the basis of quarterly tabulations of wages and salaries covered by state unemployment insurance programs from the Bureau of Labor Statistics (BLS). BEA assumes that all bonus payments paid in the first quarter of each year were accrued in the previous calendar year. Wage and salary accruals are equal to the SPI wage and salary disbursements by industry and state plus the WALD adjustment.

GDP by state wages and salaries, and the SPI accounts on which they are based, exclude the wages and salaries of federal military and civilian personnel stationed abroad because their contribution to gross product is not geographically located within a state.

Employer contributions for employee pension and insurance funds [6]

The estimate of employer contributions for employee pension and insurance funds is used directly in the GDP by state accounts; no adjustments are required. The estimate excludes the employer contributions for Federal civilian and military personnel stationed abroad.

Employer contributions for government social insurance [7]

The estimate of employer contributions for government social insurance is used directly in the GDP by state accounts; no adjustments are required. The estimate excludes the contributions for Federal civilian and military personnel stationed abroad.

Compensation of employees for all industries is the sum of wage and salary accruals, employer contributions for employee pension and insurance funds, and employer contributions for government social insurance.

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5. Wage and salary accruals and wage and salary disbursements both include the monetary remuneration of employees and the compensation of corporate officers. Both wage series also include commissions, tips and bonuses, voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans, and receipts in kind that represent income. Accruals and disbursements differ because wage and salary disbursements include retroactive wage payments (bonus payments) recorded in the year they are paid, which may differ from the year in which they were earned. GDP by state is a measure of production occurring within a calendar year, so wage accruals are the proper measure to use in the GDP by state accounts.

6. Employer contributions for employee pension and insurance funds consists of employer payments to private pension and profit-sharing plans, private group health and life insurance plans, privately administered workers' compensation plans, supplemental unemployment benefit plans, corporate directors' fees, and several minor categories of employee compensation, including judicial fees to jurors and witnesses, compensation of prison inmates, and marriage fees to justices of the peace. There are no employer contributions for employee pension and insurance funds in federal military.

7. Employer contributions for social insurance consists of employer payments under the following federal government and state and local government programs: Old-age, survivors, and disabilities insurance (social security); hospital insurance; unemployment insurance; railroad retirement; pension benefit guaranty; veterans life insurance; publicly administered workers' compensation; military medical insurance; and temporary disability insurance.

III. GDP by State for Goods-Producing Industries

THE private goods-producing industries are agriculture, forestry, and fishing; mining; construction; and manufacturing. For these industries, BEA estimates total GDP by state, compensation of employees, proprietors' income with inventory valuation adjustment (IVA) and capital consumption allowance (CCA), subsidies, and TOPI.[8, 9] The corporate capital charge component of GOS is then computed as a residual.

For farms, the GDP by state estimates for all years are based on the difference between farm receipts and farm expenses from the U. S. Department of Agriculture (USDA).[10] For mining, construction, and manufacturing, the GDP by state estimates are based on value added from the quinquennial economic censuses, although the census data must be adjusted to conform to BEA's definition of value added.

Manufacturing, construction, and mining industries value-added data from the Census Bureau include the value of purchased services, which BEA treats as an intermediate cost of production and not as a part of value added. The Census Bureau data are adjusted to remove the cost of purchased services.[11] The national ratio of purchased services to value added by industry, derived from BEA's national annual input-output (I-O) tables, is used to estimate and remove the value of purchased services in the Census Bureau's state manufacturing valued added measure, to yield an estimate of value added by state, industry, and year.

After removing the cost of purchased services from the Census Bureau value-added data, an additional adjustment is made to account for differences in industry coverage and classification between the Census Bureau and BEA. The adjusted Census Bureau value-added data are multiplied by the ratio of BEA wages and salaries to Census Bureau payrolls by state and industry. This is done on the assumption that the ratio would be 1.0 if there were no differences in coverage and classification of establishments between the two data series.

For the construction industry, additional definitional adjustments are made to the Census Bureau value-added data:

1. BEA removes rental payments for machinery and equipment, because these payments are treated as an intermediate expense by BEA.

2. After the previous adjustment, an adjustment is made to account for the value added generated by construction firms without payrolls, based upon the ratio of "value of construction work for all firms" divided by "value of construction work for firms with payrolls", as measured by the Census Bureau.

3. Finally, the adjusted value added is multiplied by the ratio of "value of construction work by location" to "value of construction work by establishment" to reassign the adjusted value added from the state where the construction establishment is located to the state where the construction is performed.

After adjusting Census Bureau value-added data, the sum-of-state adjusted value added for the mining, construction, and manufacturing industries are reconciled with the national industry accounts value added, excluding federal excise taxes (FETs) for the nation, yielding estimates of GDP by state, excluding FETs for the state. GDP by state is then computed by adding estimates of FETs by industry and state. Corporate capital charges (CC) by industry and state are then estimated by subtracting employee compensation, TOPI, and proprietors' income from GDP by state.

The GDP by state estimates for goods-producing industries use different source data and estimation techniques for years not covered by economic censuses. For the detailed manufacturing industries, value-added data from the Annual Survey of Manufactures are used to produce the GDP by state estimates using an estimation methodology similar to that used in the benchmark years. For the detailed industries within the mining sector, value-of-production data for each mining industry are used to extrapolate or interpolate GDP by state values. For construction, GDP by state earnings estimates are used as the industry extrapolation or interpolation series for construction GDP by state.

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8. The forestry, fishing, and related activities industry, which is part of agriculture, forestry, fishing, and hunting, is estimated like a services-producing industry described later in this document.

9. The inventory valuation adjustment (IVA) is an adjustment to put inventories on BEA's concept (replacement cost) from the way inventories are reported for income tax purposes (business cost). The capital consumption allowance (CCA) consists of depreciation charges and accidental damage to fixed capital.

10. Farm income is the sum of cash receipts, other farm income, and inventory change. Farm expenses include the purchase of the following goods and services: feed, livestock, seed, fertilizer and lime, petroleum products, veterinary services, pesticide, rental expense of non-operator landlords, equipment operation and repair, electricity, and miscellaneous expenses.

11. The major commodity groups included in purchased services are communications, finance, insurance, real estate, and services. Only that portion of wholesale trade attributable to sales branches and offices, i.e., non-margin output, is treated as purchased services.

IV. Taxes on Production and Imports and Subsidies

TAXES on production and imports (TOPI) consist of tax liabilities, including taxes on sales, property, and production that can be charged to business expense in the calculation of profit-type income. TOPI does not include employer contributions for government social insurance, which are included in employee compensation. Moreover, TOPI does not include corporate incomes taxes, because these taxes cannot be calculated until profits are known, so these taxes cannot be considered a cost of production.

TOPI except property taxes

TOPI is estimated as the sum of 83 federal excise and state and local taxes, of which the two largest—general sales and gross receipts taxes and property taxes—account for about 60 percent of TOPI nationally (Appendix D). The national measure for each tax, except general sales and gross receipts taxes, is distributed to states, by industry, using Census Bureau tax receipts or other appropriate state indicator series.

For general sales and gross receipts taxes, information is often available from state tax collection reports about the distribution of the taxes by industry and state. However, the industry detail reported by the states varies, so data from the state tax reports are aggregated or disaggregated as required, on the basis of the industry distribution of employee compensation, to conform to the industries for which the GDP by state estimates are prepared. When the total sales and gross receipts taxes from individual state tax collection reports differ from the state totals reported to the Census Bureau, the Census Bureau value is assumed to be the more reliable level and the industry estimates are made consistent with the published census values.

The GDP measures of the remaining TOPI components are distributed to the states using one of the following two methods depending on whether the tax is paid by just one or by several industries:

- When the tax is paid by a single industry, the Census Bureau measure of the tax receipts by state, if available, is used as the indicator series to distribute the GDP by Industry tax measure to the states. If a Census measure is not available, a related state indicator is used to allocate the annual industry accounts' tax measure to the states (Appendix D).
- When the tax is paid by two or more industries, a

dual allocation procedure is used. First, the industry distribution of BEA's compensation of employees, by state, is employed to distribute the Census Bureau's measure of the state's total collection of the tax to the industries in each state. Second, the resulting industry distribution by state is used to distribute the national GDP by Industry measure of the tax to the states.[12]

Property taxes

Property tax estimates begin with the Census Bureau tax receipts data; although these data need to be adjusted to BEA's concept. First, the Census Bureau "total" property taxes are adjusted, by state, to remove BEA's estimates of personal property taxes, which are part of SPI but not GDP by state. Second, property taxes for farms and nonoperator landlords of farms, available from the Department of Agriculture, are subtracted, leaving estimates of property taxes paid by nonfarm businesses and by residential housing, by state. Third, this total is multiplied by the state's ratio of residential assessments divided by total nonfarm assessments to estimate residential housing property taxes, which are also subtracted from the Census Bureau measure of property taxes.[13] Property taxes on farms are assigned to the farming industry, except for property taxes on the farms of nonoperator landlords and on residential housing, which are assigned to the real estate industry. The remaining property taxes (on nonfarm and nonresidential businesses) are allocated to national industry totals and to state property tax totals according to the state and industry distributions of BEA's estimate of compensation of employees.

Subsidies

Subsidies, which are government transfers to business, increase profits before taxes while not reflecting any production. Accounting for the value of production, therefore, requires that the value of subsidies be removed from gross product. Subsidies occur in a few industries, and for each industry, a national subsidies

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12. For additional information on dual allocation, see "Note 2: Allocation and dual allocation procedures" in the "Technical Notes" section.
13. The Census Bureau discontinued reporting assessed values by property use class following the 1987 Census of Governments.

total is distributed to the states by means of an indicator series:

- *Crop and animal production ("Farms")* subsidies are allocated on the basis of each state's share of total GDP by state for the industry.[14]
- *Utilities* subsidies are allocated to California only for 2001–2003. The subsidies are due to California companies being overcharged for electricity consumption.
- *Air transportation* subsidies are estimated on the basis of company financial data. Because an airline may operate in one state or in many states, and because air transportation subsidies are related to passenger transportation and not to freight transportation, some adjustments are needed to develop an indicator series that can be used to allocate the airline subsidies to the correct states:

  1. The ratio of each airline's passenger revenue to total revenue is computed to indicate the degree to which each airline is engaged in passenger versus freight transportation.

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14. Because farms is a goods-producing industry, GDP by state is estimated directly; therefore, GDP by state is available for use as an indicator series in the estimation of subsidies.

2. The ratio of passenger enplanements by state to total passengers is computed to indicate the state distribution of each airline's passenger transportation.

3. The product of these two ratios (computed in steps 1 and 2) is then multiplied by airline subsidies by company to yield an estimate of airline subsidies by state and company.

4. The estimates from step 3 are summed for all airline companies in each state to yield an estimate of air transportation subsidies by state.

5. Finally, the state distribution computed in step 4 is used to distribute the GDP by Industry national total for airline transportation subsidies to the states.

- *Rail transportation* subsides are allocated to the states on the basis of data on rail subsidies by state, available from the Bureau of the Census.
- For the remaining industries that have subsidies *(water transportation, other transportation and support activities,* and *banking)* the national subsidies total by industry is distributed to the states on the basis of each state's share of industry corporate capital charges.

V. Gross Operating Surplus

G ROSS operating surplus (GOS) consists of proprietors' income with inventory valuation adjustment (IVA) and capital consumption allowances (CCA), and other corporate capital charges. Other corporate capital charges consist of rental income of persons and CCA, corporate profits before tax with IVA and CCA, net interest, business transfer payments, nontax payments to general government agencies that are treated like taxes, and the current surplus of government enterprises.[15, 16] For goods-producing industries where total GDP by state is estimated directly from Census Bureau value-added data, corporate capital charges are computed as the difference between GDP by state and the other income components. For services-producing industries, BEA estimates corporate capital charges and computes GDP by state by summing the income components.

The GOS data and estimation methods for services-producing industries vary among industries and between economic census (benchmark) and non-economic census (nonbenchmark) estimation cycles to accommodate the availability of source data.[17] This section focuses on GOS benchmark estimation methods because they are more complex than the methods used for nonbenchmark years, which typically rely upon extrapolations and interpolations of benchmark estimates using a related data series such as wages and salaries.

Proprietors' Income

For all industries except farming, mining, and real estate, the GDP by state estimates of proprietors' income with IVA and CCA are based on SPI accounts data on proprietors' income with IVA. Two adjustments are made to the SPI proprietors' income measure to make it consistent with the annual industry accounts' measure of proprietors' income:

$$PI_{GDP_s} = PI_{SPI} - CCAdj + CCA ,$$

where:

PI_{GDP_s} = GDP by state proprietors' income,

PI_{SPI} = proprietors' income from the SPI accounts,

CCAdj = noncorporate capital consumption adjustment, and

CCA = noncorporate capital consumption allowance.

CCA must be added to the proprietors' income component of GDP by state because it is a cost of production, but CCA is not included in the SPI measure of proprietors' income.

Both of these adjustments to the SPI measure of proprietors' income with IVA are made on the basis of nonfarm proprietors' income reported to the IRS. The national total of proprietors' CCAdj by industry is removed, and the national total of CCA by industry is added to the SPI measure on the basis of each state's share of the sum of the absolute values of IRS reported nonfarm proprietors' income.[18]

Farm proprietors' income

For farms, the proprietors' income estimates are based on BEA's SPI proprietors' income with IVA and CCAdj. Like the industries above, the CCAdj must be removed from farm proprietors' income and CCA included. The estimates for CCA are based on the SPI measure of farm depreciation. However, the SPI measure of farm depreciation includes both corporate and noncorporate (proprietors') depreciation. Farm depreciation by state is split into corporate and noncorporate parts based on the corporate and noncorporate composition of farm income by state. Then, each state's share of national noncorporate farm depreciation is used to distribute the national estimates of CCA and CCAdj to the states. Finally, the state estimates of CCAdj are subtracted from and the estimates of CCA are added to the SPI farm proprietors' income to yield farm proprietors' income with IVA and CCA.

Mining proprietors' income

For the mining industries, BEA's SPI measure of proprietors' income with IVA is not used because it includes income earned from limited partnerships, which is tabulated by the IRS as being earned in the state where the income recipient resides rather than in the state where the income is produced. For the mining industries, the state shares of GDP by state for the nation, excluding proprietors' income with IVA and CCA are used to allocate the annual industry accounts'

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15. The rental income of persons, which is included as part of GDP by state for the real-estate industry, includes the imputed rental income received by the owner-occupants of farm and nonfarm dwellings which is an estimate of the net return to home ownership.

