

A Preview of the 1999 Comprehensive Revision of the National Income and Product Accounts

Definitional and Classificational Changes

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IN OCTOBER, the Bureau of Economic Analysis (BEA) will release the initial results of a comprehensive, or benchmark, revision of the national income and product accounts (NIPA's). This revision is the 11th of its kind; the last such revision was released in January 1996.

Comprehensive revisions differ from annual NIPA revisions because of the scope of the changes and because of the number of years subject to revision. Comprehensive revisions incorporate three major types of improvements: (1) Definitional and classificational changes that update the accounts to more accurately portray the evolving U.S. economy, (2) statistical changes that update the accounts to reflect the introduction of new and improved methodologies and the incorporation of newly available and revised source data, and (3) presentational changes that update the NIPA tables to reflect the definitional, classificational, and statistical changes and to make the tables more informative.

Comprehensive revisions, and to a lesser extent annual revisions, provide the opportunity to introduce major changes that are outlined in BEA's strategic plan for maintaining and improving its economic accounts.¹ The plan emphasizes efforts to provide new and improved measures of output, investment, saving, and wealth and to increase the consistency of the accounts with international guidelines.²

This article on the definitional and classificational changes is the first in a series of articles about the comprehensive revision. An article in the September issue will describe the new and redesigned tables; subsequent articles will de-

scribe the statistical changes and other aspects of the revision, including estimates of the effects of the definitional, classificational, and statistical changes.

In this comprehensive revision, the following definitional and classificational changes will be introduced.

- Recognize business and government expenditures for software as fixed investment
- Reclassify government employee retirement plans
- Modify the treatment of private noninsured pension plans
- Reclassify certain transactions as capital transfers
- Redefine dividend payments by regulated investment companies to exclude distributions that reflect capital gains income
- Redefine the value of imputed services of regulated investment companies
- Reclassify several government taxes and transfer programs
- Reclassify as financial transactions the implicit subsidies associated with Federal direct loan housing programs
- Reclassify directors' fees

In the following sections of the article, each change is described, the reason for the change is given, and the effects on the accounts is provided. With the exception of the change related to software, for which rough estimates are provided, the other changes will have little or no effect on gross domestic product (GDP) or on gross domestic income (GDI). Among these other changes, the reclassifications of government pensions and of capital transfers will significantly affect the estimates of personal saving and of the government current surplus or deficit, and the modification of private noninsured pension plans will significantly affect the estimates of corporate profits

1. The BEA strategic plan is available on our Web site at <www.bea.doc.gov>; click on "BEA's mission." BEA's plan was presented and discussed at a conference of major users of the economic accounts in March 1995; see "Mid-Decade Strategic Review of BEA's Economic Accounts: An Update," SURVEY OF CURRENT BUSINESS 75 (April 1995): 48-56.

2. For detailed information on the international guidelines for national accounts, see Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and the World Bank, *System of National Accounts 1993* (Brussels/Luxembourg, New York, Paris, and Washington, DC, 1993).

and of net interest. Estimates of these effects will be provided in subsequent articles.

For each change, [table 1](#) shows the aggregates and components from the current NIPA five-account system (see [table 2](#)) that will be affected and the initial year of revision. A technical note at the end of the article describes the methodology that BEA has developed in order to implement the change that recognizes software expenditures as investment.

Business and government expenditures for software

Business and government expenditures for software will be recognized as fixed investment, beginning with 1959. This change represents another step in the effort to improve the NIPA measures of investment and saving. Software will be recognized as investment because, like other assets currently included in fixed investment, it produces a flow of services that lasts more than 1 year; BEA estimates that the average service life is 3–5 years, depending on the type of software. The new treatment also eliminates an inconsistency in the NIPA estimates of investment, in which “embedded,” or bundled, software is included but software purchases by both business and government are excluded. The change will provide users of the accounts with better information on the important role of software in the economy, re-

flecting the rapid growth in software purchases in the past decade. In addition, it will make the NIPA’s more consistent with the economic accounts of most other countries.³

Currently, except for software embedded in equipment by the producer of that equipment, business purchases and the costs associated with own-account production of software are classified as inputs to production, and government purchases and own-account production of software are classified as government consumption expenditures (“own-account” production refers to software produced by a business or government for its own use).

As a result of the new treatment, GDP will be increased by business purchases and own-account production of software, by government enterprises purchases and own-account production of software, and by the depreciation, or consumption of fixed capital (CFC), on general government purchases and own-account production of software. For general government, the depreciation

3. As part of the 1993 revision of the international guidelines, the definition of investment was expanded to include the following types of intangible assets that are expected to be used for more than 1 year: Mineral exploration, computer software, databases, and literary and artistic works. The NIPA’s previously had included mineral exploration as investment; the recognition of databases and literary and artistic works as investment was not considered for this comprehensive revision.

Table 1.—Major Definitional and Classificational Changes

Change	Components affected	Initial year of revision
Recognize business and government expenditures for software as fixed investment.	Private fixed investment in equipment and software, government consumption expenditures and gross investment, proprietors’ income, consumption of fixed capital, corporate profits, subsidies less current surplus of government enterprises, personal saving, and government current surplus or deficit.	1959
Reclassify government employee retirement plans	PCE, government consumption expenditures and gross investment, employer contributions for social insurance, personal contributions for social insurance, other labor income, personal saving, personal income, personal outlays, personal dividend income, dividends received by government, personal interest income, net interest paid by government, transfer payments to persons from government, transfer payments to the rest of the world from government (net), transfer payments to the rest of the world from persons (net), and government current surplus or deficit.	1929
Modify the treatment of private noninsured pension plans ...	Corporate profits, dividends, rental income of persons, personal dividend income, net interest, and personal interest income.	1946
Reclassify certain transactions as capital transfers	Corporate profits, subsidies less current surplus of government enterprises, personal tax and nontax payments, personal saving, transfer payments to the rest of the world from persons (net), transfer payments to the rest of the world from government (net), government current surplus or deficit, and net foreign investment.	1929
Redefine dividend payments by regulated investment companies to exclude distributions that reflect capital gains income.	Dividends, undistributed profits, personal dividend income, and personal saving	1946 ¹
Redefine the value of imputed services of regulated investment companies.	PCE, government consumption expenditures and gross investment, personal interest income, net interest, and net interest paid by government.	1959
Reclassify several government taxes and transfer programs	PCE, S&L government consumption expenditures and gross investment, employer contributions for social insurance, personal contributions for social insurance, subsidies less current surplus of government enterprises, transfer payments to persons, personal tax and nontax payments, personal saving, government current surplus or deficit, and the statistical discrepancy.	1938 (Federal) 1973 (S&L)
Reclassify as financial transactions the implicit subsidies associated with Federal direct loan housing programs.	Net interest, subsidies less current surplus of government enterprises, and net interest paid by government.	1968
Reclassify directors’ fees	Proprietors’ income, other labor income, the statistical discrepancy, and personal saving	1929

