

Bureau of Economic Analysis

Survey of Current Business

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Special in this issue

26. Accounting for Renewable and Environmental Resources

[Reprint of chapter 4 of Nature's Numbers: Expanding the National Economic Accounts to Include the Environment]

Last summer, a blue-ribbon panel of the National Academy of Sciences' National Research Council completed a congressionally mandated review of BEA's prototype integrated economic and environmental accounts. As part of its promise to inform users of the results of this evaluation, BEA is reprinting chapters from the panel's final report.

55. An Examination of the Low Rates of Return of Foreign-Owned U.S. Companies (PDF)

In 1988-97, the average rate of return on assets (ROA) of foreign-owned nonfinancial companies, at 5.1 percent, was 2.2 percentage points below that of U.S.-owned companies; over the period, the ROA gap narrowed to about 1 percentage point in 1997. Among several factors that may help explain the lower ROA of foreign-owned companies, age and market share were found to be significant, and industry mix and shifting of profits outside the United States using transfer prices were found to be relatively insignificant. These findings are based on newly developed estimates of the rate of return for foreign-owned U.S. nonfinancial companies that are disaggregated by industry and valued in current-period prices.

Regular features

1. Business Situation

Real GDP increased 6.9 percent in the fourth quarter of 1999, according to the "preliminary" estimate; the "advance" estimate issued last month had shown a 5.8-percent increase. The upward revision reflected upward revisions to consumer spending, to State and local government spending, to exports of goods, and to private nonfarm inventory investment. The price index for gross domestic purchases increased 2.3 percent in the fourth quarter, the same as the previously published increase.

11. Federal Personal Income Tax Liabilities and Payments, 1959-97

BEA's estimates of Federal personal income tax liabilities and payments have been revised, beginning with 1959, to incorporate the results of the recent comprehensive revision of the NIPA's and newly available tax return data from the Internal Revenue Service. Since 1992, the differences between liabilities and payments have generally been small; in 1997, payments exceeded liabilities by \$2.3 billion.

16. Federal Budget Estimates, Fiscal Year 2001

Each year, BEA prepares a "translation" of the administration's budget that puts the budget's receipts and outlays on a basis that is consistent with the framework of the NIPA's. For fiscal year 2001, the Federal current surplus on the NIPA basis would be \$171.1 billion, compared with the surplus of \$184.0 billion in the administration's budget. The budget estimate of receipts would exceed the NIPA estimate of current receipts by \$2.4 billion, and the NIPA estimate of current expenditures would exceed the budget estimate of outlays by \$10.5 billion.

Reports and statistical presentations

52. Errata: Industrial Composition of State Earnings in 1958-98

D-1. BEA Current and Historical Data

Looking Ahead

Revised NIPA and Related Estimates. Revised NIPA estimates for 1929-58 and revised estimates of fixed assets and consumer durable goods for 1925-98 that reflect the recent comprehensive NIPA revision will be presented in the April Survey.

B U S I N E S S S I T U A T I O N

This article was prepared by Larry R. Moran, Daniel Larkins, Ralph W. Morris, and Deborah Y. Sieff.

REAL GROSS domestic product (GDP) increased 6.9 percent in the fourth quarter of 1999, according to the “preliminary” estimates of the national income and product accounts (NIPAs), after increasing 5.7 percent in the third quarter (table 1 and chart 1); the “advance” fourth-quarter estimate of real GDP, reported in the February “Business Situation,” had shown a 5.8-percent increase.¹ The upward revision to real GDP reflected upward revisions to consumer

spending, to State and local government spending, to exports of goods, and to private nonfarm inventory investment; these revisions were partly offset by a downward revision to Federal Government spending. Real final sales of domestic product and real gross domestic purchases were each revised up less than GDP. (The sources of the revisions are discussed in the section “Revisions.”)

1. Quarterly estimates in the NIPAs are expressed at seasonally adjusted annual rates. Quarter-to-quarter dollar changes are the differences between the published estimates. Quarter-to-quarter percent changes are annualized and are calculated from unrounded data unless otherwise specified.

Real estimates are calculated using a chain-type Fisher formula with annual weights for all years and quarterly weights for all quarters; real estimates are expressed both as index numbers (1996=100) and as chained (1996) dollars. Price indexes (1996=100) are also calculated using a chain-type Fisher formula.

Table 1.—Real Gross Domestic Product, Real Gross Domestic Purchases, and Real Final Sales to Domestic Purchasers

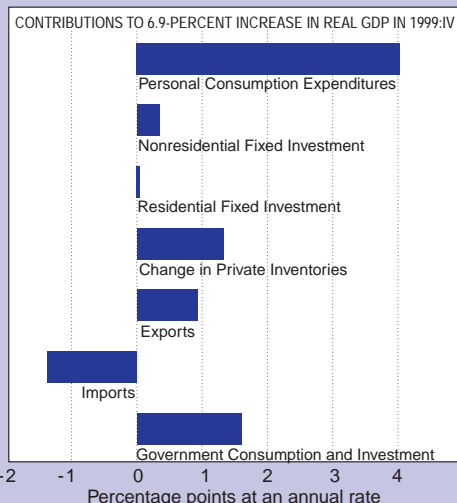
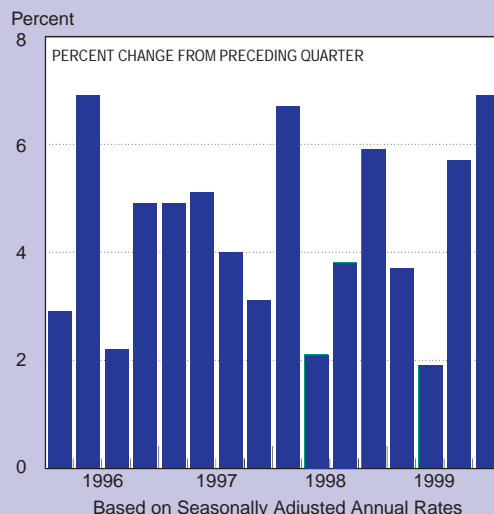
[Seasonally adjusted at annual rates]

	Billions of chained (1996) dollars					Percent change from preceding quarter			
	Level	Change from preceding quarter				1999			
		1999				I	II	III	IV
	IV	I	II	III	IV				
Gross domestic product	9,050.9	78.7	40.7	122.0	150.3	3.7	1.9	5.7	6.9
Less: Exports of goods and services	1,077.0	-14.4	10.0	28.4	22.2	-5.5	4.0	11.5	8.7
Plus: Imports of goods and services	1,426.7	37.8	44.5	47.6	33.7	12.5	14.4	14.9	10.0
Equals: Gross domestic purchases	9,377.5	125.9	70.8	138.7	160.6	5.8	3.2	6.3	7.2
Less: Change in private inventories	68.7	-20.6	-36.1	24.0	30.7	.....	.....	.....	.....
Nonfarm	74.0	-15.1	-30.0	28.1	32.8	.....	.....	.....	.....
Farm	-6.4	-5.4	-6.5	-4.7	-2.6	.....	.....	.....	.....
Equals: Final sales to domestic purchasers	9,302.9	144.2	103.0	114.4	130.7	6.7	4.7	5.2	5.8
Personal consumption expenditures	6,120.3	92.6	73.4	71.5	87.0	6.5	5.1	4.9	5.9
Durable goods	846.6	22.8	17.3	15.1	25.4	12.4	9.1	7.7	13.0
Nondurable goods	1,810.6	36.9	14.2	15.6	31.3	8.9	3.3	3.6	7.2
Services	3,473.0	34.5	42.7	41.4	32.4	4.2	5.2	5.0	3.8
Private fixed investment	1,615.8	33.4	25.1	26.3	8.5	9.1	6.6	6.8	2.1
Nonresidential	1,242.0	21.9	20.2	31.4	7.7	7.8	7.0	10.9	2.5
Structures	243.4	-3.8	-3.4	-2.4	-2.7	-5.8	-5.3	-3.8	-4.3
Equipment and software	1,008.0	27.2	25.2	35.7	11.4	12.5	11.2	15.7	4.7
Residential	376.1	11.1	5.1	-3.7	1.0	12.9	5.5	-3.8	1.0
Government consumption expenditures and gross investment	1,570.8	18.7	4.9	17.0	34.3	5.1	1.3	4.5	9.2
Federal	557.9	-6	2.8	5.5	18.2	-5	2.1	4.1	14.2
National defense	362.0	-3.5	-2.2	9.1	13.7	-4.0	-2.6	11.2	16.7
Nondefense	195.9	2.8	5.0	-3.6	4.6	6.1	10.9	-7.1	9.9
State and local	1,012.7	19.3	2.2	11.5	16.1	8.2	.9	4.8	6.6
Addendum: Final sales of domestic product	8,976.3	96.9	72.7	97.9	120.5	4.6	3.4	4.5	5.6

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates usually are not additive. Chained (1996) dollar levels and residuals, which measure the extent of nonadditivity in each table, are shown in NIPA tables 1.2, 1.4, and 1.6. Percent changes are calculated from unrounded data. Percent changes in major aggregates are shown in NIPA table S.1. (See “Selected NIPA Tables,” which begin on page D-2 of this issue.)

CHART 1

Real Gross Domestic Product



U.S. Department of Commerce, Bureau of Economic Analysis

The 6.9-percent increase in the fourth quarter was the largest increase in 3 1/2 years and was well above the 3.6-percent average annual growth rate for real GDP over the current expansion, which began in the second quarter of 1991.

The picture of the economy in the fourth quarter presented by the preliminary estimates differs somewhat from that presented by the advance estimates. The preliminary estimates showed the following:

- Real GDP growth accelerated in the fourth quarter. The acceleration was primarily accounted for by accelerations in government spending and in consumer spending and by a deceleration in imports of goods. These changes were partly offset by decelerations in private nonresidential fixed investment and in exports of goods.
- Real final sales of domestic product accelerated about the same as real GDP, as private inventory investment—which is not included in final sales of domestic product—increased sharply in both quarters.² Growth in real final sales of domestic product was more than 1 percentage point lower than growth real GDP in both quarters.

2. Final sales of domestic product is calculated as GDP less change in private inventories.

Table 2.—Contributions to Percent Change in Real Gross Domestic Product

[Seasonally adjusted at annual rates]

	1999			
	I	II	III	IV
Percent change at annual rate:				
Gross domestic product	3.7	1.9	5.7	6.9
Percentage points at annual rates:				
Personal consumption expenditures	4.27	3.36	3.33	4.03
Durable goods .....	.96	.71	.62	1.02
Nondurable goods	1.68	.64	.73	1.44
Services	1.63	2.01	1.97	1.57
Gross private domestic investment .....	.67	-.36	2.25	1.72
Fixed investment	1.48	1.10	1.16	.39
Nonresidential .....	.94	.86	1.33	.34
Structures	-.18	-.16	-.11	-.12
Equipment and software	1.12	1.02	1.44	.46
Residential .....	.53	.24	-.17	.05
Change in private inventories	-.80	-1.46	1.09	1.33
Net exports of goods and services	-2.13	-1.35	-.72	-.43
Exports	-.61	.42	1.19	.93
Goods	-.74	.32	1.19	.79
Services .....	.13	.10	0	.15
Imports	-1.52	-1.77	-1.91	-1.37
Goods	-1.28	-1.59	-1.83	-1.07
Services	-.24	-.19	-.08	-.30
Government consumption expenditures and gross investment .....	.87	.23	.81	1.61
Federal	-.03	.13	.26	.84
National defense	-.16	-.10	.42	.63
Nondefense .....	.13	.23	-.16	.21
State and local .....	.90	.10	.55	.76

NOTE More detailed contributions to percent change in real gross domestic product are shown in NIPA table 8.2. Contributions to percent change in major components of real gross domestic product are shown in tables 8.3 through 8.6.

- Real gross domestic purchases accelerated less than real GDP in the fourth quarter.³
- The largest contributors to the fourth-quarter increase in real GDP were consumer spending, government spending, and private inventory investment (table 2 and chart 1). The increase in GDP was moderated by an increase in imports.

The price index for gross domestic purchases increased 2.3 percent in the fourth quarter after increasing 1.7 percent in the third (table 3). The step-up was accounted for by an acceleration in prices of personal consumption expenditures (PCE) other than food and energy and by a smaller decrease in prices of private nonresidential investment in equipment and software; in contrast, prices of PCE energy goods and services and of private residential investment decelerated. The price index for gross domestic purchases excluding food and energy—food and energy prices are usually more volatile than many other prices—increased 1.9 percent after increasing 1.2 percent.

GDP prices increased 2.0 percent in the fourth quarter after increasing 1.1 percent in the third.

Real disposable personal income (DPI) increased 4.5 percent in the fourth quarter after increasing

3. Gross domestic purchases—a measure of purchases by U.S. residents regardless of where the purchased goods and services were produced—is calculated as the sum of personal consumption expenditures, gross private domestic investment, and government consumption expenditures and gross investment.

Table 3.—Percent Changes in Prices

[Annual rates; based on seasonally adjusted index numbers (1996=100)]

	1999			
	I	II	III	IV
Gross domestic product	2.0	1.3	1.1	2.0
Less: Exports of goods and services	-.5	.7	1.3	2.6
Plus: Imports of goods and services	-3.0	5.2	6.2	4.6
Equals: Gross domestic purchases	1.6	1.9	1.7	2.3
Less: Change in private inventories				
Equals: Final sales to domestic purchasers	1.7	2.0	1.8	2.3
Personal consumption expenditures	1.4	2.2	1.8	2.5
Food	2.5	1.2	2.1	2.3
Energy goods and services ¹	-2.5	26.9	14.2	11.9
Other personal consumption expenditures	1.4	1.3	1.2	2.0
Private nonresidential fixed investment	-.9	-1.4	-1.3	.1
Structures	1.3	2.2	3.4	3.6
Equipment and software	-1.6	-2.5	-2.7	-.9
Private residential investment	4.0	3.6	4.1	2.8
Government consumption expenditures and gross investment	3.8	2.9	3.3	3.2
Federal	8.6	.9	1.8	2.8
National defense	7.6	1.0	1.8	2.6
Nondefense	10.4	.7	1.8	3.2
State and local	1.4	4.0	4.2	3.4
Addendum: Gross domestic purchases less food and energy	1.7	1.2	1.2	1.9

1. Consists of gasoline, fuel oil, and other energy goods and of electricity and gas.

NOTE Percent changes in major aggregates are shown in NIPA table 8.1. Index numbers are shown in tables 7.1, 7.2, and 7.4.

2.9 percent in the third. The personal saving rate—personal saving as a percentage of current-dollar DPI—continued its downtrend, decreasing to 1.8 percent from 2.1 percent in the third quarter; the fourth-quarter rate is the lowest since 1959, the first year for which quarterly estimates are currently available.

Personal consumption expenditures

Real personal consumption expenditures (PCE) increased 5.9 percent in the fourth quarter after increasing 4.9 percent in the third (table 4 and chart 2). For eight consecutive quarters, the increases have exceeded the 3.8-percent average annual growth rate for PCE over the current expansion. The fourth-quarter step-up was accounted for by accelerations in expenditures for both non-durable and durable goods. Expenditures for services increased less than in the third quarter.

The step-up in PCE was consistent with movements in some of the factors considered in analyses of PCE (chart 3). As previously mentioned, real DPI increased more in the fourth quarter than in the third; the Index for Consumer Sentiment (prepared by the University of Michigan's Survey Research Center as a measure of consumer attitudes and expectations) remained high; and the unemployment rate decreased to 4.1 percent, the lowest quarterly rate in 30 years.

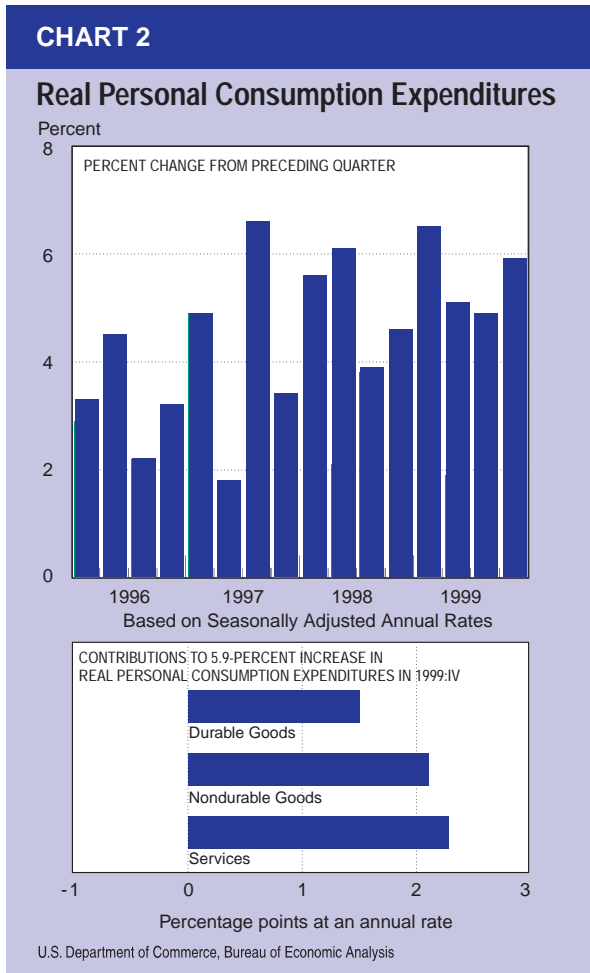


Table 4.—Real Personal Consumption Expenditures
[Seasonally adjusted at annual rates]

	Billions of chained (1996) dollars					Percent change from preceding quarter			
	Level	Change from preceding quarter				1999			
	1999	1999							
	IV	I	II	III	IV	I	II	III	IV
Personal consumption expenditures	6,120.3	92.6	73.4	71.5	87.0	6.5	5.1	4.9	5.9
Durable goods	846.6	22.8	17.3	15.1	25.4	12.4	9.1	7.7	13.0
Motor vehicles and parts	325.8	3.0	6.8	2.4	6.2	3.9	9.2	3.0	8.0
Of which: New autos	108.5	1.6	5.6	-8	7.1	6.5	25.5	-3.2	31.0
New light trucks	89.1	-9	1.3	2.3	.2	-4.0	6.0	11.0	1.2
Furniture and household equipment	359.2	14.1	8.8	10.5	13.2	19.3	11.3	13.0	16.3
Other	164.1	6.4	1.8	2.9	6.5	18.5	4.8	8.0	17.3
Nondurable goods	1,810.6	36.9	14.2	15.6	31.3	8.9	3.3	3.6	7.2
Food	873.2	4.1	5.1	5.4	23.2	2.0	2.4	2.6	11.4
Clothing and shoes	318.0	19.1	2.1	4.8	-3.6	28.4	2.7	6.2	-4.5
Gasoline, fuel oil, and other energy goods	144.9	1.0	1.0	.6	.4	2.8	2.8	1.8	1.0
Other	473.9	13.2	6.0	4.9	10.4	12.6	5.4	4.3	9.3
Services	3,473.0	34.5	42.7	41.4	32.4	4.2	5.2	5.0	3.8
Housing	834.2	6.4	4.7	5.4	5.7	3.2	2.3	2.7	2.7
Household operation	361.4	8.6	4.8	5.6	-3.0	10.3	5.6	6.4	-3.2
Electricity and gas	130.6	5.4	1.1	3.2	-4.8	18.5	3.5	9.9	-13.4
Other household operation	230.5	3.2	3.6	2.5	1.6	6.0	6.7	4.4	3.0
Transportation	243.9	1.6	2.2	2.5	1.5	2.8	3.6	4.2	2.5
Medical care	889.5	3.4	6.4	8.9	8.6	1.6	3.0	4.2	4.0
Recreation	237.1	5.6	6.6	7.4	4.7	10.9	12.7	13.8	8.3
Other	907.2	9.1	18.1	11.8	14.6	4.3	8.7	5.5	6.7

NOTE.—See note to table 1 for an explanation of chained (1996) dollar series. Chained (1996) dollar levels and residuals are shown in NIPA tables 2.3 and 8.9B (motor vehicles). Percent changes in major aggregates are shown in NIPA table S.1.

Expenditures for nondurable goods increased 7.2 percent after increasing 3.6 percent. The step-up was more than accounted for by an acceleration in food, but "other" nondurable goods also contributed.⁴ Gasoline and oil increased about the same in each quarter, fuel oil and coal decreased slightly more in the fourth quarter than in the third, and clothing and shoes decreased after increasing.

Expenditures for durable goods increased 13.0 percent after increasing 7.7 percent. The acceleration was widespread. An acceleration in motor vehicles and parts was more than accounted for by an upturn in new autos. An acceleration in "other" durable goods was largely accounted for by wheel goods and sporting equipment, which increased after no change.⁵ An acceleration in furniture and

household equipment was accounted for by furniture and equipment other than computers and software; computers and software increased less than in the third quarter.

Expenditures for services increased 3.8 percent after increasing 5.0 percent. The slowdown was primarily accounted for by a downturn in household operation, which was mostly accounted for by electricity and gas. Recreation decelerated, reflecting a downturn in motion picture admissions and a slowdown in casino gambling. Transportation also decelerated, reflecting a downturn in motor-vehicle leasing. Medical care and housing services both increased about the same in each quarter. "Other" services increased more than in the third quarter, primarily reflecting an upturn in brokerage and investment counseling.⁶

4. "Other" nondurable goods includes tobacco, toilet articles, drug preparations and sundries, stationery and writing supplies, toys, film, flowers, cleaning preparations and paper products, semidurable house furnishings, and magazines and newspapers.

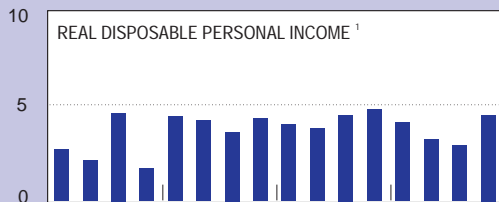
5. "Other" durable goods includes jewelry and watches, ophthalmic products and orthopedic equipment, books and maps, bicycles and motorcycles, guns and sporting equipment, photographic equipment, boats, and pleasure aircraft.

6. "Other" services includes personal care, personal business, net foreign travel, education and research, and religious and welfare activities.

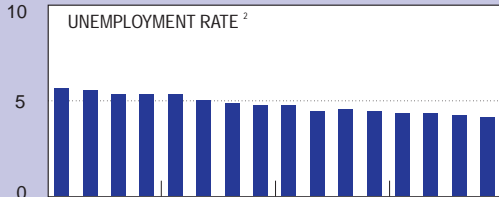
CHART 3

Selected Factors Affecting Consumer Spending

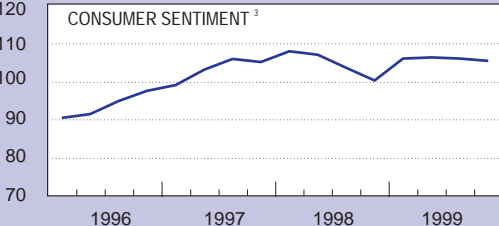
Percent change



Percent



Index

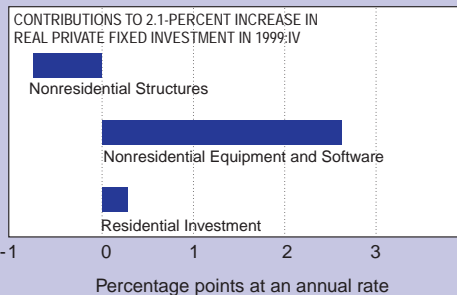
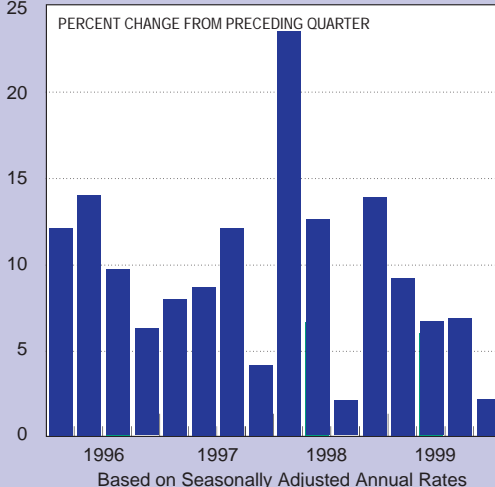


1. Based on seasonally adjusted annual rates.
 2. All civilian workers, seasonally adjusted. Data: U.S. Department of Labor, Bureau of Labor Statistics
 3. Data: University of Michigan's Survey Research Center
 U.S. Department of Commerce, Bureau of Economic Analysis

CHART 4

Real Private Fixed Investment

Percent



U.S. Department of Commerce, Bureau of Economic Analysis

Private fixed investment

Real private fixed investment increased 2.1 percent in the fourth quarter after increasing 6.8 percent in the third (chart 4). A deceleration in nonresidential fixed investment more than offset an upturn in residential investment.

Nonresidential fixed investment.—Real private nonresidential fixed investment increased 2.5 percent in the fourth quarter after jumping 10.9 percent in the third (table 5). Equipment and software decelerated sharply, and structures decreased more than in the third quarter.

Over the past four quarters, nonresidential fixed investment increased 7.0 percent, somewhat less than the 8.3-percent average increase over the current expansion. Some of the factors that affect investment spending showed strength over the past four quarters (chart 5). Over that period, real final sales of domestic product increased 4.5 percent, and over the first three quarters of 1999, domestic corporate profits increased at an average annual rate of 6.4 percent (estimates of profits for the fourth quarter are not yet available). In contrast, the capacity utilization rate was 81.0 percent in the fourth quarter of 1999, unchanged from a year ago, and long-term interest rates increased; for example, the yield on high-grade corporate bonds increased to 7.47 percent from 6.25 percent.

Investment in equipment and software increased 4.7 percent after jumping 15.7 percent. The slowdown was accounted for by a downturn in transportation equipment—reflecting downturns in trucks, buses, and trailers and in autos—and by a deceleration in information processing equipment and software. Industrial equipment increased more than in the third quarter, and “other” equipment decreased less.⁷ The deceleration in information processing equipment was largely accounted for by a slowdown in computers and peripheral equipment, but communication equipment and software also slowed.

Investment in nonresidential structures decreased 4.3 percent after decreasing 3.8 percent. The larger fourth-quarter decrease was accounted for by downturns in mining exploration, shafts, and wells and in utilities. Nonresidential buildings and “other structures” decreased less than in the third quarter.⁸

Residential investment.—Real private residential investment increased 1.0 percent in the fourth quarter after decreasing 3.8 percent in the third (table 5). The upturn was more than accounted for by single-family structures, which increased after

7. “Other” equipment includes construction and agricultural machinery, mining and oilfield machinery, electrical equipment not included in other categories, furniture and fixtures, and service-industry machinery.

8. “Other” structures includes streets, dams and reservoirs, sewer and water facilities, parks, airfields, brokerage commissions on the sale of structures, and net purchases of used structures.

Table 5.—Real Private Fixed Investment

(Seasonally adjusted at annual rates)

	Billions of chained (1996) dollars					Percent change from preceding quarter			
	Level	Change from preceding quarter				1999			
	1999	1999							
	IV	I	II	III	IV	I	II	III	IV
Private fixed investment	1,615.8	33.4	25.1	26.3	8.5	9.1	6.6	6.8	2.1
Nonresidential	1,242.0	21.9	20.2	31.4	7.7	7.8	7.0	10.9	2.5
Structures	243.4	-3.8	-3.4	-2.4	-2.7	-5.8	-5.3	-3.8	-4.3
Nonresidential buildings, including farm	176.5	-8	-5.4	-4.0	-7	-1.8	-11.1	-8.4	-1.7
Utilities	37.4	-6	-1	.5	-1.1	-5.7	-1.5	5.3	-10.5
Mining exploration, shafts, and wells	23.5	-2.0	1.0	1.7	-8	-30.1	19.5	35.6	-13.2
Other structures	6.2	-2	1.1	-8	-1	-12.3	100.1	-38.2	-5.5
Equipment and software	1,008.0	27.2	25.2	35.7	11.4	12.5	11.2	15.7	4.7
Information processing equipment and software	538.5	21.9	30.6	25.0	12.5	21.0	28.6	21.6	9.8
Computers and peripheral equipment ¹	242.0	15.1	19.5	20.6	8.5	38.6	46.9	44.5	15.5
Software ²	155.5	3.8	5.4	5.0	3.5	11.7	16.1	14.3	9.4
Other	177.6	6.9	10.6	6.3	2.9	19.6	29.9	15.7	6.9
Industrial equipment	154.7	-3.9	1.6	3.4	4.7	-9.9	4.3	9.8	12.9
Transportation equipment	200.6	5.0	.8	12.4	-3.4	11.2	1.6	28.7	-6.5
Of which: Motor vehicles	162.8	2.2	3.7	14.0	-7.2	6.0	10.3	41.0	-15.9
Other	129.4	6.0	-3.7	-3.2	-7	18.7	-10.2	-8.7	-2.7
Residential	376.1	11.1	5.1	-3.7	1.0	12.9	5.5	-3.8	1.0
Single-family structures	195.9	6.5	0	-4.1	4.2	14.4	-1	-8.0	9.1
Multifamily structures	22.8	2.2	-4	0	-1	48.7	-6.5	-8	-8
Other ³	157.4	2.3	5.6	.5	-3.3	6.1	15.4	1.2	-7.9

1. Includes new computers and peripheral equipment only.
 2. Excludes software “embedded,” or bundled, in computers and other equipment.
 3. “Other” residential investment includes home improvements, new manufactured home sales, brokers’ commissions on home sales, residential equipment, net purchases of used structures, and other residential structures (which consists primarily of dormitories and of fraternity and soror-

ity houses).
 NOTE.—See note to table 1 for an explanation of chained (1996) dollar series. Chained (1996) dollar levels and residuals are shown in NIPA tables 5.5 and 8.9B (motor vehicles). Percent changes in major aggregates are shown in NIPA table S.1.

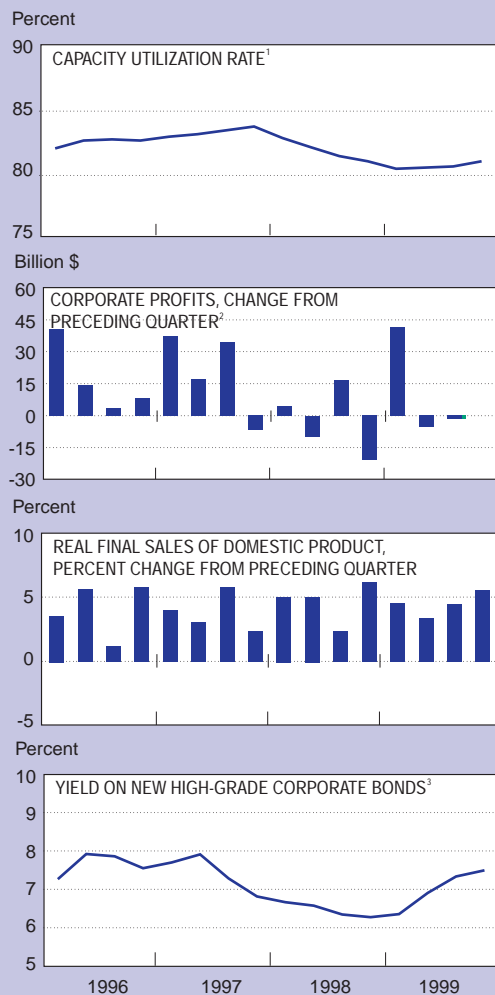
decreasing. Multifamily structures changed little in each quarter, and “other” residential investment turned down.⁹

Investment in single-family structures increased 9.1 percent after decreasing 8.0 percent. Multifamily structures decreased 0.8 percent in each quarter. “Other” residential investment decreased 7.9 percent after increasing 1.2 percent; a downturn in brokers’ commissions—which largely reflected a larger decrease in sales of existing homes in the fourth quarter than in the third—more than offset an acceleration in home improvements.

9. “Other” residential investment includes home improvements, new manufactured home sales, brokers’ commissions on home sales, net purchases of used structures, residential equipment, and other residential structures (which consists primarily of dormitories and of fraternity and sorority houses).

CHART 5

Selected Factors Affecting Nonresidential Investment



1. All industries. Data: Federal Reserve Board

2. Domestic industries.

3. Data: U.S. Treasury Department

U.S. Department of Commerce, Bureau of Economic Analysis

Inventory investment

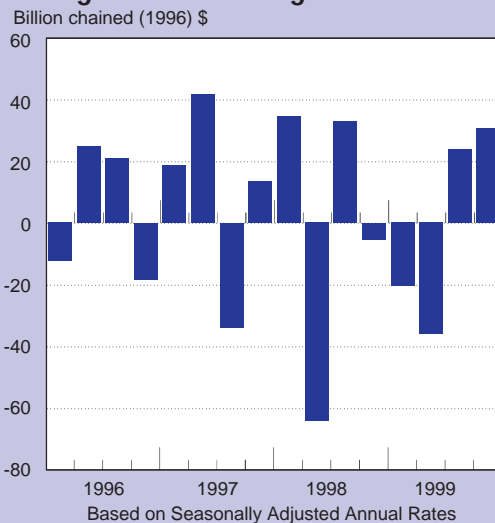
Real inventory investment—that is, the change in private inventories—increased \$30.7 billion in the fourth quarter, as inventory accumulation stepped up to \$68.7 billion from \$38.0 billion; inventory investment had increased \$24.0 billion in the third quarter (table 6 and chart 6). The fourth-quarter increase in inventory investment was largely accounted for by retail trade.

Retail inventories increased \$42.1 billion after increasing \$14.1 billion. Inventories of durable-goods retailers increased \$28.1 billion after increasing \$11.8 billion; the step-up reflected both inventories of nonmotor-vehicle-durable-goods retailers, which increased \$13.6 billion after increasing \$2.5 billion, and inventories of motor vehicle dealers, which increased \$14.4 billion after increasing \$9.3 billion. Inventories of nondurable-goods retailers increased \$14.3 billion after increasing \$2.5 billion; about half of the step-up reflected an upturn in the inventories of apparel stores.

Manufacturing inventories increased \$10.2 billion after increasing \$1.7 billion. The step-up was largely accounted for by inventories of nondurable-goods manufacturers, which increased \$6.3 billion after no change. Chemical inventories increased after decreasing, and food inventories increased after little change. Inventories of durable-goods manufacturers increased \$3.8 billion after increasing \$1.8 billion. Inventories of electronic machinery increased substantially more than in

CHART 6

Real Private Inventory Investment: Change from Preceding Quarter



U.S. Department of Commerce, Bureau of Economic Analysis

the third quarter, and a number of other durable-goods industries recorded smaller step-ups or upturns; in contrast, inventories of transportation equipment other than motor vehicles decreased more than in the third quarter, reflecting a step-up in the liquidation of aircraft inventories.

“Other” nonfarm inventories increased \$3.9 billion after little change.¹⁰ Inventories of durable goods turned up, and inventories of nondurable goods accelerated.

10. “Other” nonfarm inventories includes inventories held by the following industries: Mining; construction; public utilities; transportation; communication; finance, insurance, and real estate; and services.

Wholesale trade inventories increased \$16.7 billion after increasing \$25.1 billion. Inventories of nondurable goods turned down, more than offsetting an acceleration in inventories of durable goods.

Farm inventories decreased \$6.4 billion after decreasing \$3.8 billion. Crop inventories decreased more than in the third quarter, and livestock inventories decreased about the same as in the third quarter.

In the fourth quarter, the ratio of real nonfarm inventories to real final sales of domestic businesses

Table 6.—Real Change in Private Inventories
[Billions of chained (1996) dollars, seasonally adjusted at annual rates]

	Level					Change from preceding quarter			
	1998	1999				1999			
		IV	I	II	III	IV	I	II	III	IV
Change in private inventories	70.7	50.1	14.0	38.0	68.7	-20.6	-36.1	24.0	30.7
Farm	12.8	7.4	.9	-3.8	-6.4	-5.4	-6.5	-4.7	-2.6
Nonfarm	58.2	43.1	13.1	41.2	74.0	-15.1	-30.0	28.1	32.8
Manufacturing	12.0	0	-8.3	1.7	10.2	-12.0	-8.3	10.0	8.5
Durable goods	6.8	1.8	-6.6	1.8	3.8	-5.0	-8.4	8.4	2.0
Nondurable goods	5.3	-1.8	-1.7	0	6.3	-7.1	.1	1.7	6.3
Wholesale trade	17.2	9.5	11.1	25.1	16.7	-7.7	1.6	14.0	-8.4
Durable goods	15.5	11.8	11.0	11.1	19.3	-3.7	-8	.1	8.2
Nondurable goods	1.4	-2.4	.1	14.0	-2.3	-3.8	2.5	13.9	-16.3
Retail trade	15.5	17.5	5.9	14.1	42.1	2.0	-11.6	8.2	28.0
Durable goods	16.0	9.5	4.0	11.8	28.1	-6.5	-5.5	7.8	16.3
Of which: Motor vehicle dealers	7.6	3.1	0	9.3	14.4	-4.5	-3.1	9.3	5.1
Nondurable goods	-3	8.0	1.9	2.5	14.3	8.3	-6.1	.6	11.8
Other	13.6	15.7	4.1	.1	3.9	2.1	-11.6	-4.0	3.8
Durable goods	1.0	1.7	-2.0	-1.0	1.1	.7	-3.7	1.0	2.1
Nondurable goods	12.6	14.0	6.3	1.1	2.8	1.4	-7.7	-5.2	1.7
Addenda:									
Motor vehicles	16.6	6.4	2.5	13.3	18.1	-10.2	-3.9	10.8	4.8
Autos	12.9	1.7	-7.9	3.3	7.7	-11.2	-9.6	11.2	4.4
Trucks	3.9	4.5	9.2	9.4	9.9	.6	4.7	.2	.5

NOTE.—See note to table 1 for an explanation of chained (1996) dollar series. Chained (1996) dollar levels and residuals are shown in NIPA tables 5.11 and 8.9B (motor vehicles).

Table 7.—Real Exports and Imports of Goods and Services
[Seasonally adjusted at annual rates]

	Billions of chained (1996) dollars					Percent change from preceding quarter			
	Level	Change from preceding quarter				1999			
		1999	1999				I	II	III
	IV		I	II	III	IV			
Exports of goods and services	1,077.0	-14.4	10.0	28.4	22.2	-5.5	4.0	11.5	8.7
Exports of goods ¹	782.6	-17.8	7.7	29.2	19.3	-9.3	4.3	16.9	10.5
Foods, feeds, and beverages	58.7	-4.9	3.2	3.0	-4	-29.6	25.9	23.3	-2.6
Industrial supplies and materials	161.9	-5.2	3.0	2.6	9.2	-13.1	8.5	6.9	26.4
Capital goods, except automotive	356.2	-7.6	-1.2	23.7	4.1	-8.7	-1.5	32.1	4.7
Automotive vehicles, engines, and parts	75.2	-3.4	3.5	.8	.4	-17.1	21.3	4.3	2.2
Consumer goods, except automotive	83.1	.5	-4	1.4	2.8	2.8	-2.3	7.4	15.1
Other	48.0	2.0	-1	-1.5	2.7	19.2	-6	-12.2	26.1
Exports of services ¹	295.4	2.9	2.3	0	3.2	4.1	3.2	0	4.5
Imports of goods and services	1,426.7	37.8	44.5	47.6	33.7	12.5	14.4	14.9	10.0
Imports of goods ¹	1,215.6	32.3	40.5	46.4	26.7	12.6	15.5	17.3	9.3
Foods, feeds, and beverages	47.6	.9	2.3	1.2	.4	9.0	22.9	10.7	2.9
Industrial supplies and materials, except petroleum and products	163.9	0	3.4	4.5	4.9	.1	9.3	12.1	12.8
Petroleum and products	76.9	1.4	4.7	-2.6	-5.8	7.1	25.5	-11.6	-25.1
Capital goods, except automotive	406.7	7.9	23.0	19.5	16.7	9.6	29.2	22.8	18.3
Automotive vehicles, engines, and parts	184.5	9.7	3.0	10.7	.4	26.5	7.1	27.1	.8
Consumer goods, except automotive	263.2	8.4	5.1	10.8	11.6	15.7	8.9	19.2	19.8
Other	75.2	2.6	1.5	2.1	.9	16.5	8.4	12.7	4.7
Imports of services ¹	212.3	5.6	4.3	1.8	6.8	11.9	8.9	3.6	13.9

1. Exports and imports of certain goods, primarily military equipment purchased and sold by the Federal Government, are included in services.

NOTE.—See note to table 1 for an explanation of chained (1996) dollar series. Chained (1996) dollar levels and residuals are shown in NIPA table 4.4. Percent changes in major aggregates are shown in NIPA table S.1.

was 2.09, the same as in the third quarter; over the current expansion, the ratio has fluctuated in the range of 2.07 to 2.17. The inventory-sales ratio that includes only final sales of goods and structures decreased from 3.71 to 3.70, its lowest level in more than 30 years.¹¹

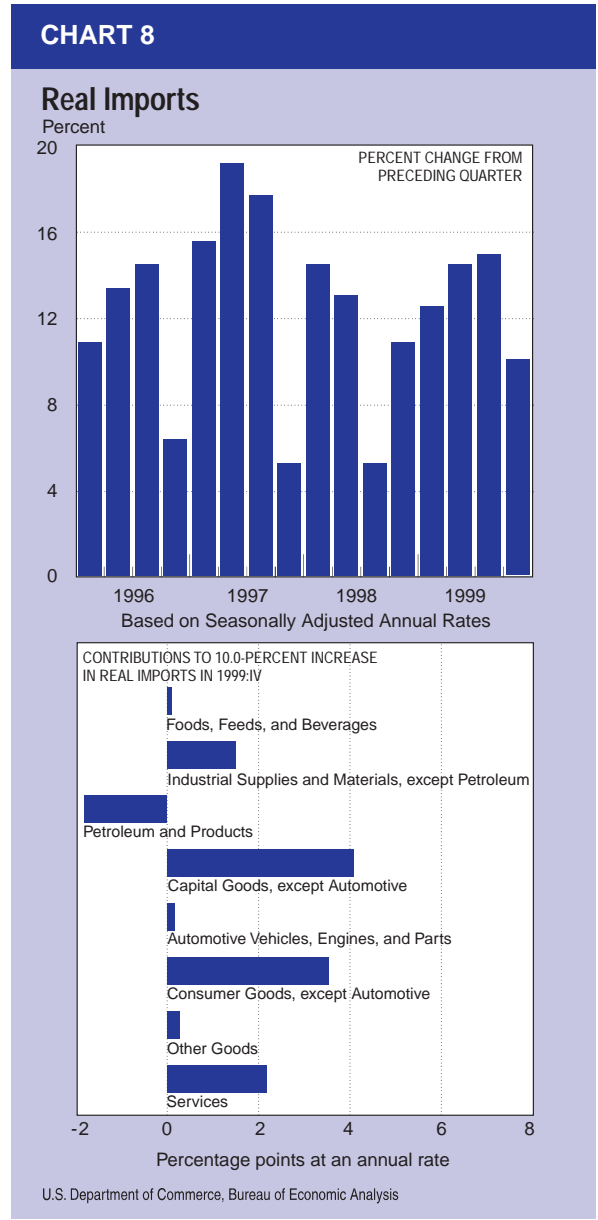
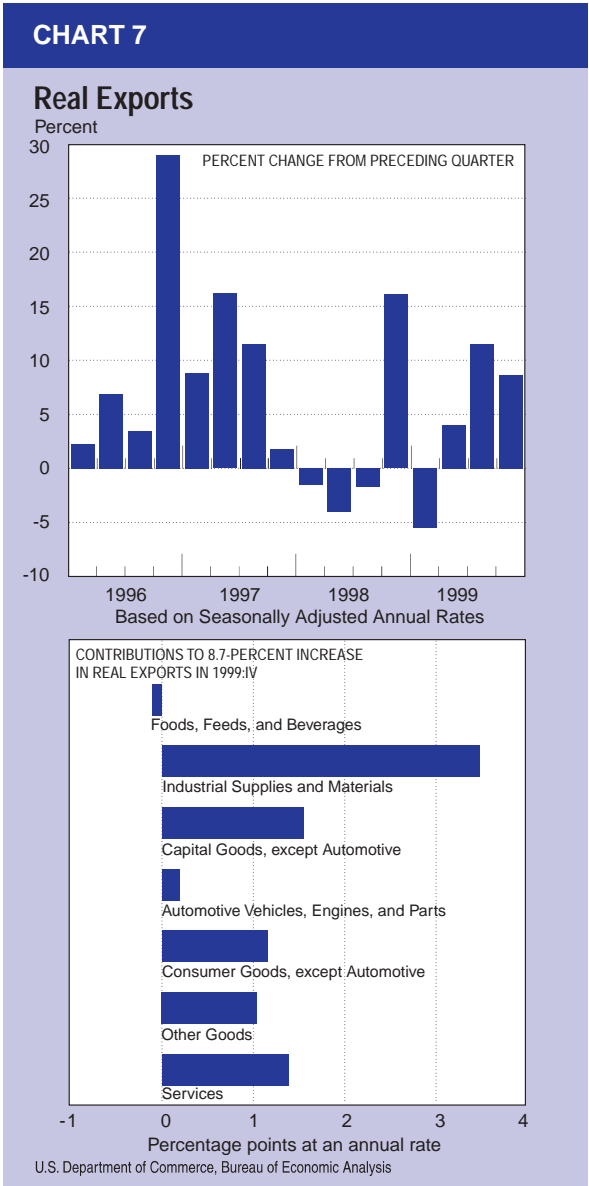
Exports and imports

Real exports of goods and services increased 8.7 percent in the fourth quarter after jumping 11.5 percent in the third; exports of goods decelerated,

and exports of services accelerated (table 7). Real imports of goods and services increased 10.0 percent after jumping 14.9 percent; imports of goods decelerated, and imports of services accelerated.

Real exports of goods increased 10.5 percent after jumping 16.9 percent (chart 7). Most of the slowdown was attributable to a sharp deceleration in nonautomotive capital goods, primarily reflecting downturns in computers, peripherals, and parts and in telecommunication equipment and reflecting decelerations in semiconductors and in civilian aircraft, engines, and parts; however, a downturn in food, feeds, and beverages also contributed to the slowdown. Exports of industrial supplies and materials and of nonautomotive consumer goods accelerated.

11. Use of the ratio that includes all final sales of domestic businesses in the denominator implies that the use of inventories in the production of services is similar to the use of inventories in the production of goods and structures. In contrast, use of the "goods and structures" ratio implies that the production of services does not use inventories. Because business final sales of services are large relative to final sales of goods and structures, the levels of the two ratios differ substantially. However, quarter-to-quarter changes in the two ratios tend to be similar.



Exports of services increased 4.5 percent after no change. Exports of travel turned up, and exports of “other private services” accelerated.¹²

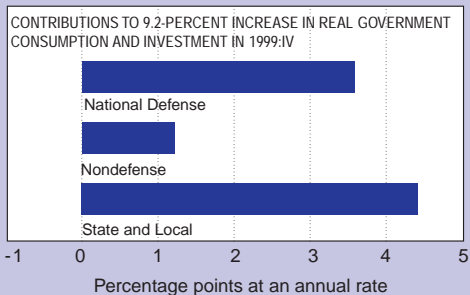
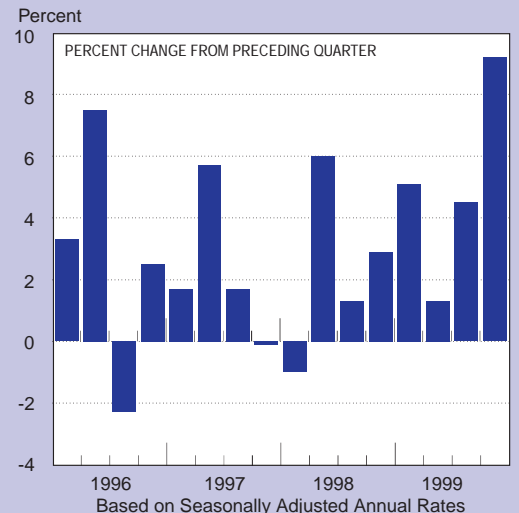
12. Exports of other private services includes education, financial, telecommunications, insurance, and business, professional, and technical.

Real imports of goods increased 9.3 percent after jumping 17.3 percent (chart 8). The slowdown reflected slowdowns in imports of automotive vehicles, engines, and parts and in computers, peripherals, and parts; a downturn in imports of civilian aircraft, engine, and parts; and a larger decrease in the imports of petroleum and products.

Imports of services jumped 13.9 percent after increasing 3.6 percent. Imports of travel and of royalties and license fees turned up, and imports of passenger fares and of “other private services” accelerated.¹³

CHART 9

Real Government Consumption and Investment



U.S. Department of Commerce, Bureau of Economic Analysis

Government spending

Real government consumption expenditures and gross investment increased 9.2 percent in the fourth quarter after increasing 4.5 percent in the third (table 8 and chart 9). Spending by both the Federal Government and State and local governments increased more in the fourth quarter than in the third.

Federal defense spending jumped 16.7 percent after increasing 11.2 percent. Investment spending increased after little change; equipment and software stepped up, and structures changed little after decreasing slightly. Consumption spending increased more in the fourth quarter than in the third; the acceleration was more than accounted for by a step-up in services other than compensation of employees.

Federal nondefense spending increased 9.9 percent after decreasing 7.1 percent. Consumption expenditures increased after decreasing, largely reflecting an upturn in services. Investment spend-

13. Imports of other private services includes education, financial, telecommunications, insurance, and business, professional, and technical.

Table 8.—Real Government Consumption Expenditures and Gross Investment

[Seasonally adjusted at annual rates]

	Billions of chained (1996) dollars					Percent change from preceding quarter			
	Level	Change from preceding quarter				1999			
		1999	1999				I	II	III
	IV	I	II	III	IV	I	II	III	IV
Government consumption expenditures and gross investment¹	1,570.8	18.7	4.9	17.0	34.3	5.1	1.3	4.5	9.2
Federal	557.9	-6	2.8	5.5	18.2	-5	2.1	4.1	14.2
National defense	362.0	-3.5	-2.2	9.1	13.7	-4.0	-2.6	11.2	16.7
Consumption expenditures	305.0	-4.1	-4.6	9.1	11.0	-5.4	-6.2	13.4	15.7
Gross investment	57.3	.7	2.5	-1	2.8	5.2	20.7	-8	22.9
Nondefense	195.9	2.8	5.0	-3.6	4.6	6.1	10.9	-7.1	9.9
Consumption expenditures	152.0	1.7	1.3	-2.3	2.2	4.4	3.6	-5.8	5.8
Gross investment	44.5	1.3	3.8	-1.3	2.6	13.9	45.6	-12.0	26.9
State and local	1,012.7	19.3	2.2	11.5	16.1	8.2	.9	4.8	6.6
Consumption expenditures	811.9	6.7	6.9	7.6	7.0	3.4	3.5	3.9	3.5
Gross investment	201.1	12.8	-4.9	3.9	9.4	31.6	-9.7	8.6	21.1

1. Gross government investment consists of general government and government enterprise expenditures for fixed assets; inventory investment is included in government consumption expenditures.

NOTE.—See note to table 1 for an explanation of chained (1996) dollar series. Chained (1996) dollar levels and residuals are shown in NIPA table 3.8. Percent changes in major aggregates are shown in NIPA table S.1.

ing also increased after decreasing, reflecting an upturn in equipment and software.

State and local government spending increased 6.6 percent after increasing 4.8 percent. The step-up was more than accounted for by an acceleration in investment spending, which reflected an acceleration in spending for structures, largely for highways. Consumption expenditures increased slightly less than in the third quarter.

Table 9.—Revisions to Change in Real Gross Domestic Product and Prices, Fourth Quarter 1999

[Seasonally adjusted at annual rates]

	Percent change from preceding quarter		Preliminary estimate minus advance estimate		
	Advance estimate	Preliminary estimate	Change in real GDP		Contribution to percent change in real GDP
			Percentage points	Billions of chained (1996) dollars		Percentage points
Gross domestic product	5.8	6.9	1.1	24.0	.....
<i>Less:</i> Exports of goods and services	6.9	8.7	1.8	4.6	.19
Goods	7.6	10.5	2.9	5.2	.22
Services	5.1	4.5	-.6	-.5	-.02
<i>Plus:</i> Imports of goods and services	10.6	10.0	-.6	-1.9	.07
Goods	9.9	9.3	-.6	-1.8	.06
Services	14.3	13.9	-.4	-.1	.00
Equals: Gross domestic purchases	6.3	7.2	.9	18.1	.....
<i>Less:</i> Change in private inventories .....	.....	.....	.....	3.3	.15
Farm .....	.....	.....	.....	.8	.03
Nonfarm .....	.....	.....	.....	2.6	.12
Equals: Final sales to domestic purchasers	5.2	5.8	.6	14.6	.....
Personal consumption expenditures	5.3	5.9	.6	9.1	.44
Durable goods	11.8	13.0	1.2	2.1	.09
Nondurable goods	6.1	7.2	1.1	4.7	.22
Services	3.5	3.8	.3	2.4	.14
Fixed investment	1.5	2.1	.6	2.3	.11
Nonresidential	2.5	2.5	0	.1	.01
Structures	-5.3	-4.3	1.0	.6	.03
Equipment and software	4.9	4.7	-.2	-.7	-.02
Residential	-1.2	1.0	2.2	2.1	.10
Government consumption expenditures and gross investment	8.4	9.2	.8	3.1	.16
Federal	16.0	14.2	-1.8	-2.2	-.10
National defense	18.9	16.7	-2.2	-1.7	-.07
Nondefense	11.0	9.9	-1.1	-.5	-.03
State and local	4.4	6.6	2.2	5.2	.24
Addenda:					
Final sales of domestic product	4.6	5.6	1.0	20.4	.....
Gross domestic purchases price index	2.3	2.3	0	.....	.....
GDP price index	2.0	2.0	0	.....	.....

NOTE.—The preliminary estimates for the fourth quarter of 1999 incorporate the following revised or additional major source data that were not available when the advance estimates were prepared.

Personal consumption expenditures: Retail sales for November and December (revised), consumers' share of new-car purchases for December, average unit value for domestic new autos for December (revised), and consumers' share of new-truck purchases for December.

Nonresidential fixed investment: Construction put-in-place for October and November (revised) and December, manufacturers' shipments of machinery and equipment for November (revised) and December, and exports and imports of machinery and equipment for November (revised) and December.

Residential fixed investment: Construction put-in-place for October and November (revised) and December.

Change in private inventories: Manufacturing, retail trade, and wholesale trade inventories for November (revised) and December and unit inventory data for autos for December.

Exports and imports of goods and services: Exports and imports of goods for November (revised) and December.

Government consumption expenditures and gross investment: Monthly Treasury Statement detailed data for December, Department of Defense detailed financial reports for the fourth quarter, and State and local government construction put-in-place for October and November (revised) and December.

Wages and salaries: Employment, average hourly earnings, and average weekly hours for November and December (revised). GDP prices: Detailed merchandise export and import price indexes for October through December (revised), unit-value index for petroleum imports for November (revised) and December, housing prices for the fourth quarter, and consumer price indexes (revised to incorporate new seasonal adjustment factors).

Revisions

The preliminary estimate of a 6.9-percent increase in real GDP in the fourth quarter is 1.1 percentage points higher than the advance estimate (table 9); for 1978–99, the average revision, without regard to sign, from the advance estimate to the preliminary estimate was 0.5 percentage point.

The upward revision to real GDP primarily reflected upward revisions to PCE, to State and local government spending, to exports of goods, and to private nonfarm inventory investment; these revisions were partly offset by a downward revision to Federal Government spending.