16. Nontax payments generally exclude business purchases from general government agencies of goods and services that are similar to those provided by the private sector, and the current surplus of government enterprises.

17. Benchmark years are the years for which data from the economic census' are available: 1963, 1967, 1972, 1977, 1982, 1987, 1992, and 1997, and 2002.

18. Absolute values are used because reported proprietors' income is occasionally negative, but it is the magnitude of the reported income, regardless of its sign, which is indicative of a level of activity.

measure of proprietors' income with IVA and CCA to the states.

Real estate proprietors' income

Similar to the mining industries, BEA's SPI measure of proprietors' income with IVA for the real estate industry is not used because it includes income earned from limited partnerships. The "Real Estate" subpart of Section V (Gross Operating Surplus) includes a complete discussion of how proprietors' income is computed for this industry.

Corporate Capital Charges

GOS is the sum of proprietors' income (with IVA and CCA) and corporate capital charges. The estimation of the proprietors' income component of GOS has been described above. This section describes the benchmark year methodologies for estimating the capital charge components of GOS: Rental income of persons and CCA; corporate income components (corporate profits with IVA and CCA, net interest, business transfer payments); certain other nontax payments (or liabilities) to general government agencies that are treated like taxes; and the current surplus of government enterprises. Benchmark years are those for which the corporate capital charge estimates rely most heavily on state-specific source data rather than on extrapolation or interpolation using a related indicator series (Appendix E). The corporate capital charge benchmark methods are discussed in terms of goods-producing industries, services-producing industries, and government because of the similarities within each of these groups with respect to estimation methodologies and source data.

Nontax payments to government

Nontax payments to government consist of various items such as regulatory and inspection fees, fines and forfeitures, rents and royalties, and donations (Appendix F). For farms, the estimates are based on each state's share of federal grazing receipts from permits and leases data from the Department of the Interior. For oil and gas extraction, the estimates are based on each state's share of rents and royalties data from the Department of the Interior. For banking, the estimates are based on each state's share of Federal Reserve Bank assessments from the Federal Reserve Board. For industries other than those just described, the estimates are based on each state's share of unpublished wages and salaries from BEA.

Services-Producing Industries

Services-producing industries consist of all industries except agriculture, forestry, fishing, and hunting; mining; construction; manufacturing; and government. All the remaining industries are private services-producing industries. For these industries, as well as for the forestry, fishing, and related activities industry, GOS is estimated in three components:

- Proprietors' income with IVA and CCA,
- Nontax payments to government, and
- Corporate capital charges.

The data and methods used to estimate proprietors' income with IVA and CCA and nontax payments to government were described above. The rest of this section describes the methods for estimating corporate capital charges for services-producing industries.

For most services-producing industries, GDP by state corporate capital charge estimates are based upon receipts and payroll data from the Census Bureau's quinquennial economic census and upon BEA wages and salaries data. The exceptions to this approach are mainly regulated industries for which additional company financial data are available, and for which alternative estimation methods have been developed.[19] These exceptions to the standard methodology will be treated separately below. The standard methodology uses an indicator data series to distribute the national GDP by Industry corporate capital charge total to the states. The indicator series is defined as the sum of BEA wages and salaries and Census receipts, after the Census receipts data have been adjusted (by the ratio of BEA wages and salaries to Census payrolls) to account for differences in establishment coverage and industry-establishment classification between Census and BEA:

$$Z_{i,j} = 0.5 \times WS_{i,j} + 0.5 \times (WS_{i,j}/CP_{i,j}) \times CR_{i,j},$$

where:
$Z_{i,j}$ = the indicator series for industry i in state j,
$WS_{i,j}$ = BEA wages and salaries for industry i in state j,
$CP_{i,j}$ = Census payrolls for industry i in state j, and
$CR_{i,j}$ = Census receipts for industry i in state j.

The values of the indicator series are summed across the states for an industry and then the national GDP by Industry total for corporate capital charges in the industry is distributed to the states on the basis of each state's share of the indicator series total. This estimate of corporate capital charges is then added to estimated nontax payments and proprietors' income with IVA and CCA by state to yield the estimate of GOS for each

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19. The exceptions to the standard capital charge estimation methodology are utilities, air transportation, rail transportation, banking, insurance carriers, real estate, and government.

industry. The estimates of GOS are then added to estimates of employee compensation, TOPI, and subsidies to yield the estimate of GDP by state for each industry.

Utilities

BEA estimates corporate capital charges by state for three sub-industry groups within the utilities industry: Natural gas distribution; electric power generation, transmission, and distribution; and water sewage and other systems.[20] GDP by Industry corporate capital charge components for the utilities industry are distributed to the three sub-industry groupings based on each sub-industry group's share of the selected financial measures for utilities. These national total corporate capital charges for each of the three sub-industry groups are then distributed to the states on the basis of indicator data series specific to each of the groups.

Natural gas distribution. The natural gas distribution portion of utilities industries' corporate capital charges is distributed to the states on the basis of each state's share of "total gas delivered to consumers."

Electric power generation, transmission, and distribution. For electric power generation, transmission, and distribution, a four-step procedure is used to take advantage of selected financial data for each company.

1. Selected financial items from each company's income statement and balance sheet are redefined to conform to BEA conventions and definitions.[21]
2. The redefined measures are distributed to the states in which the company operates based on each state's share of the company's total generating capacity.
3. The adjusted and distributed measures from step 2 are summed across companies, by state, and used as the indicator series to distribute to the states the respective annual industry accounts' capital charge component—net interest, corporate CCA, and corporate profits with IVA.
4. The remaining income component—business transfers—is distributed to states using the state distribution of company revenues as an indicator series.

Nontax payments are estimated separately and added to the corporate capital charges estimates.

Water, sewage, and other systems. For the corporate capital charges component of corporate profits with IVA and CCA, the national total is distributed to the states using equally-weighted Census Bureau receipts (adjusted by the ratio of BEA wages and salaries to Census payrolls) and BEA wages and salaries, like most other services-producing industries. The corporate capital charges components of net interest and business transfer payments are distributed to the states based on each state's share of BEA wages and salaries for the industry.

Air transportation

BEA uses passenger enplanements, by company and airport, and airline financial data, by company, from the Department of Transportation (DOT) to estimate air transportation corporate capital charges by state.[22, 23] The company financial measures are allocated to states using the company's passenger enplanements by state. The resulting state distributions of the financial measures are then used as an indicator series to distribute the national GDP by Industry corporate capital charge components to the states.[24]

Rail transportation

BEA estimates state rail corporate capital charges as the sum of corporate capital charges for Class I railroads, Class II railroads, and AMTRAK.[25] Accordingly, the national GDP by Industry corporate profits with IVA, CCA, net interest, business transfer payments, and current surplus are split among the three types of railroads before being distributed to the states.

The AMTRAK portion of the GDP by Industry capital charge components is based on the company's reported profit (or loss), depreciation, and interest expense. The AMTRAK portion of the rail transportation industry's corporate capital charges is distributed to the states on the basis of AMTRAK passenger boardings by state.

After subtracting the AMTRAK portion from the GDP by Industry total for railroad transportation corporate capital charges, the remainder is split between

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20. The NAICS utilities industry includes natural gas distribution while natural gas transmission is included in the NAICS pipeline transportation industry. The SIC utilities industry includes both natural gas distribution and natural gas transmission.

21. For additional information, see "Note 5: Adjustments to financial items of utilities companies" in the "Technical Notes."

22. The following DOT data, by company, are used: Total property revenue plus mail revenue, total passenger revenue, subsidies, interest on long term debt and capital leases plus other interest expense, depreciation and amortization, and net income (or loss) before taxes.

23. This NAICS industry differs significantly from the similarly-named SIC industry, Transportation by air. Along with several minor differences, large portions of the SIC industry, including courier services such as Federal Express, are not included in the NAICS industry. These differences may be especially large in states that serve as hubs to courier service operations.

24. Net income (or loss) before income taxes plus depreciation and amortization is used to allocate GDP profits with IVA plus CCA; interest on long-term debt plus other interest expense is used to allocate net interest. The GDP by Industry measure of business transfer payments is allocated to states on the basis of passenger enplanements by state.

25. Class I railroads are those with annual gross revenues of more than $250 million, and Class II railroads are those with annual gross revenues of $20–$250 million.

Class I and II railroads based on the expense, revenue, and profit shares of each class:[26]

- For Class I railroads, corporate CCA is distributed to states on the basis of the state shares of national structure and equipment depreciation; profits with IVA and business transfers are distributed to the states on the basis of the state shares of net revenue; net interest is distributed to the states on the basis of the state shares of interest expense.
- For Class II railroads, corporate CCA and net interest, business transfer payments, and corporate profits with IVA are distributed to the states on the basis of state shares of Class II expenses, revenues, and profits, respectively.

The GDP by state estimate for Rail transportation capital charge components by state is then the sum for each state of the estimated corporate capital charges for AMTRAK, Class I, and Class II railroads.

Insurance carriers and related activities

Corporate capital charges for insurance carriers and related activities are estimated in two parts: Insurance carriers, life insurance, property and casualty insurance; and insurance agents, brokerage, and related activities (which, for simplicity, will be referred to as "insurance agents"). The sum of corporate capital charge estimates for these two parts yield the corporate capital charges estimate for the industry in each state. The national total corporate capital charges for the two parts of the industry are obtained as a special tabulation from the GDP by Industry accounts. These national totals are then distributed to the states on the basis of state-level insurance industry data obtained from the National Association of Insurance Commissioners (NAIC).

Insurance carriers. The national corporate capital charges total for insurance carriers is distributed to the states in three parts:

1. The national total for corporate profits with IVA is distributed to the states on the basis of each state's share of the total NAIC net premiums for insurance carriers, where "net premiums" are measured as total premiums minus losses.

2. The national total for net settlements (actual losses less expected losses) is distributed to the states on the basis of each state's share of total NAIC losses as reported by the insurance carriers. When the national value of net settlements is negative and the reported NAIC loss is also negative, then the absolute value of the loss is used as the indicator value for net settlements for the state.

3. The national total for corporate capital charges except profits and net settlements is distributed to the states on the basis of each state's share of total NAIC premiums paid for insurance carriers.

The insurance carriers corporate capital charges assigned to each state is then the sum of the three parts. The data on premiums, settlements, profits, and losses are recorded in the home state of the insurance underwriter, not in the home state of the insured.

Insurance agents. The national corporate capital charges total for insurance agents is distributed to the states on the basis of each state's share of NAIC total insurance premiums, recorded on a "where sold" basis. Using insurance premiums on a "where sold" basis serves to locate the economic activity in the home state of the insurance agents, rather than the home state of the underwriters of the insurance.

Credit intermediation

Federal Reserve Banks and depository and nondepository institutions comprise the credit intermediation industry. While all types of institutions are included, this discussion focuses on depository institutions, whose output is the most complex to estimate.

The operating income of depository institutions (hereafter referred to as "banks") roughly equals interest received minus interest paid and other expenses. Banks act as financial intermediaries for depositors and borrowers by granting loans with available funds from bank deposits and by maximizing the interest income earned from re-investment of deposits and loan repayments. Financial intermediation is a service to depositors and borrowers that is not explicitly priced and must be indirectly valued. The next sections review the quantification of these implicit services as part of bank net interest and describe the data used to compute the other components of corporate capital charges (profit, corporate capital consumption allowance, and business transfer payments).

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26. The financial measures (expenses, revenues, and profits) are special tabulations based on way-bill data, by state, and company financial reports from DOT. For Class I railroads, DOT provides net income before taxes, depreciation and amortization expense, interest expense, and total revenues, by company and state. For Class II railroads, DOT provides total revenues, expenses, and profits, by state. The difference between the total Class I depreciation reported by DOT and the estimated Class I CCA is added to the Class I profits reported by DOT and subtracted from the Class I depreciation reported by DOT in order to account for differences between financial accounting and national income accounting.

> **Financial intermediation** is the implicit service of using funds from deposits to acquire financial assets by making loans and/or purchasing securities, while assuming financial risk, and channeling funds from lenders to borrowers and transforming or repackaging the funds with respect to maturity, scale, and risk.

Net Interest

The national income and product accounts (NIPAs) recognize that both the interest paid to depositors and the interest received from borrowers have two forms of payment: A monetary amount and an imputed value for implicit services provided by the bank. The System of National Accounts (SNA) 1993 recommends that the value of implicit services be computed using a "reference rate" of interest that represents the opportunity cost of borrowing or lending and does not include a risk premium or any intermediation services. In agreement with the NIPAs and SNA, the regional product accounts estimate the four gross interest flows for commercial banks by state: Monetary interest paid (MIP), imputed interest paid (IIP), monetary interest received (MIR), and imputed interest received (IIR). Therefore, net interest earned by commercial banks equals the sum of monetary and imputed interest paid, less the sum of monetary interest received and imputed interest received:

$$\text{Net interest} = (\text{MIP} + \text{IIP}) - (\text{MIR} + \text{IIR}).$$

Net interest for the credit intermediation industry equals the sum of net interest from each type of institution: Commercial banks, savings and loan associations, savings banks, credit unions, Federal Reserve Banks, and nondepository institutions. The difference between the sum of net interest by state and the NIPA value is distributed to the states based on the computed series of net interest by state. The next sub-sections discuss the computation of net interest by type of institution.

Commercial bank net interest. Monetary interest paid is distributed to each state with domestically-located commercial bank deposits. The state distribution of commercial bank interest income is used to distribute national monetary interest received to the states. Imputed interest paid by banks to depositors equals the reference rate, less the interest rate received by depositors, multiplied by average deposit liabilities. Similarly, imputed interest received by banks from borrowers equals the interest rate paid by borrowers, less the reference rate, multiplied by average earning assets.

Savings institutions net interest. The state distribution of savings institutions (savings and loan associations and savings banks) deposits is used to distribute national net interest for both types of institutions to the states. The reference rate approach may be applied to savings institutions as a part of a future benchmark revision in methodology. The computations would be similar to those employed to compute commercial bank net interest.

Federal Reserve Banks net interest. The Federal Reserve Banks do not pay monetary interest. Therefore, net interest for each state with a Federal Reserve Bank equals monetary interest received. (The value of implicit services, net of the opportunity cost of required deposits, is assumed to be zero for Federal Reserve Banks).[27]

Nondepository institutions net interest. Nondepository net interest for economic census years is distributed to each state using an equal weighting of census receipts and SPI wages and salaries. These estimates are extrapolated or interpolated with the annual percent change in wages and salaries to compute nondepository net interest for non-economic census years.

