

# A Guide to the National Income and Product Accounts of the United States

This guide presents information on the structure, definitions, and presentation that underlie the national income and product accounts (NIPAs) produced by the Bureau of Economic Analysis. The NIPAs show the composition of production and the distribution of incomes earned in production. Thus, they represent a critical element of the U.S. economic accounts, which are designed to provide a consistent and comprehensive picture of the Nation's economy. The NIPAs feature several widely followed measures of aggregate U.S. economic activity, including gross domestic product (GDP), gross domestic income (GDI), personal income, and personal saving among others. This guide is organized as follows:

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## Background and History of the NIPAs

The estimation of national income was initiated during the early 1930s, when the lack of comprehensive economic data frustrated the efforts of Presidents Hoover and Roosevelt to design policies to combat the Great Depression. In response to this need, the Department of Commerce commissioned Simon Kuznets of the National Bureau of Economic Research (NBER) to develop estimates of national income. Professor Kuznets headed a small group within the Bureau of Foreign and Domestic Commerce's Division of Economic Research. Professor Kuznets coordinated the work of researchers at the NBER in New York and his staff at Commerce. The estimates were presented in a report to the Senate in 1934, *National Income, 1929–32*.

The entry of the United States into World War II led to increased demand for data that could be used for wartime planning. Early in 1942, annual estimates of gross national product (GNP) were introduced to complement the estimates of national income. In addition, estimates were developed to detail how income was generated, received, and spent by various sectors of the economy.

The U.S. national income and product statistics were first presented as part of a complete and consistent accounting system in the July 1947 supplement to the SURVEY OF CURRENT BUSINESS. The supplement contained 48 tables covering the years 1929–46. All estimates were presented in current dollars; no adjustments were yet made for changes in purchasing power. Quarterly estimates were available for only a few of the aggregates (national income, GNP, and personal income, and their major components). Monthly estimates were presented for personal income and its major components.

In 1951, annual estimates of real GNP and of implicit price deflators were introduced as supplementary tables. Real GNP was calculated by holding fixed the prices of a particular base year that is—GNP was calculated in “constant dollars.” In 1954, these inflation-adjusted estimates were formally integrated into the standard NIPA tables.

Another revision, published in 1958, introduced changes in the accounting system and added new information to the accounts. Five summary accounts were adopted as a concise, general presentation of output, income, outlays, foreign transactions, saving, and investment. Quarterly estimates of real GNP were introduced. Government sector tables provided a new breakdown of expenditures by type and function for the Federal Government and for state and local governments. The foreign transactions tables were expanded in detail and integrated with the balance of payments accounts. Regional estimates were introduced, as were estimates of the net stock of fixed assets in manufacturing.

In the 1965 comprehensive revision, for the first time, the components of GNP were benchmarked to the detailed estimates contained in the 1958 input-output table, which provided a better understanding of the structural relationships within the economy.

During the 1960s and 1970s, the estimates of capital stock were expanded to cover all business and government owned fixed assets and consumer durable goods. In 1976, in order to provide a more consistent valuation, the estimates of consumption of fixed capital (CFC) were shifted to a current-cost basis. Previously, the estimates were on a book-value basis—that is, valued at historical cost—reflecting a mixture of prices for the various years in which the assets were acquired.

In 1985, BEA introduced quality-adjusted price indexes for computers and peripheral equipment that were developed with the assistance and advice of researchers from the IBM Corporation. The indexes, which were based on a statistical technique known as “hedonic” regression, adjusted for the rapid improvements in speed and capacity of computer equipment. These hedonic price indexes provide improved measures of price change for computers and peripheral equipment during periods when quality characteristics change rapidly and when prices decline as new products are introduced.

In 1991, BEA changed its featured measure of U.S. production from GNP to GDP. GDP covers the goods

and services produced by labor and property located in the United States and is thus consistent with key economic indicators of employment, productivity, and industry output. The change also facilitated comparisons of economic activity in the United States with that in other countries.

In 1993, the *System of National Accounts 1993 (SNA 1993)* was adopted by the international community in order to facilitate international comparisons of national economic statistics and to serve as a guide for countries as they develop their economic accounting systems.<sup>1</sup> BEA actively participated in preparing *SNA 1993* and announced its plan to move toward consistency with *SNA 1993*. Since then, the major improvements in the NIPAs have been designed, at least in part, to incorporate the SNA's concepts and definitions wherever feasible.<sup>2</sup>

In 1996, BEA introduced several major improvements to the NIPAs. BEA began estimating the changes in real GDP and its components by chaining together year-by-year quantity changes that were calculated using the Fisher index formula, rather than estimating real GDP on the basis of prices of a single, arbitrary base year.<sup>3</sup> Government expenditures for equipment and structures were recognized as fixed investment, thereby providing a more complete measure of investment through the consistent treatment of fixed assets whether purchased by the public or the private sector. The method for calculating CFC was changed to reflect the results of studies on the prices of used equipment and structures in resale markets that found that depreciation generally tends to follow a geometric pattern.

The 1999 comprehensive revision of the NIPAs further improved the definitions underlying the accounts and the statistical underpinnings of the current-dollar estimates, quantities, and prices in the accounts. For example, business and government expenditures for software were recognized as fixed investment. Government employee retirement plans were reclassified so that they would be treated similarly to private pension plans. A new method was introduced for calculating the real value of unpriced bank services by incorporating measures of banking activity. The consumer price indexes that were used for deflating personal consumption expenditures (PCE) were revised back to

1978 to reflect the use of a geometric mean formula.

The most recent comprehensive revision of the NIPAs, which was released beginning in 2003, further improved and updated the accounts. For example, a more complete and accurate measure of insurance services was adopted that includes estimates of the implicit services provided by property and casualty insurance companies; the new measure eliminates large swings in measured insurance services associated with catastrophic losses. An improved measure of banking services that includes the services received by borrowers was introduced; previously, such services were only allocated to depositors. A new treatment of government activity that recognizes that governments produce services and that goods and services purchased by governments are intermediate inputs was adopted. An expanded definition of national income that includes all net incomes earned in production was introduced; the new definition is more consistent with international guidelines. The presentation of the NIPAs was changed to reflect these improvements and to introduce a redesigned set of tables that provides more information in an easier to use format and that offers more flexibility for the addition of new tables. The new tables also improve the comparability of the NIPAs with other U.S. accounts (such as the Federal Reserve Board's flow of funds accounts) and with accounts of other nations and the System of National Accounts.

The improvements introduced over the years have reflected not only BEA's own experience, research, and strategic planning but also the reviews and recommendations of scholars and other experts.

In the 1950s, there were two major reviews of the accounts. The first was prepared by the NBER.<sup>4</sup> The second resulted from a symposium on the accounts held by the Conference on Research in Income and Wealth.<sup>5</sup> Both of these reviews dealt with emerging issues of the time, many of which related to expanding the complexity and scope of the accounts to more accurately portray the U.S. economy. They also dealt with conceptual issues, such as the treatment of capital gains and the coverage of nonmarket production and consumption, and they discussed the need for better integration of the income and product accounts, flow of funds, and other aspects of the existing accounts.

1. Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and the World Bank, *System of National Accounts 1993 (SNA 1993)* Brussels/Luxembourg, New York, Paris, and Washington, DC, 1993.

2. See Charles Ian Mead, Karin E. Moses, and Brent R. Moulton, "The NIPAs and the System of National Accounts," *SURVEY OF CURRENT BUSINESS* 84 (December 2004): 17–32.

3. The chain-type measures of real output and prices eliminate the overstatement of real GDP growth for periods after the reference year and the understatement of real GDP growth for periods before the reference year.

4. U.S. Congress, Joint Economic Committee, Subcommittee on Economic Statistics, "The National Economic Accounts of the United States: Review, Appraisal, and Recommendations," in *The National Economic Accounts of the United States*, report by the National Accounts Review Committee, National Bureau of Economic Research, 85th Congress, October 1957.

5. "A Critique of the United States Income and Product Accounts." *Studies in Income and Wealth*, vol. 22. Princeton, NJ: Princeton University Press, for the National Bureau of Economic Research, 1958.

In 1971, on the occasion of the 50th anniversary of the SURVEY, BEA published a special volume containing 43 papers contributed by some of the country's most prominent economists.<sup>6</sup> BEA catalogued and prioritized the suggestions from these papers, and BEA's Director at that time, George Jaszi, responded to them.

In 1977, a report was prepared by the Advisory Committee on Gross National Product Data Improvement (referred to as the Creamer Report after its chair, Daniel Creamer).<sup>7</sup> The report addressed concerns about the relatively large revisions to the GNP estimates in the early 1970s and focused on needed improvements in the source data.

In 1979, the Conference on Research in Income and Wealth addressed several aspects of the NIPAs role as a system of information about the behavior of the economy.<sup>8</sup> Topics included the concepts and structure of the accounts, deflation and the treatment of quality change in price indexes, and source data. The last topic included an evaluation of major parts of the Creamer Report.

In 1982, the General Accounting Office published a report that reviewed quarterly GNP revisions in order to reevaluate the relative importance of the Creamer Report's recommendations and to reassess the reliability of the GNP estimates.<sup>9</sup> The report focused more on statistical than on conceptual issues and suggested that priorities be placed on those recommendations that would most reduce GNP revisions. In addition, as the

title indicates, it urged BEA to take a more proactive role in obtaining the source data needed to improve the accounts.

In 1995, BEA began a comprehensive review of its national, international, and regional economic accounts. Outside perspective was obtained by comments and discussions of a strategic plan that BEA presented in the SURVEY and at a conference of users.<sup>10</sup>

In 2000, BEA established an advisory committee that meets about twice a year to discuss issues and possible improvements to the accounts. The papers that are presented to the advisory committee are made available on BEA's Web site <www.bea.gov>.

In 2004, BEA participated in a Conference on Research in Income and Wealth on "A New Architecture for the U.S. National Accounts."<sup>11</sup> The purpose of the conference was to initiate the development of a comprehensive and fully integrated set of U.S. national accounts. Conference participants identified short-term and long-term initiatives to more fully integrate the existing sets of accounts, to uncover gaps and inconsistencies, and to expand and integrate systems of non-market accounts with the core system. As part of this exercise, participants identified initiatives to integrate BEA's existing set of accounts with other U.S. economic accounts, including the productivity accounts prepared by the Bureau of Labor Statistics and the flow of funds accounts prepared by the Federal Reserve Board.

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6. "The Economic Accounts of the United States: Retrospect and Prospect," SURVEY 51 (July 1971), Part II, 50th anniversary issue.

7. Office of Federal Statistical Policy and Standards, *Gross National Product Data Improvement Project Report*, report of the Advisory Committee on Gross National Product Data Improvement, Washington, DC: U.S. Department of Commerce, 1977.

8. Murray F. Foss, ed., "The U.S. National Income and Product Accounts: Selected Topics," *Studies in Income and Wealth*, vol. 47, Chicago: University of Chicago Press, for the National Bureau of Economic Research, 1983.

9. Comptroller General, *The Bureau of Economic Analysis Should Lead Efforts to Improve GNP Estimates* (Washington, DC: General Accounting Office, 1982).

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10. "Mid-Decade Strategic Review of BEA's Economic Accounts: Maintaining and Improving Their Performance," SURVEY 75 (February 1995): 36–66, and "Mid-Decade Strategic Review of BEA's Economic Accounts: An Update," SURVEY 75 (April 1995): 48–56.

11. Dale W. Jorgenson, J. Steven Landefeld, and William D. Nordhaus, eds., "A New Architecture for the U.S. National Accounts," *Studies in Income and Wealth*, vol. 66, Chicago: University of Chicago Press, for the National Bureau of Economic Research, 2006.

## Definitions and Classifications Underlying the NIPAs

### NIPA entries

The national income and product accounts (NIPAs) are summarized in seven accounts that show the composition of production and the distribution of incomes earned in production.<sup>12</sup> The seven summary accounts are shown in table A. For illustrative purposes, the tables show estimates for 2005 that are based on the latest published NIPA estimates.

Each of the components in the summary accounts also enters one of the other summary accounts and is shown in one or more of the tables that make up the full set of 299 NIPA tables. Taken together, the summary accounts constitute a double-entry system in which a use (or expenditure) recorded in one account for one sector is also recorded as a source (or receipt) in an account of another sector or of the same sector.<sup>13</sup> This system of integrated, double-entry accounts provides a comprehensive measure of economic activity in a consistently defined framework without double counting. Thus, the NIPAs, in combination with BEA's industry, wealth, and regional accounts, can be used to trace the principal economic flows among the major sectors of the economy.

The first account, the domestic income and product account, shows the consolidated—that is, unduplicated—production of all sectors of the economy as the sum of goods and services sold to final users on the right side and the income generated by that produc-

tion on the left side.<sup>14</sup> The private enterprise income account (account 2) provides additional information on the sources and uses of income by private enterprises, which give rise to the bulk of the output in the U.S. economy. Accounts 3–5 show the receipts and expenditures of the other major sectors of the U.S. economy: The personal sector, which is made up of households and nonprofit institutions serving households; the government sector; and the foreign sector. Account 6 provides information on the saving and investment of the domestic sectors of the economy, and account 7 provides information on capital transactions with the rest of the world.