The upward revision to PCE was largely to non-durable goods and services. The upward revision to nondurable goods was primarily to food, which mainly reflected the incorporation of revised Census Bureau estimates of retail sales for November and December. The upward revision to services was primarily to recreational services, which mainly reflected the incorporation of newly available data on State government gambling revenues for November and December, and to brokerage and investment counseling, which mainly reflected the incorporation of newly available trade source data on mutual funds sales for December.


The upward revision to State and local government spending was primarily to investment in highways and reflected the incorporation of newly available Census Bureau estimates of construction-put-in-place for December.

The upward revision to exports of goods was mainly to "other capital goods, except automotive" and primarily reflected the incorporation of newly available Census Bureau estimates for December.

The upward revision to private nonfarm inventory investment was mainly to retail motor vehicles and primarily reflected the incorporation of newly available trade source data on auto inventories for December.

The downward revision to Federal Government spending was mainly to defense spending and primarily reflected the incorporation of newly available detailed data from the Monthly Treasury Statement for December and Department of Defense financial reports for the fourth quarter.

The preliminary estimates of the increases in the price indexes for gross domestic purchases (2.3 percent) and for GDP (2.0 percent) were the same as the advance estimates.

The preliminary estimate of the increase in real DPI was 4.5 percent and that of the increase in current-dollar DPI was 7.1 percent, both of which were 0.1 percentage point lower than the advance estimates. 

Federal Personal Income Tax Liabilities and Payments, 1959–97

By Thae S. Park

THIS ARTICLE presents estimates of Federal personal income tax liabilities and estimates of Federal personal income tax payments for 1959–97 (table 1).¹ The estimates reflect the in-

1. The estimates of Federal personal income tax liabilities for 1997 are new, and the estimates for 1959–96 are revised. The previously published estimates of Federal personal income tax liabilities for 1959–92 appeared in the August 1996 SURVEY OF CURRENT BUSINESS; those for 1993–94, in the December 1997 SURVEY; and those for 1995–96 in the December 1998 SURVEY. The quarterly series for

corporation of the results of the comprehensive revision of the national income and product accounts (NIPAs) that was released in October 1999 and newly available tax return data for 1997 from the Internal Revenue Service (IRS).²

The first section of the article discusses the payments series, the derivation and the use of the estimates of tax liabilities, and the sources of the differences between liabilities and payments. The second section discusses the sources of the differences for selected years, and the third section discusses the sources of the revisions to the estimates for 1959–96.

Payments and liabilities

In the NIPAs, Federal personal income tax payments consist of three components: Withheld income taxes; declarations and settlements, or “nonwithheld” taxes; and refunds.³

Federal Personal Income Tax Payments, 1995–97

(Billions of dollars)

	1995	1996	1997
Federal personal income taxes	585.6	662.9	743.1
Withheld	501.6	548.6	595.1
Declarations and settlements	169.9	203.6	241.8
Less: Refunds	85.9	89.3	93.8

Withheld income taxes are those withheld at the source of the income, mainly on wage and salary income. Declarations are estimated tax payments,

liabilities for 1959–97 is available on request; for information, write to the Government Division (BE-57), Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC 20230.

2. For more information on the comprehensive revision, see Brent R. Moulton, Robert P. Parker, and Eugene Seskin, “A Preview of the 1999 Comprehensive Revision of the National Income and Product Accounts: Definitional and Classificational Changes,” SURVEY 79 (August 1999): 11–12 and Eugene P. Seskin, “Improved Estimates of the National Income and Product Accounts for 1959–98: Results of the Comprehensive Revision,” SURVEY 79 (December 1999): 15–43. For tax return data for 1997, see Internal Revenue Service, *Statistics of Income Bulletin* (Washington, DC: U.S. Government Printing Office, Fall 1999). For tax return data for prior years, see *Statistics of Income—Individual Income Tax Returns*.

3. The estimates of these components are published annually in NIPA table 3.4, most recently on page 68 in the December 1999 SURVEY. Quarterly estimates of Federal personal income taxes are published monthly in NIPA table 3.2 in the section “BEA Current and Historical Data.” Estimates for earlier periods are available on the BEA Web site at <www.bea.doc.gov> and on the STAT–USA Web site at <www.stat–usa.gov>.

Table 1.—Federal Personal Income Tax Liabilities and Payments, 1959–97

(Billions of dollars)

	Federal personal income taxes			Disposable personal income (DPI)	
	Liabilities basis ¹	Payments basis ²	Difference	Alternative DPI with NIPA Federal personal income taxes on a liabilities basis	Published DPI with NIPA Federal personal income taxes on a payments basis ³
1959	39.0	38.5	0.5	350.7	351.2
1960	39.9	41.8	-1.9	368.1	366.2
1961	42.7	42.7	.0	382.3	382.4
1962	45.4	46.5	-1.1	406.8	405.6
1963	48.8	49.1	-.3	426.2	425.8
1964	47.8	46.0	1.8	461.2	463.0
1965	50.2	51.1	-.9	499.8	498.9
1966	56.8	58.6	-1.8	540.9	539.1
1967	63.7	64.4	-.7	576.9	576.2
1968	77.5	76.4	1.1	625.1	626.2
1969	87.4	91.7	-4.3	679.3	675.0
1970	84.5	88.9	-4.4	740.9	736.5
1971	86.1	85.8	.3	801.4	801.7
1972	94.3	102.8	-8.5	877.0	868.6
1973	108.9	109.6	-.7	979.6	979.0
1974	124.4	126.5	-2.1	1,074.3	1,072.3
1975	117.3	120.7	-3.4	1,184.9	1,181.4
1976	142.8	141.2	1.6	1,298.3	1,299.9
1977	161.0	162.2	-1.2	1,437.1	1,436.0
1978	189.6	188.9	.7	1,614.1	1,614.8
1979	216.1	224.6	-8.5	1,816.8	1,808.2
1980	252.3	250.0	2.3	2,017.4	2,019.8
1981	286.7	290.6	-3.9	2,251.8	2,247.9
1982	280.2	295.0	-14.8	2,421.5	2,406.8
1983	277.8	286.2	-8.4	2,594.4	2,586.0
1984	306.7	301.4	5.3	2,882.3	2,887.6
1985	331.5	336.0	-4.5	3,091.0	3,086.5
1986	374.9	350.1	24.8	3,237.7	3,262.5
1987	378.7	392.5	-13.8	3,473.3	3,459.5
1988	422.0	402.9	19.1	3,733.3	3,752.4
1989	440.0	451.5	-11.5	4,027.7	4,016.3
1990	453.4	470.2	-16.8	4,310.4	4,293.6
1991	455.4	461.3	-5.9	4,480.7	4,474.8
1992	483.1	475.3	7.8	4,746.8	4,754.6
1993	508.5	505.4	3.1	4,932.2	4,935.3
1994	540.3	542.5	-2.2	5,167.7	5,165.4
1995	592.9	585.6	7.3	5,415.2	5,422.6
1996	664.5	662.9	1.6	5,676.2	5,677.7
1997	740.8	743.1	-2.3	5,985.1	5,982.8

1. This series is derived by the Bureau of Economic Analysis and is based on data from *Statistics of Income, Individual Income Tax Returns*.

2. This series is presented in NIPA table 3.2 in the section “BEA Current and Historical Data” of the SURVEY OF CURRENT BUSINESS. All the estimates are available on the BEA Web site at <www.bea.doc.gov> and on the STAT–USA Web site at <www.stat–usa.gov>.

3. This series is presented in NIPA table 2.1 in “BEA Current and Historical Data.” See also the BEA Web site. NIPA National income and product account

mostly on income that is not subject to withholding, such as capital gains and self-employment income; settlements are additional taxes that are paid when tax returns are filed or as the result of audits. Refunds of excess payments are recorded as negatives in the payments series when the refunds are made.

For certain analyses, payments data may not be the most appropriate basis of measurement. For example, households may base their consumption decisions, especially about major purchases, on disposable income that is calculated net of expected tax liabilities rather than net of actual tax payments. As a result, liabilities may be the more appropriate basis for analyzing the impact of taxes on consumption.

BEA estimates of Federal personal income tax liabilities are derived primarily from the estimates of "total income tax" from the IRS's *Statistics of Income: Individual Income Tax Returns (SOI)*. *SOI* estimates of total income tax are the sum of income tax after credits, including a portion of the earned income tax credit, and the alternative minimum tax. The *SOI* estimates are adjusted so that the coverage of the liabilities series is comparable with that of the NIPA payments series.⁴ The data for these adjustments are from *SOI* and related publications and from the *IRS Data Book*.

The *SOI* estimates are raised by the addition of recapture taxes from the recomputation of investment, low-income housing, and other tax credits for the prior year; assessment from audits, net of refunds on amended returns (Form 1040X); and fiduciary income taxes.

The *SOI* estimates are reduced by the portion of the earned income credit that is used to offset social security and penalty taxes and by income taxes paid by U.S. citizens living abroad for 1 year or more. In the NIPAs, these citizens are considered residents of foreign countries.

The following paragraphs identify the sources of differences between liabilities and payments, for income that is subject to withholding and income that is not subject to withholding.

Income subject to withholding.—In the Internal Revenue Code, three types of withholding are provided—mandatory, optional, and backup.

4. The NIPA estimates of personal income taxes are derived primarily from financial statements of the Federal Government. BEA begins with the combined income and social security taxes, which are collected together. First, a timing adjustment is made to the combined collections; and then the social security tax portion is subtracted based on a tabulation of employment tax returns from the Social Security Administration. Other adjustments are also made, such as the elimination of interest charges on late taxes and of taxes paid by residences of foreign countries.

Mandatory withholding applies to most wages and salaries, military retirement pay, supplemental wages, and certain other incomes, such as gambling winnings. For wages and salaries, liabilities differ from payments for several reasons. The most important reason is that the withholding tables that are issued by the IRS and that are used by employers to calculate the amounts to be withheld on wages and salaries are based on two simplifying assumptions.

The first assumption is that taxpayers use the standard deduction in calculating their income tax liabilities. However, taxpayers who itemize their deductions may be overwithheld if they underestimate the number of additional withholding allowances that are necessary to offset the excess of their estimated itemized deductions over the standard deduction.⁵ The second assumption is that each taxpayer's wages are constant throughout the year, so overwithholding may result if wages vary widely within the year and are therefore subject to varying withholding rates. In addition, overwithholding may result from the use of withholding for "forced savings" or from the failure to estimate growth in itemized deductions.

Overwithholding may also result when withholding for certain payments is based on flat rates rather than on the withholding-table rates. For example, at the option of an employer, withholding may be based on a flat 28 percent for supplemental wages (such as bonuses, commissions, and overtime pay) and on a flat 20 percent for taxable fringe benefits (such as company cars provided to employees and free or discounted commercial flights). For certain gambling winnings of more than \$5,000, withholding must be at a flat 28 percent.

When tax laws change, changes to withholding tables may differ from changes to liabilities either by timing or by amounts. Tax law provisions are usually effective on January 1, but the withholding tables are sometimes updated later.⁶ The withholding tables are usually updated to reflect changes in the standard deduction, exemptions, and tax rates, but they are not updated to

5. Employees must fill out "Employee's Withholding Allowance Certificate" (Form W-4) so that their employers can withhold Federal income tax from their pay. Employees determine the number of withholding allowances based on estimated itemized deductions, on estimated adjustments to gross income, on the number of personal and dependency exemptions, and on filing status. Employees may submit new Form W-4's at any time to change the number of withholding allowances. These options provide them with some discretion over the effective rates at which taxes are withheld from their incomes.

6. For example, in August 1993, the Omnibus Budget Reconciliation Act of 1993 created two new tax brackets of 36 percent and 39.6 percent, which applied to all income in 1993, but the withholding tables reflecting these new rates were not available to employers until January 1994.

reflect changes in the provisions affecting itemized deductions or adjustments to gross income.

Differences between liabilities and payments may also arise when withholding is the taxpayer's option, as is the case for pensions and annuities; unemployment compensation; certain Federal Government payments, such as social security and tier 1 railroad retirement benefits; and sick pay from other than an employer.

Backup withholding applies to all types of non-wage income that are subject to information reporting. For example, backup withholding is required if the recipient fails to furnish an accurate taxpayer identification number to the payor or if the recipient lacks certification that the income is not subject to backup withholding (this withholding was initiated in 1984 as a compliance measure). The backup withholding system requires a payor to deduct and withhold income tax from reportable payments, such as interest or dividends, at a 31-percent rate, and it may result in overwithholding if the income is actually taxed at a lower rate.

The net result of all of these factors has been persistent overwithholding of taxes on income subject to withholding, despite an attempt to reduce overwithholding by redesigning the withholding tables in 1992.⁷

Income not subject to withholding.—For income that is not subject to withholding (such as self-employment income, capital gains, taxable social security benefits, and most interest, dividends, and pensions and annuities), liabilities differ from payments for two reasons. First, the proportion of the current year's liabilities that must be paid in estimated taxes in order to avoid a penalty is less than 100 percent. Second, settlements and the last installment of quarterly estimated taxes are for liabilities that are incurred in 1 year but that are paid to the U.S. Treasury Department in the next year; refunds also are made in the year after the liabilities were incurred. (Settlements, quarterly estimated taxes, and refunds are recorded in the payments series in the calendar year in which they are received or paid by the U.S. Treasury Department.) As a result, net payments of nonwithheld taxes during a year may not reflect that year's income. Therefore, nonwithheld tax payments (declarations and settlements) tend to be less than liabilities.

As noted below, overwithholding on wage and salary income tends to offset much of this shortfall, and the net difference between total payments

and total liabilities is smaller than the difference that would be expected by an examination of either withheld income taxes or nonwithheld income taxes.

In addition to the timing differences between payments and liabilities, there are measurement errors that cannot be isolated from the timing-basis differences. These errors include sampling and nonsampling errors with the *SOI* sample data, reporting and processing errors with the financial statements for the Federal Government and with employment tax return tabulations from the Social Security Administration, and estimating errors in the NIPA payments series and in the coverage adjustments made to the *SOI* data to derive the liabilities series.

Differences between liabilities and payments

BEA estimates of Federal personal income tax liabilities and the NIPA estimates of Federal personal income tax payments are derived from different source data. The BEA estimates of Federal personal income tax liabilities are derived primarily from the *SOI* estimates of total income tax, and the NIPA estimates of Federal personal income tax payments are derived primarily from the *Monthly Treasury Statement of Receipts and Outlays of the United States Government*. The most notable differences—in 1972, 1982–83, and 1986–90—usually reflect changes in tax laws.

For 1972, tax payments exceeded tax liabilities by \$8.5 billion. The excess payments primarily resulted from increases in withholding rates that were designed to eliminate widespread underwithholding. The new withholding tables effective for wages paid after January 15, 1972, resulted in overwithholding for wage earners unless they claimed one or more additional withholding allowances to offset the higher rates.⁸ However, many wage earners did not claim the additional withholding allowances, so payments greatly exceeded liabilities.

For 1982, tax payments exceeded tax liabilities by \$14.8 billion, and for 1983, by \$8.4 billion. The excess payments resulted primarily from provisions of the Economic Recovery Tax Act of 1981. The most important provision of this act was a three-stage reduction in personal income tax rates: 5 percent in October 1981, 10 percent in July 1982, and 10 percent in July 1983. Tax payments were reduced, primarily through cuts in withholding rates that were effective in October 1981, in July 1982,

8. The higher withholding rates were designed to result in overwithholding for wage earners who elected to take the standard deduction; overwithholding was much larger for wage earners who itemized their expenses and deductions. Overwithholding was built into withholding tables until 1991. New withholding tables introduced in 1992 largely removed the built-in overwithholding.

7. However, much of this overwithholding may not represent overwithholding for total income taxes (that is, total payments in excess of total liabilities), because individuals may choose to withhold more from their wages in order to cover tax liabilities on income not subject to withholding.

and in July 1983. However, these cuts were less than the reduction in liabilities, resulting in substantial excess payments, especially for 1982 and 1983.

For 1986–88, the differences resulted primarily from provisions of the Tax Reform Act of 1986 (TRA). Most of the provisions of the TRA were effective on January 1, 1987, but a few were retroactive to January 1, 1986.

For 1986, tax liabilities exceeded tax payments by \$24.8 billion. This substantial difference reflected unusually the large taxable capital gains declared in that year; these gains increased from \$68.3 billion in 1985 to \$132.8 billion in 1986, when the preferential tax treatment of long-term capital gains was repealed by the TRA. Under the TRA, capital gains were taxed at the same rate as ordinary income, but in 1987, the top rate was limited to 28 percent. Previously, long-term capital gains were taxed at only 40 percent of the ordinary income tax rates, so the top rate was 20 percent. Thus, many taxpayers accelerated realizations of capital gains into the fourth quarter of 1986. Because capital gains

are not subject to withholding, 1986 tax payments were little affected by the accelerated realizations.

For 1987, tax payments exceeded tax liabilities by \$13.8 billion. The excess payments reflected the settlements of the 1986 capital gains tax liabilities.

For 1988, tax liabilities exceeded tax payments by \$19.1 billion. The excess liabilities reflected continued increases in the incomes of partnerships and S corporations and in capital gains, for which taxes are not withheld. The large increase in the incomes of partnerships and S corporations—from \$24.3 billion in 1987 to \$57.1 billion in 1988—was affected by the TRA's phasing out of passive losses beginning in 1987.

For 1989, tax payments exceeded tax liabilities by \$11.5 billion. The excess payments partly reflected the settlement of the 1988 tax liabilities; the excess also reflected a decrease in capital gains (by \$8.1 billion) and a slowdown in the increase in the incomes of partnerships and S corporation (by \$6.0 billion), both of which limited the increase in tax liabilities. Moreover, because of the overwithholding inherent in the withholding system, tax payments tend to exceed tax liabilities when incomes not subject to withholding increase at a slow rate or decline.

For 1990, tax payments exceeded tax liabilities by \$16.8 billion. The excess payments primarily reflected a decrease in the income not subject to withholding. Taxable capital gains declined \$31.4 billion and taxable self-employment income declined \$9.9 billion as a result of a new deduction for one-half of self-employment tax owed.⁹ As in 1989, payments also exceeded liabilities largely because of a slowdown in income not subject to withholding.

For 1991–97, the differences between liabilities and payments were relatively small, despite numerous changes in the tax laws.¹⁰

Sources of revisions for 1959–96

The revisions to the annual series for liabilities and for payments for 1959–96 reflected the incorpora-

Table 2.—Revisions to Federal Personal Income Tax Liabilities and Payments, 1959–96

(Billions of dollars)

Year	Liabilities basis			Payments basis			Difference		
	Pre-viously published	Revised	Revision	Pre-viously published	Revised	Revision	Pre-viously published	Revised	Revision
1959	39.1	39.0	-0.1	38.4	38.5	0.1	0.7	0.5	-0.2
1960	39.9	39.9	0	41.7	41.8	.1	-1.8	-1.9	-.1
1961	42.7	42.7	0	42.6	42.7	.1	.1	0	-.1
1962	45.3	45.4	.1	46.4	46.5	.1	-1.1	-1.1	0
1963	48.7	48.8	.1	49.0	49.1	.1	-.3	-.3	0
1964	47.7	47.8	.1	45.8	46.0	.2	1.9	1.8	-.1
1965	50.2	50.2	0	50.9	51.1	.2	-.7	-.9	-.2
1966	56.7	56.8	.1	58.4	58.6	.2	-1.7	-1.8	-.1
1967	63.6	63.7	.1	64.1	64.4	.3	-.5	-.7	-.2
1968	77.4	77.5	.1	76.2	76.4	.2	1.2	1.1	-.1
1969	87.2	87.4	.2	91.1	91.7	.6	-3.9	-4.3	-.4
1970	84.3	84.5	.2	88.5	88.9	.4	-4.2	-4.4	-.2
1971	85.9	86.1	.2	85.3	85.8	.5	.6	.3	-.3
1972	94.2	94.3	.1	102.3	102.8	.5	-8.1	-8.5	-.4
1973	108.8	108.9	.1	109.1	109.6	.5	-.3	-.7	-.4
1974	124.5	124.4	-.1	126.0	126.5	.5	-1.5	-2.1	-.6
1975	117.3	117.3	0	120.4	120.7	.3	-3.1	-3.4	-.3
1976	142.8	142.8	0	140.8	141.2	.4	2.0	1.6	-.4
1977	161.0	161.0	0	161.8	162.2	.4	-.8	-1.2	-.4
1978	189.6	189.6	0	188.4	188.9	.5	1.2	.7	-.5
1979	216.1	216.1	0	224.0	224.6	.6	-7.9	-8.5	-.6
1980	252.2	252.3	.1	249.5	250.0	.5	2.7	2.3	-.4
1981	286.7	286.7	0	290.1	290.6	.5	-3.4	-3.9	-.5
1982	280.3	280.2	-.1	295.0	295.0	0	-14.7	-14.8	-.1
1983	278.0	277.8	-.2	286.8	286.2	-.6	-8.8	-8.4	.4
1984	307.1	306.7	-.4	301.9	301.4	-.5	5.2	5.3	.1
1985	332.9	331.5	-1.4	336.7	336.0	-.7	-3.8	-4.5	-.7
1986	375.2	374.9	-.3	350.7	350.1	-.6	24.5	24.8	.3
1987	379.6	378.7	-.9	394.1	392.5	-1.6	-14.5	-13.8	.7
1988	422.9	422.0	-.9	405.6	402.9	-2.7	17.3	19.1	1.8
1989	441.6	440.0	-1.6	453.2	451.5	-1.7	-11.6	-11.5	.1
1990	455.3	453.4	-1.9	472.7	470.2	-2.5	-17.4	-16.8	.6
1991	457.1	455.4	-1.7	464.4	461.3	-3.1	-7.3	-5.9	1.4
1992	484.5	483.1	-1.4	478.1	475.3	-2.8	6.4	7.8	1.4
1993	509.5	508.5	-1.0	508.1	505.4	-2.7	1.4	3.1	1.7
1994	540.4	540.3	-.1	545.3	542.5	-2.8	-4.9	-2.2	2.7
1995	594.0	592.9	-1.1	589.0	585.6	-3.4	5.0	7.3	2.3
1996	665.8	664.5	-1.3	666.9	662.9	-4.0	-1.1	1.6	2.7


9. Beginning with 1990, if a taxpayer had income from self-employment and owed self-employment tax, the taxpayer was allowed to deduct one-half of that tax. The deduction was entered on Form 1040 as an adjustment to total income.

10. The following major tax law changes affected liabilities during this period: The decrease in the maximum tax rate on net long-term capital gains from 28 percent for 1991 to 20 percent for 1997; the increase in the maximum tax rate on other types of income from 31 percent for 1991 to 39.6 percent for 1997; the increase in the maximum earned income tax credit from \$1,192 for one qualifying child for 1991 to \$2,210 for 1997; the phaseout of certain itemized deductions beginning with 1991; and the taxation of up to 85 percent of social security and equivalent tier 1 railroad retirement benefits beginning with 1994. Tax payments were changed to reflect liabilities changes by the introduction of new withholding tables and by changes in the minimum estimated tax payments requirements. As noted in footnote 8, new withholding tables introduced in 1992 largely removed the built-in overwithholding that was present in the tables since 1972.

tion of definitional and statistical changes made in the comprehensive revision of the NIPA's that was released in October 1999 and the incorporation of updated *SOI* estimates of total income from the *Statistics of Income Bulletin* (table 2).¹¹

The definitional changes to the NIPA payments series include the reclassifications of several Federal tax and contributions items. The refunds under the Federal Insurance Contribution Act (FICA) were reclassified as offsets against contributions for social insurance; previously, the FICA refunds were treated as offsets against personal income taxes. Penalties related to estimated taxes and to individual retirement plans were reclassified as personal nontaxes, and the excise taxes related to private pension plans were reclassified as business

nontaxes; previously, those penalties and excise taxes were treated as personal income taxes. These definitional changes were also made to the BEA liabilities series, so the differences between the two series were unaffected.¹²

Several statistical changes were incorporated into the liabilities series, beginning with 1959, and into the payments series, beginning with 1988.¹³ Because the net amounts of statistical changes to the annual estimates of liabilities and of payments were small, revisions to the differences were also small. 

11. For details about the definitional changes for Federal Government taxes, see Moulton, Parker, and Seskin, "Definitional and Classificational Changes,"¹⁵ For *SOI* data, see Internal Revenue Service, *Statistics of Income Bulletin* (Washington, DC: U.S. Government Printing Office, Spring 1999).

12. Previously, the items reclassified in the definitional changes were part of the adjustments made to *SOI* estimates of total income tax in the derivation of the liabilities series; these adjustments were made in order to make the coverage of the liabilities series comparable with that of the payments series.

13. Statistical changes to the liabilities series included the incorporation of newly available source data on additional assessments from audits and revised source data for income taxes paid by U.S. citizens living abroad for 1 year or more. Statistical changes to the payments series included the incorporation of revised source data for interest paid on late taxes and for taxes paid by U.S. citizens living abroad for 1 year or more.

Federal Budget Estimates, Fiscal Year 2001

By Laura M. Beall and Sean P. Keehan

THE FEDERAL *Budget of the United States Government, Fiscal Year 2001* that was released by the President shows a \$184.0 billion surplus, a \$17.3 billion increase over the projected \$166.7 billion surplus in fiscal year 2000.¹ The surplus in fiscal year 1999 was \$124.4 billion. After adjustments that put these estimates on a consistent basis with the national income and product accounts (NIPAs), the current surplus would increase \$16.5 billion, to \$171.1 billion, in fiscal year 2001.

These Federal budget surplus estimates are derived from all Federal transactions—that is, all unified budget receipts and all unified budget outlays.² The fiscal year 2001 surplus reflects the administration's proposed legislation and program changes, the economic assumptions used in making the budget projections, and the laws that have already been enacted.³

This article summarizes the proposed legislation and program changes in the administration's budget and the budget estimates.⁴ It then presents

the budget receipts and outlays in the framework of the NIPAs, which are designed to show the composition of production and the distribution of the incomes earned in production. This framework, which differs in concept and timing from the budget, provides a means of gauging the effects of the Federal budget on aggregate measures of U.S. economic activity, such as gross domestic product, that are part of the NIPAs.

Proposed legislation and program changes

Receipts.—The fiscal year 2001 budget presents proposed legislation that would increase receipts by a net \$9.1 billion (table 1). The largest proposals are an increase in the per pack tax on cigarettes that would add \$4.1 billion to receipts and a transfer from the Federal Reserve to the U.S. Treasury that would add \$3.8 billion.

Proposals to limit the benefits of corporate tax shelter transactions by increasing the disclosure of certain transactions, codifying the judicially created economic substance doctrine, increasing and strengthening the understatement penalty on corporate tax shelter items, and penalizing all parties involved with tax shelter transactions would add \$2.3 billion to receipts.

Proposals to reinstate excise taxes for the Hazardous Substance Superfund Trust Fund, to convert Airport and Airway Trust Fund excise taxes to a cost-based user fee, and to reinstate corporate environmental taxes would each increase receipts by \$0.7 billion. The excise taxes for the Hazardous Substance Superfund Trust Fund are levied on petroleum, chemicals, and imported substances. Under the Airport and Airway Trust Fund proposal, excise taxes that are levied on domestic air passengers and cargo and on international arrivals and departures would gradually be reduced and a cost-based user fee for air traffic services would be phased in beginning in fiscal year 2001.

Corporate income tax proposals to repeal the lower-of-cost-or-market inventory accounting method for valuing ending inventories and to modify the rules for how life insurance companies

1. Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2001* (Washington, DC: U.S. Government Printing Office, 2000).

2. Other presentations of the Federal budget distinguish between off-budget and on-budget transactions or between the trust funds surplus and the Federal funds deficit. The off-budget surplus, which consists of the social security trust funds and the Postal Service fund, is \$147.8 billion in 2000 and \$159.6 billion in 2001. In 2000, the on-budget surplus of \$18.9 billion is the difference between the total surplus and the off-budget surplus; in 2001, the on-budget surplus of \$9.0 billion is the difference between the total surplus and the off-budget surplus and the reserve for a proposed plan to ensure medicare solvency (\$15.4 billion) that is in the administration's budget. In the trust funds/Federal funds breakdown, the proposed surplus generated from all trust funds—such as social security, medicare, and unemployment compensation—would amount to \$224.3 billion in 2000 and \$241.3 billion in 2001. The Federal funds measure, which consists of all transactions that are not classified in trust funds, would show deficits of \$57.6 billion in 2000 and \$57.3 billion in 2001. There are no equivalent measures of these presentations in the NIPAs.

3. Estimates of the administration's proposed legislation and program changes are the difference between the "current-services" estimates, which are included in the budget, and the actual budget. The current-services estimates, which are based on the economic assumptions underlying the budget, are designed to show what Federal receipts and outlays would be if no changes are made to the laws that have already been enacted, with the exception that excise taxes dedicated to trust funds are assumed to be extended for all years, including the years after the law is to expire. In concept, these estimates are neither recommended amounts nor forecasts; they form a baseline with which administration or congressional proposals can be analyzed.

4. The article on the Federal budget estimates is usually published after the release of the Federal budget; see "Federal Budget Estimates, Fiscal Year 2000" in the March 1999 SURVEY OF CURRENT BUSINESS. This article provides updated fourth-quarter 1999 estimates that incorporate information that became available since the release of the budget, as well as more detailed estimates of receipts and expenditures than are shown in the NIPA estimates published in *Analytical Perspectives: Budget of the United States Government, Fiscal Year 2001*.

can capitalize policy acquisition costs would each add \$0.5 billion to receipts.

In addition, over 70 smaller proposals would increase receipts by a total of \$2.6 billion.

Partly offsetting the proposed \$16.0 billion increase in receipts are proposed tax credits and other tax law changes that would decrease receipts \$6.9 billion. There are several proposals that would reduce personal income taxes. A proposal to remove nontaxable forms of income when determining

eligibility for the earned income tax and to increase the credit rate for families would reduce receipts by \$2.3 billion. A proposal to simplify several provisions of tax law and modify the alternative minimum tax would reduce receipts by \$0.9 billion. An increase in the tax credit for post-secondary education and the exclusion of graduate education assistance from gross income would reduce receipts by \$0.7 billion. A proposal to allow a partial deduction of charitable contributions by taxpayers who do not itemize would reduce receipts by \$0.5 billion.

A proposal to reduce customs duties by modifying international trade provisions would reduce receipts by \$0.5 billion. This proposal involves extending the provisions in the Generalized System of Preferences that eliminate duties on certain goods from eligible developing countries.

A proposal to replace the Harbor Maintenance Tax with a cost-based user fee would reduce customs duties by \$0.5 billion. The user fee would raise less revenue than would have been raised by the Harbor Maintenance Tax, which was ruled unconstitutional.

Numerous smaller proposals would reduce receipts by a total of \$1.4 billion. Of these, proposals to increase the standard deduction for married couples with two incomes to twice the amount of the deduction for single filers and to modify the child care tax credit would reduce receipts by \$0.4 billion. A proposal to lower Federal employee retirement contributions would reduce receipts by \$0.4 billion. Proposals to promote energy efficiency would reduce receipts by \$0.2 billion.

Outlays.—The fiscal year 2001 budget proposes program changes that would decrease total outlays by a net \$3.7 billion. The largest reduction is \$3.3 billion for commerce and housing credit, resulting from lower budget outlays for the 2000 decennial census. A proposal to repeal the law that delays the last payday in September 2000 would reduce national defense outlays by \$3.1 billion.⁵ Similar proposals to repeal pay and benefit delays largely account for a \$1.5 billion decrease in veterans benefits and services, a \$1.0 billion decrease in allowances, and a \$0.8 billion decrease in income security. Proposed legislation to reduce lender subsidies and to improve management and collection of defaulted loans would reduce outlays for education, training, employment, and social

Table 1.—Relation of Current-Services Estimates to the Budget

[Billions of dollars]

	Fiscal year	
	2000	2001
Receipts		
Current-services estimates	1,955.7	2,009.9
<i>Plus:</i> Proposed legislation .....	.6	9.1
Tobacco tax .....	.4	4.1
Maintain Federal Reserve surplus transfer to the U.S. Treasury		3.8
Limit benefits of corporate tax shelter transactions	0	2.3
Reinstate Hazardous Substance Superfund excise taxes .....	.2	.7
Convert airport trust fund taxes to user fee system .....		.7
Reinstate environmental tax imposed on corporate income .....		.7
Repeal lower-of-cost-or-market inventory accounting method .....		.5
Modify rules for life insurance policy acquisition costs .....		.5
Other .....	.2	2.6
Subtotal: Provisions that increase receipts .....	.8	16.0
Simplify the earned income tax credit		-2.3
Simplify tax law and modify alternative minimum tax	-2	-9
Education incentives	-1	-7
International trade provisions	0	-5
Charitable contributions by taxpayers who do not itemize		-5
Replace Harbor Maintenance Tax with user fee		-5
Other	0	-1.4
Subtotal: Provisions that decrease receipts	-2	-6.9
<i>Equals:</i> The budget	1,956.3	2,019.0
Outlays		
Current-services estimates	1,776.2	1,838.8
<i>Plus:</i> Program changes	13.4	-3.7
Commerce and housing credit	0	-3.3
National defense	6.3	-3.1
Education, training, employment, and social services .....	.1	-1.9
Veterans benefits and services	1.8	-1.5
Allowances ¹ .....	.8	-1.0
Medicare	0	-9
Income security	2.2	-8
Net interest .....	.3	.3
General science, space, and technology	0	.3
Administration of justice	0	.5
Health .....	.3	.7
General government .....	.1	.8
International affairs .....	.5	1.0
Transportation	0	1.3
Agriculture .....	.7	3.5
Other .....	.3	.4
<i>Equals:</i> The budget	1,789.6	1,835.0
Current-services surplus or deficit (-)	179.5	171.2
Proposed changes, receipts less outlays	-12.8	12.8
Administration budget surplus or deficit (-)	166.7	184.0

1. Allowances are included in budget totals to cover certain budgetary transactions that are expected to increase or decrease outlays, receipts, or budget authority but are not reflected in the program details. Allowances include funding for emergencies, such as natural disasters, and for unforeseen defense and nondefense costs.

Source: *The Budget of the United States Government, Fiscal Year 2001.*

5. As a result of the law, the last payday in September would actually fall in October 2000, thereby making it part of the budget for fiscal year 2001. The proposed repeal returns that payday to the budget for fiscal year 2000.

Compensation in the NIPAs is recorded on an accrual basis. Therefore, these laws do not impact the NIPA estimates.

services by \$1.9 billion. The program changes to medicare brought about by savings proposals such as cost sharing for laboratory services and by proposals to insure program integrity would decrease total outlays by \$0.9 billion.

The largest increase in outlays would be a \$3.5 billion increase in agriculture, primarily from proposed legislation that would provide financial assistance to farmers if prices fall. Outlays for transportation would increase \$1.3 billion, based on changes to airports and airways, highways, and mass transit programs. Outlays for international affairs would increase \$1.0 billion, from program changes affecting international development and humanitarian assistance, international security assistance, and conduct of foreign affairs. Outlays for general government would increase \$0.8 billion, from program changes affecting central fiscal

operations and legislative branch discretionary programs. Outlays for health would increase \$0.7 billion, primarily from proposed legislation to extend medicaid eligibility to parents whose children are covered under medicaid or the State Children's Health Insurance Fund.

The budget estimates

In the budget, receipts in fiscal year 2001 are projected to increase \$62.8 billion, to \$2,019.0 billion (table 2). Receipts in 2000 are projected to be \$1,956.3 billion, up \$128.8 billion from 1999. Most of the increase in 2001 is accounted for by projected increases in social insurance taxes and contributions and in individual income taxes. The projected increases in 2000 and 2001 are based on administration economic assumptions.⁶ The administration assumes the economy will grow 2.9 percent in 2000 and 2.6 percent in 2001. In addition, unemployment is projected to remain unchanged in 2000 and to increase slightly in 2001. Inflation and interest rates are projected to remain relatively low.

Excise taxes would increase \$8.3 billion after decreasing \$2.0 billion in 2000. The decrease in 2000 is accounted for by a projected decrease in excise taxes on motor fuels; provisions of the Taxpayer Relief Act of 1997 delayed deposits of excise taxes on alternative motor fuels from fiscal year 1998 to fiscal year 1999. The increase in 2001 largely reflects the proposed increase in the tobacco tax, the reinstatement of the hazardous substance excise tax, and the phasing-in of the cost-based user fee for air traffic services.

Miscellaneous receipts would decrease \$2.6 billion after increasing \$7.6 billion. These changes are primarily based on projected deposits of earnings by the Federal Reserve System.

Under the budget proposals, total budget outlays in fiscal year 2001 are projected to increase \$45.5 billion, to \$1,835.0 billion (table 3). Outlays in 2000 are projected to be \$1,789.6 billion, up \$86.5 billion from 1999. The projected increase in 2001 is mostly accounted for by increases in four areas:

- **Social security.** An increase of \$19.1 billion is accounted for by an increase in current-services outlays for old-age and survivors insurance benefits. This increase reflects cost-of-living adjustments and assumptions about inflation and about the number of beneficiaries in these programs.
- **Medicare.** An increase of \$18.0 billion is accounted for by an increase of \$18.9 billion

Table 2.—Budget Receipts by Source

[Billions of dollars]

	Level for fiscal year				Change from preceding year		
	1998	1999	2000	2001	1999	2000	2001
Budget receipts	1,721.8	1,827.5	1,956.3	2,019.0	105.7	128.8	62.8
Individual income taxes	828.6	879.5	951.6	972.4	50.9	72.1	20.8
Social insurance taxes and contributions	571.8	611.8	650.0	682.1	40.0	38.2	32.1
Corporation income taxes	188.7	184.7	192.4	194.8	-4.0	7.7	2.4
Excise taxes	57.7	70.4	68.4	76.7	12.7	-2.0	8.3
Miscellaneous receipts	32.7	34.9	42.5	39.9	2.3	7.6	-2.6
Estate and gift taxes	24.1	27.8	30.5	32.3	3.7	2.7	1.8
Customs duties	18.3	18.3	20.9	20.9	0	2.5	0

Source: *The Budget of the United States Government, Fiscal Year 2001.*

Table 3.—Budget Outlays by Function

[Billions of dollars]

	Level for fiscal year				Change from preceding fiscal year		
	1998	1999	2000	2001	1999	2000	2001
Budget outlays	1,652.6	1,703.0	1,789.6	1,835.0	50.4	86.5	45.5
Social security	379.2	390.0	406.6	425.7	10.8	16.6	19.1
National defense	268.5	274.9	290.6	291.2	6.4	15.8	.6
Income security	233.2	237.7	252.3	259.7	4.5	13.6	8.4
Medicare	192.9	190.4	201.5	220.5	-2.5	12.1	18.0
Net interest	243.4	229.7	220.3	208.3	-13.6	-9.4	-12.0
Health	131.4	141.1	154.2	166.7	9.6	13.1	12.5
Education, training, employment, and social services	54.9	56.4	63.4	67.5	1.5	7.0	4.1
Transportation	40.3	42.5	46.7	49.5	2.2	4.2	2.8
Veterans benefits and services	41.8	43.2	46.8	46.4	1.4	3.6	-3
Administration of justice	22.8	25.9	26.8	31.4	3.1	.8	4.6
Natural resources and environment	22.4	24.0	24.5	25.0	1.6	.5	.5
Agriculture	12.2	23.0	32.0	22.4	10.8	9.0	-9.6
General science, space, and technology	18.2	18.1	18.9	19.6	-1	.7	.8
International affairs	13.1	15.2	17.1	19.6	2.1	1.8	2.5
General government	13.4	15.8	15.0	15.4	2.3	-7	.4
Community and regional development	9.7	11.9	11.1	10.2	2.1	-8	-9
Commerce and housing credit	1.0	2.6	5.6	2.9	1.6	3.0	-2.7
Allowances ¹ .....			.8	-1.0	0	.8	-1.8
Energy	1.3	.9	-1.6	-7	-4	-2.6	1.0
Undistributed offsetting receipts ²	-47.2	-40.4	-43.1	-45.6	6.7	-2.6	-2.6

1. Allowances are included in budget totals to cover certain budgetary transactions that are expected to increase or decrease outlays, receipts, or budget authority but are not reflected in the program details. Allowances include funding for emergencies, such as natural disasters, and for unforeseen defense and nondefense costs.

2. Undistributed offsetting receipts are collections that are governmental in nature and that are not credited to expenditure accounts. Undistributed offsetting receipts fall into two categories: Receipts from performing business-like activities, such as proceeds from selling Federal assets or leases; and shifts from one account to another, such as agency payments to retirement funds.

Source: *The Budget of the United States Government, Fiscal Year 2001.*

6. See "Economic Assumptions," *Analytical Perspectives*: 3-15.

in current-services outlays, based on expected increases in health services.

- **Health.** An increase of \$12.5 billion is mainly accounted for by a \$12.0 billion increase in current-services outlays, based on projected increases in drug prices, in home- and community-based services, and other health services.
- **Income security.** An increase of \$8.4 billion is more than accounted for by an \$11.4 billion increase in current-services outlays. Most of the increase is accounted for by increases in unemployment insurance programs, civilian employee and military retirement, and other income support programs.

These increases are partly offset by decreases in two areas:

- **Net interest.** A decrease of \$12.0 billion is mostly accounted for by the decrease in the Federal debt and the lower interest rate on the remaining debt.
- **Agriculture.** A decrease of \$9.6 billion is more than accounted for by a decrease of \$12.4 billion in current-services outlays. The decrease primarily reflects emergency funding for farm income stabilization in fiscal year 2000 that is not anticipated for fiscal year 2001.

Relation between budget and NIPA estimates

The Bureau of Economic Analysis (BEA) prepares estimates of the Federal sector in the framework of the national income and product accounts (NIPAs). Unlike the budget, which is a financial plan of the government on a cash basis, the NIPAs facilitate macroeconomic analyses of the impact of changes in Federal current receipts, current expenditures, and gross investment on gross domestic product and its components. BEA makes adjustments to the budget estimates in order to provide estimates of Federal current receipts and current expenditures that are consistent over time with NIPA components. As part of the comprehensive revision released in October 1999, two major changes were made to the definitions and classifications used to measure the Federal sector that affect the relationship between the budget and the NIPA estimates.⁷

7. These adjustments are shown in NIPA table 3.18; this table, reflecting the comprehensive revision, is scheduled to be published in the April SURVEY. For a detailed discussion of these adjustments, see Brent R. Moulton, Robert P. Parker, and Eugene P. Seskin, "A Preview of the 1999 Comprehensive Revision of the National Income and Product Accounts: Definitional and Classificational Changes," SURVEY 79 (August 1999):11-14. For estimates of the effects of these adjustments, see Eugene P. Seskin, "Improved Estimates of the National Income

- Government employee retirement plans, which were previously classified as social insurance funds within the government sector, are now treated similarly to private pension plans. This reclassification leads to several differences between the budget and the NIPAs.⁸ For example, employer contributions to the plans are classified as personal income (other labor income); previously, they had been classified as government current receipts (contributions to social insurance). Benefits paid by the plans are treated as transactions within the personal sector; previously, they had been classified as government current expenditures (transfer payments to persons).
- Certain transactions, which mainly represent transfers of existing assets, are removed from government current receipts and expenditures and reclassified as capital transfers. These transactions include certain investment grants-in-aid to State and local governments, investment subsidies to businesses, and estate and gift taxes.

One major conceptual difference between the budget and the NIPAs is in the treatment of government investment in fixed assets; in the NIPAs, government consumption expenditures excludes investment in fixed assets but includes a depreciation charge on past investment as consumption of fixed capital. Transfers of nonproduced assets, such as the sale of land, are excluded from the NIPAs because they do not affect current production. The NIPAs also exclude transactions with residents of Puerto Rico and the U.S. Territories, whose product and income are by definition not included in the NIPAs, and transactions of the Federal Communication Commission Universal Service Fund, which pass through a non-profit institution that is regulated by the Federal Communication Commission.

NIPA current receipts differ from budget receipts because of differences in coverage, in netting

and Product Accounts for 1959-98: Results of the Comprehensive Revision," SURVEY 79 (December 1999): 29-30.

For a detailed discussion of other adjustments, see *Government Transactions*, Methodology Paper No. 5 (November 1988), which is available from the National Technical Information Service, accession no. PB 90-118480, and at BEA's Web site, at <www.bea.doc.gov>.

For changes since the publication of this paper, see Robert P. Parker, "A Preview of the Comprehensive Revision of the National Income and Product Accounts: Definitional and Classificational Changes," SURVEY 71 (September 1991): 24-25; "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; and "Improved Estimates of the National Income and Product Accounts for 1959-95: Results of the Comprehensive Revision," SURVEY 76 (January/February 1996): 1-31.

8. Additional differences between the treatment of these plans in the budget and in the NIPAs existed prior to the comprehensive revision.

and grossing (which provide additional information on items that are recorded on a net basis in the budget), and in timing. For most years, the differences between NIPA current receipts and budget receipts primarily reflect capital transfers received, personal and business nontaxes, and supplementary medical insurance premiums.⁹ For 2001, NIPA current receipts would be below budget receipts by \$2.4 billion; capital transfers received would remove \$32.2 billion, other netting and grossing differences would add \$24.6 billion, and supplementary medical insurance premiums would add \$23.2 billion (table 4).

Similarly, NIPA current expenditures differ from budget outlays because of differences in coverage, in netting and grossing, and in timing. Coverage differences include the exclusion of capital transfers paid and Federal employee retirement plan transactions; the NIPA treatment of government investment in fixed assets; the exclusion of financial transactions, such as loans; and the exclusion of sales of nonproduced assets, such as the radio spec-

9. Personal and business nontaxes, which are included in "other" netting and grossing differences in table 4, are classified as receipts in the NIPAs and netted against outlays in the budget.

Table 4.—Relation of Federal Government Current Receipts in the NIPA's to the Budget

[Billions of dollars]

	Fiscal year		
	1999	2000	2001
Budget receipts	1,827.5	1,956.3	2,019.0
Less: Coverage differences	39.2	42.7	44.6
Geographic ¹	3.4	3.6	3.7
Contributions received by Federal employee retirement plans ²	4.5	4.3	3.9
Capital transfers received ³	27.7	30.3	32.2
Financial transactions	0	0	0
Other ⁴	3.7	4.5	4.8
Netting and grossing differences	-37.0	-39.5	-41.4
Supplementary medical insurance premiums	-21.6	-21.7	-23.2
Taxes received from the rest of the world ⁵	6.2	6.4	6.4
Other ⁶	-21.6	-24.2	-24.6
Plus: Timing differences	16.3	0	.8
Corporate profits taxes	5.5	3.2	5.5
Federal and State unemployment insurance taxes .....	.2	0	-1
Withheld personal income tax and social security contributions	16.1	-2.8	-4.3
Excise taxes	-5.2	.2	.7
Other	-3	-5	-1.0
Equals: Federal Government current receipts, NIPA's	1,841.6	1,953.1	2,016.6

1. Consists largely of contributions for social insurance by residents of U.S. territories and Puerto Rico.

2. These transactions are included in the NIPA personal sector.

3. Consists of estate and gift taxes.

4. Consists largely of Treasury receipts from sales of foreign currencies to Government agencies.

5. Taxes received from the rest of the world are included in receipts in the budget and netted against expenditures (transfer payments) in the NIPAs.

6. Includes proprietary receipts that are netted against outlays in the budget and classified as receipts in the NIPAs. Also includes some transactions that are not reflected in the budget data but are added to both receipts and expenditures in the NIPAs.

Sources: *The Budget of the United States Government, Fiscal Year 2001* and the Bureau of Economic Analysis.

trum. For 2001, NIPA current expenditures would exceed budget outlays by \$10.5 billion; capital transfers paid would remove \$37.3 billion, Federal employee retirement plan transactions would add \$31.3 billion, and loan disbursements less loan repayments and sales would remove \$27.0 billion (table 5).

Table 5.—Relation of Federal Government Current Expenditures in the NIPA's to the Budget

[Billions of dollars]

	Fiscal year		
	1999	2000	2001
Budget outlays	1,703.0	1,789.6	1,835.0
Less: Coverage differences	12.7	27.9	40.0
Geographic ¹	10.6	11.1	11.8
Federal employee retirement plan transactions ²	-32.0	-32.1	-31.3
Interest received	-46.9	-48.7	-49.6
Contributions received (employer)	-62.6	-63.7	-65.1
Benefits paid	77.3	80.2	83.3
Administrative expenses .....	.1	.1	.1
Financing disbursements from credit programs ³	-13.3	-28.9	-17.5
Other differences in funds covered ⁴	2.3	5.4	2.8
Net investment ⁵	2.4	9.6	15.9
Capital transfers paid ⁶	31.3	35.0	37.3
Financial transactions	12.5	29.5	24.4
Loan disbursements less loan repayments and sales	21.3	32.5	27.0
Deposit insurance	-3.2	-1.0	-3
Net purchases of foreign currency	0	0	0
Other	-5.6	-2.0	-2.3
Net purchases of nonproduced assets	-1.0	-1.6	-3.3
Outer Continental Shelf	0	0	-2
Land and other ⁷	-1.0	-1.6	-3.0
Other ⁸	-1	-1	-1
Netting and grossing differences	-37.0	-39.5	-41.4
Supplementary medical insurance premiums	-21.6	-21.7	-23.2
Taxes received from the rest of the world ⁹	6.2	6.4	6.4
Other ¹⁰	-21.6	-24.2	-24.6
Plus: Timing differences	2.5	-2.7	9.0
Purchases (increase in payables net of advances) .....	.7	-4	3.4
Interest	0	0	0
Transfer payments	1.3	-2.6	5.4
Subsidies less current surplus of government enterprises .....	.5	.2	.3
Equals: Federal Government current expenditures, NIPA's	1,729.9	1,798.4	1,845.5

1. Consists largely of transfer payments, subsidies, and grants-in-aid to residents of U.S. territories and Puerto Rico.

2. These transactions are included in the NIPA personal sector.

3. Consists of transactions (not included in the budget totals) that record all cash flows arising from post-1991 direct loan obligations and loan guarantee commitments. Many of these flows are for new loans or loan repayments; consequently, related entries are included in "Loan disbursements less loan repayments and sales."

4. Consists largely of agencies or accounts such as the Postal Service and the Federal Financing Bank that, in some time periods, were not included in the budget.

5. Net investment is gross investment less consumption of fixed capital for government enterprises and general government.

6. Consists of investment grants to State and local governments and maritime construction subsidies. Does not include the forgiveness of debts owed by foreign governments to the U.S. Government; this forgiveness is classified as a capital transfer paid by the United States and is excluded from both budget outlays and NIPA current expenditures.

7. Consists of net sales of land other than the Outer Continental Shelf and, beginning with 1995, the auction of the radio spectrum.

8. Consists largely of net expenditures of foreign currencies.

9. Taxes received from the rest of the world are included in receipts in the budget and netted against expenditures (transfer payments) in the NIPAs.

10. Includes proprietary receipts that are netted against outlays in the budget and classified as receipts in the NIPAs. Also includes some transactions that are not reflected in the budget data but are added to both receipts and expenditures in the NIPAs.

Sources: *The Budget of the United States Government, Fiscal Year 2001* and the Bureau of Economic Analysis.

In the NIPA framework, budget outlays for national defense and nondefense are reflected in both consumption expenditures and gross investment. For national defense, the budget outlays differ from the NIPA estimates for four principal reasons. First, some defense outlays, primarily disbursements for foreign military sales, are treated as exports in the NIPAs.¹⁰ Second, NIPA expenditures are recorded on a delivery basis, and budget outlays are recorded on a cash basis; thus, in the NIPAs, all work-in-progress except shipbuilding and structures are included in the change-in-private-inventories component of gross domestic product. Third, in defense outlays, the cost of the military retirement program is measured as the cash payment from the military personnel appropriation account to the military retirement trust fund. In the NIPAs, a payment is added to amortize the unfunded liability for military retirement ben-

efits earned by military personnel for service before 1985, and a payment is also added to amortize the unfunded liability for defense civilian retirement benefits; these payments are recorded in the budget as intergovernmental transactions. Fourth, the NIPA measure includes general government consumption of fixed capital; this item accounts for most of the difference between the budget outlays and the NIPA estimates for national defense (table 6).

The differences between the budget and NIPA estimates of receipts, of outlays, and of the current surplus or deficit that result from the adjustments detailed above are summarized in table 7. For 2001, the budget surplus exceeds the NIPA surplus by \$12.9 billion, primarily because timing adjustments raise NIPA expenditures more than NIPA receipts.

10. The production of military equipment is initially recorded in the change in private inventories, and when the equipment is delivered, a decrease in private inventories is recorded. For sales of equipment to foreign governments, the decrease is offset by an increase in exports; for sales to the U.S. Government, the decrease is offset by an increase in government consumption expenditures and gross investment.

Fiscal year 2001 NIPA estimates

In the NIPA framework, the current surplus would increase \$16.5 billion, to \$171.1 billion, in fiscal year 2001, after increasing \$42.9 billion in fiscal year 2000 (chart 1). The slowdown is due to a sharp deceleration in current receipts, mostly in personal tax and nontax receipts and in corporate profit tax accruals. Current expenditures also slowed, as a sharp deceleration in consumption expenditures and a downturn in subsidies less current

Table 6.—Relation of National Defense Consumption Expenditures and Gross Investment in the NIPAs to National Defense Outlays in the Budget

(Billions of dollars)

	Fiscal year		
	1999	2000	2001
National defense outlays in the budget	274.9	290.6	291.2
Department of Defense, military	261.4	277.5	277.5
Military personnel	69.5	73.5	75.1
Operation and maintenance	96.4	103.8	109.3
Procurement	48.8	48.0	51.0
Aircraft	16.5	15.7	17.1
Missiles	3.1	3.2	3.4
Ships	6.7	5.8	6.4
Weapons	2.9	2.7	2.9
Ammunition	1.2	1.2	1.1
Other	18.5	19.3	20.1
Research, development, test, and evaluation	37.4	37.4	37.7
Other	9.3	14.8	4.5
Atomic energy and other defense-related activities	13.5	13.2	13.7
Plus: Consumption of general government fixed capital	62.2	63.0	63.5
Additional payments to military and civilian retirement funds	21.7	21.7	22.4
Timing difference .....	.2	-.6	3.1
Military assistance programs .....	.2	.2	.2
Less: Grants-in-aid to State and local governments and net interest paid	3.2	3.3	3.5
Other differences	-.5	-1.0	-1.2
Equals: National defense consumption expenditures and gross investment, NIPAs	356.6	372.7	378.1
Less: National defense gross investment ¹	51.9	56.9	60.9
Equals: National defense consumption expenditures, NIPAs	304.7	315.8	317.2

1. Gross investment consists of general government and government enterprise expenditures for fixed assets; inventory investment is included in Federal Government consumption expenditures.
Sources: *The Budget of the United States Government, Fiscal Year 2001* and the Bureau of Economic Analysis.