Profits before taxes

Depository profits. The NIPAs include profits estimates for the following types of banking institutions: Federal Reserve Banks, commercial banks, savings and loan associations, savings banks, Federal Home Loan Banks, credit unions, bank holding companies, and nondepository institutions. With the exceptions of credit union and bank holding company profits, the sum of net operating income and allowance for loan and lease losses by state provides the information necessary to distribute the NIPA national profits estimates to the states by type of institution. (The state distribution of compensation of employees is used to distribute national credit union profits to each state.) The financial data for commercial banks, savings and loan associations, and savings banks are adjusted to account for banks that operate branch banks in a different state (interstate branching). Bank holding company profits from the NIPAs are distributed to each state using bank holding company profits by state.

Nondepository profits. For economic census years, the value of nondepository profits from the NIPAs is distributed to the states using an equal weighting of census receipts data and SPI wages and salaries. For non-economic census years, nondepository profits estimates are computed by extrapolating or interpolating economic census year's values using the annual percent change in SPI wages and salaries.

CCA and business transfer payments (BTP) for depository and nondepository institutions

Depository CCA and BTP. The remaining corporate capital charges components consists of corporate CCA and BTP. The national value of the CCA and BTP components of capital charges are distributed to the states

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27. Under the National Bank Act of 1863, national banks are required at all times to maintain specified reserves based on the level of deposits in the bank.

in two parts: Federal Reserve and all other depository institutions. Federal Reserve Bank CCA is depreciation on land and equipment and is assigned to the states where it is reported. BTP are assumed to apply to only non-Federal Reserve Banks. BTP and CCA from the NIPAs, less the Federal Reserve Bank CCA, are distributed to all institutions, except Federal Reserve Banks, using the state distribution of compensation of employees.

Nondepository CCA and BTP. For economic census years, the value of nondepository CCA and BTP from the NIPAs is distributed to the states using an equal weighting of census receipts data and SPI wages and salaries. For non-economic census years, nondepository CCA and BTP estimates are computed by extrapolating or interpolating economic census year's values using the annual percent change in SPI wages and salaries.

Total capital charges for depository and non-depository institutions

The total state corporate capital charges for depository and nondepository institutions, excluding nontax payments to government, equals the sum of profits, CCA, BTP, and net interest for each institution. To ensure consistency with the national accounts, the difference between the sum-of-states estimates and the national corporate capital charges value is distributed to the states based on the estimates of the state corporate capital charges.

Real estate

The GOS estimates methodology for the real estate industry takes advantage of the availability of data from the decennial Census of Housing and other sources. Real estate GOS is divided into "other" real estate and housing services. Other real estate is the portion of the real estate industry engaged in renting or leasing real estate to others; managing real estate for others; selling, buying, or renting real estate for others; and providing other real estate related services, such as appraisal services. Output from the housing services industry is the imputed rental value of owner-occupied permanent site homes, owner-occupied manufactured homes, and tenant-occupied homes.

The estimation of state GOS for the real estate industry differs from most industries because total state GOS is estimated and then split into corporate capital charges and proprietors' income. This slightly-different approach of estimating proprietors' income is necessary because the state estimates of proprietors' income from the SPI accounts are based on IRS tax records which record income by place of residence. Since GDP by state is measured by place-of-work, the

real estate proprietors' income must be adjusted to account for this measurement difference. This location adjustment to proprietors' income is not necessary for most industries.[28]

Housing services

The estimation of GOS for the housing services industry requires several steps:

1. The national GOS for real estate is split into two parts, "housing services" and "other real estate" on the basis of corporate capital charge data for each part, available from the GDP by Industry accounts.
2. The national total GOS for the housing services portion of the real estate industry is split into three parts by type of housing—owner-occupied housing for permanent site, manufactured homes, and tenant-occupied housing—on the basis of data obtained from the NIPAs on net interest, CCA, and rental income of persons for each of these three housing types.
3. The national GOS for owner-occupied permanent site and manufactured homes is distributed to the states using estimates of state imputed rents from the SPI accounts for these two housing types.
4. For decennial census years, tenant-occupied housing rent estimates are computed by multiplying median rent and number of units statistics from the Decennial Census of Housing and Population. Non-economic census years values are interpolated or extrapolated with the percent change in nonfarm personal income.
5. The GOS estimates for the three housing types are summed along with tenant-occupied farm housing from the SPI accounts, to yield an indicator series for housing services.
6. The state indicator series for housing services is used to distribute the national total for housing services GOS to the states on the basis of each state's share of the indicator series total.
7. GOS is split into corporate capital charges and proprietors' income using the ratio of national proprietors' income to GOS.
8. The rental income from farm housing is added to the estimate of proprietors' income computed in step 7.

Other real estate

The national totals for corporate capital charges and proprietors' income for other real estate are distributed

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28. Many proprietors in the mining and real estate industries are more accurately characterized as investors than owners and they often do not live in the same state as the establishment they own. Consequently, this adjustment tends to be large for these industries.

to the states on the basis of Census Bureau receipts data for this piece of the real estate industry. Census Bureau receipts data are available only for economic census years. For non-economic census years, the corporate capital charges and proprietors' income estimates are computed by extrapolating or interpolating economic census years' values using the annual percent change in SPI wages and salaries.

Federal, state, and local government

In the regional accounts, the government sector consists of Federal civilian government, Federal military, and state and local government. For Federal civilian government and state and local government, GOS consists of the surplus or deficit of government enterprises, the consumption of fixed capital (CFC) for government enterprises, and the CFC for general government. For Federal military, GOS consists of CFC only.

Federal government

The national measure of Federal military CFC is distributed to the states using each state's share of active military personnel. However, the national measure of Federal military CFC is adjusted to include only domestic structures and office equipment.[29]

The national measure of Federal civilian CFC (general government and government enterprises) is distributed to the states using each state's share of federal civilian employment. The remaining component for Federal civilian GOS is the surplus or deficit of government enterprises.

The twelve federal government enterprises for which surplus or deficit is estimated can be classified into four categories:
- The United States Postal Service (USPS),
- Federal power authorities,
- Federal insurance programs, and
- Other federal enterprises.[30]

The methodologies for allocating the national measure of surplus or deficit, by government enterprise and state, are discussed below in terms of these four categories.

Because the GDP by state for the USPS includes neither proprietors' income nor TOPI, GOS for each state can be estimated as the difference between USPS value added and USPS employee compensation. State estimates of USPS value added are made by distributing national total USPS value added to the states on the basis of each state's share of USPS revenues. State estimates of USPS employee compensation are made by distributing national USPS employee compensation to the states on the basis of each state's share of USPS wages and salaries.[31] The difference between these two estimates, value added and employee compensation, for each state is then the estimate of USPS GOS for each state.

State estimates of GOS for each of the federal power authorities are derived by distributing each power authority's total surplus or deficit to the states on the basis of each state's share of the power authority's generating capacity.[32]

State estimates of the surplus or deficit for the two federal insurance programs—flood insurance and crop insurance—are derived in calculations by distributing each insurance program's total surplus or deficit to the states on the basis of each state's share of the insurance program's premiums received plus indemnities paid.

For the remaining federal government enterprises in the "all other" category:
- The surplus or deficit of the *Federal Housing Administration (FHA) Fund* is distributed to the states based on the insured mortgage activity by state,
- The surplus or deficit of *military post exchanges and restaurants* is distributed to the states based on the number of military personnel (active, retired, and reserve) by state,
- The surplus or deficit of the *Veterans Canteen Service* is distributed to the states based on canteen sales by state, and
- The surplus or deficit of the *U. S. Enrichment Corporation* is distributed to the states based on the value of uranium sales by state.

State and local government

The GOS estimates consist of the surplus or deficit of sixteen state and local government enterprises, the

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29. All military equipment and structures located overseas and mobile military equipment located domestically are excluded from the CFC in the GDP by state accounts, but included in the national measure. The CFC, excluding the part which is attributable to mobile equipment, is adjusted to exclude overseas equipment and structures based on the ratio of domestic troop strength to total troop strength.

30. The twelve Federal enterprises are the U. S. Postal Service, Military post exchanges and restaurants, Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, Upper Colorado River Basin Fund, Tennessee Valley Authority, Federal Housing Administration Fund (FHA), Veterans Canteen Service, Federal Crop Insurance, National Flood Insurance, and the U. S. Enrichment Corporation.

31. Wages and salaries for the USPS are available from the SPI series. Employee compensation is wages and salaries plus supplements. USPS supplements, nationally, are estimated by multiplying BEA's measure of supplements for all enterprises by the ratio of USPS wages and salaries to the wages and salaries for all enterprises.

32. Information on the state distribution of generating capacity is obtained from each power authority.

CFC for these enterprises, and state and local general government CFC.[33]

In general, state and local government revenues less expenditures, for each enterprise and state, from the Census Bureau are used to distribute to the states the national surplus or deficit of each state and local government enterprise. Exceptions are off-track betting which is assigned to New York, the Alaska Ferry which is assigned to Alaska, and miscellaneous commercial

activities which are distributed to the states based on each state's share of population.

The CFC for state and local government (general government and government enterprises) is distributed to the states based on each state's share of state and local government employment.

Finally, the components estimated above for state and local government—the surplus or deficit of state and local government enterprises, the CFC for state and local government enterprises, and the CFC for state and local general government—are summed yielding the GOS for state and local government.

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33. The state and local government enterprise functions are: Housing and urban renewal, water supply, sewerage, natural gas, electricity supply, toll highways, off-track betting, Alaska ferry, water terminals, air terminals, transit, liquor stores, lotteries, miscellaneous commercial activities, parking facilities, and miscellaneous insurance trusts.

VI. Real GDP by State

Chain-weighted quantity indexes

BEA prepares chain-type quantity indexes, by industry, for the nation, but state-level information on prices by industry is not available, so estimates of real GDP by state are derived by applying national-level industry implicit price deflators to the current dollar GDP by state estimates for the detailed industries. Real GDP by state for the aggregate industries (such as total services, manufacturing, and so on) is derived by using the same chain-type index formula that is used in the national accounts. To the extent that a state's output is produced and sold in national markets at relatively uniform prices (or sold locally at national prices), real GDP by state captures the relative differences in the mix of goods and services that states produce. However, real GDP by state does not capture state-to-state differences in the prices of goods and services that are produced and sold locally.

Unlike fixed-weighted measures, chain-weighted measures are not based on the price weights of a single base year, but on the prices and quantities of adjacent years. Fixed-weighted measures have a number of disadvantages, including the need for periodic rebasing, leading to significant revisions to the historical data, and the inability to capture substitution effects caused by changing relative prices of goods and services. Chain-weighted measures avoid these weaknesses. However, chain-weighted measures do have some disadvantages; they are not additive, because they are based upon geometric means, and they are more difficult to compute than fixed-weighted measures. The non-additivity of chain-weighted measures means that total real GDP by state cannot be obtained by summing the real GDP by state of each industry. As a result, the contribution of each industry to a change in real total GDP by state is not readily computable. The computation of contributions to growth is described later in this section.

To calculate a chain-type quantity index for total GDP by state, or GDP by state of any aggregate industry, a Fisher Ideal index is used. The Fisher Ideal index is the geometric mean of the Laspeyres and Paasche quantity indexes. The Paasche quantity index is defined as:

$$P_{1,2} = \frac{\sum_i (p_{i,2} \times q_{i,2})}{\sum_i (p_{i,2} \times q_{i,1})} \; ,$$

and the Laspeyres quantity index is defined as:

$$L_{1,2} = \frac{\sum_i (p_{i,1} \times q_{i,2})}{\sum_i (p_{i,1} \times q_{i,1})} \; .$$

The Fisher quantity index is the geometric mean of the Paasche and Laspeyres quantity indexes for adjacent years:

$$F_{1,2} = \sqrt{L_{1,2} \times P_{1,2}} = \sqrt{\frac{\sum_i (p_{i,1} \times q_{i,2})}{\sum_i (p_{i,1} \times q_{i,1})} \times \frac{\sum_i (p_{i,2} \times q_{i,2})}{\sum_i (p_{i,2} \times q_{i,1})}} \; .$$

However, in the above formula, the variables that represent the composites of prices in one year and quantities in an adjacent year (for example, $p_{i,1} \times q_{i,2}$) are not directly observable, so an algebraically-equivalent formula is used to calculate the Fisher quantity index:

$$F_{1,2} = \sqrt{\frac{\sum_i \frac{p_{i,1}}{p_{i,2}} \times (p_{i,2} \times q_{i,2})}{\sum_i (p_{i,1} \times q_{i,1})} \times \frac{\sum_i (p_{i,2} \times q_{i,2})}{\sum_i \frac{p_{i,2}}{p_{i,1}} \times (p_{i,1} \times q_{i,1})}} \; .$$

The Fisher quantity index measures the percent change in real quantities between adjacent years. To obtain a time series, successive indexes are calculated and then chained together by arbitrarily setting the first year equal to 1.0 and iteratively multiplying the current year's index by the next year's index. To change the reference year (there is no "base year," in the sense that there is in the case of fixed-weighted indexes) of the series, one must only divide each element of the series by the value of the index for the desired reference year. Real chained-dollar GDP by state estimates are calculated from the chained Fisher Ideal index series by multiplying the index for each year by the current-dollar GDP by state value for the reference year. For display purposes, the indexes are commonly multiplied by 100, to set the reference year value to 100.0 rather than 1.0.

Contributions to real growth

Real chain-weighted GDP by state is not additive (except for the trivial case of the reference year, when the real and nominal dollar values are the same), because the underlying quantity indexes are geometric means of indexes from adjacent years. As a result, the contribution of each individual industry or region to a change in total GDP by state cannot be calculated simply by dividing the change in a component (an industry or a region) by the change in the total. Instead, a more complicated approach is required to account for the non-additivity of the real GDP by state measures.

The formula below is used to calculate the contribution of component i to the percent change in total real GDP by state:

$$C\%\Delta_{i,\,t} = 100 \times \frac{((p_{i,\,t}/P_t^F) + p_{i,\,t-1}) \times (q_{i,\,t} - q_{i,\,t-1})}{\sum\limits_{j} ((p_{j,\,t}/P_t^F) + p_{j,\,t-1}) \times q_{j,\,t-1}} \, ,$$

where:

P_t^F is the Fisher price index for the aggregate in period t relative to period $t-1$,

$P_{i,t}$ is the price of component i in period t, and

$q_{i,t}$ is the quantity of component i in period t.