Within the summary accounts, each entry has a counterentry, generally in another account. The parenthetical numbers that follow an entry in table A identify the counterentry by account and line number. With the exception of major income and product aggregates, entries are usually defined in the sequence in which they appear in the seven-account summary. The definition is not repeated where the counterentry appears, but a cross reference is made to the place of its first appearance. After the seven-account-summary discussion, definitions for the following items are presented: Final sales of domestic product, gross domestic purchases, final sales to domestic purchasers, net interest, fixed assets, produced assets, nonproduced assets, population, personal saving as a percentage of disposable personal income, gross saving as a percentage of gross national income, U.S. residents, foreign residents, and the rest of the world.

12. Prior to the 2003 comprehensive revision, the NIPAs were summarized in five accounts, which are shown in table A of the August 2002 SURVEY on pages 38–39. For a discussion of the differences between the old and new summary accounts, see Nichole Mayerhauser, Shelly Smith, and David F. Sullivan, “Preview of the 2003 Comprehensive Revision of the National Income and Product Accounts: New and Redesigned Tables,” SURVEY 83 (August 2003): 8–15.

13. For more information on the concepts underlying the accounts, see U.S. Bureau of Economic Analysis (BEA), “An Introduction to National Economic Accounting,” methodology paper, forthcoming, and *SNA 1993*.

14. The estimate of GDP avoids double counting (of, for example, the semiconductors that go into computers or the flour that goes into bread) because the purchase by one business of materials and services on current account (intermediate purchases) from another business is canceled by the corresponding sale by another business in the consolidation.

## Major aggregates

*Gross domestic product* (GDP) (1–34), the featured measure of U.S. output, is the market value of the goods and services produced by *labor and property located in the United States*.<sup>15</sup> Because the labor and property are located in the United States, the suppliers—that is, the workers and, for property, the owners—may be either U.S. residents or residents of the rest of the world.

*Gross domestic income* (GDI) (1–12) measures output as the costs incurred and the incomes earned in the production of GDP.<sup>16</sup> In theory, GDP should equal GDI, but in practice, they differ because their components are estimated using largely independent and less than perfect source data. This difference is termed the “statistical discrepancy” (described below).

*Gross national product* (GNP) is the market value of the goods and services *produced by labor and property supplied by U.S. residents*. Because the labor and property are supplied by U.S. residents, they may be located either in the United States or abroad. The difference between GDP and GNP is net receipts of income from the rest of the world. These net receipts represent income from the goods and services produced abroad using labor and property supplied by U.S. residents less payments to the rest of the world for the goods and services produced in the United States using labor and property supplied by foreign residents. The income receipts and payments are measured as compensation of employees, corporate profits (earnings of both incorporated and unincorporated affiliates), and interest.

*Net domestic product* (NDP) is the net market value of the goods and services attributable to labor and property located in the United States and is equal to GDP less consumption of fixed capital (CFC). NDP may be viewed as an estimate of sustainable product, which is a rough measure of the level of consumption that can be maintained while leaving capital assets intact.

*Net national product* (NNP) is the net market value of goods and services attributable to the labor and property supplied by U.S. residents and is equal to GNP less CFC. The measure of CFC used for both NDP and NNP relates only to fixed capital located in the United States. The investment in capital is measured by private fixed investment and government gross investment.

*National income* includes all net incomes (net of

CFC) earned in production.<sup>17</sup> National income is the sum of compensation of employees, proprietors’ income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, corporate profits with IVA and CCAdj, net interest and miscellaneous payments, taxes on production and imports, business current transfer payments, and the current surplus of government enterprises, less subsidies.<sup>18</sup>

*Gross national income* (GNI) is equal to national income plus CFC. (GNI and GNP also differ by the statistical discrepancy.)

*Personal income* (3–26) is the income received by persons from all sources—that is, from participation in production and from current transfer receipts from both government and business. “Persons” consists of individuals, nonprofit institutions that primarily serve households, private noninsured welfare funds, and private trust funds. Personal income is calculated as compensation of employees, received; proprietors’ income with IVA and CCAdj; rental income of persons with CCAdj; personal income receipts on assets; and personal current transfer receipts; less contributions for government social insurance.

*Disposable personal income* is personal income less personal current taxes. It is the income available to persons for spending or saving.

## Account 1. Domestic income and product account

This account presents the product and the income produced by labor and property located in the United States.

GDP is measured as the sum of personal consumption expenditures, gross private domestic investment (including change in private inventories and before deduction of charges for CFC), net exports of goods and services (exports less imports), and government

17. Prior to the 2003 comprehensive revision, national income consisted only of “factor incomes.”

18. Inventory valuation adjustment (IVA) is the difference between the cost of inventory withdrawals valued at acquisition cost and the cost of inventory withdrawals valued at replacement cost. The IVA is needed because inventories as reported by business are often charged to cost of sales (that is, withdrawn) at their acquisition (historical) cost rather than at their replacement cost (the concept underlying the NIPAs). As prices change, businesses that value inventory withdrawals at acquisition cost may realize profits or losses. Inventory profits, a capital-gains-like element in business income (corporate profits and nonfarm proprietors’ income), result from an increase in inventory prices, and inventory losses, a capital-loss-like element, result from a decrease in inventory prices. In the NIPAs, inventory profits or losses are shown as adjustments to business income; that is, they are shown as the IVA with the sign reversed. No adjustment is needed to farm proprietors’ income because farm inventories are measured on a current-market cost basis.

The private capital consumption adjustment (CCAdj) converts depreciation that is on a historical-cost (book value) basis—the capital consumption allowance (CCA)—to depreciation that is on a current-cost basis—consumption of fixed capital (CFC)—and is derived as the difference between private CCA and private CFC.

15. In the NIPAs, the United States consists of the 50 states (before 1960, Alaska and Hawaii were not included), the District of Columbia, and U.S. military installations, embassies, and consulates abroad.

16. Capital gains and losses are not included in NIPA measures, because they result from the revaluation and sale of existing assets rather than from current production.

Table A. Summary National Income and Product Accounts, 2005

[Billions of dollars]

## Account 1. Domestic Income and Product Account

Line			Line		
1	Compensation of employees, paid .....	7,036.6	15	Personal consumption expenditures (3-3) .....	8,742.4
2	Wage and salary accruals .....	5,671.1	16	Durable goods .....	1,033.1
3	Disbursements (3-12 and 5-11) .....	5,671.1	17	Nondurable goods .....	2,539.3
4	Wage accruals less disbursements (4-9 and 6-11) .....	0.0	18	Services .....	5,170.0
5	Supplements to wages and salaries (3-14) .....	1,365.5	19	Gross private domestic investment .....	2,057.4
6	Taxes on production and imports (4-16) .....	922.4	20	Fixed investment (6-2) .....	2,036.2
7	Less: Subsidies (4-8) .....	57.3	21	Nonresidential .....	1,265.7
8	Net operating surplus .....	2,878.2	22	Structures .....	338.6
9	Private enterprises (2-19) .....	2,893.6	23	Equipment and software .....	927.1
10	Current surplus of government enterprises (4-26) .....	-15.4	24	Residential .....	770.4
11	Consumption of fixed capital (6-13) .....	1,604.8	25	Change in private inventories (6-4) .....	21.3
12	<b>Gross domestic income</b> .....	<b>12,384.8</b>	26	Net exports of goods and services .....	-716.7
13	Statistical discrepancy (6-19) .....	71.0	27	Exports (5-1) .....	1,303.1
			28	Imports (5-9) .....	2,019.9
			29	Government consumption expenditures and gross investment (4-1 and 6-3) .....	2,372.8
			30	Federal .....	878.3
			31	National defense .....	589.3
			32	Nondefense .....	289.0
			33	State and local .....	1,494.4
14	<b>GROSS DOMESTIC PRODUCT</b> .....	<b>12,455.8</b>	34	<b>GROSS DOMESTIC PRODUCT</b> .....	<b>12,455.8</b>

## Account 2. Private Enterprise Income Account

Line			Line		
1	Income payments on assets .....	2,552.4	19	Net operating surplus (1-9) .....	2,893.6
2	Interest and miscellaneous payments (3-20 and 4-21) .....	2,411.4	20	Income receipts on assets .....	2,107.1
3	Dividend payments to the rest of the world (5-14) .....	81.8	21	Interest (3-20) .....	1,769.1
4	Reinvested earnings on foreign direct investment in the United States (5-15) .....	59.2	22	Dividend receipts from the rest of the world (5-6) .....	320.0
5	Business current transfer payments (net) .....	74.2	23	Reinvested earnings on U.S. direct investment abroad (5-7) .....	18.0
6	To persons (net) (3-24) .....	45.7			
7	To government (net) (4-24) .....	30.1			
8	To the rest of the world (net) (5-19) .....	-1.6			
9	Proprietors' income with inventory valuation and capital consumption adjustments (3-17) .....	970.7			
10	Rental income of persons with capital consumption adjustment (3-18) .....	72.8			
11	Corporate profits with inventory valuation and capital consumption adjustments .....	1,330.7			
12	Taxes on corporate income .....	399.3			
13	To government (4-17) .....	384.4			
14	To the rest of the world (5-19) .....	14.9			
15	Profits after tax with inventory valuation and capital consumption adjustments .....	931.4			
16	Net dividends (3-21 and 4-22) .....	576.9			
17	Undistributed corporate profits with inventory valuation and capital consumption adjustments (6-10) .....	354.5			
18	<b>USES OF PRIVATE ENTERPRISE INCOME</b> .....	<b>5,000.7</b>	24	<b>SOURCES OF PRIVATE ENTERPRISE INCOME</b> .....	<b>5,000.7</b>

## Account 3. Personal Income and Outlay Account

Line			Line		
1	Personal current taxes (4-15) .....	1,203.1	10	Compensation of employees, received .....	7,030.3
2	Personal outlays .....	9,070.9	11	Wage and salary disbursements .....	5,664.8
3	Personal consumption expenditures (1-15) .....	8,742.4	12	Domestic (1-3 less 5-11) .....	5,661.9
4	Personal interest payments (3-20) .....	209.4	13	Rest of the world (5-3) .....	2.9
5	Personal current transfer payments .....	119.2	14	Supplements to wages and salaries (1-5) .....	1,365.5
6	To government (4-25) .....	72.0	15	Employer contributions for employee pension and insurance funds .....	933.2
7	To the rest of the world (net) (5-17) .....	47.1	16	Employer contributions for government social insurance .....	432.3
8	Personal saving (6-9) .....	-34.8	17	Proprietors' income with inventory valuation and capital consumption adjustments (2-9) .....	970.7
			18	Rental income of persons with capital consumption adjustment (2-10) .....	72.8
			19	Personal income receipts on assets .....	1,519.4
			20	Personal interest income (2-2 and 3-4 and 4-7 and 5-5 less 2-21 less 4-21 less 5-13) .....	945.0
			21	Personal dividend income (2-16 less 4-22) .....	574.4
			22	Personal current transfer receipts .....	1,526.6
			23	Government social benefits (4-4) .....	1,480.9
			24	From business (net) (2-6) .....	45.7
			25	Less: Contributions for government social insurance (4-19) .....	880.6
9	<b>PERSONAL TAXES, OUTLAYS, AND SAVING</b> .....	<b>10,239.2</b>	26	<b>PERSONAL INCOME</b> .....	<b>10,239.2</b>

## Account 4. Government Receipts and Expenditures Account

Line			Line		
1	Consumption expenditures (1-29) .....	1,975.7	14	Current tax receipts .....	2,520.7
2	Current transfer payments .....	1,517.8	15	Personal current taxes (3-1) .....	1,203.1
3	Government social benefits .....	1,484.0	16	Taxes on production and imports (1-6) .....	922.4
4	To persons (3-23) .....	1,480.9	17	Taxes on corporate income (2-13) .....	384.4
5	To the rest of the world (5-18) .....	3.1	18	Taxes from the rest of the world (5-18) .....	10.8
6	Other current transfer payments to the rest of the world (net) (5-18) .....	33.9	19	Contributions for government social insurance (3-25) .....	880.6
7	Interest payments (3-20) .....	348.0	20	Income receipts on assets .....	98.3
8	Subsidies (1-7) .....	57.3	21	Interest and miscellaneous receipts (2-2 and 3-20) .....	95.8
9	Less: Wage accruals less disbursements (1-4) .....	0.0	22	Dividends (3-21) .....	2.4
10	Net government saving (6-12) .....	-312.5	23	Current transfer receipts .....	102.1
11	Federal .....	-309.2	24	From business (net) (2-7) .....	30.1
12	State and local .....	-3.3	25	From persons (3-6) .....	72.0
13	<b>GOVERNMENT CURRENT EXPENDITURES AND NET SAVING .....</b>	<b>3,586.3</b>	26	Current surplus of government enterprises (1-10) .....	-15.4
			27	<b>GOVERNMENT CURRENT RECEIPTS .....</b>	<b>3,586.3</b>