1. This change will affect the estimates through 1981 (see the section in the text).

PCE Personal consumption expenditures

S&L State and local

Table 2.—Summary National Income and Product Accounts

Account 1.—National Income and Product Account

Compensation of employees Wage and salary accruals Supplements to wages and salaries Employer contributions for social insurance Other labor income Proprietors' income with IVA and CCA _{adj} Rental income of persons with CCA _{adj} Corporate profits with IVA and CCA _{adj} Profits tax liability Dividends Undistributed profits with IVA and CCA _{adj} Net interest National income Business transfer payments Indirect business tax and nontax liability Less: Subsidies less current surplus of government enterprises Consumption of fixed capital Less: Receipts of factor income from the rest of the world Plus: Payments of factor income to the rest of the world Gross domestic income Statistical discrepancy GROSS DOMESTIC PRODUCT	Personal consumption expenditures Gross private domestic investment Fixed investment Nonresidential Residential Change in business inventories Net exports of goods and services Exports Imports Government consumption expenditures and gross investment Federal State and local
GROSS DOMESTIC PRODUCT	GROSS DOMESTIC PRODUCT

Account 2.—Personal Income and Outlays Account

Personal tax and nontax payments Personal outlays Personal consumption expenditures Interest paid by persons Personal transfer payments to the rest of the world (net) Personal saving PERSONAL TAXES, OUTLAYS, AND SAVING	Wage and salary disbursements Other labor income Proprietors' income with IVA and CCA _{adj} Rental income of persons with CCA _{adj} Personal dividend income Personal interest income Transfer payments to persons Less: Personal contributions for social insurance
PERSONAL INCOME	PERSONAL INCOME

Account 3.—Government Receipts and Expenditures Account

Consumption expenditures Transfer payments Net interest paid Less: Dividends received by government Subsidies less current surplus of government enterprises Less: Wage accruals less disbursements Current surplus or deficit (-), national income and product accounts GOVERNMENT CURRENT EXPENDITURES AND SURPLUS	Personal tax and nontax payments Corporate profits tax liability Indirect business tax and nontax liability Contributions for social insurance Employer Personal
GOVERNMENT RECEIPTS	GOVERNMENT RECEIPTS

Account 4.—Foreign Transactions Account

Exports of goods and services Receipts of factor income RECEIPTS FROM THE REST OF THE WORLD	Imports of goods and services Payments of factor income Transfer payments to the rest of the world (net) Net foreign investment PAYMENTS TO THE REST OF THE WORLD
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Account 5.—Gross Saving and Investment Account

Gross private domestic investment Gross government investment Net foreign investment GROSS INVESTMENT	Personal saving Wage accruals less disbursements (private) Undistributed corporate profits with IVA and CCA _{adj} Consumption of fixed capital Government current surplus or deficit (-), national income and product accounts Statistical discrepancy GROSS SAVING AND STATISTICAL DISCREPANCY
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CCA_{adj} Capital consumption adjustment
 IVA Inventory valuation adjustment

represents a partial measure of the services of the stock of government software.⁴

Based on preliminary estimates for 1996, this change will increase GDP by about 1½ percent, or \$115 billion—about \$95 billion in private fixed investment and about \$20 billion in government consumption expenditures and gross investment.

The effects on NIPA components due to the recognition of software as investment by business and by government are described below, followed by a section on how the recognition will affect the NIPA tables, including the five summary accounts.⁵ For a summary description of the methodology used to prepare the newly developed estimates of the output and prices necessary to implement this change, see the technical note at the end of this article.

Business.—Business purchases of software will be added to fixed investment and thus to GDP. Currently, these purchases are treated as intermediate inputs; as a result, they are omitted from the calculation of GDP as the sum of final expenditures, and they are subtracted from gross output in the calculation of gross product by industry.⁶ Business own-account software production, measured as the sum of the costs of production, will also be added to fixed investment and thus to GDP. For the calculation of industry gross product, own-account software production will be redefined as part of gross output and thus will be added to the gross output and gross product of industries engaged in producing own-account software.⁷

The recognition of software as investment will also affect the business incomes and private CFC components of GDI. Business incomes (proprietors' income and corporate profits) will be increased by the elimination of the deductions for the purchases of software and by the addition of the value of the production of own-account software as a receipt. These effects will be partly offset by the deduction of the CFC on both purchased software and own-account software production.

4. The service value of an asset should be measured as the reduction in the value of the asset as a result of its use in the current period (measured by the depreciation) plus a return equal to the value the asset could earn if it were invested elsewhere. Source data to estimate this return are not currently available.

5. For both business and government, purchases of software will consist of purchases of both prepackaged and custom software.

6. Estimates of gross product by industry that reflect the NIPA revision will be released in the spring of 2000. For information on gross product by industry, see Sherlene K.S. Lum and Brian C. Moyer, "Gross Product by Industry, 1985–97," SURVEY 78 (November 1998): 20–40.

7. This treatment is the same as that for own-account, or "force-account," new construction and major improvements, which is currently recognized as investment in private and government structures in the NIPAs.

Government.—Purchases of software by general government agencies will be reclassified to gross government investment from government consumption expenditures. In addition, as is the current convention for all government investment, the services of purchased software, measured by depreciation, will be added to government consumption expenditures and thus to GDP.⁸

Own-account production of software by general government agencies, measured as the sum of the costs of production, will also be reclassified to gross government investment from government consumption expenditures, and CFC on own-account software production will be added to government consumption expenditures. As a result of the reclassification of the costs of own-account software production, the compensation of employees engaged in own-account production and the related costs of production, such as rent and utilities, will be classified as investment expenditures rather than as consumption expenditures. The gross product of general government, which is measured as the sum of compensation of employees (including compensation related to own-account production) and CFC, will increase by the value of the CFC of software investment.