VII. Future Developments

Extending the GDP by state-NAICS time series

CURRENTLY, the GDP by state estimates on a NAICS basis are available only for years 1997 forward. The GDP by state estimates rely heavily on two major data sources—(1) wages and salaries data from the Bureau of Labor Statistics (BLS), and (2) value-added, receipts, and payroll data from the Census Bureau's economic censuses. The first year the economic census is recorded on a NAICS basis is 1997. In December 2004, when the NAICS-based GDP by state data were first released, the BLS wages and salaries data were only available on NAICS for 1997 forward. Since that time, BLS has released wages and salaries data on a NAICS basis back to 1990.

To provide our customers with a longer NAICS time series, BEA has undertaken two research efforts. The first is the estimation of compensation of employees and proprietors' income on a NAICS basis for 1990 through 2000. BEA has completed preliminary research, and has released state estimates of compensation of employees and proprietors' income for NAICS industries in the fall of 2006.

Second, BEA has entered into a joint effort with the Census Bureau's Center for Economic Studies (CES) to recode the 1992 economic census from SIC to NAICS. After completion of this effort, BEA will estimate the NAICS-based GDP by state estimates for years 1992–1996.

Improving the timeliness of the GDP by state estimates

In December, 2004 BEA released the first set of advance total GDP by state estimates in current dollars. And in the fall of 2005, BEA released the first set of advance GDP by state industry estimates. Advance GDP by state estimates are now released on a regular basis. Advance total GDP by state estimates for the previous calendar year are released in June and industry estimates are released in October. At this time, the advance GDP by state estimates do not include any of the GDP by state income components.

BEA is currently working on improving the accuracy of the advance GDP by state industry estimates and plans to release the advance 2006 total GDP by state and industry estimates in June, 2007, while investigating the feasibility of producing advance estimates of the GDP by state income components.

GDP by metropolitan area estimates

To provide our users with gross metropolitan product (GMP) estimates, BEA has included, as part of its recent Strategic Plan, an investigation of the feasibility of producing GMP estimates. Although this effort has not yet been fully funded, BEA has developed illustrative "top-down" GMP estimates that are based on county earnings by industry from the local area personal income (LAPI) accounts and GDP by state by industry. The illustrative estimates include both current and real chained-dollar GMP for 81 NAICS industries. These estimates provide a more accurate picture of GMP than those published by private companies because the illustrative GMP estimates are: (1) consistent with the published GDP by state estimates, (2) consistent with estimates produced by BEA's national accounts, and (3) are based on source data without disclosure edits.

If BEA is funded for further development of GMP, additional improvements may include the development of a bottom-up estimation methodology that is consistent with the GDP by state estimation methodology. This effort will require BEA to gather additional county and metropolitan area source data and to design and develop a computer estimation system to produce the estimates.

VIII. Technical Notes

Note 1: Interpolation and extrapolation procedures

FREQUENTLY, source data required as inputs for the GDP by state estimates are not available for one or more years in a time series. For example, some data may be available only for the years corresponding to a quinquennial or decennial census. Then it is often possible to estimate reasonable values for the missing data by interpolation or extrapolation on the basis of available data and a related data series.

All data interpolations used in the GDP by state estimates are growth rate interpolations. That is, they are geometric rather than linear interpolations.

Consider a case in which data are available only at five-year intervals:

$$X = \{x_0, x_5, x_{10}, \ldots, x_{25}\} .$$

Values for intermediate years need to be estimated by interpolation.

Whenever possible, a time series of related data are used to compute the interpolated values in the time series X, above. If the data being interpolated were, for example, payroll or value-added data by industry and state, then a related series to be used might be BEA wage and salary accruals by industry and state:

$$W = \{w_0, w_1, w_2, w_3, w_4, \ldots, w_{25}\} .$$

The wage and salary data, W, are available for all years in the time series, so the interpolated values for X can be tied to the available values of W by interpolating the ratio between the two series. For the years for which values of X are available, compute the ratios between the values of X and the values of the related series W:

where $r_t = {}^{w_t}\!/\!x_t$.

The interpolated values of these ratios are then computed by applying the average annual growth rate between available ratio values, which are directly computable just every five years in the current example:

$$\Delta_{t,t+5} = \sqrt[5]{r_{t+5}/r_t} .$$

The value is the annual geometric factor (technically, it is 1.0 plus the average annual growth rate in the ratio) for computing interpolated values of the ratios between the related data series W and the missing values X:

$$r_1 = \Delta_{0,5} \times r_0 \Rightarrow x_1 = w_1 / (\Delta_{0,5} \times r_0) ,$$

$$r_2 = \Delta_{0,5} \times r_1 \Rightarrow x_2 = \frac{w_2}{\Delta_{0,5} \times r_1} \Rightarrow x_2 = \frac{w_2}{\Delta_{0,5}^2 \times r_0} ,$$

and so on until all the missing values of X have been computed.

One limitation of the geometric interpolation method outlined here is that it is useless if the end-point values being interpolated are of opposite sign. There is no constant annual growth rate, and therefore no value of Δ, that will carry one monotonically from a negative number to a positive one, or vice versa. (A negative value of Δ may be found to traverse the interpolation period and connect the available endpoints; however, it would do so by oscillating annually between negative and positive values—not generally a desirable result.) In these cases, a linear interpolation of the ratios between X and W may be the only solution, but one needs to carefully review the results of any such interpolation, inasmuch as the construction of the ratio—which value is the numerator and which is the denominator—will affect the shape of the resulting interpolated time series, sometimes in surprising fashion.

A similar approach can be used to *extrapolate* values of X. In this case, one would need to decide what value to assign to Δ. Assigning Δ a value of 1.0 keeps the ratio between X and W constant during the extrapolation period (Δ is 1.0 plus the annual growth rate, so a value of 1.0 implies a zero growth rate for the ratio). However, it may be possible, through regression analysis or other means, to identify a time trend in the relationship between X and W. The value may then be non-zero, but the algebra of the extrapolation would be the same.

Note 2: Allocation and dual allocation procedures

Estimation of state values for the components of GDP by state often involves the distribution of a pre-determined national total to the states on the basis of the state values of an indicator series. An indicator data series is a data set with a known distribution—usually a distribution across states. In the context of GDP by state estimation, it is assumed to be similar to the unknown state distribution of the national total. For example, in the absence of better information, it may be assumed that a tax for an industry is distributed across the states as employee compensation is distributed, so the state estimate for the tax would be derived by applying the industry's distribution of employee compensation to the national total for the tax for the industry.

It is often the case that the indicator series is itself a first estimate of the data being estimated, such as adjusted value-added data from the Census Bureau,

which provide the first estimate of GDP by state for the manufacturing industries. In these cases the objective is to reconcile the first estimate with a predetermined control total, usually a national total, to which the state-level estimates must sum.

The procedure used to distribute a national total according to an indicator series, or to reconcile a first estimate to a control total, is commonly referred to as allocation, because a control total is "allocated" or shared out to the states. This procedure can be expressed algebraically as:

$$\hat{x}_i = X_{US} * \left(z_i \bigg/ \sum_{j=1}^{51} z_j \right),$$

where:

$\hat{x}_i$ = the state i estimate for some component of GDP by state;

X_{US} = the predetermined national total being distributed to the states; and

z_i = the state i value of indicator series Z, being used to allocate the value of X_{US} to the states (which may be the first estimate of the data being estimated).

In practice, it is often advisable to perform data allocations using the absolute values of the indicator series, so the above formulation would become:

$$\hat{x}_i = X_{US} * \left(|z_i| \bigg/ \sum_{j=1}^{51} |z_j| \right).$$

Basing the allocation on absolute values has advantages when either the indicator series or the national total being distributed may contain negative numbers, as commonly occurs when the data are net values, such as net interest.

A refinement of this allocation procedure is sometimes used when additional information is available. For example, national property tax totals are available by industry, so the allocation procedure just described could be used to distribute those industry totals to the states, using compensation of employees or some other indicator series as the distributor. However, information is also available on all-industry total property tax payments by state, so an additional constraint can be placed on the estimates of property tax payments by industry and state. This is accomplished using a dual allocation procedure.

A dual allocation is an iterative application of the allocation procedure described above, with the allocation first to one set of totals, and then to a second set; the procedure is repeated until the estimated values converge to a solution in which all constraints are satisfied. Convergence to a solution requires the two sets of controls to be mutually consistent. Thus, using the

property tax example again, the national property tax totals by industry can be summed across industries to yield a national all-industry total for property taxes, and the state-level all-industry property tax totals can be summed across states also to yield a national all-industry total for property taxes. These two totals must agree, or the dual allocation procedure will never converge to a single solution.

Note 3: Estimates of national totals for TOPI

Taxes on production and imports (TOPI) consist of federal excise taxes and state and local taxes. National values are estimated for 83 detailed taxes, by industry. These detailed tax estimates are then used as inputs to the estimation of GDP, GDP by Industry, annual I-O accounts, and GDP by state.

The national TOPI estimates are based upon data from BEA, the Internal Revenue Service (IRS), the Treasury Department, the Department of Transportation (DOT), the Census Bureau, and state government agencies. Depending upon the data available, the national tax estimates may be either estimated with national data only or estimated with state-level data and then aggregated to national estimates—sometimes referred to as a "bottom-up" approach. Several of the bottom-up estimates incorporate Census Bureau data from special tabulations that provide detailed tax-by-industry data for each state.[34]

Federal excise taxes by industry

Federal excise taxes (FETs) are estimated using national tax collections data from the Statistics of Income (SOI) Bulletin and national all-FET totals from BEA. The SOI tax collections are by fiscal year and listed by type of excise tax. The SOI tax collections are adjusted from fiscal year to calendar year and the excise taxes are aggregated to broad BEA tax categories. Shares of the BEA tax categories are computed for the SOI FETs and then applied to the national control total for the tax category. The resulting FET estimates are then assigned to the appropriate industries.

State and local taxes by industry

The national state and local all-industry tax totals are estimated from Census Bureau state and local tax receipts. These all-industry totals by tax are distributed across industries and states according to the methods described below.

- State and local general sales taxes are bottom-up estimates based upon reports collected from the

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34. In cases where the latest year(s) of source data are not available, the most recent year of available source data is used.

individual states and upon Government Finance data from the Census Bureau. The data are aggregated across states to yield national estimates by industry. The national estimates by industry for revised years are computed by applying the best change in the sum-of-state industry estimates to the previously published national industry values. The estimates by industry are then controlled to the national total for general sales taxes.

- State and local property taxes by industry are estimated using national industry property tax data and current-cost net stock of private fixed assets ("capital stock") data from BEA. The property tax estimates for farms are developed as part of BEA's GDP estimate. Property tax estimates for three industries: rail transportation, telephone and telegraph, and insurance carriers are based upon industry data from DOT, FCC, and the American Council of Life Insurance, respectively. Property taxes for residential real estate are obtained from the NIPAs. The sum of property taxes for the three industries listed above and property taxes for residential real estate is subtracted from the all-industry property tax total to yield a residual, which is distributed to the residual industries according to their relative shares of capital stock.

- State and local motor vehicle license taxes are bottom-up estimates obtained using Census Bureau state totals for motor vehicles license taxes, DOT registration fees by state, national estimates of current-cost net stock of fixed private capital (capital stock) for autos and for trucks, and the national motor vehicle license tax total from the NIPAs.

    The national motor vehicle license tax total includes only business license taxes, which is what is needed in the computation of TOPI–personal motor vehicle license tax payments are not part of GDP by state. But the Census Bureaus' state and national values contain both business and personal license taxes, so the nonbusiness payments portion needs to be removed. To compute business motor vehicle license taxes by state, the ratio of BEA's national level of motor vehicle license taxes (which excludes personal motor vehicle license tax payments) to the Census Bureau's national measure of motor vehicle license taxes (which includes personal motor vehicle license tax payments) is computed and applied to the Census state totals for motor vehicle license taxes, yielding business motor vehicle license taxes by state.

    The DOT supplies total motor vehicle registration fees and autos registration fees by state. These data are used to split the state business motor vehi-

cle license taxes, computed above, into the amount for autos and for trucks. The autos share of total fees is applied to the state business motor vehicle license tax total yielding business taxes for autos by state. Trucks fees are computed as a residual. Industry values for auto business taxes by state are computed by applying the national industry distribution of capital stock for autos to each state's auto license tax total. The same procedure is applied to trucks, using capital stock for trucks. The final national estimates for motor vehicle license taxes by industry are generated by summing the state/industry values for autos and trucks.

- Taxes from motor fuel sales, tobacco sales, insurance sales, hunting and fishing licenses, building permits, pari-mutuel sales, amusement sales, and amusement licenses each affect only one industry, so the national control total for each tax is assigned to the affected industry.

- Alcohol license taxes are distributed to the industries by applying national industry shares of the tax (obtained from the GDP by Industry accounts) to the national total for alcohol license taxes.

- Corporate franchise taxes are distributed to the industries by applying national industry shares of SOI capital stock to the national total for the tax, except for farms where the value is set to zero.

- The TOPI category "other taxes" is estimated using data from NIPA tax receipts and the industry distribution series of BLS wages and salaries. The four NIPA series of forest taxes, telecommunication taxes, auto rental taxes, and litigation fees and services are assigned to the appropriate industries. BLS wages and salaries are used to distribute the remainder of "other taxes" to the industries.

- Several categories of taxes, severance taxes, alcohol sales taxes, utility sales taxes, documentary and stock transfer taxes, other selective sales taxes, and occupational and business license taxes, are bottom-up estimates based upon Census Bureau special tabulations providing state data on specific taxes within each category. The Census Bureau totals for each tax are summed across states and scaled to be consistent with the national total for each tax. The industry values are then computed by applying the relative shares of the Census Bureau special tabulations to the state totals for each tax. The final national estimates are the state sums by tax for each affected industry.

- The utility license tax estimates are assigned to the industries in the same proportions as the utility sales tax estimates.

- Special assessments are assigned to the real estate industry.

Benchmark vs. nonbenchmark estimates

The same input series are used to generate benchmark and nonbenchmark year's estimates with one significant exception. Severance taxes, alcohol sales taxes, utility sales taxes, documentary and stock transfer taxes, other selective sales taxes, and occupational and business license taxes are estimated using tax receipts data that were tabulated only for benchmark years due to resource constraints. Updating the tax receipts series involves obtaining detailed state tax receipts data from the Census Bureau, reviewing printed or online copies of state government reports, and in many cases contacting state government agencies for more detailed information or clarification. Nonbenchmark year's estimates are filled in by linear interpolation.