Table 7.—Relation of Administration Budget and NIPA Estimates of Federal Government Current Receipts and Expenditures

(Billions of dollars)

	Level for fiscal year			Change from preceding fiscal year	
	Actual	Estimates		2000	2001
		1999	2000			2001
Administration budget:					
Receipts	1,827.5	1,956.3	2,019.0	128.8	62.8
Outlays	1,703.0	1,789.6	1,835.0	86.5	45.5
Surplus or deficit (-)	124.4	166.7	184.0	42.3	17.3
NIPAs:					
Receipts	1,841.6	1,953.1	2,016.6	111.4	63.5
Outlays	1,729.9	1,798.4	1,845.5	68.5	47.0
Surplus or deficit (-) ¹	111.7	154.7	171.1	42.9	16.5
	Differences				
Administration budget less NIPAs:					
Receipts	-14.1	3.2	2.4	17.3	-8
Outlays	-26.9	-8.8	-10.5	18.1	-1.7
Surplus or deficit (-)	12.7	12.0	12.9	-7	.9

1. The NIPA current surplus or deficit reflects the treatment of government investment that was introduced in January 1996. Current expenditures include (1) consumption of fixed capital for general government in consumption expenditures, and (2) consumption of fixed capital for government enterprises as an expense in the calculation of the current surplus of government enterprises. Gross investment in fixed assets by general government and by government enterprises is not classified as a current expenditure in the year the asset is purchased but is classified, instead, as an expenditure over the service life of the asset.
Sources: *The Budget of the United States Government, Fiscal Year 2001* and the Bureau of Economic Analysis.
NIPA National income and product accounts

surplus of government enterprises more than offset an acceleration in transfer payments.

In the NIPA framework, Federal current receipts would increase \$63.5 billion, to \$2,016.6 billion, in fiscal year 2001, after increasing \$111.4 billion in fiscal year 2000 (chart 2). The slowdown is more than accounted for by a deceleration in the tax base that would increase current receipts \$54.1 billion after increasing \$110.9 billion (table 8). The tax base is estimated using administration economic assumptions and does not include the impact of any proposed legislation. Within current receipts,

personal tax and nontax receipts would increase \$20.8 billion after increasing \$53.9 billion; the slowdown is mostly due to a deceleration in wages and salaries. Corporate profits tax accruals would increase \$1.5 billion after increasing \$11.7 billion; the deceleration is more than accounted for by a downturn in the tax base, according to administration economic assumptions on the level of corporate profits. These decelerations would be partly offset by a slight acceleration in indirect business taxes; the acceleration is more than accounted for by the proposed increase in the tobacco tax.

In the NIPA framework, Federal current expenditures would increase \$47.0 billion, to \$1,845.5 billion, in fiscal year 2001, after increasing \$68.5 billion (chart 3). The deceleration is attributable to a downturn in subsidies less current surplus of government enterprises and to slowdowns in non-defense consumption expenditures and in national defense consumption expenditures. Subsidies less current surplus of government enterprises would decrease \$10.3 billion after increasing \$2.4 billion; the turnaround is mainly due to a downturn in agriculture subsidies (table 9). Nondefense consumption expenditures would increase \$1.6 billion after increasing \$12.3 billion, and national defense consumption expenditures would increase \$1.4 billion after increasing \$11.1 billion. In contrast, transfer payments would increase \$48.3 billion after increasing \$30.5 billion; the acceleration is attributable to accelerations in social security and medicare.

Quarterly pattern.—Seasonally adjusted quarterly estimates of NIPA current receipts and current

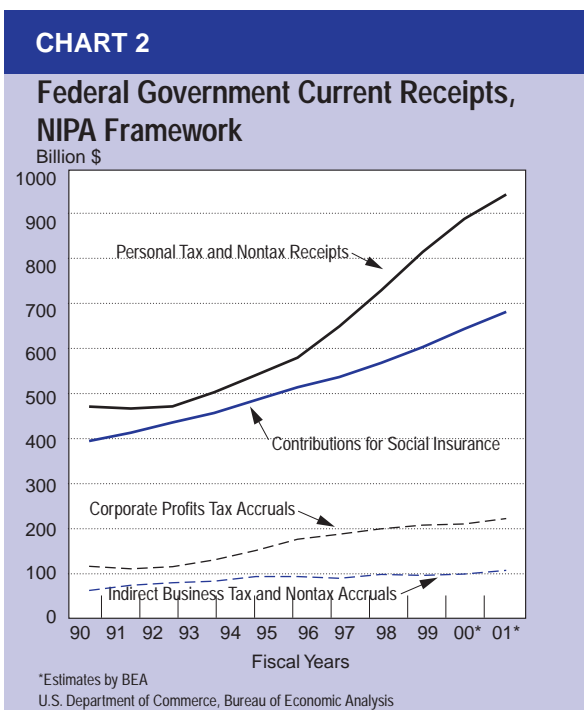
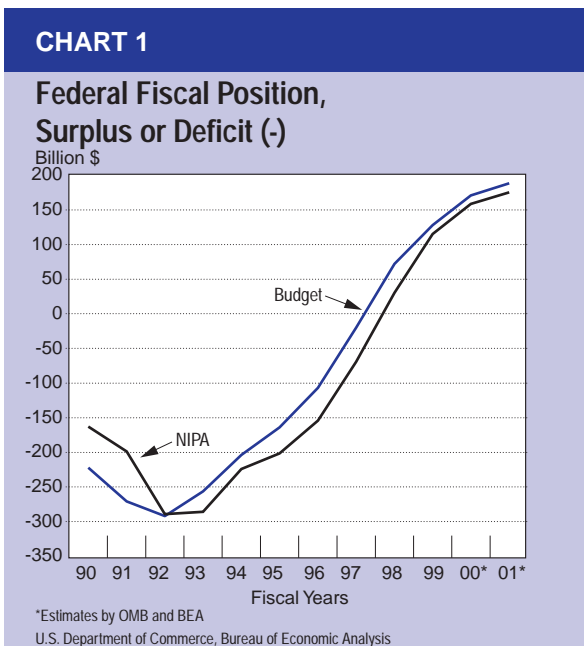


Table 8.—Sources of Change in Federal Government Receipts, NIPA Framework
[Billions of dollars]

	Change from preceding fiscal year		
	1999	2000	2001
Total receipts	119.8	111.4	63.5
Due to tax bases	119.8	110.9	54.1
Due to proposed legislation	0	.5	9.4
Personal tax and nontax receipts	73.8	53.9	20.8
Due to tax bases	73.8	54.2	25.9
Due to proposed legislation	0	-4	-5.2
Corporate profits tax accruals	2.8	11.7	1.5
Due to tax bases	2.8	11.6	-7.4
Due to proposed legislation	0	.1	8.9
Indirect business tax and nontax accruals	2.9	8.1	8.8
Due to tax bases	2.9	7.3	3.2
Due to proposed legislation	0	.8	5.6
Contributions for social insurance	40.3	37.8	32.4
Due to tax bases	40.3	37.8	32.4
Due to proposed legislation	0	0	0

Sources: *The Budget of the United States Government, Fiscal Year 2001* and the Bureau of Economic Analysis.

expenditures that are consistent with the budget estimates of receipts and outlays for the fiscal year

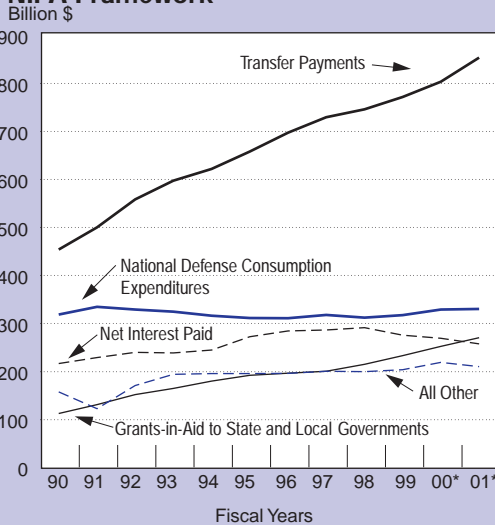
are shown in table 10. The NIPA estimates of current receipts reflect the quarterly pattern that results from the enacted and proposed legislation, from the administration's projected quarterly pattern of wages and profits, and from the use of a methodology to derive quarterly estimates of declarations and settlements (estimated income tax payments and final settlements) less refunds.¹¹ The NIPA estimates of current expenditures reflect the quarterly pattern that results from the enacted and proposed legislation that would adjust pay for Federal Government employees and provide cost-of-living increases in social security. The quarterly estimates do not control to the fiscal year estimates, but instead are estimated changes based on the published level of the fourth quarter of 1999. Because of the limited information available to estimate the quarterly patterns, they should be viewed as rough approximations; over the course of the year, BEA will provide more reliable estimates in NIPA table 3.2.

In the NIPA framework, the current surplus increases in the first three quarters of 2000, decreases in the fourth quarter of 2000 and the first quarter of 2001, and then increases through the third quarter of 2001. The increase in the first quarter of 2000 is due to an increase in current receipts, particularly in contributions for social insurance, and a decrease in current expenditures, primarily because of a decrease in subsidies less current surplus of government enterprises. The decrease in the current surplus in the fourth quarter of 2000 is mainly due to an increase in transfer payments, mostly because of an increase in transfer payments to the rest of the world. The increase in the current surplus in the second quarter of 2001 results from increases in personal taxes and contributions; current expenditures increase only slightly.

Table 10 follows. 

CHART 3

Federal Government Current Expenditures, NIPA Framework



*Estimates by BEA
U.S. Department of Commerce, Bureau of Economic Analysis

Table 9.—Sources of Change in Federal Government Current Expenditures, NIPA Framework
[Billions of dollars]

	Change from preceding fiscal year		
	1999	2000	2001
Total current expenditures	35.9	68.5	47.0
Consumption expenditures	11.4	23.4	3.0
National defense	4.9	11.1	1.4
Pay raise and locality pay ¹ .....	.....	3.5	4.8
Other	4.9	7.6	-3.4
Nondefense	6.5	12.3	1.6
Pay raise and locality pay ¹ .....	.....	2.4	2.8
Other	6.5	9.9	-1.1
Transfer payments	14.1	30.5	48.3
Social security	10.8	16.3	18.7
Medicare	-1.9	11.5	19.4
Supplemental security income	2.0	1.1	1.3
Earned income and child care credits	3.2	.1	.1
Veterans benefits .....	.8	.9	1.1
Unemployment benefits	1.0	.4	2.8
Other	-1.8	.1	4.9
Grants-in-aid to State and local governments	17.5	18.4	17.5
Medicaid	6.8	8.1	8.7
Education	2.7	3.6	.1
Welfare and social services	2.5	3.5	3.6
Health and hospitals	3.1	1.9	2.2
Civilian safety	-.3	.9	1.0
Other	2.8	.5	1.8
Net interest paid	-14.9	-6.3	-11.4
Subsidies less current surplus of government enterprises	7.7	2.4	-10.3
Agriculture subsidies	10.8	2.1	-8.1
Housing subsidies	-1.5	.6	.9
Other subsidies	-.3	.3	-.2
Less: Current surplus of government enterprises:			
Postal Service surplus	1.5	.5	2.1
Other surplus of government enterprises	-.2	.1	.9

1. Consists of pay raises and locality pay beginning in January 2000. Source: Bureau of Economic Analysis.

11. The methodology, which was adopted during the 1998 annual revision of the NIPAs, separates estimated income tax payments and final settlements into estimated taxes, final settlements, back taxes, fiduciary taxes (taxes paid by estates and trusts on income earned), and refunds. For final settlements, back taxes, and refunds—which are primarily based on tax liabilities for previous years—the full amount of the annual changes are recorded in the first quarter (in January) of the year, and the monthly and quarterly estimates are held at that level throughout the rest of the year. See Eugene P. Seskin, "Annual Revision of the National Income and Product Accounts," SURVEY 78 (August 1998):29-31.

Accounting for Renewable and Environmental Resources

LAST SUMMER, a blue ribbon panel of the National Academy of Sciences' National Research Council completed a congressionally mandated review of the work that the Bureau of Economic Analysis (BEA) had published on integrated economic and environmental accounts. The panel's final report commended BEA for its initial work in producing a set of sound and objective prototype accounts. The November 1999 issue of the *SURVEY OF CURRENT BUSINESS* contained an article by William D. Nordhaus, the Chair of the Panel, that presented an overview of the major issues and findings and a reprint of chapter 5, "Overall Appraisal of Environmental Accounting in the United States." Chapter 3, "Accounting for Subsoil Mineral Resources" was reprinted in the February 2000 issue; chapter 4, "Accounting for Renewable and Environmental Resources" is reprinted below.

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THE PREVIOUS chapter reviewed issues involved in extending the national accounts to include subsoil assets. This chapter focuses on two other aspects of environmental accounting: renewable and environmental resources. BEA has proposed covering these two categories of resources in future work on integrated accounting. As discussed in Chapter 1, Phase II of that work would focus on different classes of land (e.g., agriculture, forest, and recreation land), on timber, on fisheries, and on agricultural assets such as grain stocks and livestock. Phase III would address environmental resources, including, for example, air, uncultivated biological resources, and water.

The general principles set forth in Chapter 2 indicate that increasingly severe obstacles are likely to arise as the national accounts move further from the boundaries of the market economy. The discussion in this chapter confirms the premise that BEA's Phase III raises the most difficult conceptual, methodological, and data problems. This finding presents a dilemma that must be faced in expanding the accounts: Should follow-on efforts focus on those resources that can be most easily included given existing data and methods, or should BEA focus on including those resources that would have the largest impact on our understand-

ing of the interaction between the U.S. economy and the environment? The panel's investigation, while based on data that are highly imprecise and in some cases speculative, suggests that the development of the accounts proposed for Phase III would be likely to encompass the most significant economy-environment interactions. This observation is tempered by the realization that to date nothing approaching adequate comprehensive environmental accounting for a country of the complexity of the United States has yet been undertaken. For BEA or the federal government to prepare a full set of environmental accounts would require a substantial commitment.

This chapter provides a review of the issues involved in accounting for renewable and environmental resources. It is not intended to be a comprehensive review of work in this area. Rather, it delineates the issues that are involved in environmental accounting and presents two important specific examples that illustrate these issues. The first section reviews BEA's efforts in environmental accounting to date. Next, we analyze how stocks and flows of residuals from human activities relate to natural sources of residuals, natural resource assets, stocks, flows, and economic activity. The third section examines issues involved in accounting for renewable and environmental resources. The chapter then turns to general issues associated with the physical data requirements of environmental accounting and with valuation. We next investigate in greater detail the cases of forests and air quality to illustrate how augmented accounting might actually be done. The chapter ends with the panel's conclusions and recommendations in the area of accounting for renewable and environmental resources. Appendix B identifies potentially useful sources of data for developing supplemental accounts identified by the panel in the course of its investigation.

BEA EFFORTS TO DATE IN ACCOUNTING FOR RENEWABLE AND ENVIRONMENTAL RESOURCES

This section reviews BEA's initial design for its supplemental accounts for natural-resource and

environmental assets. A more complete evaluation of BEA's efforts on forests is included later in the chapter. As discussed in Chapter 2, a critical issue involved in the development of augmented accounts is setting the boundary. How far from the boundary of the marketplace should

the purview of the environmental accounts extend? Table 4-1 shows BEA's tentative decisions on how it proposed to structure its supplemental accounts (BEA's Integrated Environmental and Economic Satellite Accounts [IEESA] from Bureau of Economic Analysis, 1994a: Table 1). Phase II

TABLE 4-1 IEESA Asset Account, 1987

[Billions of dollars]

This table can serve as an inventory of the estimates available for the IEESA's. In decreasing order of quality, the estimates that have been filled in are as follows: For made assets, estimates of reproducible tangible stock and inventories, from BEA's national income and product accounts or based on them, and pollution abatement stock, from BEA estimates (rows 1-21); for subsoil assets, the highs and lows of the range based on alternative valuation methods, from the companion article (rows 36-41); and best available, or rough-order-of-magnitude, estimates for some developed natural assets (selected rows 23-35 and 42-47) and some environmental assets (selected rows 48-55) prepared by BEA. The "n.a."—not available—entries represent a research agenda.

Row	Opening Stocks (1)	Change				
		Total, Net (3+4+5) (2)	Depreciat, Depletion, Degradation (3)	Capital Formation (4)	Revaluation and Other Changes (5)	Closing Stocks (1+2) (6)
PRODUCED ASSETS						
Made assets						
1	11,565.9	667.4	-607.9	905.8	369.4	12,233.3
2	10,535.2	608.2	-607.9	875.8	340.2	11,143.4
3	4,001.6	318.1	-109.8	230.5	197.4	4,319.7
4	6,533.6	290.1	-498.1	645.3	142.9	6,823.7
5	503.7	23.1	-19.2	30.3	12.0	526.8
6	241.3	8.4	-7.0	10.6	4.7	249.6
7	152.7	3.6	-4.4	5.3	2.7	156.4
8	88.5	4.8	-2.5	5.3	2.0	93.3
9	262.4	14.7	-12.2	19.7	7.3	277.1
10	172.9	12.8	-5.6	13.7	4.8	185.8
11	45.3	.6	-4.1	3.5	1.3	45.9
12	44.2	1.3	-2.5	2.6	1.2	45.5
13	6,029.9	267.0	-478.9	615.0	130.9	6,296.9
14	1,030.7	59.3		30.1	29.2	1,090.0
15	184.9	6.8		2.9	3.8	191.7
16	797.3	62.4		32.7	29.7	859.7
17	48.5	-9.9		-5.5	-4.4	38.6
18	10.2	.3		-1.1	1.4	10.5
19	5.0	-1		-1.0	.9	4.9
20	2.6	0.0		-.2	.2	2.6
21	30.7	-10.1		-3.2	-6.9	20.6
22	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Developed natural assets						
23	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
25	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	12.9	2.0	n.a.	-3	2.3	14.9
27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
28	2.0	.2	n.a.	0.0	.2	2.2
29	288.8	47.0	-6.9	9.0	44.9	335.7
30	n.a.	n.a.		n.a.	n.a.	n.a.
31	n.a.	n.a.		n.a.	n.a.	n.a.
32	24.1	7.5		0.0	7.5	31.6
33	n.a.	n.a.		n.a.	n.a.	n.a.
34	5.0	.9		-.5	1.4	5.9
35	1.8	.3		.1	.2	2.1
36	270.0 - 1,066.9	57.8 - 116.6	-16.7 - 61.6	16.6 - 64.6	58.0 - 119.6	299.4 - 950.3
37	58.2 - 325.9	-22.5 - 84.7	-5.1 - 30.6	5.8 - 34.2	-23.1 - 88.3	35.7 - 241.2
38	42.7 - 259.3	6.6 - 57.2	-5.6 - 20.3	4.1 - 14.9	8.1 - 51.8	49.4 - 202.2
39	140.7 - 207.7	2.2 - 3.4	-5.4 - 7.6	4.4 - 6.3	3.2 - 2.1	143.0 - 204.2
40	(*) - 215.3	67.2 - 29.5	-2 - 2.2	2.2 - 9.2	65.2 - 22.5	38.5 - 244.8
41	28.4 - 58.7	4.3 - 8	-4 - 9	.1 - 0	4.6 - 1	32.8 - 57.9
42	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
43	4,053.3	253.0	n.a.	n.a.	n.a.	4,306.3
44	441.3	42.4	n.a.	-2.8	45.2	483.7
45	n.a.	n.a.	-5	n.a.	n.a.	n.a.
46	n.a.	n.a.	-9	.9	n.a.	n.a.
47	285.8	28.8	n.a.	-6	29.4	314.6
NONPRODUCED/ENVIRONMENTAL ASSETS						
48	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
49	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
50	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
51	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
52	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
53	n.a.	n.a.	-19.9	19.9	n.a.	n.a.
54		n.a.	-38.7	38.7	n.a.	
55		n.a.	-27.1	27.1	n.a.	

n.a. = Not available

* The calculated value of the entry was negative.

NOTE: Leaders (...) indicate an entry is not applicable.

Source: Bureau of Economic Analysis (1994a) SURVEY OF CURRENT BUSINESS, April 1994. The table has been slightly simplified for this report.

of BEA's development of supplemental tables focused on assets listed in rows 22–35 and 42–47 of [Table 4–1](#), while Phase III considers rows 48–55. Because BEA has not completed Phases II and III, actual decisions on what will be included have yet to be made. Each of the following sections of this chapter considers an element of how to draw the line. While an ideal set of accounts would contain “everything,” this chapter examines practical issues that arise in constructing actual accounts based on available data and tools. As will be seen, the practical is likely to fall far short of the ideal.

Pollution Abatement and Control Expenditures

One particular entry in the environmental accounts—pollution abatement and control expenditures—has been the subject of detailed investigation by BEA for many years. These items are shown for 1987 in rows 5–12 of [Table 4–1](#). The Bureau of the Census began collecting these data and BEA reporting them in 1972 (with some breaks in the series); these efforts were suspended in 1995 because of budget cuts. Reporting of these costs does not extend the accounts, but rather reorganizes the existing accounts to provide a better indication of the interaction between the environment and the economy.

The limitations of these data are well recognized and were discussed in Chapter 2. Many of the costs included in the data overstate the cost of pollution control, while other pollution-reducing costs are omitted because they involve changes in processes. There is also controversy about the extent to which stringent pollution control regulations may have a chilling effect on innovation and technological change. Finally, little thought has been given to the appropriate treatment of purchases of emission permits, which are likely to become a more important feature of environmental regulation in the future. Despite their limitations, however, data on pollution abatement are likely to be among the most precise of the data in the environmental accounts, and they have been extremely useful for understanding trends and levels in control costs and for examining how environmental programs have affected productivity. The panel finds that the data on pollution abatement expenditures are valuable and, as noted in the final section of this chapter, recommends that funds be provided to improve the design and recommence collecting these data.

Other Sectors of the Proposed Accounts

As reported by BEA, the quality of actual entries in published supplemental accounts for Phase II and III assets ranges from relatively good to conceptually defective.¹ For Phase II assets, estimates within the category “developed land” are described as “of uneven quality” (p. 45). According to BEA, agricultural land values are “relatively good and are based on U.S. Department of Agriculture estimates of farm real estate values less BEA’s estimates for the value of structures” (p. 45). BEA has not attempted to estimate the value of recreational land, but has entered federal maintenance and repair expenditures as an investment (see [Table 4–1](#)) and “assumed that these expenditures exactly offset the degradation/depletion of recreational land” (p. 45). BEA indicates that this assumption is made only for purposes of illustration and is “not to imply any judgment about the true value of degradation/depletion” (p. 45). A more detailed discussion of BEA estimates for timber and land in forests is presented later in this chapter.

For Phase III assets, BEA has entered “n.a.” for most of the items, indicating that these estimates have not yet been developed. Entries for investment in and degradation of water, air, and undeveloped land are included, however. As in the case of developed recreational land, BEA has assumed that maintenance exactly offsets degradation, noting that this assumption provides entries that “are simply place markers” (p. 46). In the panel’s view, the use of maintenance expenditures as degradation costs is highly misleading, and this procedure should not be followed in the future. Entering “n.a.” would be more accurate. The panel notes, however, that these estimates do not necessarily reflect BEA’s planned approaches, but were included by BEA to show the current state of data and research.

Regarding future plans, the United Nations System of Integrated Environmental and Economic Accounting (SEEA) “does not recommend that the stock of air—which is truly a global common—or water be valued; instead it recommends that valuation be limited to changes in these assets—their degradation and investments in their restoration” (p. 46). It should be emphasized that the entries for environmental assets in [Table 4–1](#) are highly oversimplified. Some components of air quality, such as greenhouse gases and stratospheric ozone, are truly global assets and services; others, such as reductions in urban smog, are local and regional

1. All quotations in this section are from the Bureau of Economic Analysis (1994a).

POLLUTANT EMISSIONS AND THEIR RELATION TO STOCKS, FLOWS, AND ECONOMIC ACTIVITY

Before constructing environmental accounts, it is necessary to determine the interactions between natural resources and the environment and economic activity. It is essential to understand the key physical flows and stocks and how they affect humans and economic activities and values. A complete accounting requires detailed knowledge of the physical properties of resources and pollutants as described in fate, transport, and impact or damage models, as well as the service flows to market and nonmarket sectors.

Figure 4-1 illustrates key relationships among emissions, stocks of pollutants, natural-resource assets, and economic activities in different sectors. As the figure shows, economic activities produce a variety of uninternalized emissions and resid-

public goods. Additional dimensions that need to be incorporated are relations to external events, spatial resolution, and nonlinearities in damages. The discussion of air quality later in this chapter illustrates its multiple dimensions. Similarly, water quality and quantity, undeveloped land, and uncultivated biological resources are composites of many different assets and quality characteristics that provide multiple goods and services.

BEA's efforts have focused on the asset accounts. A preliminary table for a production account without entries is included in BEA's report on its development of the IEESA (Bureau of Economic Analysis, 1994a, 1994b). Production of market goods and services from these natural assets—e.g., timber, agricultural crops, fish—is already in the core production accounts. Greater attention is needed to identifying, measuring, and valuing the specific types of nonmarket goods and services produced by these assets.

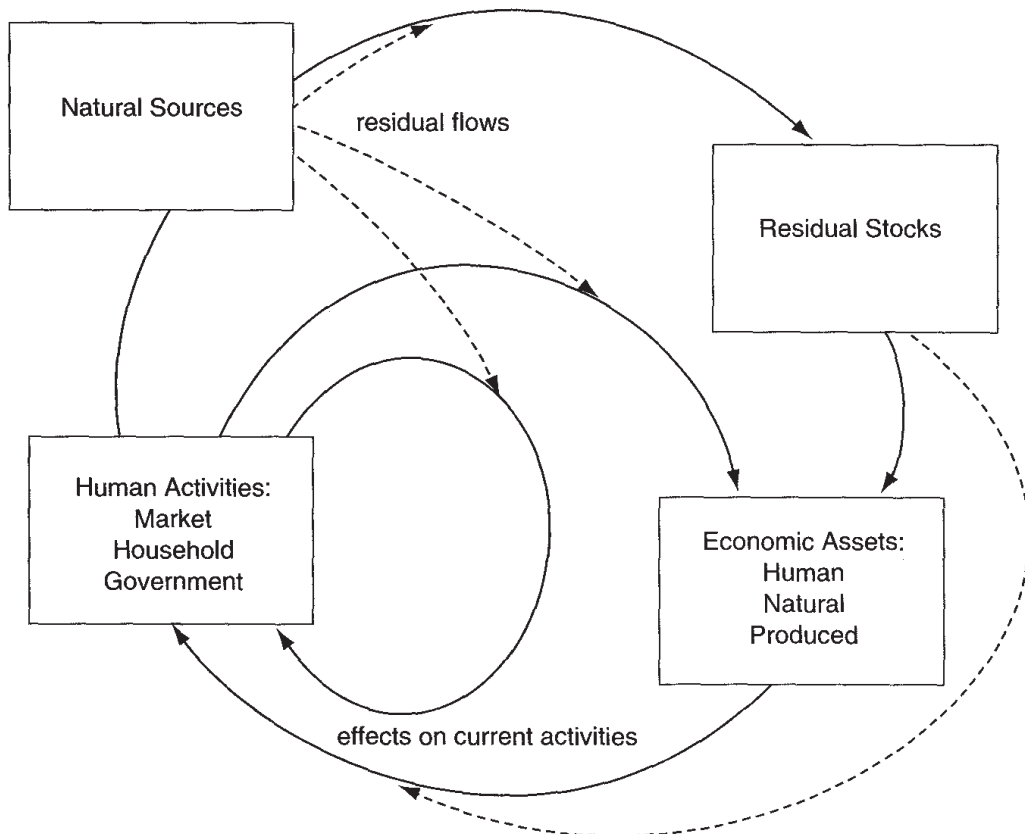


FIGURE 4-1 Human Activities, Residuals, and Economic Assets.

uals that find their way into the environment. Many of the pollutants of concern are residuals that also have natural sources—sulfur, carbon dioxide, carbon monoxide, nitrogen compounds—and are emitted during volcanic eruptions, produced by forests and wetlands, or released from wildfires. Other residuals of concern—such as chlorofluorocarbons (CFCs) and many pesticides used in agriculture—are anthropogenic and have no natural sources. In terms of effects on human activities, the sources of the residuals are not important. What may be important is that human activities have increased the levels occurring in the environment, concentrated them to a degree that makes them dangerous, or relocated them to areas where people or economic activities are exposed to them at high levels.

Whether from natural sources or human activities, environmental variables can affect economic well-being in three general ways, as illustrated in **Figure 4-1**: (1) direct effects on consumption or income of households, industry, and government; (2) accumulation in the environment of stocks of residuals that then affect economic activities or economic assets; and (3) effects on the service flows of economic assets (capital stock, natural resources, or human resources), such as recreation, clean air to breathe, and navigable river channels free of sedimentary deposits.

Direct Effects

Environmental variables affect human and natural systems directly. Urban smog, whose concentrations change daily or even hourly, is an obvious example. Sulfate and nitrate aerosols, pollutants contributing to acid precipitation, remain in the atmosphere for a matter of days. These pollutants have short-term health effects, reduce visibility, interfere with recreational activities, affect crop growth, and present their own set of problems for accounting. In many cases, the substances emitted are precursor emissions; that is, they react chemically in the atmosphere with other substances to form the substance that is ultimately damaging to humans or ecosystems. There are also complex nonlinearities because the formation of the damaging substance depends on the level of precursor emissions, weather conditions, and the presence of other substances with which the precursor emissions react. All of these processes vary on an hourly, daily, and seasonal basis. Emissions, concentrations, and impacts of damaging substances also vary spatially, and there may be important threshold effects as well. Above all, there is the “weed

syndrome”—the fact that the same substance may be beneficial or harmful depending on where it is, how much of it there is, the time and duration of exposure, and what organism is absorbing it. Virtually every substance on earth, from water to plutonium, can be an economic good or an economic weed depending on the circumstances.

One of the most important difficulties is that the physical measurements used are often inaccurate indicators of actual human exposures. Average emissions of the precursor pollutant, average concentrations over the year, or concentration data for limited sites are generally not representative of concentrations to which the population is exposed and may be a misleading basis for developing damage estimates. For example, tropospheric ozone forms mainly in warm weather. Thus total annual hydrocarbon emissions, the precursor to tropospheric ozone, are a poor indicator of potential levels of tropospheric ozone. Tropospheric ozone levels also vary significantly over the distance of a few city blocks. One of the major challenges both for better environmental policy and for the construction of environmental accounts is to obtain better measures of direct human exposure to the important harmful substances among a representative sample of people.

Accumulation of Stocks

Many environmental problems result from the accumulation of residuals. These substances include most radiatively active trace gases, which remain in the atmosphere for decades or centuries, and many radioactive materials, which have half-lives of decades or centuries. Similarly, recovery from stratospheric ozone depletion is a process requiring years or decades, and agricultural chemicals often migrate very slowly through soils, contaminating drinking water only after several years or decades.

Environmental accounting therefore needs to develop and include appropriate methods to account for those persistent pollutants, such as heavy metals that accumulate in the environment and last for many years. Each year's emissions or production of residuals adds to the stock in the environment, and it is necessary to understand the processes by which these stocks decay or dissipate. In some cases (as with radioactive substances), those processes are easily understood, while in other cases (such as subsoil toxins or the carbon cycle), understanding the processes poses enormous scientific challenges. In the economic accounts, the stock-flow dynamics are similar to those of gross

investment and depreciation of capital. While there is a conceptual similarity, however, there is no readily observable market price for these stock changes. Hence, valuation of a change in stock requires estimating the value of the impact of additions over the lifetime of the stock, accounting for dissipation, and appropriately discounting future effects. It should also be recognized that, with a few exceptions, the stocks are extremely heterogeneous, so that measuring a simple “environmental capital stock” is likely to be extremely difficult.

Effects on Economic Assets

Both short-lived and long-lived residuals can affect economic activity over a number of years through their effects on other economic assets, in particular produced capital goods such as buildings and equipment. For example, acid precipitation can cause deterioration of buildings. Accumulated greenhouse gases can result in coastal flooding and higher storm surges, thereby adversely affecting the value of existing coastal structures. Pollutants such as lead can cause long-lasting health consequences, impacts on intellectual functions, and premature death.

ISSUES INVOLVED IN ACCOUNTING FOR RENEWABLE AND ENVIRONMENTAL RESOURCES

The previous section addressed the major ways in which natural resources and the environment interact with economic activity. Depending on the intended uses of the data, there are different approaches to structuring environmental and natural-resource accounts. The most complete accounting structure would treat all the relationships in [Figure 4-1](#). However, constructing such a complete set of accounts is infeasible today, and governments must choose areas for investigation strategically in accordance with their national economic and environmental goals and interests. This section delineates some possible approaches to accounting for natural and environmental resources and activities.

Production and Income Accounts

A complete set of production accounts would identify all the cross-relationships among industry, household, government, and natural sources of emissions or residuals, as well as the nonmarketed current account input services provided by nature and the productive contribution of nature to

final demand. Current-year activities would include production of residuals, just as traditional economic accounts include production accounts. A complete set of accounts would incorporate flows of residuals from abroad, similar to imports of goods and services. It would also be necessary to calculate the “price”—negative or positive—indicating whether the effect was adverse or beneficial. The accounting for current-year activities would include final uses of residuals, identifying effects on final consumption, flows abroad, and contributions to capital stocks, just as traditional accounting frameworks identify final consumption of goods and services, exports, and gross capital accumulation.

Accounting for Capital Assets

It is important to measure the volumes and values of the nation’s natural assets for many reasons. One purpose is simply to determine general trends. Another, illustrated in [Table 4-1](#), is to determine the relative magnitudes of different assets. A further reason arises in the context of sustainable economic growth. As discussed in Chapter 2, one can calculate measures of sustainable income if one corrects conventional measures of national income by including the value of the change in the stocks of natural and other assets.

For all of these reasons, we would ideally like to have measures of the value and volume of the nation’s natural assets; thus we must include measures not only of “made assets,” such as houses and computers, but also renewable resources, such as timber or the fertility of land, and nonrenewable assets, such as oil and mineral resources. It is important to know whether the economy is generating an ever-growing stock of damaging environmental residuals that will pose a large economic burden on future generations. We want to know whether the economic value of investments in tangible, human, and technological capital is more than offsetting whatever depletion of natural assets is occurring.

There is a close connection between the production accounts and the asset accounts (see Chapter 2). As noted above, measures of comprehensive income or of sustainable income include not only current consumption flows, but also the value of the change in the stocks of assets. Hence augmented accounting requires careful and accurate measurement of both assets and consumption flows. Such measurement is currently undertaken within the boundary of the marketplace, but augmented accounting would require extending that

boundary for both assets and consumption in a consistent manner. The conceptual basis for asset valuation in environmental accounts parallels closely that in the conventional accounts. Depletion and degradation of natural resources is conceptually similar to depreciation of produced capital assets. Stocks of residuals can decay or dissipate, a process that is again conceptually similar to depreciation of produced assets. Natural growth of biological resources, recharge of groundwater resources, and accumulation of residuals are conceptually similar to gross capital formation or investment. Net accumulation of assets is equal to the value of the change in stocks. Many of the issues involved in constructing chain indexes of values and volumes translate directly into measurement of resource and environmental stocks.

However, some special conceptual difficulties arise in measuring stocks of natural assets. Natural-resource assets (like a physical plant or piece of equipment) are complex systems of component parts that have value because of the way they work together. Since produced capital assets are generally purchased or constructed as modules, they can be valued on the basis of their own market prices, rather than their synergistic contribution to output. To take an analogy, a baseball player's contribution to the team is a complex function not only of hitting, pitching, and fielding, but also of temperament, teamwork, and verbal abilities; from an accounting perspective, however, the economic contribution is simply wages and other compensation. For environmental assets, determining the value will become difficult when the effort extends beyond the market boundary. Consider a forest. How can the value of the stumpage in the forest be separated from the forest's contribution to erosion control, air quality, and biodiversity?

Even when markets produce evidence of the value of a bundle of assets—the composite value of soils, timber, nearness to water, and recreation—it may be difficult to separate out the values of the different components without applying complicated statistical procedures. Sometimes, the separation is misleading, as when the value of the components depends on their being together. An assembled bicycle is different from a pile of parts; similarly, forests, lakes, rivers, farmland, and coastal estuaries are valuable because of the way they are assembled.

One possible way of avoiding this difficulty is to redefine assets in terms of particular functions or characteristics, an approach similar to that taken in hedonic valuation, whereby goods are viewed as packages of characteristics. This approach would

be similar to redefining an automobile as a combination of transportation mode, public-health menace, and status symbol. Under this approach, an asset is valued in terms of the sum of the values of its various characteristics. In this view, there is little point in trying to analyze the total value of holistic assets such as land or air or climate; rather, one undertakes the more modest task of looking at the different functions involved.² BEA's treatment of soil erosion is consistent with this approach; agricultural land is treated as the asset and the soil depth and organic-matter content as characteristics of the land. Other aspects of land quality—local climate or ambient level of pollution—can be considered in a similar manner. Identification of the economic effects of erosion on the value of land makes the resource link explicit.

Thus, a potentially useful alternative to considering the holistic value of assets is to consider how changes in air quality affect the value of agricultural land, forests, residential property, and human capital. Thus, fundamental nonhuman assets might include forests, lakes, rivers, estuaries, coastal regions, wetlands, farmland, and residential property. This approach has two further attractive features: it allows better integration with existing accounts, since some of these assets (such as residential property and forests) have an extensive existing database; and it allows incremental development of a set of valuations, building upon those in the market sector.

Practical Choices in Expanding the Accounting Framework

A complete accounting system including interactions in the production and asset accounts would be a significant undertaking. Deciding on the scale of augmented accounting and the next steps to be taken will require considerable strategic thought. One question is whether the accounts will be used for scorekeeping or for management (see the discussion in Chapter 2).

Scorekeeping, which involves developing a better measure of the performance of the economy over time, is one perspective. It addresses the questions of trends in the values of environmental assets and whether current consumption is sustainable. If scorekeeping of this type is the purpose of supplemental environmental accounts, it will simplify the enterprise because there will be no need to consider intermediate interactions between production sectors. Tracing where pollutants were

2. Watershed valuation is an example of a holistic approach (see Anderson and Rockel [1991] and Green et al. [1994] as examples).

produced and how they affect intermediate product is unnecessary as long as one can measure final consumption and changes in assets. For example, a dying forest is a deteriorating asset; whether the deterioration is caused by acid precipitation, tropospheric ozone, or pest infestation is secondary from a scorekeeping perspective. What is important is to measure the deterioration accurately. Similarly, the overall health and skills of human populations is a central issue in measuring whether the economy as currently structured is leading to an increase or decrease in the stock of human capital. Why the change is occurring—whether because of changes in health care or education expenditures or reductions in blood lead—is secondary to the measurement issue. Overall scorekeeping would note the substantial improvements in the health status of Americans over this century rather than decreases in particular ailments.

The second broad perspective on the function of environmental accounts is that of environmental management. This perspective focuses on the sources, transportation, and ultimate disposal of residual pollutants, particularly their contributions to outcomes of economic and ecological consequence. Knowing to what extent particular emissions of residuals come from utilities, automobiles, or volcanic eruptions is critical to developing strategies for control. If human sources are dwarfed by natural sources, for example, efforts to control human sources may be futile. Similarly, knowing that life expectancies have increased dramatically is not very useful to understanding whether there are benefits to tightening controls on small particles or ozone. Improvements in health care, occupational safety, and traffic safety may result in increasing life spans and health status more than pollutants are shortening life span—but reducing pollution further could extend lives further. Thus, if the supplemental accounts are meant to support environmental management decisions, knowing the sources of pollutants and the specific causes of changes in asset quality are essential.

Analogy with Economic Accounts

The discussion in this section has emphasized the complexity involved in constructing environmental accounts. It is useful to compare environmental with conventional economic accounting. A little reflection suggests that economic activity has a similar, almost fractal complexity when one looks under the surface. It would be just as difficult to measure the physical flows in economic life as in environmental life, and indeed many of the same

processes come into play. Consider the problems involved in accounting for a simple loaf of bread. Doing so would require measuring and valuing a wide variety of flows of water, fertilizer, pesticides, labor, climate, and capital inputs that go into producing the wheat; the fuels, transport vehicles, emissions, weather-related delays, induced congestion, or floods involved in transportation; the molds, spores, and miscellaneous rodents and their droppings that invade the storage silos; the complex combination of human skills, equipment, and structures that go into milling the wheat; the entrepreneurship of the baker and the software in the computer-operated baking and slicing machinery; the complex chemistry and regulatory environment involved in the wrapping materials; and the evolving ecology of the distribution network. Behind each of these elements, in addition, is the complex general equilibrium of the marketplace, which determines the selection of production processes by prices, taxes, and locations, along with the further complexity of needing to unravel the input-output structure of the inputs into each of the steps just described.

It appears unlikely that anyone would try, and safe to conclude that no one could succeed in, describing the physical flows involved in this little loaf of bread. Fortunately, however, economic accounting does not attempt such a Herculean task. Rather, the national accounts measure all these activities by the common measuring rod of dollars. Although the dollar flows are routinely broken down into different stages—wheat, transportation, milling, baking, and distribution—one could never hope to describe the flows physically and then attach dollar values to each physical stage. Yet this is just what would be required for a full and detailed set of environmental accounts. The above comparison may give some sense of why accounting for environmental flows outside the marketplace is such a daunting task.

PHYSICAL DATA REQUIREMENTS: GENERAL ISSUES

Some of the analytical questions involved in environmental accounting have been analyzed in the previous section. To construct actual accounts requires both obtaining accurate physical data (discussed in this section) and valuing the flows (discussed in the next section).

Accurate data on physical flows and stocks are a prerequisite for developing any accounting system and are the focus of national accounting systems under development in several European nations.

In some areas, ample physical data are available as a by-product of regulatory monitoring and resource management systems. Appendix B lists a number of databases identified by the panel that may be of use in further work on supplemental accounts.

Three concerns are fundamental to understanding data and measurement requirements for the development of environmental accounts: (1) the dose-response relationship, (2) measurement of actual doses experienced, and (3) the fate and transport of residuals in the environment. The first, the dose-response relationship, is the physical relationship between the concentration of or exposure to an environmental change and the response of the subject experiencing the dose. The dose-response relationship is applied to many different situations, for example, the response of trees and crops to chemicals such as carbon dioxide, tropospheric ozone, or acid deposition and the response of humans to pollutants such as lead, particulate matter, or radiation.

Dose-response relationships are often difficult to determine because they may be affected by complex interactions and intervening factors. For example, there are extensive medical data on causes of death and, less universally, illness. To determine impacts of environmental changes on human or natural ecosystems requires separating out the different causes of premature death or illness. In some areas, such as the impact of tobacco or lead, the relationships are relatively well established; in other areas, such as the impact of particulate matter or ozone, much uncertainty persists. For many of these relationships, average exposure over the year is rarely the relevant measure. Damage may be related to extreme levels or to periods in which the subject is particularly sensitive to the agent; acute effects may differ from chronic effects related to long-term, low-level exposure.

Resolving these uncertainties about dose-response relationships is important for policy decisions, such as the level at which to set primary air-pollution standards. Resolution of these uncertainties would also allow construction of environmental accounts. The panel's review of work in this area indicates that the preparation of estimates of the economic impacts of air pollution is feasible today, but there are enormous uncertainties at virtually every stage of the effort. While BEA or those preparing environmental accounts would not necessarily be involved in preparing dose-response estimates, the accountants will need to work closely with public-health, agricultural, forestry, and ecological experts to use the best information available.

In addition to understanding the dose-response relationship, national accounting requires regular, statistically valid monitoring of the relevant populations and the doses they are receiving. A basic limitation of much of the data currently collected is that ambient concentration levels in areas where individuals, crops, forests, or other relevant entities actually reside are poorly measured. Most measurements occur at sites of convenience rather than sites of relevance. Air pollution monitors are often placed with other monitoring devices where airplanes congregate rather than where people live.

A full account of economic-environmental interactions also requires tracking the fate and transport relationship, or the connection between the emission of a particular pollutant or pollutant precursor at one time and geographic point and the level, time, and location of the pollutant at the point where it affects an economic asset or activity. These relationships are generally highly complex and variable. For air pollutants, wind direction and speed, temperature, cloudiness, and precipitation all affect how a pollutant is dispersed or concentrates. Precursor pollutants sometimes do not create damage themselves, but react chemically in the atmosphere to create other agents that are damaging. Acid precipitation and tropospheric ozone are examples. The formation of these pollutants depends on the presence of other agents that may limit, speed, or slow the process. Monitoring of emissions, concentrations, exposures, and consequences would provide the physical foundation for a complete set of environmental accounts, and is also a critical part of environmental management.

The goals of environmental accounting will dictate the assignment of priorities for improved data. Extensive data on the fate and transport of emissions and concentrations of pollutants are a lower priority if the goal is scorekeeping; even dose-response relationships may be secondary to more direct measurement of consumption flows or changes in important capital and environmental assets and human health status. If one is interested primarily in measuring the sustainability of economic activity, understanding the health status of human and natural systems is more important than understanding why conditions have changed. On the other hand, understanding these technical relationships is essential if environmental accounts are to serve as a data set to support environmental management, in which the goals are to understand the severity and causes of environmental problems, along with remedies needed to mitigate those problems.

VALUATION: GENERAL ISSUES

Once appropriate physical data have been developed, the next step in developing integrated accounts is to value changes in the physical measures. Physical data alone are often interesting and useful for policy making, and improvements in physical environmental data could enhance policy-making efforts. Indeed, most countries have not gone beyond developing physical measures and indicators because of the difficulties involved in valuing nonmarket goods. Without valuation, however, physical data alone have serious limitations for both scorekeeping and environmental management. Aggregate physical measures, such as areas of agricultural land, forest, or wetlands or tons of sulfur, toxic wastes, or particulate emissions, provide incomplete second column evidence on the effects of these chemicals on economic well-being or economic sustainability over time. For example, losing 1000 acres of prime Florida Everglades would probably impose a greater economic and ecological loss than losing an equivalent area of frozen wetlands in northern Alaska. Thus an accounting entry of "total wetland acres" lost would not be a useful measure. Furthermore, a simple measure of wetland area would fail to capture improvements in quality that might occur as a result, for example, of current efforts to restore the Everglades as a fully functioning ecosystem.

For many issues, it is necessary to weight the physical measures by their importance. There are approaches to weighting physical quantities other than valuing all impacts in dollar terms; for example, different environmental residuals can be weighted by how they affect human mortality. However, such weights would be incomplete because they would exclude impacts on morbidity or on the health of ecosystems. In economic accounting, the "importance weights" are the economic values, usually market prices. The advantage of using economic valuation is that comparisons can be made across very different environmental effects and with goods that are part of the market economy. While relying on economic values has many desirable features, there are a number of difficulties involved in usefully applying nonmarket valuation studies and techniques to environmental accounting, as discussed below (see also Chapter 2).

Valuation Techniques

Markets provide the conventional valuation for market goods and services. A variety of methods for valuing nonmarket goods and services has

been developed. Table 4-2 indicates the potential and actual uses of various valuation methods for many environmental problems, including the dose-response method discussed above. These methods have been developed over a number of years and have been applied to many specific problems.³

The *dose-response method*, as a valuation method in and of itself, is directed toward converting exposure to a specified dose of a substance, from which is calculated a physical response for which a direct market price can be observed. For example, exposure to ozone or particulate matter results in wheat-yield loss or lost work-days due to respiratory illness; using the market price of wheat or of labor, an estimate of economic value can be made. The valuation techniques in this approach are consistent with prices used in the economic accounts. Incomparability or additional uncertainties are introduced only through imputation of output by use of the dose-response relationship, which converts the environmental effects into market-good terms.

Travel-cost and hedonic methods also use behavior and observed market transactions as a basis for estimating values, but the activities involve time use and expenditures on goods and services related to use of the environmental or natural-resource good, rather than on the resource itself. For example, a recreational site might be valued using the travel-cost method by estimating the time and out-of-pocket costs involved in reaching the site.

Hedonic methods use statistical techniques to explain variations in market prices based on the bundle of characteristics of a good. This approach is currently used in the national accounts. Computers, for example, are considered bundles of attributes such as speed, memory, and random access memory (RAM), and the value of the computer is a weighted sum of the values of its attributes.

For resource and environment valuation purposes, hedonic methods are used to explain variations in land values that reflect natural-resource or environmental characteristics. Such estimates are based on observed price differences of land with different amenities or disamenities such as noise, pollution, and crime. Hedonic wage studies—looking at the wage premiums of high-risk jobs—are currently the standard approach to estimating the value of workplace hazards; the results are often used as estimates of the value of

3. See Smith (1993) and Braden and Kolstad (1991) for reviews of the theory and application of these methods.

life-threatening effects due to such causes as air pollution or traffic accidents.

Contingent value (CV) methods are survey techniques that ask people directly what they would pay for goods and services. Applications in the area of environment and natural resources include, for example, asking individuals what they would be willing to pay to reduce smog, to increase visibility in places such as the front range of Colorado, and to clean up an oil spill in a coastal area. CV methods differ from the other methods discussed above in that there are no budget constraints or behavioral observations involved; the results reflect respondents' estimates of the value of a hypothetical change, rather than a dollar or time cost actually

incurred. While widely used for environmental valuation, CV is highly controversial because it often fails elementary tests of consistency and scaling and is subject to a wide variety of potential response errors if not carefully constructed.

The overriding problem with all these methods is that they require voluminous data and statistical analysis and can hardly be used routinely for a large number of products in constructing environmental accounts. Where existing CV studies are used for environmental or natural-resource valuation, they often employ valuation approaches that are inappropriate for national accounts. For example, many estimates used in environmental management rely on average value (including con-

TABLE 4-2 Methods for Environmental Valuation

Pollution	Type of Effect	Impact	Techniques for estimation impacts				
			Hedonic Property	Hedonic Wages	Travel Cost	Contingent Valuation	Dose Response
<i>Air pollution</i>							
Conventional pollutants: (total suspended particulate [TSP], sulfur dioxide [SO ₂], nitrous oxides [NO _x])	Respiratory illness	WLD RAD Medical suffering	L	L	X	U	U
	Respiratory illness	Death	L and U	U	X	X	U
	Aesthetics	Visual, sensory	U	L	X	U	X
	Recreation	Visits, especially to forests	L	X	U	U	X
	Materials	Maintenance/repair	X	X	Poss	Poss	U
	Vegetation	Crop losses	L	X	X	X	U
<i>Water pollution</i>							
Conventional pollutants (e.g., biochemical oxygen demand [BOD])	Recreation (e.g., fishing, boating)	Visit behavior	L	X	U	U	X
	Commercial fisheries	Stock losses	X	X	X	X	U
	Aesthetics	Turbidity, odor, unsightliness	U	X	L	U	X
	Ecosystem	Habitat and species loss	X	X	X	U	U
Trace concentrations	Drinking water	Illness, mortality	X	X	X	Poss	U
	Fisheries	Stock losses	X	X	X	X	U
<i>Toxic substances</i>							
Air (benzene, polychlorinated Biphenyls [PCBs], pesticides)	Illness, mortality	WLD RAD Medical expenses Pain and suffering	U	X	U	U	U
Chemicals hazardous to land	Aesthetics Ecosystem	Unsightliness Anxiety, ecosystem losses	X	X	X	U	U
<i>Radiation</i>							
	Illness, mortality	WLD RAD Lives lost	Poss	U	X	L	U
<i>Marine pollution</i>							
Oil, radioactive substances, sewage	Aesthetics	Unsightliness	U	X	U	U	U
	Swimming	Visit behavior Illness Fish/livestock losses					
<i>Noise</i>							
	Nuisance	Annoyance	U	X	X	U	L

U = Used technique; Poss = Not developed, but possible; X = Inapplicable technique; WLD = Work loss days; L = Very limited applications; RAD = Resource activity days.

Source: Adapted from Organization for Economic Cooperation and Development (1989), as appearing in Costanza (1997).

sumer surplus), rather than the prices or marginal values that are the convention in national income accounting.⁴ In a competitive economy, market prices measure both the incremental value to the economy of consuming another unit of the good and the incremental cost to the economy of producing that unit. Therefore, prices are a useful benchmark for valuation.

In one sense, the market value underestimates the total value of goods and services to consumers. Because consumers pay the price of the last or marginal unit for all units consumed, they enjoy a surplus of total satisfaction over total cost. The term used for the extra utility consumers receive over what they pay for a commodity is *consumer surplus* (see also Chapter 2). Consumer surplus introduces a complication in comparing market prices with nonmarket values. For goods without markets, value is often measured by total willingness to pay for the good. Such values are not directly comparable to market prices because the values include the consumer surplus. In other words, when nonmarket goods are valued according to total willingness to pay, the value of those goods is overstated relative to the market value of marketed goods. For example, travel costs can provide the average value of a recreational service, but the marginal value of the resource for an open-access beach or forest with no fee may be zero. This discussion illustrates the importance of ensuring comparability in estimating values in the construction of nonmarket economic accounts.

Classes of Economic Goods

The valuation of environmental goods and services raises an issue that is largely overlooked in conventional accounting—the distinction between private and public goods. These deceptively common terms are used in a specialized sense here (see Samuelson, 1954, 1955). *Private goods* are ones that can be divided up and provided separately to different individuals, with no external benefits or costs to others. An example is bread. Ten loaves of bread can be divided up in many ways among individuals, and what one person eats cannot be eaten by others. *Public goods*, by contrast, are ones whose benefits are indivisibly spread among the entire community, whether or not individuals desire to purchase them. An example is smallpox eradication. It matters not at all whether one is

old or young, rich or poor, American scientist or African farmer—one will benefit from the eradication whether one wants to or not. The example of smallpox eradication is a dramatic case of a public good. The economy is replete with activities, such as pollution abatement, new scientific knowledge, national defense, and zoning, that have public-good characteristics.⁵

The distinction between public and private goods is central for many nonmarket and environmental commodities. In a perfectly competitive market, the price of a marketed private good is the marginal value of consumption to the consumer. Similarly, while observed prices do not exist for nonmarket private goods, the marginal value of the consumption of such goods is conceptually equivalent to a market price. The national accounts value food produced and consumed on farms, even though it is not marketed, the same way food sold in the marketplace is valued.

Valuation of public goods is an especially difficult problem because their value to all consumers must be reckoned with. For example, improvements in air quality affect everyone. Conceptually, therefore, one should value public goods by adding up the marginal values of changes to the entire affected population. Doing so poses severe measurement difficulties for two reasons. First, the “personal prices” or marginal values of the public good are sure to vary across people—some may be significantly affected and therefore place a high value on air quality, while others may be relatively indifferent. Second, determining the values of public goods is extremely difficult because people make few decisions that reveal their preferences in this regard. People cannot choose how much defense or smallpox eradication they would like to consume; these decisions are made collectively. Since people cannot choose different levels of a public good,

5. This discussion greatly simplifies the discussion of public goods. There are further distinctions among public goods that are central to many issues involved in environmental accounting, particularly as regards valuation methods. One such distinction is whether consumption is excludable; in the case of global warming, for example, no coastal nation can exclude itself from the rising seas. Another distinction is between pure and congestible public goods. Congestible public goods are those whose consumption is neither completely rival nor nonrival; one person using a beach does not preclude others from doing so, but most people find crowded beaches less enjoyable than deserted ones (see Cornes and Sandler, 1986). Crowding of this sort means that even with open access, the marginal value of use of these sites is greater than zero. A final distinction is between those goods whose use affects market activities or market values and those that are completely independent of the market. Public goods without traces in markets are frequently referred to as “nonuse values.” Nonuse values include values people derive from knowing that a species exists, natural wonders remain, or natural systems survive intact beyond any specific use to which they might be put (see Randall and Stoll, 1983). When Congress created Yellowstone National Park in 1872, for example, no member of Congress had ever been there, and its value as a natural wonderland was largely a “nonuse value” imagined on the basis of photographs of William Henry Jackson and drawings of Thomas Moran.

4. Marginal costs and marginal values are central concepts in determining economic efficiency. For example, knowing the marginal value of reductions in atmospheric lead is more useful to the policy maker than knowing the average value of all reductions. Marginal cost and marginal value are defined in Appendix D.

there are no behavioral traces of their preferences or personal prices.