For government enterprises, purchases of software and own-account software production will be added to gross government investment and thus to GDP.⁹ Government consumption expenditures will not be affected, because the current purchases of government enterprises are treated as costs of production and thus are deducted in the calculation of the current surplus of government enterprises, a business-type income component of GDI. The effect on the current surplus of government enterprises is similar to that on proprietors' income and corporate profits discussed above; that is, the surplus will be increased by the elimination of the deductions for the purchases of software and by the addition of the value of own-account software production as a receipt, and it will be reduced by the deduction of the CFC on both purchased software and own-account software production.

8. For a discussion of the treatment of investment by government agencies, see "Preview of the Comprehensive Revision of the National Income and Product Accounts: Recognition of Government Investment and Incorporation of a New Methodology for Calculating Depreciation," SURVEY 75 (September 1995): 33–41.

9. For a detailed discussion of the treatment of government enterprises, see "Recognition of Government Investment," 34–35; and *Government Transactions*, Methodology Paper No. 5 (November 1988), which is available from the National Technical Information Service, accession no. PB 90–118480, and on BEA's Web site at <www.bea.doc.gov>.

Effect on the five summary accounts.—The recognition of business and government expenditures for software as investment will affect the following major components of the five summary accounts of the NIPA'S.

In the national income and product account (account 1), GDP will increase to reflect the amounts of purchased and own-account software by business in private fixed investment, of purchased and own-account software of government enterprises in gross government investment, and of software CFC of general government in government consumption expenditures. Purchased software by general government agencies will be reclassified from government consumption expenditures to gross government investment. Within GDI, the components proprietors' income, corporate profits, and the current surplus of government enterprises will increase for most periods, because the elimination of deductions for purchased software and the addition of the value of own-account software as a receipt are expected to exceed the deduction of software CFC. The CFC component of GDI will increase to reflect the addition of the software CFC.

In the personal income and outlay account (account 2), personal income and personal saving will increase for most periods by the amount of the change in proprietors' income.

In the government receipts and expenditures account (account 3), government consumption expenditures will decrease for most periods by the sum of the amounts of general government purchased software and of general government own-account compensation and other production costs, less the amount of general government software CFC. The current surplus of government enterprises will increase by the sum of the amounts of government enterprises purchased software and of government enterprises own-account compensation and other production costs, less the amount of government enterprises software CFC. The "government current surplus or deficit" will increase for most periods by the amounts of the change in government consumption expenditures and the change in the current surplus of government enterprises.

In the foreign transactions account (account 4), receipts from the rest of the world and payments to the rest of the world will not be affected.

In the gross saving and investment account (account 5), personal saving, undistributed corporate profits, CFC, the government current surplus or deficit, gross private domestic investment, and gross government investment will change as de-

scribed above. Gross saving and gross investment will increase by the same amount as the sum of the changes in gross private domestic investment and in gross government investment.

Changes in series titles.—The recognition of software as investment will result in the following changes to series titles for major NIPA tables: The title of the nonresidential producers' durable equipment component of private fixed investment will be changed to "equipment and software"; the title of the residential producers' durable equipment component of private fixed investment will be changed to "equipment"; and the title of the equipment component of gross government investment will be changed to "equipment and software." In addition, annual and quarterly estimates of private investment in software will be published.

The next article in this series on the comprehensive NIPA revision will provide additional details on the specific tables affected by these changes.

Government employee retirement plans

Government employee retirement plans will no longer be classified as social insurance funds within the government sector. The reclassification will cover Federal civilian, Federal military, and State and local government retirement plans and will treat these plans similarly to private pension plans.¹⁰ It will also achieve greater comparability with the treatments by other countries.¹¹ The change, which will be carried back to 1929, will not affect GDP, GDI, or national saving, but it will increase personal saving and decrease government saving by offsetting amounts.

Under the new treatment, employer contributions will be reclassified to personal income (in other labor income in compensation of employees) from government receipts (in contributions

10. The reclassification covers unfunded retirement plans, such as the military retirement plan as it existed before a trust fund was established in the fourth quarter of 1984. The change will not affect the Federal Government employees' Thrift Savings Plan (TSP), a tax-deferred retirement savings plan that is similar to a 401(k) plan and invests in a variety of financial assets; the NIPA'S currently treat the TSP similarly to a private noninsured pension plan.

The treatment of other social insurance funds will not be affected; these funds include old-age, survivors, and disability insurance (social security), hospital insurance (medicare), unemployment insurance, and workers' compensation insurance. Social security has features similar to those of government and private employee pension plans, but it also has other features that make it different from those plans. For example, social security benefit payments are not directly proportional to prior earnings; low-wage earners receive a much larger proportion than do high-wage earners. In addition, social security benefits are provided to society at large rather than to specific groups of employees.

11. The System of National Accounts (SNA) recommends that both private and government employee retirement plans appear in a subsector for insurance corporations and pension funds; however, BEA is deferring a decision on sector reclassification, pending a review of differences in the classifications between the NIPA'S and the SNA.

for social insurance) and current expenditures (partly in compensation of general government employees in consumption expenditures and partly in compensation of government enterprise employees in the expenses used to estimate the current surplus of government enterprises). Personal contributions will no longer be included in government receipts (in contributions for social insurance) and as a deduction from personal income (in personal contributions for social insurance). Interest and dividends received by the retirement plans will be reclassified to personal income (in personal interest income and in personal dividend income) from a deduction in government current expenditures (in government interest and dividends received).¹² Benefits paid by the plans will be treated as transactions within the personal sector rather than as transfer payments from government to persons. Benefits paid to beneficiaries living outside the United States will be treated as transfer payments to the rest of the world (net) from persons rather than from government.¹³ The administrative expenses associated with the plans will be treated as personal consumption expenditures (PCE) (in expense of handling life insurance and pension plans in personal business services) rather than as government current expenditures (in consumption expenditures). As a result of these changes, the savings associated with the plans will appear in personal saving rather than in the government current surplus or deficit.¹⁴

Effect on the five summary accounts.—The reclassification of government employee pension plans will affect the following major components of the five summary accounts of the NIPA's.

In the national income and product account (account 1), GDP and national income will not be affected. Within GDP, government consumption expenditures will decrease, and PCE will increase, by the amount of the reclassified administrative expenses. Within national income, other labor income will increase, and employer contributions for social insurance will decrease, by the amount of the reclassification of employer contributions.