## Account 5. Foreign Transactions Current Account

Line			Line		
1	Exports of goods and services (1-27) .....	1,303.1	9	Imports of goods and services (1-28) .....	2,019.9
2	Income receipts from the rest of the world .....	513.3	10	Income payments to the rest of the world .....	481.5
3	Wage and salary receipts (3-13) .....	2.9	11	Wage and salary payments (1-3) .....	9.2
4	Income receipts on assets .....	510.4	12	Income payments on assets .....	472.2
5	Interest (3-20) .....	172.4	13	Interest (3-20) .....	331.2
6	Dividends (2-22) .....	320.0	14	Dividends (2-3) .....	81.8
7	Reinvested earnings on U.S. direct investment abroad (2-23) .....	18.0	15	Reinvested earnings on foreign direct investment in the United States (2-4) .....	59.2
8	<b>CURRENT RECEIPTS FROM THE REST OF THE WORLD .....</b>	<b>1,816.5</b>	16	Current taxes and transfer payments to the rest of the world (net) .....	86.6
			17	From persons (net) (3-7) .....	47.1
			18	From government (net) (4-5 and 4-6 less 4-18) .....	26.1
			19	From business (net) (2-8 and 2-14) .....	13.3
			20	Balance on current account, national income and product accounts (7-1) .....	-771.4
			21	<b>CURRENT PAYMENTS TO THE REST OF THE WORLD AND BALANCE ON CURRENT ACCOUNT .....</b>	<b>1,816.5</b>

## Account 6. Domestic Capital Account

Line			Line		
1	Gross domestic investment .....	2,454.5	8	Net saving .....	7.2
2	Private fixed investment (1-20) .....	2,036.2	9	Personal saving (3-8) .....	-34.8
3	Government fixed investment (1-29) .....	397.1	10	Undistributed corporate profits with inventory valuation and capital consumption adjustments (2-17) .....	354.5
4	Change in private inventories (1-25) .....	21.3	11	Wage accruals less disbursements (private) (1-4) .....	0.0
5	Capital account transactions (net) (7-2) .....	4.4	12	Net government saving (4-10) .....	-312.5
6	Net lending or net borrowing (-), national income and product accounts (7-3) .....	-775.8	13	Plus: Consumption of fixed capital (1-11) .....	1,604.8
7	<b>GROSS DOMESTIC INVESTMENT, CAPITAL ACCOUNT TRANSACTIONS, AND NET LENDING .....</b>	<b>1,683.1</b>	14	Private .....	1,352.6
			15	Government .....	252.2
			16	General government .....	207.2
			17	Government enterprises .....	45.1
			18	Equals: Gross saving .....	1,612.0
			19	Statistical discrepancy (1-13) .....	71.0
			20	<b>GROSS SAVING AND STATISTICAL DISCREPANCY .....</b>	<b>1,683.1</b>

## Account 7. Foreign Transactions Capital Account

Line			Line		
1	<b>BALANCE ON CURRENT ACCOUNT, NATIONAL INCOME AND PRODUCT ACCOUNTS (5-20) .....</b>	<b>-771.4</b>	2	Capital account transactions (net) (6-5) .....	4.4
			3	Net lending or net borrowing (-), national income and product accounts (6-6) .....	-775.8
			4	<b>CAPITAL ACCOUNT TRANSACTIONS (NET) AND NET LENDING, NATIONAL INCOME AND PRODUCT ACCOUNTS .....</b>	<b>-771.4</b>

NOTE. Numbers in parentheses indicate accounts and items of counterentry in the accounts. For example, line 5 of account 1 is shown as "Supplements to wages and salaries (3-14)"; the counterentry is shown in account 3, line 14.

consumption expenditures and gross investment. GDP excludes intermediate purchases of goods and services by business.

*Personal consumption expenditures* (PCE) (1–15) measures goods and services purchased by U.S. residents. PCE consists mainly of purchases of new goods and of services by individuals from private business. In addition, PCE includes purchases of new goods and of services by nonprofit institutions (including compensation of employees), net purchases of used goods by individuals and nonprofit institutions, and purchases abroad of goods and services by U.S. residents. PCE also includes purchases of certain goods and services provided by general government and government enterprises, such as tuition payments for higher education, charges for medical care, and charges for water and other sanitary services. Finally, PCE includes imputed purchases that keep PCE invariant to changes in the way that certain activities are carried out—for example, whether housing is rented or owned, whether financial services are explicitly charged, or whether employees are paid in cash or in kind.

The following conventions are used to classify each PCE commodity: *Durable goods* (1–16) are tangible commodities that can be stored or inventoried and that have an average life of at least 3 years; *nondurable goods* (1–17) are all other tangible commodities that can be stored or inventoried; and services (1–18) are commodities that cannot be stored and that are consumed at the place and time of purchase.

*Gross private domestic investment* (1–19) consists of *fixed investment* (1–20) and the *change in private inventories* (1–25). Fixed investment consists of both *nonresidential* (1–21) fixed investment and *residential* (1–24) fixed investment. It is measured without a deduction for CFC and includes replacements and additions to the capital stock. It covers all investment in fixed assets by private businesses and by nonprofit institutions in the U.S., regardless of whether the fixed asset is owned by U.S. residents. (Purchases of the same types of equipment, software, and structures by government agencies are included in government gross investment.) It excludes investment by U.S. residents in other countries. Nonresidential fixed investment consists of both *structures* (1–22) and *equipment and software* (1–23).

Nonresidential structures consists of new construction (including own-account production), improvements to existing structures, expenditures on new nonresidential mobile structures, brokers' commissions on sales of structures, and net purchases of used structures by private business and by nonprofit institu-

tions from government agencies.<sup>19</sup> New nonresidential construction includes hotels and motels and mining exploration, shafts, and wells. Nonresidential structures also includes equipment considered to be an integral part of a structure, such as plumbing, heating, and electrical systems.

Equipment and software consists of purchases by private business and by nonprofit institutions of new machinery, equipment, furniture, vehicles, and computer software used repeatedly, or continuously, in the processes of production for more than 1 year. Also included are dealers' margins on sales of used equipment to business and to nonprofit institutions; net purchases of used equipment from government agencies, from persons, and from the rest of the world; and own-account production of computer software. For equipment that is purchased for both business and personal use (for example, motor vehicles), the personal-use portion is included in PCE.

Residential fixed investment consists of all private residential structures and of residential equipment that is owned by landlords and rented to tenants. Residential structures consists of new construction of permanent-site single family and multifamily units, improvements (additions, alterations, and major structural replacements) to housing units, expenditures on manufactured homes, brokers' commissions on the sale of residential property, and net purchases of used structures from government agencies. Residential structures includes some types of equipment that are built into the structure, such as heating and air conditioning equipment.

*Change in private inventories* (1–25) is the change in the physical volume of inventories owned by private business, valued in average prices of the period. It differs from the change in the book value of inventories reported by most business; the difference is the *inventory valuation adjustment* (described above).

*Net exports of goods and services* (1–26) is *exports* (1–27) less *imports* (1–28) of goods and services. Income receipts and payments and current taxes and transfer payments to the rest of the world (net) are excluded.

*Government consumption expenditures and gross investment* (1–29), the measure of government sector final demand, consists of two major components: Current consumption expenditures by general government and gross investment by both general government and government enterprises. Consumption

19. Own-account production refers to an asset produced by a business or government for its own use.

expenditures consists of the goods and services that are produced by general government, less sales to other sectors and own-account investment. As producers of nonmarket services, governments generally provide services to the general public without charge, for example, law enforcement services, national defense services, and elementary and secondary education. The value of government production, that is, government's gross output, is measured by the cost of inputs: Compensation of employees, CFC (a partial measure of the services of government capital), and intermediate goods and services purchased.<sup>20</sup> Therefore, government consumption expenditures is measured as the sum of these costs of production less sales by government of goods and services to other sectors (which are classified as PCE, if purchased by individuals, or as intermediate inputs, if purchased by businesses) and the value of software and construction that are produced by government for its own use (that is, own-account investment, which is classified as part of gross government investment). Gross investment consists of purchases of new structures and of equipment and software by both general government and government enterprises, net purchases of used structures and equipment, and own-account production of structures and of software. Government consumption expenditures and gross investment does not include current transactions of government enterprises, current transfer payments, interest payments, subsidies, or transactions in financial assets and in nonproduced assets such as land.

*Compensation of employees, paid* (1–1) shows the income accruing to employees as remuneration for their work for domestic production; it includes compensation paid to the rest of the world and excludes compensation received from the rest of the world. It is the sum of wage and salary accruals and of supplements to wages and salaries.

*Wage and salary accruals* (1–2) consists of the monetary remuneration of employees, including the compensation of corporate officers; commissions, tips, and bonuses; voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans; employee gains from exercising nonqualified stock options; receipts-in-kind; and miscellaneous compensa-

tion of employees.<sup>21</sup> Wage and salary accruals consists of *disbursements* (1–3) and *wage accruals less disbursements* (1–4). Disbursements is wages and salaries as just defined except that retroactive wage payments are recorded when paid rather than when earned. Accruals less disbursements is the difference between wages earned, or accrued, and wages paid, or disbursed. In the NIPAs, wages accruals is the measure used for gross domestic income, and wage disbursements is the measure used for personal income.

*Supplements to wages and salaries* (1–5) consists of employer contributions for employee pension and insurance funds (3–15) and of employer contributions for government social insurance (3–16).

*Taxes on production and imports* (1–6) consists of Federal excise taxes and custom duties and of state and local sales taxes, property taxes (including residential real estate taxes), motor vehicle licenses, severance taxes, special assessments, and other taxes.

*Subsidies* (1–7) is the monetary grants paid by government agencies to private business and to government enterprises at another level of government.<sup>22</sup>

*Net operating surplus* (1–8) is a profits-like measure that shows business income after subtracting the costs of compensation of employees, taxes on production and imports (less subsidies), and CFC from gross product (or value added), but before subtracting financing costs (such as net interest) and business current transfer payments. Net operating surplus consists of *net operating surplus of private enterprises* (1–9) and *current surplus of government enterprises* (1–10). (Net operating surplus of private enterprises is discussed under account 2 below.) The current surplus of government enterprises is their current operating revenue and subsidies received from other levels of government less their current expenses. In the calculation of their current surplus, no deduction is made for net interest paid.

*Consumption of fixed capital* (CFC) (1–11) is the charge for the using up of private and government fixed capital located in the United States. It is defined as the decline in the value of the stock of fixed assets due to wear and tear, obsolescence, accidental damage, and aging. For most types of assets, estimates of CFC are based on geometric depreciation patterns; empirical studies on the prices of used equipment and

20. Intermediate goods also include net purchases of used goods and changes in inventories. Change in inventories is not included in government investment because source data to prepare estimates for most inventory categories are not available. At present, the estimates for a few inventory categories for which data are available, such as inventories held by the Commodity Credit Corporation and the Strategic Petroleum Reserve, are included in government consumption expenditures.

21. Miscellaneous compensation of employees includes judicial fees paid to jurors and to witnesses, compensation of prison inmates, and marriage fees paid to justices of the peace.

22. For years prior to 1959, subsidies is presented net of the current surplus of government enterprises (1–10), because detailed data to separate the series for this period are not available.

structures in resale markets have concluded that a geometric pattern of depreciation is appropriate for most types of assets.<sup>23</sup> For general government and for non-profit institutions that primarily serve individuals, CFC is recorded in government consumption expenditures and in PCE, respectively, as a partial measure of the value of the current services of the fixed assets owned and used by these entities. Private capital consumption allowances consists of tax return-based depreciation charges for corporations and nonfarm proprietorships and of historical cost depreciation (calculated by BEA using a geometric pattern of price declines) for farm proprietorships, rental income of persons, and nonprofit institutions. Private capital consumption adjustment is the difference between private capital consumption allowances and private CFC.

*Statistical discrepancy* (1–13) is GDP less GDI or GNP less GNI. It is recorded in the NIPAs as an “income” component that reconciles the income side with the product side of the accounts. As noted above, it arises because the two sides are estimated using independent and imperfect data.<sup>24</sup>

## Account 2. Private enterprise income account

This account presents *sources of private enterprise income* (2–24) on the right side of the account and *uses of private enterprise income* (2–18) on the left side.<sup>25</sup> Private enterprises consist of private businesses and the accounts of homeowners for owner-occupied housing (which is treated as if it were a business). In addition, the net interest paid by nonprofit institutions serving households is included as a use of income in this account.<sup>26</sup>

*Net operating surplus, private enterprises* (2–19), can be derived by a series of deductions from business-sector gross value added, as described above. Alterna-

tively, it can be calculated as the sum of the domestic components of proprietors’ income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, corporate profits with IVA and CCAdj, net interest and miscellaneous payments, and business current transfer payments (net).<sup>27</sup>

*Income receipts on assets* (2–20) consists of interest, dividend receipts from the rest of the world, and reinvested earnings on U.S. direct investment abroad. *Interest* (2–21) is the interest received by domestic private enterprises and includes both monetary and imputed interest receipts. Interest received by private noninsured pension plans is recorded as being directly received by persons in personal income. *Dividend receipts from the rest of the world* (2–22) consists of receipts by U.S. residents of dividends from foreign corporations plus earnings distributed by unincorporated foreign affiliates to their U.S. parents. *Reinvested earnings on U.S. direct investment abroad* (2–23) consists of receipts by U.S. residents of their share of the reinvested earnings of their incorporated foreign affiliates and reinvested earnings of their unincorporated foreign affiliates.

