The Comprehensive Revision of the U.S. National Income and Product Accounts: A Review of Revisions and Major Statistical Changes

In early December, the Bureau of Economic Analysis (BEA) released results of a comprehensive—that is, benchmark—revision of the national income and product accounts (NIPA's). This comprehensive revision is the ninth of its kind; the last such revision was released in December 1985. In this revision, most current-dollar series are revised back to 1978, and many are revised back to earlier years; all constant-dollar series are revised back to 1929. (For information on the availability of the revised estimates, see the box on page 26.)

Comprehensive revisions differ from annual NIPA revisions because of the scope of the changes incorporated and because of the number of years subject to revision. (Annual NIPA revisions are typically carried back 3 years to incorporate new and revised source data from a variety of annual government surveys and administrative records and reports.) Comprehensive revisions incorporate three kinds of changes: Definitional and classificational changes, statistical changes, and new and redesigned tables. The definitional and classificational changes incorporated in this comprehensive revision were described in an article in the September 1991 SURVEY OF CURRENT BUSINESS, the major statistical changes are reviewed in a section of this article beginning on page 34, and the new and redesigned tables were presented in an article in the October 1991 SURVEY.

The incorporation of definitional and classificational changes (hereafter referred to as "definitional changes") and of statistical changes leads to revisions in current-dollar estimates and in estimates of prices. In turn, these revisions lead to revisions in constant-dollar estimates. The first three sections of this article describe the impact of the definitional and statistical changes on the current-dollar annual estimates for 1959-90, the constant-dollar annual estimates for 1977–90, and the quarterly estimates for 1988:I-1991:III. The final section reviews the major statistical changes incorporated in this comprehensive revision.

Annual Revisions in Current Dollars

As shown in table 1, the current-dollar revisions in level for major aggregates are generally upward. Prior to 1977, the revisions are mostly small, and they are largely traceable to definitional changes. The largest revisions result from the change that redefines government sales and nontaxes. This change lowers both State and local government purchases and personal tax and nontax payments and raises personal consumption expenditures for services; it has little effect on gross domestic product (GDP) and gross national product (GNP) because the revisions are largely offsetting. Two other definitional changes result in noticeable revisions—amounting to $2.0 billion or more—prior to 1977. The reclassification of interest paid by the Federal Government to foreigners raises payments of factor income, thus lowering GNP but not affecting GDP, and lowers net interest, thus lowering national income. The reclassification of bad debt losses as financial transactions raises corporate profits and lowers proprietors' income, rental income of persons, and business transfer payments. This change has little effect on GDP and GNP; it raises national income and lowers personal income. One statistical change, the introduction of a new procedure for estimating construction of private nonresidential structures and of State and local government nonresidential structures, results in upward revisions back to 1970, raising both GDP and GNP. Another statistical change, the introduction of a new methodology for estimating imputed rental income of farm dwellings, lowers personal consumption expenditures (PCE) and farm proprietors' income back to 1973; this change lowers GDP, GNP, national income, and personal income.

The remainder of the discussion of the revisions in the NIPA estimates focuses on 1977–90, the period in which the revisions are concentrated. The dollar revisions for 1977–90 in the components of the five summary NIPA's are shown in appendix A. Revisions in the major components of these accounts are discussed in some detail in the following sections.

Table 1.—Revisions in Gross Domestic Product, Gross National Product, National Income, and Personal Income

[Billions of dollars]

	1959	1977	1982	1987	1990
Gross domestic product:					
Total revision	**1.5**	**9.0**	**34.8**	**53.2**	**90.4**
Definitional	1.3	.9	6.0	10.0	5.6
Statistical	.2	8.1	28.8	43.2	84.8
Gross national product:					
Total revision	**1.2**	**4.1**	**13.8**	**28.9**	**59.4**
Definitional	1.0	–4.0	–12.7	–14.9	–31.9
Statistical	.2	8.1	26.5	43.8	91.3
National income:					
Total revision	**.9**	**–8.7**	**4.1**	**32.0**	**41.2**
Definitional	.8	–4.1	–21.6	–16.5	–43.5
Statistical	.1	–4.6	25.7	48.5	84.7
Personal income:					
Total revision	**.5**	**–6.2**	**20.1**	**35.6**	**34.3**
Definitional	.3	–3.3	–2.1	–4.5	–19.3
Statistical	.2	–2.9	22.2	40.1	53.6

National income and product

GDP in current dollars is revised up for all years from 1977 through 1990. The percent revision in the level of GDP ranges from 0.5 percent for 1977 to 1.7 percent for 1990. Statistical changes account for most of the revision; the change that has the largest impact is the introduction of the new procedure for estimating nonresidential structures. Other statistical changes that contribute to the upward revisions are the incorporation of the results of the 1982 benchmark input-output (I-O) accounts (largely into the estimates of producers' durable equipment), the Annual Survey of Manufactures for 1988 and for 1989 (change in business inventories), and the Annual Retail Trade Survey for 1988 and for 1989 (PCE). Definitional changes have their greatest impact in 1986, when they account for about one-fifth of the total revision. The changes that contribute most to the upward revisions in GDP are (1) the change in imputed brokerage charges (PCE and State and local government purchases), (2) the reclassification of nine Federal Government agencies (Federal nondefense purchases), (3) the reclassification of capital gains distributions (PCE), and (4) the capitalization of monetary interest on own-account construction (nonresidential structures).

GNP is revised up for all years. The percent revision in the level of GNP is less than that for GDP, ranging from 0.2 percent for 1977 to 1.1 percent for 1990. (In the last comprehensive revision, the largest percent revision in the level of GNP was 4.0 percent.) In general, the impacts of the definitional and statistical changes on GNP are similar to those on GDP. Wo exceptions are definitional changes that affect receipts and payments of factor income: The reclassification of interest paid by the Federal Government to foreigners as a payment of factor income (which lowers GNP); and the recording of nonresident taxes as transfer payments, which raises both receipts and payments of factor income (because receipts are raised more than payments, GNP is also raised).

National income is revised down for 1977-81 and up for 1982–90. The largest percent revision in the level of national income is 0.9 percent in 1990. (In the last comprehensive revision, the largest percent revision in the level of national income was 4.4 percent.) The downward revisions for 1977-81 largely result from the definitional change that reclassifies interest paid by Federal Government to foreigners. Beginning with 1982, substantial upward statistical revisions more than offset downward definitional revisions. For all or part of 1982-87, the following are the major statistical changes that result in upward revisions: The improved adjustments for misreporting on tax returns that are used in estimating nonfarm proprietors' income and wages and salaries, information from the 1982 I-O accounts that lowers rental expenses and thus raises rental income of persons, information from a trade source that increases the employer's share of health insurance premiums, and a variety of improvements in the procedures for estimating net interest. For 1988-90, the upward revisions also reflect the incorporation of tax return sources for the estimates of corporate profits and net interest and of Bureau of Labor Statistics (BLS) tabulations of wages and salaries covered by State unemployment insurance.

Product-side components

Personal consumption expenditures (PCE) for goods.—PCE for goods is revised down for 1977–88 and up for 1989 and 1990 (table 2). These revisions are largely accounted for by a number of statistical changes.

PCE for durable goods is revised down for all years; the revisions are primarily in motor vehicles, mainly in purchases of used autos and of 'tires, tubes, accessories, and other parts." The downward revisions in used auto purchases by consumers reflect an updating of the depreciation schedule used to determine the constant-dollar value and, prior to 1984, the carry-

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Table 2.—Revisions in Personal Consumption Expenditures

[Billions of dollars]

	1977	1982	1987	1990
Personal consumption expenditures: Total revision	**14.3**	**8.5**	**42.8**	**85.3**
By source of revision				
Definitional	17.4	37.8	57.8	74.6
Redefine government sales and personal nontaxes	17.2	34.8	53.0	71.0
Reclassify bad debt losses as financial transactions	−.2	2.1	−1.5	.3
Reclassify capital gains distributions	.2	.1	2.1	.3
Remove capital gains from brokerage charges	.2	.9	4.1	2.9
Statistical	−3.1	−29.3	−15.0	10.7
By component				
Durable goods	−1.9	−16.2	−19.7	−14.4
Nondurable goods	0	1.3	9.8	24.0
Services	16.1	23.4	52.7	75.7

ing back of an adjustment for quality change in the valuation of used autos in current dollars. Beginning with 1981, expenditures for "tires, tubes, accessories, and other parts" is revised down substantially; the revisions result from information from the 1982 I-O accounts on the consumer share of purchases of these items.

PCE for nondurable goods is revised up beginning with 1980; the revisions for recent years are sizable. Much of the revision is traceable to upward revisions in expenditures for gasoline and oil, reflecting newly available information from the 1982 I-O accounts, the 1987 Census of Retail Trade, and the 1987 Truck Inventory and Use Survey. Within nondurables, new information from the 1982 I-O accounts and the 1987 Census of Retail Trade on the product composition of sales by retail stores leads to substantial downward revisions in expenditures for food and substantial upward revisions in expenditures for "other nondurables." Sizable upward revisions in "other nondurables" also reflect the incorporation of data from the 1988 and the 1989 Annual Retail Trade Survey. Beginning with 1978, expenditures for fuel oil and coal are revised down, reflecting information horn the 1982 I-O accounts on the consumer share of purchases.

PCE for services.—PCE for services is revised up substantially for all years. These revisions are largely accounted for by the definitional change that redefines government sales and nontaxes; this change adds expenditures for certain services provided by government—primarily tuition payments for higher education and charges for medical care—to PCE for services. Statistical changes result in sizable upward and downward revisions in a number of services components. Data from the 1982 I-O accounts result in upward revisions for most years—especially since 1982—in transportation services, services furnished without payment by financial intermediaries, expense of handling life insurance, and religious and welfare activities. Housing services is revised down for all years for both nonfarm and farm dwellings: The revisions in nonfarm housing services mainly reflect newly available data on units from the 1990 Census of Housing, and the revisions in farm housing services reflect the new methodology for estimating imputed rental value of farm dwellings. Among other services, professional medical services is revised down to reflect the elimination of a double-counting of physicians' fees included in hospital charges, and personal care services is revised down to reflect data from the 1982 I-O accounts; net foreign travel is revised down to reflect data from the 1982 I-O accounts and, for years prior to 1986, to carry back several balance-of-payments-accounts revisions that had been introduced in the 1987 and 1989 annual NIPA revisions.

Nonresidential structures.—Nonresidential structures is revised up substantially for all years (table 3). These revisions largely reflect the introduction of the new procedure for estimating construction. Within structures, the upward revisions are concentrated in industrial and commercial buildings.

Nonresidential producers' durable equipment (PDE).—Nonresidential PDE is revised up for all years. The revisions are largely in information processing and related equipment, mainly in computers and in communication equipment, and reflect information from the 1982 I-O accounts. Within transportation and related equipment, net sales of used autos to consumers by business—a negative entry in PDE—is

Data Availability

Revised estimates for most quarterly series are available in hard copy, on magnetic tape, and on diskettes. To obtain an order form indicating the cost of obtaining the estimates in these various forms and the schedule and cost of other materials, write to the National Income and Wealth Division (BE-54), Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC 20230, or call (202) 523-0669.

Table 3.—Revisions in Gross Private Domestic Investment

[Billions of dollars]

	1977	1982	1987	1990
Gross private domestic investment: Total revision	**14.2**	**56.1**	**49.8**	**61.6**
By source of revision				
Definitional	4.0	9.0	−2.2	−.1
Reclassify CCC commodity loans	3.5	7.1	−3.2	−.8
Capitalize monetary interest on own-account construction	.6	1.9	1.0	.7
Statistical	10.2	47.1	52.0	61.7
By component				
Fixed investment	10.7	47.5	51.8	56.6
Nonresidential	9.0	47.0	52.9	62.9
Structures	7.9	35.5	37.6	51.7
Producers' durable equipment	1.3	11.5	15.3	11.2
Residential	1.7	.6	−1.1	−6.3
Change in business inventories	3.4	8.6	−2.0	5.0
Nonfarm	0	1.4	.4	5.4
Farm	3.4	7.2	−2.5	−.4

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revised up (see the entry on used car purchases in PCE goods), and aircraft is revised down, reflecting information from the 1982 I-O accounts and the Annual Survey of Manufactures for 1988 and for 1989.

Residential investment.—Except for 1990, the revisions in residential investment are small. A downward revision for 1990, which is primarily in single-family construction, reflects the incorporation of revised data from the Census Bureau on the value of new construction put in place.

Change in business inventories.—Revisions in change in business inventories vary from year to year in terms of direction and size. For all years, revisions in the change in farm inventories largely reflect the reclassification of commodity loans made by the Commodity Credit Corporation (CCC). Within nonfarm inventories, the change in manufacturing inventories is revised up for 1988–90, reflecting newly available information from the Annual Survey of Manufactures for 1988 and for 1989; the change in "other" inventories is revised down for 1988 and 1989, reflecting the incorporation of Internal Revenue Service (IRS) tabulations of inventory book values from corporate tax returns for 1988.

Net exports of goods and services.—As part of this comprehensive revision, GDP replaces GNP as the primary production aggregate; this replacement leads to a redefinition of net exports of goods and services to exclude net receipts of factor income.[1] (Exports

1. For more information, see "Gross Domestic Product as a Measure of U.S. Production" in the August 1991 SURVEY OF CURRENT BUSINESS.

Table 4.—Revisions in Net Exports of Goods and Services

[Billions of dollars]

	1977	1982	1987	1990
Net exports of goods and services:				
Total revision	**–0.2**	**4.2**	**0.6**	**–1.4**
By source of revision				
Definitional	....	....	....	....
Statistical	–.2	4.2	.6	–1.4
By component				
Exports	3.3	12.3	11.0	15.0
Merchandise	.6	1.2	1.7	.3
Services	2.6	10.9	9.2	14.8
Of which: Record exports of services on a gross basis	1.6	4.3	6.1	8.6
Imports	3.4	8.1	10.4	16.5
Merchandise	.7	1.1	2.2	4.7
Services	2.6	6.9	8.1	11.8
Of which: Record imports of services on a gross basis	1.6	4.3	6.1	8.6
Addenda:				
Net receipts of factor income: Total revision	–4.9	–21.0	–24.4	–30.9
By source of revision				
Definitional	–4.9	–18.7	–24.9	–37.5
Reclassify interest paid by Federal Government to foreigners	–5.5	–19.3	–25.3	–37.9
Record nonresident taxes as transfer payments	.6	.6	.4	.4
Statistical	0	–2.3	.5	6.6
By component				
Receipts of factor income	1.6	5.7	8.5	10.3
Of which: Record receipts of interest on a gross basis	.3	4.7	5.3	4.7
Payments of factor income	6.5	26.6	32.9	41.3
Of which: Record payments of interest on a gross basis	.3	4.7	5.3	4.7
Reclassify interest paid by Federal Government to foreigners	5.5	19.3	25.3	37.9

NOTE.—In this comprehensive revision, net exports of goods and services is redefined to exclude net receipts of factor income. The addenda show revisions in net receipts of factor income.