Note 4: Estimates of national totals for nontax payments
Rents and royalties

Rents and royalties data are obtained from the Minerals Management Service of the U. S. Department of the Interior. Federal rents and royalties from the Outer Continental Shelf (OCS), obtained from the NIPAs, are assigned to the oil and gas extraction industry. State and local rents and royalties, also obtained from the NIPAs, are assigned to the real estate industry.

Business transfer payments to government

Federal nontax payments by industry. Federal nontax payments are estimated using national Federal nontax payments series from the NIPAs and detailed tax payment data from the Treasury Department's data appendices. The first step in the estimation of Federal nontax payments is to assign as many NIPA series as possible to the appropriate industries (e.g., FDIC premiums to depository institutions, federal grazing fees to farms). The sum of these direct industry assignments is then subtracted from total federal nontax payments yielding total miscellaneous receipts.

A further industry assignment of miscellaneous receipts is done based on the title or description of coverage in Table A of the Treasury appendices. The remaining series are "undefined." Using Treasury miscellaneous receipts data as the allocation series, a distribution of defined (industry) receipts is applied to total defined miscellaneous receipts, computed above, yielding a dollar value for defined industry miscellaneous receipts.

BLS wages and salaries are used to distribute total undefined miscellaneous receipts to the appropriate industries.

State and local nontax payments by industry. State and local nontax payments are estimated using national tax receipts totals obtained from the NIPAs and BLS wages and salaries. Specific items, such as tobacco settlement payments and the Exxon fine, are assigned to the appropriate industries. BLS wages and salaries are used to distribute the residual nontax payments to the remaining industries.

Note 5: Adjustments to financial items of utilities companies

BEA adjusts the profits and depreciation plus amortization reported to the Federal Energy Regulatory Commission (FERC) by utilities companies to make them consistent with the conventions used in the NIPAs. The three steps below describe the adjustments to operating expense, operating income, and net interest:

1. The adjustment to operating expenses of each company consists of the net provision for deferred income taxes divided by the corporate statutory tax rate:

$$\Delta = \frac{(P - C)}{r},$$

where:
Δ = the adjustment made to company operating expenses,
P = provision for deferred income taxes,
C = provision for deferred income taxes (credits), and
r = statutory corporate income tax rate.

The adjusted operating expenses value is combined with reported depreciation expense plus amortization to yield the indicator series used to distribute to the states the national corporate CCA for utilities companies.

2. The same adjustment is made to reported net utility operating income. Then the following financial items are added to the adjusted value of operating income:
- Reported federal income taxes on operating and other income,
- Reported net investment tax credit adjustments,
- Reported total other income less other income deductions, and
- Reported loss on disposition of property.

This adjusted net utility operating income is then used to distribute to the states the national industry total of corporate profits with IVA minus taxes other than income taxes (because those are accounted for in TOPI) minus the sum of allowance for borrowed funds used during construction plus net interest charges.

3. The sum of net interest charges and allowance for borrowed funds used during construction is used as the indicator series to distribute to the states the national utilities industry net interest total.

Appendix A

The Relation of Gross Domestic Product by State and U.S. Gross Domestic Product, 2004
[Billions of dollars]

	U.S. GDP ([1])	GDP by state				
		Compensation of employees	Taxes on production and imports	Gross operating surplus	Total	Difference between GDP and GDP by state
Compensation of employees	**6,693.4**	**6,671.9**	....	....	**6,671.9**	**21.5**
Wages and salaries	5,395.2	5,381.5	....	....	5,381.5	13.7
Supplements to wages and salaries:						
Employer contributions for employee pension and insurance funds	895.5	888.5	....	....	888.5	7.0
Employer contributions for government social insurance	402.7	402.0	....	....	402.0	0.7
Taxes on production and imports	**852.8**	....	**852.8**	....	**852.8**	**0.0**
Less: Subsidies	**43.5**	....	**43.5**	....	**43.5**	**0.0**
Gross operating surplus	**4,231.5**	....	....	**4,174.1**	**4,174.1**	**57.4**
Equals: Gross domestic product	**11,734.2**	**6,671.9**	**809.4**	**4,174.1**	**11,655.3**	**78.9**

1. GDP data are based on the NIPA values from the July 2005 annual revision.
GDP Gross domestic product

Appendix B

NAICS Industries for Which Gross Domestic Product by State Estimates are Available from 1997 to 2005

	1997 NAICS code		1997 NAICS code
Private industries	....	**Information**	**51**
		Publishing including software....................................	511
Agriculture, forestry, fishing, and hunting	**11**	Motion picture and sound recording industries	512
Crop and animal production	111–112	Broadcasting and telecommunications	513
Forestry, fishing, and related activities...................	113–115	Information and data processing services	514
Mining..	**21**		
Oil and gas extraction	211	**Finance and insurance**	**52**
Mining, except oil and gas	212	Federal Reserve banks, credit intermediation and	
Support activities for mining	213	related services..	521–522
		Securities, commodity contracts, investments	523
Utilities...	**22**	Insurance carriers and related activities	524
		Funds, trusts, and other financial vehicles	525
Construction	**23**		
		Real estate, rental, and leasing	**53**
Manufacturing..	**31–33**	Real estate..	531
		Rental and leasing services and lessors of intangible	
Durable goods	....	assets..	532–533
Wood product manufacturing...............................	321		
Nonmetallic mineral product manufacturing........	327	**Professional and technical services**	**54**
Primary metal manufacturing...............................	331	Legal services..	5411
Fabricated metal product manufacturing	332	Computer systems design and related services	5415
Machinery manufacturing	333	Other professional, scientific and technical services	5412–5414, 5416–5419
Computer and electronic product manufacturing	334		
Electrical equipment and appliance		**Management of companies and enterprises**	**55**
manufacturing..	335		
Motor vehicle, body, trailer, and parts		**Administrative and waste services**	**56**
manufacturing..	3361–3363	Administrative and support services	561
Other transportation equipment manufacturing ...	3364, 3365, 3366, 3369	Waste management and remediation services	562
Furniture and related product manufacturing.......	337		
Miscellaneous manufacturing	339	**Educational services**	**61**
Nondurable goods	....	**Health care and social assistance**............................	**62**
Food product manufacturing	311–312	Ambulatory health care services...............................	621
Textile and textile product mills	313–314	Hospitals and nursing and residential care facilities	622–623
Apparel manufacturing...	315–316	Social assistance	624
Paper manufacturing..	322		
Printing and related support activities.................	323	**Arts, entertainment, and recreation**	**71**
Petroleum and coal products manufacturing	324	Performing arts, museums, and related activities	711–712
Chemical manufacturing.......................................	325	Amusements, gambling, and recreation....................	713
Plastics and rubber products manufacturing	326		
		Accommodation and food services	**72**
Wholesale trade	**42**	Accommodation	721
		Food services and drinking places............................	722
Retail trade	**44–45**		
		Other services, except government	**81**
Transportation and warehousing, excluding			
Postal Service	**48–49**	**Government**...	**92**
Air transportation	481	Federal civilian	....
Rail transportation	482	Federal military..	....
Water transportation	483	State and local	....
Truck transportation	484		
Transit and ground passenger transportation	485		
Pipeline transportation..	486		
Other transportation and support activities............	487, 488, 492		
Warehousing and storage..	493		

Appendix C

SIC Industries for Which Gross Domestic Product by State Estimates are Available from 1963 to 1997

	1987 SIC code		1987 SIC code
Private industries..	....	**Transportation and public utilities**...................	**E**
		Transportation...	....
Agriculture, forestry, and fishing	**A**	Railroad transportation	40
Farms...	01–02	Local and interurban passenger transit	41
Agricultural services, forestry, and fishing........	07–09	Trucking and warehousing	42
		Water transportation	44
Mining	**B**	Transportation by air	45
Metal mining	10	Pipelines, except natural gas.........................	46
Coal mining...	12	Transportation services..................................	47
Oil and gas extraction	13	Communications..	48
Nonmetallic minerals, except fuels	14	Electric, gas, and sanitary services	49
Construction	**C**	**Wholesale trade**..	**F**
Manufacturing	**D**	**Retail trade**...	**G**
Durable goods...	....	**Finance, insurance, and real estate**................	**H**
Lumber and wood products	24	Depository institutions	60
Furniture and fixtures.....................................	25	Nondepository institutions	61
Stone, clay, and glass products.....................	32	Security and commodity brokers	62
Primary metal industries	33	Insurance carriers...	63
Fabricated metal products	34	Insurance agents, brokers, and service...........	64
Industrial machinery and equipment..............	35	Real estate	65
Electronic and other electric equipment........	36	Holding and other investment offices...............	67
Motor vehicles and equipment	371		
Other transportation equipment.....................	372–79	**Services**..	**I**
Instruments and related products	38	Hotels and other lodging places	70
Miscellaneous manufacturing industries........	39	Personal services	72
		Business services...	73
Nondurable goods..	....	Auto repair, services, and parking	75
Food and kindred products	20	Miscellaneous repair services	76
Tobacco products...	21	Motion pictures	78
Textile mill products.......................................	22	Amusement and recreation services	79
Apparel and other textile products	23	Health services...	80
Paper and allied products	26	Legal services..	81
Printing and publishing..................................	27	Educational services.......................................	82
Chemicals and allied products.......................	28	Social services...	83
Petroleum and coal products	29	Membership organizations	86
Rubber and miscellaneous plastics products.	30	Other services	84,87,89
Leather and leather products.........................	31	Private households	88
		Government	**J**
		Federal civilian...	91–96
		Federal military	97
		State and local...	91–96

Appendix D

Major Sources of State Data for the Estimates of Taxes on Production and Imports by Industry—Continues

Product/activity taxed	Major source of data	Industry affected
Federal excise taxes:		
Imported products	Collections of customs duties by port from Department of Treasury	Wholesale trade, food product manufacturing
Coal mining	Production of coal from DOE	Mining, except oil and gas
Alcoholic beverages	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Food product manufacturing
Tobacco	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Food product manufacturing
Transportation of persons and property by air	Passenger and freight enplanements by air from DOT	Air transportation
Chemicals and vaccines	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Chemical manufacturing
Firearms transfer	Personal income from BEA	Retail trade
Sport fishing equipment, bows, and arrows	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Miscellaneous manufacturing
Telephone and teletypewriter services	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Broadcasting and telecommunications
Electric detection / sonar devices	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Computer and electronic product manufacturing
Petroleum	Refinery inputs of crude oil	Petroleum and coal products manufacturing
Tires	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Plastics and rubber products manufacturing
Nuclear waste disposal	Generation of nuclear power from DOE	Utilities
Heavy-duty trucks	Payments into highway trust fund attributable to highway users from DOT	Wholesale trade
Highway use by heavy vehicles	Payments into highway trust fund attributable to highway users from DOT	Truck transportation, wholesale trade, and retail trade
Alcohol license	Personal income from BEA	Retail trade
Diesel and special motor fuels	Payments into highway trust fund attributable to highway users from DOT	Wholesale trade
Luxury retail	Personal income from BEA	Retail trade
Chemical and vaccines	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Chemical manufacturing
Aviation fuel (commercial and noncommercial) and gasoline used in noncommercial aviation	Consumption of aviation gas fuel and nongas fuel from DOE	Wholesale trade
Firearms and ammunition	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Fabricated metal product manufacturing
Electric outboard motors and devices	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Machinery manufacturing
Fuel used commercially on inland waterways	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Water transportation
"Gas guzzlers"	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Wholesale trade
Policies issued by foreign insurers	Unpublished estimates of wage and salary accruals from BEA	Insurance carriers and related activities
Wagering	Wage and salary disbursements for employees covered by unemployment insurance from BLS	Amusements, gambling, and recreation

BEA Bureau of Economic Analysis   DOE U.S. Department of Energy
BLS Bureau of Labor Statistics   DOT U.S. Department of Transportation

Major Sources of State Data for the Estimates of Taxes on Production and Imports by Industry—Table Ends

Product/activity taxed	Major source of data	Industry affected
State and local taxes:		
Amusement license and sales tax	Employee compensation from BEA	Amusements, gambling, and recreation; motion picture and sound recording industries
Building permits	Building permits from Census Bureau	Construction
Documentary and stock transfer	Census Bureau tabulations by state and industry	Securities, commodity contracts, investments; real estate; legal services
Franchise	Employee compensation from BEA	All industries except crop and animal product ("farms"), social assistance, and government
General sales tax	Sales tax receipts by industry	All industries except crop and animal production ("farms"), and federal government
Hunting and fishing license	Census Bureau tabulations by state	Forestry, fishing, and related activities
Insurance	Census Bureau tabulations by state	Insurance carriers and related activities
Alcohol license	Employee compensation from BEA	Food product manufacturing; wholesale trade; and retail trade
Alcohol sales	Census Bureau tabulations by state	Food product manufacturing; wholesale trade; and retail trade
Motor fuel sales	Census Bureau tabulations by state	Wholesale trade
Motor vehicle license	BEA tabulations for farms; Census Bureau tabulations for all other industries	All industries except government
Severance	Census Bureau tabulations by state	Forestry, fishing and related activities; oil and gas extraction; mining, except oil and gas; and utilities
Occupational and business license	Census Bureau tabulations by state	All industries except crop and animal production ("farms"), and government
Other TOPI	Employee compensation from BEA	All industries except crop and animal production ("farms"), and government
Parimutuel	Census Bureau tabulations by state	Amusements, gambling, and recreation
Tobacco	Census Bureau tabulations by state	Food product manufacturing
Public utility license	Employee compensation from BEA	Utilities, transportation and warehousing, and broadcasting and telecommunications
Public utility sales	Census Bureau tabulations by state	Utilities, transportation and warehousing, and broadcasting and telecommunications
Other selective sales	Census Bureau tabulations by state	All industries except crop and animal production ("farms"), and government
Property	Employee compensation from BEA	All industries except crop and animal production ("farms"), and government
Special assessments	Special assessments from Census Bureau	Real estate

BEA Bureau of Economic Analysis
BLS Bureau of Labor Statistics

DOE U.S. Department of Energy
DOT U.S. Department of Transportation

Appendix E

Major Sources of State Data for the Estimates of Gross Domestic Product by State and Industry—Continues