For the above reasons, constructing environmental accounts will necessarily be different for private and public goods. For private goods, particularly near-market goods that have close relatives in the market economy, valuation appears feasible and has a level of reliability that approaches that of the current national income accounts. Most public goods, by contrast, present greater measurement and conceptual problems. Table 4-3 shows examples of each type of goods that have these different characteristics.

Strategies for Valuation

Near-market natural-resource and environmental goods (which are largely private goods) offer the most promise for valuation and inclusion in the accounts. Often there are markets for comparable goods that provide direct evidence of the value of the nonmarketed goods or services. This approach is consistent with the use of market prices used elsewhere in the accounts and has precedent in the valuation of owner-occupied housing services. Thus, the methods for including these near-market goods have already been established. A potential source of error in using this approach is that the quality may differ for goods or services produced or provided in the household and those produced in the market. It would be appropriate to undertake a modest research program to investigate the adjustments necessary to make market and near-market activities comparable.

Two basic types of near-market goods are of interest. The first is the service flow from a natural resource. Here, as in the case of timber from forests or crops from farmland, the service flow is already in the core accounts, and the returns to these assets appear as profits and/or returns to other assets, but the accounting is incomplete because it omits the nonmarket activities. The second case is a good

not currently in the accounts, such as recreation services enjoyed by households; in this case, the value that is attributable to the service is equal to the value of household labor and capital services, plus a service flow from a natural resource.

Public goods that affect markets offer opportunities for using observations of actual market transactions to generate valuation estimates. An example would be concessionaire activity within a national park. The hedonic property and wage techniques can be explored as a basis for developing values or imputing how changes in these public goods affect markets. There are some potentially sound ways to make the links between these public goods and the market explicit in the accounts, but there is not yet a consensus on how to include them, and each provides a challenge for data development and estimation of values.

Other classes of public goods, particularly those that are national or global in nature and do not leave behavioral traces of individual preferences, are currently problematic for the national accounts. Most of these public goods, such as those involving nonuse values of natural-resource and environmental assets, can be valued only with CV methods. Some reviews have conveyed cautious approval for use of these methods in limited circumstances. For example, a panel convened by the National Oceanic and Atmospheric Administration to review CV methods for use in federal compensation decisions identified "a number of stringent guidelines for the conduct of CV studies" that, when followed, allow "CV studies [to] convey useful information" (see Arrow et al., 1993:4610). However, the accuracy of the values developed with these methods remains controversial among those in the economics profession (see Portney, 1994; Hanemann, 1994; Mitchell and Carson, 1989; and Diamond and Hausman, 1994).

As discussed above, the hypothetical nature of the valuation makes these methods quite different from other methods that are based on actual market transactions. For these reasons, while CV is sometimes useful for other purposes, the panel has determined that it is currently of limited value for environmental accounting. This means that, for many important environmental assets, environmental accounts will omit a portion of the value of the assets. That is, it appears to be feasible to work toward accounting for goods such as recreation activities associated with the Florida Everglades, Yellowstone National Park, and similar sites. However, it is beyond the ability of current techniques to provide reliable measures of the value of the public-goods services provided by these as-

TABLE 4-3 Classes of Goods and Services

Type of goods	Private (examples)	Public (examples)	
		Related to Markets	Independent of Markets
Market	Bread Cars Restaurant meals Housing rentals	Knowledge and innovations that are patented and copyrighted Pollutants with tradeable permits	None
Nonmarket	Household prepared meals Leisure time Television viewing Groundwater for drinking Rental values of owner-used assets	Air and water quality Climate Mosquito control	Passive or nonuse value (e.g., knowledge of the existence of species, unique national treasures such as Yellowstone National Park)

sets, even though we may suspect that these services are precious to the nation.

In the remaining sections we explore the issues raised in the preceding sections in far more detail for the cases of forests and air quality.

FORESTS: A RENEWABLE NATURAL RESOURCE

Forests are a prime example of renewable natural-resource assets. They present many of the same national economic accounting issues as other renewable natural-resource assets, such as agricultural land, fisheries, and coastal and freshwater resources. Many of the products derived from natural-resource assets are included in the production accounts of the existing core NIPA. But these assets are not generally included in national asset accounts, and the production accounts themselves exclude any nonmarket goods and services derived from these natural-resource assets. Forests are a useful example because much effort has been devoted internationally to forest accounting.

While the NIPA as currently structured are not intended to include the full range of forest values, regular reports of economic activity as measured by the NIPA are widely noted and interpreted as measuring important aspects of economic well-being. It is logical to try to capture in these accounts more of the important relationship between forests and humans. Forests support human material and spiritual welfare in countless ways. They harbor many important species of plants and animals. They form an aesthetically pleasing backdrop for recreation and for everyday life. They filter and regulate the flow of much of the U.S. water supply. They have been a reservoir for land available for conversion to agriculture and other developed activities. Wood is one of the world's most important industrial raw materials and a ubiquitous source of energy. And worldwide, literally millions of indigenous people call forests home.

This section examines, in five parts, methodological and practical issues that arise with regard to including forests in national economic accounts. It begins with a discussion of the nature of the economics of forest values, providing a general framework for assessing those values. The second subsection translates this general discussion into a more precise statement of how forest values might be incorporated in the U.S. economic accounts. Given this context, the third subsection comments on BEA's work to date and provides a brief discussion of the extensive international literature on forest accounting. This is followed by discussion

of a recommended approach for measuring the net accumulation of timber. The section ends with the panel's conclusions on forest resources.

The Nature of Forest Values

Forests produce economic value through three principal classes of economic goods: private goods traded in markets, private goods not traded in markets, and public goods. These goods can affect both the national asset accounts and the NIPA.⁶ These three classes of forest goods and services are discussed in decreasing order of availability of data and of accepted analysis required to include them in the national economic accounts.

Private, market-related activities. Some forest-based market-related activities are already included in the national income accounts; examples are all forest products used in manufacturing (logging, lumber production, the manufacture of paper, wooden furniture, and musical instruments). Some fuel wood production would fall into this category; the part that flows through the market economy would enter the accounts, while the part that is produced for own consumption would not.

The major issue in the current treatment of private, marketed forest-based goods and services is the failure to account for changes in the value of the standing timber. Most of the conceptual problems involved in doing so have been fully considered and developed, as discussed below. Accounting for changes in the timber inventory would address one of the major shortcomings of the existing forest accounts.

Private goods not traded in markets. Forests produce many private goods and services that—for reasons of custom, law, or economics—society has elected not to allocate through markets.⁷ For example, the water flowing from forested watersheds has considerable economic value. Indeed, the rationale for forest conservation in the late nineteenth century related primarily to protection of forested upland watersheds. Protection

6. The following discussion focuses primarily on issues pertinent to the United States. A significant issue in natural-resource accounting for many developing countries is deforestation. For example, a major concern in the national accounts of developing countries such as Indonesia is that harvesting of forests is contributing to rapid growth in current consumption at the expense of the stock of forest assets. In the late 1800s, the deforestation rate in the United States equaled or exceeded that found in many tropical countries today, but deforestation is no longer significant on a national scale, and the general trend since the 1950s has been a net growth in the forest stock of the United States.

7. Because of the decision not to use markets in allocating such resources, but typically to provide them through collective decisions, common usage sometimes refers to such goods and services as "public goods." This report follows the conventional definitions of public and private goods discussed in the previous section.

of navigation was the explicit constitutional basis for creation of the eastern national forests, and congressional agricultural interests concerned about irrigation provided the principal support for withdrawing the national forests from the western public-domain lands. A study by Bowes et al. (1984) of the Front Range of the Rockies around Denver and informal estimates for the Quabbin Watershed servicing Boston demonstrate that in some locations, the value of the water produced from a forest may far exceed the value of the timber production. Changes in forest attributes can affect stream flow and therefore the value of water "produced." Interestingly, Bowes et al. (1984) demonstrate that when water is valuable, it is optimal to keep timber stocks low to reduce evapotranspiration and therefore increase runoff.

Public goods. Public goods are ones for which consumption by one individual does not reduce the amount available for others to consume. Forests produce many public goods, including aesthetically pleasing landscapes, a carbon sink, and a store of biological diversity. Given data on changes in forest inventories, it may be possible to value some of these services (e.g., the value of carbon sequestration), although the uncertainties of such valuation should not be underestimated. In other cases, the valuation problems go far beyond the results of current research.

The interactions among these three sources of forest value—private marketed goods, private nonmarketed goods, and public goods—can be complex. For example, cutting trees leads to increases in manufacturing activity. This in turn might cause an increase in water yields and thereby reduce the costs of industrial and household production. It might also cause a shift of species diversity away from late-seral-stage organisms, such as spotted owls, and toward early-seral-stage ones, such as elk. It would lead to an immediate release of carbon associated with logging and forest products manufacturing, but might result in a long-term increase in carbon sequestration with forest growth if the wood products were sequestered in long-lived furniture or houses. Given the site-specific nature of such production relationships and the lack of current scientific understanding of many of the underlying ecological processes, there is currently an insufficient scientific basis for specifying a full set of such linkages in supplemental accounts.

Incorporation of Forest Values in the National Economic Accounts⁸

To be most useful, the economic accounts would identify the separable contributions of forests to the national economy. It is convenient to discuss the problems involved in incorporating forest values in the U.S. national economic accounts first for the production accounts and then for the asset accounts.

Adjustments to Production Accounts

A full treatment of forests in the production accounts would involve the following adjustments to national income and product.

Timber income. Sales of timber are already included, although some are recorded as part of personal income, some as part of manufacturing income, and some as part of government receipts. The principal difficulty is ascribing these income streams to the forest sector; in this respect, the issues are very similar to those encountered in the treatment of mineral incomes discussed in Chapter 3. Ordinary production costs associated with forest production activities are similarly covered by the current NIPA, but may not be easily associated with the forests themselves, rather than forest-products manufacturing. Problems remain with the allocation of joint costs. For example, forest roads are a costly input to the production of many forest products, including timber, minor forest products, and recreation. Yet standard accounting practices, especially for the national forests, attribute the full cost of these roads to the timber program. As currently constructed, the NIPA include the costs of road construction, but exclude the benefits produced by the road.

Near-market forest products. To the extent that near-market forest products, such as fuel wood, berries, mushrooms, and Christmas trees, are produced by households but not purchased through markets, they would be included in the forest accounts.

Contributions to household production (e.g., recreation). The accounts would include the value of household production of activities such as hiking, hunting, and fishing. However, if there is uncongested, open access to the forest-based inputs needed for household production, the contribution of these inputs to household value on the margin is zero. Current practice often uses average rather than marginal values, so care must be taken,

8. The discussion in this section draws heavily on the recent comprehensive treatment of the subject by Vincent and Hartwick (1997).

particularly for open-access forests, to ensure consistent valuation in order to prevent overvaluation of nonmarket activities.

Environmental services used by other industries (e.g., watershed protection, domestic/industrial water supply). Some of the impacts of forests are already included in the NIPA. For example, if forests moderate water flows and reduce the cost of agricultural production, this benefit is fully incorporated in the NIPA. Ascribing the benefit to the forest sector, while a difficult task, would be required for a full accounting.

Public goods (e.g., carbon sequestration, biodiversity, species preservation). At present, the only public goods that have been the subject of widespread attempts at valuation are those associated with carbon sequestration (Brown, 1996). While quantitative data on carbon sequestration are available, valuation is still highly uncertain. Moreover, because valuation of carbon sequestration is based on global benefits, the issue of how such benefits would be incorporated in a single nation's accounts is unresolved.

There are few comprehensive studies of the total value of forest products. Recent work on goods and services produced on public lands managed by the U.S. Forest Service indicates that more forestland value is due to recreational and wildlife services than to timber, mineral, and range goods (U.S. Department of Agriculture Forest Service, 1995). For example, of the estimated total \$9 billion value of forest goods and services in 1993 (valued at market prices), recreational and wildlife services accounted for 80 percent, whereas the production of minerals and timber and grazing range services accounted for just 20 percent.

While the above estimates illustrate the importance of nonmarket production, they should be interpreted with caution. First, they include only land managed by the U.S. Forest Service, which is not representative of all forestland. By contrast, on private lands that are intensively managed for timber production, much of the value is due to timber harvesting. Second, these estimates do not include all nonmarket values; for example, they omit the potential value of carbon sequestration. A recent estimate is that U.S. forests sequestered 211 million metric tons of carbon in 1992 (Birdsey and Heath, 1995). At \$10 per ton, a value consistent with the Intergovernmental Panel on Climate Change (IPCC) estimates of the marginal value of emission reductions (see Bruce et al., 1996), the annual value of carbon sequestration in all U.S. forests would be \$2.1 billion; the numbers could be an order of magnitude larger if the U.S. adopted

stringent emission controls under the Kyoto Protocol of 1997. Third, the Forest Service presents different types of estimates for the value of forest services, market-clearing prices being only one of these.⁹

Forests Asset Accounting

A key conceptual problem with the present NIPA is the lack of any accounting for changes in asset values of U.S. forests. Accomplishing this task was part of the Phase II work outlined by BEA (see Chapter 2). We address this issue in some detail for two reasons. First, from a conceptual standpoint, natural-resource assets should be treated consistently with produced capital assets, adding net accumulation or subtracting net decumulation from gross domestic product (GDP) to arrive at a measure of net national product (NNP) more closely associated with a sustainable-income concept. Second, the capacity exists to rectify this omission with respect to the value of forests that is linked to marketed production.

While adjustments in an asset account are conceptually similar to net investment of "made assets," for forests it is more precise to call the change in asset values net accumulation to reflect the fact that, even at constant prices, the asset value of a forest can either increase or decrease. Most generally, net accumulation is defined as the change in an asset value from one period to the next. Because asset values cannot generally be inferred, economists infer the value of the asset from assumptions about timber markets. A full analysis of this issue is presented in Appendix C. Three major alternative approaches to accounting for changes in asset values of forests are described below.

Hotelling model. The first approach is analogous to the literature on nonrenewable resources discussed in Chapter 3. In a sense, this approach treats the exploitation of primary, old-growth forests as timber mining. Since it is generally uneconomic to replace primary forests with forests of a similarly old age, this analogy is not as odd as it might appear. Under these circumstances, the change in the value is the volume of the harvest times the difference between the price and the marginal extraction cost. This model of net accumulation is called the

9. USDA Forest Service (1995) also present estimates based on fees collected (which show much lower value overall and relatively less for recreation and wildlife); willingness to pay, including consumer surplus (which show higher overall values and greater importance for recreation and wildlife); and income generated, including that generated by downstream activities such as lodging and equipment rentals related to forestland recreation (which show the highest overall value). From the perspective of comparability with the current national economic accounts, the methods associated with the discussion in the text are preferable to the other three methods.

Hotelling model to emphasize the connection between mining old growth that *will not* be replaced and mining minerals that *cannot* be replaced.

Based on historical studies, this approach appears to be a reasonable approximation of empirical trends in forest development (see Berck, 1979; Lyon, 1981; Sedjo and Lyon, 1990; and Sedjo, 1990). In the early stages of development, net growth of the forest is nil: photosynthesis just balances the death of plant tissues and entire trees. Because growth is nil, any harvest at all exceeds the growth of the forest. Since the harvest is greater than the growth, the timber inventory declines. As the inventory of old-growth timber declines, timber becomes more scarce, and timber prices rise. In addition, harvesting costs increase as logging extends into increasingly remote sites. Prices rise until the purposeful husbandry of second-growth timber and the use of nonwood substitutes (stone, concrete, and steel for construction; fossil fuels, solar energy, and conservation for energy) becomes economic. This analysis is broadly consistent with the development of the forest sector in the United States. Harvest exceeded growth until the 1950s. Timber prices rose at a real rate of about 4.6 percent per year between 1910 and World War II and 3.1 percent per year from that period to the mid-1980s (Clawson, 1979; Sedjo, 1990; and Binkley and Vincent, 1988).

Transition models. While the Hotelling model may be appropriate for the case of pure depreciation under the assumption of perfect capital markets,¹⁰ it misses several important aspects of the forest sector, including (1) “discovery” of new old-growth forest stocks (e.g., the rapid expansion of logging in the British Columbia interior to serve U.S. markets once U.S. prices had risen to the point that accessing this comparatively remote region became economic), and (2) the fact that the old-growth forests were replaced with faster-growing second-growth forests. Both effects attenuate price increases, causing the ordinary Hotelling model to overstate forest depreciation. These effects are the forest analog of mineral deposits analyzed in Chapter 3.

Transition models account in part for these problems by recognizing that forest growth offsets harvests. Assuming constant prices and a forest inventory recognized only by total net growth, this model suggests net accumulation is given by the

difference between price and marginal harvesting cost times *growth minus harvesting* (rather than simply minus harvesting in the Hotelling model). By recognizing forest growth, such a formulation improves on the ordinary Hotelling approach, but still suffers the defects of (1) ignoring endogenous price changes in the sector, and (2) characterizing the forest only by net growth and not its more complex underlying age-class structure.

Managed second-growth forests. Economic theory suggests that, once the transition between old- and second-growth forests is complete, timber prices will stabilize, and the economic return to holding forests will arise solely from forest growth. Vincent (1997) has analyzed this case and developed the appropriate measures of net accumulation for optimally managed second-growth forests. The appropriate estimate of the value of asset accumulation is more complicated here (see Appendix C for a full discussion). Accumulation depends on the forest age structure, discount rate, timber-yield function, and economically optimal rotation age. While this approach improves on both the Hotelling and transition approaches, certain shortcomings remain. In particular, this approach assumes that forest owners cut their trees at the economically optimal time and that timber prices grow at a constant rate. This theory of forest valuation can be used to formulate a practical approach to measuring the economic depreciation of forests. Before turning to that recommended approach, it is useful to examine BEA's work on forests and the international literature in this field.

BEA's Approach and International Comparisons

As noted, forests are part of Phase II of BEA's IEESA effort. As a consequence, BEA's work on forests to date has not been extensive and may need refinement (see Howell, 1996). In its current work, BEA separates forestland from the timber inventory. “Forests and other wooded land” are valued at the average value of agricultural land. In general, edaphic and geomorphologic factors make forestland less valuable than agricultural lands, and the rate of change in forestland prices is uncorrelated with the rate of change in farmland prices (see Washburn, 1990). BEA updated their estimates of the timber inventory each period using separate Forest Service estimates in physical terms of growth and removals. Starting with physical inventory estimates, BEA added physical estimates of growth (additions) and removals (depletion) to derive closing stocks. Each year's closing stock es-

10. The Hotelling model assumes perfect capital markets in which the rate of return in the mining or old-forest sector equals the rate of return in alternative economic activities. In countries, especially developing countries, where both forest and mining activities earn disproportionately high returns because of special favors and licenses, the Hotelling model is not appropriate. It greatly overstates the true decline in the value of these stocks as they are mined.

timate became the following year's opening stocks (except in the Forest Service inventory years, when inventory estimates of standing timber were used). Opening and closing stocks, additions, and depletions were then valued at the stumpage prices; the difference between the opening stocks plus additions less depletion and closing stocks, in monetary terms, was placed in revaluations.

BEA uses the Hotelling model to value the timber stock in each period. Timber is valued at the national average stumpage rate, with species divided into two categories, softwood and hardwood. When measured at a national level, marginal extraction costs are probably nonzero (production increases are accomplished by turning to increasingly costly regions). There is some evidence that extraction costs are constant within regions, however (Adams, 1997). One conceptual flaw in BEA's current approach is that it measures the depreciation of recreational land on the basis of the costs of repair and maintenance of federal government expenditures for parks. The panel has noted in numerous places the flaw in this approach. Having accounted for one of the costs of providing recreational services, BEA does not adjust national income to reflect the benefits. BEA recognizes the

criticisms of this approach and plans to use other approaches in the future. BEA publishes a full account for 1987, although it produces data on the value of timber stocks for 1952–1992. Using BEA's data, the net accumulation of timber in 1987 was \$2.1 billion at 1987 prices and \$47.0 billion if price changes are included.

While BEA's methods can and should be refined as the environmental accounts are developed, they are consistent with current international practice. Table 4–4 provides a summary of 29 studies from around the world that have attempted to extend the treatment of forests in national income and product accounts. Most of these efforts use variants of the so-called “net price” approach (see equations C.3 and C.4 in Appendix C). Many fail to distinguish marginal and average extraction costs. Accounting for net timber accumulation is well established in the international literature. None of the studies appears to use the third method described in the previous subsection of a managed second-growth forest.

A Recommended Approach for Measuring Net Accumulation of Timber

The three alternative approaches to accounting for changes in asset values of forests discussed above incorporate many restrictive assumptions. The panel investigated other alternatives and identified one (developed by Vincent [1997]) that is similar to the second-growth forests approach, but allows for the possibility that forest managers may deviate from ideal wealth-maximizing behavior. This approach is described in detail in Appendix C. A review of available data indicates that the approach can be readily implemented for the United States using data maintained by the U.S. Forest Service.

Conclusions on Forest Resources

BEA has initiated a useful effort to recognize the economic contributions of forests in the NIPA. Doing so is consistent with a wide international interest in such accounts. The data and methods employed by BEA to date are reasonably consistent with the body of international work in this area. At the same time, data are available for U.S. forestlands that can enable much more complete estimates of net timber accumulation than either those developed to date by BEA or those available in the literature for other countries. BEA could fruitfully work with the U.S. Forest Service in developing annual estimates of net timber accumulation using these data.

TABLE 4–4 Summary of Forest Accounting Studies

Study Area	Reference	Valuation Method			
		Net Price	El Serafy	NPV	Other
Global Asia	World Bank (1997) Vincent and Castaneda (1996)	T	G	U	
Australia I	Young (1993)			U	
Australia II	Skinner (1995), Joisce (1996)	H		U	U
Austria	Sekot et al. (1996)	H		U	U
Canada I	Anielski (1992a, 1992b, 1994, 1996)	T			
Canada II	Statistics Canada (1997), Baumgarten (1996)	H		U	
Chile	Claude and Pizarro (n.d.)	?	?	?	?
China	Li (1993)	T			
Costa Rica I	Repetto et al. (1991)	?	?	?	?
Costa Rica II	Aguirre (1996)	T			
Ecuador	Kellenberg (1995)	T			U
Finland I	Koittola and Mukkonen (1996)	T			
Finland II	Hoffren (1996)	T			
Indonesia	Repetto et al. (1989)	T			
Malaysia I	Vincent et al. (1993)	T			
Malaysia II	Vincent (1997), Vincent et al. (1997)		G		
Mexico	van Tongeren et al. (1993)	T	U		
Nepal	Katila (1995)	T			
New Guinea	Bartelmus et al. (1992, 1993), Bartelmus (1994)	X	X	X	X
New Zealand	Biggsby (1995)	H			
Philippines I	IRG et al. (1991, 1992)	T		U	
Philippines II	Cruz and Repetto (1992)	T			
Sweden I	Hulkranz (1992)	T			
Sweden II	Eliasson (1996)	T			
Tanzania	Peskin (1989a)	X		X	X
Thailand	Sadoff (1993, 1995)	T			U
United States	Howell (1996)	H			
Zimbabwe	Crowards (1996)	T			

Key: H = Hotelling approach; T = transition approach; G = generalized El Serafy approach (elasticity of marginal cost not infinity); X = no timber valuation performed; ? = no information; U = used technique; NPV = net present value.
Source: Vincent and Hartwick (1997). References in original.

This work could also be related to other important values of the forest, particularly recreation and other nonmarket activities. While the data and analytical methods are not yet adequate to provide precise estimates of the value of all forest-sector flows to the economy, nonmarket forest values for the nation as a whole appear to exceed the value of timber by a substantial amount. Many of these forest values (such as recreation or self-produced fuel wood) are best understood conceptually in the context of household production. The household combines specific aspects of the forest resource with household capital and labor to produce valuable nonmarket goods and services. Viewed in this context, forests present many of the same challenges for national accounting as do such important products and services as home-cooked meals and in-home education or childcare. It is therefore logical for BEA to consider these aspects of environmental accounting as part of the larger problem of valuing the contributions of nonmarket activity to economic well-being.

In conclusion, constructing a set of forest accounts is a natural next step in developing integrated economic and environmental accounts. At the same time, it must be recognized that there are many thorny problems involved in forest accounting. Given the available data and methods, the panel concludes that this accounting is a useful next step in developing the IEESA.

AIR QUALITY: A PUBLIC ENVIRONMENTAL GOOD

Air quality is one of the most important examples of a public environmental good and thus should be among the top priorities for inclusion in environmental accounts. It also presents issues for environmental accounting similar to those encountered with other environmental assets, such as water quality and climate change. Severely degraded air quality in many cities of the United States in the 1960s generated a number of federal regulations during the early 1970s designed to reduce emissions of pollutants that contributed to this degradation. Air quality has many dimensions, and early regulations focused on some of the more obvious and easily addressed problems. As scientific research further illuminated the less immediately obvious impacts of degraded air quality, such as chronic effects on health, these earlier controls were tightened, and new regulations addressed a wider range of pollutants.

The first subsection below examines the various market and nonmarket impacts of air quality. The

second reviews some major pollutants that result in degradation of air quality and their primary physical effects. This is followed by review of a recent attempt to estimate comprehensively the benefits associated with improvements in air quality. The fourth subsection addresses the relevance of these damage estimates to environmental accounting. The section ends with the panel's conclusions on accounting for air quality.

Air Quality Impacts on Market and Nonmarket Activities

Degraded air quality can have a harmful effect on both market activities (e.g., reduced crop yields or lost work-days) and nonmarket activities (e.g., losses due to illness beyond those related to paid labor, such as those to retired persons, and reduced amenities in recreational facilities). These air quality effects belong in the production accounts of environmental accounts. Moreover, degraded air quality can affect the value of natural-resource assets (e.g., acid deposition damage to forests), can cause deterioration of physical capital (e.g., damage to the exterior of buildings), and has long-term health impacts that affect human capital (e.g., premature death and effects of lead on measured IQ of children). Such effects might be included in the asset component of environmental accounts. With assets as with production, there are both market and nonmarket effects: market impacts include capital asset deterioration and forest timber loss, while nonmarket impacts include lost value due to damaged landmarks or degradation of forests for recreational purposes.

Major Air Pollutants and Their Health and Ecological Effects

Table 4-5 lists some important health and ecological effects of exposure to six air pollutants for which the U.S. Environmental Protection Agency (EPA) has established National Air Quality Standards—carbon monoxide, ground-level ozone, lead, nitrogen dioxide, particulate matter, and sulfur dioxide. These chemicals are sometimes referred to as “criteria pollutants.” In addition, there are many other constituents of the atmosphere that may have impacts of economic consequence. Table 4-6 lists some other components of air pollutants, including air toxins (e.g., benzene), stratospheric ozone depletors (e.g., CFCs), and greenhouse gases (e.g., carbon dioxide and methane). As indicated, EPA has identified 188 air toxins alone.

Exposure to air pollution has a wide range of impacts, including respiratory illnesses (which result from ground-level ozone, sulfur dioxide, nitrogen dioxide, particulate matter, and air toxins); child IQ loss, infant mortality, strokes, and heart attacks (which result from lead); skin cancer (which is the indirect consequence of stratospheric ozone depleters); and increased mortality (resulting from particulate matter, lead, and air toxins) (see Pearce et al., 1996). Ecological effects include impacts on agricultural, forest, and aquatic ecosystems. Airborne chemicals have both positive and negative effects on production of marketed goods and services. Ground-level ozone harms crops, while nitrogen deposition and carbon dioxide enhance plant and timber growth. Ground-level ozone and sulfur dioxide reduce crop yields and timber growth, while air toxins and sulfur dioxide reduce freshwater fish yields. In other cases, atmospheric trace gases have subtle effects that will occur far in the future affecting biological diversity (for greenhouse gases) or ocean food web stresses, and ultimately causing severe sight damage for many mammals (for stratospheric ozone depleters).

Table 4-5 also shows the change in emissions and sampled concentrations of EPA's six criteria pollu-

tants from 1986 to 1995.¹¹ Primarily as a result of the Clean Air Act and the Clean Air Act Amendments, emissions of the six primary pollutants have decreased substantially. For example, installing scrubbers and switching to low-sulfur coal caused a 19 percent decline in emissions from coal utility plants, which in turn resulted in an overall 18 percent decline in sulfur dioxide emissions from 1986 to 1995. A 16 percent decline in carbon monoxide emissions during the same period resulted primarily from a 20 percent decline in carbon monoxide emissions of on-road motor vehicles. Similarly, a 32 percent decline in lead emissions was primarily a result of the ban on leaded gasoline.

Declines in nitrogen dioxide (14 percent) and ground-level ozone emissions (6 percent) were less dramatic, but are expected to become more pronounced as the Clean Air Act Amendments of 1990 become effective. For example, reformulated fuel requirements (for oxygen and volatility) for on-road vehicles are likely to reduce carbon monoxide and ground-level ozone emissions. Similarly, the Acid Rain Program (Title IV) requires a 40 percent reduction in sulfur dioxide and a 10 percent reduction in nitrogen dioxide emissions from 1980 to 2010. Particulate matter may be more difficult to control given that almost 70 percent of anthropogenic-related emissions result from fugitive dust (e.g., unpaved roads), with an additional 20 percent coming from agriculture and forestry.

The declines in emissions are, of course, linked to lower concentrations of the six primary pollutants. Whereas emissions are estimated on the basis of

TABLE 4-5 Environmental Protection Agency's Six Criteria Air Pollutants

Pollutant Trends (1986-1995)	Major Effects	Leading Source
Ground-level ozone (O ₃) Concentration -6% Emissions -9%	Respiratory illness/lung damage Crop/forest damage Building/material damage Visibility problems	Transportation* (37%) Solvent utilization (28%)
Carbon monoxide (CO) Concentration -37% Emissions -16%	Reduced oxygenation of blood Heart damage	Transportation (81%)
Sulfur dioxide (SO ₂) Concentration -37% Emissions -18%	Respiratory illness Building/material damage (acid rain) Crop/forest damage Visibility problems	Electric utilities (66%)
Nitrogen dioxide (NO ₂) Concentration -14% Emissions -3%	Respiratory illness/lung damage Building/material damage (acid rain) Crop/forest damage Visibility problems	Transportation (49%) Electric utilities (29%)
Lead (Pb) Concentration -78% Emissions -32%	Infant mortality Reduced birth weight Childhood IQ loss Hypertension Heart attacks	Metals processing (smelters, battery plants) (39%) Transportation (31%)
Particulate matter (PM-10) Concentration -22% Emissions -17%	Lung disease Mortality	Fugitive dust (68%) Agriculture and forestry (20%)

* Based on volatile organic compounds (VOC) emissions. Source: U.S. Environmental Protection Agency (1996).

11. Data prior to 1986 exist, but cannot be directly compared with data collected from 1986 on because of changes in data collection (see U.S. Environmental Protection Agency, 1996, for more details).

TABLE 4-6 Other Pollutants of Air Quality Identified by Environmental Protection Agency

Pollutant	Major Effects	Leading Source
Air toxins (188 in total, e.g., dioxins, benzene, arsenic, beryllium, mercury, vinyl chloride)	Thought to cause cancer or other serious health effects, such as birth defects or reproductive effects Ecosystem damage (particularly freshwater fish)	Transportation, wood combustion, chemical plants, oil refineries, aerospace, manufactures, dry cleaners
Stratospheric ozone depleters (e.g., chlorofluorocarbons [CFCs], halons, carbon tetrachloride, methyl chloroform)	Skin cancer Cataracts Suppression of the immune system Ocean food chain stresses	Fossil fuel, industrial cleaners
Greenhouse gases (e.g., carbon dioxide, methane, halogenated fluorocarbons [HFCs])	Broad-scale changes in temperature and precipitation affecting agriculture, health, water resources, recreation, ecosystems Sea level rise	Fossil fuel, combustion, landfills

Source: U.S. Environmental Protection Agency (1996).

industrial activity, technology, fuel consumption, and vehicle miles traveled, concentrations of pollutants are measured at selected monitoring sites across the country. Based on these measurements, estimated airborne concentrations of lead have fallen by 78 percent since 1986, while concentrations of airborne carbon monoxide, sulfur dioxide, and particulate matter have fallen by 37, 37, and 22 percent, respectively. Smaller declines occurred for ground-level ozone and nitrogen dioxide (6 and 14 percent, respectively).

Data on other air chemicals vary widely. Excellent data are available on emissions and concentrations of many of the greenhouse gases (particularly carbon dioxide) and stratospheric ozone destroyers. EPA presently monitors national ambient concentrations for few of the 188 air toxins identified in the Clean Air Act Amendments. Rather, the agency sets technology-based performance standards to control emissions of these substances. As a result, EPA has only begun developing a National Toxins Inventory.

Monetized Benefits of Clean Air Regulations

Although a great deal of work has been done on valuing components of air quality, there is currently no comprehensive measure of the economic impacts of air pollution for the United States. However, a recent EPA study evaluating the economic costs and benefits of clean air regulations provides a useful benchmark that sheds light on this issue (U.S. Environmental Protection Agency, 1997). The estimates given are subject to many uncertainties due to the difficulty of estimating exposure and the incidence of effects related to exposure and valuing the effects. In addition, data on air toxins have only recently become available, making it difficult to develop comparable estimates for these pollutants. The EPA study includes no physical or monetary assessments of the impacts of changes in air quality on ecosystem health, physical capital, or global public goods, such as slowing climate change and preventing ozone depletion. Moreover, many of the estimates of benefits, particularly those involving the valuation of health benefits and the discount rate, have been the subject of major criticism (see Clean Air Act Council on Compliance, 1997).

Notwithstanding these limitations, the EPA study provides an indication of the overall economic importance of changes in air quality, as well as a sense of the relative importance of the various air pollutants and the impacts on different sectors. The study estimates the economic benefit

of actual air pollution relative to a counterfactual baseline that assumes no controls imposed after 1970; roughly speaking, the counterfactual is for emissions to grow with the economy, rather than declining as described above. The major result presented is that the economic benefits of reduced air pollution in 1990 are estimated to be worth \$1,248 billion. Reduced mortality benefits (\$1,004 billion) account for 80 percent of this total; together, avoided human health effects account for 99 percent of the total. In addition, benefits of improved visibility are estimated at \$3.4 billion, those of reduced household soiling at \$4.0 billion, and those of increased agricultural income from reduced yield losses due to ozone at about \$1.0 billion. With regard to specific pollutants, most of the benefits are attributed to reductions in particulate matter (PM-10) and lead; the benefits of ozone reduction are estimated to be only on the order of \$2 billion.

Caution is warranted in drawing too many conclusions from these estimates and comparisons. Certain assumptions might have had the effect of exaggerating the economic benefits, and there are major uncertainties about the health impacts, particularly because of weaknesses in human exposure data. Moreover, the study omits some of the major effects of acid deposition on forests, lakes, and buildings, and the impact of tropospheric ozone on ecosystems is not valued. The figures presented should therefore be viewed as order-of-magnitude estimates. Even with all these qualifications, however, it appears that the economic impacts of air quality on human health are highly significant.

Air Quality Benefits and Supplemental Accounts

The estimates of the benefits of pollution control just discussed reflect the value of changes in the level of air pollutants resulting from proposed regulations. They are relevant for regulatory or cost-benefit purposes, but they are not the appropriate values for economic accounts. Production accounts should measure the damages associated with remaining levels of pollution, in terms of both production accounts and change in asset values. This difference between abatement and residual damage can be quantitatively large. For example, ozone concentrations fell only 6 percent between 1986 and 1995. As a result, regardless of the benefits of preventing higher levels of ozone than those of 1986, the value of changes in ozone concentrations over this period would be relatively small. In contrast, lead and PM-10 concentrations fell 78

and 22 percent, respectively, over the same period, and consequently the damages from these chemicals would be much smaller in 1995 than in 1986. In other words, whereas comprehensive consumption would have a substantial negative entry due to lead and PM-10 in 1986, the negative values would be of much smaller magnitude in 1995. The result might be a substantial increase in the estimate of growth of comprehensive consumption over this period.

As discussed earlier, air pollution affects production activities, assets, and nonmarket activities. Most of the estimates from the EPA study refer to the production accounts: days of work lost, shortness of breath and acute bronchitis, loss of visibility, and crop losses are effects on production activities. Crop losses and the output losses from lost work-days are already included implicitly in the accounts because these relate to market activities. Supplemental accounts that would identify these losses separately would serve to connect them specifically to air pollution. The estimates for shortness of breath and acute bronchitis include both damages that may already be reflected in the production accounts (i.e., reduced worker productivity while on the job) and damages that would be reflected only if the accounts were expanded to include household production (e.g., impacts on tennis and jogging). Many of the effects not estimated by EPA, such as those of acid deposition on forest health, freshwater quality, or ecosystem function, would also include effects on both market activities already in the accounts, such as timber or commercial fishing, and nonmarket goods, such as recreation.

Asset effects present greater complexity, as was seen above for the case of forests. Some impacts, such as those on soil or fish farms, would be reflected in the market value of these assets. Others, such as mortality and chronic bronchitis, are long-term effects on human resources. These effects would require adjustments in the asset accounts if a full set of asset accounts for human health and capital were constructed.

One particular concern arises if the accounts are to include the impact of air pollution on human health. The impact of air pollution and other environmental activities on human health is often taken out of the context of other health-related activities. If one were to track environmental trends alone, it might be concluded that until the 1970s, growing environmental problems were leading to a deterioration in the health status of Americans. This conclusion is, in fact, incorrect. Activities outside the environmental arena—including im-

proved sanitation, vaccinations, and public-health measures—led to improved life expectancy over the first seven decades of this century. It would therefore be misleading to enter only a large health negative into a set of augmented income accounts. The positives and negatives in the environmental entry in a set of health accounts would have to be placed in the context of the vast changes in health status of the American population.

Conclusions on Air Quality

The basic finding emerging from the above discussion is that air quality is likely to be a major nonmarket effect. While EPA's estimates of benefits of \$1.2 trillion per year due to reduced air pollution are highly uncertain, do not include all effects, and measure a somewhat different concept than would be appropriate for the accounts, it is likely that a realistic assessment of reduced damages due to improved air quality would yield a much larger figure than the \$27.1 billion in air pollution control expenditures used by BEA as a placeholder. In the panel's view, no other area of natural-resource and environmental accounting would have as great an impact as the potential correction from air quality. The magnitude of this impact indicates that the development of supplemental accounts for air quality is a high priority. Indeed, the overall review of augmented accounting in Chapter 2 reveals only a few areas close in importance, such as the value of leisure, health status, and nonmarket educational investments.

At the same time, air quality is a most elusive concept since it has so many different components. To include these effects in the accounts, several data and measurement obstacles must be overcome. First, determination of the physical impacts of changes in air quality, generally estimated through dose-response functions, should be focused on the effects of actual human exposure to air pollution. Second, the damage estimates must separate the market effects of changes in air quality that are currently captured in the accounts (lost productivity) from the nonmarket effects that are not currently captured (lost leisure activities). Third, there is a need for reliable and objective physical and monetary damage estimates associated with exposure to air pollutants, including air toxins, ozone depleters, and greenhouse gases. Fourth, significant data gaps with respect to the impacts of air pollution and changes in air quality on ecosystem health must be filled. And finally, the estimates must represent year-to-year changes,

rather than changes from a hypothetical level of pollution without regulations.

Developing a set of accounts in this area, along with the associated physical measures and valuations to apply to those measures, is a major long-run task for the nation. This task far transcends the scope and budget of BEA, and much of the necessary work lies outside BEA's specialized expertise. The task for the short run, therefore, is to continue basic research on the underlying science and economics of estimating the benefits of public goods such as clean air. Many years of concerted research are likely to be required before the materials for a set of augmented accounts in this area are available. But the payoff from the research would be large, not only in producing the raw materials for improved environmental accounts, but more important in providing the data and analysis needed for improved public policy concerning the environment. In short, the task of constructing environmental accounts for important public goods should be part of a more general goal of improving the nation's information and analytical systems in this area.

CONCLUSIONS AND RECOMMENDATIONS ON RENEWABLE AND ENVIRONMENTAL RESOURCES

General Approach

4.1 The panel recommends that BEA continue its work toward accounting for changes in natural-resource assets and for the flow of services from these assets.

Environmental variables affect economic well-being in three major ways: direct effects on consumption or income of households, industry, and government; accumulation in the environment of stocks of residuals that then affect economic activities or economic assets; and effects on the service flows of economic assets, including capital stock, natural resources, and human resources. The main value of natural-resource accounting is in providing a complete picture of the role these resources play in the economy. Sometimes this information can be used to judge the overall sustainability of the use of resources, while at other times it can be used to manage natural and environmental resources and to inform public policy choices.

Valuation

4.2 For valuation, the panel recommends that BEA rely primarily on market values or proxies of market

values that are based on actual behavior. Contingent valuation, while sometimes useful for other purposes, is currently of limited value for environmental accounting in the context of the economic accounts.

Valuing environmental goods and services requires distinguishing between private and public goods. Market prices provide the marginal valuations for private goods, but determining the value of public goods requires the summation of individual values. Moreover, there may be no behavioral traces for individual valuation of public goods.

Price data are relatively reliable for private market goods produced from forest and agricultural assets, such as timber stumpage, livestock, and land use and quality. Values for near-market goods—those that have direct counterparts in the market—can be constructed by comparing the near-market goods with their market counterparts, adjusting for quality as necessary. Techniques for valuation of public goods are still under development. Some techniques—such as hedonic or travel-cost studies—rely on behavioral or market-based estimates; while these estimates are subject to significant measurement errors, they are conceptually appropriate in economic accounts. Other techniques, such as contingent valuation, are not based on actual behavior, are highly controversial, and are subject to potential response errors.

Quantitative Data

4.3 Quantitative data on many natural-resource assets are currently relatively adequate. However, the data on many environmental variables are at present poorly designed for the construction of environmental accounts. The panel recommends that greater emphasis be placed on measuring effects as directly as possible. Of particular importance are measures of actual human exposure to air and water pollutants, rather than modeled measures of exposure based on ambient pollutant levels at current monitoring sites.

Quantitative data for natural resources are often of high quality relative to the other quantitative data in the NIPA because there are well-established units of measure for many natural resources. Quantitative data on near-market activities such as fuel wood for own use are conceptually straightforward, and many of these data are currently collected by federal agencies. Measurement of nonmarket goods and services and explicit accounting for quality changes, particularly for those that have public-good characteristics, are currently subject to severe methodological difficulties and

insufficient data. There are relatively good data on emissions of many residuals from industrial and human activities, but for most harmful pollutants except lead there is very little systematic monitoring of human exposures.

Inclusion of Public Goods

4.4 The panel finds that more work will be needed on techniques for establishing production flows and values for the assets and services of public goods to place them on a comparable basis with the prices and quantities used in the core accounts.

True public goods, for example biodiversity, species preservation, and national treasures such as the Florida Everglades and Yellowstone National Park, present severe conceptual and measurement issues for incorporation into a national accounting system.

Data Collection

4.5 The panel encourages BEA to help mount a concerted federal effort to identify the data needed for measuring changes in the quantity and quality of natural-resource and environmental assets and associated nonmarket service flows.

Many different federal agencies collect data or have expertise that will be essential to BEA, particularly as its efforts expand to include Phase III assets and associated flows. BEA already cooperates with other agencies in collecting data for the core accounts; supplemental environmental accounts will require cooperation with, for example, the Environmental Protection Agency, the Department of Agriculture, the Department of the Interior, the Bureau of Labor Statistics, the Bureau of the Census, the Energy Information Administration, the National Institute of Environmental Health Sciences, and the Department of Health and Human Services.

Regional Resolution

4.6 The panel recommends BEA focus on developing supplemental accounts for the nation as a whole as a first priority. At the same time, BEA should preserve regional detail where it exists so that these data are available for analysts interested in developing accounts at the regional level.

The development of national estimates will require sampling, measurement, and valuation techniques that reflect the fact that the quality and value of natural-resource assets and associated flows vary geographically. While some assets and

flows may not be important to the national economy, they could be far more important to regional and local economies.

Next Steps

4.7 The panel recommends that funds be provided to reinitiate and improve the design of the collection of data on pollution control and abatement expenditures.

4.8 As BEA further develops its natural-resource and environmental accounts, an important step is to incorporate near-market goods and services—those that have close counterparts in marketed goods and services. There is a clear basis here for measuring quantities and establishing values in a manner comparable to that used for the core accounts.

4.9 Construction of a set of forest accounts is a natural step in developing integrated economic-environmental accounts. The United States has much of the data needed for such an effort, and the analytical techniques are relatively well developed.

4.10 Based on available information, the economic impacts of air quality are likely to be the most significant element in the environmental accounts; development of such accounts is a central task for environmental accounting. At the same time, because of the unresolved conceptual issues and the need for appropriate physical measures, the development of stock and flow accounts for air quality and other important public goods poses awesome difficulties. This task far transcends the scope, budget, and expertise of BEA. A major goal for the near term is to continue basic research on the underlying science and economics in this area.

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Errata

Industrial Composition of State Earnings in 1958–98

Tables 1–3 in the February 2000 SURVEY OF CURRENT BUSINESS article “Industrial Composition of State Earnings in 1958–98” contained errors. The corrected tables follow. The text of the article is not affected by this correction.

Table 1.—Industry Shares of Earnings, 1998

[Percentage points]

	Farms	Agricultural services, forestry, and fishing	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Government
United States	0.8	0.7	0.9	5.9	17.4	6.8	6.4	9.1	8.9	28.8	14.4
Alabama	1.8	.6	1.0	6.4	21.1	6.5	5.8	9.6	5.9	23.6	17.7
Alaska .....	.1	1.7	7.6	7.5	4.6	10.7	3.1	9.7	4.1	21.9	28.9
Arizona .....	.9	1.0	.9	7.5	13.9	5.8	6.5	10.8	9.1	29.2	14.5
Arkansas	4.2	.8	.5	5.9	22.3	8.2	5.2	11.4	5.0	21.6	14.8
California	1.2	1.1	.3	5.4	15.7	6.2	6.2	8.9	8.7	32.3	14.0
Colorado	1.0	.7	1.8	7.9	11.5	9.6	6.0	9.4	8.4	29.7	14.0
Connecticut .....	.2	.5	.1	4.7	20.2	5.3	6.5	7.8	13.8	30.3	10.6
Delaware .....	.8	.4	0	6.8	25.7	4.4	3.8	8.2	14.2	23.7	11.8
District of Columbia	0	.8	0	1.2	2.8	3.3	.9	2.5	6.2	43.2	39.1
Florida .....	.9	1.0	.2	6.1	8.6	6.6	6.7	11.4	9.6	34.0	14.8
Georgia	1.5	.6	.3	5.9	15.8	9.6	8.9	9.2	7.6	26.3	14.3
Hawaii .....	.8	.7	.1	6.2	3.6	8.3	3.7	12.0	8.2	31.1	25.3
Idaho	3.5	1.4	1.0	8.5	17.5	6.9	5.6	10.9	5.2	23.4	16.1
Illinois .....	.4	.5	.3	5.5	19.1	7.3	7.2	8.0	10.3	29.4	11.9
Indiana .....	.7	.5	.4	6.8	31.2	6.0	5.7	9.2	6.0	21.8	11.7
Iowa	4.3	.8	.2	6.4	21.4	6.2	6.9	9.4	7.7	22.3	14.5
Kansas	2.7	.7	1.0	6.2	18.8	7.7	7.4	9.9	6.1	23.9	15.7
Kentucky	2.4	.7	2.3	6.0	21.6	7.7	5.5	10.2	5.1	22.7	15.7
Louisiana .....	.6	.5	5.3	8.1	13.6	7.8	5.7	9.4	5.4	26.9	16.7
Maine .....	.5	1.1	0	6.8	17.9	6.0	5.3	12.0	6.8	27.7	16.0
Maryland .....	.4	.6	.1	6.9	9.0	5.7	5.6	9.4	8.3	33.3	20.8
Massachusetts .....	.1	.5	.1	4.9	16.8	5.4	6.8	8.4	10.5	35.5	11.0
Michigan .....	.2	.5	.2	5.6	31.3	5.0	6.5	8.4	5.6	24.3	12.3
Minnesota .....	.8	.5	.5	6.1	20.8	6.4	7.9	9.2	8.8	26.7	12.2
Mississippi	2.4	.7	.9	6.6	21.5	6.5	4.9	10.2	4.6	23.0	18.7
Missouri .....	.3	.5	.3	6.6	19.0	8.4	6.9	9.5	7.8	27.2	13.5
Montana .....	.8	.9	2.4	8.3	8.1	8.0	5.3	12.7	5.9	28.0	19.4
Nebraska	5.5	1.1	.2	6.2	14.0	9.0	6.6	9.0	7.4	25.5	15.5
Nevada .....	.3	.7	2.2	11.8	4.7	5.7	4.4	9.8	7.4	40.3	12.7
New Hampshire .....	.2	.6	.1	6.3	22.5	6.0	7.1	11.7	7.2	27.7	10.7
New Jersey .....	.1	.4	.1	4.4	15.2	8.5	9.0	7.8	9.6	31.1	13.7
New Mexico	1.5	.7	3.3	7.1	7.8	6.0	4.2	11.4	5.2	28.3	24.5
New York .....	.1	.3	.1	3.7	11.9	5.9	5.8	6.7	20.1	31.8	13.6
North Carolina	1.9	.6	.2	6.9	23.1	6.1	6.1	9.6	6.8	22.9	15.7
North Dakota	6.0	.8	2.0	7.0	8.2	8.4	8.2	10.0	5.7	25.5	18.2
Ohio .....	.5	.5	.4	5.7	26.2	5.7	6.8	9.4	6.8	25.3	12.7
Oklahoma .....	.7	.5	4.7	5.1	16.2	8.3	5.2	10.0	5.4	25.6	18.2
Oregon	1.0	.9	.1	7.4	19.2	6.3	7.4	10.9	6.9	25.8	14.1
Pennsylvania .....	.4	.5	.7	5.7	20.4	6.9	5.8	9.2	8.0	30.4	12.1
Rhode Island .....	.2	.7	.1	5.0	18.3	5.2	5.0	9.3	8.2	32.2	15.8
South Carolina .....	.6	.7	.1	7.3	23.6	5.4	5.2	11.1	5.7	22.4	17.8
South Dakota	7.4	1.2	.8	6.4	14.2	6.4	6.1	10.6	6.9	24.8	15.0
Tennessee .....	.2	.5	.3	6.4	21.0	7.7	6.6	10.7	6.6	27.5	12.5
Texas .....	.7	.6	4.3	6.4	16.2	9.1	6.9	8.9	7.2	26.4	13.3
Utah .....	.7	.4	1.3	8.1	14.3	7.4	5.9	10.7	7.8	27.5	16.0
Vermont	1.7	.7	.3	7.3	20.2	5.8	4.9	10.4	5.6	28.4	14.7
Virginia .....	.3	.5	.5	6.1	12.7	7.0	5.4	8.6	7.3	30.7	20.9
Washington	1.1	1.0	.2	6.4	16.4	7.0	6.1	9.3	6.4	30.3	15.7
West Virginia	0	.4	6.5	6.2	15.5	7.8	4.9	10.0	4.2	25.7	18.8
Wisconsin .....	.5	.6	.2	6.5	27.8	5.9	6.3	9.0	6.9	23.4	13.0
Wyoming	−4	.8	15.8	8.6	5.6	8.9	3.6	10.4	4.7	19.4	22.4

Table 2.—Difference between State and U.S. Industry Shares of Earnings, 1998

[Percentage points]

	1998 similarity index	Farms	Agri- cultural services, forestry, and fishing	Mining	Con- struction	Manu- facturing	Trans- portation and public utilities	Whole- sale trade	Retail trade	Finance, insur- ance, and real estate	Services	Government	Population
California	91.5	0.4	0.4	-0.6	-0.5	-1.7	-0.6	-0.2	-0.2	-0.2	3.5	-0.4	32,682,794
Washington	91.3	.3	.3	-7	.5	-1.0	.2	-3	.2	-2.5	1.5	1.3	5,687,832
Arizona	91.0	.1	.3	0	1.6	-3.5	-1.0	1.7	.2	.4	.4	.1	4,667,277
Pennsylvania	90.7	-4	-2	-2	-2	3.0	.1	-6	.1	-9	1.6	-2.3	12,002,329
Missouri	90.3	-5	-2	-6	.7	1.6	1.6	.5	.4	-1.1	-1.6	-9	5,437,562
Illinois	90.0	-4	-2	-6	-4	1.7	.5	.8	-1.1	1.4	.6	-2.5	12,069,774
Minnesota	89.3	0	-2	-4	.2	3.4	-4	1.5	.1	-1	-2.1	-2.2	4,726,411
Rhode Island	88.2	-6	0	-8	-9	.9	-1.6	-1.4	.2	-7	3.4	1.4	987,704
Georgia	87.9	.7	-1	-6	0	-1.6	2.8	2.5	.1	-1.3	-2.5	-1	7,636,522
Maine	87.2	-3	.4	-9	.9	.5	-8	-1.1	2.9	-2.1	-1.1	1.6	1,247,554
Utah	87.0	-1	-3	.4	2.2	-3.1	.6	-5	1.6	-1.1	-1.3	1.6	2,100,562
Oregon	86.8	.2	.2	-8	1.5	1.8	-5	1.0	1.8	-2.0	-3.0	-3	3,282,055
Texas	86.4	-1	-1	3.4	.5	-1.2	2.3	.5	-2	-1.7	-2.4	-1.1	19,712,389
Tennessee	86.3	-6	-2	-6	.5	3.6	.9	.2	1.6	-2.3	-1.3	-1.9	5,432,679
Vermont	86.3	.9	0	-6	1.4	2.8	-1.0	-1.5	1.3	-3.3	-4	.3	590,579
Colorado	85.8	-2	0	.9	2.0	-5.9	2.8	-4	.3	-5	.9	-4	3,968,967
New Jersey	85.4	-7	-3	-8	-1.5	-2.2	1.7	2.6	-1.3	.7	2.3	-7	8,095,542
Kansas	84.6	1.9	0	.1	.3	1.4	.9	1.0	.8	-2.8	-4.9	1.3	2,638,667
Virginia	82.5	-5	-2	-4	.2	-4.7	.2	-1.0	-5	-1.6	1.9	6.5	6,789,225
Massachusetts	82.4	-7	-2	-8	-1.0	-6	-1.4	.4	-7	1.6	6.7	-3.4	6,144,407
Nebraska	82.3	4.7	.4	-7	.3	-3.4	2.2	.2	-1	-1.5	-3.3	1.1	1,660,772
New Hampshire	82.3	-6	-1	-8	.4	5.1	-8	.7	2.6	-1.7	-1.1	-3.7	1,185,823
Iowa	81.9	3.5	.1	-7	.5	4.0	-6	.5	.3	-1.2	-6.5	.1	2,861,025
Alabama	81.6	1.0	-1	.1	.5	3.7	-3	-6	.5	-3.0	-5.2	3.3	4,351,037
Connecticut	81.5	-6	-2	-8	-1.2	2.8	-1.5	.1	-1.3	4.9	1.5	-3.8	3,272,563
Ohio	80.8	-3	-2	-5	-2	8.8	-1.1	.4	.3	-2.1	-3.5	-1.7	11,237,752
North Carolina	80.7	1.1	-1	-7	1.0	5.7	-7	.3	.5	-2.1	-5.9	1.3	7,545,828
Florida	80.5	.1	.3	-7	.2	-8.8	-2	.3	2.3	.7	5.2	.4	14,908,230
Idaho	80.3	2.7	.7	.1	2.6	.1	.1	-8	1.8	-3.7	-5.4	1.7	1,230,923
South Dakota	80.3	6.6	.5	-1	.5	-3.2	-4	-3	1.5	-2.0	-4.0	.6	730,789
Oklahoma	79.9	-1	-2	3.8	-8	-1.2	1.5	-1.2	.9	-3.5	-3.2	3.8	3,339,478
Louisiana	79.6	-2	-2	4.4	2.2	-3.8	1.0	-7	.3	-3.5	-1.9	2.3	4,362,758
Kentucky	78.3	1.6	0	1.4	.1	4.2	.9	-9	1.1	-3.8	-6.1	1.3	3,934,310
Wisconsin	78.0	-3	-1	-7	.6	10.4	-9	-1	-1	-2.0	-5.4	-1.4	5,222,124
Mississippi	76.1	1.6	0	0	.7	4.1	-3	-1.5	1.1	-4.3	-5.8	4.3	2,751,335
Maryland	75.7	-4	-1	-8	1.0	-8.4	-1.1	.8	.3	-6	4.5	6.4	5,130,072
West Virginia	75.4	-8	-3	5.6	.3	-1.9	1.0	-1.5	.9	-4.7	-3.1	4.4	1,811,688
Arkansas	74.7	3.4	.1	-4	0	4.9	1.4	-1.2	2.3	-3.9	-7.2	.4	2,538,202
South Carolina	73.8	-2	0	-8	1.4	6.2	-1.4	-1.2	2.0	-3.2	-6.4	3.4	3,839,578
Michigan	72.0	-6	-2	-7	-3	13.9	-1.8	.1	-7	-3.3	-4.5	-2.1	9,820,231
Montana	71.8	0	.2	1.5	2.4	-9.3	1.2	-1.1	3.6	-3.0	-8	5.0	879,533
New York	71.6	-7	-4	-8	-2.2	-5.5	-9	-6	-2.4	11.2	3.0	-8	18,159,175
Delaware	70.7	0	-3	-9	.9	8.3	-2.4	-2.6	-9	5.3	-5.1	-2.6	744,066
Indiana	70.3	-1	-2	-5	.9	13.8	-8	-7	.1	-2.9	-7.0	-2.7	5,907,617
North Dakota	68.5	5.2	.1	1.1	1.1	-9.2	1.6	1.8	.9	-3.2	-3.3	3.8	637,808
New Mexico	66.3	.7	0	2.4	1.2	-9.6	-8	-2.2	2.3	-3.7	-5	10.1	1,733,535
Hawaii	64.1	0	0	-8	.3	-13.8	1.5	-2.7	2.9	-7	2.3	10.9	1,190,472
Nevada	60.9	-5	0	1.3	5.9	-12.7	-1.1	-2.0	.7	-1.5	11.5	-1.7	1,743,772
Alaska	42.9	-7	1.0	6.7	1.6	-12.8	3.9	-3.3	.6	-4.8	-6.9	14.5	615,205
Wyoming	41.6	-1.2	.1	14.9	2.7	-11.8	2.1	-2.8	1.3	-4.2	-9.4	8.0	480,045
District of Columbia	21.6	-8	.1	-9	-4.7	-14.6	-3.5	-5.5	-6.6	-2.7	14.4	24.7	521,426

NOTE.—Industry shares are sorted based on the 1998 similarity index.