Table 5.—Revisions in Government Purchases

[Billions of dollars]

	1977	1982	1987	1990
Government purchases:				
Total revision	**–19.3**	**–34.1**	**–39.9**	**–55.2**
By source of revision				
Definitional	–20.5	–40.8	–45.6	–68.9
Reclassify nine Federal Government agencies	.2	1.6	4.2	2.0
Redefine government sales and personal nontaxes	–17.4	–35.7	–54.6	–73.2
Reclassify CCC commodity loans	–3.5	–7.1	3.2	.8
Remove capital gains from brokerage charges	.1	.4	1.6	1.5
Statistical	1.2	6.7	5.7	13.7
By component				
Federal	–3.2	–6.1	3.6	.9
National defense	0	0	–2.5	–.2
Nondefense	–3.3	–6.2	6.2	1.1
State and local	–16.1	–27.9	–43.6	–56.1

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Table 6.—Revisions in Compensation of Employees

[Billions of dollars]

	1977	1982	1987	1990
Compensation of employees:				
Total revision	**0.7**	**9.0**	**12.3**	**46.1**
By source of revision				
Definitional	0	0	.2	.6
Reclassify nine Federal Government agencies	0	0	.2	.6
Record nonresident taxes as transfer payments	0	0	0	0
Statistical	.7	9.0	12.1	45.5
By component				
Wage and salary disbursements	0	7.2	11.5	33.6
Supplements to wages and salaries	.7	1.8	.8	12.5
Employer contributions for social insurance	.1	0	–.1	–3.5
Other labor income	.6	1.8	1.0	15.9

is redefined to exclude receipts of factor income, and imports is redefined to exclude payments of factor income.)

Revisions in net exports of goods and services (as redefined) are generally small (table 4). For all years, both exports and imports are revised up; the revisions largely result from the definitional change that records exports and imports of services on a gross basis and from the statistical change related to territorial adjustment, which affects both goods and services. Statistical revisions also reflect the incorporation of the latest balance of payments accounts; these revisions are mainly in travel and passenger fares, beginning with 1984, and in foreign students' expenditures, beginning with 1981.

The addenda to table 4 show the revisions in net receipts of factor income. The downward revisions for all years reflect larger upward revisions in payments of factor income than in receipts of factor income. The upward revisions in payments of factor income largely result from two definitional changes: The reclassification of interest paid by the Federal Government to foreigners, and the recording of payments of interest on a gross basis. The upward revisions in receipts of factor income largely result from the recording of interest on a gross basis.

Government purchases.—Government purchases are revised down substantially for all years (table 5). The downward revisions are accounted for by the redefinition of government sales and personal nontaxes, which substantially lowers State and local government purchases of services for all years. These downward revisions are partly offset by upward statistical revisions in State and local government purchases of structures, reflecting the new procedure for estimating construction, and compensation of employees. Prior to 1990, the revisions in employee compensation largely reflect the inclusion of the wages and salaries of students working for public educational institutions and of other State and local government employees not covered by unemployment insurance; for 1990, they largely reflect BLS tabulations of wages and salaries covered by State unemployment insurance.

Revisions in Federal Government purchases are generally small except for years when the reclassification of CCC commodity loans results in sizable upward or downward revisions in Federal nondefense purchases.

Income-side components

Compensation of employees.—Compensation of employees is revised up for all years, substantially for 1990 (table 6). Upward revisions in wages and salaries are mainly attributable to the following statistical changes: The improved adjustments for misreporting on tax returns; the inclusion of wages and salaries of students working for public educational institutions and of other State and local government employees not covered by unemployment insurance; and, for 1990, to BLS tabulations of wages and salaries covered by State unemployment insurance.

Upward revisions in supplements to wages and salaries are more than accounted for by upward statistical revisions in other labor income. Within other labor income, revisions in health insurance are attributable to revised estimates of the employer's share of these contributions derived from information from the U.S. Chamber of Commerce and BLS; revisions in pensions are attributable to IRS tabulations of data on contributions from corporate tax returns for 1988.

Proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj).—Proprietors' income with IVA and CCAdj is revised down for all years except 1984-86 (table 7). Farm proprietors' income is revised down for all years; the revisions reflect both definitional and statistical changes. The definitional changes are the reclassification of CCC commodity loans and the elimination of the defaulters' gain associated with the reclassification of bad debt losses as financial transactions. The statistical changes are the introduction of a new procedure for estimating imputed rental value of farm dwellings and the incorporation of revised estimates of production expenses from the Department of Agriculture based on the 1987 Census of Agriculture and on the 1988 Agricultural Economics and Land Ownership Survey.

Nonfarm proprietors' income is revised down for 1977–79, up for 1980-86, and down for 1987–90. The elimination of the defaulters' gain associated with bad debt losses results in

Table 7.—Revisions in Proprietors' Income With Inventory Valuation and Capital Consumption Adjustments

[Billions of dollars]

	1977	1982	1987	1990
Proprietors' income with inventory valuation and capital consumption adjustments: Total revision	**−6.5**	**−4.8**	**−13.2**	**−29.3**
By source of revision				
Definitional	−1.3	−4.4	−13.5	−12.6
Reclassify CCC commodity loans	−.1	−1.2	0	−.1
Reclassify bad debt losses as financial transactions	−1.3	−3.5	−13.4	−12.4
Capitalize monetary interest on own-account construction	.1	.3	−.1	−.1
Statistical	−5.2	−.4	.3	−16.7
By component				
Farm	−3.4	−11.1	−11.5	−7.4
Proprietors' income with inventory valuation adjustment	−3.3	−10.8	−11.2	−7.2
Capital consumption adjustment	−.2	−.4	−.3	−.3
Nonfarm	−3.0	6.4	−1.6	−21.9
Proprietors' income	−2.6	9.3	5.3	−15.4
Inventory valuation adjustment	0	−.1	.2	.9
Capital consumption adjustment	−.4	−2.9	−7.1	−7.3

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downward revisions for all years, substantially beginning with 1987. Statistical revisions are upward through 1987, as the improved adjustments for misreporting on tax returns more than offset downward revisions from two sources. The first of these sources is revisions in the CCAdj, which reflect the incorporation of the revised estimates of fixed investment into the estimates of the consumption of fixed capital (see consumption of fixed capital for additional detail); the second source is the carrying back and correction of an adjustment, introduced in the July 1988 annual NIPA revision, for interest paid by partnerships that is passed through to partners, who, in turn, treat it as an expense on their own tax returns. Beginning in 1988, statistical revisions turn negative; the upward revisions due to the misreporting adjustments become smaller, and they are more than offset by downward revisions stemming from the other two sources. The incorporation of IRS tabulations of noncorporate business tax returns for 1989 also contributes to the downward revisions.

Rental income of persons with CCAdj.—Rental income of persons with CCAdj is revised up for 1979-85 and down for 1986-90 (table 8). The revisions are largely statistical. The upward revisions for 1979-85 reflect information from the 1982 I-O accounts that lowers expenses and thus raises rental income of persons. The downward revisions for 1986-90 reflect both lower estimates of rental receipts and higher estimates of interest expenses.

Table 8.—Revisions in Rental Income of Persons with Capital Consumption Adjustment

[Billions of dollars]

	1977	1982	1987	1990
Rental income of persons with capital consumption adjustment: Total revision	**0.8**	**8.3**	**−10.5**	**−19.8**
By source of revision				
Definitional	−.7	−.5	−2.0	−3.2
Reclassify bad debts losses as financial transactions	−.7	−.5	−2.0	−3.2
Statistical	1.5	8.8	−8.0	−16.6
By component				
Rental income of persons	1.2	10.0	−11.6	−21.0
Capital consumption adjustment	−.4	−1.6	1.1	1.3

Table 9.—Revisions in Corporate Profits With Inventory Valuation and Capital Consumption Adjustments

[Billions of dollars]

	1977	1982	1987	1990
Corporate profits with inventory valuation and capital consumption adjustments: Total revision	**0.9**	**1.5**	**11.5**	**20.7**
By source of revision				
Definitional	3.5	−.2	21.7	9.0
Record nonresident taxes as transfer payments	−.8	−3.1	−2.9	−4.3
Reclassify bad debt losses as financial transactions	4.6	4.9	27.4	19.0
Remove capital gains from brokerage charges	−.8	−3.2	−2.5	−5.0
Capitalize monetary interest on own-account construction	.5	1.3	−.4	−.5
Recognize capital consumption for abandoned nuclear power plants	0	−.2	0	0
Recognize personal-injury trusts as corporate businesses	0	0	0	−.2
Statistical	−4.4	1.7	−10.2	11.7
By component				
Profits before tax	2.9	6.7	12.6	27.6
Inventory valuation adjustment	0	.5	4.9	−2.8
Capital consumption adjustment	−2.0	−5.7	−6.0	−4.1

The lower receipts are based on data on the number of units from the 1990 Census of Housing, and the higher expenses reflect a new procedure for handling refinanced mortgages.

Corporate profits with IVA and CCAdj.— Revisions in corporate profits with IVA and CCAdj are small except for downward revisions for 1981 and 1986 and substantial upward revisions for 1987–90 (table 9). The downward revisions are largely attributable to statistical revisions in the CCAdj, which is revised down for all years (see consumption of fixed capital for a description of the major sources of these revisions). The upward revision for 1987 is more than accounted for by the reclassification of bad debt losses as financial transactions. The upward revisions for 1988-90 are accounted for by this reclassification and by statistical revisions that largely reflect the incorporation of IRS tabulations of corporate tax return data for 1988 into the estimates of profits before tax. By industry, the upward revisions for 1987–90 are largely in profits of financial institutions, reflecting the reclassification of bad debt losses.

Table 10.—Revisions in Net Interest

[Billions of dollars]

	1977	1982	1987	1990
Net interest: Total revision	**−4.6**	**−9.9**	**31.8**	**23.4**
By source of revision				
Definitional	−5.5	−16.5	−22.8	−37.2
Reclassify interest paid by Federal Government to foreigners	−5.5	−19.3	−25.3	−37.9
Record nonresident taxes as transfer payments	0	.1	.1	.3
Reclassify bad debt losses as financial transactions	−.2	2.4	−.3	−.1
Reclassify capital gains distributions	.2	.2	2.3	.4
Remove capital gains from brokerage charges	.1	.1	.3	.2
Statistical	.9	6.6	54.6	60.6
By component				
Net monetary interest	−4.5	−4.3	11.9	−9.6
Net imputed interest	....	−5.6	20.0	33.0

Net interest.—Net interest is revised down for 1977-83 and up for 1984-90 (table 10). The downward revisions are attributable to the reclassification of interest paid by Federal Government to foreigners. Downward definitional revisions continue through 1990; although these revisions become large, they are more than offset by even larger upward statistical revisions. For 1982–87, the statistical revisions are largely accounted for by the following changes: (1) Newly available IRS tabulations of interest paid by partnerships for residential rental property, (2) improvements in the adjustment to interest reported on partnership tax return data to account for interest passed through to the individual partners (see proprietors' income), (3) improvements in the procedure used to convert data from federally insured banks to represent all commercial banks in estimating imputed interest paid by them, (4) improved adjustments for interest misreported as business receipts by credit agencies and captive finance companies, (5) revised estimates for 1987 of income earned by regulated investment companies, (6) newly available IRS tabulations of interest paid by several types of nonprofit institutions, and (7) revised estimates of mortgage interest (see rental income of persons). Beginning with 1988, upward revisions also reflect the incorporation of IRS tabulations of corporate tax returns for 1988 and the incorporation of data from several other annual sources for 1989 and 1990.

Table 11.—Revisions in Indirect Business Tax and Nontax Liability

[Billions of dollars]

	1977	1982	1987	1990
Indirect business tax and nontax liability: Total revision	**-0.2**	**-2.4**	**-2.8**	**-1.1**
By source of revision				
Definitional	.6	1.6	3.8	4.6
Reclassify nine Federal Government agencies	.5	1.6	3.8	4.6
Recognize court-mandated escrow accounts	.2	0	0	0
Statistical	-.8	-4.0	-6.6	-5.7

Table 12.—Revisions in Business Transfer Payments

[Billions of dollars]

	1977	1982	1987	1990
Business transfer payments: Total revision	**-1.3**	**1.1**	**-4.5**	**-7.3**
By source of revision				
Definitional	-1.4	-.8	-5.1	-5.4
Reclassify nine Federal Government agencies	0	0	-.2	-.2
Record nonresident taxes as transfer payments	1.4	3.6	3.2	4.5
Reclassify bad debt losses as financial transactions	-2.8	-4.4	-8.0	-10.0
Recognize personal-injury trusts as corporate businesses	0	0	0	.2
Statistical	.1	1.9	.6	-1.9
By component				
Transfers to persons	-2.7	-2.5	-7.7	-11.8
Transfers to rest of the world	1.4	3.6	3.2	4.5

Indirect business tax and nontax liability.—Indirect business tax and nontax liability is revised down for all years (table 11). The downward revisions are more than accounted for by a statistical change that transfers interest earned by State and local governments on industrial development bonds from rental receipts, which is included in nontaxes, to interest received. These downward statistical revisions are partly offset by upward revisions for all years that result from the definitional changes that involve the reclassification of nine Federal Government agencies.

Business transfer payments.—Revisions in business transfer payments are small for 1977-86; business transfer payments are revised down for 1987–90 (table 12). The downward revisions are more than accounted for by downward revisions in transfer payments to persons, which largely reflect the elimination of the defaulters' gain associated with bad debt losses. The downward revisions in transfers to persons are partly offset by upward revisions in transfers to the rest of the world, which result from another definitional change, the recording of nonresident taxes as transfer payments.