Industry	Benchmark years	Nonbenchmark years
Agriculture, forestry, fishing, and hunting:		
Crop and animal production ("farms")	Farm income and expenses from USDA	Same as benchmark
Forestry, fishing, and related activities	Wage and salaries from BEA	Same as benchmark
Mining	Value added and payrolls from census of mineral industries	Interpolated or extrapolated using value of production from DOE and USGS
Utilities	Income and expenses by company and generating capacity by operating plant for electric utilities from FERC and EIA, respectively; receipts, exports, and deliveries to consumers of natural gas by gas utilities from EIA; wage and salaries for sanitary service from BEA; company financial data from Statistics of Income, IRS	Same as benchmark
Construction	Value added and payrolls from census of construction industries	Interpolated or extrapolated using earnings from BEA
Manufacturing	Value added and payrolls from census of manufactures	Value added and payrolls from annual survey of manufactures
Wholesale trade	Revenues and payrolls from census of wholesale and retail trade	Interpolated or extrapolated using wages and salaries from BEA
Retail trade	Revenues and payrolls from census of wholesale and retail trade	Interpolated or extrapolated using wages and salaries from BEA
Transportation and warehousing, excluding Postal Service:		
Air transportation	Income and expenses by company and passenger enplanements from DOT	Same as benchmark
Rail transportation	For Class I and Class II railroads as a group, revenue ton-miles, and revenues and expenses from DOT; revenues, expenses and passenger boardings from Amtrak	Same as benchmark
Water transportation	Revenues and payrolls from census of transportation, communications, and utilities	Interpolated or extrapolated using wages and salaries from BEA
Truck transportation	Revenues and payrolls from census of transportation, communications, and utilities	Interpolated or extrapolated using wages and salaries from BEA
Transit and ground passenger transportation	Revenues and payrolls from census of transportation	Interpolated or extrapolated using wages and salaries from BEA
Pipeline transportation	Census data and state government data on revenue	Interpolated or extrapolated using wages and salaries from BEA
Other transportation and support activities	Revenues and payrolls from census of transportation	Interpolated or extrapolated using wages and salaries from BEA
Information	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Finance and insurance:		
Federal Reserve banks, credit intermediation and related services	Income and expenses from FDIC, FRB, OTS, and FHLBB	Same as benchmark
Securities, commodity contracts, investments	Revenues and payrolls from census of finance, insurance, and real estate	Interpolated or extrapolated using wages and salaries from BEA
Insurance carriers and related activities	Premiums paid and losses incurred by type of insurance and state from the National Association of Insurance Commissioners	Same as benchmark
Funds, trusts, and other financial activities	Wages and salaries from BEA	Same as benchmark

See the abbreviations defined at the end of the table.

Major Sources of State Data for the Estimates of Gross Domestic Product by State and Industry—Table Ends

Industry	Benchmark years	Nonbenchmark years
Real estate, rental, and leasing:		
Real estate	For 1990 and 2000, number and value of owner-occupied dwellings and number and rental value of renter-occupied dwellings from census of housing; Imputed rent from BEA; nonfarm personal income from BEA	Interpolated or extrapolated using nonfarm personal income from BEA
Rental and leasing services and lessors of intangible assets	Revenues and payrolls from census of finance, insurance, and real estate	Interpolated or extrapolated using wages and salaries from BEA
Professional and technical services	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Management of companies and enterprises	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Administrative and waste services	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Educational services	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Health care and social assistance	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Arts, entertainment, and recreation	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Accommodation and food services	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Other services, except government	Sales and payrolls from census of service industries	Interpolated or extrapolated using wages and salaries from BEA
Government:		
Federal civilian	Federal civilian employment from BLS; Generating capacity of Federal Power authorities; postal service revenues from USPS; volume of FHA mortgage insurance from HUD; premiums and indemnities of the Federal Crop Insurance Corporation from USDA; premiums received and amounts paid for losses by National Flood Insurance Program from FEMA; income and expenses of Federal Reserve banks from FRB; uranium sales from USEC; canteen sales from DVA	Same as benchmark
Federal military	Federal military employment from BLS	Same as benchmark
State and local	Revenues and expenses for 15 types of enterprises from Census Bureau; state and local government employment from BLS	Same as benchmark

BEA Bureau of Economic Analysis
BLS Bureau of Labor Statistics
DOD U.S. Department of Defense
DOE U.S. Department of Energy
DOT U.S. Department of Transportation
DVA U.S. Department of Veterans Affairs
EIA Energy Information Administration

FDIC Federal Deposit Insurance Corporation
FEMA Federal Emergency Management Agency
FHA Federal Housing Administration
FHLBB Federal Home Loan Bank Board
FRB Federal Reserve Board
HUD U.S. Department of Housing and Urban Development
IRS Internal Revenue Service

OTS Office of Thrift Supervision
USDA U.S. Department of Agriculture
USEC U.S. Enrichment Corporation
USGS U.S. Geological Survey
USPS U.S. Postal Service

Appendix F

Major Sources of State Data for the Estimates of Nontax Payments to Government

Product/activity taxed	Major source of data	Industry affected
Grazing fees	Grazing receipts from Federal lands from DOI	Crop and animal production ("farms")
Onshore and offshore mining rents and royalties	Federal rents and royalties From DOI	Oil and gas extraction
Miscellaneous rents and royalties	Wages and salaries from BEA	Real estate
Federal Reserve banking (assessments)	Assessments on Federal Reserve Banks from FRB	Federal Reserve banks, credit intermediation and related services

BEA Bureau of Economic Analysis
DOI U.S. Department of the Interior
FRB Federal Reserve Board

Frequently Asked Questions

1. When analyzing regional performance, should I use nominal or real chained-dollar GDP by state?

Comparisons of GDP by state chained-dollar growth rates and nominal dollar shares of GDP by state across industries or states and regions provide indications of the relative performance of industries, states, and regions. For example, comparing the growth rate of chained-dollar GDP by state for an industry to the growth rate of total chained-dollar GDP by state indicates whether that industry is raising or lowering the state's growth rate. Comparing the share of total GDP by state in nominal dollars that is accounted for by the GDP by state of an industry over time indicates whether that industry's claim on the state's resources is increasing or decreasing.

2. How can I compute chained dollar values for years 1977–1989?

We publish a full time series (1977–1997) of chain-weighted quantity indexes. These indexes can be used to reconstruct the complete time series of real GDP by state. The annual percent change in the quantity index series is equal to the annual percent change in the real dollar GDP by state series for a given industry and state. So the real GDP by state values can be extrapolated using the annual growth rate in the quantity index series.

3. How do I compute industry contributions to changes in real GDP by state?

BEA recommends using estimates of real economic growth that are based on chain-type quantity indexes or chained dollars. The method for computing contributions to growth is discussed in the article "A Preview of the 1999 Comprehensive Revision of the national income and product Accounts: Statistical Changes," in the October 1999 SURVEY OF CURRENT BUSINESS. This formula eliminates problems with the non-additivity of component industries to total product (GDP or GDP by state) when valued in chained dollars. An individual industry's contribution to the percent change in total

chained-dollar product is given by:

$$C\%\Delta_{i,t} = 100 \times \frac{((p_{i,t}/P_t^F) + p_{i,t-1}) \times (q_{i,t} - q_{i,t-1})}{\sum_j ((p_{j,t}/P_t^F) + p_{j,t-1}) \times q_{j,t-1}},$$

where P_t^F is the Fisher price index for the aggregate in period t relative to period $t-1$.

$P_{i,t}$ is the price of component i in period t; and

$q_{i,t}$ is the quantity of component i in period t.

For additional discussion of the issues involved in analyzing real economic growth based on chain-type quantity indexes or chained dollars measures, refer to the box, "Using Chained Dollar Estimates for Computing Contributions to Economic Growth: A Cautionary Note," in: Lum, Sherlene K. S. and Brian C. Moyer, "Gross Product by Industry, 1995–97," SURVEY OF CURRENT BUSINESS 78 (November 1998): 20–40.

4. How and when will the economic effects of Hurricane Katrina be reflected in BEA's regional income and product accounts?

● *How is State Personal Income affected by natural disasters such as Katrina?*

Natural disasters like Hurricane Katrina have two types of major effects on state personal income: they destroy property, and they disrupt the flow of income in the economy: typically reducing it in the short term and boosting it later. BEA's estimates reflect both types of effects.

Disruptions to the flow of income are generally embedded in the data on which the estimates are based. The impact of the natural disaster on personal income growth cannot be distinguished separately, however, because the source data record actual activity and do not attempt to separately identify the effects of the disaster. Nonetheless, in the short run, compensation in

many industries is likely to decline in areas directly hit by the hurricane because of a decline in production, while in some industries involved in the cleanup and repair (construction and health care and social assistance) compensation may increase. Similarly, compensation could increase in areas that are the recipients of evacuees, both from the increased activity to support these evacuees (e.g. doctors moving into the area) and to the extent that the evacuees themselves might find employment.

Estimates of property losses and of the associated insurance claims are incorporated as one-time effects: They increase both the consumption of fixed capital and business transfer payments. Damage to the property of household enterprises affects proprietors' income and rental income. They are reduced by the amount of uninsured losses measured by consumption of fixed capital less business transfer payments. Damage to consumer durable goods affects only personal current transfer receipts which are increased by the amount of the insured losses for these goods.

A table that identifies the impacts of the 2005 hurricanes is available at BEA's Web site, <www.bea.gov>.

How is Gross Domestic Product by state affected by natural disasters such as Katrina?

GDP by state is a measure of a state's current production of goods and services and it will reflect any disruption in that production. It is not directly affected by the loss of property (structures and equipment) produced in previous periods. GDP by state may be affected indirectly by the actions taken by consumers, businesses, and governments in response to disruptions in production or to the loss of property, but these responses are not amenable to precise quantification; moreover, the responses may be spread out over a long period of time. For example, rebuilding activity, which may occur over many months following a disaster, will typically be reflected in the regular source data used to estimate residential and nonresidential construction. There is no way to separate the disaster-related rebuilding from other construction activity.

Tourism and other types of consumer spending may be canceled or postponed in the face of a disaster; whether canceled or merely postponed, the effects will be embedded in the source data that are used to estimate GDP by state.

When will the economic effects of Hurricane Katrina be reflected in the State Personal Income estimates?

The estimates of personal income for the third quarter of 2005 were released December 20, 2005, and reflect the effects of Hurricane Katrina. This storm caused extensive damage, particularly in Louisiana, Mississippi, Alabama, and Florida; as a result, several components of state personal income could be affected.

Rental income of persons and proprietors' income will be reduced to the extent that there are uninsured losses of property owned by household enterprises. Business payments to persons, a component of personal current transfer receipts, will increase for the quarter, to the extent that there are net insurance settlements for damage to consumer durable goods.

Other effects of the hurricanes are embedded in BEA's source data and will not be identifiable, so BEA will not attempt to quantify them. However, employment statistics from the affected states—primarily Louisiana and Mississippi—may not be able to report employment accurately due to the significant disruption to the businesses in the affected areas. This is an area BEA will watch carefully.

When will the economic effects of Hurricane Katrina be reflected in the GDP by state estimates?

Because Hurricane Katrina struck the states surrounding the Gulf of Mexico in late August, 2005, the prototype accelerated GDP by state estimates for 2005 that were released on June 6, 2006, reflect the initial economic impacts of the hurricane. Since the impacts of Hurricane Katrina were so extensive, and the rebuilding of the infrastructure in the Gulf states may span many months, the GDP by state estimates for future years may also reflect economic impacts of the hurricane on these states.

Can RIMS multipliers be used to estimate the economic impacts of hurricanes and natural disasters such as Katrina?

In general, yes. In fact, RIMS was used to analyze the economic impacts of Hurricanes Andrew in 1992 and Charley in 2004, which, while devastating to those regions' residents, were not as catastrophic as Katrina. However, use RIMS multipliers for analyzing the impacts of natural disasters with care. Natural disasters can cause substantial changes to the structure of the local economy.

In the case of the New Orleans metropolitan area, as we now know, there was severe damage and flooding of residences and businesses in many parts of the area, and mandatory evacuation has been ordered for the entire city. Such a dramatic alteration of the structure of a local economy makes using multipliers from regional input-output models like RIMS highly problematic. Regional multipliers reflect the industry linkages in a local economy at a given time, and so are best used to study less catastrophic events where those

linkages are for the most part preserved.

See the RIMS User Handbook for more details on what factors need to be taken into account when using RIMS multipliers: <http://www.bea.gov/bea/ARTICLES/REGIONAL/PERSINC/Meth/rims2.pdf>.

In the case of other local areas in the Gulf Coast region, RIMS multipliers can be used to estimate the economic impacts of Katrina, as long as the damage did not result in major changes to the structure of the local economy. For example, if tourism declines because Katrina damaged some, but not all, of the casinos or hotels in the Gulfport-Biloxi area, then RIMS can be used to estimate the impact on the area of the decline in tourism. Similarly, if some of the manufacturing or other firms in the area were forced to close due to Katrina, RIMS multipliers could be used. For more details, please refer to the RIMS documentation on BEA's web site: <http://www.bea.gov/bea/regional/rims/>.

- *How large is the region in the total U.S. economy?*

Louisiana's gross domestic product is about 1.2 percent of U.S. GDP, but the state ranks first in the U.S. in terms of specialization in water transportation and third (behind Alaska and Wyoming) in terms of specialization in oil and gas extraction. While the New Orleans-Metairie-Kenner Metropolitan Statistical Area (MSA) only accounts for about 0.4 percent of U.S. personal income, the MSA accounts for over one-third of Louisiana's personal income.

Mississippi's gross domestic product is about 0.7 percent of U.S. GDP. Together, the Gulfport-Biloxi and Pascagoula MSAs account for 15 percent of Mississippi's personal income.

Alabama's gross domestic product is about 1.2 percent of U.S. GDP. The Mobile, Alabama MSA accounts for about 8 percent of Alabama's personal income.

- *How can I obtain further information about BEA's regional income and product accounts?*

For state personal income, go to BEA's Web site at <http://www.bea.gov/bea/regional/statelocal.htm>.

For gross domestic product by state, go to BEA's Web site at <http://www.bea.gov/bea/regional/gsp.htm>.

For RIMS multipliers, go to BEA's Web site at <http://www.bea.gov/bea/regional/rims/>.

5. Where can I obtain quarterly GDP by state data?

The gross domestic product (GDP) by state data series published by BEA contains annual estimates only. We do not estimate or publish quarterly GDP by state.

6. Why is GDP by state per employee so large for finance, insurance, and real estate, relative to the other industries?

This is due, in large part, to the real estate industry which includes an imputation for the rental value of owner-occupied housing. BEA treats homeowners as businesses, which pay rent to themselves. Therefore, homeowners contribute to the real estate industry's GDP by state even if they are not employed by the industry. In addition, like businesses, homeowners' property taxes paid to state and local governments are included as part of real estate TOPI.