Table 3.—Change in Industry Shares of Earnings, 1958–98

[Percentage points]

	Change in the similarity index	Farms	Agricultural services, forestry, and fishing	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Government
United States		-4.5	0.3	-0.7	-0.3	-11.3	-1.0	0.1	-2.8	4.0	15.7	0.6
South Dakota	41.2	-24.4	.6	-.5	.5	7.7	.5	.4	-2.5	3.7	15.2	-1.4
Alaska	34.8	-.2	-1.4	5.7	-6.8	-1.9	4.5	.8	2.5	1.9	14.6	-19.9
North Dakota	30.7	-26.7	.3	.3	.2	4.4	0	1.5	-3.8	2.4	16.1	5.2
Arizona	26.1	-6.4	.5	-4.1	-2.6	1.0	-1.5	1.4	-3.5	4.3	15.7	-4.7
Nebraska	20.8	-16.3	.6	-.4	.3	.7	-.7	.5	-3.6	2.5	14.6	1.7
Nevada	19.9	-3.7	.5	-.8	3.8	-.6	-2.3	1.5	-4.1	3.7	7.7	-5.7
New Mexico	19.9	-6.7	.4	-5.3	-1.2	1.7	-1.8	.3	-.2	1.8	12.0	-.9
Montana	19.6	-20.4	.6	-2.3	1.7	-2.0	-2.0	.7	-.5	2.7	16.7	4.6
Iowa	18.8	-18.3	.1	-.2	.8	1.1	-1.1	.8	-3.3	3.4	11.9	4.9
Idaho	17.2	-13.9	1.1	-1.3	.1	2.9	-1.6	.9	-2.8	1.8	11.5	1.4
Utah	17.1	-3.5	.3	-5.2	.4	-1.9	-2.2	-.7	-1.4	3.5	15.0	-4.0
Oklahoma	16.0	-9.1	.1	-5.0	-1.0	2.5	.3	-.6	-2.0	1.4	14.0	-.7
Florida	15.8	-4.9	.2	-.4	-3.7	-3.5	-1.1	-.4	-3.6	3.4	16.1	-2.2
Kansas	14.0	-12.1	.4	-2.3	0	-.6	-1.2	2.7	-2.7	2.2	13.5	.2
Colorado	13.3	-5.5	.3	-1.3	-.7	-3.5	.6	-.8	-3.8	3.0	16.0	-4.2
Hawaii	12.7	-5.6	.4	0	-.7	-6.4	1.1	-1.6	1.4	3.7	18.8	-11.0
Connecticut	12.6	-1.3	.1	0	-2.4	-21.9	.2	2.0	-3.6	7.6	17.5	1.7
Rhode Island	12.4	-.5	.3	0	-.4	-16.8	-.5	-.8	-2.0	3.6	20.8	-3.7
Pennsylvania	11.0	-1.7	.3	-1.4	0	-17.2	-1.5	-.4	-2.4	3.8	18.3	2.3
Virginia	10.3	-5.1	0	-.9	-.1	-6.8	-1.0	1.2	-2.8	3.3	18.6	-6.3
Texas	10.2	-6.9	.3	-2.8	-.2	-2.0	.8	0	-3.8	2.6	14.3	-2.3
Minnesota	10.0	-10.7	.1	-1.4	-.5	-1.4	-2.6	.2	-3.1	3.5	14.9	1.0
West Virginia	9.6	-2.8	.2	-9.7	1.2	-11.7	-2.4	.6	-.7	1.4	15.6	8.4
Washington	5.8	-3.6	.1	0	-.6	-9.0	-.3	-.7	-3.4	1.4	18.7	-2.7
Ohio	5.3	-2.1	.2	-.3	-.6	-14.7	-1.7	1.4	-1.9	2.9	14.1	2.9
New Jersey	5.2	-1.3	.1	-.1	-1.6	-23.4	.8	3.3	-3.7	4.9	18.1	2.9
Arkansas	4.4	-11.5	.3	-1.4	.1	4.4	-.2	.3	-2.3	1.2	9.5	-.6
Louisiana	4.3	-4.2	-.1	-2.1	0	-.4	-2.2	-.6	-3.0	1.1	13.9	1.3
Missouri	4.2	-7.6	.2	-.3	.8	-.7	-1.5	-.9	-3.0	2.8	14.5	2.5
California	4.1	-3.2	.5	-.4	-1.4	-9.2	-.9	0	-3.8	3.7	17.2	-2.5
Illinois	3.8	-3.8	.3	-.7	-1.0	-13.9	-1.2	-.3	-3.4	5.0	16.4	2.4
Georgia	3.4	-5.9	-.1	-.1	.4	-7.9	2.0	1.0	-2.7	3.0	13.6	-3.3
Maine	2.9	-7.2	-.4	-.1	1.1	-11.4	-1.2	-.3	.8	3.4	17.0	-1.6
Mississippi	2.8	-11.9	0	-.8	.9	1.0	.1	.2	-2.7	1.4	9.7	2.1
New Hampshire	1.9	-2.6	.2	0	-.5	-14.4	.2	3.1	-1.2	2.8	14.6	-2.1
Wisconsin	1.3	-7.0	.3	-.1	.4	-9.5	-.7	.8	-3.8	3.1	13.4	3.2
Michigan	1.2	-2.4	.3	-.4	.2	-12.0	-1.0	1.4	-2.9	1.8	13.0	1.8
Kentucky .....	.9	-8.2	.4	-2.9	0	-.6	-.7	.9	-2.5	1.3	11.3	.8
Massachusetts .....	.6	-.7	0	0	-.8	-18.2	-.7	.2	-3.3	4.7	20.8	-2.1
Vermont .....	.4	-9.4	.2	-.8	.4	-6.3	-1.5	.8	-2.1	1.5	15.7	1.3
Delaware .....	.2	-3.4	-.1	0	-.2	-16.9	-2.0	.9	-2.0	10.7	12.6	.2
District of Columbia	-1.1	0	.4	0	-2.9	-.8	-3.7	-4.0	-6.5	1.8	25.5	-8.8
Alabama	-2.2	-6.2	.1	-.7	.9	-5.0	-.3	.3	-1.6	2.2	11.6	-1.2
Oregon	-2.4	-5.6	.2	-0.2	.7	-6.2	-2.8	.9	-2.8	2.3	12.9	.5
North Carolina	-2.7	-9.7	.1	0	1.8	-6.6	.5	.1	-1.8	3.2	11.3	-.9
Wyoming	-3.1	-13.9	.6	5.7	-.7	-1.9	-2.7	-.1	-1.9	1.9	7.9	5.1
Indiana	-4.8	-5.4	.3	-.4	.7	-9.2	-1.2	.9	-2.3	2.0	12.2	2.3
South Carolina	-5.1	-7.0	.2	-.1	1.4	-7.2	.4	1.0	-.9	2.4	11.7	-2.0
Tennessee	-6.5	-7.3	.2	-.4	.9	-7.3	.7	-.7	-1.5	2.4	14.2	-1.2
Maryland	-7.1	-2.1	.1	-.2	.1	-18.3	-2.1	.9	-2.6	4.1	21.0	-.8
New York	-7.7	-1.1	.1	-.1	-1.5	-17.8	-2.8	-.2	-4.0	12.3	15.2	2.3

Note.—Industry shares are sorted based on the change in the similarity index.

An Examination of the Low Rates of Return of Foreign-Owned U.S. Companies

By Raymond J. Mataloni, Jr.

Mahnaz Fahim-Nader assisted in the development of the estimates presented in this article. This article also benefited significantly from comments by four reviewers from outside BEA—Harry Grubert, David Laster, Robert McCauley, and Deborah Swenson.

A LONGSTANDING QUESTION about foreign-owned U.S. companies is why their rates of return have been consistently below those of other U.S. companies.¹ Previous research by the Bureau of Economic Analysis (BEA) and others has examined this issue. This article builds upon these earlier efforts by providing new estimates of the rate of return for foreign-owned U.S. nonfinancial companies that are disaggregated by industry and valued in current-period prices for the years 1988–97. The new estimates, along with company-level estimates for foreign-owned companies and industry-level estimates for U.S.-owned nonfinancial U.S. companies, are used to examine factors that help explain the low rates of return. The article extends the previous research by providing the first detailed examination of industry-mix effects and by identifying and quantifying the importance of market share.

The rate of return measure used in this article is the return on assets (ROA), defined as the ratio of “profits from current production” plus interest paid to the average of beginning- and end-of-year total assets.² Profits from current production are profits that result from the production of goods and services in the current period. Both profits and assets are valued in prices of the current period. Profits reflect the value of inventory withdrawals and depreciation on a current-cost basis; they have been adjusted to remove the income from equity

investments in unconsolidated businesses and the expense associated with amortizing intangible assets. Total assets reflect the current cost of tangible assets; they have been adjusted to remove assets for which the return is not included in the numerator of the ROA ratio—namely, equity investments in unconsolidated businesses and amortizable intangible assets. (See the [technical note](#) for details on the construction of the ROA measure.)

The new ROA estimates for foreign-owned companies and U.S.-owned companies indicate the following:

- The new current-cost estimates show that the average ROA of foreign-owned companies in 1988–97 was 5.1 percent. In contrast, the historical-cost estimates show an average ROA of 5.7 percent.
- The ROA of all foreign-owned nonfinancial companies was consistently below that of U.S.-owned nonfinancial companies in 1988–97, but the gap narrowed over time, from nearly two percentage points in 1988 to one percentage point in 1997. The narrowing of the gap appears to be related to age effects: Acquiring or establishing a new business can add costs, such as startup costs, that disappear over time; additionally, experience can yield benefits, such as learning by doing, that accumulate over time.
- The average ROAs for foreign-owned companies less the average ROA for U.S.-owned companies ranged from –8.3 percentage points in rubber and miscellaneous plastics manufacturing to +10.2 percentage points in “other” manufacturing. The average ROA of foreign-owned companies in 1988–97 was below that of U.S.-owned companies in 22 of 30 nonfinancial industries. The pervasiveness of the negative gaps suggests that differences in the industrial distribution of operations are not a major reason for the all-industries gap. More formal analysis confirms that only a small portion of the gap was attributable to the

1. In this article, “foreign-owned U.S. companies” refer to U.S. affiliates of foreign companies as defined for BEA’s surveys of foreign direct investment in the United States. A U.S. affiliate is a U.S. business enterprise that is owned 10 percent or more, directly or indirectly, by a foreign person.

2. This profitability measure differs in two respects from the measure for all domestic nonfinancial corporations that BEA presented in the June 1999 issue of the SURVEY OF CURRENT BUSINESS [21]. First, the numerator uses gross rather than net interest paid. Gross interest is used so that the numerator reflects the actual return to the investors who provide the debt financing, as well as those who provide the equity financing, of foreign-owned companies’ total assets. Second, the denominator uses total assets rather than tangible assets. Total assets is used here because it is a more appropriate measure for examining a small subset of domestic companies—in this case, domestic companies that are foreign owned. When the profitability of all domestic nonfinancial corporations is measured, tangible assets is more appropriate because financial claims and liabilities largely cancel out; however, this is not the case when the profitability of a much smaller group of companies is measured. Furthermore, if only tangible assets were used for the denominator, the industry-level profitability measures would vary simply because the degree to which tangible assets are used in production varies across industries.

tendency for foreign-owned companies to be concentrated in low-profit industries.

- The median ROA of foreign-owned companies with a market share of 30 percent or more in 1992 was virtually identical to that of U.S.-owned companies, whereas the median ROA of those with a market share of less than 20 percent was 2 percentage points below that of U.S.-owned companies.
- A comparison of the ROA's of foreign-owned companies with different propensities to import from their foreign parent companies yields only weak and inconsistent evidence that foreign-owned companies shift profits out of the United States using transfer prices. Statistical tests indicate a significant negative relationship between foreign-owned companies' ROA and the intrafirm-import content of their sales in only 2 of the 10 years studied.

The first part of this article presents the new industry-level ROA estimates for foreign-owned companies and compares them with estimates for U.S.-owned companies. The second part examines the low ROA for foreign-owned companies using estimates for foreign-owned companies at both the industry and the company level. The technical note explains how the ROA estimates were computed,

describes the statistical methods used for analysis, and presents summary results of this analysis.

New ROA Estimates for 1988–97

This section examines the new industry-level ROA estimates for foreign-owned companies and the gap between the ROA's of foreign-owned and U.S.-owned companies by industry and over time. Previously, the industry-level profit and asset data needed to compute ROA estimates were available only on a historical-cost basis; that is, the valuations of assets and related expenses (mainly depreciation) were based on the prices of the assets at the time they were acquired. Because asset prices vary over time, the resulting historical-cost ROA estimates vary with the age of the assets. In the new estimates, the assets and associated depreciation charges have been adjusted to a current-cost basis; that is, they are consistently valued in current-period prices. The industry-level current-cost adjustments are based on aggregate (all-industries) current-cost adjustments that BEA makes for all foreign-owned companies combined and for all U.S. companies combined. These aggregate estimates were allocated to individual industries using the procedures described in the technical note.

Table 1.—ROA of Foreign-Owned U.S. Nonfinancial Companies, 1988–97

[Percent]

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1988–97 average
Nonfinancial industries	5.7	5.4	4.2	3.8	3.8	4.1	5.1	5.7	6.6	7.1	5.1
Agriculture, forestry, and fishing	2.0	3.4	6.0	3.8	1.5	-0.9	1.1	1.3	2.5	4.0	2.5
Mining, excluding oil and gas extraction	6.8	5.9	7.6	8.3	8.5	4.6	7.1	9.9	6.2	6.9	7.2
Construction	0.5	3.4	1.3	0.5	0.6	0.4	0.6	-0.9	0.4	1.3	0.8
Manufacturing	6.7	6.4	5.0	4.1	4.2	4.6	6.0	6.2	7.3	7.8	5.8
Food and kindred products	4.8	4.0	3.9	5.4	5.2	4.6	4.9	4.6	6.9	8.7	5.3
Textile mill products	8.3	5.4	4.2	3.2	6.8	7.2	7.9	8.2	6.4	7.3	6.5
Apparel and other textile products	3.0	2.1	0.8	3.5	5.2	6.5	5.0	0.3	7.9	7.9	4.2
Lumber, wood, furniture, and fixtures	9.2	7.2	9.4	3.1	6.4	11.0	11.5	8.0	8.7	5.5	8.0
Paper and allied products	12.7	10.5	8.6	6.9	4.1	4.1	5.5	9.7	9.2	5.2	7.6
Printing and publishing	5.3	3.9	5.1	4.3	5.7	6.8	7.8	6.0	7.1	6.6	5.9
Chemicals and allied products	9.0	9.7	7.7	6.4	6.2	6.9	7.8	6.7	7.9	7.2	7.6
Petroleum and coal products ¹	7.9	8.7	9.8	5.8	5.8	5.9	6.7	7.6	10.0	10.7	7.9
Rubber and miscellaneous plastic products	3.5	2.7	-0.2	-3.8	-0.4	1.6	4.4	3.8	5.1	5.4	2.2
Stone, clay, and glass products	5.4	3.8	-0.8	0.4	1.5	2.4	3.4	7.0	8.5	13.4	4.5
Primary metal industries	5.7	5.8	3.6	0.5	0.8	2.6	4.3	6.3	7.4	6.7	4.4
Fabricated metal products	7.6	7.0	3.5	4.1	4.0	2.9	0.6	4.9	6.5	7.1	4.8
Industrial machinery and equipment	5.7	3.9	-0.4	0.1	(*)	-0.7	4.8	3.4	4.8	6.3	2.8
Electronic and other electric equipment	1.4	1.0	-0.5	1.7	1.2	1.0	3.6	4.3	3.9	5.6	2.3
Motor vehicles and equipment	-5.2	-6.3	-1.0	-0.8	-4.0	1.2	5.9	5.5	2.1	7.3	0.5
Other transportation equipment	-3.6	5.2	0.7	0.4	2.3	1.1	2.1	0.6	6.5	8.3	2.4
Instruments and related products	4.9	5.5	7.1	8.7	8.6	8.1	8.1	8.9	9.9	9.3	7.9
Other ²	13.9	11.0	7.7	15.4	22.0	11.1	11.6	16.3	19.9	17.9	14.7
Transportation	10.2	4.6	-4.5	0.8	2.0	5.7	5.3	8.6	11.0	10.7	5.4
Communication and public utilities	(*)	1.6	6.4	3.7	6.3	5.0	8.3	11.4	14.4	8.7	6.6
Wholesale trade	4.0	4.5	3.8	3.9	4.0	3.9	4.6	5.4	5.4	6.4	4.6
Retail trade	7.3	4.6	4.9	6.7	3.1	3.9	7.2	8.2	7.6	8.0	6.2
Real estate	3.8	4.2	3.5	3.0	2.2	2.4	2.2	2.3	2.5	3.7	3.0
Services	4.2	4.3	4.0	2.2	3.1	3.7	2.6	2.2	3.6	5.7	3.5
Hotels and other lodging places	1.6	1.2	1.5	-0.1	-0.2	0.3	0.5	1.1	3.5	4.1	1.4
Business services	5.5	6.0	7.6	6.3	7.3	7.6	6.4	4.9	3.2	9.3	6.4
Motion pictures	1.8	2.7	3.2	0.6	3.5	5.1	3.8	2.8	3.2	2.4	2.9
Other	6.0	6.2	4.5	4.0	3.7	3.1	-0.2	-0.1	4.2	5.0	3.6

(*) Less than 0.05 (±).

1. Includes oil and gas extraction.

2. Other manufacturing comprises tobacco products, leather and leather products, and miscellaneous manufacturing industries.

ROA Return on assets

ROA by industry

The average ROA for foreign-owned nonfinancial companies was 5.1 percent in 1988–97. The average ROA's varied considerably among the major industries, ranging from 7.2 percent in mining to 0.8 percent in construction (table 1 and chart 1). In addition to mining, the ROA's were relatively high in communication and public utilities (6.6 percent) and retail trade (6.2 percent). In addition to construction, the ROA's were relatively low in agriculture, forestry, and fishing (2.5 percent), real estate (3.0 percent), and services (3.5 percent).

Among foreign-owned manufacturing companies, the average ROA was 5.8 percent in 1988–97. The ROA's varied considerably among the major manufacturing industries, ranging from 14.7 percent in "other" manufacturing to 0.5 percent in motor vehicles and equipment (table 1 and chart 2).³ In addition to "other" manufacturing, the ROA's were relatively high in lumber, wood, furniture, and fixtures (8.0 percent) and instruments and related products (7.9 percent). In addition to motor vehicles and equipment, the ROA's were relatively low in rubber and miscellaneous plastic products (2.2 percent), electronic

and other electric equipment (2.3 percent), and other transportation equipment (2.4 percent).

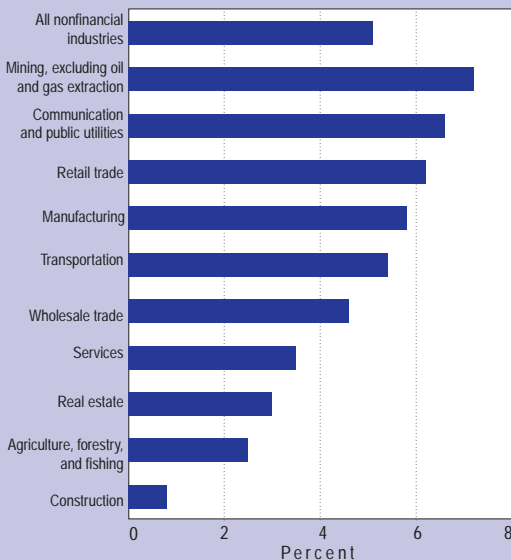
ROA gap by industry

The average ROA for foreign-owned nonfinancial companies was 2.2 percentage points below that for U.S.-owned nonfinancial companies in 1988–97. The ROA gap (that is, the ROA of foreign-owned companies less the ROA of U.S.-owned companies) was negative in most major industries but was largest in construction (-7.5 percentage points) (table 2 and chart 3). The ROA gap was also large and negative in services (-7.2 percentage points) and wholesale trade (-4.2 percentage points). The ROA gap was positive in mining, excluding oil and gas extraction (4.5 percentage points) and transportation (1.3 percentage points).

In manufacturing, the average ROA gap was -1.1 percentage points in 1988–97. The ROA gap was negative in most manufacturing industries, but

CHART 1

Average ROA of Foreign-Owned U.S. Nonfinancial Companies in 1988–97

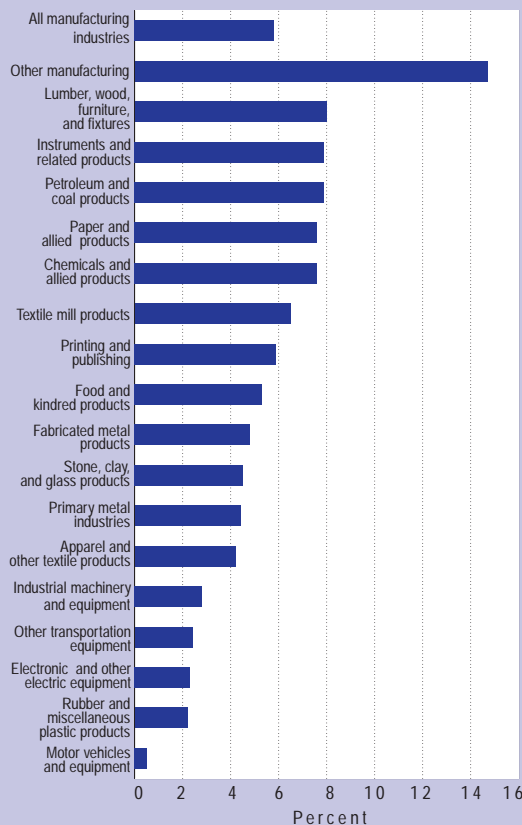


ROA Return on assets

U.S. Department of Commerce, Bureau of Economic Analysis

CHART 2

Average ROA of Foreign-Owned U.S. Manufacturing Companies in 1988–97



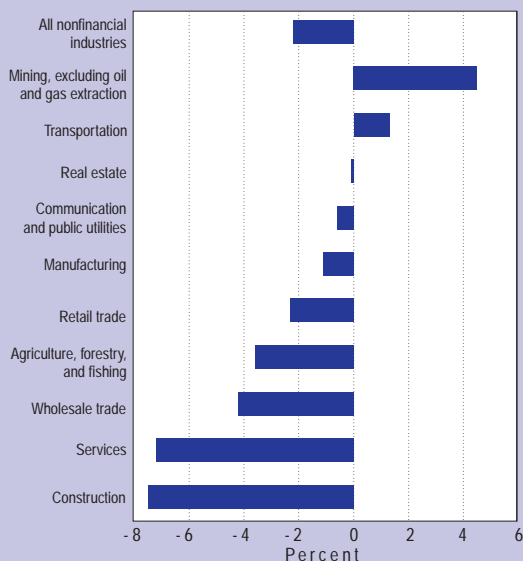
ROA Return on assets

U.S. Department of Commerce, Bureau of Economic Analysis

3. "Other" manufacturing comprises tobacco products, leather and leather products, and miscellaneous manufacturing industries.

CHART 3

Average ROA Gap of Foreign-Owned U.S. Nonfinancial Companies in 1988-97



ROA Return on assets

Note.—The ROA gap is defined as the ROA for all foreign-owned U.S. companies in an industry less the ROA for all U.S.-owned companies in that industry.

U.S. Department of Commerce, Bureau of Economic Analysis

it varied from -8.3 percentage points in rubber and miscellaneous plastic products to 10.2 percentage points in "other" manufacturing (table 2 and chart 4).

Trends.—The negative ROA gap in all nonfinancial industries combined widened from -1.8 percentage points in 1988 to -3.1 percentage points in 1990; it was unchanged at -3.1 percentage points in 1991, and then it narrowed steadily to -1.0 percentage points in 1997 (table 2 and chart 5). In some major industries, the pattern of the ROA gap was consistent over time, suggesting that the factors underlying the gap were longstanding; for example, the ROA gap was consistently positive in mining and consistently negative in services. In other industries, including manufacturing, the negative ROA gap was eliminated over time, suggesting that factors underlying the gap were temporary.

Patterns in the ROA gap also differed across the major manufacturing industries. In petroleum and coal products, the ROA gap was consistently positive. In rubber and miscellaneous plastic products, it was consistently negative. In motor vehicles and equipment, it was initially quite negative, but it became slightly positive in some of the more recent years. In a few manufacturing industries, such as

Table 2.—ROA Gap of Foreign-Owned U.S. Nonfinancial Companies, 1988-97

[Percentage points]

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1988-97 average
Nonfinancial industries	-1.8	-2.1	-3.1	-3.1	-2.9	-2.6	-2.2	-1.9	-1.3	-1.0	-2.2
Agriculture, forestry, and fishing	-5.4	-3.7	-0.4	-1.4	-4.5	-6.3	-3.5	-4.3	-3.9	-2.5	-3.6
Mining, excluding oil and gas extraction	(*)	1.1	4.6	5.1	7.0	3.6	4.3	8.9	4.9	5.0	4.5
Construction	-8.3	-4.9	-6.6	-6.3	-5.3	-6.2	-7.2	-10.1	-10.0	-9.7	-7.5
Manufacturing	-0.8	-1.3	-2.5	-2.6	-1.8	-1.4	-0.6	-1.1	0.1	0.9	-1.1
Food and kindred products	-5.2	-9.2	-9.7	-8.0	-6.8	-5.2	-5.7	-6.8	-2.0	-0.6	-5.9
Textile mill products	0.5	-1.3	-3.9	-5.0	-3.3	-0.4	1.0	2.6	-1.2	-0.2	-1.1
Apparel and other textile products	-7.1	-9.2	-10.1	-7.5	-6.1	-3.9	-5.5	-8.4	-0.7	0.3	-5.8
Lumber, wood, furniture, and fixtures	-0.5	-2.3	2.2	-3.0	-1.0	2.0	1.3	-2.9	0.4	-2.9	-0.7
Paper and allied products	1.7	0.4	0.7	0.5	-0.9	-1.0	-0.7	0.3	1.9	-0.3	0.2
Printing and publishing	-6.7	-7.8	-5.2	-6.6	-4.8	-2.9	-4.2	-4.2	-5.6	-4.6	-5.3
Chemicals and allied products	1.3	2.6	0.9	-0.1	0.3	1.8	1.7	-1.0	1.0	0.2	0.9
Petroleum and coal products ¹	2.4	4.2	3.9	1.8	3.1	2.7	3.6	3.4	4.8	5.1	3.5
Rubber and miscellaneous plastic products	-4.5	-7.4	-9.7	-16.3	-11.0	-9.0	-5.7	-5.9	-6.7	-6.4	-8.3
Stone, clay, and glass products	-1.3	-4.8	-9.7	-7.9	-7.1	-5.7	-8.5	-5.9	-2.9	0.9	-5.3
Primary metal industries	-2.2	-2.1	-1.1	-3.1	-0.7	1.4	2.0	0.7	3.5	2.5	0.1
Fabricated metal products	-1.4	-1.9	-5.5	-3.7	-3.3	-6.1	-11.3	-6.4	-5.5	-5.5	-5.1
Industrial machinery and equipment	-2.4	-4.4	-9.2	-6.1	-6.4	-7.1	-1.5	-5.2	-3.9	-1.4	-4.8
Electronic and other electric equipment	-6.4	-7.8	-9.1	-6.3	-5.9	-6.7	-5.2	-3.8	-3.8	-1.7	-5.7
Motor vehicles and equipment	-11.0	-13.0	-6.1	-4.8	-8.2	-3.7	0.7	1.3	-3.5	2.3	-4.6
Other transportation equipment	-11.5	-1.3	-5.9	-7.2	-3.9	-5.4	-2.9	-4.8	-0.6	1.2	-4.2
Instruments and related products	-3.1	-1.4	-1.9	0.1	1.5	3.0	2.9	2.6	2.2	3.0	0.9
Other ²	7.9	6.0	2.7	11.3	18.3	7.2	7.9	12.0	15.8	13.2	10.2
Transportation	5.3	1.4	-7.8	-2.1	-0.6	2.3	0.6	3.8	5.3	4.4	1.3
Communication and public utilities	-6.7	-5.1	-0.3	-3.3	-0.5	-1.9	1.1	3.8	6.7	0.4	-0.6
Wholesale trade	-5.7	-5.3	-5.2	-5.2	-4.4	-3.9	-3.8	-2.4	-3.7	-2.3	-4.2
Retail trade	-0.7	-3.7	-3.0	-1.5	-5.1	-4.3	-1.2	0.1	-1.3	-2.0	-2.3
Real estate	-0.4	0.7	0.9	1.3	(*)	(*)	-0.7	-1.2	-1.3	-0.1	-0.1
Services	-5.6	-5.4	-6.2	-8.3	-7.7	-7.8	-9.3	-9.3	-7.7	-5.0	-7.2
Hotels and other lodging places	-3.4	-3.7	-2.4	-5.5	-7.2	-7.9	-8.5	-7.4	-3.9	-1.9	-5.2
Business services	-5.5	-4.5	-2.3	-3.3	-3.5	-4.5	-6.1	-7.4	-9.4	-3.5	-5.0
Motion pictures	-6.0	-2.6	0.3	-3.5	0.3	1.1	-1.9	-2.4	-2.3	-3.1	-2.0
Other	-4.5	-4.8	-8.1	-8.9	-8.6	-9.3	-12.9	-12.3	-7.8	-5.9	-8.3

NOTE: The ROA gap is defined as the ROA for all foreign-owned companies in an industry less the ROA for all U.S.-owned companies in that industry.

(*)Less than 0.05 (±).

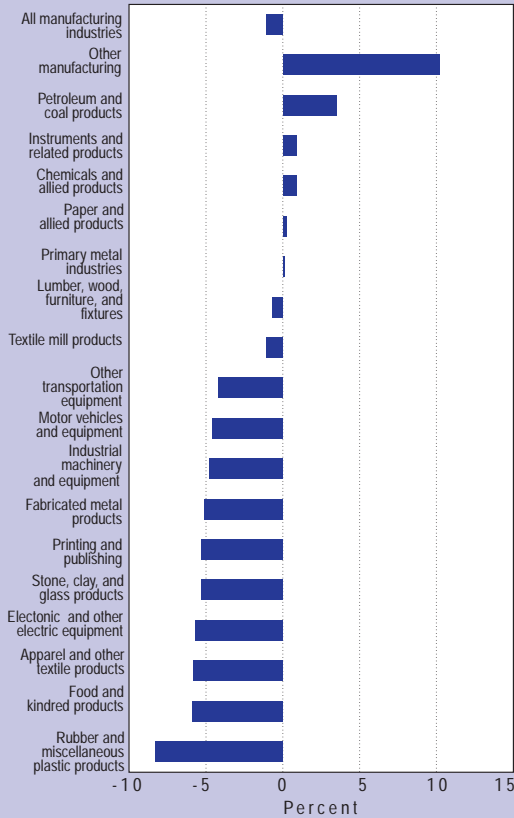
1. Includes oil and gas extraction.

2. Other manufacturing comprises tobacco products, leather and leather products, and miscellaneous manufacturing industries.

ROA Return on assets

CHART 4

Average ROA Gap of Foreign-Owned U.S. Manufacturing Companies in 1988–97



ROA Return on assets

Note.—The ROA gap is defined as the ROA for all foreign-owned U.S. companies in an industry less the ROA for all U.S.-owned companies in that industry.

U.S. Department of Commerce, Bureau of Economic Analysis

bert [4]—have examined the low profitability of foreign-owned companies.

Landefeld, Lawson, and Weinberg examined current-cost estimates of the rate of return on foreign direct investment in the United States (FDIUS) and on all U.S. businesses at the all-industries level for 1982–91. Those estimates, along with other aggregate economic data, were used to evaluate the low rate of return on FDIUS.⁴ They presented evidence suggesting the following: High startup and restructuring costs related to recent acquisitions lower the profitability of foreign-owned companies, newly acquired foreign-owned companies tended to be those that had low or negative rates of return, and many foreign-owned companies had a tax-related incentive to shift profits from the United States to their home country using transfer prices.⁵ They also identified reasons for which foreign owners may be willing to accept a below-average rate of return, such as having a lower cost of capital in the home country or gaining a cost advantage by acquiring U.S. companies with home-country funds at a time when the purchasing power of the U.S. dollar was weak.

Laster and McCauley used industry-level estimates of the historical-cost return on investment and on sales for foreign-owned companies from BEA's direct investment surveys, and for all domestic companies from the Internal Revenue Service, for the years 1977–92. Their evidence suggested the following: The low rate of return of foreign-owned companies was largely due to a late-1980's surge in foreign acquisition activity, the new acquisitions were typically expensive and unprofitable (although their profitability grew over time) and heavy debt loads and (possibly) profit shifting using transfer prices further depressed the reported profits of these firms. They concluded that the profitability of foreign-owned companies should rebound as they reduce their acquisition activity, gain experience, and divest underperforming operations.

Grubert, Goodspeed, and Swenson performed regression analysis using company-level measures of the return on historical-cost assets and sales for foreign-controlled and domestically controlled corporations in 1980–87.⁶ Their results

4. Unlike the estimates presented here, the rate of return estimates used by Landefeld, Lawson, and Weinberg are based on data from BEA's international transactions accounts (ITAs). The major difference between the two sets of estimates is that the ITA estimates are adjusted for the percentage of foreign ownership.

5. A transfer price is the price charged by one company for a product or service supplied to a related company, such as the price that a foreign-owned company is charged by its foreign parent company.

6. Their analysis was based on corporate tax return data from the U.S. Department of the Treasury, Internal Revenue Service. The latest tabulated data,

chemicals, there was consistently almost no ROA gap.

The Low ROA of Foreign-Owned Companies

In this section, industry-level ROA estimates for foreign-owned and U.S.-owned companies along with estimates for individual foreign-owned companies are used to analyze the low ROA of foreign-owned companies. The section begins with a short review of previous research and then discusses the four factors that were examined in this study: Industry mix, market share, age effects, and intrafirm-import content.

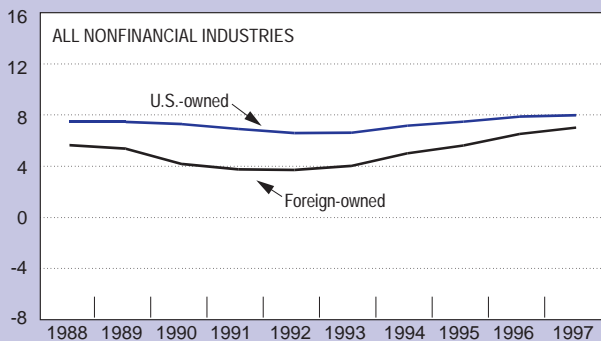
Previous research

Several studies—including Landefeld, Lawson, and Weinberg [8], Laster and McCauley [9], Grubert, Goodspeed, and Swenson [3], and Gru-

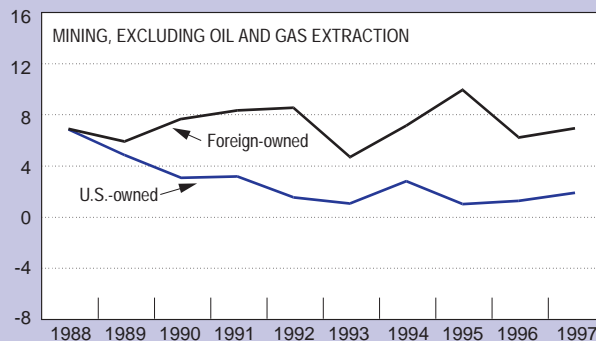
CHART 5

Average ROA of Foreign-Owned U.S. Nonfinancial Companies and U.S.-Owned Nonfinancial Companies in Selected Industries, 1988-97

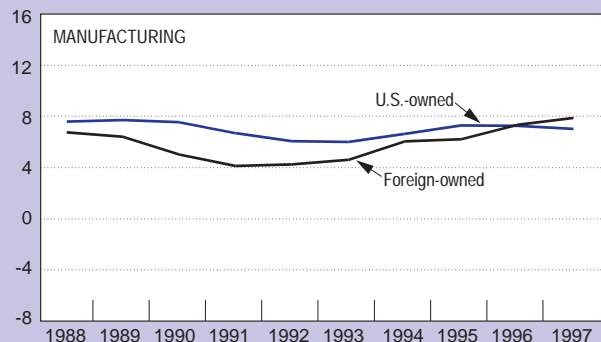
Percent



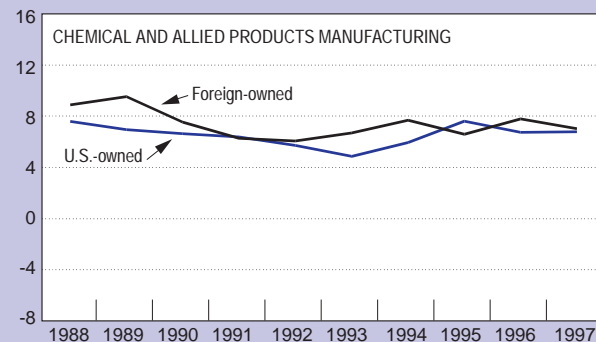
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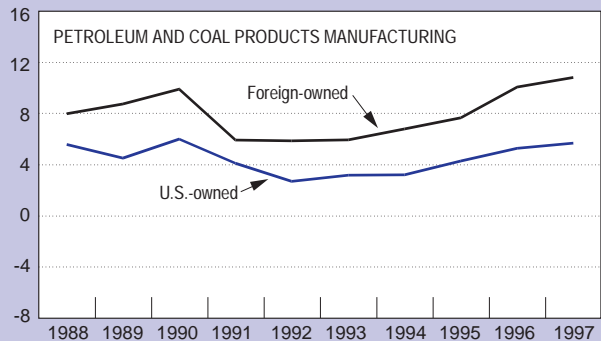
Percent



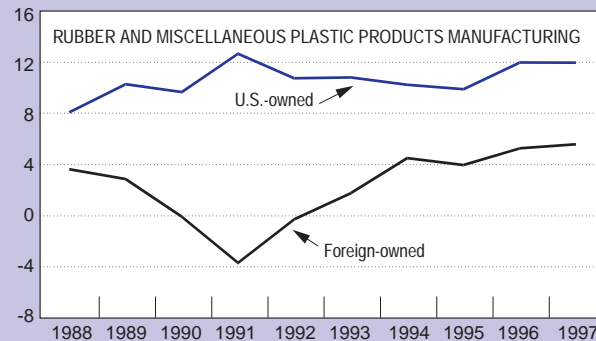
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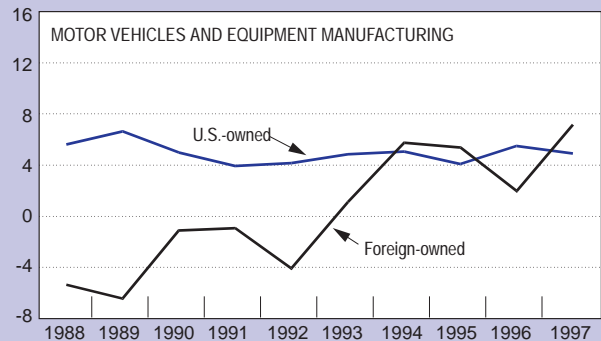
Percent



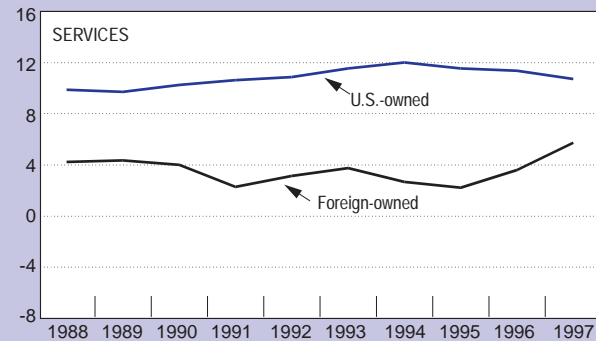
Percent



Percent



Percent



ROA Return on assets

U.S. Department of Commerce, Bureau of Economic Analysis.

demonstrated that age effects and the effects of exchange-rate changes were significant factors. Unlike Laster and McCauley, they found no evidence of the effects of heavy debt loads. They also found no significant tendency for newly acquired foreign-owned companies to be those with low or negative rates of return. They found that roughly half of the profitability gap remained unexplained. They presented statistical evidence suggesting that part of the unexplained profitability gap could be related to profit shifting using transfer prices.

Grubert used company-level estimates of the return on historical-cost assets and sales for foreign-controlled and domestically controlled U.S. corporations in 1987–93. Most of his analysis was based on a taxable-income-to-sales measure because of the problems associated with using historical-cost assets as a denominator. In addition to using total taxable income as a numerator, Grubert examined an alternative that approximated operating income by excluding receipts of dividends, interest, and royalties; he found that the profitability gap was much smaller using the alternative measure.

As in his earlier paper with Goodspeed and Swenson, Grubert found some evidence of age-related effects, but little evidence of exchange-rate effects (perhaps because the exchange value of the dollar was more stable in 1987–93 than in 1980–87). After controlling for a variety of factors, Grubert found that less than half (and perhaps as little as one-quarter) of the ROA gap remained unexplained. Profit shifting using transfer prices may underlie part of the unexplained difference, but Grubert presented evidence that it is not a major factor: He found that the profitability of foreign-controlled companies was similar to that of companies that were 20- to 50-percent foreign-owned even though the former group would be more likely to shift profits out of the United States using transfer prices.

Explanatory factors

This study uses the new current-cost industry-level estimates for foreign-owned and U.S.-owned companies and company-level estimates for foreign-owned companies to examine the role of age-related effects and intrafirm-import content in explaining the low ROA of foreign-owned companies. As explained above, the previous studies examined these factors using data at the all-

industries level or with only a very limited industry breakdown, or they used company-level data that were generally valued on a historical-cost basis. This study also examines industry-mix effects in more detail than in the earlier studies, and it examines market share, a factor not explicitly considered in the earlier studies.

In the analysis that follows, each of these factors is first examined in isolation, both for ease of exposition and because differences among some of the data sets used precluded a completely integrated approach to analysis. To determine whether the results differ when the explanatory factors are (to the extent possible) examined simultaneously, a multivariate regression analysis also was performed; it is discussed at the end of the section. Such an analysis would help to identify any cases in which explanatory factors are related to one another, which would make it difficult to sort out the independent effects of each factor. (For example, market share could potentially be associated with age, inasmuch as it might take a number of years to build market share.)

Industry mix.—A possible reason that foreign-owned companies have a lower ROA than U.S.-owned companies is that they are concentrated in low-profit industries. However, a systematic examination of the new industry-level estimates suggests industry mix is of only limited importance. The relatively low ROA's of foreign-owned companies have been widespread across industries: During 1988–97, foreign-owned companies had a lower average ROA than U.S.-owned companies in 22 of the 30 nonfinancial industries shown in [table 2](#). This result was pervasive over time and across industries.

To quantify the industry-mix effects, the ROA gap was statistically decomposed into three components: Industry-mix effects, within-industry gaps, and interaction effects ([table 3](#)).⁷ This computation indicated that only a small percentage of the gap was attributable to a tendency for foreign-owned companies to be concentrated in low-profit industries. Industry mix accounted for only 12 percent of the ROA gap, on average, in 1988–97.

These decompositions were carried out on industry estimates at both the 2-digit and 3-digit Standard Industrial Classification (SIC) level.⁸ At

7. The decomposition method is described in the technical note.

8. Although the 3-digit estimates are available only on a historical-cost basis, the industry patterns in the historical-cost and current-cost estimates are similar, so it is unlikely that using historical-cost data significantly biased the results.

covering foreign-controlled domestic corporations, appear in U.S. Department of the Treasury [24]. In these data, "control" is generally defined as ownership by a foreign person or entity, directly or indirectly, of 50 percent or more of a U.S. corporation's voting stock.

Table 3.—Decomposition of the ROA Gap

[Percentage points]

Year	ROA Gap	Industry-mix effects	Within-industry effects	Interaction effects
1988	-1.8	0.1	-3.1	1.2
1989	-2.1	-0.1	-3.3	1.3
1990	-3.1	-0.2	-3.1	0.2
1991	-3.1	-0.3	-3.1	0.3
1992	-2.9	-0.4	-2.8	0.3
1993	-2.6	-0.5	-3.0	0.9
1994	-2.2	-0.3	-2.3	0.4
1995	-1.9	-0.2	-1.2	-0.5
1996	-1.3	-0.2	-0.2	-0.9
1997	-1.0	-0.3	-0.5	-0.1

NOTE.—The ROA gap is defined as the ROA for all foreign-owned companies in an industry less the ROA for all U.S.-owned companies in that industry.
ROA Return on assets

both levels of detail, only small industry-mix effects were found.⁹

Notwithstanding the general unimportance of industry-mix effects, factors specific to particular industries may in some cases cause the ROAs of foreign-owned companies to be lower than those of U.S.-owned companies. For example, profits in some industries (such as lodging) are highly dependent on local business conditions, and foreign-owned companies' low ROA can be partly explained by the concentration of their operations in slow-growing areas of the United States. Detailed industry-by-area distributions of foreign-owned and U.S.-owned business establishments are available for 1992, and in that year, the ROA of foreign-owned companies in hotels and other lodging places was 7.2 percentage points below that of U.S.-owned lodging companies. The foreign-owned companies had a relatively large presence in some slow-growing lodging markets (such as California) and a relatively small presence in some fast-growing markets (such as Nevada).¹⁰

Market share.—One factor that was not investigated in the aforementioned studies is market share. However, more general studies of companies' profitability, such as that of Buzzell, Gale, and Sultan [2], have shown a positive relationship between market share and profitability. A large market share may be indicative of conditions, such as economies of scale and market power,

9. However, industry-mix effects may be more significant within some of the industries shown in table 2. For example, the large and negative ROA gap in rubber and miscellaneous plastic products appears to reflect foreign-owned companies' concentration in one of the less profitable segments of that industry—tire and inner tube manufacturing. The large and positive ROA gap in "other" manufacturing appears to reflect foreign-owned companies' concentration in one of the more profitable segments of that industry—tobacco product manufacturing.

10. The geographic distribution of foreign-owned companies is based on data for business establishments from the Census Bureau's 1992 Census of Manufactures through a joint project that linked BEA and Census Bureau data. The 1988–92 industry growth is based on average annual employment data by industry from the U.S. Department of Labor [22].

For a recent examination of the geographic distribution of foreign-owned U.S. businesses, see Johnson, Shannon, and Zeile [5].

that can enhance profitability.¹¹ It is also possible that high profitability can lead companies to expand their operations, such as through the acquisition of other companies, resulting in the observed relationship. Market share and profitability are probably, to some degree, mutually reinforcing, but the existing research suggests that the causality of this relationship runs mainly from market share to profitability.¹²

Industry patterns in the new ROA estimates provide some indication that the profitability of foreign-owned companies is related to their market shares. Industries in which the profitability of foreign-owned companies is relatively high (such as petroleum and chemical manufacturing) tend to be those in which the largest foreign-owned companies have a significant share of the total U.S. market for certain products. However, in some industries (such as stone, clay, and glass products manufacturing and rubber and miscellaneous plastic products manufacturing), the largest foreign-owned companies both are relatively less profitable and have a significant share of the total U.S. market for certain products. More definitive results can be obtained by performing the analysis at the company level.

To perform company-level analysis, ROA estimates were developed for 2,133 foreign-owned manufacturing companies for 1992 using procedures similar to those used to compute the industry-level estimates.¹³ The ROA gap for each foreign-owned company was calculated as the company's ROA minus the average ROA for U.S.-owned companies in the same industry. Market-share estimates for the foreign-owned companies were developed using detailed product-level shipments data for each company obtained from the Census Bureau's 1992 Census of Manufactures through a joint project that linked BEA and Census Bureau data.¹⁴

11. Microeconomic theory suggests, and industrial organization research has demonstrated, that concentration in an industry can allow the producers in that industry to restrict output and earn above-normal profits (economic rents). Although this research has usually dealt with explaining differences in profitability across industries, some researchers have extended the research to explain profitability differences within industries. Porter [13] and others have shown that the economic rents in an industry tend to be disproportionately distributed to those companies that most strongly possess the features that limit competition within the industry. For example, if the presence of heavily advertised national brands limits competition within an industry, then the companies that sell those brands will enjoy most of the economic rents, and those that sell generic brands may receive none at all. Companies that earn economic rents in this way are said to have "market power."

12. For a review of the literature on the relationship between market share and profitability, see Kohli, Venkatraman, and Grant [6].

13. The examination was restricted to manufacturing and to 1992 because market-share estimates were available only in that industry and only for that year.

14. Although the product-level data were not published, the BEA-Census Bureau data link project provided data on shipments by foreign-owned companies at the detailed 7-digit product level. Each company's market share for each

Table 4.—Market Share and Median ROA Gap for Foreign-Owned U.S. Manufacturing Companies, 1992

Market share (percent)	Median ROA gap (percentage points)	Number of companies
Less than 10.0	-2.0	1,639
10.0 to 19.9	-2.0	294
20.0 to 29.9	-1.0	127
30.0 to 39.9	(^c)	38
40.0 or more	(^c)	35

NOTE.—The ROA gap is defined as the ROA for a foreign-owned company less the ROA for all U.S.-owned companies in the same industry.
 (^a) Less than 0.05 (±)
 ROA Return on assets

Table 4 shows the median ROA gap for foreign-owned companies grouped by their average market share.¹⁵ For example, the 1,639 companies that had an average market share across all product lines of less than 10 percent had a median ROA gap of -2.0 percentage points. In general, as a foreign-owned company's market share increased, the gap between its ROA and the average ROA for U.S.-owned companies decreased. A regression of foreign-owned companies' ROA gap on their market share confirmed the statistical significance of this relationship.¹⁶ (See the **technical note** for summary results of the regression analysis.)

Age effects.—The age effects examined in this study include (1) the effects of acquiring or establishing a new business and (2) the benefit of experience. Foreign-owned companies may have a lower ROA than U.S.-owned companies because of factors related to the share of their operations that are newly acquired or established. These factors include high startup costs for newly established businesses, a possible tendency for acquired companies to be those that are relatively less profitable, and accounting changes resulting from mergers and acquisitions (see the box **"Accounting for Mergers and Acquisitions"**). The relationship between the newness of foreign-owned companies and the relative size of their negative ROA gap suggests that newness is an important factor (**chart 6**). The chart shows that, in relative terms, the negative ROA gap of foreign-owned companies tends to rise or fall with their degree of newness.

The profits of foreign-owned companies that have been newly acquired or established may be

product that it produces was derived by computing the ratio of the company's shipments of the product to total U.S. shipments of that product. Because foreign-owned companies tend to be large and diversified, and because only an overall ROA was available for each company, an average market share across all products for each company was computed using a weighted average based on the distribution by product of the company's shipments.

15. Companies with an ROA gap that exceeded 25 percentage points in absolute value were considered outliers and were excluded here and in all of the company-level analysis.

16. For the regression analysis in this study, significance is uniformly defined at the 1-percent level, unless otherwise noted.

dampened by high startup costs related to activities such as aggressive spending for capital equipment or advertising.¹⁷ In 1996, for example, foreign-owned nonfinancial companies that acquired or established a U.S. business in the preceding 2 years had an average capital-spending-to-sales ratio of 8.4 percent, compared with 5.1 percent for other foreign-owned nonfinancial companies.

Other studies identified additional factors related to the newness of foreign ownership. As noted earlier, some studies detected a tendency for newly acquired companies to be those that are relatively less profitable.¹⁸ Others have detected a tendency for foreign-owned companies to incur heavy debt burdens (and associated interest expenses) when they acquired or established other U.S. businesses. (The ROA estimates presented here are not directly affected by variations in debt burden, because they measure the return to holders of both equity and debt.)

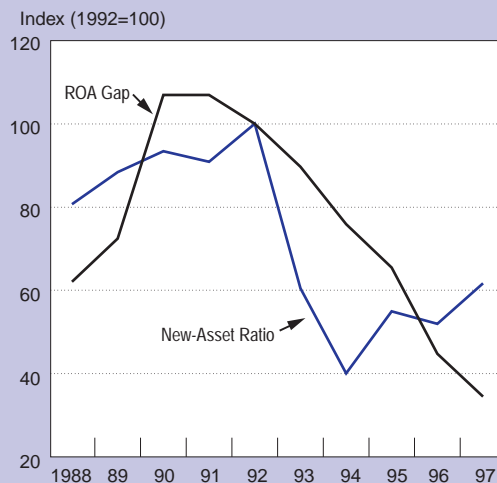
The industry-level estimates provide a mixed picture of the connection between the ROA gap and the newness of foreign-owned companies. Some

17. In the case of capital expenditures, profits would be reduced mainly by the associated depreciation charges.

18. Both Landefeld, Lawson, and Weinberg [8] and Laster and McCauley [9] used data from BEA's survey of new foreign direct investments in the United States to show that a large percentage of U.S. companies acquired by foreigners had below-average profitability.