Table 13.—Revisions in Subsidies Less Current Surplus of Government Enterprises

[Billions of dollars]

	1977	1982	1987	1990
Subsidies less current surplus of government enterprises: Total revision	**0.3**	**-2.5**	**-3.3**	**2.3**
By source of revision				
Definitional	.3	-2.7	-2.8	3.4
Reclassify nine Federal Government agencies	.3	-1.5	-2.8	3.5
Reclassify CCC commodity loans	-.1	-1.2	0	-.1
Statistical	0	.2	-.5	-1.1
By component				
Subsidies	0	0	.7	.2
Current surplus	-.3	2.4	3.9	-2.1

CCC Commodity Credit Corporation

Subsidies less the current surplus of government enterprises.—Revisions in subsidies less the current surplus of government enterprises are generally small (table 13). They largely reflect the definitional changes involving the reclassification of nine Federal Government agencies.

Consumption of fixed capital.—Consumption of fixed capital—that is, economic depreciation and allowances for accidental damage—is revised up for all years (table 14). The upward revisions largely result from the higher estimates of fixed investment.

Capital consumption allowances (CCA) is also revised up for all years, but by less than is consumption of fixed capital. Upward revisions in the CCA of corporations and of nonfarm sole proprietorships and partnerships—which are tax-return-based depreciation measures—reflect a number of statistical changes. These changes include the incorporation of corrections to IRS tabulations of corporate tax return amortization for 1982–85 and the incorporation of IRS tabulations of corporate tax return data for 1988 and of noncorporate business tax return data for 1989. Upward revisions in the CCA of nonprofit institutions serving individuals reflect a new estimating procedure that results in higher estimates of fixed investment by these institutions.

The CCAdj—which is derived as the difference between the CCA and the economic measure of depreciation—is revised down for all years. The revision is almost entirely in the adjustments for corporate profits and for nonfarm proprietors' income.

Table 14.—Revisions in Consumption of Fixed Capital

[Billions of dollars]

	1977	1982	1987	1990
Consumption of fixed capital: Total revision	**3.7**	**15.9**	**15.2**	**19.2**
By source of revision				
Definitional	0	1.0	.5	.6
Capitalize monetary interest on own-account construction	0	.2	.5	.6
Recognize capital consumption for abandoned nuclear power plants	0	.7	0	0
Statistical	3.7	14.9	14.7	18.6
By component				
Capital consumption allowances	.7	5.1	2.4	8.0
Corporate	0	3.1	-1.4	-1.7
Noncorporate	.7	2.0	3.8	9.7
Less: Capital consumption adjustment	-3.0	-10.8	-12.8	-11.1
Corporate	-2.0	-5.7	-6.0	-4.1
Noncorporate	-1.0	-5.1	-6.8	-7.0
Addenda:				
Consumption of fixed capital:				
Corporate	2.0	8.7	4.5	2.5
Noncorporate	1.7	7.2	10.7	16.7

Personal income and outlays

Personal income is revised down for 1977–79, up for 1980-88, down for 1989, and up for 1990 (table 15). These revisions reflect a combination of substantial upward and downward revisions in several components. The revisions in wages and salaries, other labor income, proprietors' income, and rental income of persons were described previously. Among other components, revisions in personal interest income are particularly large.

Personal interest income is revised up for all years, substantially beginning with 1984. The upward revisions largely stem from the previously described statistical revisions in net interest.[2] These revisions are partly offset by sizable upward revisions in interest received by State and local governments, which reflect the inclusion of interest paid by businesses for industrial bonds (see indirect business taxes), and in interest received by the Federal Government, which reflect higher estimates of the interest paid by persons and by business because of late filings of income tax returns.

Personal dividend income is revised up for all years. The revisions largely result from the definitional change that recognizes capital gains distributions of regulated investment companies as dividends.

Transfer payments to persons are revised down for all years. These revi-

2. Personal interest income is derived as net interest plus interest paid by persons and by government less interest received by government.

Table 15.—Revisions in Personal Income

[Billions of dollars]

	1977	1982	1987	1990
Personal income: Total revision	**-6.2**	**20.1**	**35.6**	**34.3**
Definitional	-3.3	-2.1	-4.5	-19.3
Statistical	-2.9	22.2	40.1	53.6
By component				
Wage and salaries, other labor income, proprietors' income with IVA and CCAdj, and rental income of persons with CCAdj	-5.1	12.5	-11.2	.4
Personal dividend income	1.2	3.2	8.6	1.0
Personal interest income	.3	7.1	46.8	40.9
Transfer payments	-2.8	-2.5	-7.7	-9.9
Less: Personal contributions for social insurance	0	0	.7	-1.9
***Less*: Personal tax and nontax payments: Total revision**	**-18.1**	**-37.9**	**-59.1**	**-78.4**
Definitional	-18.1	-37.1	-56.7	-75.9
Statistical	....	-.8	-2.4	-2.5
***Equals*: Disposable personal income: Total revision**	**12.0**	**58.2**	**94.8**	**112.7**
Definitional	14.9	35.2	52.3	56.6
Statistical	-2.9	23.0	42.5	56.1
***Less*: Personal outlays: Total revision**	**14.5**	**12.1**	**44.7**	**86.2**
Definitional	17.8	39.3	61.3	78.2
Statistical	-3.3	-27.2	-16.6	8.0
***Equals*: Personal saving: Total revision**	**-2.6**	**46.1**	**50.1**	**26.5**
Definitional	-3.0	-4.4	-9.1	-21.7
Statistical	.4	50.5	59.2	48.2
Addendum:				
Personal saving as a percent of disposable personal income	-.3	1.8	1.4	.5

IVA Inventory valuation adjustment
CCAdj Capital consumption adjustment

sions largely result from the elimination of the defaulters' gain associated with bad debt losses.

Revisions in personal contributions for social insurance are small.

Personal tax and nontax payments.—Personal tax and nontax payments is revised down substantially for all years. These revisions are largely traceable to the redefinition of government sales and personal nontaxes, which removes payments for certain services-primarily tuition payments for higher education and charges for medical care-provided by government from personal nontaxes and adds them to PCE. Personal taxes is also lowered by the statistical change related to taxes and interest paid to the Federal Government because of late filings of tax returns.

Disposable personal income.—Disposable personal income (DPI) is revised up substantially for all years. The upward revisions in DPI reflect both the largely statistical revisions in personal income, upward except for 1977–79 and 1989, and the largely definitional revisions in personal tax and nontax payments, downward for all years.

Personal outlays.—Personal outlays is revised up substantially for all years. These revisions largely reflect the previously mentioned revisions in PCE. In addition, they also reflect a definitional change that recognizes interest payments by persons to government.

Personal saving.—Personal saving is revised down for 1977 and 1978, up for 1979-88, down for 1989, and up for 1990. The pattern of revision in personal saving reflects the revisions in both personal income and personal outlays. Beginning with 1982, the principal statistical revisions in personal income that raise personal saving are the improved adjustments for misreporting on tax returns, the revisions in personal interest income that stem from the revisions in net interest, and the revisions in employer contributions for health insurance. For 1977–87, personal saving is also raised by the downward statistical revisions in personal outlays (which is subtracted in deriving personal saving), mainly stemming from revisions in PCE for durable goods and for services. For 1988–90, personal saving is lowered by upward statistical revisions in personal outlays, mainly in PCE for nondurable goods. For all years, personal saving is lowered by the definitional change that eliminates the defaulters' gain associated with bad debt losses. Most of the other major definitional and statistical changes that affect personal income, personal taxes, DPI, or personal outlays have little effect on personal saving. For example, the redefinition of government sales and personal nontaxes raises DPI and the PCE component of personal outlays by virtually the same amount. Similarly, several of the statistical changes that affect personal income also affect the PCE component of personal outlays; the most important of these offsetting changes are the downward revisions in imputed rental receipts, which lower farm proprietors' income and rental income of persons as well as PCE for housing services, and the upward revisions in imputed interest paid by commercial banks, which raise both personal interest income and PCE for services.

The personal saving rate-personal saving as a percentage of DPI—is revised up for all years except 1977, 1978, and 1989. The largest upward revisions are for 1980-87, when the personal saving rate is raised 1-to-2 percentage points each year. In 1990, the rate is raised 0.5 percentage point to 5.1 percent.

Table 16.—Revisions in Government Receipts and Expenditures

[Billions of dollars]

	1977	1982	1987	1990
Federal				
Receipts	-0.1	0.1	0	-4.9
Expenditures	-3.7	-10.3	-6.3	-5.6
Surplus or deficit (-), national income and product accounts	**3.6**	**10.4**	**6.4**	**.7**
State and local				
Receipts	-18.2	-40.4	-60.9	-76.0
Of which: Redefine government sales and personal nontaxes	-17.4	-35.7	-54.3	-72.8
Expenditures	-16.9	-32.2	-49.9	-66.3
Of which: Redefine government sales and personal nontaxes	-17.4	-35.7	-54.3	-72.8
Surplus or deficit (-), national income and product accounts	**-1.3**	**-8.2**	**-10.9**	**-9.7**

Government receipts and expenditures

Federal.—Revisions in Federal Government receipts are small for all years except 1990 (table 16). For most years, personal income tax receipts are revised down, reflecting the definitional change that records nonresident taxes as transfer payments and the statistical change related to taxes and interest paid by persons because of late filings of tax returns. (In the NIPA's, interest received by government is recorded on the expenditures side of the government account as an offset to interest paid.) The downward revisions in personal taxes tend to be offset by upward revisions in indirect business nontax accruals, reflecting the definitional changes related to the reclassification of nine Federal Government agencies and a statistical change related to the valuation of purchases of used assets. For 1989 and 1990, corporate profits tax accruals are revised up, reflecting information from regular annual sources on taxes paid by liability year. For 1990, information from regular annual sources adds to the downward revisions in personal income tax receipts.

Federal Government expenditures is revised down for all years except 1983. For most years, the downward revisions reflect revisions in net interest paid. Net interest paid is revised down for all years, as interest received by the Federal Government (recorded as an offset to interest paid) is revised up, reflecting the statistical change related to interest paid by persons and business because of late filings of income tax returns. The reclassification of CCC commodity loans results in sizable revisions in nondefense purchases; these purchases are revised down considerably for 1982 and 1985 and up considerably for 1983 and 1988.

The Federal Government deficit on a NIPA basis is reduced for all years. Prior to 1984, the upward revisions are traceable to definitional changes, primarily the reclassification of CCC commodity loans and the reclassification of nine Federal Government agencies. For 1984-90, the upward revisions reflect a number of statistical changes, primarily the change related to higher interest payments by business (the higher interest payments by persons are offset by lower personal taxes) because of late filings of tax returns, the change in the revaluation of used assets, and for 1989 and 1990, the upward revisions in corporate profits tax accruals. For particular years, the reclassification of CCC commodity loans also resulted in sizable revisions in the Federal deficit. (The effects of the CCC loan reclassification are largely those of timing; over long periods, revisions in the deficit due to this change will net to zero.)

State and local.—State and local government receipts are revised down substantially for all years. The revisions largely result from the redefinition of government sales and personal nontaxes, which lowers personal nontax receipts. Indirect business tax and nontax accruals is also revised down for all years, reflecting the transfer of interest earned on industrial development bonds from nontaxes to interest received (revised estimates of earnings results in adding more to interest received than is deducted from nontaxes). For 1989 and 1990, these revisions are partly offset by upward revisions in personal tax receipts and in indirect business tax and nontax liability; these upward revisions reflect Census Bureau *Government Finances* tabulations for fiscal year (FY) 1989 and preliminary tabulations for FY 1990 and Census Bureau quarterly tax revenue data for 1990.

State and local government expenditures are revised down substantially for all years. These revisions largely result from the redefinition of government sales and personal nontaxes, which raises government sales (a negative entry in government purchases). Net interest paid is revised down for all years, as interest received is revised up, reflecting the inclusion of interest paid by business for industrial development bonds. For 1983–89, these revisions are partly offset by the carrying back of a statistical change, introduced in the July 1988 annual NIPA revision, that excludes capital gains from interest received by State and local government retirement systems. The downward revisions are partly offset by upward revisions in purchases of structures, reflecting the introduction of the new procedure for estimating construction, and in purchases of employee compensation, reflecting the inclusion of wages and salaries of students working for public educational institutions and of other State and local government employees not covered by unemployment insurance.

The State and local government surplus on a NIPA basis is reduced for all years. The downward revisions are largely traceable to the higher estimates of purchases of structures and of employee compensation. (The reclassification of government sales and personal nontaxes results in equal, and offsetting, revisions in receipts and expenditures; the transfer of interest earned on industrial development bonds results in largely offsetting revisions.) For 1989 and 1990, the incorporation of the data from regular annual sources holds down the reduction in the surplus.

Rest-of-the-world transactions

Receipts from the rest of the world is revised up for all years (table 17). Both exports of goods and services and receipts of factor income are revised up. The upward revisions in exports largely reflect the recording of exports of services on a gross basis; the upward revisions in factor income receipts largely reflect the recording of receipts of interest on a gross basis.

Payments to the rest of the world is revised up for all years. Both imports of goods and services and payments of factor income are revised up. The upward revisions in imports largely reflect the recording of imports of services on a gross basis; the upward revisions in factor income payments reflect the reclassification of interest paid by the Federal Government to foreigners and the recording of payments of interest on a gross basis. Net transfer payments is revised up; the revisions are more than accounted for by the recording of nonresident taxes as business transfer payments to the rest of the world. The downward revisions in interest paid by the Federal Government to foreigners result from the deletion of this interest item as a separate entry.

Table 17.—Revisions in Rest-of-the-World Transactions

[Billions of dollars]

	1977	1982	1987	1990
Receipts from the rest of the world	**4.9**	**18.0**	**19.4**	**25.4**
Exports of good and services	3.3	12.3	11.0	15.0
Receipts of factor income	1.6	5.7	8.5	10.3
Capital grants received by the United States (net)	0	0	0	0
Payments to the rest of the world	**4.9**	**18.0**	**19.4**	**25.4**
Imports of goods and services	3.4	8.1	10.4	16.4
Payments of factor income	6.5	26.6	32.9	41.3
Transfer payments (net)	.7	2.6	1.4	3.7
Interest paid by government to foreigners [1]	−5.5	−18.3	−25.3	−38.8
Net foreign investment	−.3	−.9	.1	2.7

1. In this comprehensive revision, the reclassification of interest paid by government to foreigners as a payment of factor income results in the deletion of this line.