*The uses of private enterprise income* (2–18) consists of income payments on assets, business current transfer payments (net), proprietors’ income with IVA and CCAdj, rental income of persons with CCAdj, and corporate profits with IVA and CCAdj.

*Income payments on assets* (2–1) consists of interest and miscellaneous payments, dividend payments to the rest of the world, and reinvested earnings on foreign direct investment in the United States. *Interest and miscellaneous payments* (2–2) consists of interest paid by domestic private enterprises and of rents and royalties paid by private enterprises to government.<sup>28</sup> Interest payments includes both monetary and imputed interest payments. *Dividend payments to the rest of the world* (2–3) consists of payments by U.S. corporations of dividends to foreign residents, plus earnings distributed by unincorporated U.S. affiliates to their foreign parents. *Reinvested earnings on foreign direct investment in the United States* (2–4) consists of payments to foreign residents of their share of the reinvested earnings of their incorporated U.S. affiliates and reinvested earnings of their unincorporated U.S. affiliates. These earnings are treated as income payments on assets because the decision to retain some of the earnings

23. Several asset types use depreciation patterns that are not geometric. For example, computers and peripheral equipment and private autos use actual empirical depreciation profiles, and missiles and nuclear fuel rods use a straight-line pattern. For more information on depreciation patterns, see U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Assets and Consumer Durable Goods in the United States, 1925–97*, (Washington, DC: U.S. Government Printing Office, September 2003) and <[www.bea.gov/bea/dn/Fixed\\_assets\\_1925\\_97.pdf](http://www.bea.gov/bea/dn/Fixed_assets_1925_97.pdf)>.

24. For additional details on the statistical discrepancy, see Robert P. Parker and Eugene P. Seskin, “Annual Revision of the National Income and Product Accounts,” *SURVEY* 77 (August 1997): 19.

25. Government enterprises are not included in account 2, because complete estimates on sources and uses of government enterprise income, notably the income payments and income receipts on assets, are not currently available. The sources and uses of government enterprise income are included, but not separately identified, in the government receipts and expenditures account.

26. Summary account 2 presents the components of private enterprise income on a national basis, that is, for labor and property supplied by U.S. residents. Consequently, for the net operating surplus to be shown in account 2 on a domestic basis consistent with summary account 1, several income flows to and from the rest of the world must also be shown in account 2.

27. *Net interest and miscellaneous payments*, a component of national income, consists of interest and miscellaneous payments (2–2) less interest receipts (2–21). For a definition of net interest, see the section “other definitions” (page 14).

28. Interest payments on mortgage and home improvement loans and on home equity loans are included in interest paid by private enterprises because home ownership is treated as a business in the NIPAs.

within a U.S. enterprise represents a deliberate investment decision on the part of the foreign investor.<sup>29</sup>

*Business current transfer payments (net)* (2–5) consists of payments *to persons (net)* (2–6), *to government (net)* (2–7), and *to the rest of the world (net)* (2–8) by private business for which no current services are performed. Payments for net insurance settlements—actual insured losses (or claims payable) less a normal level of losses—are also treated as business current transfer payments. Business current transfer payments to government (net), consists of Federal deposit insurance premiums and other current transfer payments (largely fines and regulatory and inspection fees), less net insurance settlements from the National Flood Insurance Program, state and local fines and other current transfer payments (largely donations and tobacco settlements), and net insurance settlements paid to state and local governments as policyholders. Business current transfer payments to the rest of the world (net) consists of net insurance settlements paid to the rest of the world as policyholders.

*Proprietors' income with inventory valuation and capital consumption adjustments* (2–9) is the current-production income (including income in kind) of sole proprietorships and partnerships and of tax-exempt cooperatives. The imputed net rental income of owner occupants of farm and nonfarm dwellings is included in rental income of persons. Proprietors' income excludes dividends and monetary interest received by nonfinancial business and rental income received by persons not primarily engaged in the real estate business; these incomes are included in dividends, net interest, and rental income of persons.

*Rental income of persons with capital consumption adjustment* (2–10) is the net current production income of persons (except those primarily engaged in the real estate business) from the rental of real property, the imputed net rental income of owner occupants of farm and nonfarm dwellings, and the royalties received by persons from patents, copyrights, and rights to natural resources.

*Corporate profits with inventory valuation and capital consumption adjustment* (2–11) is the net current production income of organizations treated as corporations in the NIPAs. These organizations consist of all entities required to file Federal corporate tax returns, including mutual financial institutions and cooperatives subject to Federal income tax, private noninsured pension funds, nonprofit institutions that primarily serve business, Federal Reserve banks, and federally

sponsored credit agencies.<sup>30</sup> With several differences, this income is measured as receipts less expenses as defined in Federal tax law. Among these differences are the following: Receipts exclude capital gains and dividends received, expenses exclude depletion and capital losses and losses resulting from bad debts, inventory withdrawals are valued at replacement cost, and depreciation is on a consistent accounting basis and is valued at replacement cost using depreciation profiles based on empirical evidence on used asset prices that generally suggest a geometric pattern of price declines. Corporate profits is included on a national income basis, which is defined as the income of U.S. residents; therefore the profits component includes income earned abroad by U.S. corporations and excludes income earned in the United States by the rest of the world.

*Taxes on corporate income* (2–12) consists of taxes on corporate income paid to government and taxes on corporate income paid to the rest of the world. *Taxes on corporate income paid to government* (2–13) is the sum of Federal, state, and local government income taxes on all income subject to taxes; this income includes capital gains and other income excluded from profits before tax. The taxes are measured on an accrual basis, net of applicable tax credits. *Taxes on corporate income paid to the rest of the world* (2–14) consists of nonresident taxes—that is, taxes paid by domestic corporations to foreign governments.

*Profits after tax with inventory valuation adjustment and capital consumption adjustment* (2–15) is corporate profits with IVA and CCAdj less taxes on corporate income. It consists of net dividends and undistributed corporate profits with IVA and CCAdj. *Net dividends* (2–16) is payments in cash or other assets, excluding the corporations' own stock, that are made by corporations located in the United States and abroad to stockholders who are U.S. residents. The payments are measured net of dividends received by U.S. corporations. Dividends paid to state and local governments are included. *Undistributed profits with inventory valuation and capital consumption adjustments* (2–17) is corporate profits after tax with IVA and CCAdj less net dividends.

### Account 3. Personal income and outlay account

*Personal income* is the sum of compensation of employees, received; proprietors' income with IVA and CCAdj; rental income of persons with CCAdj; personal

29. This treatment is consistent with the guidelines of *SNA 1993*, paragraph 7.121.

30. The corporate profits that are associated with private noninsured pension plans are recorded as zero, and the property income is recorded as being received directly by persons in the corresponding components of personal income.

income receipts on assets; and personal current transfer receipts; less contributions for government social insurance. Personal income receipts on assets (interest, dividends, and rent) of private noninsured pension plans and of government employee retirement plans are recorded as being received directly by persons in the corresponding components of personal income.

*Compensation of employees, received* (3–10) consists of wage and salary disbursements and supplements to wages and salaries.

*Wage and salary disbursements* (3–11) consists of *domestic disbursements* (see 1–3) and *rest-of-the-world disbursements* (3–13).

*Supplements to wages and salaries* (see 1–5) consists of employer contributions for employee pension and insurance funds and of employer contributions for government social insurance. *Employer contributions for employee pension and insurance funds* (3–15) consists of employer payments (including payments in kind) to private pension and profit-sharing plans, publicly administered government employee retirement plans, private group health and life insurance plans, privately administered workers' compensation plans, and supplemental unemployment benefit plans. *Employer contributions for government social insurance* (3–16) consists of employer payments under the following Federal Government and state and local government 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 medical insurance; and temporary disability insurance.<sup>31</sup>

*Proprietors' income with inventory valuation and capital consumption adjustments* (see 2–9).

*Rental income of persons with capital consumption adjustment* (see 2–10).

*Personal income receipts on assets* (3–19) consists of personal interest income and personal dividend income. *Personal interest income* (3–20) is the interest income (monetary and imputed) of persons, including individuals and nonprofit institutions serving households, from all sources. It equals private enterprise interest payments (see 2–2) plus *personal interest payments* (3–4), plus *government interest payments* (4–7), plus *interest receipts from the rest of the world* (5–5), less *private enterprise interest receipts* (see 2–21), less *government interest receipts* (see 4–21), less *interest payments to the rest of the world* (5–13). *Personal interest payments* (3–4) consists of all interest paid by individuals except mortgage interest, which is reflected in

rental income of persons.

*Personal dividend income* (3–21) is the dividend income of persons from all sources. It equals *net dividends paid by corporations* (see 2–16) less *government receipts of dividends* (4–22), which consists of dividends received by state and local governments.

*Personal current transfer receipts* (3–22) consists of income payments to persons for which no current services are performed and of net insurance settlements. It is shown as the sum of government social benefits and current transfer receipts from business (net) (see 2–6). *Government social benefits* (3–23) includes benefits from government social insurance funds and social assistance benefits from certain other programs.

*Contributions for government social insurance* (3–25) includes employer contributions for government social insurance (see 3–16) and payments by employees, self employed, and other individuals who participate in the following government programs: Old age, survivors, and disability insurance (social security); hospital insurance; supplementary medical insurance, including the Medicare Prescription Drug benefit; unemployment insurance; railroad retirement; veterans life insurance; and temporary disability insurance.

*Personal current taxes* (3–1) is tax payments (net of refunds) by U.S. residents that are not chargeable to business expense. Personal taxes includes taxes on income, including realized net capital gains, and on personal property. Personal contributions for government social insurance is not included. Taxes paid by U.S. residents to foreign governments and taxes paid by foreigners to the U.S. Government are both included in *current taxes and transfer payments to the rest of the world from government (net)*.

*Personal outlays* (3–2) is the sum of personal consumption expenditures (see 1–15), personal interest payments (see 3–4), and personal current transfer payments. *Personal current transfer payments* (3–5) consists of transfer payments *to government* (3–6) and *to the rest of the world* (3–7). Payments to government includes donations, fees, and fines paid to Federal, state, and local governments. Payments to the rest of the world is personal remittances in cash and in kind to the rest of the world less such remittances from the rest of the world.

*Personal saving* (3–8) is personal income less the sum of personal outlays and personal current taxes. It is the current saving of individuals (including proprietors and partnerships), nonprofit institutions that primarily serve households, life insurance carriers, private noninsured welfare funds, private noninsured pension plans, publicly administered government employee retirement plans, and private trust funds. Personal saving may also be viewed as the net acquisition

31. Publicly administered government employee retirement plans are classified as employee pension and insurance funds, not as government social insurance programs.

of financial assets (such as cash and deposits, securities, and the change in life insurance and pension fund reserves), plus the net investment in produced assets (such as residential housing, less depreciation), less the net increase in financial liabilities (such as mortgage debt, consumer credit, and security credit), less net capital transfers received.

#### **Account 4. Government receipts and expenditures account**

*Government current receipts* (4–27) is the sum of current tax receipts, contributions for government social insurance, income receipts on assets, current transfer receipts, and current surplus of government enterprises. *Current tax receipts* (4–14) consists of personal current taxes (see 3–1), taxes on production and imports (see 1–6), taxes on corporate income (see 2–13), and *taxes from the rest of the world* (4–18), which are mostly income taxes received by the Federal Government from foreigners.<sup>32</sup>

*Contributions for government social insurance* (see 3–25).

*Income receipts on assets* (4–20) consists of interest and miscellaneous receipts and dividends. *Interest and miscellaneous receipts* (4–21) includes monetary and imputed interest received by government on loans and investments from persons, from business, and from the rest of the world; miscellaneous receipts include Federal Outer Continental Shelf royalties and state and local rents and royalties. (Interest received by government employee retirement plans is recorded as being received directly by persons in personal income.)

*Dividends received by government* (see 3–21).

*Current transfer receipts* (4–23) consists of receipts *from business (net)* (4–24) (see 2–7) and receipts *from persons* (4–25) (see 3–6).

*Current surplus of government enterprises* (see 1–10).

*Consumption expenditures* (see 1–29).

*Current transfer payments* (4–2) is government social benefits and other current transfer payments to the rest of the world. *Government social benefits* (4–3) consists of government social benefits payments to *persons* (4–4) (see 3–23) and government social benefits payments *to the rest of the world* (4–5), which are U.S. Government transfers, mainly social security benefits, to former residents of the United States. *Other current transfer payments to the rest of the world (net)* (4–6) consists of U.S. Government military and nonmilitary grants in cash and nonmilitary grants-in-kind to foreign governments.

*Interest payments* (4–7) is interest paid by govern-

ment to persons, to business, and to the rest of the world (that is, to foreign businesses, governments, and persons). Interest paid consists of monetary interest paid on public debt and other financial obligations.