In the personal income and outlay account (account 2), personal income will increase by the amounts of employer and personal contributions,

dividends received, and interest received, and it will decrease by the amount of transfer payments to persons. Personal outlays will increase by the amounts of the reclassification of administrative expenses (affecting PCE) and of the reclassification of transfer payments to the rest of the world (net). Personal saving will increase by the amount of the difference between the increase in personal income and the increase in personal outlays.

In the government receipts and expenditures account (account 3), government receipts will decrease by the amounts of employer and personal contributions. Government current expenditures will decrease by the amounts of reclassified administrative expenses (in consumption expenditures) and benefits paid (in transfer payments), and it will increase by the amounts of interest and dividends received. The "government current surplus or deficit" will decrease by the amount of reclassified savings associated with the plans.

In the foreign transactions account (account 4), receipts from the rest of the world and payments to the rest of the world will not be affected. An increase in transfer payments to the rest of the world from persons (net) will be offset by a decrease in transfer payments to the rest of the world from government (net).

In the gross saving and investment account (account 5), gross investment and gross saving will not be affected. An increase in personal saving will be offset by a decrease in the "government current surplus or deficit."

Private noninsured pension plans

The treatment of noninsured pension plans as it relates to the measurement of corporate profits and to the recording of property income—rents, dividends, and interest—will be modified. The corporate profits that are associated with the plans will be recorded as zero; the property income will be recorded as being received directly by persons in the corresponding components of personal income. Currently, the profits of these plans are negative because they are defined to equal net dividends (paid less received), and all sources of property income are treated as imputed interest paid by business to persons. This modification in treatment will increase profits, will increase rental income of persons and personal dividend income, and will decrease net interest and personal interest income. The increases in rental income and in dividend income will be offset by the decrease in personal interest income. GDP, national income, personal income,

12. Interest paid by the Federal Government to Federal employee retirement plans will be included in personal interest income and in Federal interest paid. Currently, this transaction is within the government sector and is not shown in the NIPA's.

13. Data are not currently available to estimate benefits paid from State and local government plans to beneficiaries living outside the United States.

14. These savings equal employer contributions plus personal contributions plus interest received plus dividends received less benefits paid less administrative expenses.

personal saving, and business saving will not be affected.

Capital transfers

Certain transactions now included in the NIPA's will be reclassified as capital transfers. These transactions, which mainly represent transfers of existing assets and so do not affect the level of disposable income in the current period, will be removed from the NIPA's, which record only transactions that reflect current production and the related income and saving.¹⁵ This reclassification, which will be carried back to 1929, will not affect GDP, but it will affect national saving.

Capital transfers are transactions in which one party provides something (usually cash) to another party without receiving anything in return, and these transactions are linked to, or are conditional upon, the acquisition or the disposition of an asset.

The classification of a transaction as a capital transfer is sometimes difficult because a transaction may represent the acquisition or disposition of an asset to one party and disposable income to the other party. For example, estate and gift taxes are linked to the transfer of assets and therefore are capital transactions from the point of view of the household; however, from the government's point of view, these taxes represent funds that are available for spending and would be considered as current transactions. In general, BEA will follow international guidelines in which a transaction is classified as a capital transfer if it is viewed as a capital transaction by either party to the transaction. As a result of the reclassification of these transactions, the NIPA's will be more closely aligned with the international guidelines for national economic accounts.¹⁶ In order to facilitate comparisons of NIPA measures of saving with other measures of saving, estimates of capital transfers will continue to be published as part

of the NIPA tables (see the upcoming article on presentational changes to the NIPA tables).¹⁷

The following transactions will be reclassified as capital transfers: (1) Federal Government investment grants to State and local governments for highways, transit, air transportation, and water treatment plants (now part of Federal Government grants to State and local governments); (2) Federal Government investment subsidies to business, that is, maritime construction subsidies (now part of Federal subsidies); (3) estate and gift taxes (now part of personal tax and non-tax payments); (4) immigrants' transfers to the United States (now part of personal transfer payments to the rest of the world); and (5) Federal Government forgiveness of debt owed by foreign governments (the forgiveness of original principal amounts is currently excluded from the NIPA's as a financial transaction; the forgiveness of accrued interest is currently part of government transfer payments to the rest of the world).¹⁸

In a related reclassification, the capital transaction "capital grants received by the United States (net)," which is now a NIPA category in the foreign transactions account, will be dropped from the NIPA's; this change is consistent with international guidelines.¹⁹

Effect on the five summary accounts.—The reclassification of capital transfers will affect the following major components of the five summary accounts of the NIPA's.

In the national income and product account (account 1), GDP and its expenditure components will not be affected. National income and corporate profits will decrease by the amount of Federal Government investment subsidies to business (maritime construction subsidies). GDI will not be affected; the decrease in national income will be offset by a corresponding decrease in subsidies, which is subtracted in the calculation of GDI.

In the personal income and outlay account (account 2), personal income and its components will not be affected. Personal outlays will

17. Because some data users are specifically interested in the series on estate and gift taxes, quarterly estimates will be made available through STAT-USA as "unpublished detail."

18. In future comprehensive revisions, BEA will consider reclassifying additional transactions as capital transfers. For example, a portion of Federal disaster assistance programs and Federal Government investment grants to foreign countries might be classified as capital transfers. To date, BEA has been unable to complete the conceptual and statistical work required to implement these additional reclassifications.

19. This category consists primarily of allocations of special drawing rights (SDR's), which are international reserve assets created by the International Monetary Fund (IMF) and allocated to its members, but they are not considered to be liabilities to any organization. Allocations of SDR's by the IMF are not therefore considered to be transactions between two parties: The United States gains an asset, but the IMF does not acquire a liability.

15. The NIPA investment flows are used to prepare BEA's accounts of the stock of fixed assets presented in *Fixed Reproducible Tangible Wealth, 1925-94* (forthcoming). A new table, which will be described in the forthcoming article on presentational changes, will provide an integration of the estimates of the stocks of fixed assets and inventories and the associated investment flows. BEA intends to continue its work toward developing integrated accounts of the stocks and flows of nonfinancial and financial assets, with the objective of developing national balance sheets. When that objective is reached, the capital transfers will be presented as part of a capital account.