Net foreign investment—the difference between receipts from the rest of the world and payments to the rest of the world—is revised down for 1977-86 and up for 1987–90. The revisions are small for most years. For 1986-90, the revisions are largely traceable to statistical revisions from the balance of payments accounts that were not previously incorporated into the NIPA's; these revisions are primarily in net receipts of factor income.

Gross saving and investment

Gross saving is revised up substantially for all years (table 18). The upward revisions are largely traceable to the previously described statistical revisions in personal saving and in undistributed corporate profits with IVA and CCAdj. (The upward revisions in consumption of fixed capital are largely offset by the revisions in the CCAdj for corporate profits and for proprietors' income.) The government surplus or deficit on a NIPA basis is revised down for most years, as reductions in the State and local government surplus exceed reductions in the

Table 18.—Revisions in Gross Saving and Investment

[Billions of dollars]

	1977	1982	1987	1990
Gross saving	**3.0**	**62.5**	**64.1**	**54.5**
Gross private saving	.7	60.4	68.7	63.4
Personal saving	−2.6	46.1	50.1	26.5
Undistributed corporate profits with IVA and CCAdj	−.4	−1.6	3.3	17.7
Consumption of fixed capital	3.6	15.8	15.1	19.2
Government surplus or deficit(−), national income and product accounts	2.3	2.2	−4.6	−8.9
Gross investment	**14.0**	**55.2**	**49.9**	**64.3**
Gross private domestic investment	14.2	56.1	49.8	61.6
Net foreign investment	−.3	−.9	.1	2.7
Statistical discrepancy	**10.9**	**−7.3**	**−14.2**	**9.8**

IVA Inventory valuation adjustment
CCAdj Capital consumption adjustment

Federal Government deficit. Most of the definitional revisions in the components of gross saving are offset in total gross saving; for example, the reclassification of bad debt losses as financial transactions lowers personal saving but raises undistributed corporate profits with IVA and CCAdj.

Gross investment is also revised up substantially for all years. The upward revisions largely result from the following statistical changes: The introduction of the new procedure for estimating nonresidential structures; the incorporation of information on purchases of new equipment from the 1982 I-O accounts; the revised estimates of net purchases of used autos in PDE; and, for 1989-90, the incorporation of regular annual source data for the change in business inventories. The definitional change in the classification of CCC commodity loans also affects the change in business inventories; it reduces gross investment for most years but contributes to the upward revisions for 1977, 1981, 1982, and 1985.

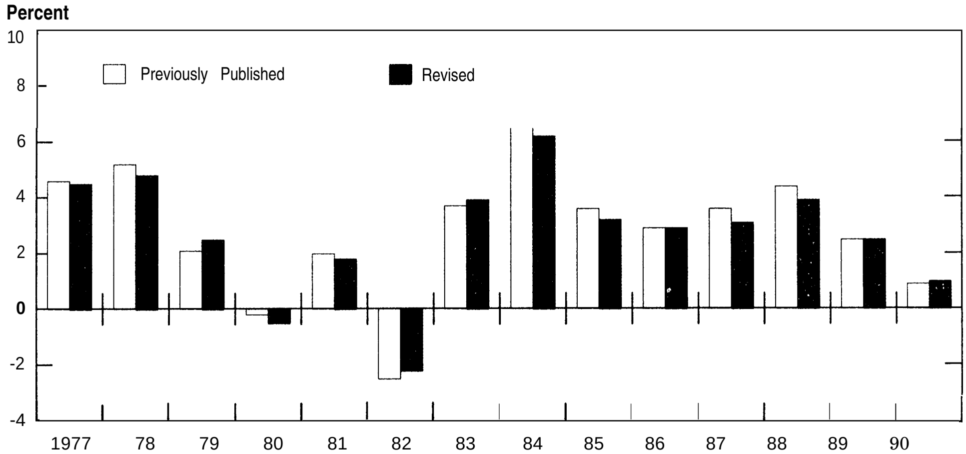
Annual Revisions in Constant Dollars

The preceding section examined the revisions in the current-dollar estimates in terms of the differences between the revised and the previously published levels. This approach is not useful for the constant-dollar estimates, because the shift in the base period changes the prices in which these series are measured. The differences in the levels of the revised and the previously published series primarily reflect this change; the effect can be seen by comparing the previously published levels of real GNP for 1990 in 1982 dollars ($4,157.3) with that in 1987 dollars ($4,846.9).[3] This section will examine the revisions in the constant-dollar estimates in terms of the differences between the revised and the previously published rates of change.

In general, revisions in aggregate constant-dollar—or real—estimates arise from three main sources. First, they reflect the revisions in the current-dollar estimates; the contribution of the current-dollar revisions is measured as the revision in percent change of the current-dollar estimates.

CHART 1

Real Gross Domestic Product: Percent Change From Preceding Year



U.S. Department of Commerce, Bureau of Economic Analysis 91-12-1

Second, they reflect the shift in the base period from 1982 to 1987; the contribution of the base-period shift is measured as the difference between the change in the previously published estimates in 1987 dollars and the change in the previously published estimates in 1982 dollars. Third, they reflect "other" revisions that result from such sources as revisions in prices and the interaction of redistributions of current-dollar levels within components, which, in effect, reweight the constant-dollar component detail; because the contribution of the "other" revisions is obtained as a residual, the measure of this contribution depends upon the way the contributions of the first two sources are measured.

During 1977–90, the revised estimates of real GDP show an average annual growth rate of 2.5 percent, 0.2 percentage point less than was shown in the previously published estimates (table 19). The growth rate of real GNP, shown in the addendum to the table, is also revised down 0.2 percentage point to 2.5 percent. As indicated in the columns of the table showing the sources of the constant-dollar revi-

Table 19.—Gross Domestic Product and Its Major Components: Revisions in Average Annual Rates of Change Over the Period 1977-90

[Percent]

	Current dollars			Constant dollars			Source of constant-dollar revision		
	Previously published	Revised	Revision	Previously published	Revised	Revision	Current-dollar revision	Base period shift	Other
Gross domestic product	**8.1**	**8.2**	**0.1**	**2.7**	**2.5**	**–0.2**	**0.1**	**–0.2**	**–0.1**
Personal consumption expenditures	**8.6**	**8.7**	**.1**	**2.8**	**2.7**	**–.1**	**.1**	**–.1**	**–.1**
Durable goods	7.6	7.5	–.1	4.1	3.5	–.6	–.1	–.4	–.1
Nondurable goods	7.1	7.2	.1	1.7	1.9	.2	.1	0	.1
Services	9.9	10.0	.1	3.1	3.1	0	.1	.1	–.2
Gross private domestic investment	**6.1**	**6.4**	**.3**	**2.2**	**1.7**	**–.5**	**.3**	**–.9**	**.1**
Fixed investment	6.7	7.0	.3	2.7	2.1	–.6	.3	–.9	0
Nonresidential	7.1	7.7	.6	3.6	3.2	–.4	.6	–1.1	.1
Structures	6.3	7.8	1.5	.9	2.7	1.8	1.5	.3	0
Producers' durable equipment	7.5	7.7	.2	4.8	3.5	–1.3	.2	–1.8	.3
Residential	5.7	5.3	–.4	.4	–.2	–.6	–.4	0	–.2
Change in business inventories	....	....	....	....	....	....	....	....	....
Net exports of goods and services	....	....	....	....	....	....	....	....	....
Exports	10.0	10.0	0	6.7	5.7	–1.0	0	–.9	–.1
Merchandise	9.4	9.4	0	6.9	5.5	–1.4	0	–1.2	–.2
Services	11.7	11.9	.2	5.9	6.1	.2	.2	0	0
Imports	9.9	9.9	0	5.4	5.6	.2	0	.1	.1
Merchandise	9.6	9.7	.1	5.4	5.7	.3	.1	.2	0
Services	11.0	11.1	.1	5.0	5.1	.1	.1	0	0
Government purchases	**8.3**	**8.3**	**0**	**2.6**	**2.6**	**0**	**0**	**–.2**	**.2**
Federal	8.3	8.5	.2	3.1	2.9	–.2	.2	–.3	–.1
National defense	9.1	9.1	0	3.8	3.4	–.4	0	–.3	–.1
Nondefense	6.2	6.9	.7	1.2	1.6	.4	.7	.1	–.4
State and local	8.4	8.3	–.1	2.3	2.4	.1	–.1	–.1	.3
Addendum:									
Gross national product	8.1	8.2	.1	2.7	2.5	–.2	.1	–.3	0

3. The levels of real GNP are from the August 1991 SURVEY, table 1.2 of the "Selected NIPA Tables" and table 4 of the "Reconciliation and Other Special Tables."

sions, the downward revisions in the growth rates of both real GDP and real GNP are mainly accounted for by the shift in the base period. (As discussed in the section on the major statistical changes, a shift to a more recent base period tends to reduce the measured change in real aggregates.) By major component, the downward revision in the increase in real GDP is largely accounted for by downward revisions in fixed investment and in exports of goods and services.

Revisions in components of real GDP.—Largely as a result of the rebasing, the average annual growth rate of real fixed investment during 1977–90 is revised down 0.6 percentage point to 2.1 percent. The growth rate of producers' durable equipment is revised down 1.3 percentage points to 3.5 percent; the downward revision is more than accounted for by rebasing, mainly reflecting the importance of computers in this component (the volume of computer purchases jumped from 1982 to 1987, while their price fell sharply). The growth rate of residential investment is also revised down, 0.6 percentage point to –0.2 percent; the downward revision is attributable to current-dollar revisions and to "other" revisions that largely result from methodological changes in the price estimates for single-family houses and for multifamily houses. In contrast, the growth rate of nonresidential structures is revised up 1.8 percentage points to 2.7 percent, as the sharp upward revision in current dollars is augmented by an upward revision due to the rebasing.

As a result of the rebasing, the growth rate of exports of goods and services is revised down 1.0 percentage point to 5.7 percent. The growth rate of merchandise exports is revised down 1.4 percentage points to 5.5 percent; the downward revision is largely accounted for by the rebasing, mainly reflecting the importance of computers. The growth rate of exports of services is revised up 0.2 percentage point to 6.1 percent, mainly reflecting the current-dollar revisions.

Revisions in the growth rates of the other major components of GDP are small. Within PCE, durable goods is revised down, largely reflecting the rebasing. Within government purchases, Federal national defense purchases is revised down, largely reflecting the rebasing, and Federal nondefense purchases is revised up, reflecting current-dollar revisions. Within imports, merchandise imports is revised up, reflecting the rebasing.

Annual changes.—For 1977–90, the annual, or year-to-year, percent change in real GDP is revised down for 8 years, is revised up for 4 years, and is unrevised for 2 years (chart 1). The revisions for the 14 annual percent changes average 0.3 percentage point (without regard to sign). Changes for 3 years are revised by 0.5 percentage point or more. For 1984, the growth of real GDP is revised down 0.8 percentage point to 6.2 percent. This revision is largely in nonresidential fixed investment, reflecting the rebasing, and in Federal Government purchases, reflecting current-dollar revisions. For 1987, the growth of real GDP is revised down 0.5 percentage point to 3.1 percent. This revision is largely in nonresidential fixed investment, reflecting current-dollar revisions and the rebasing, and in exports, reflecting the rebasing and "other" revisions. For 1988, the growth of real GDP is revised down 0.5 percentage point to 3.9 percent. This revision is largely in nonresidential fixed investment and in exports, both mainly reflecting the rebasing.

Quarterly Revisions

Revisions in quarterly estimates come about in three major ways: (1) Adjustment of the estimates to reflect the annual revisions, (2) incorporation of new and revised source data (including the updating of seasonal factors) that are used to indicate quarterly pat-

Table 20.—Real Gross Domestic Product: Percent Change From Preceding Quarter in the Revised and Previously Published Estimates

[Percent change at annual rates, based on seasonally adjusted estimates]

	1988				1989				1990				1991		
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
Gross domestic product:															
Revised	2.6	4.3	2.5	3.9	2.5	1.9	1.1	1.2	1.7	1.6	0.2	−3.9	−2.5	1.4	1.8
Previously published	4.6	4.3	2.6	2.4	3.5	2.1	1.4	−.1	1.8	1.2	.7	−2.1	−3.0	.3	2.5
Final sales of domestic product:															
Revised	6.3	4.6	1.9	4.1	.8	2.1	2.7	.4	4.6	−.5	.9	−.3	−2.4	1.2	−.7
Previously published	6.6	5.8	1.0	4.4	2.3	2.1	1.5	.5	4.0	.1	1.1	.9	−2.9	.3	.6
Personal consumption expenditures:															
Revised	7.1	2.5	2.9	4.1	−.2	1.0	4.1	.1	2.1	0	2.8	−3.5	−1.3	1.4	2.3
Previously published	6.9	2.7	3.5	3.5	−.3	1.3	4.6	−.8	1.1	.2	2.7	−3.4	−1.5	2.5	3.8
Nonresidential fixed investment:															
Revised	5.7	11.0	2.9	2.7	.9	2.7	.8	−2.5	7.1	−4.6	8.5	−7.7	−17.4	−3.3	−3.7
Previously published	11.4	15.7	1.6	−6.3	8.9	6.9	6.3	−3.8	5.0	−4.7	8.9	.1	−16.3	1.4	6.6
Residential fixed investment:															
Revised	−5.8	3.7	2.7	3.3	−5.9	−11.9	−5.6	−7.3	.6	−15.7	−16.2	−15.0	−24.8	3.1	10.9
Previously published	−6.8	6.8	.4	−.4	−3.6	−11.3	−7.6	−5.5	15.1	−11.2	−19.8	−20.6	−25.3	1.6	20.6
Exports of goods and services:															
Revised	23.6	10.3	6.8	14.0	12.4	17.2	.9	13.7	8.8	4.8	−.4	17.7	−7.4	19.4	7.3
Previously published	31.5	6.9	3.1	14.2	17.8	12.7	2.3	14.9	16.8	−2.6	3.6	10.8	1.3	14.5	3.7
Imports of goods and services:															
Revised	−1.2	−4.0	8.7	11.7	−6.1	6.9	6.8	4.0	−2.5	1.7	9.6	−9.3	−15.4	13.3	22.3
Previously published	−.2	−2.8	8.0	11.6	−3.0	8.9	12.4	3.6	4.3	−1.5	10.2	−11.7	−2.0	22.3	17.0
Federal Government purchases:															
Revised	−11.6	−2.6	−3.7	5.1	−9.5	7.9	5.1	−7.2	5.9	4.3	−5.0	4.5	9.9	1.0	−8.1
Previously published	−24.1	3.5	−10.4	33.6	−9.1	7.0	−7.9	−.4	.4	16.4	.1	4.6	−.5	5.5	−14.3
State and local government purchases:															
Revised	2.0	3.5	1.3	4.9	1.3	3.4	3.3	6.6	6.7	.8	3.2	4.6	−1.9	−.7	−.1
Previously published	3.9	3.2	1.2	4.3	1.3	1.8	1.8	5.6	4.8	−.6	2.0	4.9	−1.9	−.8	−.3
Addendum:															
Gross national product:															
Revised	3.0	3.8	2.4	4.3	2.1	1.5	1.4	1.8	1.7	.9	.7	−2.5	−2.8	.3	2.0
Previously published	5.1	3.6	2.7	2.7	3.6	1.6	1.7	.3	1.7	.4	1.4	−1.6	−2.8	−.5	2.4