*Subsidies* (see 1–7).

*Wage accruals less disbursements* (see 1–4).

*Net government saving* (4–10) is the sum of government current receipts (lines 14, 19, 20, 23, and 26 of account 4) less the sum of government current expenditures (lines 1, 2, 7, 8, less line 9 of account 4). It may also be viewed as the net acquisition of financial assets by government and government enterprises, plus the net investment in fixed assets (such as roads and highways, less depreciation), plus the net government purchases of nonproduced assets, less the net increase in financial liabilities, less net capital transfers.

#### **Account 5. Foreign transactions current account**

*Imports of goods and services* (see 1–28).

*Income payments to the rest of the world* (5–10) consists of wage and salary payments (see 1–3) and income payments on assets (5–12), which is the sum of interest (see 3–20), dividends (see 2–3), and reinvested earnings on foreign direct investment in the United States (see 2–4).

*Current taxes and transfer payments to the rest of the world (net)* is the sum of transfer payments *from persons (net)* (see 3–7), *from government (net)* (see 4–5 and 4–6 less 4–18), and *from business (net)* (see 2–8 and 2–14).

*Balance on current account, national income and product accounts* (5–20) is U.S. exports of goods and services and income receipts from the rest of the world less U.S. imports of goods and services, income payments to the rest of the world, and current taxes and transfer payments to the rest of the world (net). It may also be viewed as the acquisition of foreign assets by U.S. residents less the acquisition of U.S. assets by foreign residents. It includes the statistical discrepancy in the balance of payments accounts.

*Exports of goods and services* (see 1–27).

*Income receipts from the rest of the world* (5–2) consists of wage and salary receipts (see 3–13) and *income receipts on assets* (5–4), which is the sum of interest (see 3–20), dividends (see 2–22), and reinvested earnings on U.S. direct investment abroad (see 2–23).

#### **Account 6. Domestic capital account**

This account presents gross saving and the statistical discrepancy on the right side and “gross domestic investment, capital transfers, and net lending” on the left.

*Gross saving* (6–18) is net saving plus the consumption of fixed capital (see 1–11). *Net saving* (6–8) is

32. Taxes from the rest of world also includes some taxes on production and some current transfers, but the source data do not permit the reliable separation of the taxes on income.

calculated as the sum of personal saving (see 3–8), undistributed corporate profits with inventory valuation and capital consumption adjustments (see 2–17), private wage accruals less disbursements (see 1–4), and net government saving (see 4–10). It supplements the NIPA gross saving measure and provides a useful measure of the saving that is available for adding to the Nation's net stock of fixed assets.

*Statistical discrepancy* (see 1–13).

*Gross domestic investment* (6–1) measures the total investment in the United States in fixed assets (that is, the structures, equipment, and software that are used in production) and in inventories (change in private inventories). It is the sum of private fixed investment (see 1–20), government fixed investment (see 1–29), and change in private inventories (1–25).

*Capital accounts transactions (net)* (6–5) consist of capital transfers (mainly debt forgiveness and migrants' transfers) and the transfers of nonproduced nonfinancial assets to (or from) the rest of the world.

*Net lending or net borrowing* (–), *national income and product accounts* (6–6) is equal to the balance on current account less capital accounts transactions (net). It may be viewed as an indirect measure of the net acquisition of foreign assets by U.S. residents less the net acquisition of U.S. assets by foreign residents.

#### **Account 7. Foreign transactions capital account**

The right side of this account shows capital accounts transactions (net) (see 6–5) and net lending or net borrowing (–), national income and product accounts (see 6–6). The left side shows the balance on current account, national income and product accounts (see 5–20).

#### **Other definitions**

*Final sales of domestic product* is GDP less change in private inventories; equivalently, it is the sum of PCE, private fixed investment, government consumption expenditures and gross investment, and net exports of goods and services.

*Gross domestic purchases* is the market value of goods and services purchased by U.S. residents, regardless of where those goods and services were produced. It is GDP less net exports of goods and services; equivalently, it is the sum of PCE, gross private domestic investment, and government consumption expenditures and gross investment.

*Final sales to domestic purchasers* is gross domestic purchases less change in private inventories.

*Net interest* is the interest paid by private enterprises less the interest received by private enterprises, plus the interest paid by the rest of the world less the interest received by the rest of the world. Interest payments on

mortgage and home improvement loans and on home equity loans are included in interest paid by private enterprises because home ownership is treated as a private enterprise. Interest received by private noninsured pension plans is recorded as being directly received by persons in personal income. Interest paid by nonprofits serving households is included in interest paid by private enterprises, while interest received by nonprofits serving households is included in the interest received by persons. In addition to monetary interest, net interest includes imputed interest. Imputed interest is made up of 1) imputed income paid to policy holders by property and casualty insurance companies and life insurance companies, measured as the investment income earned on policyholders' reserves; 2) implicit services provided by financial intermediaries other than commercial banks, measured as the property income received by them less the interest paid by them to business, households and institutions, governments, and the rest of the world; and 3) implicit services provided by commercial banks in the form of both depositor and borrower services.<sup>33</sup>

*Fixed assets* are produced assets that are themselves used repeatedly, or continuously, in processes of production for more than 1 year. Fixed assets consist of equipment, software, and structures (including, by convention, owner-occupied housing); consumer durable goods are not included. *Fixed investment* is the net acquisition of fixed assets.

*Produced assets* are nonfinancial assets that have come into existence as outputs from a production process; they include fixed assets and private inventories.

*Nonproduced assets* are nonfinancial assets that are used for production but have not themselves been produced; they include naturally occurring assets, such as land and mineral deposits.

*Population* is the total population of the United States, including the Armed Forces overseas and the institutionalized population. The monthly estimate is the average of Census Bureau survey estimates for the first of the month and the first of the following month; the

33. Commercial banks provide implicit services to both depositors and borrowers. Depositor services are measured as the difference between the interest received by depositors and the interest they would have received had they been paid a risk-free rate of interest (reference rate). Depositors receive a lower interest rate for their deposits in exchange for the unpriced services provided by banks. Borrower services are measured as the difference between the interest paid by borrowers and the interest they would have paid had they borrowed at the reference rate. Borrowers pay a higher interest rate for loans in exchange for the unpriced services provided to them by banks. The unpriced depositor services are recorded as imputed interest paid by financial intermediaries and received by depositors. The unpriced borrower services are recorded as negative imputed interest received by the financial intermediaries and negative interest paid by borrowers. Thus, imputed interest paid by private enterprises includes the interest paid by financial intermediaries for depositor services and the negative interest paid by businesses and owner-occupied housing in their role as borrowers.

quarterly and annual estimates are the averages of the relevant monthly estimates.

*Personal saving as a percentage of disposable personal income (DPI)*, frequently referred to as “the personal saving rate,” is calculated on a monthly, quarterly, and annual basis as the ratio of personal saving to DPI.

*Gross saving as a percentage of gross national income (GNI)*, sometimes referred to as “the national saving rate,” is calculated on a quarterly and annual basis as the ratio of gross saving—the sum of net saving and consumption of fixed capital—to GNI.

*U.S. residents* are individuals, governments, business enterprises, trusts, associations, nonprofit organizations, and similar institutions that have the center of their economic interest in the United States and that reside or expect to reside in the United States for 1 year or more. (For example, business enterprises residing in the United States include U.S. affiliates of foreign companies.) In addition, U.S. residents include all U.S. citizens who reside outside the United States for less than 1 year and U.S. citizens residing abroad for 1 year or more who meet one of the following criteria: Owners or employees of U.S. business enterprises who reside abroad to further the enterprises’ business and who intend to return within a reasonable period; U.S. Government civilian and military employees and members of their immediate families; and students who attend foreign educational institutions.

*Foreign residents* are those residing and pursuing economic interests outside the United States. They also include international institutions located in the United States, foreign nationals employed by their home governments in the United States, and foreign affiliates of U.S. companies.

*The rest of the world* consists of foreign residents who are transactors with U.S. residents.

## Real Output and Related Measures

In addition to estimating the current-dollar market value of GDP, BEA estimates “real,” or inflation-adjusted, GDP and its components.

### Quantity and price indexes

BEA’s chain-type quantity and price indexes, in combination with the current-dollar estimates, provide users with the basic data series from which all other analytical tables and presentations of the NIPAs are derived.

Changes in current-dollar GDP measure the changes in the market value of the goods, services, and structures produced in the economy in a particular period. These changes can be decomposed into quantity and price components that, in turn, can be expressed as index numbers with the reference year—at present, the year 2000—equal to 100. These are referred to as “chain-type” indexes. Percent changes in real GDP and

its components are equal to the percent changes of the quantity indexes; percent changes in prices are equal to the percent changes of the price indexes.<sup>34</sup>

The annual changes in quantities and prices in the NIPAs are calculated using a Fisher formula that incorporates weights from 2 adjacent years. For example, the 2003–04 change in real GDP uses prices for 2003 and 2004 as weights, and the 2003–04 change in prices uses quantities for 2003 and 2004 as weights.<sup>35</sup> These annual changes are “chained” (multiplied) together to form time series of quantity and price indexes. Quarterly changes in quantities and prices are calculated using a Fisher formula that incorporates weights from two adjacent quarters; quarterly indexes are adjusted for consistency to the annual indexes before percent changes are calculated. (For more details, see appendix 1, “Formulas for Calculating Chain-Type Quantity and Price Indexes.”)

The Fisher formula produces percent changes in quantities and prices that are not affected by the choice of reference year. In addition, the use of the Fisher formula has several other advantages over fixed-weighted measures: (1) It eliminates substitution bias in real GDP growth that tends to cause an understatement of growth for periods before the reference year and an overstatement of growth for periods after the reference year; (2) it eliminates the distortion of growth in components and in industries that result from the fixed-weighted indexes; and (3) it eliminates the anomalies that arise from using recent-period price weights to measure periods in the past when a far different set of prices prevailed.<sup>36</sup>

34. Indexes are not presented for change in private inventories, for net exports, and for most of the “net” series in tables 2.4.3, 2.4.4, 2.5.3, 2.5.4, 3.9.3, 3.9.4, 5.2.3, 5.4.3, 5.4.4, 5.8.3, and 5.8.4 because indexes for these series are not meaningful.

35. Because the source data available for most components of GDP are measured in dollars rather than in units, the quantities of most of the detailed components used to calculate percent changes are obtained by deflation. For deflation, quantities are approximated by real values (expressed, at present, with 2000 as the reference year) that are calculated by dividing the current-dollar value of the component by its price index, where the price index uses 2000 as the reference year. Two other methods, quantity extrapolation and direct valuation, are also used to calculate real values for a number of the most detailed GDP components. For quantity extrapolation, the real values are obtained by extrapolating the current-dollar estimates for the reference year in both directions by quantity indicators; for example, the real values for “mining exploration, shafts, and wells structures” are extrapolated using oilwell footage drilled. For direct valuation, the real values are obtained by multiplying reference-year prices by quantity data for each period; for example, the real values of “natural gas inventories” are calculated using quantities and prices of natural gas stocks. For more information, see “Updated Summary Methodologies,” in the November 2005 SURVEY.

36. For further discussion, see J. Steven Landefeld, Brent R Moulton, and Cindy M. Vojtech, “Chained-Dollar Indexes: Issues, Tips on Their Use, and Upcoming Changes,” SURVEY 83 (November 2003): 6–16; J. Steven Landefeld and Robert P. Parker, “BEA’s Chain Indexes, Time Series, and Measures of Long Term Economic Growth,” SURVEY 77 (May 1997): 58–68; and Jack E. Triplett, “Economic Theory and BEA’s Alternative Quantity and Price Indexes,” SURVEY 72 (April 1992): 49–52.

### Chained-dollar measures

BEA also prepares measures of real GDP and its components in a dollar-denominated form, designated “chained (2000) dollar estimates.” For GDP and most other series, these estimates are computed by multiplying the current-dollar value in 2000 by a corresponding quantity index number and then dividing by 100. For example, if a current-dollar GDP component equaled \$100 in 2000 and if real output for this component increased 15 percent by 2004, then the chained (2000) dollar value of this component in 2004 would be \$115 (= \$100 x 115/100). (For a list of the chained-dollar series that are not calculated in this way, see appendix 2, “Chained Measures in the NIPAs Not Calculated as Fisher Indexes.”)

The chained (2000) dollar, or “real,” estimates provide measures to calculate the percent changes for GDP and its components that are consistent with those calculated from the chain-type quantity indexes; any differences will be small and due to rounding. For most components of GDP, the chained-dollar estimates also provide rough approximations of their relative importance and of their contributions to real GDP growth for years close to 2000.<sup>37</sup> However, for some components—such as computers and other high-tech equipment with rapid growth in real sales and falling prices—chained-dollar levels (as distinct from chain-weighted indexes and percent changes) overstate the relative importance of such components to GDP growth.<sup>38</sup>

In addition, chained-dollar values for the detailed GDP components will not necessarily sum to the chained-dollar estimate of GDP (or any intermediate aggregate) because the relative prices used as weights for any period other than the reference year differ from those used for the reference year. BEA provides a measure of the extent of such differences by showing a “residual” line on chained-dollar tables that indicates the difference between GDP (or other major aggregate) and the sum of the most detailed components in the table.