CHART 6

Foreign-Owned U.S. Nonfinancial Companies: Indexes of the ROA Gap and the New-Asset Ratio, 1988-97



Notes.—The ROA gap is defined as the ROA for all foreign-owned U.S. companies in an industry less than the ROA for all U.S.-owned companies in that industry.

The new-asset ratio is defined as the ratio of the assets of U.S. companies acquired or established by foreign-owned U.S. companies in the preceding 2 years to the current-year assets of all foreign-owned U.S. companies.

ROA Return on assets

U.S. Department of Commerce, Bureau of Economic Analysis

industries in which the profitability of foreign-owned companies was relatively high (such as petroleum manufacturing and chemical manufacturing) were those in which newly acquired or established businesses accounted for a relatively small share of the operations of foreign-owned companies. However, in some industries (such as food and kindred products manufacturing), newly acquired or established businesses accounted for a relatively small share of the operations of foreign-owned companies, but the profitability of foreign-owned companies was relatively low.

The relationship between the ROA gap and the newness of foreign ownership was examined in greater detail using company-level estimates covering 7,906 foreign-owned nonfinancial companies in 1989 and 10,223 foreign-owned nonfinancial companies in 1996. The newness of foreign ownership of a given company was measured by the ratio of (1) the assets of companies acquired or established by the given company in the preceding 2 years—as reported on BEA's survey of new foreign direct investments in the United States—to (2) the current-year assets of the given company.¹⁹ This

19. BEA's survey of new foreign direct investments covers outlays by foreign direct investors to acquire or establish affiliates in the United States. For newly acquired companies, asset values reported on the survey are as of the end of the most recent financial year preceding acquisition; if assets are to be revalued after

measure is referred to hereafter as the "new-asset ratio."

Table 5 shows the average ROA gap for foreign-owned companies grouped by their new-asset ratios. For example, in 1989, companies with a "high" new-asset ratio (25 percent or more) had an average ROA gap nearly twice as large (-3.0 percent) as that of companies with a "low" new-asset ratio (less than 25 percent). The differences between the mean ROA's for the low and high new-

acquisition, they are reported after revaluation. For newly acquired companies, asset values are projections for the end of the first full year of operations. A two-year lag was chosen for the newness measure because it was judged long enough to include transactions that could have had an impact on rate of return, but short enough to preclude dissipation of the factors related to newness. Comparisons of two-year and three-year lags in earlier work showed little difference in results.

Table 5.—Average ROA Gap for Foreign-Owned U.S. Nonfinancial Companies by New-Asset Ratio, 1989 and 1996

[Percentage points]

Year	Low new-asset ratio	High new-asset ratio
1989	-1.7	-3.0
1996	-2.3	-3.2

NOTES.—The new-asset ratio is the ratio of the assets of companies acquired or established by the given company in the preceding 2 years to the current-year assets of the given company. A new-asset ratio less than 25 percent is considered "low," and one that is 25 percent or more is considered "high."

The ROA gap is defined as the ROA for a foreign-owned company less the ROA for all U.S.-owned companies in the same industry.
ROA Return on assets

Accounting for Mergers and Acquisitions

Business combinations (mergers and acquisitions) may result in accounting changes that distort return on assets (ROA) comparisons across companies and across time. U.S. generally accepted accounting principles currently provide two methods for accounting for business combinations—the "purchase" method and the "pooling-of-interests" method. In the purchase method, one company is identified as the buyer and records the value of the company being acquired in its financial statements at the price it actually paid. In the pooling-of-interests method, the two combining companies add together the historical-cost values of their net assets.

The effect of a business combination on the combined companies' ROA depends on the method used. The purchase method will often result in substantial changes in the ROA of the combined companies because the purchased company's assets are revalued to current prices. In addition, any premium paid for the purchased company beyond the fair-market value of its assets is recorded as "goodwill," which is treated as an amortizable intangible asset. The annual amortization of goodwill is a charge against income and thus reduces the ROA. In contrast, the pooling-of-interests method generally does not affect the ROA of the combined companies, because the transaction generally does not result in any charges against income and because the combining companies' assets are carried over to the new combined company at historical cost.

Companies generally prefer the pooling-of-interests method because it does not disrupt comparisons of financial results across companies or across time.¹

This study tried to remove some of the effects of business combinations on the ROA estimates. Specifically, an estimate for annual amortization of intangible assets (chiefly, goodwill) was removed from the numerator, and an estimate for the stock of amortizable intangible assets was removed from the denominator (see the technical note for details). These adjustments mitigated, but did not completely remove, potential inconsistencies over time in the ROA estimates. For example, special allowance was not made for other intangible assets that may have been restated at market value after a business combination.

Another potential effect of business combinations on the ROA estimates is the usually higher depreciation charges that result when assets are purchased for an amount greater than their value at historical cost. However, the ROA estimates presented here should not be affected, because all companies' fixed assets (and the associated depreciation charges) have been revalued to current prices.

1. However, in mid-1999, the U.S. Financial Accounting Standards Board (FASB) announced that it would eliminate the pooling-of-interests method for business combinations beginning late in 2000. The faults with this method that the FASB cited included lack of conformity with international accounting standards and inconsistency with the treatment for other acquired assets.

asset ratio categories were found to be statistically significant.²⁰

A second age-related effect is the benefit of experience. Foreign-owned companies may initially have a lower ROA than U.S.-owned companies because they are relatively less mature and have a greater need for improvements that will be made in their operations over time. These improvements may include reaching a higher level of capacity utilization, restructuring or shedding unprofitable operations, and learning by doing. Earlier research demonstrated the benefits of experience on a company's ROA. For example, Lupo, Gilbert, and Liliestedt [10] examined company-level data for 4,507 foreign manufacturing affiliates of U.S. multinational companies and found that the average ROA for the affiliates increased steadily with age, at least for the first 10 years. As mentioned earlier, Grubert, Goodspeed, and Swenson [3] and Laster and McCauley [9] found a similar result in their research.

This study examined the relationship between a foreign-owned company's age and its ROA gap using data for a panel of 749 foreign-owned manufacturing companies that existed throughout 1988–97. The panel was restricted to manufacturing companies because some of the benefits of experience (such as higher capacity utilization) are expected to be strongest for companies in that industry. For analytical purposes, the age of a given company was measured as the number of years that the affiliate was in the panel.²¹ To test for the presence of a relationship between age and the ROA gap, panel-data regressions were performed on the company-level data.

A significant relationship between a company's age and its ROA gap was detected for all foreign-owned manufacturing companies in the panel and for companies in 11 of the 18 manufacturing industries shown in tables 1 and 2. For all man-

Table 6.—Median ROA Gap for a Matched Sample of Foreign-Owned U.S. Companies in All Manufacturing Industries and in Motor Vehicles and Equipment Manufacturing, 1988–97

[Percentage points]

	All manufacturing industries	Motor vehicles and equipment
1988	-2.7	-6.5
1989	-2.6	-6.4
1990	-3.5	-2.2
1991	-3.0	-3.9
1992	-2.0	-1.0
1993	-1.4	-0.7
1994	-0.3	1.5
1995	-1.9	3.5
1996	-0.2	-1.8
1997	0.1	3.0

NOTE.—The ROA gap is defined as the ROA for a foreign-owned company less the ROA for all U.S.-owned companies in the same industry.
ROA Return on assets

ufacturing industries combined, the median ROA gap, which was -2.7 percentage points in 1988, had been completely eliminated by 1997 (table 6). Among individual industries, a particularly strong relationship between age and the ROA gap was found in motor vehicles and equipment manufacturing: The median ROA gap was -6.5 percentage points in 1988, but a positive 3.0 percentage points in 1997. (See the technical note for summary results of the regression analysis.)

Intrafirm-import content.—Some analysts speculate that foreign-owned companies have actually made higher profits than as measured by the BEA data but then have shifted some of them out of the United States using transfer prices. Although tax regulations generally require that intrafirm transactions be at “arms-length” prices, intercountry differences in tax rates create incentives to deviate from this standard, particularly for trade in nonstandardized goods and services for which market-based reference prices are lacking.²² It was not possible to directly test for profit shifting using transfer prices. However, the greatest opportunities to shift profits using transfer prices exist for foreign-owned companies with a high percentage of their sales accounted for by intrafirm imports. Thus, any relationship detected between the share of sales accounted for by intrafirm imports and the ROA gap may provide indirect evidence of profit shifting using transfer prices.

The industry-level estimates indicated no clear relationship. To investigate the relationship at a more detailed level, company-level estimates for foreign-owned companies in manufacturing and wholesale trade in 1988–97 were used.

20. A sample inference between two population means was used to test the statistical significance of these differences; the procedure is described in the technical note.

An extension of the analysis of the effects of newness would measure newness in U.S.-owned companies and its impact on the ROA gap for the foreign-owned companies. Using readily available data, a crude measure of newness was developed for U.S. parent companies in manufacturing using data from BEA's surveys of U.S. direct investment abroad. In contrast to the findings for foreign-owned companies, U.S. parent companies in manufacturing with a high degree of newness had a higher ROA than those with a low degree of newness. This difference may reflect the types of companies acquired: Foreign-owned companies may tend to acquire relatively less profitable companies, whereas U.S.-owned companies may tend to acquire companies that are relatively more profitable. Further work is needed to confirm and interpret these preliminary results and to investigate whether they apply to U.S.-owned companies in general.

21. This measure of age is limited in two ways. First, the companies were not of uniform age in the first year of the panel (1988). Second, the companies in the panel may have acquired or established other businesses during the period, an activity that would have subjected them to new rounds of profit-reducing “newness.” Therefore, any benefit of experience detected for these companies must have been strong enough to offset the effects of these data limitations.

22. An “arm's-length” price is the price that would be charged between unrelated parties.

Table 7.—Average Intrafirm-Import Content of Sales and Median ROA Gap for Foreign-Owned Manufacturing and Wholesale Trade Companies, 1988–97

Intrafirm-import content of sales (percent)	Median ROA gap (percentage points)	Number of companies
Less than 10.0	-3.0	1,744
10.0 to 29.9	-2.6	672
30.0 to 49.9	-3.1	575
50.0 to 69.9	-3.4	492
70.0 or more	-4.0	390

NOTE.—The ROA gap is defined as the ROA for a foreign-owned company less the ROA for all U.S.-owned companies in the same industry.
ROA: Return on assets

Table 7 shows the median ROA gap for foreign-owned companies grouped by the intrafirm-import content of their sales. For example, the 1,744 companies in the first group had an intrafirm-import content of sales of less than 10 percent and a median ROA gap of -3.0 percentage points. From the table, there does not appear to be a strong relationship between the two variables. Regressions of the two variables detected a statistically significant relationship in only 2 of the 10 years studied. However, these 2 years were at the end of the period, when the profitability of foreign-owned firms was highest and the incentives to shift profits thus possibly the greatest.²³ (See the [technical note](#) for summary results of the regression analysis.)

The regression equation was also estimated annually by country for foreign-owned companies from five major investing countries: Canada, France, Germany, Japan, and the United Kingdom. Effective tax rates varied considerably across these countries, and the incentive to shift profits from the United States would have been strongest for parent companies in countries such as the United Kingdom, where the tax rates on business profits were low relative to the rates in the United States.²⁴ However, when the regression equations

23. To see if imports might affect profitability in other ways, such as by influencing the cost of inputs, the relationship between the *total* import content of sales and the ROA gap was also tested. However, as was the case for intrafirm imports, the relationship was found to be statistically significant in only 2 of the 10 years studied. In light of the results of the analysis of intrafirm imports, this result was to be expected because intrafirm imports accounted for 80 percent, on average, of total imports of goods by foreign-owned companies during the period.

In addition to intrafirm imports, the relationship between foreign-owned companies' ROAs and their intrafirm exports was tested. However, the regression analysis provided no evidence that foreign-owned companies with larger intrafirm export-to-sales ratios have larger ROA gaps. The opportunity for foreign-owned companies to use exports for profit shifting is probably limited. Their intrafirm exports are significantly smaller than their intrafirm imports, and the exports are more likely to consist of standard goods for which arm's-length prices are readily available. The only previous study to examine explicitly the relationship between trade and profits was Laster and McCauley [9]; their findings were based primarily on tests using imports, but they also examined the relationship between profits and exports and, like this study, found no correlation.

24. Data for majority-owned foreign affiliates of U.S. multinational companies suggest that effective tax rates for the five foreign investing countries varied considerably and that tax rates in the United Kingdom were particularly

were estimated for the individual countries, the coefficients were insignificant in all but 1 of the 50 country-by-year regressions.

Combined effects.—The preceding analysis showed that, when taken separately, industry mix, market share, newness, and the benefit of experience are each (to varying degrees) associated with the ROA gap of foreign-owned companies, and that intrafirm-import content of sales is generally not. To determine whether a particular factor still independently does or does not contribute to differences in the ROA gaps once the influence of each of the other factors is taken into account, the measures of market share, newness, and intrafirm-import content were included as independent variables in a multivariate regression equation in which the ROA gap was the dependent variable. The equation was estimated using data for 2,133 foreign-owned manufacturing companies in 1992.²⁵

It was not necessary to include a variable for industry in the equation, because the manner in which the data are constructed implicitly controls for industry effects; that is, for each foreign-owned company, the gap is computed as the ROA for the company less the average ROA for U.S.-owned companies in the same industry. It was not possible to include a variable for the benefit of experience, because that variable is tested in a dynamic, rather than a static, framework. That is, the effect of experience was tested using time-series data; however, data limitations made it necessary to base the estimation of the multivariate regression equation on data for a single year.

The regression results confirmed that, even after allowing for the influence of the other measures, market share and newness were each significantly correlated with differences in the ROA gaps, and that intrafirm-import content was not.

As noted earlier, there could be relationships between some of the explanatory variables that, if present, might influence the results of the regression analysis; in particular, such relationships would tend to make it difficult to discern the independent effect of each variable. Statistical tests performed in conjunction with the multivariate analysis suggest that such relationships were not significant. (See the [technical note](#) for summary results of the regression analysis.)

low relative to those in the United States. For a study of corporate tax rates in the member countries of the Organisation for Economic Co-Operation and Development, see KPMG [7].

25. The estimation was restricted to manufacturing and to 1992 because market-share estimates were available only in that industry and only in that year.

Technical Note

This note explains how the ROA estimates were computed, describes the statistical methods used for analysis, and presents summary results of the regression analysis.

Computation of the ROA estimates

The ROA estimates for foreign-owned nonfinancial companies and U.S.-owned nonfinancial companies were computed as the ratio of profits plus interest paid to the average of beginning- and end-of-year total assets.²⁶ (Tables 8 and 9 summarize the derivation of the numerator and denominator of the ROA estimates.) Profits are the national income and product accounts (NIPA's) item "profits from current production," which measures profits before deduction of income taxes and excluding nonoperating items such as capital gains and losses and income from equity investments. Profits from current production reflect the value of inventory withdrawals and depreciation on a current-cost basis. Interest paid is gross interest paid (that is, interest receipts are not netted against interest payments). Total assets consist of

26. The data for U.S.-owned companies is restricted to corporations because the source data used are available only for those companies. In 1997, foreign-owned corporations accounted for 95 percent of the gross product (value added) of all foreign-owned companies.

Table 8.—Derivation of the Numerator of the ROA Estimates for Nonfinancial Companies for 1997

[Millions of dollars]

Foreign-owned companies		
1	Profit-type return ¹	45,635
2	Plus: CCAAdj for consistent accounting at historical cost	2,233
3	CCAAdj for current cost	433
4	Expensed petroleum and natural gas E&D expenditures	766
5	Amortization of intangible assets	4,309
6	Effect of recognition of software as fixed investment	829
7	Monetary interest paid	40,452
8	Equals: Numerator	94,657
All U.S. companies		
9	Corporate profits with inventory valuation adjustment, NIPA's ²	510,927
10	Plus: CCAAdj for consistent accounting at historical cost ³	114,934
11	CCAAdj for current cost ³	-63,092
12	Monetary interest paid ⁴	378,018
13	Equals: Numerator	940,787
U.S.-owned companies		
14	Numerator (line 13 less line 8)	846,130

1. As published in Zeile (1999), 36. Includes an inventory valuation adjustment.
 2. As published in NIPA table 6.16C. In the NIPA's, petroleum and natural gas exploration and development expenditures, business purchases of software, and business own-account software production are regarded as fixed investment. Also, amortization of intangible assets is not recognized as an expense.
 3. As published in NIPA table 8.15.
 4. Consistent, in concept, with data in NIPA table 8.20. The estimates presented here are preliminary and have since been revised.

NOTE.—See the technical note for more information.
 CCAAdj Capital consumption adjustment
 E&D Exploration and development
 NIPA's National Income and Product Accounts
 ROA Return on assets

both tangible and intangible assets but exclude assets for which the return is not included in the numerator of the ROA ratio. Reproducible tangible assets are valued at current cost—that is, at the price that would have been paid for them if they had been purchased new in the period to which the estimates refer.

Most of the information used to compute the ROA's for foreign-owned companies is available from BEA's surveys of foreign direct investment in the United States, and most of the information used for U.S.-owned companies is available from the NIPA's. However, some of the data used to compute the ROA's for both groups of companies had to be obtained from other sources or estimated. Most of the estimation involved allocating estimates at the all-industries level to individual industries; these estimates were allocated to individual companies using identical methods. These allocations required assumptions that may have resulted in the understatement or overstatement of some of the ROA components for some industries or companies. However, it is unlikely that these allocations had a material impact on the analysis, because the allocated items' contribution to the ROA estimates was small relative to the variation in the estimates across industries and to the size of the gaps between the estimates for foreign- and U.S.-owned companies. Checks using alternative methods to allocate the estimated data across industries confirmed that the ROA patterns for foreign- and U.S.-owned companies were not

Table 9.—Derivation of the Denominator of the ROA Estimates for Nonfinancial Companies for 1997

[Millions of dollars]

	1996	1997	
Foreign-owned companies			
1	Current-cost net plant and equipment	484,327	505,971
2	Plus: Current-cost inventories	164,995	169,513
3	Other assets	830,418	898,848
4	Less: Amortizable intangible assets	86,261	90,149
5	Equity investment in unconsolidated businesses	97,828	106,197
6	Equals: Current-cost assets	1,295,651	1,377,986
7	Denominator¹	1,336,819	
All U.S. companies			
8	Current-cost net plant and equipment	4,249,578	4,481,868
9	Plus: Current-cost inventories	1,145,500	1,206,699
10	Other assets	7,745,510	8,248,757
11	Less: Amortizable intangible assets	683,108	727,655
12	Equity investment in unconsolidated businesses	963,974	986,543
13	Equals: Current-cost assets	11,493,506	12,223,126
14	Denominator¹	11,858,316	
U.S.-owned companies			
15	Denominator (line 14 less line 7)	10,521,498	

1. Equals the average of current-year and prior-year current-cost assets.

NOTES.—See the technical note for more information. Assets are valued at yearend.
 ROA Return on assets

significantly affected by the method used for the allocations.

Foreign-owned companies

Profits.—Profits from current production for foreign-owned companies were estimated by adjusting the existing estimates of the companies' "profit-type return" (PTR) to place depreciation charges on a consistent accounting basis that reflects geometric depreciation patterns and to value them at current costs. The PTR estimates include an adjustment to place inventories, but not depreciation, on a current-cost basis.²⁷ To remove inconsistencies in the valuation of depreciation, a capital consumption adjustment (CCAdj) was computed for foreign-owned companies. In addition, to be consistent with profits from current production, the PTR of foreign-owned companies was adjusted to make it more consistent with the NIPA treatment of expensed petroleum and natural gas exploration charges, amortization of intangible assets, and business purchases of computer software.²⁸

The profit estimates for foreign-owned companies required a CCAdj because depreciation reported on the direct investment surveys is valued at historical cost.²⁹ The CCAdj, which is the difference between the historical-cost and the current-cost value of depreciation charges, comprises two parts: One part adjusts depreciation charges used by businesses in financial or tax accounting so that they are on a consistent historical-cost accounting basis, and the other part adjusts those charges to a current-cost basis.³⁰

27. BEA estimates the PTR of foreign-owned companies from financial and operating data reported in its annual and benchmark surveys of foreign direct investment in the United States. These data provide a picture of the overall operations of foreign-owned companies, and include balance sheets and income statements, employment and compensation of employees, trade in goods, research and development expenditures, sources of finance, and selected data by State. The PTR estimates are based primarily on data from the income statement and are computed as net income (before the deduction of income taxes or depletion charges), excluding capital gains and losses, income from equity investments, and other nonoperating income, and they also include an inventory valuation adjustment. For a summary of the most recent estimates—covering 1997—see Zeile [25]. For more detailed estimates, see U.S. Department of Commerce [18].

28. The NIPA profit measure is primarily based on tabulations of business tax return data by the Internal Revenue Service (IRS). NIPA table 8.25 shows the relationship between NIPA profit measures and the corresponding measures published by the IRS. For the most recent estimates, see U.S. Department of Commerce [20].

29. The data collected in the direct investment surveys are required to be reported as they would have been in the financial statements of the foreign-owned companies and generally reflect U.S. generally accepted accounting principles (GAAP). Under GAAP, depreciable assets and their related depreciation charges are usually valued at historical cost, and depreciation charges generally follow a straight-line (rather than a geometric) pattern.

30. For more information about these adjustments, see page M-6 of U.S. Department of Commerce [19] and page 2 of U.S. Department of Commerce [16].

The CCAdj estimates for the PTR of foreign-owned companies were based on CCAdj estimates that BEA has computed for income on foreign direct investment in the United States as shown in the international transactions accounts (ITAs).³¹ The ITA estimates are based on (1) estimates of historical-cost depreciation from data collected in annual and benchmark surveys and (2) estimates of current-cost depreciation computed by BEA using a perpetual-inventory model that takes into account the service lives and depreciation rates of the assets.³² Because direct investment income in the ITAs reflects the foreign parent company's share in the earnings of their U.S. affiliates, the CCAdj estimates used in the ITAs are adjusted for percentage of foreign ownership. The CCAdj estimates are made only at the all-industries level.³³

The CCAdj estimates from the ITAs were used to adjust the PTR of foreign-owned companies. Because PTR reflects the total earnings of foreign-owned companies, not just the foreign parents' share, the two CCAdj components were modified to remove the adjustment for percentage of foreign ownership. The modified adjustment for consistent accounting at historical cost was allocated to individual industries in proportion to the industries' respective shares in the reported depreciation charges in that year; this procedure assumes that the composition of the fixed assets and the relationship between financial-statement-based and consistent-historical-cost depreciation charges is the same across industries. The adjustment for current cost was allocated to individual industries according to industry-level estimates of the ratio of historical-cost to current-cost depreciation for all U.S. companies from BEA's wealth estimates.

The adjustment for current cost may have been overstated or understated in some industries because the industrial distribution of the ratio of historical-cost to current-cost depreciation for all U.S. companies from the BEA wealth estimates is based on data for establishments, which are classified by the principal product or service produced at each establishment; in contrast, the distribution of the depreciation charges for foreign-owned com-

31. BEA collects data on direct investment income, along with data on other transactions and positions between foreign parent companies and their U.S. affiliates needed for preparation of the ITAs and NIPAs, in quarterly surveys of foreign direct investment in the United States. (Parallel surveys are conducted for U.S. direct investment abroad.) Unlike the data from the annual and benchmark surveys described in footnote 27, which cover the overall operations of foreign-owned companies, the data from the quarterly surveys cover only transactions and positions between foreign parent companies and their U.S. affiliates.

32. For a description of the perpetual-inventory model, see pages M-4 to M-6 of U.S. Department of Commerce [17].

33. The CCAdj estimates, which extend back to 1982, were introduced in Murad [12], pp. 72-73.

panies is based on data collected for enterprises (companies), which are classified by the principal product or service produced by all of their establishments combined.

Profits of foreign-owned companies were also adjusted to include three items that are treated as expenses in the computation of PTR but not in the computation of NIPA profits: Expenditures for petroleum and natural gas exploration and development, amortization of intangible assets, and purchases of software.³⁴ The estimates of amortization of intangible assets were computed in three steps: First, the stock of amortizable intangible assets was estimated from balance sheet data for the companies reported on the direct investment surveys and for all U.S. corporations from the Internal Revenue Service's *Corporate Source Book* [23] (the estimation procedure is described in the section "Total assets")³⁵; second, annual amortization charges were computed based on these stock estimates and on an assumed amortization pattern (using amortization rules prescribed by U.S. generally accepted accounting principles); and finally, profits for foreign-owned companies were adjusted to reflect BEA's new treatment of software in the profit estimates for all domestic corporations.³⁶

These adjustments make the estimates of profits from current production (and profit-type return) for foreign-owned companies as comparable as possible with their counterparts in the NIPAs.

34. Data on expenditures of foreign-owned companies for petroleum and natural gas exploration and development are collected in BEA's annual and benchmark surveys of foreign direct investment in the United States.

In the NIPAs, expenditures for mining exploration, shafts, and wells are treated as fixed investment and, accordingly, the NIPA profits measures reflect the depreciation associated with the investments rather than the expenditures themselves. Because the data are unavailable to measure the depreciation associated with the investments by foreign-owned companies, the PTR of the foreign-owned companies could not be adjusted to reflect the depreciation.

35. The estimates for 1997 were mainly based on data from the Census Bureau's *Quarterly Financial Report* [14] because 1997 data were not available from the *Corporate Source Book*.

36. In the NIPAs, business purchases of software and business own-account software production are regarded as fixed investment. Business incomes (proprietors' income and corporate profits) are 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 are partly offset by the deduction of the consumption of fixed capital (depreciation) on both purchased software and own-account software production. (For details, see Moulton, Parker, and Seskin [11].)

In the reports to BEA, for the period covered by this study, foreign-owned companies are believed to have treated software purchases and development of own-account software primarily as current expenses rather than fixed investment. (Until recently, there were no authoritative accounting guidelines on how companies should treat these software items in their financial reports. Beginning in 1998, the Accounting Standards Executive Committee of the American Institute of Certified Public Accountants (AICPA) has advised all of its members to treat them as fixed investment (see AICPA [1] for details).

Accordingly, it was necessary to adjust the profits of foreign-owned companies to make the treatment of software consistent with that in the NIPAs. The adjustment was estimated in two steps: First, the overall adjustment for all foreign-owned nonfinancial companies was derived based on the data for all U.S. corporations from the NIPAs on the software-related effects on profits and on the foreign-owned companies' share of corporate gross domestic product; second, the adjustment for foreign-owned companies was allocated by industry based on the industry distribution of total U.S. expenditures for computer and data processing services from the 1992 input-output accounts [15].

However, one minor difference could not be eliminated. For the NIPA profits measures, accounting provisions for losses related to bad debts are not treated as an expense, whereas such provisions are treated as an expense for foreign-owned companies' PTR.

Total assets.—Current-cost assets of foreign-owned companies were estimated by applying several adjustments to the financial-accounting-based total assets data for foreign-owned companies. First, the reported values for net plant and equipment and for inventories for all foreign-owned companies were revalued to current prices using ratios of historical-cost to current-cost net plant and equipment and inventories. These adjustment ratios are generated by the perpetual inventory model used to compute the CCA_{adj} and inventory valuation adjustment for direct investment income in the ITAs. Industry-level current-cost estimates were derived by applying the all-industries ITA adjustment ratios to the reported historical-cost data for each industry. This procedure implicitly assumes that the ratios of historical- to current-cost tangible assets are the same for each industry. Assets other than plant and equipment and inventories did not have to be adjusted, because those assets, which are mostly financial assets, are usually valued at (or near) current cost in financial accounting.³⁷

Second, the value of equity investments in unconsolidated businesses was subtracted from total assets for consistency with the profit estimates (which exclude income from such investments).

Third, an estimate of amortizable intangible assets was subtracted from total assets. The estimate was derived by multiplying the ratio of amortizable intangible assets to "other noncurrent assets" for all U.S. companies from the *Corporate Source Book* by reported data on foreign-owned companies' "other noncurrent assets."³⁸ This adjustment was made to improve consistency with the profit measure (which, as noted above, excludes the amortization of intangible assets) and to lessen the impact of variations in the level of acquisition-related amortizable intangible assets on changes in the estimated ROAs. (See the section "Age effects" in the text for details.)

37. It would have also been desirable to revalue holdings of land to current-period prices, but this was not done, because the necessary price data were unavailable. Because land's share of the total assets of both foreign-owned and U.S.-owned companies is very small, any adjustment probably would not have had a material impact on the ROA estimates.

38. "Other noncurrent assets" are all noncurrent assets except (1) equity investments involving 20 percent or more equity ownership and (2) net property, plant, and equipment.

U.S.-owned companies

Most of the data used to compute industry-level ROA's for all U.S. nonfinancial companies are available from the NIPAs and from the IRS *Corporate Source Book*. The derivation of those ROA estimates is explained below. Once the ROA estimates for all nonfinancial U.S. companies were computed, estimates for nonfinancial U.S.-owned companies were derived by subtracting the estimates for foreign-owned nonfinancial companies.

The NIPAs provide most of the data used to compute the numerator of the ROA ratios. They provide estimates of profits from current production for all U.S. companies but not by industry, because industry-level estimates of the CCAdj are not available. They also provide industry-level estimates of interest paid.

Profits.—Industry-level estimates of profits from current production for all U.S. companies were derived by computing and applying a CCAdj to the historical-cost industry-level estimates from the NIPAs. To compute industry-level CCAdj's, the aggregate adjustments from the NIPAs were allocated to individual industries. These allocations were made using the same techniques used for the estimates for foreign-owned companies; that is, the adjustment for consistent accounting at historical cost was allocated by industry using annual industry-level data on historical-cost depreciation from the *Corporate Source Book*. The adjustment for current cost was allocated by industry using industry-level estimates of the ratio of historical-cost to current-cost depreciation for all U.S. companies from BEA's wealth estimates. Because the data used to calculate the ratios are for business establishments and the profits data are for companies, the adjustment for current cost may be understated or overstated in some industries.

Total assets.—The *Corporate Source Book* provides the industry-level asset data to compute industry-level ROA estimates for all U.S. companies for this analysis. These data are at historical cost, so adjustments had to be made to derive estimates in current-period prices. Specifically, the industry-level estimates of net plant and equipment and of inventories for all nonfinancial U.S. corporations from the *Corporate Source Book* were revalued from historical cost to current prices using industry-level ratios of historical-cost assets to current-cost assets from BEA's wealth estimates. To make the denominator more reflective of the companies' own operations, the resulting estimates of current-

cost assets were adjusted to remove an estimate of the value of equity investments in unconsolidated businesses.³⁹ Finally, amortizable intangible assets from the *Corporate Source Book* were subtracted from total assets.

An adjustment could not be made for the potential difference in the levels of consolidation underlying the asset and profit data for all U.S. corporations. The level of consolidation of the NIPA profit data reflects the profits and related revenue and expense items reported on the IRS forms that are used in the estimation of NIPA profits by industry. Companies are required to report total assets and other balance sheet items to IRS on their income tax forms, and, when doing so, tend to follow U.S. generally accepted accounting principles (GAAP). Under GAAP, companies must consolidate subsidiaries in which they directly or indirectly control a majority interest (over 50 percent). In contrast, the IRS allows U.S. corporations to consolidate subsidiaries in which they control an 80-percent interest when reporting their profit data. If differences in the level of consolidation caused a company's profit data and assets data to appear in different industries, then the resulting ROA estimates may be understated or overstated for some industries.

Identification of industry-mix effects

The ROA gap was decomposed statistically into industry-mix, within-industry, and interaction effects. First, the ROA for all industries may be expressed as a weighted average of the ROA's in individual industries; the weight for any given industry is the industry's share of total assets. Thus, the average ROA for U.S.-owned companies can be expressed as

$$ROA^u = \sum_{i=1}^{30} s_i^u ROA_i^u,$$

and the average ROA of foreign-owned companies can be expressed as

$$ROA^f = \sum_{i=1}^{30} s_i^f ROA_i^f,$$

where ROA is the average return on assets for the 30 industries, ROA_i is the average return on assets for industry i , and s_i is i th industry's share of the total assets of companies in the 30 industries.

39. Because the *Corporate Source Book* did not provide the necessary balance sheet detail, this estimate was derived from ratios for U.S. multinational companies that were calculated from data collected in BEA surveys of U.S. direct investment abroad.

Variables with the superscript *f* denote data for foreign-owned companies, and variables with the superscript *u* denote data for U.S.-owned companies. The ROA gap can then be decomposed algebraically as

$$ROA^f - ROA^u = \sum_{i=1}^{30} ROA_i^u (s_i^f - s_i^u) + \sum_{i=1}^{30} (ROA_i^f - ROA_i^u) s_i^u + \sum_{i=1}^{30} (ROA_i^f - ROA_i^u) (s_i^f - s_i^u).$$

The first term on the right side of the equation measures the effects of differences in industry mix; it is the ROA gap that would have resulted if, in each industry, ROAs were the same for both foreign-owned companies and U.S.-owned companies and if the differences in the industrial distribution of assets were as observed. The second term on the right side measures the effects of within-industry ROA gaps; it is the ROA gap that would have resulted if both foreign-owned and U.S.-owned companies had the same distribution of assets by industry and if the ROA gaps in each industry were as observed. The third term reflects the interaction between these two effects.

Sample inference between two population means

The statistical significance of the differences between the average ROA gaps for foreign-owned companies with a “high” new-asset ratio and those with a “low” new-asset ratio was tested using a sample inference between two population means (see below). A test statistic was derived based on summary statistics for the ROA gaps for foreign-owned companies in the high and low new-asset-ratio classes. Because the number of observations was large and the observations were assumed to be normally distributed, the value of the test statistic was then checked against a critical t-statistic for the 1-percent confidence level. The following formula was used to calculate the test statistic:

$$z = \frac{(\overline{GAP}_H - \overline{GAP}_L)}{\sqrt{\frac{\sigma_H^2}{n_H} + \frac{\sigma_L^2}{n_L}}}$$

where \overline{GAP} is the average ROA gap, σ^2 is the variance of the ROA gaps, and *n* is the number of observations. Variables with the subscript *H*

denote data for companies with a high new-asset ratio (25 percent or more), and variables with a subscript *L* denote data for companies with a low new-asset ratio (less than 25 percent). The choice of 25 percent as the threshold for the high and low new-asset ratios was based on patterns detected in less aggregated classes.

Regression analysis

The statistical significance of market share, the benefit of experience, and the intrafirm-import content of sales in explaining the low ROAs of foreign-owned companies was separately tested using univariate regression analysis of company-level data. (Companies with an ROA gap that exceeded 25 percentage points in absolute value were considered outliers and were excluded from the analysis.) The dependent variable in each of the regression equations is the company’s ROA gap, which is the company’s ROA less the average ROA of U.S.-owned companies in the same indus-

Table 10.—Regression Results
The equations are of the form: *GAP* = *a* + *bX*

	Number of observations	Estimated coefficients		t-statistic	R ²
		a	b		
	(1)	(2)	(3)	(4)	(5)
Market share					
All manufacturing industries	2,133	-3.1	0.07	3.29**	0.005
Benefit of experience					
All manufacturing industries	20,830	-2.2	0.07	5.13**	0.001
Food and kindred products	740	-7.9	0.68	8.94**	0.107
Textile mill products	200	-1.4	0.20	1.47	0.011
Apparel and other textile products	100	-1.0	-0.29	-1.28	0.011
Lumber, wood, furniture, and fixtures	160	-1.2	-0.02	-0.12	(t)
Paper and allied products	200	-5.0	0.49	3.39**	0.060
Printing and publishing	210	-5.7	0.28	1.86	0.011
Chemicals and allied products	820	-1.4	0.25	3.58**	0.017
Petroleum and coal products	100	-1.0	0.70	3.60**	0.127
Rubber and miscellaneous plastic products	460	-5.1	0.21	2.20*	0.005
Stone, clay, and glass products	480	-5.9	0.34	3.25**	0.024
Primary metal industries	650	-1.9	0.47	5.34**	0.047
Fabricated metal products	540	-1.7	0.06	0.57	(t)
Industrial machinery and equipment	1,250	-2.4	0.40	6.40**	0.035
Electronic and other electric equipment	720	-5.1	0.46	5.87**	0.051
Motor vehicles and equipment	270	-7.8	1.16	8.13**	0.215
Other transportation equipment	120	1.2	-0.25	-0.94	0.006
Instruments and related products	270	-2.3	0.56	4.12**	0.065
Other	200	-2.0	0.60	3.71**	0.035
Intrafirm-import content of sales					
1988	3,067	-2.8	-0.01	-1.81	0.001
1989	3,257	-3.0	(t)	0.20	(t)
1990	3,522	-4.0	0.01	0.92	0.001
1991	3,709	-3.7	0.01	1.40	(t)
1992	3,241	-2.6	-0.01	-1.42	(t)
1993	4,350	-2.1	-0.01	-0.83	(t)
1994	4,361	-1.2	-0.02	-2.76**	0.015
1995	4,428	-2.2	(t)	-0.69	(t)
1996	4,466	-1.7	-0.03	-4.72**	0.005
1997	4,339	0.6	-0.02	-2.52*	0.002

**Significant at the 1-percent level.
*Significant at the 5-percent level.
(t) In column 3, less than 0.005 (±); in column 5, less than 0.0005 (±).
NOTE.—The dependent variable in each equation is the ROA gap. See the text for a description of the independent variables (X).

try. The estimated equations and their summary statistics are presented in table 10.

For the market-share and intrafirm-import equations, the number of observations is the number of companies included in the regression. The benefit of experience was tested using a panel data regression covering the years 1988–97; thus, there were 10 observations for each company. In table 10, a is the intercept term, and b is the coefficient of the independent variable.

The independent variables are as follows: For market share, the average market share of the company across all of its products; for the benefit of experience, the number of years that the company is in the panel (1 through 10); and for intrafirm-import content of sales, the percentage of the company's sales that was accounted for by intrafirm imports of goods.

In addition to the univariate analysis, multivariate regression analysis of the effects of market share, newness, and intrafirm-import content was also performed to determine whether the results differ when several explanatory variables are examined simultaneously. (It was not possible to include a variable for the benefit of experience, because that variable is tested in a dynamic, rather than a static, framework.) Using 2,133 foreign-owned manufacturing companies in 1992 as observations, the estimation yielded the following results:

$$GAP = -2.90 + .07MS - .03NEW + .01IMPORT$$

$$(3.42) \quad (-3.30) \quad (0.30)$$

$$R^2 = .010,$$

where GAP , MS , NEW , and $IMPORT$ are measures of the ROA gap, market share, newness, and intrafirm-import content of sales, respectively. The t-statistics for the independent variables, which appear in parentheses, indicate that the coefficients for market share and newness are statistically significant at the 1-percent level, but the coefficient for the intrafirm-import content of sales is not.

There could be relationships between the explanatory variables (multicollinearity) that influence the results of the regression analysis; in particular, such relationships would tend to make it difficult to discern the independent effect of each variable. Two factors suggest the absence of multicollinearity in this case: (1) the strength of the t-statistics for the significant coefficients and (2) the virtual absence of collinearity between the estimated coefficients as indicated by a correlation matrix.

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National Data

A. Selected NIPA Tables

The tables in this section include the most recent estimates of gross domestic product and its components; these estimates were released on February 25, 2000 and include the "preliminary" estimates for the fourth quarter of 1999.

The selected set of NIPA tables shown in this section presents quarterly estimates, which are updated monthly; in most of these tables, annual estimates are also shown.

The news release on gross domestic product (GDP) is available within minutes of the time of release, and the "Selected NIPA Tables" are available later that day, on STAT-USA's Web site <www.stat-usa.gov>; for information, call STAT-USA on 202-482-1986. The GDP news release is also available within minutes of the time of release, and the "Selected NIPA Tables" a day or two later, on BEA's Web site <www.bea.doc.gov>.

The "Selected NIPA Tables" are also available on printouts or diskettes from BEA. To order NIPA subscription products, call the BEA Order Desk at 1-800-704-0415 (outside the United States, 202-606-9666).

S. Summary Tables

Table S.1.—Summary of Percent Change From Preceding Period in Real Gross Domestic Product and Related Measures

[Percent]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Gross domestic product	4.3	4.1	3.8	5.9	3.7	1.9	5.7	6.9
Personal consumption expenditures	4.9	5.3	3.9	4.6	6.5	5.1	4.9	5.9
Durable goods	11.3	11.5	4.1	20.4	12.4	9.1	7.7	13.0
Nondurable goods	4.0	5.4	2.4	5.0	8.9	3.3	3.6	7.2
Services	4.0	4.0	4.7	1.5	4.2	5.2	5.0	3.8
Gross private domestic investment	11.7	5.8	10.4	11.5	3.6	-2.1	13.6	10.0
Fixed investment	11.8	8.0	2.0	13.8	9.1	6.6	6.8	2.1
Nonresidential	12.7	8.3	0	15.3	7.8	7.0	10.9	2.5
Structures	4.1	-2.6	-6.6	5.8	-5.8	-5.3	-3.8	-4.3
Equipment and software	15.8	12.0	2.4	18.6	12.5	11.2	15.7	4.7
Residential	9.2	7.4	8.0	9.8	12.9	5.5	-3.8	1.0
Change in private inventories								
Net exports of goods and services								
Exports	2.2	3.6	-1.7	16.1	-5.5	4.0	11.5	8.7
Goods	2.1	4.0	1.6	19.4	-9.3	4.3	16.9	10.5
Services	2.5	2.8	-8.8	8.6	4.1	3.2	0	4.5
Imports	11.6	11.8	5.2	10.8	12.5	14.4	14.9	10.0
Goods	11.7	12.7	4.9	12.8	12.6	15.5	17.3	9.3
Services	10.8	7.6	6.4	1.6	11.9	8.9	3.6	13.9
Government consumption expenditures and gross investment	1.7	3.7	1.3	2.9	5.1	1.3	4.5	9.2
Federal	-9	2.8	-2.3	3.9	-5	2.1	4.1	14.2
National defense	-1.9	1.8	7.0	-2.9	-4.0	-2.6	11.2	16.7
Nondefense	1.0	4.7	-17.4	17.8	6.1	10.9	-7.1	9.9
State and local	3.2	4.2	3.3	2.3	8.2	.9	4.8	6.6
Addenda:								
Final sales of domestic product	4.3	4.5	2.4	6.2	4.6	3.4	4.5	5.6
Gross domestic purchases	5.4	5.1	4.6	5.5	5.8	3.2	6.3	7.2
Final sales to domestic purchasers	5.4	5.5	3.2	5.8	6.7	4.7	5.2	5.8
Gross national product	4.1		2.6	6.3	3.8	1.9	5.6	
Disposable personal income	4.1	4.0	4.5	4.8	4.1	3.2	2.9	4.5

NOTE.—Percent changes from preceding period in the current-dollar and price measures for these series are shown in table 8.1.

Table S.2.—Summary of Contributions to Percent Change in Real Gross Domestic Product

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Percent change at annual rate:								
Gross domestic product	4.3	4.1	3.8	5.9	3.7	1.9	5.7	6.9
Percentage points at annual rates:								
Personal consumption expenditures	3.24	3.54	2.64	3.13	4.27	3.36	3.33	4.03
Durable goods .....	.86	.90	.33	1.51	.96	.71	.62	1.02
Nondurable goods .....	.79	1.05	.49	.98	1.68	.64	.73	1.44
Services	1.59	1.59	1.83	.64	1.63	2.01	1.97	1.57
Gross private domestic investment	1.93	1.01	1.74	1.94	.67	-3.36	2.25	1.72
Fixed investment	1.86	1.33	.34	2.20	1.48	1.10	1.16	.39
Nonresidential	1.49	1.02	.01	1.79	.94	.86	1.33	.34
Structures .....	.13	-0.8	-2.1	.18	-1.8	-1.6	-1.1	-1.2
Equipment and software	1.37	1.10	.22	1.61	1.12	1.02	1.44	.46
Residential .....	.37	.31	.33	.41	.53	.24	-1.7	.05
Change in private inventories .....	.07	-.32	1.40	-.26	-.80	-1.46	1.09	1.33
Net exports of goods and services	-1.18	-1.09	-.82	.33	-2.13	-1.35	-.72	-.43
Exports .....	.25	.39	-.18	1.65	-.61	.42	1.19	.93
Goods .....	.17	.30	.12	1.38	-.74	.32	1.19	.79
Services .....	.08	.09	-.30	.27	.13	.10	0	.15
Imports	-1.43	-1.49	-.65	-1.32	-1.52	-1.77	-1.91	-1.37
Goods	-1.21	-1.32	-.51	-1.29	-1.28	-1.59	-1.83	-1.07
Services	-.22	-.16	-.13	-.03	-.24	-.19	-.08	-.30
Government consumption expenditures and gross investment .....	.31	.65	.23	.51	.87	.23	.81	1.61
Federal	-.06	.17	-.14	.24	-.03	.13	.26	.84
National defense	-.08	.07	.27	-.12	-.16	-.10	.42	.63
Nondefense .....	.02	.10	-.42	.36	.13	.23	-.16	.21
State and local .....	.37	.48	.37	.28	.90	.10	.55	.76

NOTE.—More detailed contributions to percent change in real gross domestic product are shown in table 8.2. Contributions to percent change in major components of real gross domestic product are shown in tables 8.3 through 8.6.

1. National Product and Income

Table 1.1.—Gross Domestic Product

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Gross domestic product	8,759.9	9,254.6	8,797.9	8,947.6	9,072.7	9,146.2	9,297.8	9,501.6
Personal consumption expenditures	5,848.6	6,257.3	5,889.6	5,973.7	6,090.8	6,200.8	6,303.7	6,434.2
Durable goods	698.2	758.6	696.9	722.8	739.0	751.6	761.8	782.0
Nondurable goods	1,708.9	1,842.7	1,716.6	1,742.9	1,787.8	1,824.8	1,853.9	1,904.3
Services	3,441.5	3,656.0	3,476.1	3,508.0	3,564.0	3,624.3	3,688.0	3,747.9
Gross private domestic investment	1,531.2	1,622.9	1,535.3	1,580.3	1,594.3	1,585.4	1,635.0	1,676.9
Fixed investment	1,460.0	1,577.8	1,461.7	1,508.9	1,543.3	1,567.8	1,594.2	1,605.8
Nonresidential	1,091.3	1,166.5	1,087.2	1,121.4	1,139.9	1,155.4	1,181.6	1,189.2
Structures	272.8	272.7	271.7	278.0	274.7	272.5	272.1	271.5
Equipment and software	818.5	893.8	815.4	843.4	865.2	882.9	909.5	917.7
Residential	368.7	411.3	374.5	387.5	403.4	412.4	412.7	416.6
Change in private inventories	71.2	45.1	73.7	71.4	51.0	17.6	40.8	71.1
Net exports of goods and services	-149.6	-255.5	-165.7	-161.2	-201.6	-245.8	-278.2	-296.4
Exports	966.3	997.4	949.1	981.8	966.9	978.2	1,008.5	1,036.2
Goods	681.3	698.8	667.2	693.3	674.3	680.5	708.8	731.5
Services	285.1	298.7	281.9	288.6	292.6	297.7	299.7	304.7
Imports	1,115.9	1,252.9	1,114.8	1,143.1	1,168.5	1,224.0	1,286.6	1,332.6
Goods	930.4	1,048.8	927.2	952.6	974.3	1,022.3	1,079.3	1,119.2
Services	185.5	204.2	187.7	190.4	194.2	201.7	207.4	213.4
Government consumption expenditures and gross investment	1,529.7	1,629.8	1,538.7	1,554.8	1,589.1	1,605.9	1,637.2	1,687.0
Federal	538.7	570.5	539.7	546.7	557.4	561.6	569.8	593.2
National defense	348.6	364.5	354.7	352.9	355.8	354.3	365.4	382.3
Nondefense	190.1	206.1	185.0	193.8	201.6	207.3	204.4	210.9
State and local	991.0	1,059.3	999.0	1,008.1	1,031.8	1,044.3	1,067.4	1,093.8

NOTE.—Percent changes from preceding period for selected items in this table are shown in table 8.1.

Table 1.2.—Real Gross Domestic Product

[Billions of chained (1996) dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Gross domestic product	8,516.3	8,867.0	8,536.0	8,659.2	8,737.9	8,778.6	8,900.6	9,050.9
Personal consumption expenditures	5,698.6	6,000.9	5,730.7	5,795.8	5,888.4	5,961.8	6,033.3	6,120.3
Durable goods	731.5	815.7	731.2	766.0	788.8	806.1	821.2	846.6
Nondurable goods	1,685.3	1,775.8	1,692.0	1,712.6	1,749.5	1,763.7	1,779.3	1,810.6
Services	3,284.5	3,417.3	3,309.6	3,322.0	3,356.5	3,399.2	3,440.6	3,473.0
Gross private domestic investment	1,547.4	1,637.7	1,551.1	1,593.9	1,608.2	1,599.8	1,651.6	1,691.5
Fixed investment	1,471.8	1,590.0	1,474.0	1,522.5	1,555.9	1,581.0	1,607.3	1,615.8
Nonresidential	1,122.5	1,215.4	1,120.3	1,160.8	1,182.7	1,202.9	1,234.3	1,242.0
Structures	254.1	247.5	252.1	255.7	251.9	248.5	246.1	243.4
Equipment and software	870.6	975.3	870.6	908.5	935.7	960.9	996.6	1,008.0
Residential	350.2	375.9	354.2	362.6	373.7	378.8	375.1	376.1
Change in private inventories	74.3	42.7	76.1	70.7	50.1	14.0	38.0	68.7
Net exports of goods and services	-215.1	-322.9	-237.9	-232.3	-284.5	-319.0	-338.2	-349.7
Exports	1,007.1	1,043.6	993.0	1,030.8	1,016.4	1,026.4	1,054.8	1,077.0
Goods	722.8	751.6	712.0	744.2	726.4	734.1	763.3	782.6
Services	284.4	292.4	281.1	287.0	289.9	292.2	292.2	295.4
Imports	1,222.2	1,366.5	1,231.0	1,263.1	1,300.9	1,345.4	1,393.0	1,426.7
Goods	1,031.6	1,162.2	1,037.9	1,069.7	1,102.0	1,142.5	1,188.9	1,215.6
Services	190.7	205.2	193.1	193.8	199.4	203.7	205.5	212.3
Government consumption expenditures and gross investment	1,480.3	1,535.4	1,485.3	1,495.9	1,514.6	1,519.5	1,536.5	1,570.8
Federal	526.1	540.8	527.0	532.0	531.4	534.2	539.7	557.9
National defense	341.7	347.7	347.5	344.9	341.4	339.2	348.3	362.0
Nondefense	184.4	193.0	179.6	187.1	189.9	194.9	191.3	195.9
State and local	953.9	994.3	958.1	963.6	982.9	985.1	996.6	1,012.7
Residual	.9	5.2	2.9	-2.2	2.6	8.1	6.4	3.8

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. The residual line is the difference between the first line and the sum of the most detailed lines.

Percent changes from preceding period for selected items in this table are shown in table 8.1; contributions to the percent change in real gross domestic product are shown in table 8.2.

Chain-type quantity indexes for the series in this table are shown in table 7.1.

Table 1.9.—Relation of Gross Domestic Product, Gross National Product, Net National Product, National Income, and Personal Income

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Gross domestic product	8,759.9	9,254.6	8,797.9	8,947.6	9,072.7	9,146.2	9,297.8	9,501.6
Plus: Income receipts from the rest of the world	285.3		276.4	280.8	283.8	296.1	307.7	
Less: Income payments to the rest of the world	295.2		302.0	297.9	298.2	310.4	323.2	
Equals: Gross national product	8,750.0		8,772.2	8,930.5	9,058.2	9,131.9	9,282.3	
Less: Consumption of fixed capital	1,066.9	1,141.2	1,075.2	1,094.0	1,108.8	1,126.3	1,160.9	1,168.7
Private	880.8	945.2	888.3	904.8	916.7	931.8	963.7	968.6
Capital consumption allowances	906.2	975.5	914.2	932.2	947.1	964.7	989.9	1,000.5
Less: Capital consumption adjustment	25.4	30.3	25.9	27.4	30.3	32.9	26.2	31.9
Government	186.2	196.0	186.9	189.1	192.0	194.5	197.2	200.2
General government	158.6	166.7	159.2	160.9	163.4	165.5	167.7	170.2
Government enterprises	27.6	29.3	27.7	28.2	28.6	29.0	29.5	29.9
Equals: Net national product	7,683.1		7,697.1	7,836.5	7,949.5	8,005.6	8,121.4	
Less: Indirect business tax and nontax liability	677.0	716.3	676.6	697.8	696.6	706.7	718.3	743.5
Business transfer payments	38.1	39.4	38.2	38.6	38.8	39.3	39.5	40.0
Statistical discrepancy	-47.6		-87.9	-62.4	-99.4	-135.5	-141.2	
Plus: Subsidies less current surplus of government enterprises	20.8	26.5	16.9	31.4	21.0	27.9	17.3	39.6
Equals: National income	7,036.4		7,087.1	7,193.8	7,334.5	7,423.1	7,522.1	
Less: Corporate profits with inventory valuation and capital consumption adjustments	846.1		843.8	834.3	882.0	875.5	879.2	
Net interest	435.7		444.0	440.8	446.3	456.4	476.3	
Contributions for social insurance	621.9	658.2	626.1	633.8	647.2	653.8	662.3	669.4
Wage accruals less disbursements	3.5	0	3.5	3.5	0	0	0	0
Plus: Personal interest income	897.8	930.5	909.3	906.4	907.4	920.5	938.8	955.5
Personal dividend income	348.3	364.3	348.0	351.9	356.1	361.2	367.0	373.1
Government transfer payments to persons	954.8	988.5	957.7	962.0	978.5	984.1	991.6	999.9
Business transfer payments to persons	28.8	29.6	28.8	29.0	29.3	29.5	29.7	29.9
Equals: Personal income	7,358.9	7,791.0	7,413.6	7,530.8	7,630.2	7,732.6	7,831.4	7,969.6
Addenda:								
Gross domestic income	8,807.5		8,885.8	9,009.9	9,172.0	9,281.7	9,439.0	
Gross national income	8,797.6		8,860.2	8,992.8	9,157.6	9,267.4	9,423.5	
Net domestic product	7,693.0	8,113.4	7,722.7	7,853.6	7,963.9	8,019.9	8,136.9	8,332.9

Table 1.10.—Relation of Real Gross Domestic Product, Real Gross National Product, and Real Net National Product

[Billions of chained (1996) dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Gross domestic product	8,516.3	8,867.0	8,536.0	8,659.2	8,737.9	8,778.6	8,900.6	9,050.9
Plus: Income receipts from the rest of the world	279.2		270.3	274.0	276.0	286.6	296.5	
Less: Income payments to the rest of the world	289.6		295.8	291.3	290.7	301.1	311.8	
Equals: Gross national product	8,506.0		8,510.6	8,641.9	8,723.3	8,764.3	8,885.5	
Less: Consumption of fixed capital	1,074.2	1,157.0	1,082.4	1,100.6	1,117.8	1,140.5	1,179.1	1,190.8
Private	899.8	978.6	908.4	925.8	941.6	962.8	1,000.2	1,010.0
Government	185.4	192.4	186.1	187.8	189.6	191.4	193.3	195.3
General government	158.4	164.4	159.0	160.5	161.9	163.5	165.1	166.9
Government enterprises	26.9	28.0	27.1	27.3	27.6	27.9	28.2	28.5
Equals: Net national product	7,432.5		7,429.2	7,542.3	7,606.8	7,626.1	7,710.0	
Addenda:								
Gross domestic income ¹	8,562.4		8,621.3	8,719.5	8,833.5	8,908.7	9,035.8	
Gross national income ²	8,552.1		8,595.9	8,702.3	8,819.0	8,894.3	9,020.6	
Net domestic product	7,442.7	7,712.5	7,454.4	7,559.5	7,621.3	7,640.3	7,725.1	7,863.2

1. Gross domestic income deflated by the implicit price deflator for gross domestic product.
 2. Gross national income deflated by the implicit price deflator for gross national product.
 NOTE.—Except as noted in footnotes 1 and 2, chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive.
 The chain-type quantity index for gross national product is shown in table 7.3.