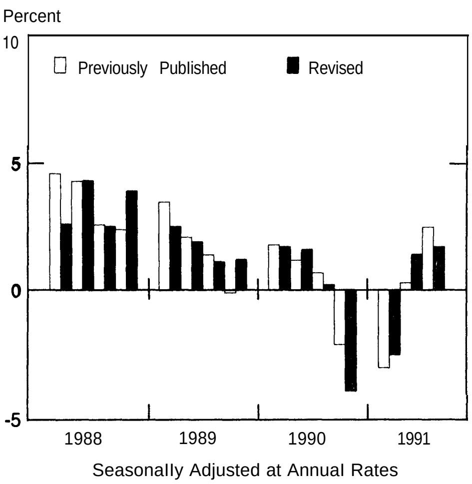
NOTE.—The previously published estimates for 1991:III are the advance estimates released in October 1991.

terns, and (3) changes in the methodology used to prepare the quarterly estimates. The following discussion of quarterly revisions focuses on the estimates for 1988:I-1991:III, the period that would normally have been covered by an annual NIPA revision.

For this period, the quarter-to-quarter percent change in real GDP is revised down for nine quarters, is revised up for five quarters, and is unrevised for one quarter (chart 2 and table 20). The preponderance of downward revisions is largely attributable to the just-described revisions in the constant-dollar annual estimates. The revisions for the 15 quarterly percent changes (at annual rates) average 0.8 percentage point (without regard to sign), somewhat larger than the average for the past five annual NIPA revisions. Changes for three quarters are revised by 1.5 percentage points or more. For the first quarter of 1988, the increase in real GDP is revised down 2.0 percentage points to 2.6 percent. The downward revision is accounted for by nonresidential fixed investment, change in business inventories, exports, and State and local government purchases. (The quarterly estimates of exports—and of imports as well—are revised back to 1978, reflecting the application of seasonal adjustment factors developed jointly by BEA and the Census Bureau.) For the fourth quarter of 1988, the increase in real GDP is revised up 1.5 percentage points to 3.9 percent. The upward revision is largely accounted for by change in business inventories; PCE, nonresidential and residential fixed investment, and State and local government purchases also contribute. For the fourth quarter of 1990, the decrease in real GDP is revised down 1.8 percentage points to 3.9 percent. The downward revision is accounted for by nonresidential fixed investment, change in business inventories, and State and local government purchases.

CHART 2

Real Gross Domestic Product: Percent Change From Preceding Quarter



U.S. Department of Commerce, Bureau of Economic Analysis 91-12-2

Major Statistical Changes

This section of the article reviews the major sources of the statistical revisions in the revised estimates for 1959–90. In this comprehensive revision, the following statistical changes are incorporated:

- Shift of the base period by the substitution of the prices of 1987 for those of 1982 in calculating constant-dollar series and the substitution of the composition of output in 1987 for that in 1982 in calculating fixed-weighted price indexes;
- New and revised data from sources that are usually incorporated at the time of the annual July revisions of the NIPA's, referred to as "regular sources for 1988–90";
- New and revised data from sources that are usually incorporated at the time of comprehensive revisions because they become available less often than annually, referred to as "regular benchmark sources"; and
- Changes in methodologies—that is, new source data and/or new estimating procedures—including the use in earlier years of methodological changes introduced in the annual NIPA revisions that have taken place since the 1985 comprehensive revision.

Shift of the base period

A shift to a more recent base period is a standard procedure designed to provide measures of real output and prices that are more relevant for many purposes. The NIPA's were last "rebased" in the 1985 comprehensive revision, when the base period was shifted from 1972 to 1982. The year 1987 was selected as the new base period because it is the latest year for which the economic censuses were conducted and for which the NIPA estimates will not be revised until the next comprehensive revision. The effects of the shift on the revised constant-dollar estimates are described in a section of this article beginning on page 32; a hypothetical example that shows these effects is described in a note on page 35.

Newly available regular source data

Regular data sources for 1988-90.–Major regular data sources for 1988–90 are shown in table 21. These data would normally have been used to prepare an annual revision in July 1991; the annual revision was combined with this comprehensive revision. The effect of incorporating these sources reflects the newly available or revised data for 1988-90 as well as changes in procedures related to them.

Regular benchmark source data.—The single most important regular benchmark source is BEA's 1982 benchmark I-O tables. I-O tables provide the benchmarks for the estimates of the expenditure components of GDP and for parts of several income components.[4] In turn, the I-O tables are based primarily on the detailed industry statistics collected by the Census Bureau in the 1982 Economic Censuses and in the 1982 censuses of agriculture and governments. The tables also are based on 1982 data from the following regular sources: BEA's balance of payments accounts and perpetual-inventory-method estimates of private capital stock, U.S. Department of Agriculture (USDA) farm statistics reports, and Health Care Financing Administration reports on health insurance.

The detailed industry statistics from the economic censuses provide additional data items and more detailed information than the annual surveys that cover the same industries, and they also cover additional industries. For example, sales and receipts of retail and service establishments are reported for the types of products sold, and manufacturers' shipments are reported by more detailed type of

4. The 1982 I-O tables were presented in "Benchmark Input-Output Accounts for the U.S. Economy, 1982," SURVEY 71 (July 1991): 30-71. For several GDP expenditure components, these estimates were subsequently revised to reflect the definitional, classificational, and statistical changes incorporated into this NIPA comprehensive revision. Revised 1982 I-O tables reflecting these changes will be prepared and made available later in 1992.

product. The additional retail and service data provide for a more accurate distribution of products purchased by persons; the additional shipments data provide for a more accurate identification of purchases of business equipment and of related parts.

The censuses also provide additional information, such as goods and services purchased by business, for both the industries covered by annual surveys and for most of the industries—mining, construction, and nonmerchant wholesale trade—covered only in the censuses. This information—

A Note on the Effect of Shifting the Base Period

Typically, the effect of shifting to a more recent base period is to reduce the rate of growth in real GDP and the fixed-weighted price index for GDP.

Real GDP.— To understand how shifting to a more recent base period affects measured growth in real GDP, a hypothetical example of a two-commodity economy is helpful. The following table shows prices, quantities, and the current-dollar value of output—that is, price times quantity—for two commodities (*A* and *B*) in years 1 and 2. An important feature of the example is that the price of *A* grows more than the price of *B*, while the quantity of *A* grows less than the quantity of *B*.

	Price (dollars)		Quantity (number)		Current-dollar value (dollars)	
	year 1	year 2	year 1	year 2	year 1	year 2
A	5	9	10	11	50	90
B	6	7	10	16	60	112

Using the entries in the table, real GDP is obtained by multiplying quantities in each year by prices in the base period. Thus, with year 1 as the base period, real GDP in year 1 is (5 × 10) + (6 × 10), or 110, and in year 2, it is (5 × 11) + (6 × 16), or 151.[1]

The ratio of real GDP in year 2 to real GDP in year 1, with year 1 as the base period, is 151 ÷ 110, or 1.373. Thus, the increase from year 1 to year 2 is 37.3 percent. The increase in real GDP is a weighted average of the 10-percent increase for A (whose quantity increased from 10 to 11) and the 60-percent increase for B (10 to 16), with the weights based on year 1 prices.[2]

When the base period is shifted to year 2, the increase in real GDP is calculated using year 2 prices. Real GDP is then (9 × 10) + (7 × 10), or 160, in year 1 and (9 × 11) + (7 × 16), or 211, in year 2. The ratio of real GDP in year 2 to real GDP in year 1 is 211 ÷ 160, or 1.319. Thus, the increase is 31.9 percent. This increase, too, is a weighted average of the increases for A and B, but the weights are based on year 2 prices.[3]

In this example, selecting year 2 as the base period produces a smaller increase—31.9 percent versus 37.3 percent. The reason is that A, the commodity with less growth in quantity, is also the commodity with more growth in price. Commodity A therefore receives more weight when year 2 is the base period than when year 1 is the base period. It is true generally, as in this example, that a recent base period produces lower growth in real GDP than an early base period if there is a tendency for slow-growing quantities to be associated with relatively fast-growing prices and for fast-growing quantities to be associated with relatively slow-growing prices.

Over long timespans, such inverse relationships tend to be the rule. As changes in technology or in market structure lower some relative prices and raise others, buyers respond by demanding relatively more of the low-priced goods and relatively less of the high-priced ones. Computers provide a dramatic example of a technological change that lowers a relative price and leads to rapid growth in demand. It is possible for shifts in demand due to changes in taste or in income levels to have a contrary effect, driving both prices and quantities up for some commodities more than for others. Over long timespans, such shifts are apparently less important than the factors producing the inverse relationships of price and quantity changes.

Fixed-weighted GDP price index.—Using the entries in the table, the fixed-weighted price index for GDP is obtained by multiplying prices each year by quantities in the base period, dividing the result for each year by that for the base year, and multiplying each year by 100. Thus, with year 1 as the base period, the fixed-weighted GDP price index in year 1 is

$$\frac{(5 \times 10) + (6 \times 10)}{(5 \times 10) + (6 \times 10)} \times 100 = 100.0,$$

and in year 2, it is

$$\frac{(9 \times 10) + (7 \times 10)}{(5 \times 10) + (6 \times 10)} \times 100 = 145.0^{1}$$

The ratio of the fixed-weighted GDP price index in year 2 to that in year 1, with year 1 as the base period, is 145.0 ÷ 100.0, or 1.45. Thus, the increase from year 1 to year 2 is 45 percent. The increase in the fixed-weighted GDP price index is a weighted average of the 80.0-percent increase for A and the 16.7-percent increase for B with the weights based on year 1 quantities.[2]

When the base period is shifted to year 2, the increase in the fixed-weighted GDP price index is calculated using year 2 quantities. The fixed-weighted price index is then

$$\frac{(5 \times 11) + (6 \times 16)}{(9 \times 11) + (7 \times 16)} \times 100 = 71.6$$

in year 1 and

$$\frac{(9 \times 11) + (7 \times 16)}{(9 \times 11) + (7 \times 16)} \times 100 = 100.0$$

in year 2. The ratio of the fixed-weighted GDP price index in year 2 to that in year 1, with year 2 as the base period, is 100.0 ÷ 71.6, or 1.40. Thus, the increase is 40 percent. This increase, too, is a weighted average of the increase for A and B, but the weights are based on year 2 quantities.[3]

With year 2 as the base period, the increase in the fixed-weighted GDP price index is less than that with year 1 as the base period. The direction of the difference is the same as that for the growth of real GNP and for the same reason.

1. Because price and quantity data are not available for most components of GDP, real GDP is obtained by deflating current-dollar values by price indexes that express each period's price relative to a base-period price. This procedure yields results identical to those obtained directly from prices and quantities. For example, using prices and quantities directly with year 1 as the base year, commodity A in real terms in year 2 is (11 × 5), or 55. The identical result is obtained by deflating the current-dollar value of 99 for commodity A in year 2 by the price index with year 1 as the base year for commodity A in year 2. The price index is (9 ÷ 5), or 1.80. Thus, commodity A in real terms is (99 ÷ 1.80), or 55.

Algebraically, the two procedures may be shown to be identical as follows. Using prices and quantities directly, real GDP is $\sum q_t p_o$, where q_t is the quantity in year t and p_o is the price in the base period. Deflating current-dollar values, real GDP is

$$\sum \frac{q_t p_t}{\frac{p_t}{p_o}} = \sum q_t p_o$$

Real GDP may also be presented as a fixed-weighted quantity index with a base period equal to 100.0. Such an index is obtained by weighting quantity indexes in each year by proportions of total output in the base period.

2. The weights are the proportions of total output in year 1.

3. The weights are the proportions of total output in year 1 valued in the prices of year 2.

1. Because price and quantity data are not available for most components of GDP, the fixed-weighted price index for real GDP is obtained by weighting price indexes in each year by proportions of total output in the base period. This procedure yields results identical to those obtained directly from prices and quantities.

2. The weights are the proportions of total output of year 1.

3. The weights are the proportions of total output in year 2 valued in the prices of year 1.

in combination with the more detailed sales, receipts, and shipments data—provides more accurate estimates of purchases of products by persons.[5] The additional industry coverage also provides more accurate estimates of inventories and, as explained later in this section, the basis for improved estimates of investment in structures.

In addition to the incorporation of estimates from the 1982 I-O tables, other regular benchmark sources incorporated into the comprehensive revision include the following: The 1987 Economic Censuses and the 1987 censuses of agriculture and governments (to the extent data were available in time); the 1990 Census of Housing; periodic audits conducted by the IRS; and periodic IRS tabulations on private pension plans and nonprofit institutions. The 1987 Economic Censuses data that are incorporated in the revision are limited to the following: Sales, receipts, and shipments for retail trade, service industries, and manufacturing; inventory change for mining, manufacturing, and trade; mileage and other

5. For a description of the estimation of PCE in the I-O accounts, see U.S. Department of Commerce, Bureau of Economic Analysis, *Personal Consumption Expenditures,* Methodology Paper Series MP-6 (Washington, DC: U.S. Government Printing Office, June 1990): 31–40.