For periods close to the reference year, when there

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37. The availability of chained-dollar estimates before 1990 has been limited to key aggregates. However, detailed quantity indexes, which are accurate for all periods, are presented in tables with table numbers having format #.#.3, most of which begin with 1929. These quantity indexes can be used in place of chained-dollar estimates in analyses that require data on real GDP or its components over time, as well as to calculate percent changes. For GDP and its major components, annual growth rates beginning with 1930 and quarterly growth rates beginning with the second quarter of 1947 are presented in table 1.1.1.

38. The problems associated with chained-dollar levels for components with rapidly changing prices is the result of using a fixed reference year in conjunction with a chain index whose weights change every period to reflect changes in relative prices. It is mathematically impossible to “force” chained-dollar levels to reflect both the current-period weights and period-to-period percent changes that are consistent with a chain index.

usually has not been much change in the relative prices that are used as the weights for calculating the chain-type index, the residuals tend to be small, and the chained (2000) dollar estimates can be used to approximate the contributions to growth and to aggregate the detailed estimates.

### Contributions

For periods further from the reference year, the residual tends to become larger, and the chained-dollar estimates are less useful for analyses of contributions to growth.<sup>39</sup> For this reason, BEA also shows contributions of major components to the percent change in real GDP (and to the percent change in other major aggregates) that use exact formulas for attributing growth. (For details, see appendix 3, “Calculation of Component Contributions to the Change in GDP and Other Major Aggregates.”)

The contributions tables have table numbers with the format #.#.2, and the presentation is limited to the contributions to the percent change in GDP (or in another major aggregate) from the preceding year or quarter. For some analytical purposes, it may be desirable to calculate contributions to growth for more than a single quarter or year or to calculate contributions to growth for aggregates not shown in these tables. An article in the *SURVEY* provides information on how to prepare chained-dollar series with different reference years that permit the calculation of close approximations of contributions to real growth for any period.<sup>40</sup> The article shows how to calculate a chained-dollar series for any period by using the percent changes in the chain-type indexes to compute chained-dollar series indexed to the current dollars of whatever reference year is appropriate for the analysis. In the article, different reference years are used depending upon the time period analyzed; for example, for decades and business cycles, the midpoints of the periods are used.<sup>41</sup>

### Current-dollar shares

Two tables show the percentage shares of GDP and GDI that are accounted for by major components. These shares, which are calculated on a current-dollar

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39. This is why most of the chained-dollar series for detailed components are shown beginning with 1990, although chained (2000) dollar estimates for selected series for earlier periods are shown in tables 1.1.6, 1.2.6, 1.3.6, 1.4.6, 1.7.6, and 1.8.6.

40. See Landefeld and Parker, “BEA’s Chain Indexes,” 63–66.

41. NIPA tables 1.1.6A, 1.1.6B, 1.1.6C, and 1.1.6D present annual estimates of real GDP and its major components in chained (1937) dollars, chained (1952) dollars, chained (1972) dollars, and chained (1982) dollars, respectively. However, users should be aware that contributions calculated from these tables are approximations and may produce misleading results for periods far from those reference years or when relative prices are changing rapidly, such as during the energy crisis of 1973–75.

basis, provide data users with an accurate measure of the size and importance of the components of GDP and GDI. Table 1.1.10, which shows the shares of GDP, is published annually and quarterly, and table 1.1.11, which shows the shares of GDI, is published annually.

### Price indexes

BEA's featured aggregate price measure is the price index for gross domestic purchases, which measures the prices paid for goods and services *purchased* by U.S. residents. This index is derived from the prices of PCE, gross private domestic investment, and government consumption expenditures and gross investment. In contrast, the GDP price index measures the prices paid for goods and services *produced* by the U.S. economy and is derived from the prices of PCE, gross private domestic investment, net exports, and government consumption expenditures and gross investment. Thus, the two indexes differ with respect to coverage of the prices of exported and imported goods and services. Price changes in goods and services produced abroad and sold in the United States are reflected in the gross domestic purchases measure but not in the GDP measure; price changes in goods and services produced by the U.S. economy and sold abroad are reflected in the GDP price measure but not in the gross domestic purchases price measure. For example, a change in the price of imported petroleum that is fully passed on to U.S. consumers would be fully reflected in the price index for gross domestic purchases but not in the GDP price index, because imports are subtracted in deriving GDP.

### Implicit price deflators

BEA also prepares another price index, the implicit price deflator (IPD), which is calculated as the ratio of the current-dollar value to the corresponding chained-dollar value, multiplied by 100 (see appendix 1, "Formulas for Calculating Chain-Type Quantity and Price Indexes"). The values of the IPD are very close to the values of the corresponding chain-type price index for all periods. IPDs for GDP and its major components are presented as index numbers in NIPA table 1.1.9.

### Command-basis GNP and terms of trade

BEA also prepares another measure of "real" output—*command-basis GNP* (tables 1.8.3 and 1.8.6). Command-basis GNP is a measure of the goods and services produced by the U.S. economy in terms of their purchasing power. GNP and command-basis GNP differ in how their real values are prepared: In estimating real GNP, the current-dollar values of the detailed components of exports of goods and services are

deflated by export prices, the current-dollar values of the detailed components of imports of goods and services are deflated by import prices, and the current-dollar value of most factor income is deflated by the IPD for final sales to domestic purchasers. In estimating command-basis GNP, the current-dollar value of the sum of exports of goods and services and of income receipts is deflated by the IPD for the sum of imports of goods and services and of income payments.

The *terms of trade* is a measure of the relationship between the prices that are received by U.S. producers for exports of goods and services and the prices that are paid by U.S. purchasers for imports of goods and services. When the terms of trade improve (that is, when export prices rise relative to import prices), the purchasing power, or command value of U.S. GNP in international markets, increases by more than the production of goods and services valued in U.S. prices. Conversely, when the terms of trade deteriorate (that is, when export prices fall relative to import prices), the purchasing power, or command value of U.S. GNP in international markets, increases by less than the production of goods and services valued in U.S. prices.

The terms of trade is measured by the following ratio, with the decimal point shifted two places to the right: In the numerator, the IPD for the sum of exports of goods and services and of income receipts; in the denominator, the IPD for the sum of imports of goods and services and of income payments. Changes in the terms of trade reflect the interaction of several factors, including movements in exchange rates, changes in the composition of traded goods and services, and changes in producers' profit margins. For example, if the U.S. dollar depreciates against a foreign currency, a foreign manufacturer may choose to absorb this cost by reducing the profit margin on the product it sells to the United States, or it may choose to raise the price of the product and risk a loss in market share.

### Classifications of Production

In the NIPAs, production is classified by type of product, by sector, by legal form of organization, and by industry.

#### Type of product

Type of product classifications—goods (durable and nondurable), services, and structures—are presented for GDP and the components of final sales of domestic product.

Goods are tangible products that can be stored or inventoried, services are products that cannot be stored and are consumed at the place and time of their purchase, and structures are products that are usually

constructed at the location where they will be used and that typically have long economic lives. In cases in which a product has characteristics of more than one of these classifications (for example, restaurant meals), or in which source data do not provide detail on type of product (for example, foreign travel), the product is classified on the basis of the dominant characteristic.

Accordingly, the following products are included in goods: Restaurant meals; expenditures abroad by U.S. residents except for travel (for example, expenditures of U.S. military and embassy personnel abroad); replacement parts whose installation cost is minimal; dealers' margins on used equipment; and movable household appliances, such as refrigerators, even when they are included in the purchase price of a new home.

The following products are included in services: Food that is included in airline transportation and hospital charges; natural gas and electricity (except in exports and imports); goods and services that are included in current operating expense of nonprofit institutions (for example, office supplies); foreign travel by U.S. residents; expenditures in the United States by foreigners; repair services, which include the cost of parts (except replacement parts whose installation cost is minimal); defense research and development; and exports and imports of certain goods, primarily military equipment purchased and sold by the Federal Government.

Government consumption expenditures for the Federal Government and state and local governments are recognized as services produced by general government. The value of these services, most of which are not sold in the market, are measured by the cost of inputs: Compensation, consumption of fixed capital (CFC), and intermediate goods and services purchased less own-account investment and sales to other sectors. (Purchases by general government of goods and services are classified as intermediate purchases.)

The following products are included in structures: Manufactured homes; certain types of installed equipment, such as elevators, heating, and air conditioning systems; brokers' commissions on sale of structures; architectural and engineering fees included in the value of structures; land development costs; and mining exploration, shafts, and wells.

In PCE, in exports, in imports, and in government intermediate goods and services purchased, durable goods have an average life of at least 3 years. In fixed investment, equipment and software consists of goods that have an average life of at least 1 year. In change in private inventories, goods held by manufacturing and trade establishments are classified as durable goods or nondurable goods in accordance with the classification of the industry of the establishment holding the inven-

tories. Inventories held by construction establishments are classified as durable goods. Inventories held by establishments other than those in manufacturing, trade, and construction are classified as nondurable goods.

### Sector

In the NIPAs, a breakdown of GDP is also shown in terms of the three sectors of the economy—business, households and institutions, and general government; the term “value added” refers to the product of sectors.

*Business:* Production by all entities that produce goods and services for sale at a price intended at least to approximate the costs of production, corporate and noncorporate private entities organized for profit, and certain other entities that are treated as business in the NIPAs. These entities include mutual financial institutions, private noninsured pension funds, cooperatives, nonprofit organizations (that is, entities classified as nonprofit by the Internal Revenue Service (IRS) in determining income tax liability) that primarily serve business, Federal Reserve banks, federally sponsored credit agencies, and government enterprises.<sup>42</sup> Gross value added of the business sector is measured as GDP less the gross value added of households and institutions and of general government.<sup>43</sup>

*Households and institutions:* The households and institutions sector comprises households and nonprofit institutions serving households (NPISHs). The gross value added of households is measured by the services of owner-occupied housing and the compensation paid to domestic workers. The gross value added of NPISHs is measured by the compensation paid to the employees of these institutions, the rental value of fixed assets owned and used by these institutions, and the rental income of persons for tenant-occupied housing owned by these institutions.

*General government:* The government sector comprises all Federal Government and state and local government agencies except government enterprises. The gross value added of general government is measured as the sum of the compensation of the employees of these agencies and of their CFC.

### Legal form of organization

For the domestic business sector, income and its components are shown for corporate business and noncorporate business. Noncorporate business, in turn, comprises sole proprietorships and partnerships, other private business, and government enterprises

42. For more detail on government enterprises, see the section “Legal form of organization.”

43. Gross value added of financial and of nonfinancial corporations are also shown in the NIPA tables. They are calculated based on the costs incurred and the incomes earned from production.

(employee compensation and current surplus of enterprises).

*Corporate business:* This legal form comprises all entities required to file Federal corporate tax returns (IRS Form 1120 series). These entities include mutual financial institutions and cooperatives subject to Federal income tax, nonprofit institutions that primarily serve business, Federal Reserve banks, and federally sponsored credit agencies.

*Sole proprietorships:* This legal form comprises all entities that would be required to file IRS Schedule C (Profits or Loss from Business) or Schedule F (Farm Income and Expenses) if the proprietor met the filing requirements.

*Partnerships:* This legal form comprises all entities required to file Federal partnership income tax returns, IRS Form 1065 (U.S. Partnership Return of Income).

*Other private business:* This legal form comprises all entities that would be required to report rental and royalty income on the individual income tax return in IRS Schedule E (Supplemental Income and Loss) if the individual met the filing requirements, tax-exempt cooperatives, and buildings and equipment and software owned and used by NPISHs.

*Government enterprises:* This legal form consists of government agencies that cover a substantial proportion of their operating costs by selling goods and services to the public and that maintain their own separate accounts. A “mixed” treatment of government enterprises is used in the NIPAs: Some types of transactions are recorded as if they were part of the business sector, and others are recorded as if they were part of the general government sector. The following transactions of government enterprises are treated like those of businesses and included in the NIPA business sector: (1) Their sales to final users are recorded as sales by businesses, (2) their purchases of materials and business services are considered intermediate, and (3) their compensation payments and CFC are deducted in calculating their income. Within the business sector, government enterprises are classified as noncorporate businesses.

Other transactions of government enterprises are treated like those of other government agencies: (1) Their interest payments are combined with those of general government rather than those of business, (2) their investment in equipment and software and in structures is combined with general government investment rather than with business investment in gross private domestic investment, and (3) their profit-like income, the current surplus of government enterprises (see definition on page 9), accrues to general government.