Table 1.11.—Command-Basis Real Gross National Product

[Billions of chained (1996) dollars]

Gross national product	8,506.0		8,510.6	8,641.9	8,723.3	8,764.3	8,885.5	
Less: Exports of goods and services and income receipts from the rest of the world	1,286.1		1,262.9	1,304.0	1,292.0	1,313.1	1,351.5	
Plus: Command-basis exports of goods and services and income receipts from the rest of the world ¹	1,340.0		1,320.3	1,360.7	1,355.0	1,365.2	1,391.6	
Equals: Command-basis gross national product	8,559.9		8,568.0	8,698.7	8,786.3	8,816.3	8,925.6	
Addendum:								
Terms of trade ²	104.2		104.5	104.3	104.9	104.0	103.0	

1. Exports of goods and services and income receipts deflated by the implicit price deflator for imports of goods and services and income payments.
 2. Ratio of the implicit price deflator for exports of goods and services and income receipts to the corresponding implicit price deflator for imports divided by 100.
 NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. Percent changes from preceding period for gross national product are shown in table 8.1. Chain-type quantity indexes for the series in this table are shown in table 7.3.

3. Government Current Receipts and Expenditures

Table 3.1.—Government Current Receipts and Expenditures

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Current receipts	2,611.8		2,635.3	2,680.2	2,716.6	2,754.4	2,800.5	
Personal tax and nontax receipts	1,072.6	1,151.9	1,088.3	1,113.0	1,124.8	1,139.4	1,160.4	1,183.2
Corporate profits tax accruals	240.2		244.3	235.6	248.0	254.4	259.4	
Indirect business tax and nontax accruals	677.0	716.3	676.6	697.8	696.6	706.7	718.3	743.5
Contributions for social insurance	621.9	658.2	626.1	633.8	647.2	653.8	662.3	669.4
Current expenditures	2,523.1	2,619.4	2,525.9	2,566.3	2,570.3	2,598.7	2,617.8	2,690.8
Consumption expenditures	1,261.0	1,332.2	1,265.2	1,282.1	1,299.4	1,313.7	1,341.5	1,374.2
Transfer payments (net)	965.2	999.0	966.7	980.7	985.3	993.3	1,000.1	1,017.3
To persons	954.8	988.5	957.7	962.0	978.5	984.1	991.6	999.9
To the rest of the world (net)	10.4	10.5	9.1	18.7	6.8	9.2	8.5	17.4
Net interest paid	276.4	262.1	277.4	272.5	265.0	264.1	259.2	260.1
Interest paid	368.4	356.8	368.8	365.6	358.1	358.6	354.3	356.0
To persons and business	277.3		277.7	274.8	267.4	266.0	257.7	
To the rest of the world	91.1		91.1	90.8	90.7	92.6	96.6	
Less: Interest received by government	92.0	94.6	91.4	93.2	93.1	94.5	95.1	95.9
Less: Dividends received by government .....	.3	.3	.3	.3	.3	.3	.3	.3
Subsidies less current surplus of government enterprises	20.8	26.5	16.9	31.4	21.0	27.9	17.3	39.6
Subsidies	35.6	43.8	32.3	46.4	38.0	44.9	34.6	57.5
Less: Current surplus of government enterprises	14.8	17.3	15.4	15.0	16.9	17.0	17.3	17.9
Less: Wage accruals less disbursements	0	0	0	0	0	0	0	0
Current surplus or deficit (-), national income and product accounts	88.7		109.5	113.9	146.3	155.7	182.7	
Social insurance funds	57.3	77.7	59.6	67.0	72.7	76.4	79.7	82.1
Other	31.4		49.9	46.9	73.6	79.3	103.0	
Addenda:								
Net lending or net borrowing (-)	34.4		49.4	58.2	75.6	86.9	108.9	
Current surplus or deficit (-), national income and product accounts	88.7		109.5	113.9	146.3	155.7	182.7	
Plus: Consumption of fixed capital	186.2	196.0	186.9	189.1	192.0	194.5	197.2	200.2
Plus: Capital transfers received (net)	32.6	36.9	31.6	34.8	35.1	37.9	34.5	40.3
Less: Gross investment	268.7	297.6	273.5	272.6	289.8	292.2	295.7	312.8
Less: Net purchases of nonproduced assets	4.3	9.1	5.1	7.0	8.0	8.9	9.9	9.5

Table 3.2.—Federal Government Current Receipts and Expenditures

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Current receipts	1,750.7		1,770.3	1,793.3	1,826.5	1,853.1	1,883.1	
Personal tax and nontax receipts	835.7	900.0	847.3	868.1	877.9	892.1	908.0	
Income taxes	827.6	891.2	839.1	859.8	869.4	883.4	899.0	
Nontaxes	8.1	8.9	8.2	8.3	8.5	8.8	9.0	
Corporate profits tax accruals	206.5		209.9	202.6	212.6	218.1	222.4	
Federal Reserve banks	26.6		26.7	26.7	23.5	23.7	24.6	
Other	179.9		183.2	175.9	189.1	194.4	197.9	
Indirect business tax and nontax accruals	97.3	101.5	97.7	99.6	99.5	100.0	101.5	
Excise taxes	62.9	67.0	63.1	65.7	66.3	66.9	66.9	
Customs duties	19.6	20.0	19.9	19.6	19.0	18.8	20.5	
Nontaxes	14.8	14.5	14.7	14.3	14.1	14.2	14.2	
Contributions for social insurance	611.2	647.1	615.4	623.1	636.5	642.9	651.2	
Current expenditures	1,703.8	1,755.8	1,710.7	1,733.5	1,728.9	1,735.0	1,749.3	
Consumption expenditures	453.5	474.8	451.4	460.0	467.0	465.2	475.0	
Transfer payments (net)	730.4	754.4	731.0	742.1	743.4	749.7	754.8	
To persons	720.0	743.9	721.9	723.5	736.6	740.5	746.4	
To the rest of the world (net)	10.4	10.5	9.1	18.7	6.8	9.2	8.5	
Grants-in-aid to State and local governments	209.3	225.5	220.2	214.2	219.9	215.7	230.6	
Net interest paid	278.4	262.9	279.6	274.3	266.0	264.8	259.9	
Interest paid	297.7	285.4	298.1	294.8	287.1	287.4	282.9	
To persons and business	206.6		207.0	204.0	196.4	194.8	186.3	
To the rest of the world	91.1		91.1	90.8	90.7	92.6	96.6	
Less: Interest received by government	19.3	22.6	18.5	20.5	21.1	22.6	23.0	
Subsidies less current surplus of government enterprises	32.1	38.3	28.5	42.9	32.6	39.5	29.0	
Subsidies	35.1	43.3	31.8	45.9	37.5	44.4	34.1	
Less: Current surplus of government enterprises	3.0	5.0	3.3	3.0	4.8	4.9	5.1	
Less: Wage accruals less disbursements	0	0	0	0	0	0	0	
Current surplus or deficit (-), national income and product accounts	46.9		59.6	59.7	97.6	118.1	133.8	
Social insurance funds	56.4	76.9	58.6	66.3	72.2	75.6	78.9	
Other	-9.4		1.0	-6.6	25.4	42.5	54.9	
Addenda:								
Net lending or net borrowing (-)	51.1		58.3	60.8	96.2	108.3	120.4	
Current surplus or deficit (-), national income and product accounts	46.9		59.6	59.7	97.6	118.1	133.8	
Plus: Consumption of fixed capital	87.4	90.9	87.5	88.1	89.6	90.2	91.2	
Plus: Capital transfers received (net)	-3.6	-5.0	-5.5	-3.4	-2.7	-4.8	-9.7	
Less: Gross investment	85.2	95.7	88.3	86.7	90.4	96.4	94.9	
Less: Net purchases of nonproduced assets	-5.6	-8	-5.0	-3.1	-2.1	-1.1	0	

Table 3.3.—State and Local Government Current Receipts and Expenditures

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Current receipts	1,070.4		1,085.3	1,101.1	1,110.0	1,117.0	1,148.0	
Personal tax and nontax receipts	236.9	251.9	241.0	244.9	246.9	247.3	252.4	
Income taxes	184.7	196.8	188.4	191.6	192.9	192.5	197.0	
Nontaxes	33.2	35.3	33.5	34.0	34.5	35.1	35.6	
Other	19.0	19.7	19.1	19.3	19.5	19.7	19.8	
Corporate profits tax accruals	33.8		34.4	33.1	35.4	36.4	37.0	
Indirect business tax and nontax accruals	579.6	614.8	579.0	598.2	597.1	606.8	616.8	
Sales taxes	284.3	307.1	284.8	291.1	298.5	303.7	309.5	
Property taxes	225.5	234.5	226.4	226.3	229.5	232.8	236.1	
Other	69.8	73.2	67.7	80.8	69.1	70.3	71.2	
Contributions for social insurance	10.7	11.1	10.7	10.7	10.7	10.9	11.2	
Federal grants-in-aid	209.3	225.5	220.2	214.2	219.9	215.7	230.6	
Current expenditures	1,028.7	1,089.1	1,035.4	1,046.9	1,061.2	1,079.4	1,099.1	
Consumption expenditures	807.5	857.4	813.8	822.2	832.4	848.4	866.5	
Transfer payments to persons ...	234.8	244.6	235.7	238.5	241.9	243.6	245.3	
Net interest paid	-2.0	-7	-2.2	-1.8	-1.0	-7	-6	
Interest paid	70.7	71.3	70.7	70.8	71.0	71.2	71.5	
Less: Interest received by government	72.7	72.1	72.9	72.7	72.0	71.9	72.1	
Less: Dividends received by government .....	.3	.3	.3	.3	.3	.3	.3
Subsidies less current surplus of government enterprises	-11.3	-11.8	-11.6	-11.6	-11.6	-11.6	-11.7	
Subsidies .....	.5	.5	.5	.5	.5	.5	.5
Less: Current surplus of government enterprises	11.7	12.3	12.0	12.1	12.1	12.1	12.2	
Less: Wage accruals less disbursements	0	0	0	0	0	0	0	
Current surplus or deficit (-), national income and product accounts	41.7		49.9	54.2	48.7	37.6	48.9	
Social insurance funds .....	.9	.8	.9	.7	.6	.8	.8
Other	40.8		48.9	53.4	48.2	36.8	48.1	
Addenda:								
Net lending or net borrowing (-)	-16.8		-8.9	-2.6	-20.6	-21.4	-11.6	
Current surplus or deficit (-), national income and product accounts	41.7		49.9	54.2	48.7	37.6	48.9	
Plus: Consumption of fixed capital	98.8	105.1	99.4	101.1	102.4	104.3	106.0	
Plus: Capital transfers received (net)	36.2	42.0	37.1	38.2	37.8	42.6	44.2	
Less: Gross investment	183.5	201.9	185.2	185.9	199.4	195.8	200.8	
Less: Net purchases of nonproduced assets	9.9	9.9	10.1	10.2	10.1	10.0	9.8	

4. Foreign Transactions

Table 4.1.—Foreign Transactions in the National Income and Product Accounts

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Receipts from the rest of the world	1,251.6		1,225.5	1,262.7	1,250.7	1,274.3	1,316.2	
Exports of goods and services ...	966.3	997.4	949.1	981.8	966.9	978.2	1,008.5	1,036.2
Goods ¹	681.3	698.8	667.2	693.3	674.3	680.5	708.8	731.5
Durable	487.2	503.5	479.4	498.3	486.7	489.8	512.2	525.4
Nondurable	194.0	195.3	187.8	195.0	187.6	190.7	196.6	206.1
Services ¹	285.1	298.7	281.9	288.6	292.6	297.7	299.7	304.7
Income receipts	285.3		276.4	280.8	283.8	296.1	307.7	
Payments to the rest of the world	1,251.6		1,225.5	1,262.7	1,250.7	1,274.3	1,316.2	
Imports of goods and services ...	1,115.9	1,252.9	1,114.8	1,143.1	1,168.5	1,224.0	1,286.6	1,332.6
Goods ¹	930.4	1,048.8	927.2	952.6	974.3	1,022.3	1,079.3	1,119.2
Durable	636.1	715.9	632.0	659.5	676.6	701.7	732.5	753.0
Nondurable	294.3	332.8	295.2	293.2	297.7	320.6	346.7	366.3
Services ¹	185.5	204.2	187.7	190.4	194.2	201.7	207.4	213.4
Income payments	295.2		302.0	297.9	298.2	310.4	323.2	
Transfer payments (net)	42.0	44.6	41.3	51.6	39.7	43.6	42.7	52.6
From persons (net)	22.3	24.4	22.9	23.3	23.5	24.6	24.5	25.1
From government (net)	10.4	10.5	9.1	18.7	6.8	9.2	8.5	17.4
From business	9.3	9.8	9.3	9.6	9.5	9.8	9.8	10.1
Net foreign investment	-201.5		-232.6	-229.9	-255.7	-303.7	-336.3	

1. Exports and imports of certain goods, primarily military equipment purchased and sold by the Federal Government, are included in services. Beginning with 1986, repairs and alterations of equipment are reclassified from goods to services.

Table 4.2.—Real Exports and Imports of Goods and Services and Receipts and Payments of Income

[Billions of chained (1996) dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Exports of goods and services	1,007.1	1,043.6	993.0	1,030.8	1,016.4	1,026.4	1,054.8	1,077.0
Goods ¹	722.8	751.6	712.0	744.2	726.4	734.1	763.3	782.6
Durable	513.5	537.4	507.5	529.3	518.2	522.8	548.2	560.2
Nondurable	209.3	214.1	204.4	214.9	208.1	211.2	214.9	222.2
Services ¹	284.4	292.4	281.1	287.0	289.9	292.2	292.2	295.4
Income receipts	279.2		270.3	274.0	276.0	286.6	296.5	
Imports of goods and services	1,222.2	1,366.5	1,231.0	1,263.1	1,300.9	1,345.4	1,393.0	1,426.7
Goods ¹	1,031.6	1,162.2	1,037.9	1,069.7	1,102.0	1,142.5	1,188.9	1,215.6
Durable	700.2	803.9	700.7	733.7	753.6	787.4	825.3	849.2
Nondurable	331.6	358.6	337.5	336.0	348.5	355.0	363.8	367.1
Services ¹	190.7	205.2	193.1	193.8	199.4	203.7	205.5	212.3
Income payments	289.6		295.8	291.3	290.7	301.1	311.8	

1. Exports and imports of certain goods, primarily military equipment purchased and sold by the Federal Government, are included in services. Beginning with 1986, repairs and alterations of equipment are reclassified from goods to services.

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. Chain-type quantity indexes for the series in this table are shown in table 7.9.

Table 5.10.—Change in Private Inventories by Industry Group

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Change in private inventories	71.2	45.1	73.7	71.4	51.0	17.6	40.8	71.1
Farm .....	.3	3.4	-1.1	15.2	10.1	4.8	.7	-1.8
Nonfarm	70.9	41.7	74.7	56.2	40.9	12.8	40.1	73.0
Change in book value ¹	45.7	57.2	49.7	33.7	22.8	32.1	73.7	100.1
Inventory valuation adjustment ²	25.2	-15.5	25.0	22.5	18.2	-19.3	-33.6	-27.2
Manufacturing	24.1	.9	21.2	11.5	0	-7.8	1.6	9.7
Durable goods	16.4	.2	12.8	6.5	1.7	-6.2	1.6	3.6
Nondurable goods	7.8	.7	8.4	5.1	-1.7	-1.6	0	6.1
Wholesale trade	22.4	15.0	32.3	16.3	8.8	10.7	24.2	16.4
Durable goods	16.0	12.8	18.2	15.2	11.3	10.5	10.6	18.6
Nondurable goods	6.4	2.3	14.1	1.1	-2.6	.2	13.6	-2.2
Merchant wholesalers	19.6	13.7	29.1	13.9	7.5	8.3	22.0	16.8
Durable goods	14.0	11.3	16.1	13.6	9.8	7.0	9.6	18.8
Nondurable goods	5.7	2.3	13.0	.2	-2.3	1.3	12.4	-2.0
Nonmerchant wholesalers	2.8	1.4	3.2	2.4	1.3	2.4	2.2	-4
Durable goods	2.1	1.5	2.1	1.6	1.5	3.5	1.0	-3
Nondurable goods .....	.7	-1	1.1	.9	-2	-1.1	1.2	-1
Retail trade	11.1	20.1	10.9	15.6	17.5	5.9	14.3	42.9
Durable goods	5.3	13.3	7.7	16.0	9.4	4.0	11.7	28.1
Motor vehicle dealers ³	1.3	6.7	4.2	7.6	3.1	0	9.2	14.4
Other ³	4.0	6.6	3.4	8.4	6.3	4.0	2.6	13.7
Nondurable goods	5.8	6.8	3.3	-4	8.1	1.9	2.6	14.8
Other	13.2	5.7	10.3	12.8	14.7	4.0	0	4.0
Durable goods	1.3	-1	1.1	1.0	1.7	-2.0	-1.0	1.2
Nondurable goods	12.0	5.7	9.2	11.8	13.0	6.0	1.0	2.8

1. This series is derived from the Census Bureau series "current cost inventories."

2. The inventory valuation adjustment (IVA) shown in this table differs from the IVA that adjusts business incomes. The IVA in this table reflects the mix of methods (such as first-in, first-out and last-in, first-out) underlying inventories derived primarily from Census Bureau statistics (see footnote 1). This mix differs from that underlying business income derived primarily from Internal Revenue Service statistics.

3. Inventories of auto and home supply stores are included in "other durable goods."

Table 5.11.—Real Change in Private Inventories by Industry Group

[Billions of chained (1996) dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Change in private inventories	74.3	42.7	76.1	70.7	50.1	14.0	38.0	68.7
Farm .....	.9	-5	-2.1	12.8	7.4	.9	-3.8	-6.4
Nonfarm	73.2	42.8	77.5	58.2	43.1	13.1	41.2	74.0
Manufacturing	25.1	.9	22.2	12.0	0	-8.3	1.7	10.2
Durable goods	16.9	.2	13.4	6.8	1.8	-6.6	1.8	3.8
Nondurable goods	8.1	.7	8.8	5.3	-1.8	-1.7	0	6.3
Wholesale trade	23.4	15.6	33.8	17.2	9.5	11.1	25.1	16.7
Durable goods	16.3	13.3	18.6	15.5	11.8	11.0	11.1	19.3
Nondurable goods	7.1	2.3	15.3	1.4	-2.4	.1	14.0	-2.3
Merchant wholesalers	20.4	14.2	30.4	14.6	8.2	8.6	22.8	17.2
Durable goods	14.2	11.8	16.5	13.9	10.2	7.3	10.0	19.5
Nondurable goods	6.2	2.5	14.0	.5	-2.1	1.3	12.8	-2.2
Nonmerchant wholesalers	3.0	1.4	3.4	2.6	1.4	2.5	2.3	-4
Durable goods	2.1	1.5	2.1	1.6	1.6	3.7	1.1	-3
Nondurable goods .....	.9	-1	1.3	1.0	-3	-1.2	1.2	-2
Retail trade	11.1	19.9	11.0	15.5	17.5	5.9	14.1	42.1
Durable goods	5.3	13.3	7.7	16.0	9.5	4.0	11.8	28.1
Motor vehicle dealers ¹	1.3	6.7	4.3	7.6	3.1	0	9.3	14.4
Other ¹	4.0	6.6	3.4	8.4	6.3	4.0	2.5	13.6
Nondurable goods	5.8	6.7	3.3	-3	8.0	1.9	2.5	14.3
Other	13.9	6.0	10.8	13.6	15.7	4.1	.1	3.9
Durable goods	1.2	0	1.1	1.0	1.7	-2.0	-1.0	1.1
Nondurable goods	12.6	6.0	9.7	12.6	14.0	6.3	1.1	2.8
Residual .....	.1	.6	.3	-5	.2	.1	.5	2.0

1. Inventories of auto and home supply stores are included in "other durable goods."

NOTE.—Chained (1996) dollar series for real change in private inventories are calculated as the period-to-period change in chained-dollar end-of-period inventories. Quarterly changes in end-of-period inventories are stated at annual rates. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. The residual line is the difference between the first line and the sum of the most detailed lines.

6. Income and Employment by Industry

Table 6.1C.—National Income Without Capital Consumption Adjustment by Industry Group

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
National income without capital consumption adjustment	7,004.4		7,054.5	7,159.6	7,297.4	7,383.3	7,488.9	
Domestic industries	7,014.3		7,080.1	7,176.7	7,311.9	7,397.6	7,504.4	
Private industries	6,104.4		6,165.5	6,253.4	6,373.9	6,453.1	6,549.4	
Agriculture, forestry, and fishing	102.5		100.4	121.7	113.8	116.8	105.2	
Mining	54.7		53.5	51.7	49.9	49.2	51.4	
Construction	342.0		345.4	355.2	364.1	371.0	375.2	
Manufacturing	1,155.9		1,165.4	1,157.7	1,171.4	1,178.8	1,191.0	
Durable goods	689.0		694.1	703.2	699.0	706.5	711.7	
Nondurable goods	466.9		471.3	454.5	472.4	472.3	479.3	
Transportation and public utilities	526.2		532.7	534.6	545.1	543.9	561.6	
Transportation	222.3		224.5	227.5	228.8	229.0	234.5	
Communications	166.9		169.0	167.6	174.7	176.0	181.0	
Electric, gas, and sanitary services	137.0		139.2	139.4	141.7	138.9	146.1	
Wholesale trade	410.2		416.7	414.2	423.5	429.5	432.5	
Retail trade	580.8		584.9	591.5	609.8	618.6	618.8	
Finance, insurance, and real estate	1,274.3		1,288.1	1,311.0	1,348.3	1,361.5	1,392.0	
Services	1,657.8		1,678.3	1,715.8	1,748.0	1,783.8	1,821.8	
Government	909.9		914.6	923.3	938.0	944.5	955.0	
Rest of the world	-9.9		-25.6	-17.1	-14.4	-14.3	-15.5	

NOTE.—Estimates in this table are based on the 1987 Standard Industrial Classification (SIC).

Table 6.16C.—Corporate Profits by Industry Group

[Billions of dollars]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV
Corporate profits with inventory valuation and capital consumption adjustments	846.1		843.8	834.3	882.0	875.5	879.2	
Domestic industries	746.0		757.2	736.0	777.7	772.1	771.1	
Financial	171.0		168.7	168.0	185.2	177.4	181.8	
Nonfinancial	575.0		588.5	568.0	592.5	594.7	589.2	
Rest of the world	100.0		86.6	98.3	104.3	103.3	108.1	
Receipts from the rest of the world	148.4		137.1	146.8	157.0	164.1	169.5	
Less: Payments to the rest of the world	48.4		50.5	48.5	52.7	60.8	61.4	
Corporate profits with inventory valuation adjustment	802.8		799.9	787.4	831.4	822.2	827.1	
Domestic industries	702.8		713.2	689.1	727.1	718.9	719.0	
Financial	191.3		189.5	188.6	205.3	198.3	203.9	
Federal Reserve banks	24.6		24.7	24.7	24.3	24.5	25.5	
Other	166.7		164.8	163.9	180.9	173.7	178.4	
Nonfinancial	511.5		523.7	500.6	521.9	520.6	515.1	
Manufacturing	168.4		171.9	161.7	171.0	167.8	163.1	
Durable goods	95.1		97.2	106.3	100.5	100.7	94.4	
Primary metal industries	5.4		5.0	5.0	1.7	1.2	4.4	
Fabricated metal products	17.3		19.9	17.0	19.4	19.0	19.4	
Industrial machinery and equipment	14.6		15.7	19.4	16.6	18.6	17.1	
Electronic and other electric equipment	18.2		16.9	21.4	20.5	19.6	20.8	
Motor vehicles and equipment	7.5		6.6	9.8	10.7	10.4	9.5	
Other	32.2		33.1	33.7	31.6	32.0	27.2	
Nondurable goods	73.3		74.7	55.5	70.5	67.0	68.7	
Food and kindred products	17.0		21.3	7.1	17.2	18.6	18.7	
Chemicals and allied products	20.6		19.0	20.0	25.1	20.8	17.4	
Petroleum and coal products	8.3		6.8	4.1	-9	-3	3.6	
Other	27.3		27.5	24.2	29.0	28.0	29.0	
Transportation and public utilities	109.0		113.0	106.9	111.9	107.9	117.3	
Transportation	19.4		20.1	19.7	18.3	17.2	17.7	
Communications	49.3		51.2	46.8	52.2	52.5	56.4	
Electric, gas, and sanitary services	40.2		41.7	40.5	41.5	38.2	43.2	
Wholesale trade	47.2		49.7	41.2	43.4	44.3	39.1	
Retail trade	69.8		69.3	69.0	75.7	75.4	67.7	
Other	117.1		119.9	121.7	119.8	125.2	127.9	
Rest of the world	100.0		86.6	98.3	104.3	103.3	108.1	

NOTE.—Estimates in this table are based on the 1987 Standard Industrial Classification.

B. Other NIPA and NIPA-Related Tables

Monthly Estimates:

Tables B.1 and B.2 include the most recent estimates of personal income and its components; these estimates were released on February 28, 2000 and include "preliminary" estimates for January 2000 and "revised" estimates for October-December 1999.

Table B.1.—Personal Income [Billions of dollars; monthly estimates seasonally adjusted at annual rates]

Table with columns for 1998, 1999 (Dec, Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec), and 2000. Rows include Personal income, Wage and salary disbursements, Private industries, Goods-producing industries, Manufacturing, Distributive industries, Service industries, Government, Other labor income, etc.

^ Preliminary. ^ Revised. CCAj Capital consumption adjustment.

IVA Inventory valuation adjustment. Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table B.2.—The Disposition of Personal Income

[Monthly estimates seasonally adjusted at annual rates]

Table with columns for 1998, 1999 (Dec, Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec), and 2000. Rows include Personal income, Less: Personal tax and nontax payments, Equals: Disposable personal income, Less: Personal outlays, Personal consumption expenditures, etc.

^ Preliminary. ^ Revised. 1. Disposable personal income in chained (1996) dollars equals the current-dollar figure divided by the implicit price deflator for personal consumption expenditures.

2. Monthly estimates equal personal saving for the month as a percentage of disposable personal income for that month. Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Annual Estimates:

Except as noted, these tables are derived from the NIPA tables published in the December 1999 SURVEY OF CURRENT BUSINESS; they are consistent with the 1999 comprehensive revision.

“Table B.3.—Gross Domestic Product by Industry, Current-Dollar and Real Estimates” is not published in this issue. The table will be published when the estimates of gross domestic product by industry are revised to incorporate the results of the most recent comprehensive revision of the NIPAs. An article presenting the revised estimates of gross domestic product by industry is scheduled to be published in the May 2000 SURVEY.

Table B.5.—Private Fixed Investment in Structures by Type

	Billions of dollars			Billions of chained (1996) dollars		
	1996	1997	1998	1996	1997	1998
Private fixed investment in structures	530.6	575.4	633.2	530.6	556.8	595.8
Nonresidential	225.0	254.1	272.8	225.0	244.0	254.1
New	224.6	252.9	272.6	224.6	242.8	253.9
Nonresidential buildings, excluding farm	158.0	177.1	193.1	158.0	171.6	180.9
Industrial	32.7	31.4	32.3	32.7	30.4	30.2
Commercial	78.7	89.7	100.0	78.7	86.9	93.8
Office buildings ¹	32.4	39.9	48.3	32.4	38.7	45.3
Other ²	46.3	49.8	51.7	46.3	48.2	48.5
Religious	4.4	5.6	6.5	4.4	5.4	6.1
Educational	7.7	9.8	10.8	7.7	9.5	10.2
Hospital and institutional	13.1	15.1	15.2	13.1	14.6	14.3
Other ³	21.4	25.5	28.2	21.4	24.7	26.4
Utilities	36.0	36.5	39.2	36.0	35.7	38.0
Railroads	4.4	4.9	5.3	4.4	4.8	5.1
Telecommunications	11.7	12.6	14.3	11.7	12.4	14.1
Electric light and power	11.3	11.3	11.7	11.3	11.1	11.2
Gas	7.6	6.6	6.6	7.6	6.5	6.3
Petroleum pipelines	1.0	1.0	1.3	1.0	.9	1.2
Farm	3.7	3.8	3.9	3.7	3.7	3.6
Mining exploration, shafts, and wells	21.1	30.0	30.0	21.1	26.4	25.4
Petroleum and natural gas	19.4	28.3	28.0	19.4	24.7	23.5
Other	1.7	1.7	2.0	1.7	1.6	1.9
Other ⁴	5.8	5.5	6.4	5.8	5.3	6.0
Brokers' commissions on sale of structures	1.8	2.0	2.2	1.8	2.0	2.1
Net purchases of used structures	-1.4	-8	-2.0	-1.4	-8	-1.9
Residential	305.6	321.3	360.4	305.6	312.7	341.8
New	269.8	282.1	314.4	269.8	273.8	297.5
New housing units	192.2	200.8	229.1	192.2	194.9	216.7
Permanent site	179.4	187.3	213.9	179.4	181.7	202.0
Single-family structures	159.1	164.4	189.5	159.1	159.8	180.3
Multifamily structures	20.3	22.9	24.5	20.3	21.9	21.8
Manufactured homes	12.8	13.5	15.2	12.8	13.3	14.7
Improvements	77.0	80.5	84.4	77.0	78.1	79.9
Other ⁵ .....	.6	.8	.9	.6	.8	.9
Brokers' commissions on sale of structures	37.5	41.7	49.0	37.5	41.4	47.3
Net purchases of used structures	-1.7	-2.5	-3.0	-1.7	-2.4	-2.9
Residual				0	.2	-3

1. Consists of office buildings, except those constructed at industrial sites and those constructed by utilities for their own use.
 2. Consists of stores, restaurants, garages, service stations, warehouses, mobile structures, and other buildings used for commercial purposes.
 3. Consists of hotels and motels, buildings used primarily for social and recreational activities, and buildings not elsewhere classified, such as passenger terminals, greenhouses, and animal hospitals.
 4. Consists primarily of streets, dams and reservoirs, sewer and water facilities, parks, and airfields.
 5. Consists primarily of dormitories and of fraternity and sorority houses.

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. The residual line is the difference between the first line and the sum of the most detailed lines.

Table B.6.—Private Fixed Investment in Equipment and Software by Type

	Billions of dollars			Billions of chained (1996) dollars		
	1996	1997	1998	1996	1997	1998
Private fixed investment in equipment and software	682.1	739.9	826.8	682.1	759.7	879.0
Nonresidential equipment and software	674.4	732.1	818.5	674.4	751.9	870.6
Information processing equipment and software	287.3	315.4	356.9	287.3	339.4	418.5
Computers and peripheral equipment ¹	70.9	76.7	88.5	70.9	99.0	154.2
Software ²	95.1	106.6	123.4	95.1	109.4	129.2
Communication equipment	65.6	73.0	83.6	65.6	73.8	85.9
Instruments	33.3	35.0	36.3	33.3	34.8	36.1
Photocopy and related equipment	14.7	15.8	15.2	14.7	15.7	15.4
Office and accounting equipment	7.8	8.3	9.8	7.8	8.4	9.8
Industrial equipment	136.4	142.3	150.2	136.4	141.3	148.1
Fabricated metal products	13.4	13.2	14.0	13.4	13.1	13.9
Engines and turbines	4.3	3.5	4.3	4.3	3.5	4.2
Metalworking machinery	31.7	35.0	36.4	31.7	34.9	36.0
Special industry machinery, n.e.c.	34.6	35.2	35.7	34.6	34.9	35.0
General industrial, including materials handling, equipment	31.6	33.5	36.8	31.6	33.1	36.1
Electrical transmission, distribution, and industrial apparatus	20.9	21.9	23.0	20.9	21.9	23.0
Transportation equipment	138.9	150.9	176.0	138.9	149.6	175.3
Trucks, buses, and truck trailers	77.9	87.0	97.0	77.9	87.4	98.5
Autos	41.3	41.7	40.5	41.3	40.2	39.0
Aircraft	12.2	14.4	28.0	12.2	14.2	27.5
Ships and boats	2.2	2.2	3.0	2.2	2.2	2.9
Railroad equipment	5.4	5.6	7.5	5.4	5.7	7.6
Other equipment	116.5	128.0	140.5	116.4	126.7	137.9
Furniture and fixtures	27.6	31.2	33.7	27.6	30.7	33.0
Tractors	10.6	11.4	12.1	10.6	11.4	12.0
Agricultural machinery, except tractors	11.4	12.2	12.9	11.4	12.1	12.6
Construction machinery, except tractors	17.3	19.6	22.4	17.3	19.2	21.6
Mining and oilfield machinery	2.8	3.1	4.6	2.8	3.0	4.5
Service industry machinery	14.2	14.4	15.7	14.2	14.2	15.3
Electrical equipment, n.e.c.	10.6	11.6	12.8	10.6	11.8	13.1
Other	21.9	24.5	26.2	21.9	24.3	25.8
Less: Sale of equipment scrap, excluding autos	4.6	4.5	4.9	4.6	4.4	5.7
Residential equipment	7.7	7.9	8.3	7.7	7.9	8.4
Residual				-3	-2.7	-15.9
Addenda:						
Private fixed investment in equipment and software	682.1	739.9	826.8			
Less: Dealers' margin on used equipment	7.0	7.4	8.3			
Net purchases of used equipment from government .....	.8	.9	.9			
Plus: Net sales of used equipment	38.4	38.9	40.7			
Net exports of used equipment .....	.4	.4	.7			
Sale of equipment scrap	4.7	4.6	5.0			
Equals: Private fixed investment in new equipment and software	717.7	775.7	864.2			

1. Includes new computers and peripheral equipment only.
 2. Excludes software "embedded," or bundled, in computers and other equipment.
 NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. The residual line is the difference between the first line and the sum of the most detailed lines.
 n.e.c. Not elsewhere classified.

Table B.9.—Wage and Salary Accruals Per Full-Time Equivalent Employee and Full-Time Equivalent Employees by Industry

	Wage and salary accruals per full-time equivalent			Full-time equivalent employees ¹		
	Dollars			Thousands		
	1996	1997	1998	1996	1997	1998
Total	32,040	33,428	35,112	113,300	116,213	119,317
Domestic industries	31,963	33,339	35,021	113,716	116,669	119,779
Private industries	31,384	32,825	34,594	95,388	98,254	101,229
Agriculture, forestry, and fishing	19,324	20,333	20,730	1,789	1,839	1,972
Farms	19,893	20,037	21,516	713	751	754
Agricultural services, forestry, and fishing	18,946	20,537	20,244	1,076	1,088	1,218
Mining	48,680	50,428	52,465	571	589	581
Metal mining	48,500	49,481	51,469	54	54	49
Coal mining	48,742	49,621	50,857	97	95	91
Oil and gas extraction	52,365	54,372	56,571	315	333	333
Nonmetallic minerals, except fuels	37,657	39,346	41,611	105	107	108
Construction	31,631	32,924	34,524	5,444	5,752	6,074
Manufacturing	37,158	38,965	40,928	18,168	18,350	18,513
Durable goods	39,038	40,804	42,715	10,664	10,880	11,100
Lumber and wood products	26,148	27,448	28,272	782	792	817
Furniture and fixtures	26,068	27,641	28,979	497	501	523
Stone, clay, and glass products	34,880	35,708	37,088	532	544	558
Primary metal industries	40,771	42,033	43,080	703	705	709
Fabricated metal products	33,968	35,155	36,292	1,426	1,461	1,493
Industrial machinery and equipment	41,668	44,133	46,454	2,074	2,141	2,181
Electronic and other electric equipment	40,307	42,838	45,840	1,645	1,673	1,689
Motor vehicles and equipment	48,773	49,669	51,908	959	975	990
Other transportation equipment	46,520	47,215	48,776	815	850	891
Instruments and related products	46,859	48,635	51,663	842	851	858
Miscellaneous manufacturing industries	28,776	30,594	32,072	389	387	391
Nondurable goods	34,486	36,286	38,254	7,504	7,470	7,413
Food and kindred products	30,567	31,891	33,506	1,654	1,651	1,648
Tobacco products	54,975	59,450	57,590	40	40	39
Textile mill products	25,019	26,376	27,312	624	612	593
Apparel and other textile products	19,832	20,861	22,180	846	803	745
Paper and allied products	40,718	42,177	43,349	677	674	671
Printing and publishing	35,897	37,427	39,481	1,444	1,465	1,478
Chemicals and allied products	53,303	56,772	60,096	1,021	1,019	1,023
Petroleum and coal products	56,188	60,037	64,215	138	135	135
Rubber and miscellaneous plastics products	30,898	32,253	33,691	965	982	997
Leather and leather products	23,589	25,281	26,345	95	89	84
Transportation and public utilities	39,355	40,897	42,717	5,884	6,037	6,219
Transportation	33,197	34,439	35,621	3,783	3,886	4,034
Railroad transportation	54,706	56,505	56,322	211	208	205
Local and interurban passenger transit	20,811	21,189	21,981	402	418	432
Trucking and warehousing ²	30,351	31,753	32,934	1,551	1,596	1,660
Water transportation	38,934	40,421	42,341	166	171	173
Transportation by air ²	37,238	38,705	40,095	1,043	1,063	1,118
Public utilities	6,158	6,458	7,096	2,101	2,151	2,185
Rest of world⁵	-416	-456	-462	-416	-456	-462

1. Full-time equivalent employees equals the number of employees on full-time schedules plus the number of employees on part-time schedules converted to a full-time basis. The number of full-time equivalent employees in each industry is the product of the total number of employees and the ratio of average weekly hours per employee for all employees to average weekly hours per employee on full-time schedules.
 2. Reflects the reclassification of air couriers from trucking and warehousing to transportation by air.
 3. Consists of museums, botanical and zoological gardens; engineering and management services; and services,

not elsewhere classified.
 4. Includes Coast Guard.
 5. Includes estimates of foreign professional workers and undocumented Mexican migratory workers employed temporarily in the United States.
 NOTE.—Estimates in this table are based on the 1987 Standard Industrial Classification (SIC).

Table B.10.—Farm Sector Output, Gross Product, and National Income

	Billions of dollars			Billions of chained (1996) dollars		
	1996	1997	1998	1996	1997	1998
	Farm output	222.6	226.2	214.2	222.6	237.3	237.9
Cash receipts from farm marketings	201.2	208.7	198.2	201.2	218.7	220.3
Crops	108.3	112.1	103.7	108.3	121.2	121.8
Livestock	93.0	96.5	94.5	93.0	97.5	98.7
Farm housing	6.2	6.4	6.6	6.2	6.0	5.9
Farm products consumed on farms .....	.5	.5	.5	.5	.5	.5
Other farm income	6.8	7.8	8.6	6.8	8.2	9.6
Change in farm inventories	7.9	2.8	.3	7.9	3.0	.9
Crops	9.0	3.1	.9	9.0	3.4	1.7
Livestock	-1.1	-4	-6	-1.1	-4	-7
Less: Intermediate goods and services purchased	130.4	138.1	134.1	130.4	134.7	137.4
Intermediate goods and services, other than rent	114.3	122.1	119.0	114.3	119.2	121.9
Rent paid to nonoperator landlords	16.1	16.0	15.1	16.1	15.5	15.5
Equals: Gross farm product	92.2	88.0	80.2	92.2	103.1	100.5
Less: Consumption of fixed capital	25.4	26.2	27.1	25.4	25.8	26.3
Equals: Net farm product	66.8	61.9	53.1	66.8	77.7	74.2
Less: Indirect business tax and nontax liability	5.0	5.2	5.3			
Plus: Subsidies to operators	6.2	6.3	10.7			
Equals: Farm national income	68.1	63.0	58.6			
Compensation of employees	16.6	17.5	18.6			
Wage and salary accruals	14.2	15.0	16.2			
Supplements to wages and salaries	2.4	2.4	2.4			
Proprietors' income and corporate profits with inventory valuation and capital consumption adjustments	42.0	35.5	29.2			
Proprietors' income	34.3	29.5	25.1			
Corporate profits	7.7	6.0	4.1			
Net interest	9.5	10.1	10.8			

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive.

Table B.11.—Housing Sector Output, Gross Product, and National Income

	Billions of dollars			Billions of chained (1996) dollars		
	1996	1997	1998	1996	1997	1998
	Housing output ¹	742.3	777.9	822.8	742.3	755.9	775.2
Nonfarm housing	736.1	771.5	816.2	736.1	749.9	769.3
Owner-occupied	555.4	585.5	622.6	555.4	569.0	586.6
Tenant-occupied	180.6	186.0	193.6	180.6	180.9	182.6
Farm housing	6.2	6.4	6.6	6.2	6.0	5.9
Less: Intermediate goods and services consumed	94.4	103.9	116.8	94.4	100.1	110.0
Equals: Gross housing product	647.9	673.9	705.9	648.0	655.8	665.1
Nonfarm housing	642.8	668.6	700.4	642.8	650.8	660.2
Owner-occupied	482.3	505.7	531.5	482.3	491.9	500.9
Tenant-occupied	160.5	162.9	169.0	160.5	158.9	159.4
Farm housing	5.1	5.3	5.5	5.1	5.0	4.9
Less: Consumption of fixed capital	119.6	126.2	131.9	119.6	122.5	125.7
Capital consumption allowances	63.6	67.6	71.9			
Less: Capital consumption adjustment	-56.0	-58.6	-60.0			
Equals: Net housing product	528.4	547.7	574.0	528.4	533.2	539.4
Less: Indirect business tax and nontax liability plus business transfer payments	118.9	123.4	127.9			
Plus: Subsidies less current surplus of government enterprises	23.3	23.9	23.9			
Equals: Housing national income	432.8	448.3	470.0			
Compensation of employees	8.4	9.0	9.6			
Proprietors' income with inventory valuation adjustment and capital consumption adjustment	22.6	21.6	22.0			
Rental income of persons with capital consumption adjustment	111.2	111.5	119.3			
Corporate profits with inventory valuation adjustment and capital consumption adjustment	4.7	4.7	4.9			
Net interest	285.7	301.6	314.2			

1. Equals personal consumption expenditures for housing less expenditures for other housing as shown in table B.4.

NOTE.—Chained (1996) dollar series are calculated as the product of the chain-type quantity index and the 1996 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive.

“Table B.12.—Net Stock of Fixed Private Capital, by Type” is not published in this issue. The table will be published when the estimates of fixed assets and consumer durable goods are revised to incorporate the results of the most recent comprehensive revision of the NIPAs. An article presenting the revised estimates of fixed assets and consumer durable goods is scheduled to be published in the April 2000 SURVEY.

Table C.1.—Historical Measures of Real Gross Domestic Product, Real Gross National Product, and Real Gross Domestic Purchases—Continued
 [Quarterly estimates are seasonally adjusted at annual rates]

Year and quarter	Billions of chained (1996) dollars			Percent change from preceding period		Chain-type price indexes		Implicit price deflators		Percent change from preceding period			
	Gross domestic product	Final sales of domestic product	Gross national product	Gross domestic product	Final sales of domestic product	Gross domestic product	Gross domestic purchases	Gross domestic product	Gross national product	Chain-type price index		Implicit price deflators	
										Gross domestic product	Gross domestic purchases	Gross domestic product	Gross national product
1988: I	6,257.0	6,244.3	6,285.0	2.7	6.6	79.23	79.42	79.22	79.20	2.7	2.9	2.7	2.7
1988: II	6,331.0	6,315.2	6,355.8	4.8	4.6	80.03	80.22	80.03	80.01	4.1	4.1	4.1	4.1
1988: III	6,363.1	6,346.7	6,384.7	2.0	2.0	80.97	80.97	80.96	80.94	4.8	3.8	4.7	4.7
1988: IV	6,445.0	6,427.3	6,469.2	5.2	5.2	81.61	81.69	81.59	81.57	3.2	3.6	3.1	3.2
1989: I	6,522.4	6,471.5	6,546.4	4.9	2.8	82.47	82.61	82.47	82.45	4.3	4.6	4.4	4.4
1989: II	6,556.9	6,520.4	6,579.5	2.1	3.1	83.30	83.51	83.30	83.28	4.1	4.5	4.1	4.1
1989: III	6,586.8	6,582.1	6,612.0	1.8	3.8	83.92	84.01	83.92	83.90	3.0	2.4	3.0	3.0
1989: IV	6,608.7	6,595.6	6,641.0	1.3	.8	84.56	84.71	84.56	84.54	3.1	3.4	3.1	3.1
1990: I	6,689.2	6,678.7	6,719.3	5.0	5.1	85.53	85.79	85.52	85.51	4.7	5.2	4.6	4.7
1990: II	6,705.4	6,671.3	6,737.1	1.0	-.4	86.51	86.57	86.50	86.47	4.7	3.7	4.6	4.6
1990: III	6,695.4	6,675.2	6,721.0	-6	-.2	87.31	87.54	87.30	87.28	3.7	4.6	3.8	3.8
1990: IV	6,643.9	6,659.6	6,695.0	-3.0	-.9	88.03	88.65	88.01	88.00	3.3	5.1	3.3	3.3
1991: I	6,616.2	6,637.3	6,653.9	-1.7	-1.3	88.98	89.27	88.97	88.96	4.4	2.9	4.4	4.4
1991: II	6,658.4	6,682.4	6,683.0	2.6	2.7	89.54	89.63	89.54	89.53	2.6	1.6	2.6	2.6
1991: III	6,680.2	6,684.5	6,700.5	1.3	.1	90.05	90.09	90.06	90.05	2.3	2.1	2.3	2.3
1991: IV	6,721.7	6,692.8	6,750.1	2.5	.5	90.46	90.59	90.46	90.47	1.8	2.2	1.8	1.9
1992: I	6,792.9	6,798.5	6,819.7	4.3	6.5	91.04	91.13	91.03	91.04	2.6	2.4	2.5	2.5
1992: II	6,859.3	6,839.5	6,885.1	4.0	2.4	91.51	91.66	91.51	91.52	2.1	2.3	2.1	2.1
1992: III	6,912.1	6,895.1	6,934.6	3.1	3.3	91.82	92.11	91.81	91.82	1.3	2.0	1.3	1.3
1992: IV	7,000.0	6,981.7	7,023.7	5.2	5.1	92.44	92.70	92.43	92.44	2.7	2.6	2.7	2.7
1993: I	6,986.9	6,951.9	7,019.5	-7	-1.7	93.35	93.44	93.34	93.34	4.0	3.3	4.0	4.0
1993: II	7,024.0	7,001.6	7,049.6	2.1	2.9	93.93	94.06	93.92	93.91	2.5	2.7	2.5	2.5
1993: III	7,050.8	7,046.6	7,082.3	1.5	2.6	94.41	94.45	94.39	94.39	2.0	1.7	2.0	2.0
1993: IV	7,155.0	7,141.1	7,169.8	6.0	5.5	94.97	94.99	94.98	94.97	2.4	2.3	2.5	2.5
1994: I	7,218.5	7,176.3	7,240.1	3.6	2.0	95.42	95.34	95.42	95.42	1.9	1.5	1.9	1.9
1994: II	7,319.8	7,239.8	7,337.0	5.7	3.6	95.85	95.86	95.85	95.85	1.8	2.2	1.8	1.8
1994: III	7,360.5	7,308.9	7,376.6	2.2	3.9	96.41	96.54	96.41	96.40	2.4	2.8	2.4	2.3
1994: IV	7,452.3	7,378.4	7,468.2	5.1	3.9	96.85	96.96	96.85	96.85	1.8	1.8	1.9	1.9
1995: I	7,480.4	7,419.1	7,502.7	1.5	2.2	97.56	97.60	97.55	97.55	2.9	2.7	2.9	2.9
1995: II	7,496.0	7,462.3	7,522.0	.8	2.3	97.96	98.12	97.95	97.95	1.6	2.1	1.7	1.7
1995: III	7,555.0	7,543.4	7,566.7	3.2	4.4	98.39	98.49	98.38	98.38	1.8	1.5	1.8	1.8
1995: IV	7,616.8	7,597.3	7,640.6	3.3	2.9	98.86	98.91	98.85	98.85	1.9	1.7	1.9	1.9
1996: I	7,671.4	7,664.6	7,698.7	2.9	3.6	99.46	99.48	99.45	99.45	2.5	2.3	2.5	2.5
1996: II	7,800.5	7,770.9	7,818.3	6.9	5.7	99.77	99.77	99.77	99.77	1.3	1.2	1.3	1.3
1996: III	7,843.3	7,793.5	7,854.7	2.2	1.2	100.21	100.14	100.20	100.20	1.8	1.5	1.7	1.7
1996: IV	7,937.5	7,903.7	7,953.3	4.9	5.8	100.56	100.62	100.55	100.56	1.4	1.9	1.4	1.4
1997: I	8,033.4	7,981.1	8,038.1	4.9	4.0	101.14	101.09	101.15	101.16	2.4	1.9	2.4	2.4
1997: II	8,134.8	8,042.0	8,144.0	5.1	3.1	101.53	101.23	101.53	101.54	1.5	.6	1.5	1.5
1997: III	8,214.8	8,155.3	8,216.2	4.0	5.8	101.83	101.48	101.82	101.83	1.2	1.0	1.1	1.1
1997: IV	8,277.3	8,204.3	8,277.2	3.1	2.4	102.15	101.76	102.12	102.13	1.3	1.1	1.2	1.2
1998: I	8,412.7	8,307.0	8,414.8	6.7	5.1	102.41	101.79	102.35	102.36	1.0	.1	.9	.9
1998: II	8,457.2	8,410.4	8,456.6	2.1	5.1	102.70	101.99	102.68	102.69	1.1	.8	1.3	1.3
1998: III	8,536.0	8,459.6	8,510.6	3.8	2.4	103.06	102.26	103.07	103.07	1.4	1.1	1.5	1.5
1998: IV	8,659.2	8,588.3	8,641.9	5.9	6.2	103.28	102.51	103.33	103.34	.9	1.0	1.0	1.0
1999: I	8,737.9	8,685.2	8,723.3	3.7	4.6	103.79	102.92	103.83	103.84	2.0	1.6	2.0	2.0
1999: II	8,778.6	8,757.9	8,764.3	1.9	3.4	104.13	103.40	104.19	104.19	1.3	1.9	1.4	1.4
1999: III	8,900.6	8,855.8	8,885.5	5.7	4.5	104.41	103.85	104.46	104.47	1.1	1.7	1.1	1.0
1999: IV	9,050.9	8,976.3	.....	6.9	5.6	104.93	104.44	104.98	.....	2.0	2.3	2.0	.....

D. Domestic Perspectives

This table presents data collected from other government agencies and private organizations, as noted. Quarterly data are shown in the middle month of the quarter.

Table D.1.—Domestic Perspectives

	1998	1999	1998	1999												2000	
			Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	
Consumer and producer prices, (monthly data seasonally adjusted) ¹																	
Consumer price index for all urban consumers, 1982=100:																	
All items	163.0	166.6	164.4	164.7	164.8	165.1	166.2	166.2	166.2	166.2	166.7	167.2	167.8	168.1	168.4	168.8	169.1
Less food and energy	173.4	177.0	175.5	175.8	175.8	176.1	176.7	176.8	177.0	177.4	177.5	178.1	178.4	178.7	178.9	179.2	179.6
Services	184.2	188.8	186.2	186.5	186.9	187.6	188.1	188.3	188.5	189.1	189.4	189.8	190.2	190.8	191.1	191.6	191.6
Producer price index, 1982=100:																	
Finished goods	130.7	133.1	131.1	131.6	131.1	131.6	132.2	132.3	132.4	132.7	133.5	134.6	134.6	134.9	135.0	135.0	135.0
Less food and energy	143.7	146.1	145.8	145.6	145.7	145.6	145.7	145.8	145.8	145.7	145.8	146.7	146.9	146.9	147.0	147.0	147.0
Finished consumer goods	128.9	132.1	129.5	130.2	129.5	130.1	130.9	131.0	131.3	131.7	132.7	134.1	134.0	134.4	134.5	134.5	134.5
Capital equipment	137.6	137.6	137.6	137.6	137.7	137.5	137.6	137.7	137.5	137.3	137.4	137.6	137.9	137.8	138.0	138.1	138.1
Intermediate materials	123.0	123.2	121.2	121.1	120.8	121.1	121.9	122.3	122.7	123.5	124.1	124.7	125.1	125.5	125.8	126.3	126.3
Crude materials	96.8	98.2	90.2	91.1	88.9	89.6	91.5	96.7	96.9	97.1	102.1	106.8	105.1	108.9	104.6	107.4	107.4
Money, interest rates, and stock prices																	
Money stock (monthly and quarterly data seasonally adjusted): ²																	
Percent change:																	
M1			0.34	-0.13	-0.16	0.65	0.53	-0.49	-0.15	-0.07	-0.10	-0.25	0.52	0.82	1.37	-0.31	
M2 .....			.75	.58	.57	.36	.60	.51	.40	.50	.42	.46	.39	.44	.63	.50	
Ratio:																	
Gross domestic product to M1	8.106	8.394			8.269			8.292			8.470			8.543			
Personal income to M2	1.743	1.716	1.718	1.718	1.717	1.715	1.713	1.711	1.718	1.714	1.714	1.708	1.722	1.721	1.715	1.719	
Interest rates (percent, not seasonally adjusted): ²																	
Federal funds rate	5.35	4.97	4.68	4.63	4.76	4.81	4.74	4.74	4.76	4.99	5.07	5.22	5.20	5.42	5.30	5.45	
Discount rate on new 91-day Treasury bills	4.81	4.66	4.42	4.34	4.45	4.48	4.28	4.51	4.59	4.60	4.76	4.73	4.88	5.07	5.23	5.34	
Yield on new high-grade corporate bonds	6.44	7.00	6.13	6.14	6.33	6.52	6.58	6.86	7.21	7.20	7.36	7.38	7.51	7.35	7.55	7.83	
10-Year U.S. Treasury bonds	5.26	5.65	4.65	4.72	5.00	5.23	5.18	5.54	5.90	5.94	5.94	5.92	6.11	6.03	6.28	6.66	
Yield on municipal bonds, 20-bond average	5.09	5.43	4.98	5.01	5.03	5.10	5.08	5.18	5.37	5.36	5.58	5.69	5.92	5.86	5.95	6.08	
Mortgage commitment rate	6.94	7.43	6.72	6.79	6.81	7.04	6.92	7.15	7.55	7.63	7.94	7.82	7.85	7.74	7.91	8.21	
Average prime rate charged by banks	8.35	8.00	7.75	7.75	7.75	7.75	7.75	7.75	7.75	8.00	8.06	8.25	8.25	8.37	8.50	8.50	
Index of stock prices (not seasonally adjusted): ³																	
500 common stocks, 1941-43=10	1,084.31	1,326.06	1,190.05	1,248.77	1,246.58	1,281.66	1,334.76	1,332.07	1,322.55	1,380.99	1,327.49	1,318.17	1,300.01	1,391.00	1,428.68	1,425.59	
Labor markets (thousands, monthly and quarterly data seasonally adjusted, unless otherwise noted) ¹																	
Civilian labor force	137,673	139,368	138,545	139,232	139,137	138,804	139,086	139,013	139,332	139,336	139,372	139,475	139,697	139,834	140,108	140,910	
Labor force participation rates (percent):																	
Males 20 and over	76.8	76.7	76.8	77.0	76.9	76.7	76.7	76.6	76.6	76.6	76.6	76.6	76.5	76.5	76.6	77.0	
Females 20 and over	60.4	60.7	60.6	60.9	60.7	60.7	60.8	60.7	60.9	60.7	60.7	60.6	60.7	60.7	60.7	61.2	
16-19 years of age	52.8	52.0	52.8	52.4	52.9	52.0	52.0	51.9	51.4	51.8	51.2	51.5	52.1	52.1	52.3	52.1	
Civilian employment	131,463	133,488	132,517	133,225	133,029	132,976	133,054	133,190	133,398	133,399	133,530	133,650	133,940	134,098	134,420	135,221	
Ratio, civilian employment to working-age population (percent)	64.1	64.3	64.2	64.4	64.3	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.3	64.4	64.8	
Persons engaged in nonagricultural activities	128,085	130,207	129,276	129,928	129,701	129,686	129,713	129,900	130,068	130,121	130,296	130,471	130,702	130,788	131,141	131,850	
Employees on nonagricultural payrolls	125,826	128,616	127,186	127,378	127,730	127,813	128,134	128,162	128,443	128,816	128,945	129,048	129,332	129,589	129,905	130,292	
Goods-producing industries	25,347	25,240	25,354	25,315	25,329	25,285	25,288	25,199	25,180	25,247	25,148	25,186	25,198	25,257	25,275	25,406	
Services-producing industries	100,480	103,376	101,832	102,063	102,401	102,528	102,846	102,963	103,263	103,569	103,797	103,862	104,134	104,332	104,630	104,886	
Average weekly hours, manufacturing (hours)	41.7	41.7	41.7	41.6	41.6	41.5	41.6	41.7	41.7	41.9	41.8	41.8	41.8	41.7	41.6	41.7	
Average weekly overtime hours, manufacturing (hours)	4.6	4.6	4.5	4.5	4.5	4.5	4.3	4.6	4.7	4.7	4.7	4.7	4.7	4.6	4.7	4.6	
Number of persons unemployed	6,210	5,880	6,028	6,007	6,108	5,828	6,032	5,823	5,934	5,937	5,842	5,825	5,757	5,736	5,688	5,689	
Unemployment rates (percent):																	
Total	4.5	4.2	4.4	4.3	4.4	4.2	4.3	4.2	4.3	4.3	4.2	4.2	4.1	4.1	4.1	4.0	
15 weeks and over	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	
Average duration of unemployment (weeks)	14.5	13.4	14.0	13.5	13.8	13.6	13.2	13.4	14.3	13.5	13.2	13.0	13.2	13.0	12.8	13.2	
Nonfarm business sector, 1992=100:																	
Output per hour of all persons	110.2	113.4			112.2			112.4			113.8			115.2			
Unit labor costs	108.6	110.6			109.8			111.0			110.9			110.6			
Hourly compensation	119.7	125.4			123.3			124.7			126.1			127.4			

See footnotes at the end of the table.