Table 21.—Major Regular Data Sources for Current-Dollar Estimates, 1988–90

Source data \ Components	GDP: PCE: Goods	GDP: PCE: Services	GDP: Nonresidential fixed investment: Structures	GDP: Nonresidential fixed investment: PDE	GDP: Residential fixed investment	GDP: CBI	GDP: Net exports: Merchandise	GDP: Net exports: Services	GDP: Government purchases: Federal	GDP: Government purchases: State and local
Census Bureau annual surveys of merchant wholesale and retail trade	1988^{r} & 1989					1988^{r} & 1989				
Census Bureau services annual survey		1989^{r} & 1990								
Bureau of Labor Statistics tabulations of wages and salaries of employees covered by State unemployment insurance.		1989^{r} & 1990								1989^{r} & 1990
Census Bureau surveys of State and local government		1988–90								1988–89^{r} & 1990
Internal Revenue Service tabulations of tax returns:										
Corporations		1988				1988				
Sole proprietorships and partnerships						1989				
Individuals										
U.S. Department of Agriculture farm statistics	1988–90^{r}	1988–90^{r}	1988–89^{r} & 1990			1988–90^{r}				
Bureau of Economic Analysis balance of payments accounts	1988–90^{r}	1988–90^{r}					1988–90^{r}	1988–90^{r}		
Bureau of Economic Analysis capital stock statistics		1988–90^{r}								
Census Bureau value of new construction put in place			1988–90^{r}		1988–90^{r}					1988–90^{r}
Census Bureau annual survey of manufactures				1988–89		1988–89				
Office of Management and Budget Federal budget data									1989^{r} & 1990	

Source data \ Components	Gross national income: Compensation of employees: Wages and salaries	Compensation of employees: Supplements	Proprietors' income with IVA and CCAdj: Farm	Proprietors' income with IVA and CCAdj: Nonfarm	Rental income of persons with CCAdj	Corporate profits with IVA and CCAdj	Net interest	Consumption of fixed capital	Capital consumption allowances	Other incomes
Census Bureau annual surveys of merchant wholesale and retail trade										
Census Bureau services annual survey				1990						
Bureau of Labor Statistics tabulations of wages and salaries of employees covered by State unemployment insurance.	1989^{r} & 1990									
Census Bureau surveys of State and local government		1988–90^{r} & 1990								1988–89^{r} & 1990
Internal Revenue Service tabulations of tax returns:										
Corporations		1988	1988			1988	1988		1988	1988
Sole proprietorships and partnerships		1989		1989			1989		1989	
Individuals					1989^{r} & 1990					
U.S. Department of Agriculture farm statistics	1988–90^{r}	1988–90^{r}	1988–90^{r}		1988–90^{r}		1988–90^{r}			
Bureau of Economic Analysis balance of payments accounts	1988–90^{r}					1988–90^{r}	1988–90^{r}			1988–90^{r}
Bureau of Economic Analysis capital stock statistics			1988–90^{r}	1988–90^{r}	1988–90^{r}	1988–90^{r}		1988–90^{r}	1988–90^{r}	
Census Bureau value of new construction put in place				1990				1988–90^{r}		
Census Bureau annual survey of manufactures								1988–89^{r}		
Office of Management and Budget Federal budget data	1989^{r} & 1990	1989^{r} & 1990								1989^{r} & 1990

^{r} Revised.

NOTE.—Years shown are the years of the estimates into which the source data are directly incorporated.

PCE Personal consumption expenditures
PDE Producers' durable equipment
CBI Change in business inventories
IVA Inventory valuation adjustment
CCAdj Capital consumption adjustment

characteristics of truck use from the truck inventory and use survey; and drilling expenses for mineral industry establishments.

Changes in methodology

Because the availability of new source data and the development of new estimating procedures often go hand in hand, these changes are described as "changes in methodology." A list of the major methodological changes, including those needed to incorporate the definitional and classificational changes, is shown in table 22. For major changes incorporated in the annual NIPA revisions since the 1985 comprehensive revision, the table identifies the July issue of the SURVEY in which a summary description appears. Several of the most important changes made in this comprehensive revision are described in the following paragraphs.

Imputed rental value of farm dwellings.—Beginning with 1973, the methodology used to prepare current-dollar estimates of the imputed rental value of farm dwellings is changed; the change is based largely on a similar change recently introduced by USDA in their farm statistics reports.[6] The new methodology, which reduces both PCE services and farm proprietors' income by $7.9 billion for 1982, is based on the rental equivalency method of valuing the imputed rent. This method, the same as that used for nonfarm dwellings, is based on the convention that assumes that the imputed rent paid by owner occupants is the same as that paid by tenants for the rent of a similarly valued dwelling. Both the BEA and USDA estimates for 1987 are based on the total value of farm dwellings derived from the 1987 Census of Agriculture and the related 1988 Agricultural Economics and Land Ownership Survey and on the rent-to-value ratio for nonfarm housing from BEA's estimates. The two estimates differ for other periods. BEA's estimates are extrapolated backwards and forwards by the net value of the stock of farm housing at current replacement cost from BEA's capital stock series; the USDA's estimates are extrapolated by the current market value of the farm housing stock including the value of the farm land. Previously, for all periods, BEA used USDA's estimates, which had been derived as the sum of expenses related to farm housing—such as depreciation and maintenance and repair—and an estimated return to the owner equal to the market value of farm housing times the mortgage interest rate.

The methodology for the constant-dollar imputed rental values is not affected by the changes in the current-dollar estimates. The constant-dollar estimates continue to be calculated by extrapolating the base-period value by the constant-dollar net value of the farm housing stock.

Imputed commissions of domestic security dealers.—The definitional change related to imputed commissions of security dealers required the development of a procedure for eliminating capital gains (or losses) from the previously published estimates of these commissions, which were based largely on reports filed with the Securities and Exchange Commission (SEC). In the revised estimates, the commission is defined as the "spread," or the difference, between the cost of acquiring a security or an equity and its sale value, based on the acquisition cost on the date of sale. For Federal Government securities, the revised commissions are estimated using the dollar volume of trading as reported by the Federal Reserve Bank of New York and on bid and ask prices as published in the *Wall Street Journal (WSJ)*. For equities, the revised commissions are estimated in two parts: For stocks sold over the counter, volume data are from the National Association of Securities Dealers, and bid and ask prices are from the *WSJ;* and for exchange-traded stocks, volume data are based on transactions on the New York and other stock exchanges and on related bid and ask prices. Imputed commissions paid by various purchasers—such as persons, businesses, and State and local government pension plans—are estimated for securities using data on holdings of these purchasers from the flow of funds accounts published by the Federal Reserve Board and for equities using data on transactions from New York Stock Exchange reports.

The definitional revision also results in the elimination of the capital gains element of the commissions from the profits of the dealers. For dealers in securities, the capital gains were derived from SEC trading accounts data by subtracting the revised commissions estimates and estimates of interest included in the SEC data. The capital gains were allocated between security dealers and bank dealers using data from the SEC and the Federal Deposit Insurance Corporation.

Nonresidential structures.—Estimates of nonresidential structures, both privately owned and owned by State and local governments, are revised up substantially; the revisions begin with 1970 for private structures and with 1975 for State and local structures. For 1982, the revised estimate for private nonresidential structures is 24.8 percent, or $35.5 billion, higher than the previously published estimate; the revised estimate for State and local structures is 12.1 percent, or $5.3 billion, higher. These revisions reflect the introduction of a new procedure to benchmark the estimates from the Census Bureau's monthly construction-put-in-place survey, the source of the previously published estimates of nonresidential structures. The new procedure was introduced in an effort to resolve a longstanding problem with the put-in-place survey—the need for benchmark estimates for most types of nonresidential construction.

The benchmark procedure, which provided estimates for 1977 and 1982, is based primarily on information from the census of construction industries on the value of contract construction receipts for new construction, from the census of service industries on architectural and engineering fees, and from Federal regulatory agency reports on the value of own-account new construction of utility companies. (Work is in progress on the development of similar benchmark estimates for 1987.) The procedure provided estimates of total new construction except for investment in mining exploration, for which estimates for all periods were taken from regular benchmark sources. The 1977 and 1982 estimates for the types of construction covered by the new procedure were prepared as follows. (1) The latest estimates from the put-in-place survey, with minor adjustments for definitional differences, were used for all of new residential construction and for new nonresidential construction by the Federal Government, public utilities, and agriculture. (2) The benchmark procedure estimates were used for State and local government new construction. (3) For the remainder of private new nonresidential construction, estimates by type of construc-

6. The USDA change is described in *Economic Indicators of the Farm Sector: National Financial Summary, 1989,* U.S. Department of Agriculture, ECIFS *9-2* (Washington DC: U.S. Government Printing Office, January 1991): 8-9.

Table 22.—Major Changes in Methodology

Change [1]	Components affected	Initial year of revision
Annual current-dollar estimates		
Expanded coverage of the retail-control method:		
Improved estimates of expenditures by type	PCE	1983
Nonfood sales of gasoline service stations (1988pt)	PCE	1978
Goods sold at service establishments	PCE	1978
*Improved estimates of imputed rental value of farm dwellings	PCE and proprietors' income	1973
Improved estimates of imputed charges for services of financial intermediaries:		
*Charges paid to domestic security dealers by households and nonprofit and public institutions [2]	PCE, State and local purchases, corporate profits, and net interest.	1959
Charges paid to regulated investment companies	PCE, corporate profits, dividends, and net interest	1959
Improved estimates of:		
Taxicabs	PCE	1983
Day care and nursery schools	PCE	1982
Motor vehicle leasing	PCE	1978
Telephone	PCE	1984
Video cassette rentals (1987)	PCE	1982
Improved estimates of net purchases of used autos:		
Depreciation	PCE and PDE	1978
Quality-adjusted prices (1987)	PCE and PDE	1970
*Improved estimates of private nonresidential structures	Nonresidential structures	1970
Adjustment for monetary interest paid by utility companies on own-account construction [2]	Nonresidential investment and consumption of fixed capital	1959
Improved estimates of exports and imports of capital goods	PDE	1982
Improved estimates of manufacturing and trade inventories:		
Expanded industry detail	CBI	1978
Redefined book value (1988)	CBI	1982
Prices	IVA	1978
Expanded coverage of exports and imports of services:		
Commissions on securities (1987)	Net exports	1981
Student's expenditures (1989)	Net exports, PCE	1981
Medical services (1987)	Net exports, PCE	1981
Travel and passenger fares (1989)	Net exports, PCE	1984
Introduction of revised end-use merchandise trade categories (1988, 1989)	Net exports	1967
Adjustment to include nonresident taxes in factor incomes and transfer payments [2]	Receipts and payments of factor income, business transfer payments, corporate profits, personal taxes, and transfer payments to foreigners.	1959
Adjustment to record services and interest payments between affiliated foreigners on a gross basis [2]	Net exports	1974
Improved estimates of adjustments to exclude the Commonwealth of Puerto Rico and U.S. territories.	Net exports	1959
Consistent use of market valuation of purchases and sales of used assets	Nondefense purchases	1978
*Improved estimates of nonresidential structures	State and local purchases	1975
Addition of wages and salaries of students working for public educational institutions and other State and local government employees not covered by unemployment insurance.	State and local purchases and wages and salaries	1979
Improved conversion of fiscal year local government purchases	State and local purchases	1983
*Improved adjustments for misreporting on tax returns	Wages and salaries, proprietors' income, rental income, and net interest.	1977
Improved estimates of employer share of contributions for group health and life insurance	Other labor income	1978
Adjustment for employer stock ownership plans	Other labor income and corporate profits	1976
Adjustment to farm inventories for Commodity Credit Corporation loans [2]	Proprietors' income and CBI	1959
Adjustment for pass through of interest expense of partnerships (1988)	Proprietors' income and net interest	1972
Improved estimates of expenses of home ownership (1988pt)	Rental income	1978
Improved estimates of interest paid on refinanced mortgages (1988)	Rental income and net interest	1978
Adjustment for profits reported on the completed-contract method (1986)	Corporate profits	1978
Adjustment for reversions of defined benefit pension plans (1986)	Corporate profits	1978
Adjustment for pass through of income and expenses of small business corporations (1990)	Corporate profits and net interest	1987
Adjustment for dividends paid by mutual life insurance companies (1990)	Corporate profits	1985
Improved estimates of income on private noninsured pension plans	Net interest and corporate profits	1978
'Improved estimates of interest paid by real estate rental partnerships	Net interest	1981
Improved estimates of interest received by captive finance companies	Net interest	1978
Adjustment to recognize capital consumption for abandoned nuclear power plants [2]	Corporate profits, consumption of fixed capital, CCAdj	1978
Improved estimates of service lives and of investment by nonprofit institutions	Consumption of fixed capital	1959
Transfer of and improved estimates of interest earned by State and local governments on industrial development bonds.	Indirect business taxes, personal interest and rental income	1973
Improved estimates of unrecovered losses from thefts	Business transfer payments	1978
Transfer of and improved estimates of interest on late tax payments to government by persons and business.	Personal interest income, personal taxes, and government interest received.	1978

tion were judgmentally prepared using both the corresponding benchmark and put-in-place estimates.

For the years between 1977 and 1982, estimates of State and local government new construction were interpolated using estimates from annual Census Bureau surveys of State and local government expenditures. The same survey data were used to extrapolate backwards from 1977 and forwards from 1982. For each type of private new construction based on the new procedure, estimates for the years between 1977 and 1982 were interpolated using the latest corresponding put-in-place estimates. The same put-in-place estimates were used to extrapolate backwards from 1977 and forwards from 1982. For the estimates after 1982, the put-in-place extrapolators were adjusted for the downward bias in growth in earlier periods.[7]

7. Since BEA began work on preparing benchmark estimates, the Census Bureau has incorporated several major revisions in the put-in-place estimates. For State and local nonresidential construction, the revised put-in-place and BEA benchmark estimates for 1982 are only slightly different. For private new nonresidential construction, the put-in-place estimate remains substantially below the benchmark estimate for 1982, but the difference has been narrowed. This remaining difference appears to be due mainly to inadequate coverage of construction and reconstruction work performed at industrial or commercial sites in the put-in-place survey. For a discussion of the Census Bureau revisions and of the major coverage problem in the survey, see U.S. Bureau of the Census, *Current Construction Reports: Value of New Construction Put in Place* (Washington, DC: U.S. Government Printing Office, May 1991): 2-3.