16. The U.S. international transactions accounts were recently restructured to show capital transfers to or from the rest of the world in a separate capital account; this change brought the U.S. accounts closer to existing international guidelines for balance of payments accounts. For more details, see Christopher L. Bach, "U.S. International Transactions, Revised Estimates for 1982-98," SURVEY 79 (July 1999): 63-64.

increase, and personal saving will decrease, by the amount of immigrants' transfers to the United States; these transfers are now classified as negative entries in personal transfer payments to the rest of the world (net). Personal tax and non-tax payments will decrease, and personal saving will increase, by the amount of estate and gift tax payments. On balance, personal saving will be higher.

In the government receipts and expenditures account (account 3), total government receipts will decrease by the amount of estate and gift taxes, which are now part of personal tax and nontax payments. Government current expenditures will decrease by the amounts of Federal Government investment subsidies to business (now part of Federal subsidies) and of the accrued interest included in debt forgiveness (now part of transfer payments to the rest of the world from government (net)). In addition, both Federal Government current expenditures and State and local government receipts will decrease by the amount of Federal Government investment grants to State and local governments. These grants are now part of Federal grants-in-aid to State and local governments, which are current expenditures for the Federal Government and receipts for State and local governments, but they are consolidated in the total government account.

In the foreign transactions account (account 4), receipts from, and payments to, the rest of the world will decrease by the amount of the presently published capital grants received by the United States (net) category. Transfer payments to the rest of the world from persons (net) will increase, and net foreign investment will decrease, by the amount of immigrants' transfers to the United States. Transfer payments to the rest of the world from government (net) will decrease, and net foreign investment will increase, by the amount of the accrued interest included in debt forgiveness. Net foreign investment will decrease by the amounts of the capital grants and of the immigrants' transfers to the United States, and it will increase by the amount of the accrued interest included in debt forgiveness.

In the gross saving and investment account (account 5), gross investment and gross saving will decrease by the same amount as net foreign investment. Personal saving will increase, and the "government current surplus or deficit" will decrease, by the amount of estate and gift taxes. The "government current surplus or deficit" will increase, and undistributed corporate profits will decrease, by the amount of Federal Govern-

ment investment subsidies to business (maritime construction subsidies).

Dividend distributions of regulated investment companies

As part of the 1998 annual NIPA revision, dividend payments were redefined to exclude the distributions of regulated investment companies (mutual funds) that reflect capital gains income.²⁰ In the annual revision, the estimates were carried back to 1982; for this comprehensive revision, the estimates for 1946–81 will be revised.

This change will affect dividend payments of mutual funds and the aggregates that include them. Personal income (personal dividend income) and personal saving will decrease, and undistributed corporate profits will increase, by the amount of the capital gains distributions that are excluded. GDP, GDI, corporate profits, and gross saving will not be affected.

Imputed services of regulated investment companies

The value of the imputed services of regulated investment companies—that is, mutual funds—will be redefined to equal operating expenses; currently, the value of the imputed services is defined as net property income received. This redefinition, which will be carried back to 1959, will affect GDP and GDI but not national saving.

In the NIPA's, an imputation is made to account for the implicit service charges of financial intermediaries. The output of these intermediaries is equal to these charges plus any explicit charges. The imputed service is allocated among GDP expenditure components based on each sector's share of deposits with mutual funds. The imputed services of mutual funds that are allocated to persons and to governments are included in GDP as part of the component "services furnished without payment by financial intermediaries except life insurance carriers and private noninsured pension plans" in PCE and in government consumption expenditures. The imputed services allocated to businesses are treated as intermediate inputs and thus are not included in GDP.

The imputation is in GDI as an interest income payment, which is a measure of the income associated with the production of the implicit

20. See Eugene P. Seskin, "Annual Revision of the National Income and Product Accounts," SURVEY 78 (August 1998): 29.

service.²¹ In domestic net interest, a component of GDI that equals interest paid by domestic business less interest received by domestic business, the total imputed payment is included as interest paid, and the payments received by business are included in interest received. The payments to persons are included in personal interest income, a component of personal income. The payments to government are included in net interest paid by government (as a subtraction), a component of government current expenditures. The payments to domestic business are included in net interest paid by domestic business (as a subtraction).

Currently, mutual funds are classified as depository institutions, and the value of the implicit service charge is defined as the difference between property income received and property income paid.

In the mid-1990's, the source data that had been used to measure this net property income showed unusually large increases. In the 1997 annual NIPA revision, BEA determined that the underlying source data had a number of practical problems, including the effects of significant lags between the receipt of income by the regulated investment companies and its distribution to shareholders. Consequently, BEA changed its methodology for estimating the imputed charges of these companies and began extrapolating their charges using operating expenses, as measured by "total deductions" reported on their income tax returns.

Under the new definition, the value of the imputed service charges will be defined as operating expenses; it will be measured as "total deductions" plus implicit charges by securities dealers and "services furnished without payment" by other financial intermediaries. The effect of this redefinition will be to increase GDP and GDI in some years and to decrease them in other years. Within GDP, PCE and government consumption expenditures will be affected, and within GDI, net interest will be affected. Personal saving and the government current surplus or deficit will not be affected. For personal saving, the change in personal interest income will be offset by the change in personal outlays. For the government current surplus or deficit, the change in consumption expenditures will be offset by the change in net interest paid by government.

In addition, beginning with this comprehensive revision, the consumption of the imputed serv-

ice charges of regulated investment companies by State and local governments will be recognized, and the allocation to other GDP expenditure components will be revised accordingly.

Government taxes and transfer programs

The following paragraphs describe the reclassifications of several Federal tax items and State and local contributions and transfer items. None of these reclassifications will affect GDP; except for a reclassification of certain excise taxes, GDI and national saving will not be affected.

The refunds under the Federal Insurance Contribution Act (FICA) will be reclassified as negative contributions for social insurance; currently, the FICA refunds are treated as offsets to personal income taxes. As a result of this change, the treatment of FICA refunds will be consistent with the present treatment of FICA payments, which are treated as contributions for social insurance. The change, which will be carried back to 1938, will increase nonwithheld income taxes and decrease contributions for social insurance by the amounts of the FICA refunds; Federal receipts and the current surplus or deficit will not be affected.

The excise taxes related to private pension plans, such as taxes on pension-plan "reversions," will be reclassified as business nontaxes; currently, these taxes are treated as personal nonwithheld income taxes. This change recognizes that these excise taxes are more like fees than like conventional taxes and that they are paid by the employer. The change, which will be carried back to 1982, will decrease personal nonwithheld income taxes, and will increase business nontaxes, by the amounts of these excise taxes. GDI and the statistical discrepancy will be affected; the increase in business nontaxes (indirect business tax and nontax liability) will not be offset in corporate profits, because excise taxes are already deducted in the source data used to estimate corporate profits. Federal receipts and the current surplus or deficit will not be affected. Disposable personal income and personal saving will increase.