## Industry

Industrial distributions are presented for national income and its components, capital consumption allowances, employment and hours, and the change in private inventories and the stock of private inventories.<sup>44</sup> For the estimates of income and employment by industry beginning with 1998, the classification underlying the distributions of private activities is based on the North American Industrial Classification System (NAICS).<sup>45</sup> For the estimates of inventories beginning with the first quarter of 1997, the estimates are also based on NAICS. For estimates before these dates, the industry classifications are based on the Standard Industrial Classification (SIC).<sup>46</sup>

The industry distributions in most of the tables in “Income and Employment” (table section 6; see Presentation of the NIPAs below) are shown as follows: Estimates for 1929–48 based on the 1942 SIC are shown in tables designated as part A; estimates for 1948–87 based on the 1972 SIC are shown as part B; estimates for 1987–2000 based on the 1987 SIC are shown as part C; and estimates for 1998 forward are based on the 1997 NAICS are shown as part D. The industry distributions based on the 1997 NAICS reflect the corresponding shift of most of the NIPA source data to a NAICS basis. The estimates for earlier years have not been adjusted to the 1997 NAICS basis because of a lack of adequate source data. Instead, the estimates for 1948 are shown on the basis of both the 1942 and 1972 SIC, the estimates for 1987 are shown on the basis of both the 1972 and the 1987 SIC, and the estimates for 1998–2000 are shown on the basis of both the 1987 SIC and the 1997 NAICS.

44. An industrial distribution of fixed investment based on data collected from establishments is prepared as part of the procedure used to estimate fixed assets. For further information, see *Fixed Assets and Consumer Durable Goods in the United States, 1925–97* (Washington, DC: U.S. Government Printing Office, September 2003). Industrial distributions of gross output, intermediate inputs, and gross product are also prepared; for further information, see Brian C. Moyer, 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 84 (June 2004): 21–57; Robert E. Yuskavage and Yvon H. Pho, “Gross Domestic Product by Industry for 1987–2000: New Estimates on the North American Industry Classification System,” SURVEY 84 (November 2004): 33–53; and George M. Smith, Matthew J. Gruenberg, Tameka R.L. Harris, and Erich H. Strassner, “Annual Industry Accounts: Revised Estimates for 2001–2003,” SURVEY 85 (January 2005): 9–43.

45. See Executive Office of the President, Office of Management and Budget, *North American Industry Classification System, United States, 1997* (Washington, DC: Bernan Press, 1998).

46. See Office of Management and Budget, Statistical Policy Division, *Standard Industrial Classification Manual, 1987* (Washington, DC: U.S. Government Printing Office (GPO), 1988); Office of Management and Budget, Statistical Policy Division, *Standard Industrial Classification Manual, 1972* (Washington, DC: GPO, 1972); and Bureau of the Budget, *Standard Industrial Classification Manual, 1942* (Washington, DC: GPO, 1942).

Industrial distributions of government activities are not provided; instead, they are combined into a single category. For most series, separate estimates are shown for the activities of the Federal Government, of state and local governments, and of government enterprises. Expenditures by the Federal Government and by state and local governments are also shown by type and by function.

The industrial distributions for private activities are based on data collected from “establishments” or from “companies” (also called enterprises, or firms). Establishments are economic units, generally at a single physical location, where business is conducted or where services or industrial operations are performed (for example a factory, mill, store, hotel, movie theater, mine, farm, airline terminal, sales office, warehouse, or central administrative office). Companies consist of one or more establishments owned by the same legal entity or group of affiliated entities. Establishments are classified into an industry on the basis of their principal product or service, and companies are classified into an industry on the basis of the principal industry of all their establishments. Because large multiestablishment companies typically own establishments that are classified in different industries, the industrial distribution of the same economic activity on an establishment basis can differ significantly from that on a company basis. For example, employment of steel-manufacturing companies differs from employment of steel-manufacturing establishments because the employment of these companies includes the employment of establishments that are not classified in steel manufacturing and because it excludes the employment of establishments that manufacture steel but are not owned by steel-manufacturing companies.

Industrial distributions on a consistent establishment or company basis are not available for all NIPA components. As a result, the industrial distribution of national income reflects a mix of establishment and company data. For the following series, the industrial distributions are based on establishment data: Compensation of employees, employment, hours, inventories, rental income of persons, farm proprietors’ income, farm net interest, and farm noncorporate capital consumption allowances. For nonfarm proprietors, industrial distributions of proprietors’ income, net interest, and capital consumption allowances are based on company data; these data are regarded as being substantially the same as if they were based on establishment data because nearly all unincorporated companies own only one establishment (and the few

multiestablishment companies usually own establishments in the same industry). For corporations, industrial distributions of profits, nonfarm net interest, and capital consumption allowances are based on company data.

In addition, individual industry series are not fully comparable over time. Historical comparability is affected primarily by two factors. First, the composition of industries may change because of changes in the NAICS or SIC basis that is used for the estimates. This factor affects estimates based on establishment data and on company data.

Second, historical comparability is affected because the industrial classification of the same establishment or company may change over time. This factor affects company-based estimates much more than establishment-based estimates. The classification of a company may change as a result of the following: Shifts in the level of consolidation of entities for which company reports are filed; mergers and acquisitions; and other shifts in principal activities, especially for large, diversified firms.

In addition to the industrial distributions of private activities, some NIPA tables show the following special industry groupings:

*Financial industries* consists of the following NAICS industries: Finance and insurance, and management of companies and enterprises. Finance and insurance consists of Federal Reserve banks; credit intermediation and related activities; securities, commodity contracts, and investments; insurance carriers and related activities; and funds trusts, and other financial vehicles. Management of companies and enterprises consists of bank and other holding companies.

*Nonfinancial industries* consists of all other private industries.

*Goods-producing industries* consists of the following NAICS divisions: Natural resources (agriculture, forestry, fishing, and hunting) and mining; construction; and manufacturing.

*Services-producing industries* consists of the following NAICS divisions: Wholesale trade, retail trade, transportation and warehousing, and utilities; and other services-producing industries (information; finance and insurance; real estate and rental and leasing; professional, scientific, and technical services; management of companies and enterprises; administrative and waste management services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and other services, except government).

## Presentation of the NIPAs

This section describes the release schedule for the NIPA estimates, the publication of the NIPA tables, and additional presentations of NIPA and NIPA related estimates.<sup>47</sup>

### Release schedule

For GDP and most other NIPA series, quarterly estimates are released on the following schedule: “Advance” estimates are released near the end of the first month after the end of the quarter; as more detailed and more comprehensive data become available, “preliminary” and “final” estimates are released near the end of the second and third months, respectively.

For gross national product, gross domestic income, national income, corporate profits, and net interest, “advance” estimates are not prepared, because of a lag in the availability of source data. Except for the fourth quarter estimates, the initial estimates for these series are released with the preliminary GDP estimates, and the revised estimates are released with the final GDP estimates. For the fourth quarter, these estimates are released only with the final GDP estimates.

In addition, when the preliminary estimates of GDP for the current quarter are released, BEA releases revised estimates of private wages and salaries and affected income-side aggregates for the previous quarter.<sup>48</sup> This permits the incorporation of the most recently available wage and salary data from the quarterly census of employment and wages.

Monthly estimates of personal income and outlays are released near the end of the month following the

reference month; estimates for the preceding 2 to 4 months are subject to revision at that time.

Annual revisions of the NIPAs are usually carried out each summer and cover the months and quarters of the most recent calendar year and of the 2 preceding years. These revisions are timed to incorporate newly available major annual source data.<sup>49</sup>

Comprehensive revisions are carried out at about 5-year intervals. They incorporate definitional, statistical, and presentational improvements.

### Publication of the NIPA tables

Tables that present the NIPA estimates appear each month under “National Data” in the section “BEA Current and Historical Data” in the SURVEY OF CURRENT BUSINESS and on BEA’s Web site.<sup>50</sup> The full set of NIPA tables consists of 299 tables that present annual, quarterly, and monthly estimates.

With the release of the 12th comprehensive revision of the NIPAs, the presentation of the NIPA tables was organized to group tables with similar formats in one section of the NIPA tables. To assist users in identifying the type of estimate in a table, a numbering system for NIPA tables was developed for groups of tables that display different types of estimates using similar formats. The table-numbering system highlights the type of estimate (such as current dollars, quantity indexes, and percent changes) in the table. The new system is outlined below.

Table numbers are in the format “X.Y.Z.” where “X” indicates the NIPA table section, “Y” indicates the table number in the section, and “Z” indicates the type of estimate presented.

47. For additional details on the availability of BEA’s products and services, see BEA’s Web site at <[www.bea.gov](http://www.bea.gov)>.

48. Affected aggregates include gross domestic income, the statistical discrepancy, gross national income, national income, personal income, disposable personal income, personal saving, gross (national) saving, compensation, and gross product of corporate business. Other components that are closely linked to wages and salaries, such as personal current taxes and employer contributions for government social insurance are also revised. However, GDP and its components are not affected.

49. For a discussion of the most recent annual revision of the NIPAs, see Eugene P. Seskin and Shelly Smith, “Annual Revision of the National Income and Product Accounts,” SURVEY 86 (August 2006): 7–31.

50. The NIPA estimates appear first in news releases, which are available to the general public in a variety of forms.

The table sections are numbered as follows:

1. Domestic Product and Income
2. Personal Income and Outlays
3. Government Current Receipts and Expenditures
4. Foreign Transactions
5. Saving and Investment
6. Income and Employment by Industry
7. Supplemental Tables
8. Seasonally Unadjusted Estimates

The table numbers within each section are numbered sequentially. The types of estimates are numbered as follows:

1. Percent change from preceding period in real estimates (most at annual rates)
2. Contributions to percent change in real estimates
3. Real estimates, quantity indexes
4. Price indexes
5. Current dollars
6. Real estimates, chained dollars
7. Percent change from preceding period in prices
8. Contributions to percent change in prices
9. Implicit price deflators
10. Percentage shares of GDP

For example, GDP is presented in table group 1.1; the current-dollar estimates are presented in table 1.1.5, and the chained-dollar estimates are presented in table 1.1.6.

The tables that present current-dollar estimates, but not other types of estimates, use only the first two terms of the numbering system. For example, table 3.1, “Government Current Receipts and Expenditures,” that presents only current-dollar estimates is not numbered 3.1.5.

For some tables, a letter suffix following the table number indicates that there are different versions of the table for different time periods; for example, table 4.3A shows the relation of foreign transactions in the NIPAs to the corresponding items in the international transactions accounts for the period 1946–85, and table 4.3B shows the same relation (with additional detail) beginning with 1986.

Most of the full set of NIPA tables are published in the issues of the *SURVEY* that describe the annual and comprehensive revisions (for example, see the August 2006 *SURVEY*); the remaining tables are published in subsequent months. In addition, a set of “Selected NIPA Tables” is published monthly in the *SURVEY*; this

set presents the estimates for the most recent 5 quarters and the most recent 2 years. The selected set comprises 100 tables from the first seven NIPA table sections (seasonally unadjusted estimates in the last section are compiled only once a year and thus are not included in the selected set of tables). Because the numbering system used for the full set of tables is retained in the selected set, gaps occur in the numbering of the selected tables.

A note preceding the NIPA tables indicates information on the vintage of the estimates. In general, the NIPA tables in the *SURVEY* present estimates for the most recent 2–4 years. Historical annual and quarterly estimates for summary NIPA series are presented annually in the *SURVEY* and cover the following: Current- and chained-dollar GDP for most of the components in NIPA tables 1.1.5 and 1.1.6 and for final sales of domestic product and gross national product; NIPA chained-type quantity indexes in NIPA table 1.1.3 and chain-type price indexes and implicit price deflators in NIPA tables 1.1.4 and 1.1.9; and most of the major components of national income and personal income in NIPA tables 1.1.2 and 2.1. For example, these estimates were published as “GDP and Other Major NIPA Series, 1929–2006:II” in the August 2006 *SURVEY*. In addition, historical annual and quarterly estimates for the major NIPA aggregates are published monthly in table C.1 in the “BEA Current and Historical Data” section of the *SURVEY*.

An “Index to the NIPA Tables,” which identifies the NIPA table (or tables) for each NIPA series and each topic covered by the NIPAs and which includes cross references for commonly used business and economic terms to the appropriate NIPA item was published in the May 2005 *SURVEY*, beginning on page 48. The index is also available on BEA’s Web site in the Interactive NIPA table section.

#### **Additional presentations of NIPA and NIPA-related estimates**

The *SURVEY* also presents the following NIPA and NIPA related estimates that do not fit neatly into the system or publication schedule for the standard NIPA presentation.

“Current-Dollar and Real Value Added by Industry” presents current- and chained-dollar estimates of value added by industry, which is the contribution of each industry including government to GDP. Estimates for value added by industry for 2002–2004 were published in the December 2005 *SURVEY*; advance estimates for 2005 were published in the May 2006 *SURVEY*. (Estimates for earlier years are available on BEA’s Web site.)

“Reconciliation Table” in appendix A of the “BEA

Current and Historical Data” section presents a table that reconciles NIPA estimates with related series and that provides analytically useful extensions of the NIPA estimates. This table shows the reconciliation of relevant NIPA series with related series in the international transactions accounts.

“Real Inventories, Sales, and Inventory Sales Ratios for Manufacturing and Trade,” usually published in the January, April, July, and October issues of the SURVEY, shows quarterly and monthly estimates for these series. Also shown are quarterly and monthly inventories for manufacturing by stage of fabrication. Historical estimates for these series, quarterly for 1997:I–2003:IV, were published in the April 2004 SURVEY, and revised and new estimates for 2001:IV–2005:II were published in the October 2005 SURVEY. Estimates for 1959 forward are available electronically on BEA’s Web site.