Tax return misreporting adjustments.— Beginning with 1977, the adjustments for misreporting on tax returns are updated to reflect regularly available audit information from the 1982 and the 1985 Taxpayer Compliance Measurement Program (TCMP) and the following additional information: The results of two special audit studies—one on partnership returns for 1981 and the other on employment tax returns for 1984; the results of new research by the IRS on the extent to which the audits detect all unreported income; and a BEA assumption that recent changes in tax law on compliance by noncorporate businesses have reduced misreporting beginning

Table 22.—Major Changes in Methodology—Continued

Change [1]	Components affected	Initial year of revision
Exclusion of capital gains from interest received by State and local government retirement systems (1988).	Personal interest income and government interest received	1983
Introduction of 1987 Standard Industrial Classification	CBI and most income components	1987
Improved deflation		
*Computer prices	All product components	1958
Composition of food purchases	PCE	1983
Expanded detail	PCE	various
Airline transportation (1986)	PCE and State and local purchases	1978
Personal purchases of computers (1986, 1988)	PCE	1979
Purchases of trucks (1987)	PCE	1982
Business equipment prices:		
Domestic	PDE	1982
Imported (1988)	PDE	1982
Gas plant and petroleum pipeline construction (1989)	Nonresidential structures	1985
Telephone and telegraph structures (1989)	Nonresidential structures	1964
Railroad structures (1990)	Nonresidential structures	1978
Single-family houses (1987, 1990)	Residential and nonresidential structures	1977
*Multifamily houses	Residential structures	1977
Residential brokers' commissions on sales of existing houses	Residential structures	1978
Nonfarm inventory cost indexes	CBI	1978
Merchandise exports and imports:		
Allocation of reexports (1989, 1990)	Exports	1978
Expanded detail (1987)	Exports and imports	1981
Services exports and imports:		
Expanded quarterly detail for foreign military sales	Exports	1972
Expanded quarterly detail for direct defense expenditures abroad	Imports	1972
Expanded detail for other private services	Exports and imports	1959, 1977
Expanded detail for transportation	Exports and imports	1959
Quarterly estimates		
Security brokers	PCE	1983
Brokerage charge and investment counseling (1988)	PCE	1983
Hotels and motels (1988)	PCE	1983
Farm inventories of livestock	CBI	1973
Revised seasonal factors for merchandise trade [3]	Net exports	1978

*These changes are described in this article.

1. The year(s) in parentheses refer to the July issue of the SURVEY in which the change was described.
2. Changes that are related to definitional and classificational revisions.
3. A description of this change appears in the June 1991 issue of the SURVEY, page 41.
PCE Personal consumption expenditures
PDE Producers' durable equipment
CBI Change in business inventories
IVA Inventory valuation adjustment
CCAdj Capital consumption adjustment

with 1987.[8] For 1982, the revised misreporting adjustments added $23.3 billion to both national and personal income: Proprietors' income is raised by $17.0 billion; wages and salaries, by $5.9 billion; and rental and interest income combined, by $0.4 billion.

The special partnership audit, conducted as part of the TCMP effort, was the first comprehensive audit of the detailed partnership return Form 1065. Previously, misreporting by partnerships was assumed to be proportionately the same as that by sole proprietorships. The new study, whose results are incorporated beginning with 1977, generally showed more misreporting by partnerships. The 1984 employment tax study updates the previous adjustments, which were based on information from the 1979 TCMP. The new study provides more accurate information because it is based on reporting of wages and salaries by all employers covered by Federal Unemployment Insurance; the TCMP study was based only on reporting of wages paid by sole proprietorships and small corporations. In the revised wage and salary estimates, the misreporting adjustments are interpolated between 1978 and 1984; for 1984 forward, the total 1984 adjustment is extrapolated using total private wages and salaries.

The new IRS research incorporated into the revised estimates relates to that part of the adjustment that covers incomes undetected by the auditors.[9] Previously, IRS assumed that the auditors detected only $1 out of every $3½ of unreported net income. The new research shows that this adjustment should be made only to underreported gross income and not to that part of underreported net income caused by the overreporting of expenses. In the revised BEA estimates, the auditor's adjustment is reduced, beginning with 1977.

The other change in procedure is a reduction, beginning with 1987, in the estimates of the amount of misreporting undetected by the auditors. This reduction is based on a BEA assumption that the compliance provisions and provisions related to the use of passive losses of the Tax Reform Act of 1986 will reduce misreporting.

Interest paid by real estate rental partnerships.—Beginning with 1981, the estimates of interest paid are revised to reflect the incorporation of newly available tabulations of interest paid by partnerships primarily engaged in the rental of real estate. Prior to 1981, interest paid by these businesses was included in the published IRS tabulations of partnership tax returns. Beginning in 1981, the partnership tax return was redesigned with regard to the reporting of rental income. As a result, the related interest payments were not tabulated for 1981; for 1982-86, they were not tabulated when the partnership returns were tabulated. Because these tabulations were not available, BEA judgmentally estimated the missing interest paid. Their incorporation in the comprehensive revision has the largest effect for 1984, when it adds $10.4 billion to net interest.

Computer prices.—Several improvements are incorporated in the price indexes for computers (processors and peripheral equipment). The most important of these improvements is the preparation of a separate index for imports, which is used in the deflation of imported computers in PDE and in merchandise imports. The new index uses import weights to combine separate indexes for imported processors, imported personal computers, imported printers, and for domestic and imported disk drives and displays. Previously, these series were deflated using an aggregate deflator for domestic and imported computers.[10] Other improvements include the separate deflation of computers and peripheral equipment held in manufacturing and trade inventories and the extension from 1969 back to 1958 of separate deflation of computers based on indexes developed in several independent studies.[11]

Price index for multifamily houses.—Beginning with 1977, a newly developed BEA price index for multifamily houses is used for this component of residential fixed investment. Previously, the Census Bureau's price index for single-family houses was used. The multifamily index is an hedonic index derived from Census Bureau data on the prices of multifamily construction projects and on the following characteristics: Units per project, square feet per unit, bathrooms per unit, bedrooms per unit, percent of units with central air conditioning, percent of units with parking in the structure, and percent of units having more than three stories. In addition, two characteristics are included to account for the effects of the geographic location—construction wage rates and average cooling-degree days for the State where the structure is located. The index is calculated only annually; for quarterly estimates, the Census Bureau single-family index is used as both the interpolator and the extrapolator.

8. For a description of the previous adjustments, see "Improved Adjustments for Misreporting of Tax Return Information Used to Estimate the National Income and Product Accounts, 1977," SURVEY 64 (June 1984): 17-25.

9. The IRS research is described in *Income Tax Compliance Research, IRS: Supporting Appendices to Publication 7285,* IRS publication No. 1415 (July 1988): A46-A48.

10. For a description of the previously used prices for computers, see "Improved Deflation of Purchases of Computers," SURVEY 66 (March 1986): 7–9.

11. The indexes used to construct these deflators are shown in Jack E. Triplett, "Price and Technological Change in a Capital Good: A Survey of Research on Computers" in *Technology and Capital Formation,* ed. Dale W. Jorgenson and Ralph Landau (Cambridge, MA: The MIT Press, 1989), Table 4.6A on p. 176 and Table 4.11 on p. 190.

APPENDIX A.—Revisions in Summary National Income and Product Accounts

Account 1.—National Income and Product Account

[Billions of dollars]

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Compensation of employees	0.7	3.8	5.0	6.2	8.1	9.0	8.7	13.0	15.3	12.4	12.3	16.2	22.3	46.1
Wages and salaries	0	1.3	3.4	4.6	5.2	7.2	8.0	11.2	11.1	10.6	11.5	11.9	12.6	33.6
Disbursements	0	1.4	3.3	4.6	5.3	7.2	8.1	11.2	11.1	10.6	11.5	11.9	12.6	33.6
Wage accruals less disbursements	0	0	0	0	0	0	0	0	0	0	0	0	0	.1
Supplements to wages and salaries	.7	2.4	1.6	1.5	2.7	1.8	.7	1.8	4.1	1.8	.8	4.3	9.7	12.5
Employer contributions for social insurance	.1	.1	0	0	0	0	–.4	0	–.1	.4	–.1	–.7	–2.2	–3.5
Other labor income	.6	2.4	1.6	1.4	2.7	1.8	1.0	1.8	4.2	1.4	1.0	5.0	11.8	15.9
Proprietors' income with IVA and CCAdj	–6.5	–8.5	–10.1	–8.9	–6.0	–4.8	–4.2	1.5	4.0	1.7	–13.2	–29.9	–32.3	–29.3
Farm	–3.4	–5.5	–7.0	–9.0	–9.5	–11.1	–10.0	–9.2	–8.7	–12.4	–11.5	–12.8	–7.2	–7.4
Nonfarm	–3.0	–3.0	–3.1	.2	3.5	6.4	5.9	10.7	12.8	14.3	–1.6	–17.1	–25.2	–21.9
Rental income of persons with CCAdj	.8	–.4	2.8	6.6	7.5	8.3	8.9	14.8	9.5	–2.9	–10.5	–12.0	–16.1	–19.8
Corporate profits with IVA and CCAdj	.9	2.5	2.4	.5	–6.0	1.5	–1.0	–2.7	–1.5	–10.5	11.5	27.4	40.1	20.7
Profits before tax	2.9	4.4	4.2	3.8	2.4	6.7	3.1	.5	.7	–3.8	12.6	30.8	36.8	27.6
Profits tax liability	0	0	0	0	0	0	0	.1	.1	.2	.2	.8	2.9	3.2
Profits after tax	2.9	4.4	4.2	3.8	2.4	6.7	3.1	.3	.7	–4.0	12.4	30.0	34.0	24.5
Dividends	1.2	1.2	2.3	4.3	5.6	3.1	9.7	3.7	9.1	18.5	8.0	5.3	4.4	–.2
Undistributed profits	1.6	3.3	1.9	–.5	–3.2	3.6	–6.6	–3.2	–8.5	–22.4	4.4	24.7	29.6	24.6
IVA	0	.3	1.6	.1	–1.5	.5	2.4	1.7	1.9	3.0	4.9	–.3	4.2	–2.8
CCAdj	–2.0	–2.2	–3.3	–3.4	–6.8	–5.7	–6.6	–4.9	–4.2	–9.7	–6.0	–3.1	–.8	–4.1
Net interest	–4.6	–5.8	–8.4	–9.7	–14.7	–9.9	–11.0	3.1	7.2	24.7	31.8	15.9	7.5	23.4
National income	**–8.7**	**–8.4**	**–8.4**	**–5.3**	**–11.0**	**4.1**	**1.3**	**29.7**	**34.4**	**25.3**	**32.0**	**17.7**	**21.4**	**41.2**
Business transfer payments	–1.3	–1.1	–.4	–.9	1.0	1.1	.6	.3	–1.0	–.4	–4.5	–4.7	–5.6	–7.3
Indirect business tax and nontax liability	–.2	–.3	–.7	–1.3	–2.2	–2.4	–2.5	–4.4	–3.7	–3.4	–2.8	–3.4	–3.0	–1.1
Less: Subsidies less current surplus of government enterprises	.3	–.3	–.6	–.9	–2.0	–2.5	–2.4	–.4	–.8	–3.1	–3.3	–5.3	–.2	2.3
Consumption of fixed capital	3.7	4.9	6.6	8.1	14.6	15.9	21.8	17.7	17.3	18.5	15.2	19.7	20.1	19.2
Gross national income	–6.8	–4.7	–2.1	1.5	4.4	21.1	23.7	43.6	47.9	43.1	43.1	34.7	33.0	49.6
Statistical discrepancy	10.9	9.5	14.8	8.7	6.8	–7.3	5.0	–14.4	–9.1	3.0	–14.2	–.2	14.3	9.8
Gross national product	**4.1**	**4.8**	**12.6**	**10.1**	**11.2**	**13.8**	**28.7**	**29.3**	**38.7**	**46.1**	**28.9**	**34.5**	**47.4**	**59.4**
Less: Receipts of factor income from the rest of the world	1.6	1.4	1.6	2.2	3.6	5.7	7.1	7.7	7.6	8.9	8.5	10.0	10.2	10.3
Plus: Payments of factor income to the rest of the world	6.5	10.1	13.2	15.7	22.5	26.6	27.6	30.8	33.5	34.2	32.9	35.6	43.5	41.3
GROSS DOMESTIC PRODUCT	**9.0**	**13.6**	**24.2**	**23.6**	**30.1**	**34.8**	**49.1**	**52.4**	**64.6**	**71.4**	**53.2**	**60.2**	**80.8**	**90.4**
Personal consumption expenditures	14.3	17.7	16.9	15.5	11.1	8.5	23.0	29.8	38.4	53.2	42.8	57.9	67.8	85.3
Durable goods	–1.9	–3.3	–4.8	–6.8	–11.4	–16.2	–14.1	–17.6	–19.3	–16.4	–19.7	–20.4	–14.8	–14.4
Nondurable goods	0	–.3	.1	1.5	3.6	1.3	1.1	5.7	8.2	10.2	9.8	13.8	16.9	24.0
Services	16.1	21.3	21.6	20.8	18.8	23.4	36.0	41.8	49.5	59.3	52.7	64.5	65.7	75.7
Gross private domestic investment	14.2	17.2	25.4	30.6	42.5	56.1	44.4	54.1	71.4	58.2	49.8	46.5	66.4	61.6
Fixed investment	10.7	17.9	25.6	31.8	41.0	47.5	42.8	50.7	58.1	56.5	51.8	56.6	58.7	56.6
Nonresidential	9.0	15.5	23.6	31.0	40.8	47.0	43.3	52.9	61.1	57.2	52.9	57.0	58.8	62.9
Structures	7.9	12.9	18.9	23.6	30.6	35.5	29.1	34.5	40.2	35.0	37.6	42.1	46.9	51.7
Producers' durable equipment	1.3	2.6	4.8	7.5	10.2	11.5	14.3	18.4	20.9	22.2	15.3	15.0	11.9	11.2
Residential	1.7	2.4	1.9	.8	.2	.6	–.5	–2.2	–2.9	–.7	–1.1	–.5	–.1	–6.3
Change in business inventories	3.4	–.7	–.2	–1.2	1.4	8.6	1.6	3.4	13.3	1.7	–2.0	–10.0	7.7	5.0
Nonfarm	0	0	1.3	–1.0	–1.6	1.4	9.4	4.9	4.3	1.5	.4	–2.3	12.2	5.4
Farm	3.4	–.7	–1.4	–.2	3.0	7.2	–7.9	–1.4	9.1	.3	–2.5	–7.7	–4.5	–.4
Net exports of goods and services	–.2	.3	1.2	.8	3.5	4.2	4.6	3.6	3.1	–.7	.6	–.4	.8	–1.4
Exports	3.3	4.3	5.8	6.6	10.7	12.3	12.9	19.3	20.8	9.8	11.0	11.0	13.9	15.0
Imports	3.4	4.1	4.6	5.8	7.2	8.1	8.3	15.7	17.6	10.5	10.4	11.4	13.1	16.4
Government purchases	–19.3	–21.6	–19.3	–23.2	–27.0	–34.1	–22.7	–35.1	–48.5	–39.2	–39.9	–43.8	–54.2	–55.2
Federal	–3.2	.4	1.3	1.0	–1.4	–6.1	8.5	.4	–10.9	1.3	3.6	6.7	1.4	.9
National defense	0	0	0	0	0	0	0	–1.2	–.5	–1.1	–2.5	–1.6	–1.1	–.2
Nondefense	–3.3	.4	1.4	1.0	–1.5	–6.2	8.4	1.6	–10.3	2.4	6.2	8.3	2.6	1.1
State and local	–16.1	–22.0	–20.7	–24.2	–25.6	–27.9	–31.2	–35.4	–37.5	–40.4	–43.6	–50.6	–55.6	–56.1
GROSS DOMESTIC PRODUCT	**9.0**	**13.6**	**24.2**	**23.6**	**30.1**	**34.8**	**49.1**	**52.4**	**64.6**	**71.4**	**53.2**	**60.2**	**80.8**	**90.4**