The food-cost portion of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) will be reclassified as State and local transfer payments to persons and added to PCE; currently, these food-related expenditures are classified as State and local consumption expenditures. This change recognizes that the food benefits associated with WIC are similar to those in the Federal food stamp program, which are classified as transfer payments to persons. This

21. The imputation of income payments to depositors is made so that the imputation for implicit service charges by financial intermediaries does not affect national or sector measures of saving.

change, which will be carried back to 1974, will increase State and local transfer payments to persons, personal income, and PCE, and will decrease State and local consumption expenditures, by the amounts of these expenditures. State and local current expenditures, the current surplus or deficit, and personal saving will not be affected.

Payments for foster care and for adoption assistance will be reclassified as "other" public assistance. Currently, the federally funded portion of these payments is treated as "family assistance," and the State-funded portion of foster care assistance is treated as "other" State and local transfer payments (the State-funded portion of adoption assistance was not previously estimated). The change will combine both types of payments—regardless of the source of government funding—into one category, recognizing that the current classification of the federally funded portion as family assistance is not consistent with the definition of the items in that category, and it will include estimates of State-funded adoption assistance. As a result of the change, family assistance will decrease, and "other" public assistance will increase, by the amounts of the federally funded payments. "Other" State and local transfer payments will decrease, and "other" public assistance will increase, by the amounts of the State-funded foster care payments (beginning with 1973). State and local transfer payments to persons will increase by the amounts of State-funded adoption assistance not previously captured (beginning with 1985). State and local government consumption expenditures will decrease by the amounts of federally funded payments (beginning with 1982) and the amounts of State-funded adoption assistance (beginning with 1985); previously, only the State-funded portion of foster care assistance had been removed from consumption expenditures.

Implicit subsidies associated with Federal direct loan housing programs

Implicit subsidy payments and offsetting interest payments that are associated with Federal direct loan housing programs will be reclassified as financial transactions back to 1968; as such, they will be removed from the NIPA'S. Currently, the difference between the contract interest and the interest actually owed (depending on certain income conditions) on these loans is included in subsidy payments to homeowners and, as an offset within government expenditures, in interest received from them by the Federal Government. The change will eliminate both of these payments

and will result in consistency with the treatment of interest subsidy costs of other direct loan credit programs. These costs are classified as financial transactions and thus are excluded from the NIPA'S, because transactions in financial assets represent the exchange of existing assets rather than current income or production.

The reclassification of the implicit payments will increase net interest paid by government, and will decrease subsidy payments, by the same amount; thus, government current expenditures and the government current surplus or deficit will not be affected.²² GDP will not be affected; in GDI, the decrease in subsidy payments will be offset by a decrease in net interest. Rental income of persons will not be affected, because the removal of the subsidy will be offset by the reduction in interest payments. National income will be reduced by the amount of the decrease in net interest. Personal interest income, personal income, and personal saving will not be affected.

Directors' fees

The fees that are paid to outside directors—that is, directors who are not employees of the company on whose board they serve—will be reclassified from other labor income to nonfarm proprietors' income.²³ This reclassification, which will be carried back to 1929, will not affect GDP, but because it will eliminate a double-counting of these fees in the NIPA'S that began in 1979, it will affect GDI, the statistical discrepancy, and national saving, beginning with 1979.

Directors' fees will be reclassified to proprietors' income for two reasons. First, in 1979, directors were instructed to report the fees as part of business income on Schedule C of their individual income tax return Form 1040. As a result, these fees are included in the estimates of nonfarm proprietors' income, which are based on tabulations of business tax returns; currently, these fees are also included in other labor income, where they are derived independently on the basis of the compensation paid to corporate officers that is reported on corporate income tax returns. Second, Schedule C does not separately identify these fees, so they cannot be measured and used to estimate other labor income.

For all years, the change will reduce other labor income by the amount of the current estimates

22. For some years, there will be additional effects because the amounts of the implicit payments recorded in interest and in subsidies were not the same.

23. Director's fees paid to employees who serve on their company's board of directors are classified as wages and salaries.

of directors' fees, and for years prior to 1979, the change will increase proprietors' income by that amount. Thus, prior to 1979, personal income and national income will not be affected; beginning with 1979, personal income and national income will be reduced by the same amount as other labor income.

Technical Note

Methodology for Estimates of Software

One of the major definitional changes that will be introduced in the upcoming comprehensive revision of the NIPA's is the recognition of software as investment. This note describes the methodologies that BEA has developed to prepare (1) annual estimates of business and government purchases of software, (2) annual estimates of own-account production of software, (3) price indexes that are needed to prepare the real estimates for both types of software, and (4) estimates of consumption of fixed capital (CFC) and business incomes. The methodologies used to prepare the estimates for the most recent periods are described at the end of the note.

More detailed information about the methodologies and the historical quarterly estimates will be available after the release of the comprehensive revision.

Current-dollar estimates

For 1987 and 1992, the estimates of business and government purchases of prepackaged software and custom software are based on estimates from the benchmark input-output (I-O) accounts. For other years, estimates are prepared using the commodity-flow method in which directly measured output is allocated among the various expenditure components, primarily using relationships from the benchmark I-O accounts.²⁴

First, the estimates of the total output of purchased software are derived. Beginning with 1985, output is based on industry receipts data from the Census Bureau's service annual survey.²⁵ For 1960-84, output is based on trade source data on revenues for software and computer services, and for 1959, output is based on

a judgmental trend. Second, estimates of purchases by households are derived, beginning with 1974. For 1977-91, these purchases are estimated using data from the Bureau of Labor Statistics (BLS) consumer expenditures survey; for 1992, these purchases are from the benchmark I-O table and are based on Census Bureau retail sales and services receipts from the 1992 Economic Censuses, and beginning with 1993, these purchases are based on data from the Census Bureau retail trade surveys. Third, net exports of software are derived, beginning with 1960, from data on trade in goods from the Census Bureau.²⁶ Fourth, estimates of business purchases of software that is embedded in other equipment and of the change in business inventories of software are prepared using benchmark I-O relationships of these transactions to total output.²⁷ Fifth, total investment is estimated as the difference between total output and the sum of the estimates from steps two, three, and four. Finally, the total investment estimates are divided between business purchases and government purchases, using benchmark I-O relationships of business purchases and of government purchases to total investment.