7. Why does the sum-of-states nominal dollar GDP by state not equal nominal dollar GDP?

GDP by state excludes the wages and salaries and wage and salary supplements of Federal civilian and military personnel stationed abroad. GDP by state also excludes the capital consumption allowances associated with Federal government equipment and structures located abroad, and all military weaponry.

8. Are GDP by state data available for counties and metropolitan areas?

BEA neither estimates nor publishes gross product data for any geographical units below the state level at this time.

9. How can GDP by state be negative?

GDP by state is estimated as the sum of three components:
- Compensation of employees,
- Taxes on production and imports (TOPI), and
- Gross operating surplus.

Gross operating surplus includes the losses of corporations, proprietors' losses, and government subsidies—subsidies are subtracted from gross operating surplus. Consequently, gross operating surplus for an industry may be negative. When gross operating surplus is added to the industry's compensation and TOPI, the sum, GDP by state, may be negative.

10. Why do BEA's measures of value added differ from the Census measures for some industries?

For the nation, BEA defines gross domestic product by industry, often referred to as "value added," as an industry's gross output (sales or receipts and other operating income, commodity taxes and inventory change) minus its intermediate inputs (consumption of goods and services purchased from other industries or imported). The Census Bureau's measure of value added by industry differs conceptually from BEA's by

including the purchased services that are used in production of an industry's product, excluding excise and sales taxes from gross receipts, and not valuing inventories on a replacement cost basis.

For the states, further differences between the BEA measure of GDP by state and the Census value added measure arise because 1) for SIC industries, BEA assigns the value added by central administrative offices (CAOs) of multi-establishment firms to the states where the CAOs are located while Census assigns it to the states where the operating establishments administered by the CAOs are located; 2) there may be industry classification differences between the two series; and 3) for construction, BEA assigns GDP by state to the state where the construction is performed rather than to the state where the construction establishment is located.

11. How can the GDP by industry or GDP by state chained-weighted quantity indexes be re-based?

A quantity index measures the level of quantity produced, assuming the price does not change due to inflation or deflation. An advantage of chain-type quantity indexes is that they can easily be re-based to a new base year because these indexes are not subject to bias depending on the base year selected. To re-base the quantity index series, simply divide every quantity index value in the series by the quantity index value of the desired new base year. This procedure sets the value for the new base year equal to 1.0, and all other indexes in the series are re-based to that new base year. To convert to the usual index number format, multiply all numbers in the series by 100.

12. Where can I get more information about BEA's products relating to GDP by state?

For further information on the GDP by state estimates, call the GDP by state staff at: (202) 606–5340 or call a GDP Industry analyst directly or e-mail <gdpbystate@bea.gov>.

13. What are taxes on production and imports (TOPI)?

Taxes on production and imports (TOPI) consist of tax liabilities, such as general sales and property taxes, that are chargeable to business expense in the calculation of profit-type incomes. Special assessments are also included.

TOPI is the sum of state and local TOPI, which is primarily nonpersonal property taxes, licenses, and sales and gross receipts taxes, and Federal TOPI, which is composed of excise taxes on goods and services.

14. Why are the quantity indexes equal to zero for some industries even though they do have GDP by state?

If the base year (2000) nominal GDP by state value is zero, the quantity indexes for the entire time series are incomputable because their values are mathematically undefined, even if GDP by state is nonzero for years other than the base year. In these cases the quantity indexes have been set equal to zero, even though their values are technically undefined.

15. What is the difference between company data and establishment data?

The headquarter offices of multi-establishment companies may be located in a state other than the state(s) where the operating establishments are located. For most industries and GDP by state components, the estimates are based on establishment data by state which are used directly. For selected industries—railroad transportation, transportation by air, and electric utilities, the estimates of other capital charges are based on tabulations of company net income and expenses. The company tabulations are allocated to the states in which the company has operating establishments based on indicators of capital stock or its use—for example, electric generating capacity.

16. What does the residual term "not allocated by industry" mean?

The nonadditivity of the chained (2000) dollars is reflected in a residual "not allocated by industry," which is calculated as total real (chained 2000 dollars) GDP by state minus the sum of the real GDP by state for the detailed industries.

Suggested Reading

"Experimental Estimates of Gross State Product by Industry," Bureau of Economic Analysis Staff Paper 42, May 1985: Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402.

Aman, Gerard P., George K. Downey, and Sharon D. Panek, "Comprehensive Revision of Gross State Product: Accelerated Estimates for 2003, Revised Estimates for 1977–2002," SURVEY OF CURRENT BUSINESS 85 (January 2005): 80–106.

Fixler, Dennis J., Marshall B. Reinsdorf, and George M. Smith, "Measuring the Services of Commercial Banks in the NIPAs," SURVEY OF CURRENT BUSINESS 83 (September 2003): 33–44.

Kendrick, John W. and C. Milton Jaycox, "The Concept and Estimation of Gross State Product." The Southern Economic Journal 32 (October 1965): 153–168.

Landefeld, J. Steven and Bruce T. Grimm, "A Note on the Impact of Hedonics and Computers on Real GDP," SURVEY OF CURRENT BUSINESS 80 (December 2000): 17–22.

Landefeld, J. Steven and Robert P. Parker, "BEA's Chain Indexes, Time Series, and Measures of Long-Term Economic Growth," SURVEY OF CURRENT BUSINESS 77 (May 1997): 58–68.

Lawson, Ann M., Kurt S. Bersani, Mahnaz Fahim-Nader, and Jiemin Guo, "Benchmark Input-Output Accounts of the United States, 1997," SURVEY OF CURRENT BUSINESS 82 (December 2002): 19–109.

Lenze, David G., "State Personal Income: Second Quarter of 2004 and Revised Estimates for 2001–2004:I," SURVEY OF CURRENT BUSINESS 84 (October 2004): 109–159.

Lenze, David G., "State Personal Income: Second Quarter of 2005 and Revised Estimates for 2002–2005:I," SURVEY OF CURRENT BUSINESS 85 (October 2005): 111–160.

Moulton, Brent R. and Eugene P. Seskin, "A Preview of the 1999 Comprehensive Revision of the National Income and Product Accounts: Statistical Changes," SURVEY OF CURRENT BUSINESS 79 (October 1999): 6–17.

Moulton, Brent R. and Eugene P. Seskin, "A Preview of the 2003 Comprehensive Revision of the National Income and Product Accounts: Changes in Definitions and Classifications," SURVEY OF CURRENT BUSINESS 83 (June 2003): 17–34.

Moyer Brian C., Mark A. Planting, Paul V. Kern, and Abigail M. Kish, "Improved Annual Industry Accounts for 1998–2003: Integrated Annual Input-Output Accounts and Gross-Domestic-Product-by-Industry Accounts," SURVEY OF CURRENT BUSINESS 84 (June 2004): 21–57.

Parker, Robert P., "Note on Alternative Measures of Gross Product by Industry," SURVEY OF CURRENT BUSINESS 77 (November 1997): 84–85.

Parker, Robert P. and Eugene P. Seskin, "Annual Revision of the National Income and Product Accounts: The Statistical Discrepancy," SURVEY OF CURRENT BUSINESS 77 (August 1997): 19.

Renshaw, Vernon, Edward A. Trott, Jr., and Howard L. Friedenberg, "Gross State Product By Industry," SURVEY OF CURRENT BUSINESS 68 (May 1988): 39–46.

Smith, George M. and Sherlene K. S. Lum, "Annual Industry Accounts: Revised Estimates for 2002–2004," SURVEY OF CURRENT BUSINESS 85 (December 2005): 18–69.

Sporing, Jr, John, George K. Downey, and John R. Kort, "Further Integrating BEA's Economic Accounts: Introducing Annual Input-Output Estimates into the Gross State Product by Industry Accounts," BEA Working Paper WP2005–04, April 18, 2005.

Triplett, Jack E., "Economic Theory and BEA's Alternative Quantity and Price Indexes," Survey of Current Business 72 (April 1992): 49–52.

Woodruff III, Clifford H., Sharon D. Panek, and Eric C. Erickson, "Gross State Product: Advance Estimates for 2005 and Revised Estimates for 1998–2004," Survey of Current Business 86 (July 2006): 108–132.

Young, Allan H., "Alternative Measures of Change in Real Output and Prices," Survey of Current Business 72 (April 1992): 32–48.

Young, Allan H., "An Introduction to National Economic Accounting," Survey of Current Business 65 (March 1985): 59–76.

Glossary

Additive, additivity: A characteristic of a measurement series whereby the summed components equal the aggregate.

Advance gross state product (GDP) by state: The first estimate of gross domestic product (GDP) by state. It is released six months after the end of the calendar year and is based on source data that are incomplete and subject to revision.

Allocation procedures: Allocation procedures are used in the derivation of GDP by state estimates either because the data for the GDP by state components may not be available for the states or may not be as comprehensive or reliable as the national data. In these cases, the national estimate of a component is allocated to the states in proportion to the state shares of an economic (or allocating) data series that is related to the component that is being allocated. In some cases, it is necessary to ensure that an estimated GDP by state series matches a set of national controls for an industry or component, and all-industry/component control totals for the states. In these cases, a *dual allocation* procedure is used. In a dual allocation procedure the elements within a matrix are adjusted to simultaneously sum to known row and column totals, with national totals serving as the column totals and the state totals as the row totals. The allocating series is inserted in the matrix and serves as the initial element set. These initial elements are then adjusted alternately by allocation to sum first to the column totals and then to the row totals (a process sometimes referred to as *rocking the matrix*). If the row and column totals are mutually consistent, the matrix elements will converge to a solution that simultaneously satisfies both the row and the column constraints.

Annual input-output (I-O) accounts: Set of I-O tables—make table, use table, direct requirements table, and total requirements tables—that are an update of the most recent benchmark I-O accounts. Annual tables are consistent with the gross domestic product (GDP)-by-industry accounts, but incorporate less comprehensive source data than those used for the benchmark I-O tables.

Base period: The period from which the weights for a measurement series are derived. The national income and product accounts (NIPAs) currently use the year 2000 as the base period.

Benchmark input-output (I-O) accounts: Statistical description of the production of goods and services and the transaction flows of goods and services between different producing sectors of the economy and to different components of final use. These accounts are presented in four tables: make table, use table, and two requirements tables. They are prepared primarily from economic census data and are presented at the 95- and 480-industry levels of detail.

Benchmark survey: A census intended to cover the universe of potential survey respondents, in terms of the value of selected data items. The most comprehensive survey in terms of coverage and number of data items collected. Data collected in benchmark surveys are treated as "actual" values from which annual "estimates" are extrapolated (or interpolated) based on sample surveys in nonbenchmark years. Benchmark surveys generally occur every five years.

Business current transfer payments (net): Net payments by businesses to persons, government, and the rest of the world for which no current services are performed. Related terms: business current transfer payments to persons (net), business current transfer payments to government (net), business current transfer payments to the rest of the world (net).

Business sector: All corporate and noncorporate private entities organized for profit and certain other entities that are treated as businesses in the national income and product accounts (NIPAs), including mutual financial institutions, private noninsured pension funds, cooperatives, nonprofit organizations that primarily serve businesses, Federal Reserve banks, federally-sponsored credit agencies, and government enterprises.

Capital Consumption Adjustment (CCAdj): The difference between private tax-return-based capital consumption allowances for corporations and nonfarm proprietorships and capital consumption based on the use of uniform service lives, straight-line depreciation, and replacement cost. In the GDP by state estimates, the CCAdj must be removed from the GDP by state proprietors' estimates because the CCAdj is not included in the GDP by industry proprietors' estimates. Excluding the CCAdj from the state and national proprietors' estimates may overstate proprietors' costs and understate their profits.

Capital consumption allowance (CCA), (private): Consists of tax-return-based depreciation charges for corporations and nonfarm proprietorships and of historical-cost depreciation (calculated by BEA) for farm proprietorships, rental income of persons, and nonprofit institutions.

Capital expenditures: Expenditures made to acquire, add to, or improve property, plant, and equipment (PP&E). PP&E includes: land, timber, and minerals; structures, machinery, equipment, special tools, and other depreciable property; construction in progress; and tangible and intangible exploration and development costs. Changes in PP&E due to changes in entity—such as mergers, acquisitions, and divestitures—or to changes in accounting methods are excluded.

Chained-dollar estimate: A measure to approximate the chain-type index level and is calculated by taking the current-dollar level of a series in the base period and multiplying it by the change in the chain-type quantity index number for the series since the base period. Chained-dollar estimates correctly show growth rates for a series, but are not additive in periods other than the base period.

Chained-type index: Index that is based on the linking (chaining) of indexes to create a time series. Annual chain-type Fisher indices are used in BEA's national income and product accounts (NIPAs) whereby Fisher ideal price indices are calculated using the weights of adjacent years. Those annual changes are then multiplied (chained) together, forming the chain-type index time series.

Change in private inventories: The change in the physical volume of inventories owned by private business, valued at the average prices of the period. It differs from the change in the book value of inventories reported by many businesses; the difference is the inventory valuation adjustment (IVA).

Compensation of employees: Gross domestic product by state compensation equals the sum of SPI wages and salaries (excluding other, net wages and salaries of persons employed by international organizations) adjusted for wage accruals less disbursements (WALD), plus SPI employer contributions for employee pension and insurance funds, plus employer contributions for social insurance, minus an overseas adjustment for federal civilian and military personnel stationed abroad.

Consumption of fixed capital (CFC): The charge for the using up of private and government fixed capital located in the United States. It is the decline in the value of the stock of fixed assets due to wear and tear, obsolescence, accidental damage, and aging. For general government and for nonprofit institutions that primarily serve individuals, CFC is a measure of the value of the current services of the fixed assets owned and used by these entities.

Control: An economic aggregate, usually a national total, to which state components are required to sum.

Corporate Capital charges: One of four summary GDP by state income components, composed of corporate profits with inventory valuation adjustment (IVA), corporate capital consumption allowances (CCA), business transfer payments, net interest, rental income of persons, and subsidies less current surplus of government enterprises.

Corporate profits with IVA and CCAdj: This measure—profits from current production—is the income that arises from current production, measured before income taxes, of organizations treated as corporations in the national income and product accounts (NIPAs). With several differences, this income is measured as receipts less expenses as defined in Federal tax law. Among these differences are: Receipts exclude capital gains and dividends received; expenses exclude bad debt, depletion, and capital losses; inventory withdrawals are valued at current cost; and depreciation is on a consistent accounting basis and valued at current replacement cost.