Account 2.—Personal Income and Outlay Account

[Billions of dollars]

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Personal tax and nontax payments	–18.1	–21.0	–24.5	–28.1	–33.1	–37.9	–41.7	–45.1	–49.8	–53.9	–59.1	–63.9	–67.1	–78.4
Personal outlays	14.5	18.5	18.0	17.5	14.0	12.1	27.3	32.7	39.9	55.1	44.7	58.4	67.9	86.2
Personal consumption expenditures	14.3	17.7	16.9	15.5	11.1	8.5	23.0	29.8	38.4	53.2	42.8	57.9	67.8	85.3
Interest paid by persons	.2	.8	1.0	2.0	2.6	3.3	3.8	2.5	1.0	1.8	1.6	.1	–.6	–.3
Personal transfer payments to the rest of the world (net)	0	0	0	.1	.3	.3	.4	.4	.5	.2	.2	.2	.7	1.2
Personal saving	–2.6	–2.1	5.6	17.4	33.0	46.1	38.5	58.2	64.4	62.9	50.1	10.6	–4.9	26.5
PERSONAL TAXES, OUTLAYS, AND SAVING	**–6.2**	**–4.5**	**–.9**	**6.9**	**13.8**	**20.1**	**23.9**	**45.9**	**54.5**	**64.2**	**35.6**	**5.1**	**–4.1**	**34.3**
Wage and salary disbursements	0	1.4	3.3	4.6	5.3	7.2	8.1	11.2	11.1	10.6	11.5	11.9	12.6	33.6
Other labor income	.6	2.4	1.6	1.4	2.7	1.8	1.0	1.8	4.2	1.4	1.0	5.0	11.8	15.9
Proprietors' income with IVA and CCAdj	–6.5	–8.5	–10.1	–8.9	–6.0	–4.8	–4.2	1.5	4.0	1.7	–13.2	–29.9	–32.3	–29.3
Rental income of persons with CCAdj	.8	–.4	2.8	6.6	7.5	8.3	8.9	14.8	9.5	–2.9	–10.5	–12.0	–16.1	–19.8
Personal dividend income	1.2	1.2	2.3	4.2	5.6	3.2	9.1	3.3	9.2	18.9	8.6	6.2	5.4	1.0
Dividends	1.2	1.2	2.3	4.3	5.6	3.1	9.7	3.7	9.1	18.5	8.0	5.3	4.4	–.2
Less: Dividends received by government	0	0	0	0	0	0	.6	.4	0	–.4	–.5	–.9	–1.0	–1.1
Personal interest income	.3	2.0	1.7	2.1	.7	7.1	4.4	17.2	20.1	38.5	46.8	35.3	25.8	40.9
Net interest	–4.6	–5.8	–8.4	–9.7	–14.7	–9.9	–11.0	3.1	7.2	24.7	31.8	15.9	7.5	23.4
Interest paid by government	5.6	9.0	11.5	13.3	18.0	20.6	19.3	20.9	23.0	24.4	26.5	31.0	36.2	39.7
Less: Interest received by government	.7	2.0	2.4	3.6	5.2	6.9	7.7	9.3	11.1	12.4	13.2	11.8	17.3	21.9
Interest paid by persons	.2	.8	1.0	2.0	2.6	3.3	3.8	2.5	1.0	1.8	1.6	.1	–.6	–.3
Transfer payments to persons	–2.8	–2.4	–2.4	–3.2	–2.2	–2.5	–3.7	–3.7	–3.9	–3.7	–7.7	–11.0	–12.5	–9.9
From business	–2.7	–2.5	–2.4	–3.3	–2.2	–2.5	–3.2	–3.6	–4.2	–3.9	–7.7	–9.5	–10.0	–11.8
From government	0	0	0	0	0	.1	–.5	–.1	.3	.3	0	–1.5	–2.5	2.0
Less: Personal contributions for social insurance	0	0	0	0	0	0	–.4	.1	–.2	.2	.7	.4	–1.1	–1.9
PERSONAL INCOME	**–6.2**	**–4.5**	**–.9**	**6.9**	**13.8**	**20.1**	**23.9**	**45.9**	**54.5**	**64.2**	**35.6**	**5.1**	**–4.1**	**34.3**

CCAdj Capital consumption adjustment

IVA Inventory valuation adjustment

APPENDIX A.—Revisions in Summary National Income and Product Accounts—Continued

Account 3.—Government Receipts and Expenditures Account

[Billions of dollars]

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Purchases	−19.3	−21.6	−19.3	−23.2	−27.0	−34.1	−22.7	−35.1	−48.5	−39.2	−39.9	−43.8	−54.2	−55.2
Transfer payments	−.7	−.9	−1.1	−1.6	−1.5	−1.3	−1.7	−1.5	−1.7	−1.4	−2.0	−4.3	−5.0	0
To persons	0	0	0	0	0	.1	−.5	−.1	.3	.3	0	−1.5	−2.5	2.0
To the rest of the world (net)	−.8	−.9	−1.1	−1.5	−1.5	−1.4	−1.2	−1.3	−2.0	−1.6	−2.0	−2.7	−2.6	−2.0
Net interest paid	−.7	−1.7	−2.1	−2.9	−4.1	−4.6	−6.3	−8.1	−9.4	−10.6	−11.9	−10.9	−17.0	−21.0
Interest paid	0	.3	.4	.7	1.1	2.3	1.5	1.1	1.7	1.8	1.3	.9	.3	.9
Less: Interest received by government	.7	2.0	2.4	3.6	5.2	6.9	7.7	9.3	11.1	12.4	13.2	11.8	17.3	21.9
Less: Dividends received by government	0	0	0	0	0	0	.6	.4	0	−.4	−.5	−.9	−1.0	−1.1
Subsidies less current surplus of government enterprises	.3	−.3	−.6	−.9	−2.0	−2.5	−2.4	−.4	−.8	−3.1	−3.3	−5.3	−.2	2.3
Subsidies	0	−.1	−.3	−.1	0	0	−.1	−.2	−.4	−.3	.7	.7	.5	.1
Less: Current surplus of government enterprises	−.3	.1	.3	.8	2.0	2.5	2.3	.1	.4	2.8	4.0	6.0	.7	−2.1
Less: Wage accruals less disbursements	0	0	0	0	0	0	0	0	0	0	0	0	0	.1
Surplus or deficit (−), national income and product accounts	2.3	3.3	−2.1	−.8	−.6	2.2	−11.2	−3.8	6.5	−2.7	−4.6	−3.0	4.8	−8.9
Federal	3.6	1.2	.4	1.2	5.0	10.4	−4.1	2.7	15.5	5.9	6.4	5.1	10.1	.7
State and local	−1.3	2.2	−2.5	−2.0	−5.6	−8.2	−7.2	−6.5	−9.0	−8.5	−10.9	−8.1	−5.3	−9.7
GOVERNMENT EXPENDITURES AND SURPLUS	**−18.2**	**−21.2**	**−25.1**	**−29.4**	**−35.3**	**−40.3**	**−44.9**	**−49.3**	**−53.8**	**−56.6**	**−61.2**	**−66.6**	**−70.6**	**−81.7**
Personal tax and nontax payments	−18.1	−21.0	−24.5	−28.1	−33.1	−37.9	−41.7	−45.1	−49.8	−53.9	−59.1	−63.9	−67.1	−78.4
Corporate profits tax liability	0	0	0	0	0	0	0	.1	.1	.2	.2	.8	2.9	3.2
Indirect business tax and nontax liability	−.2	−.3	−.7	−1.3	−2.2	−2.4	−2.5	−4.4	−3.7	−3.4	−2.8	−3.4	−3.0	−1.1
Contributions for social insurance	0	.1	0	.1	.1	0	−.8	.1	−.3	.6	.6	−.3	−3.4	−5.2
Employer	.1	.1	0	0	0	0	−.4	0	−.1	.4	−.1	−.7	−2.2	−3.5
Personal	0	0	0	0	0	0	−.4	.1	−.2	.2	.7	.4	−1.1	−1.9
GOVERNMENT RECEIPTS	**−18.2**	**−21.2**	**−25.1**	**−29.4**	**−35.3**	**−40.3**	**−44.9**	**−49.3**	**−53.8**	**−56.6**	**−61.2**	**−66.6**	**−70.6**	**−81.7**

Account 4.—Foreign Transactions Account

[Billions of dollars]

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Exports of goods and services	3.3	4.3	5.8	6.6	10.7	12.3	12.9	19.3	20.8	9.8	11.0	11.0	13.9	15.0
Receipts of factor income	1.6	1.4	1.6	2.2	3.6	5.7	7.1	7.7	7.6	8.9	8.5	10.0	10.2	10.3
Capital grants received by the United States (net)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RECEIPTS FROM THE REST OF THE WORLD	**4.9**	**5.8**	**7.3**	**8.8**	**14.3**	**18.0**	**20.0**	**27.0**	**28.4**	**18.7**	**19.4**	**20.9**	**24.1**	**25.4**
Imports of goods and services	3.4	4.1	4.6	5.8	7.2	8.1	8.3	15.7	17.6	10.5	10.4	11.4	13.1	16.4
Payments of factor income	6.5	10.1	13.2	15.7	22.5	26.6	27.6	30.8	33.5	34.2	32.9	35.6	43.5	41.3
Transfer payments to the rest of the world (net)	.7	.4	.9	.8	2.0	2.6	3.0	2.9	1.8	2.0	1.4	2.3	2.5	3.7
From persons (net)	0	0	0	.1	.3	.3	.4	.4	.5	.2	.2	.2	.7	1.2
From government (net)	−.8	−.9	−1.1	−1.5	−1.5	−1.4	−1.2	−1.3	−2.0	−1.6	−2.0	−2.7	−2.6	−2.0
From business (net)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest paid by government to the rest of the world	−5.5	−8.7	−11.1	−12.6	−16.9	−18.3	−17.8	−19.8	−21.3	−22.6	−25.3	−30.2	−36.0	−38.8
Net foreign investment	−.3	−.2	−.2	−1.1	−.5	−.9	−1.1	−2.7	−3.2	−5.6	.1	1.7	.8	2.7
PAYMENTS TO THE REST OF THE WORLD	**4.9**	**5.8**	**7.3**	**8.8**	**14.3**	**18.0**	**20.0**	**27.0**	**28.4**	**18.7**	**19.4**	**20.9**	**24.1**	**25.4**

Account 5.—Gross Saving and Investment Account

[Billions of dollars]

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross private domestic investment	14.2	17.2	25.4	30.6	42.5	56.1	44.4	54.1	71.4	58.2	49.8	46.5	66.4	61.6
Net foreign investment	−.3	−.2	−.2	−1.1	−.5	−.9	−1.1	−2.7	−3.2	−5.6	.1	1.7	.8	2.7
GROSS INVESTMENT	**14.0**	**17.0**	**25.2**	**29.5**	**42.0**	**55.2**	**43.3**	**51.3**	**68.3**	**52.7**	**49.9**	**48.3**	**67.1**	**64.3**
Personal saving	−2.6	−2.1	5.6	17.4	33.0	46.1	38.5	58.2	64.4	62.9	50.1	10.6	−4.9	26.5
Wage accruals less disbursements	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed corporate profits with IVA and CCAdj	−.4	1.3	.1	−3.8	−11.5	−1.6	−10.8	−6.5	−10.7	−29.1	3.3	21.2	32.8	17.7
Consumption of fixed capital	3.7	4.9	6.6	8.1	14.6	15.9	21.8	17.7	17.3	18.5	15.2	19.7	20.1	19.2
Corporate	2.0	2.5	3.5	3.7	8.7	8.7	15.0	11.4	9.2	8.3	4.5	5.5	4.1	2.5
Noncorporate	1.6	2.4	3.2	4.4	5.9	7.1	6.9	6.5	8.0	10.2	10.6	14.2	16.0	16.7
Government surplus or deficit (−), national income and product accounts	2.3	3.3	−2.1	−.8	−.6	2.2	−11.2	−3.8	6.5	−2.7	−4.6	−3.0	4.8	−8.9
Capital grants received by the United States (net)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Statistical discrepancy	10.9	9.5	14.8	8.7	6.8	−7.3	5.0	−14.4	−9.1	3.0	−14.2	−.2	14.3	9.8
GROSS SAVING AND STATISTICAL DISCREPANCY	**15.4**	**18.3**	**27.2**	**31.9**	**45.2**	**58.7**	**47.1**	**55.2**	**71.5**	**56.2**	**53.1**	**53.1**	**71.6**	**68.8**

CCAdj Capital consumption adjustment
IVA Inventory valuation adjustment