For own-account software, newly developed estimates have been prepared to measure this type of investment in software.²⁸ Own-account production of software is measured as the sum of production costs; in general, these costs consist of the following: Intermediate inputs; factor incomes, such as compensation of employees; nonfactor charges, such as indirect business taxes; and CFC. Because of the lack of available source data, these costs are limited to intermediate inputs and compensation of employees.

Beginning with 1985, total output of own-account software is calculated by multiplying the number of programmers and systems analysts in selected industries times a factor to account for the share of time spent doing tasks associated with software investment, times the median wage rate in those industries, times various factors that cover nonwage compensation costs and intermediate inputs. Data on the number of computer programmers and systems analysts by industry

26. The definitional change does not affect the current estimates of consumer purchases of software or exports and imports of software, so these estimates are used in the new methodology.

27. Annual estimates of software inventories are available only from the benchmark I-O tables. For the calculation of investment in prepackaged software, it is assumed that the inventory changes for all years except 1987 and 1992 are zero.

28. Federal Government agencies provide data on obligations for information technology to the Office of Management and Budget; however, these data do not provide sufficient detail to estimate the costs that are solely related to own-account production.

24. For a description of these accounts, see U.S. Department of Commerce, Bureau of Economic Analysis, *Benchmark Input-Output Accounts of the United States, 1992* (Washington, DC: U.S. Government Printing Office, 1998). For a description of the commodity-flow method, see *Benchmark Input-Output Accounts, M-5*.

25. Beginning with 1990, the receipts data are derived from data for the following two industries: Computer programming services (SIC industry 7371) and prepackaged software (SIC 7372). For 1985-89, the receipts data are derived from data for the computer and data processing services industry (SIC 737).

are then used to provide estimates of output for private employees, for Federal Government employees, and for State and local government employees.

Data on the number of programmers and systems analysts are available from BLS by occupation and by industry.²⁹ In order to avoid double-counting the work performed by some of these employees to create embedded software or to produce software for sale, an adjustment is made to the total number of programmers and systems analysts that reduces the number of employees from the mining, manufacturing, and business services industries. This adjustment is made judgmentally on the basis of unpublished BLS data on the employment of computer programmers and systems analysts as a share of all industry employment.

Data on the proportion of time spent by programmers and systems analysts on the development of new software are based on a private study.³⁰

Wages are derived from BLS data on median weekly earnings for computer programmers and systems analysts.³¹ The other production costs are derived as follows: Nonwage compensation, on the basis of the relationship between compensation and wages derived from published NIPA data by industry;³² and intermediate inputs, on the basis of the relationship between intermediate inputs and compensation derived primarily from the Census Bureau's census of service industries.³³

For years before 1985, this methodology is modified to reflect the availability of source data. For 1972–84, the modifications are as follows: Trade source data are used for the total number of programmers and systems analysts; the NIPA measure of wages and salaries per full-time equivalent employee for the business services industry (SIC 73) is used for the median wage rates of business; and price indexes for compensation of Federal nondefense employees and for compensation of State and local noneducation employees are used for median wage rates for

government. For 1959–71, a different methodology is used; the business and the government estimates of own-account software production are extrapolated back using NIPA measures of business purchases of computers and peripheral equipment.

Prices

Currently, the information available on the prices of prepackaged software is limited, and no information is available on the prices of custom software or of own-account software. To estimate real software investment, BEA is developing quality-adjusted price indexes in order to better reflect the rapid technological changes in these products.

Prepackaged software.—The price indexes for prepackaged software are based on information from the following sources: BEA hedonic price indexes for 1985–94 for business applications; matched-model indexes for selected types of prepackaged software, including spreadsheets, databases, and word processing; matched-model price indexes for 1985–93 that were developed by Steven Oliner and Daniel Sichel;³⁴ and beginning with December 1997, a BLS producer price index (PPI) for applications software that is also based on prices of matched models.

For 1985–93, the quality-adjusted price index is estimated by combining the BEA-developed hedonic price indexes and the Oliner-Sichel matched-model indexes. BEA developed hedonic price indexes for two types of prepackaged software—spreadsheets and word processing.³⁵ These hedonic price indexes are estimated using a methodology that is an extension of earlier work on software prices by Brynjolfsson and Kemerer and by Gandal.³⁶ The price index estimates are based on regressions in which the logarithm of prices of prepackaged software is a linear function of selected quality characteristics and of dummy variables for each year of the price observations. The resulting indexes are “regression” price indexes in which the coefficients of the dummy variables for each year are used to construct price

29. See Bureau of Labor Statistics, “Employment by Occupation and Industry, 1983–96” in the National Industry-Occupation Employment Matrix (unpublished).

30. Barry W. Boehm, *Software Engineering Economics* (Englewood Cliffs, NJ: Prentice-Hall, 1981): 533–35, 548–50.

31. See “Median Usual Weekly Earnings of Full-time Wage and Salary Workers by Detailed Occupation and Sex, 1996,” *Employment and Earnings* (January 1998): table 39. The estimates in this table are based on data collected in the current population survey.

32. See NIPA tables 6.2, 6.4, and 6.6.

33. The relationship is primarily based on data in the 1987 *Census of Service Industries: Capital Expenditures, Depreciable Assets, and Operating Expenses* (Washington, DC: U.S. Government Printing Office (GPO), 1991) and the 1992 *Census of Service Industries: Capital Expenditures, Depreciable Assets, and Operating Expenses* (Washington, DC: U.S. GPO, 1996).

34. Steven Oliner and Daniel Sichel, “Computers and Output Growth Revisited: How Big Is the Puzzle,” in *Brookings Papers on Economic Activity* vol. 2 (Washington, DC, 1994): 299–301.

35. The data on prices and quality characteristics used to estimate the regressions are obtained from published editions of National Software Testing Laboratories' *Ratings Reports*. These data are available only through 1994.

36. Erik Brynjolfsson and Chris F. Kemerer, “Network Externalities in Microcomputer Software: An Econometric Analysis of the Spreadsheet Market,” Center for Information Systems Research Working Paper No. 265 (Massachusetts Institute of Technology, November 1993), and Neil Gandal, “Hedonic Price Indexes for Spreadsheets and an Empirical Test for Network Externalities,” *Rand Journal of Economics* vol. 25, no. 1 (Spring 1994): 164–70.

index values for the sample periods of the regressions.³⁷ The individual hedonic price indexes for the two types of software are weighted together equally to produce a summary hedonic price index for prepackaged software.