“Fixed Assets and Consumer Durable Goods,” usually published in the September issue of the SURVEY, shows annual estimates of net stocks for private fixed assets, government owned fixed assets, and durable goods owned by consumers. Revised and new estimates for 2003–2005 were published in the September 2006 SURVEY. Estimates for net stocks and depreciation for 1925 forward and for fixed investment for 1901 forward are available electronically on BEA’s Web site. For information on how these estimates are prepared, see *Fixed Assets and Consumer Durable Goods in the United States, 1925–97*, September 2003, at <[www.bea.gov/bea/dn/Fixed\\_Assets\\_1925\\_97.pdf](http://www.bea.gov/bea/dn/Fixed_Assets_1925_97.pdf)>.

“Selected Monthly Estimates” for personal income by type of income and for the disposition of personal income, including PCE, are published in table B.1 in the “BEA Current and Historical Data” section of the SURVEY. These estimates are also published annually in NIPA tables 2.6–2.8.6, and the estimates for the most recent months appear in the personal income and outlays news release.

“Source Data and Assumptions” shows the source data and the BEA assumptions for missing key source data that are used to prepare the advance estimates of GDP. This information is available at the time of the news release and is included in the “GDP and the

Economy” articles in the SURVEY that present the advance estimates.<sup>51</sup>

“Reliability of the GDP Estimates” covers several articles that assess the reliability of the current quarterly estimates, which consist of the advance, preliminary, and final estimates, by comparing them with the “latest” estimates, which reflect the results of both annual and comprehensive revisions. The most recent study, which was conducted in 2005 for the period 1983–2002, found that the current quarterly estimates correctly indicated the direction of change 98 percent of the time, correctly indicated the acceleration or deceleration of aggregate economic activity about three-fourths of the time, and successfully identified whether GDP growth was high relative to trend about two-thirds of the time and whether it was low relative to trend about three-fifths of the time. For business cycles occurring during the period 1969–2002, the quarterly estimates of real GDP indicated the cyclical peaks in all five of the recessions and indicated the cyclical troughs in three of the five recessions; the two missed troughs were within one quarter of the latest estimates of the troughs.<sup>52</sup>

“Underlying Detail Tables” includes 62 tables that show additional information or detail underlying the NIPA estimates. These tables provide more detailed or higher frequency estimates of NIPA series that appear in the NIPA tables published elsewhere on BEA’s Web site and in the SURVEY. BEA does not include these detailed estimates in the published tables because their quality is significantly less than that of the higher level aggregates in which they are included. Compared to these aggregates, the more detailed estimates are more likely to be either based on judgmental trends, on trends in the higher level aggregate, or on less reliable source data. Most of the underlying tables are updated one working day after the monthly GDP releases.

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51. Additional information about source data and assumptions is also available on BEA’s and STAT-USA’s Web sites.

52. See Dennis J. Fixler and Bruce T. Grimm, “Reliability of the NIPA Estimates of U.S. Economic Activity,” SURVEY 85 (February 2005): 8–19 and Bruce T. Grimm and Teresa L. Weadock, “Gross Domestic Product: Revisions and Source Data,” SURVEY 86 (FEBRUARY 2006): 11–15.

## Statistical Conventions Used for NIPA Estimates

Most of the NIPA estimates are presented in current dollars. Changes in current-dollar estimates measure the changes in the market values of goods or services that are produced or sold in the economy. For many purposes, it is necessary to decompose these changes into price and quantity components. Prices are expressed as index numbers with the reference year at present, the year 2000 equal to 100. Quantities, or “real” measures, are expressed as index numbers with the reference year (2000) equal to 100; for selected series, they are also expressed in chained (2000) dollars. (For further details, see the section “Real Output and Related Measures.”)

### Seasonal adjustment

Quarterly and monthly NIPA estimates are seasonally adjusted at the detailed series level when the series demonstrate statistically significant seasonal patterns. For most of the series that are seasonally adjusted by the source agency, BEA adopts the corresponding seasonal adjustment factors. Seasonal adjustment removes from the time series the average effect of variations that normally occur at about the same time and in about the same magnitude each year—for example, weather and holidays. After seasonal adjustment, cyclical and other short term changes in the economy stand out more clearly.

### Annual rates

Quarterly and monthly NIPA estimates in current and chained dollars are presented at annual rates, which show the value that would be registered if the rate of activity measured for a quarter or a month were maintained for a full year. Annual rates are used so that periods of different lengths—for example, quarters and years—may be easily compared. These annual rates are determined simply by multiplying the estimated rate of activity by 4 (for quarterly data) or by 12 (for monthly data).

Percent changes in the estimates are also expressed at annual rates. Calculating these changes requires a variant of the compound interest formula,

$$r = \left[ \left( \frac{GDP_t}{GDP_0} \right)^{m/n} - 1 \right] \times 100 ,$$

where

- $r$  is the percent change at an annual rate;
- $GDP_t$  is the level of activity in the later period;
- $GDP_0$  is the level of activity in the earlier period;
- $m$  is the periodicity of the data (for example, 1 for annual data, 4 for quarterly, or 12 for monthly); and
- $n$  is the number of periods between the earlier and later periods (that is,  $t-0$ ).

## Appendix 1

### Formulas for Calculating Chain-Type Quantity and Price Indexes

This appendix shows the basic calculations used to prepare annual and quarterly chain-type quantity and price indexes.

#### Annual indexes

The formula used to calculate the annual change in real GDP and other components of output and expenditures is a Fisher index ( $Q_t^F$ ) that uses weights for 2 adjacent years (years  $t-1$  and  $t$ ).

The formula for real GDP in year  $t$  relative to its value in year  $t-1$  is

$$Q_t^F = \sqrt{\frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}} \times \frac{\sum p_t q_t}{\sum p_t q_{t-1}}}$$

where the  $p$ 's and  $q$ 's represent prices and quantities of detailed components in the 2 years.

Because the first term in the Fisher formula is a Laspeyres quantity index ( $Q_t^L$ ), or

$$Q_t^L = \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}}$$

and the second term is a Paasche quantity index ( $Q_t^P$ ), or

$$Q_t^P = \frac{\sum p_t q_t}{\sum p_t q_{t-1}}$$

the Fisher formula can also be expressed for year  $t$  as the geometric mean of these indexes as follows:

$$Q_t^F = \sqrt{Q_t^L \times Q_t^P}.$$

The percent change in real GDP (or in a GDP component) from year  $t-1$  to year  $t$  is calculated as

$$100(Q_t^F - 1.0).$$

Similarly, price indexes are calculated using the Fisher formula

$$P_t^F = \sqrt{\frac{\sum p_t q_{t-1}}{\sum p_{t-1} q_{t-1}} \times \frac{\sum p_t q_t}{\sum p_{t-1} q_t}}$$

which is the geometric mean of a Laspeyres price index ( $P_t^L$ ) and a Paasche price index ( $P_t^P$ ), or

$$P_t^F = \sqrt{P_t^L \times P_t^P}.$$

The chain-type quantity index value for period  $t$  is  $I_t^F = I_{t-1}^F \times Q_t^F$ , and the chain-type price index is calcu-

lated analogously. Chain-type real output and price indexes are presented with the reference year ( $b$ ) equal to 100; that is,  $I_b = 100$ .

The current-dollar change from year  $t-1$  to year  $t$  expressed as a ratio is equal to the product of the Fisher price and quantity indexes:

$$\frac{\sum p_t q_t}{\sum p_{t-1} q_{t-1}} = \sqrt{\frac{\sum p_t q_{t-1}}{\sum p_{t-1} q_{t-1}} \times \frac{\sum p_t q_t}{\sum p_{t-1} q_t}} \times \sqrt{\frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}} \times \frac{\sum p_t q_t}{\sum p_t q_{t-1}}} = P_t^F \times Q_t^F.$$

#### Quarterly indexes

The same formulas are used to calculate the quarterly indexes except that quarterly data are substituted for annual data.

All quarterly chain-type indexes for completed years that have been included in an annual or comprehensive revision are adjusted so that the quarterly indexes average to the corresponding annual index. When an additional year is completed between annual revisions, the annual index is computed as the average of the quarterly indexes, so no adjustment is required to make the quarterly and annual indexes consistent. For example, until the 2006 annual revision was released, the chain-type indexes for the year 2005 were computed as the average of the four quarterly indexes for 2005.

#### Chained-dollar estimates

The chained-dollar value  $CD_t^F$  is calculated by multiplying the index value by the reference year current-dollar value ( $\sum p_b q_b$ ) and dividing by 100.<sup>1</sup> For period  $t$ ,

$$CD_t^F = \sum p_b q_b \times I_t^F / 100.$$

#### Implicit price deflators

The implicit price deflator  $IPD_t^F$  for period  $t$  is calculated as the ratio of the current-dollar value to the corresponding chained-dollar value, multiplied by 100, as follows:

$$IPD_t^F = \frac{\sum p_t q_t}{CD_t^F} \times 100.$$

1. For exceptions to this procedure, see appendix 2.

## Appendix 2

### Chained Measures in the NIPAs Not Calculated as Fisher Indexes

The Fisher formula described in Appendix 1, “Formulas for Calculating Chain-Type Quantity and Price Indexes,” is generally preferred for calculating the chain-type quantity and price indexes presented in the NIPAs. In the preferred method, chained dollars are obtained by multiplying the Fisher quantity index by the reference-year current-dollar value and dividing by 100. However, when the components of an aggregate include large negative values, the Fisher formula may require taking the square root of a negative number. For these aggregates, another method for calculating chained dollars must be used. The inability to calculate a particular Fisher quantity index (for example, change in private inventories) because of negative values usually does not extend to the calculation of higher level aggregates (for example, quantity indexes for gross private domestic investment and for GDP can be computed). The calculation of contributions to percent change is not affected by negative values, so they can be calculated for all components.

The following paragraphs describe the cases for which the Fisher formula cannot be used.

For change in private inventories (in tables 1.1.6, 1.2.6, 1.4.6, 1.5.6, 5.2.6, 5.6.6A, 5.6.6B, 7.2.6B, and 7.3.6), chained-dollar series are calculated as the difference between end of period and beginning of period chain-weighted stocks of inventories.

The following chained-dollar series are calculated as the current-dollar value of the series divided by an appropriate implicit price deflator: Gross national in-

come and gross domestic income (in table 1.7.6); command-basis exports of goods and services and income receipts from the rest of the world (in table 1.8.6); and disposable personal income (in tables 2.1 and 2.6).

For the following series, real values are calculated as the sum of, or the difference between, chained-dollar series measuring flows: Net exports of goods and services (in tables 1.1.6, 1.5.6, and 4.2.6); command-basis gross national product (in table 1.8.6); net value added of nonfinancial corporate business (in table 1.14); foreign travel and other, net (in table 2.5.6); net foreign travel and net foreign remittances (in table 2.4.6); Federal nondefense intermediate purchases of durable goods, of nondurable goods, and of Commodity Credit Corporation inventory change (in table 3.10.6); Federal defense intermediate purchases of other durable goods (in table 3.11.6); net investment by major type (in table 5.2.6); residential and nonresidential private net purchases of used structures (in table 5.4.6A and 5.4.6B); Federal defense and nondefense net purchases of used structures (in table 5.8.6A and 5.8.6B); and net exports of motor vehicles (in table 7.2.6B).

For the following series, quantity indexes are calculated by dividing the chained-dollar series by its reference year (that is, 2000) value and multiplying by 100: Command-basis GNP and command-basis exports of goods and services and receipts from the rest of the world (in table 1.8.3); and income receipts from the rest of the world (in table 4.2.3).

### Appendix 3

#### Calculation of Component Contributions to the Change in GDP and Other Major Aggregates

The contributions to percent change in a real aggregate, such as real GDP, provide a measure of the composition of growth in the aggregate that is not affected by the nonadditivity of its components. This property makes contributions to percent change a valuable tool for economic analysis. The contribution to percent change ( $C\% \Delta_{i,t}$ ) in an aggregate in period  $t$  that is attributable to the quantity change in component  $i$  is defined by the formula

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

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 the component  $i$  in period  $t$ ; and

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

The summation with subscript  $j$  in the denominator includes all the deflation level components of the ag-

gregate. Contributions of subaggregates (such as PCE goods) to the percent change of the aggregate (say, PCE or GDP) are calculated by summing the contributions of all the deflation level components contained in the subaggregate.

For annual estimates, no adjustments are required for contributions to sum exactly to the percent change in the aggregate. For quarterly estimates, adjustments are required to offset the effects of adjustments made to published aggregates and their quarterly percent change: namely, conforming quarterly estimates to average to the corresponding annual estimates, and expressing percent change at annual rate. The same formula is used for both annual and quarterly estimates of contributions to percent change in all periods. The only variation in the method of calculation is that when the annual contributions for the most recent year are first calculated, they are based on a weighted average of the quarterly contributions until the next annual revision.