Current surplus of government enterprises: The current operating revenue and subsidies received by government enterprises from other levels of government less the current expenses of government enterprises.

Current tax receipts: Tax revenues received by government from all sources. It is the sum of personal current taxes, taxes on production and imports and taxes on corporate income.

Current-dollar estimate: The market value of an item. It reflects prices and quantities of the period being measured.

Disclosure avoidance (D): BEA is legally required to safeguard the confidentiality of the information that it receives. When data cannot legally be displayed in a data table or file, a (D) appears denoting the suppression of a data cell because of disclosure considerations. In data files which require numeric values, the special numeric code 9999 is inserted to indicate a "D."

Disposable personal income: Total after-tax income received by persons; it is the income available to persons for spending or saving.

Double deflation: Technique for estimating real value added by industry in the gross domestic product (GDP)-by-industry accounts. Under this procedure, an industry's gross output and its intermediate inputs are deflated separately—hence, the term "double deflation." Real value added is then estimated as the difference between deflated, or real, gross output and real intermediate inputs.

Durable goods: Tangible products that can be stored or inventoried and that have an average life of at least three years.

Employer contributions for employee pension and insurance funds: A component of both personal income and GDP by state that includes employer payments to private pension and profit-sharing plans, government employee retirement plans, private group health and life insurance plans, privately administered workers' compensation plans, supplemental unemployment benefit plans, and several minor categories of employee compensation. It was formerly called "other labor income."

Employer contributions for social insurance (ECSI): Consist of employer payments under the following programs: old age, survivors, and disability insurance (Social Security), hospital insurance, unemployment insurance, railroad retirement, pension benefit guaranty, veterans' life insurance, publicly-administered workers' compensation, military insurance, and temporary disability insurance. Although these employer contributions to publicly-administered social insurance programs are treated as a cost of production, and are included in the calculation of GDP by state, they are not treated as part of income when accounting for personal income. Instead, the payments from the programs are counted as personal income when they are paid out to individuals.

Enterprise: A business, service, or membership organization consisting of one or more establishments under common, direct or indirect, ownership or control. It is the highest level of establishment aggregation. An enterprise may vary in composition, ranging from a single-establishment company to a complex family of parent and subsidiary companies (firms under common ownership or control).

Establishment: Business or industrial unit at a single geographic location that produces or distributes goods or performs services, for example, a single store or factory.

Extrapolation: A method used to derive a first approximation to selected GDP by state components for the years that are beyond the latest (or earliest) benchmark year data, or which are beyond the range of a data series usually used as an allocation series for the component. Either a linear or growth rate procedure may be used, depending upon the component that is being extrapolated.

Factor income: Labor and property earnings from current production. In national income, it is the incomes accruing to labor and property of U.S. residents, which include compensation of employees (received), proprietors' income, rental income of persons, and corporate profits.

First approximation: The initial estimate of an economic component, when summed across all states, may not equal the national total. This requires an allocation to the states based on the national total.

Fisher ideal price index: The geometric mean of the Laspeyres and Paasche price indexes. The Fisher index is superior to either the Laspeyres or the Paasche index if the structure of relative prices in the economy changes between the base period and the current period.

General government sector: Includes production by all Federal, state, and local government agencies except for government enterprises.

Government enterprises: Government agencies that cover a substantial portion of their operating costs by selling goods and services to the public and that maintain their own separate accounts.

Gross domestic income (GDI): Gross domestic income (GDI) is measured as the sum of costs incurred and incomes earned in the production of gross domestic product (GDP). In theory, GDI should equal GDP, but in practice they differ because their components are estimated using largely independent and less-than-perfect source data. The difference between the two is termed the statistical discrepancy. The statistical discrepancy does not exist for NAICS estimates because the NIPAs have been reconciled to account for these differences.

Gross domestic product (GDP) price index: Measures the prices paid for goods and services produced by the U.S. economy and is derived from the prices of personal consumption expenditures (PCE), gross private domestic investment, net exports of goods and services, and government consumption expenditures and gross investment. It differs from the gross domestic purchases price index by ignoring price changes in imports of goods and services and including price changes in exports of goods and services.

Gross domestic product (GDP): The market value of the goods and services produced by labor and capital in the United States in a single year. GDP replaced GNP as the featured measure of U. S. production in 1991.

Gross domestic product by industry: Gross product by industry is the contribution of each industry and government to the nation's output, or GDP. An industry's GDP, often referred to as its "value added," is equal to its gross output (sales and receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (consumption of goods and services purchased from other industries or imported).

Gross domestic product by state: Formally called gross state product (GSP), it is the measure of a state's output; GDP by state is the value added in production by the labor and capital located in a state. GDP by state for a state is derived as the sum of the GDP by state originating in all industries in the state. In concept, an industry's GDP by state, referred to as its "value added," is equivalent to its gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (consumption of goods and services purchased from other U. S. industries or imported). Thus, GDP by state is often considered the state counterpart of the nation's GDP, BEA's featured measure of U.S. output. In practice, GDP by state estimates are measured as the sum of the distributions by industry and state of the components of gross domestic income—that is, the sum of the costs incurred and incomes earned in the production of GDP.

Gross national product (GNP): The market value of goods and services produced by labor and property supplied by U.S. residents, regardless of where they are located. It was used as the primary measure of U.S. production prior to 1991, when it was replaced by gross domestic product (GDP).

Gross operating surplus (GOS): Value derived as a residual for most industries after subtracting total intermediate inputs, compensation of employees, and taxes on production and imports less subsidies from total industry output. Gross operating surplus includes consumption of fixed capital (CFC), proprietors' income, corporate profits, nontax payments, and business current transfer payments (net). Prior to 2003, it was referred to as other value added or property-type income.

Gross output: Represents the market value of an industry's production, including commodity taxes, and an adjustment for inventories. GDP from the annual industry accounts, often referred to as value added, is obtained as gross output less intermediate goods and services purchased. Current-dollar and

real gross output estimates are provided for the detailed non-manufacturing industries and are used to compute industry estimates of gross output at the published industry level.

Households and institutions sector: Includes all production by households, which consists of families and unrelated individuals, and by nonprofit institutions that primarily serve households (NPISHs).

Implicit price deflator (IPD): The ratio of the current-dollar value of a series, such as gross domestic product (GDP), to its corresponding chained-dollar value, multiplied by 100.

Imputation: Imputations place a market value on certain transactions that do not occur in the market economy. Therefore, they cannot be seen in its records, but are part of the production of goods and services and so need to be included in the measures of economic activity. Imputed interest paid by depository institutions and imputed net rental income of owner-occupied nonfarm dwellings are two examples of imputations.

Input-output (I-O) accounts: Show the relationships between all the industries in the economy and all the commodities that these industries produce and use. The estimates of purchases of commodities are shown in producers' prices. The I-O accounts consist of the make table, use table, direct requirements table, and total requirements tables. The make and use table are prepared in two different methods. The first method uses the Standard Industrial Classification System (SIC) or the North American Industry Classification System (NAICS). The second method begins with the SIC or NAICS but includes adjustments (redefinitions and reclassifications) that move some secondary products from one industry to another to attain a common input structure for commodities produced by industries. The direct requirements table and total requirements tables are computed from the make and use tables with redefinition and reclassifications.

Input-output (I-O) output multipliers: Estimate of output required to satisfy a given level of final use. There are three I-O output multipliers, corresponding to the total requirements tables. The first multiplier shows the total commodity output required to deliver a dollar of a commodity to final uses; the second one shows the total industry output required to deliver a dollar of a commodity to final uses, while the third one shows the total industry output required to deliver a dollar of an industry's output to final uses.

Intermediate purchases: Purchases of intermediate inputs made by industries or government. Related terms: final uses, input-output (I-O) accounts.

Intermediate inputs: Goods or services that are used in the production process to produce other goods or services rather than for final consumption.

Interpolation: A procedure used to derive a first approximation to a GDP by state component for years between the benchmark years, or for years for which the usual allocation data series is not available. Either a linear or growth rate procedure may be used depending on the component that is being interpolated.

Inventory valuation adjustment (IVA): For corporations, the difference between the cost of inventory withdrawals as valued in determining profits before tax and the cost of withdrawals valued at current replacement cost. In a period of rising prices, the IVA will be negative to adjust for increases in inventory value not related to current production. A similar adjustment is applied to nonfarm proprietors' income.

Kendrick-Jaycox: A mathematical technique, developed by John Kendrick and C. Milton Jaycox, used to derive GDP by state by industry by "blowing up" detailed state industry earnings and then allocating those derived GDP by state estimates to national controls.

Laspeyres price index: A fixed-weighted price index that is computed as the sum of base-period quantities valued at current-period prices divided by the sum of base-period quantities valued at base-period prices.

Local area personal income: Income that is received by, or on behalf of, all persons who live in a local area. It is calculated as the sum of wage and salary disbursements, supplements to wages and salaries,

proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. Estimates of local area personal income are presented by the place of residence of the income recipients. All estimates of local area personal income are in current dollars (not adjusted for inflation).

Location quotient (LQ): An analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). An LQ is computed as an industry's share of a regional total for some economic statistic (earnings, GDP by state, employment, etc.) divided by the industry's share of the national total for the same statistic. For example, an LQ of 1.0 in mining means that the region and the nation are equally specialized in mining; while an LQ of 1.8 means that the region is relatively more specialized than the nation in mining.

National income and product accounts (NIPAs): BEA's economic accounts that display the value and composition of national output and the distribution of incomes generated in its production.

Nontax payment: A government receipt for a good or service that is administrative or regulatory in nature; includes regulatory and inspection fees, special assessments, fines and forfeitures, rents and royalties, and donations.

North American industry classification system (NAICS): An industry classification system that is constructed within a single conceptual framework. Economic units that have similar production processes are classified in the same industry, and the lines drawn between industries demarcate, to the extent practicable, differences in production processes. NAICS was developed to provide common industry definitions for Canada, Mexico and the United States. It replaces the Standard Industrial Classification (SIC) system formerly used by U. S. statistical agencies.

Other corporate capital charges: Includes corporate profits before taxes, net interest, corporate inventory valuation adjustment, corporate capital consumption allowance (CCA), business transfer payments, and subsidies. For the government industries, other capital charges include the consumption of fixed capital and subsidies less current surplus of government enterprises.

Overseas adjustment: An adjustment made to the national estimates of employee compensation to exclude the wages and salaries and related components of the income of U. S. residents employed abroad (e.g., military personnel stationed abroad). A similar adjustment excludes the consumption of fixed capital attributable to federal military installations abroad. These adjusted national estimates are used in the estimation of GDP by state because GDP by state does not include economic activity that takes place outside the U. S.

Paasche price index: A price index that does not assume a fixed consumption pattern; it is computed by dividing the product of current prices times current quantities over the product of base period prices times current quantities.

Personal income: Income received by persons from all sources. It includes income received from participation in production as well as from government and business transfer payments. It is the sum of compensation of employees (received), supplements to wages and salaries, proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, personal income receipts on assets, and personal current transfer receipts, less contributions for government social insurance.

Property-type income (PTI): Comprises proprietors' income and other capital charges.

Proprietors' income: Includes income of unincorporated establishments, rental income of persons, proprietors' inventory valuation adjustment, and non-corporate capital consumption allowance (CCA).

Quantity indexes: Quantity indexes for GDP by state are Fisher indexes calculated using a formula consisting of combinations of prices and quantities for the same year, and indexes of relative prices for two adjacent years.

Real GDP by state: An inflation-adjusted measure of each state's output that is based on national prices for the goods and services produced within that state. BEA prepares estimates of real GDP by state in millions of chained dollars. The estimates of real GDP by state are derived by applying national implicit price deflators to the current-dollar GDP by state estimates be detailed industry. These estimates of real GDP by state reflect the uniqueness of each state's industry mix, but they do not reflect differences by state in the prices of goods and services produced for local markets.

Rental income of persons with capital consumption adjustment: The net income of persons received from the rental of real property, except for the income of persons primarily engaged in the real estate business; the imputed net rental income of the owner-occupants of farm and nonfarm dwellings, and the royalties received by persons from patents, copyrights, and the rights to natural resources.

RIMS II multipliers: Estimates of regional input-output multipliers for any state, county, or combination of states or counties. The multipliers estimate the impact from changes in final demand on one or more regional industries in terms of output, employment, and labor earnings. The multipliers are based on estimates of local area personal income and on the national input-output (I-O) accounts.

Standard Industrial Classification (SIC): A U. S. industry classification system defining and numerically delineating the various industries in the economy, prior to 1997.

Statistical discrepancy: The difference between gross domestic product (GDP) and gross domestic income (GDI). The statistical discrepancy exists only for SIC estimates.

Subsidies: The monetary grants paid by government agencies to private business or to government enterprises at another level of government.

Supplements to wages and salaries: Comprised of employer contributions to social insurance funds and other labor income. Employer contributions are included in GDP by state but not in personal income, which instead counts payments from these funds as income when the payments are received by individuals.

Taxes on production and imports (TOPI): Consists of Federal excise taxes and customs duties, state and local sales taxes, property taxes (including residential real estate taxes), motor vehicle licenses, severance taxes, and special assessments. TOPI does not include nontax payments, whereas indirect business tax and nontax liability (IBT), as it was formerly known, did.

Value added: The difference between an establishment's total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). For GDP by state, an industry's value added includes compensation of employees, indirect business tax liability and nontax liability, and property-type income (mainly capital charges).

Wage accruals less disbursements (WALD): SPI, for purposes of accounting for personal income, measures wages and salaries on a cash-flow basis. GDP by state, on the other hand, accounts for the costs of production on an accrual basis. In order to account for the difference between annual wage and salary disbursements and accruals, an adjustment is made to the wage and salary estimates prepared by SPI.

Wages and salaries: BEA's SPI accounts measure wage and salary disbursements before deductions, such as social security contributions and union dues, and they include the compensation of corporate officers; commissions, tips, and bonuses; voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans; and receipts in kind, or pay-in-kind. The measure reflects the amount of wages and salaries disbursed, but not necessarily earned, during the year. That is, SPI, for purposes of accounting for personal income, measures wages and salaries on a cash-flow basis. GDP by state, on the other hand, accounts for the costs of production on an accrual basis. In order to account for the difference between annual wage and salary disbursements and accruals, an adjustment is made to the wage and salary estimates prepared by SPI. This adjustment is referred to as the WALD adjustment, for "wage accruals less disbursements."