For 1985–93, the quality-adjusted price index is estimated using an unweighted average of the percent changes in the Oliner-Sichel matched-model index and the BEA summary hedonic index. This approach reflects the concern that the hedonic index may overstate price declines because over time, the characteristics of high-priced packages with limited sales are incorporated into lower priced packages that have much greater sales.

For 1994–97, source data to prepare hedonic indexes are not available, so BEA is using private source data on retail prices and quantities sold to develop a matched-model index that covers only business-oriented software. This index extends the Oliner-Sichel matched-model index to 1997; the BLS PPI series is then used to extend the matched-model series to the current period. In addition, an annual bias adjustment is made because it is likely that the matched-model indexes understate quality-adjusted price declines; quality improvements, such as enhanced power and performance, tend to be introduced in new versions of software, so they are not captured by the matched-model estimates. The bias adjustment is equal to one-half the 6.3-percent per year difference between the matched-model index and BEA's averaged index for 1985–94.

The price index for prepackaged software is extended back from 1985 using an indicator series that is equal to 60 percent of the annual change in BEA's price index for computers and peripherals. This percentage corresponds to the average difference for 1985–97 in the annual rates of change in the computer and peripherals price index and the annual rates of change in the prepackaged software price index.

Own-account software.—The price indexes for own-account software investment are input-cost indexes that are calculated from a weighted average of compensation rates for computer programmers and systems analysts and the intermediate inputs associated with their work. (These intermediate input costs vary somewhat, but they average slightly more than half the total costs.) Compensation cost indexes are

estimated separately for government and for business own-account software investment because the compensation rates for computer programmers and systems analysts in the two sectors have moved somewhat differently over time.

For 1972–96, chain-weighted indexes of input costs are calculated using estimates of compensation of programmers, compensation of systems analysts, and intermediate inputs. The compensation rates for 1987–96 are based on BLS estimates of median usual weekly earnings for programmers and systems analysts; for 1972–86, they are based on NIPA estimates of wages and salaries per full-time equivalent employees in the business services industry. A single intermediate input index is used for business and government for 1972–96; it is based primarily on detailed PPI's. These own-account price estimates are based on the assumption that the productivity of computer programmers and systems analysts does not change; thus, increases in their compensation rates pass directly into higher prices. This assumption is the same as that made elsewhere in the NIPA's when prices are based on costs.

Beginning with 1997, a fixed-weighted index (1996 weights) of compensation rates and intermediate input costs is used. In the next annual NIPA revision, a chain-weighted index will be incorporated for 1997.

Prior to 1972, a fixed-weighted index (1972 weights) of compensation rates and of intermediate inputs is used. Source data to calculate weights are not available for these years.

Custom software.—Custom software consists of both new programming and existing programs or program modules, including prepackaged software, that is incorporated into new systems. Therefore, the price index for custom software is constructed as a weighted average of the percentage changes in the price indexes for business own-account software and for prepackaged software. The weights, which are selected arbitrarily, are 75 percent for changes in business own-account software prices and 25 percent for changes in prepackaged software prices.

CFC and business incomes

The CFC estimates for software are derived from BEA's capital stock estimates, which are prepared using the perpetual-inventory method.³⁸ In determining the depreciation pattern, a 3-year service life is used for prepackaged software,

37. For a discussion of the construction of quality-adjusted price indexes using hedonic methods, see Roseanne Cole et al., "Quality-Adjusted Price Indexes for Computer Processors and Selected Peripheral Equipment," *SURVEY* 66 (January 1986): 41–50.

38. For detailed information on the capital stock estimates, see Arnold J. Katz and Shelby W. Herman, "Improved Estimates of Fixed Reproducible Tangible Wealth, 1925–95," *SURVEY* 77 (May 1997): 69–92.

and a 5-year service life is used for both custom software and own-account software; the 3-year service life is the same as that used in current tax law. (These service lives roughly correspond to annual geometric depreciation rates of 55 percent and 33 percent, respectively.) For business, the capital consumption allowance (or tax-return-based depreciation) is calculated using the same service lives as the CFC; it is distributed by industry based on the distribution of the capital stock of computers and peripheral equipment.

For consistency with the recognition of software as investment, the business incomes (proprietors' income and corporate profits) for each industry having investment are changed as follows: The costs of the production of own-account software are added as a receipt, the deductions for the purchases of software are removed, and the depreciation on purchased software and own-account software production is deducted.³⁹ The estimates of own-account software production and purchases of software by industry and by legal form of organization are based on the investment data from BEA's capital stock estimates; the estimates of depreciation are derived as described in the previous paragraph.

Methodologies for recent-period estimates

Except for the estimates of the prices of prepackaged software, the estimates of software investment for the most recent quarters are prepared

39. The changes reflect BEA's use of business income tax returns as the primary source data for these NIPA estimates. Consequently, the actual amount of the change reflects the extent to which businesses have been treating software purchases as investment for income tax purposes and have been deducting depreciation and not the value of the purchase; a special BEA analysis of income tax returns of large corporations indicated that the amounts that were depreciated were small. For additional details, see Seskin, "Annual Revision," 28–29.

using methodologies that differ from those just described. For current-dollar purchases of software by business and by government, the last annual totals for these estimates, which are based on Census Bureau receipts data, are extrapolated using total wages for the computer programming services industry and the prepackaged software industry—the two industries whose receipts are used to extrapolate the most recent I-O benchmark estimates.

For current-dollar own-account production of software, recent trends in the business purchases and in the government purchases of computers and peripheral equipment are used to extrapolate the own-account series.

For prices of prepackaged software, the estimates are based on changes in the PPI for applications software.

For prices of own-account software, a fixed-weighted index is calculated using the weights of the most recent year for which source data are available. The costs of compensation of computer programmers and systems analysts are based on the BLS employment cost index for private industry white-collar employees. The costs of compensation of government programmers and systems analysts are based on the NIPA chain-type price indexes for compensation of Federal nondefense employees and for compensation of State and local noneducation employees. Estimates of prices for intermediate inputs are based primarily on detailed PPI's, as described earlier.

Price indexes for custom software are calculated as a weighted average of the percent changes in the prices of prepackaged software and of business own-account software. 