Table D.1.—Domestic Perspectives—Continued

	1998	1999	1998	1999												2000
			Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
Construction (monthly data seasonally adjusted at annual rates) ⁴																
Total new private construction put in place (billions of dollars)	520.1	547.0	541.6	543.5	548.7	555.4	547.9	546.9	546.9	546.0	541.8	540.9	543.8	549.3	556.3	569.0
Residential	294.3	321.7	310.3	315.8	318.5	323.1	322.2	321.8	320.9	320.3	319.7	320.0	322.7	325.7	330.1	338.2
Nonresidential	181.9	183.8	190.0	185.8	189.0	189.3	184.4	184.2	182.9	183.3	181.0	180.9	180.8	183.0	183.7	189.5
Housing starts (thousands of units):																
Total	1,617	1,665	1,792	1,804	1,738	1,737	1,561	1,649	1,562	1,704	1,657	1,628	1,636	1,663	1,748	1,775
1-unit structures	1,271	1,333	1,412	1,393	1,379	1,377	1,248	1,368	1,269	1,348	1,285	1,290	1,343	1,344	1,426	1,396
New 1-family houses sold (thousands of units)	886	904	958	908	909	885	952	914	932	929	912	860	919	861	900	.....
Manufacturing and trade, inventories and sales (millions of dollars, monthly data seasonally adjusted) ⁴																
Inventories:																
Total manufacturing and trade	1,094,345	1,145,115	1,094,345	1,095,209	1,098,308	1,103,619	1,105,654	1,108,901	1,112,311	1,115,790	1,119,251	1,124,016	1,127,772	1,139,025	1,145,115	.....
Manufacturing	466,798	470,951	466,798	464,867	464,198	463,578	463,194	463,742	462,690	465,043	464,351	465,669	467,522	469,836	470,951	.....
Merchant wholesalers	286,705	305,005	286,705	286,698	288,638	289,360	289,636	290,216	291,367	293,982	295,558	298,469	299,793	303,649	305,005	.....
Retail trade	340,842	369,159	340,842	343,644	345,472	350,681	352,824	354,943	358,254	356,765	359,342	359,878	360,457	365,540	369,159	.....
Sales:																
Total manufacturing and trade	9,333,267	9,974,802	795,774	794,865	803,481	812,055	812,237	821,761	829,593	834,062	844,439	842,647	846,797	859,289	868,827	.....
Manufacturing	4,052,248	4,259,076	344,247	341,673	343,724	349,065	347,568	350,624	354,702	357,301	361,844	358,709	360,201	364,971	367,353	.....
Merchant wholesalers	2,535,008	2,721,795	215,061	213,597	216,138	219,595	219,921	223,909	227,863	227,293	229,827	231,135	233,048	237,464	240,142	.....
Retail trade	2,746,011	2,993,931	236,466	239,595	243,619	243,395	244,748	247,228	247,028	249,468	252,768	252,803	253,548	256,854	261,332	.....
Industrial production indexes and capacity utilization rates (monthly data seasonally adjusted) ²																
Industrial production indexes, 1992=100:																
Total	132.4	137.1	133.8	134.1	134.5	135.1	135.5	136.2	136.6	137.4	137.7	138.1	139.1	139.5	140.1	141.5
By industry:																
Durable manufactures	160.7	172.8	166.2	166.3	166.8	168.1	169.4	170.8	172.2	173.8	174.4	175.0	176.5	177.2	178.0	180.4
Nondurable manufactures	111.6	111.8	111.1	111.3	112.3	111.8	111.5	111.9	111.3	111.0	111.5	111.8	113.0	113.6	113.5	113.9
By market category:																
Consumer goods	116.2	116.9	115.1	116.3	117.2	116.7	116.5	116.8	117.0	116.8	117.6	117.1	118.2	117.7	118.2	119.3
Capacity utilization rates (percent):																
Total industry	81.8	80.7	80.6	80.4	80.4	80.5	80.4	80.5	80.5	80.7	80.6	80.4	81.0	81.0	81.1	81.6
Manufacturing	80.9	79.8	79.9	79.6	79.7	79.6	79.5	79.7	79.6	79.7	79.7	79.5	80.2	80.3	80.2	80.6
Credit market borrowing (billions of dollars, quarterly data seasonally adjusted at annual rates) ²																
All sectors, by instrument:																
Total	2,126.5	.....	.....	.....	2,519.6	.....	.....	1,893.0	.....	.....	2,240.0	.....	.....	.....	.....	.....
Open market paper	193.1	.....	.....	.....	161.1	.....	.....	34.1	.....	.....	187.0	.....	.....	.....	.....	.....
U.S. government securities	418.3	.....	.....	.....	517.0	.....	.....	467.0	.....	.....	570.1	.....	.....	.....	.....	.....
Municipal securities	96.8	.....	.....	.....	100.7	.....	.....	48.0	.....	.....	74.8	.....	.....	.....	.....	.....
Corporate and foreign bonds	535.6	.....	.....	.....	765.7	.....	.....	564.8	.....	.....	380.2	.....	.....	.....	.....	.....
Bank loans, n.e.c.	145.0	.....	.....	.....	62.1	.....	.....	38.3	.....	.....	99.6	.....	.....	.....	.....	.....
Other loans and advances	158.5	.....	.....	.....	189.8	.....	.....	98.9	.....	.....	231.5	.....	.....	.....	.....	.....
Mortgages	511.4	.....	.....	.....	594.0	.....	.....	581.8	.....	.....	621.3	.....	.....	.....	.....	.....
Consumer credit	67.6	.....	.....	.....	129.2	.....	.....	60.1	.....	.....	75.4	.....	.....	.....	.....	.....

Sources:

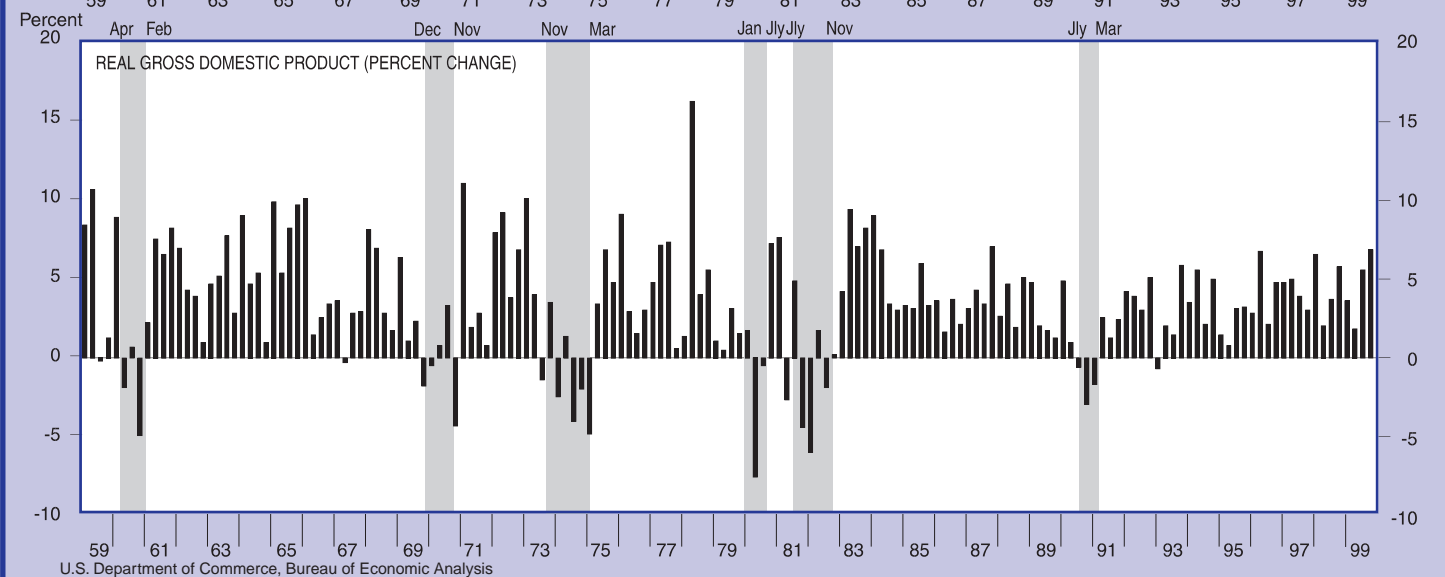
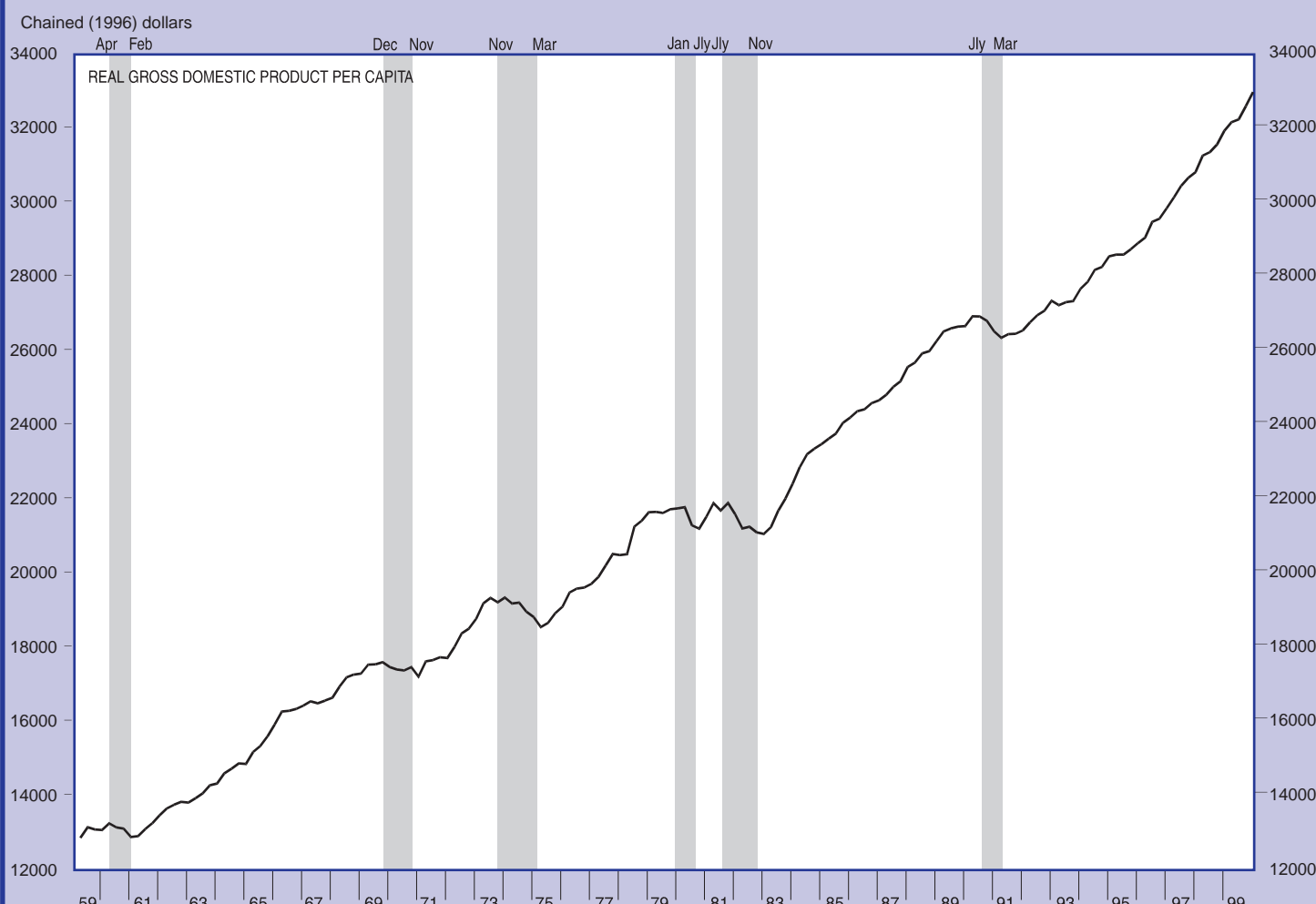
1. Bureau of Labor Statistics
2. Federal Reserve Board

3. Standard and Poor's, Inc.
4. Bureau of the Census
n.e.c. Not elsewhere classified

E. Charts

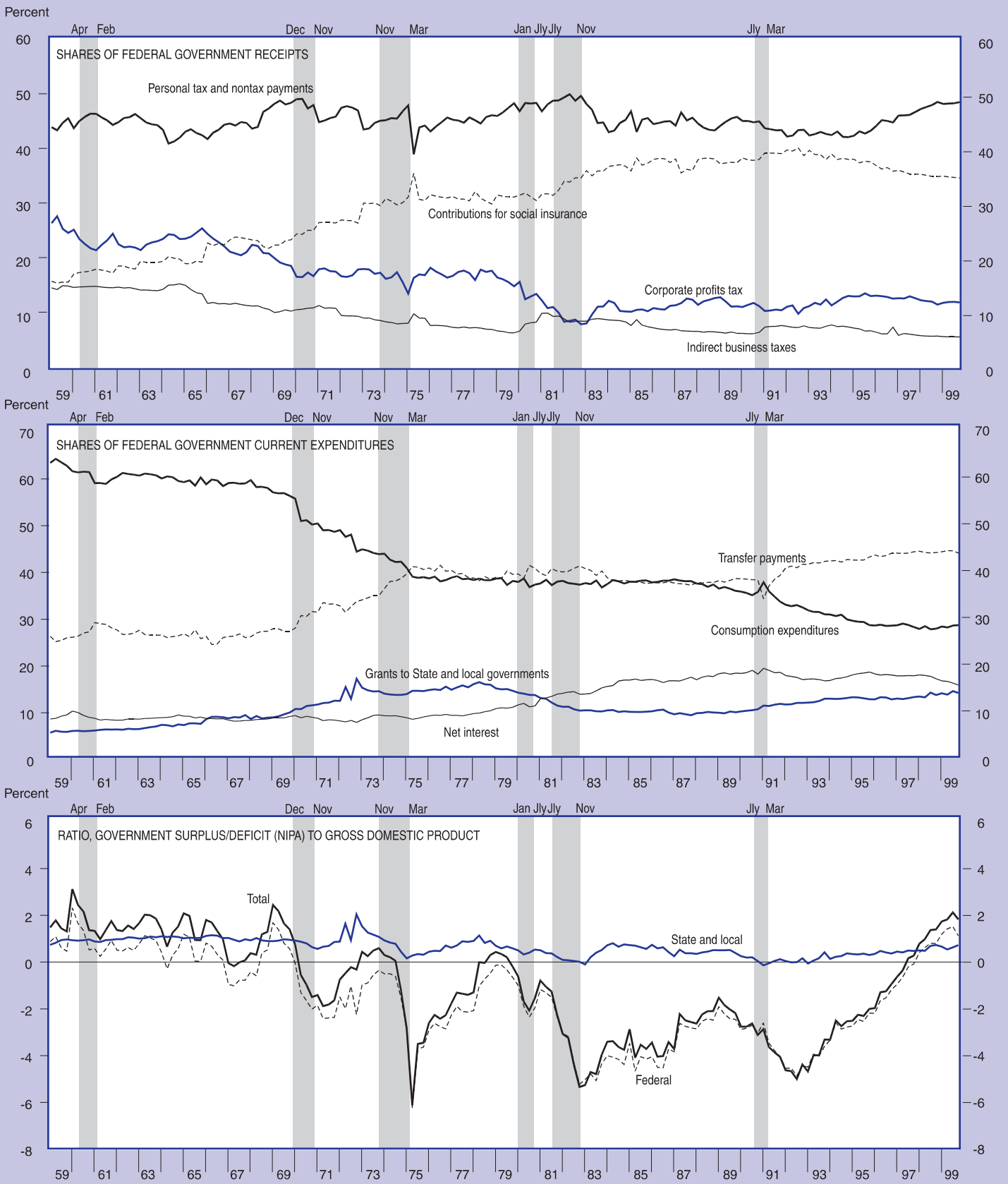
Percent changes shown in this section are based on quarter-to-quarter changes and are expressed at seasonally adjusted annual rates; likewise, levels of series are expressed at seasonally adjusted annual rates as appropriate.

SELECTED NIPA SERIES

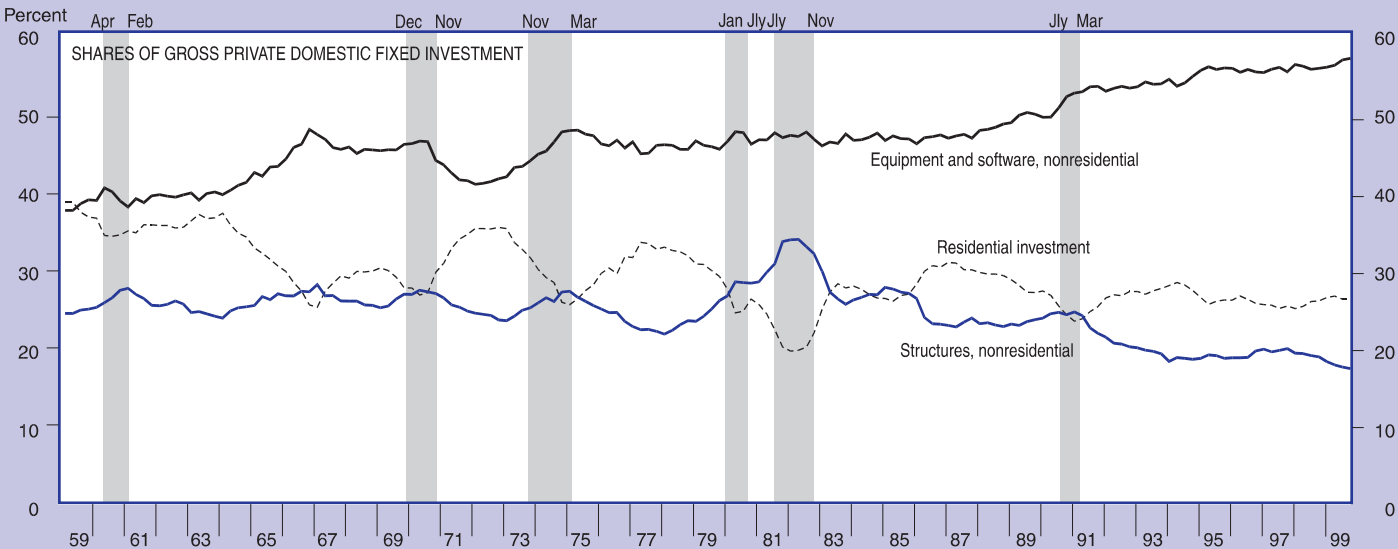
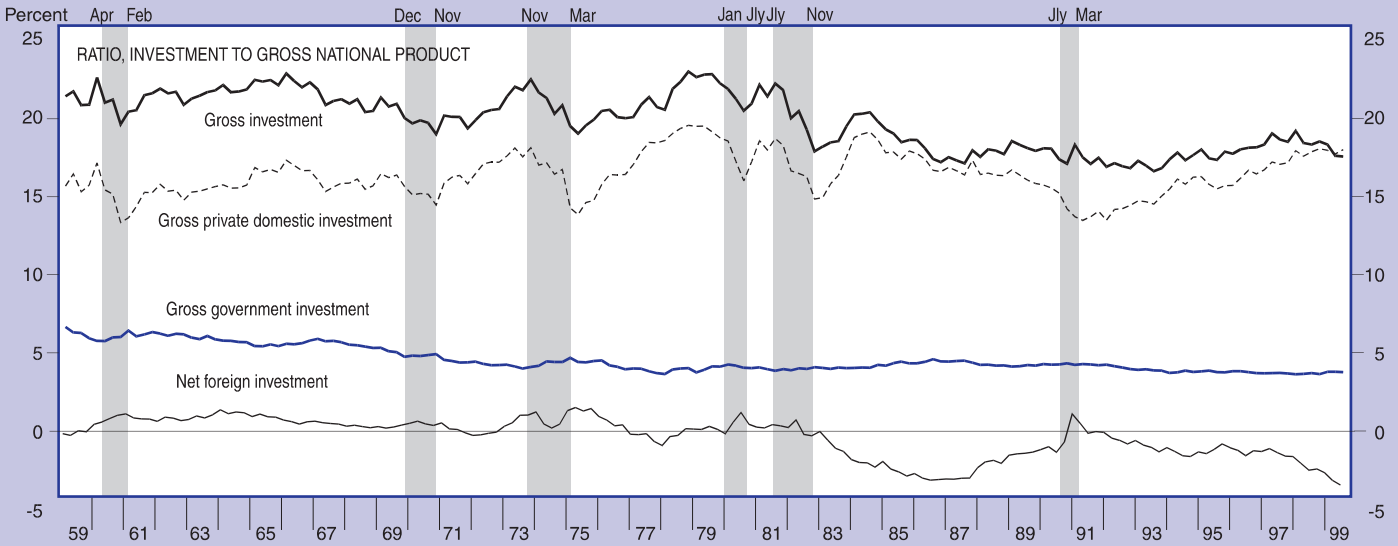
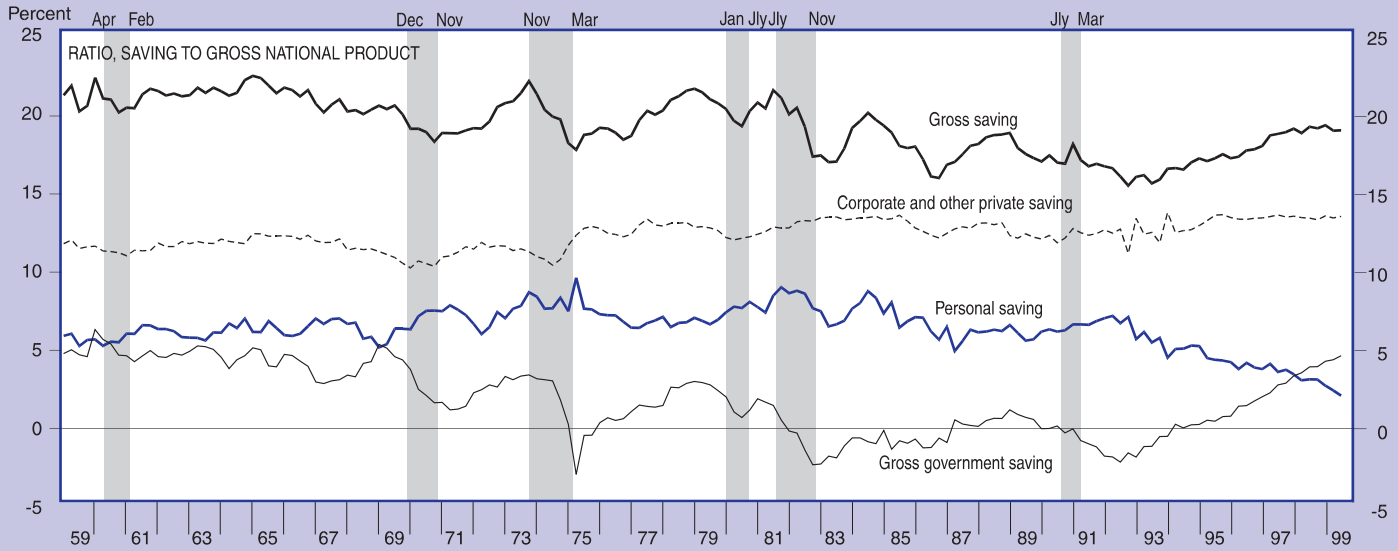


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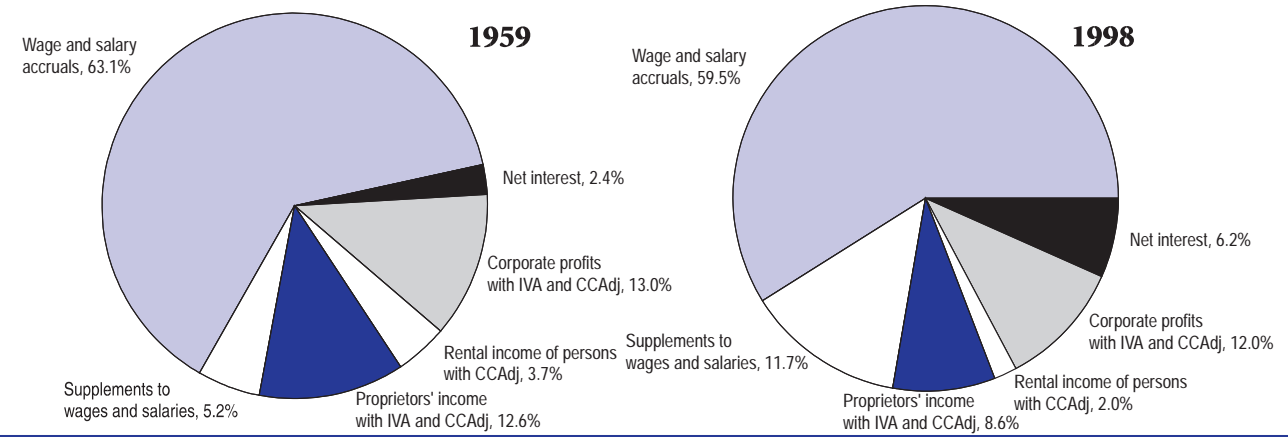


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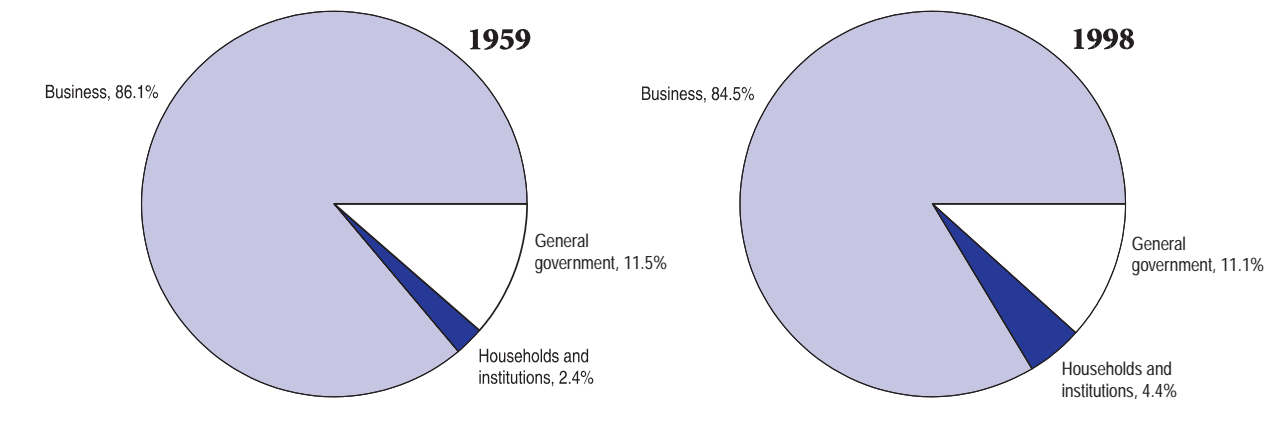


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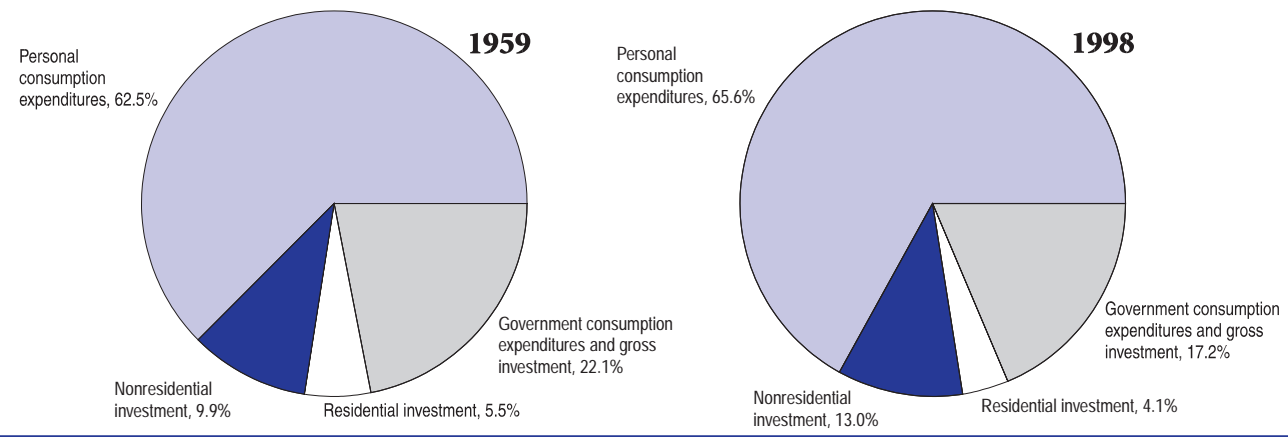
SHARES OF NATIONAL INCOME



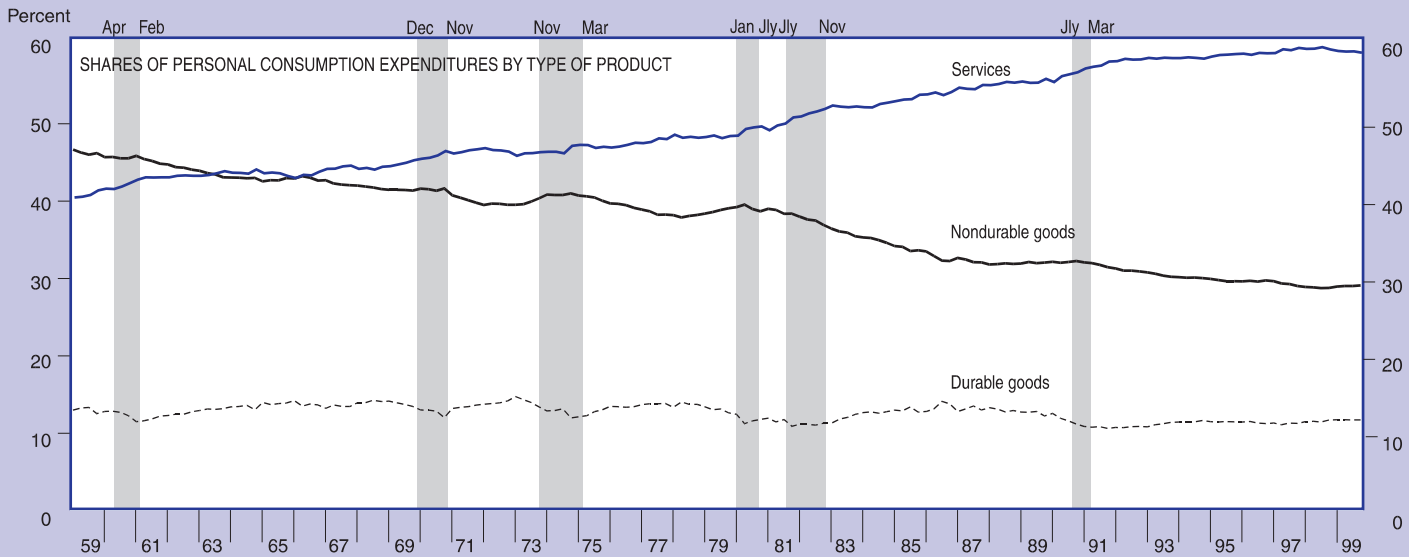
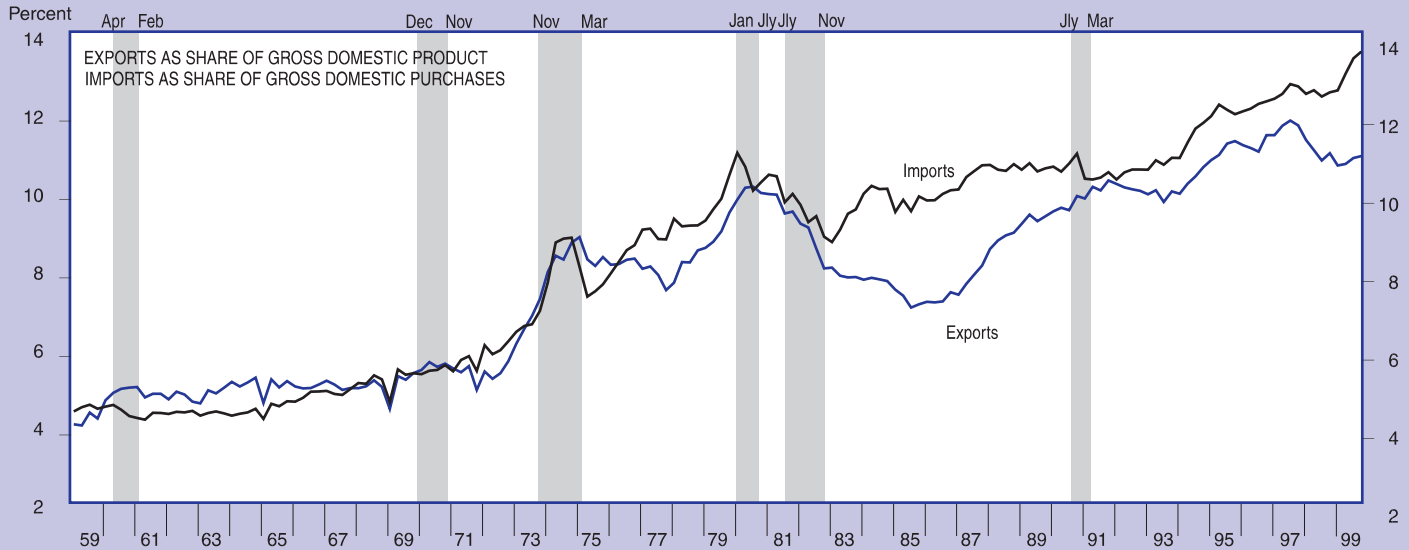
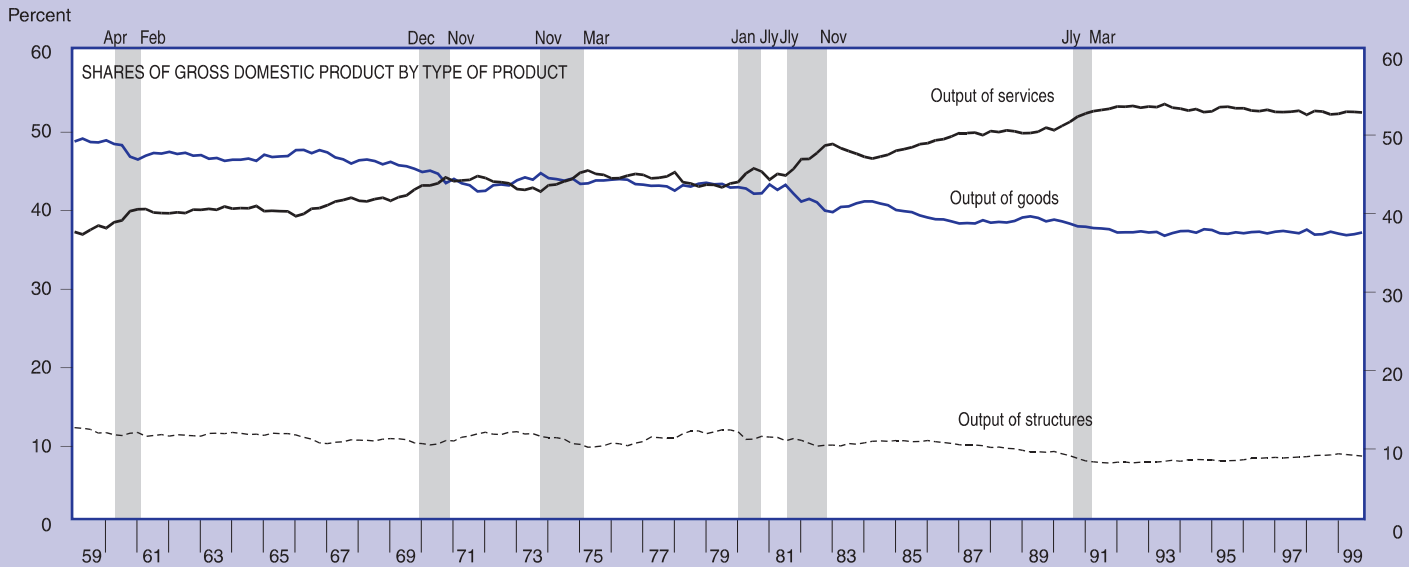
SHARES OF GROSS DOMESTIC PRODUCT BY SECTOR



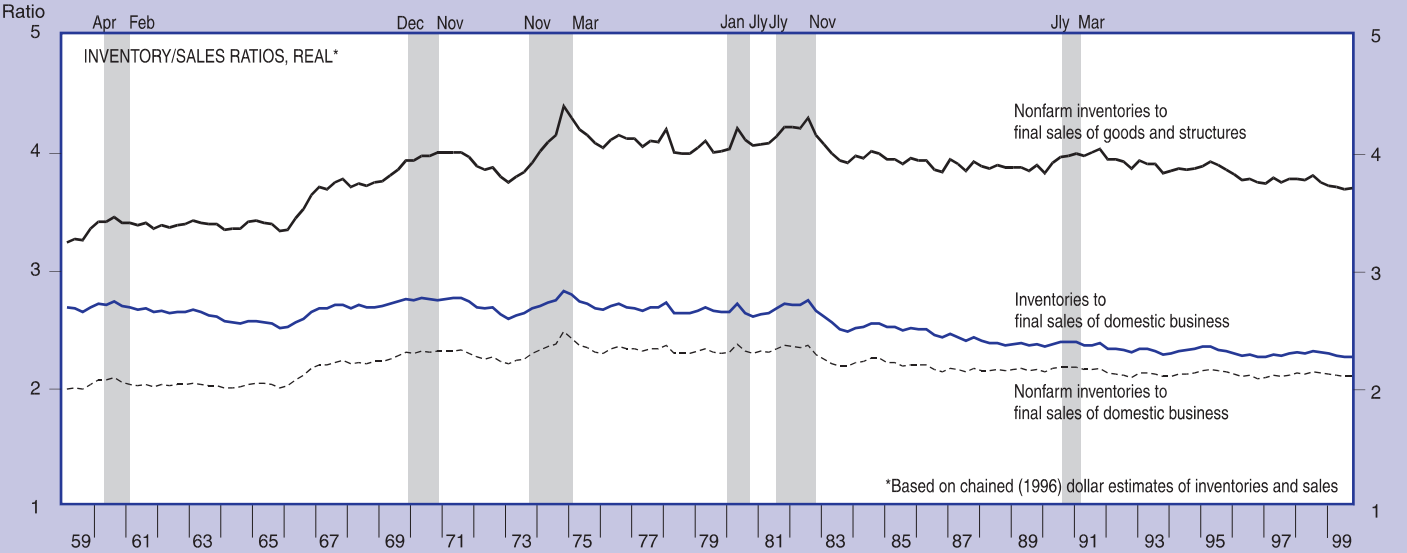
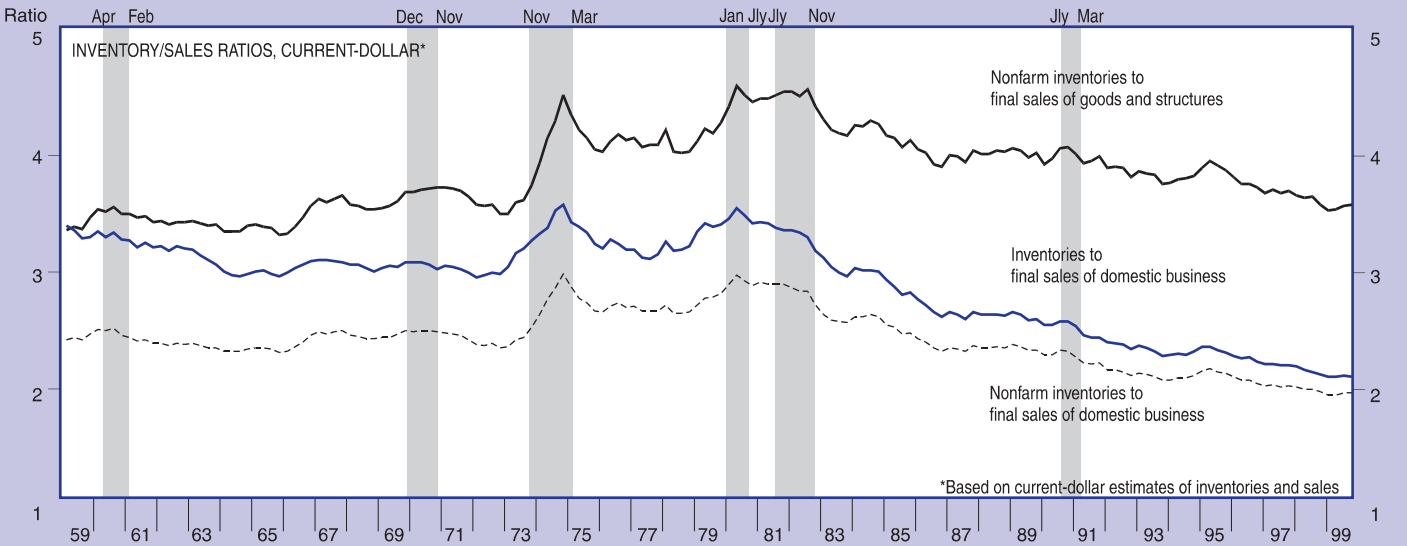
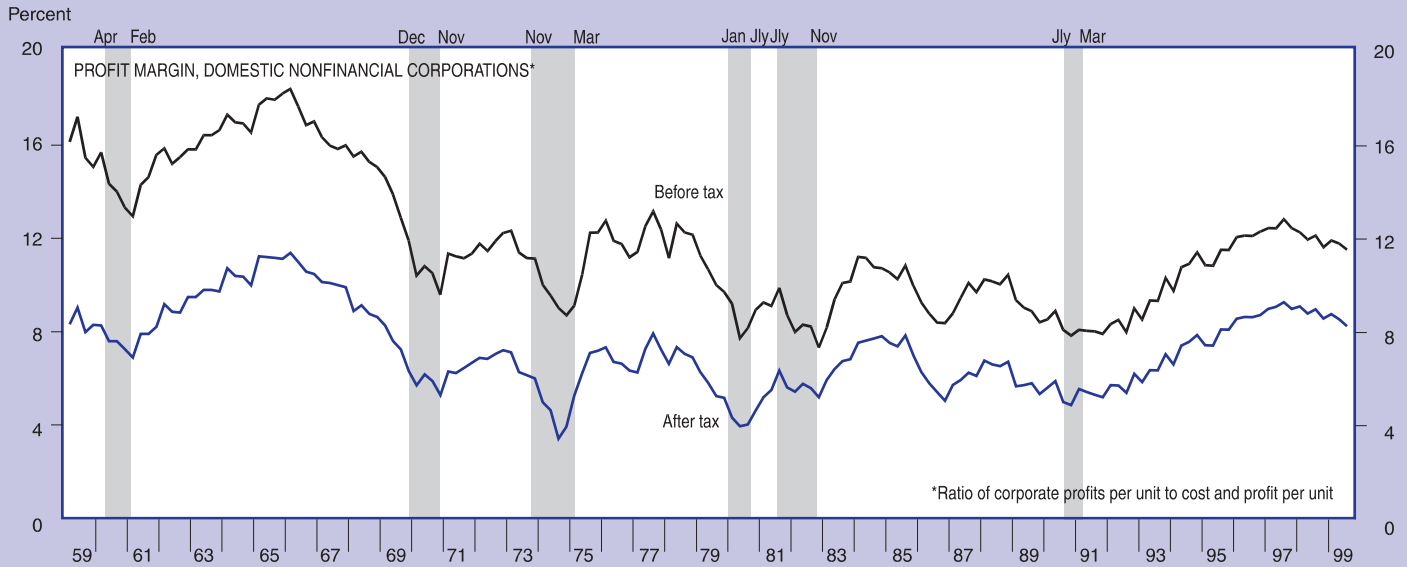
SHARES OF GROSS DOMESTIC PURCHASES



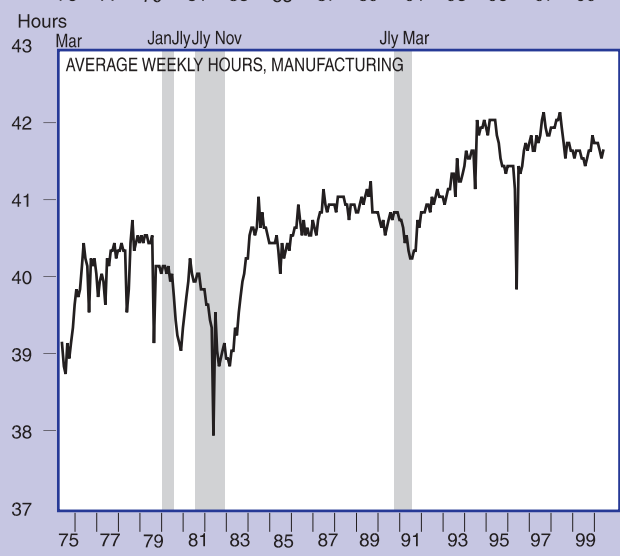
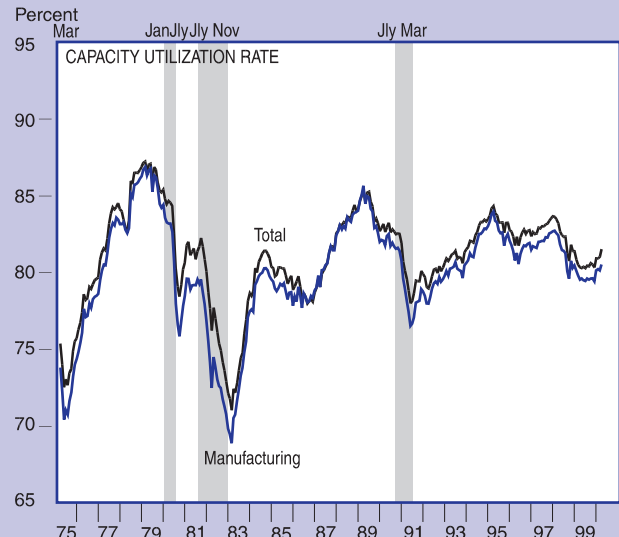
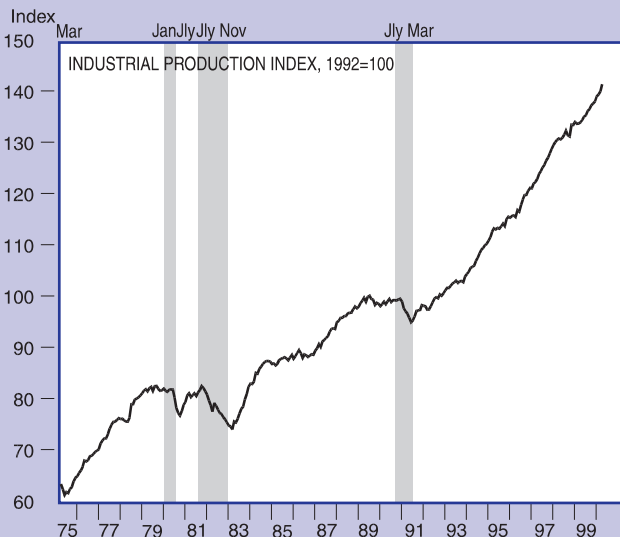
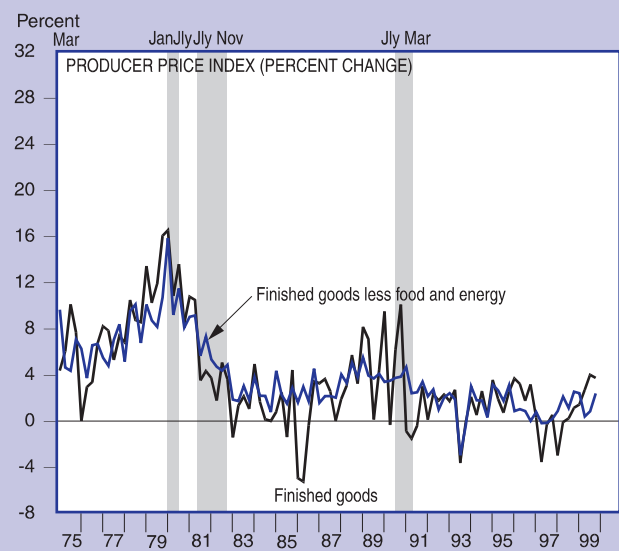
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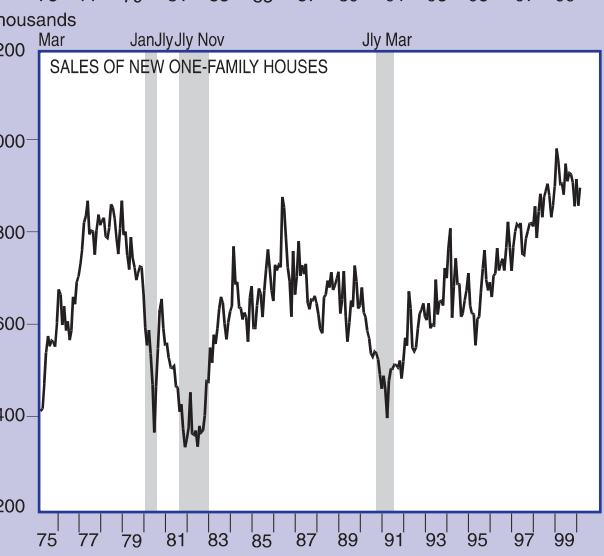
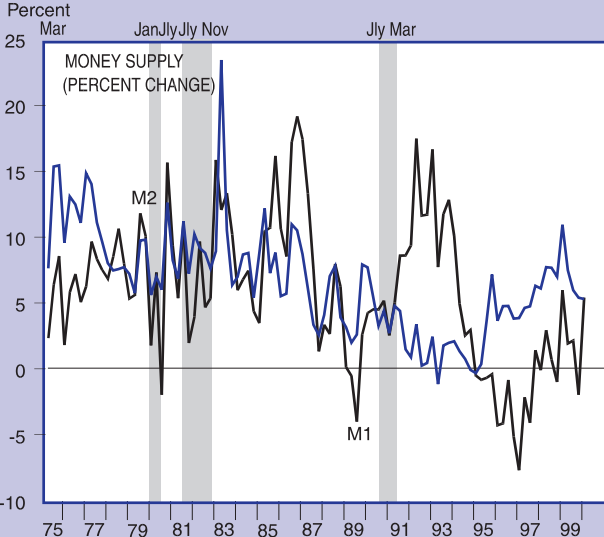
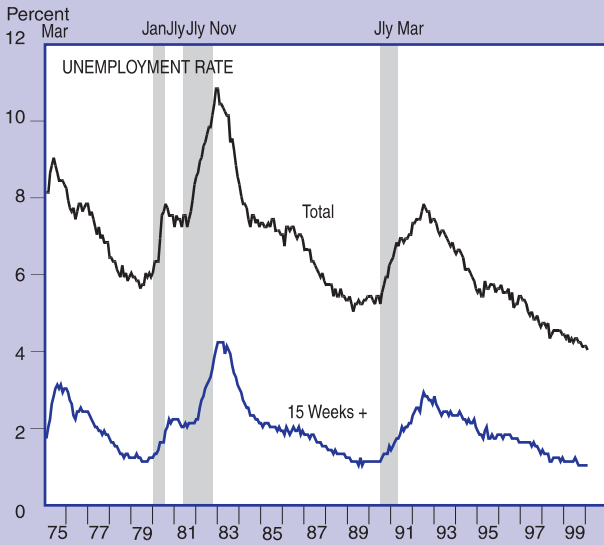
SELECTED NIPA SERIES



OTHER INDICATORS OF THE DOMESTIC ECONOMY



OTHER INDICATORS OF THE DOMESTIC ECONOMY



International Data

F. Transactions Tables

Table F.1 includes the most recent estimates of U.S. international trade in goods and services; the estimates were released on February 18, 2000 and include "preliminary" estimates for December 1999 and "revised" estimates for January–November 1999. The sources for the other tables in this section are as noted.

Table F.1.—U.S. International Transactions in Goods and Services

[Millions of dollars; monthly estimates seasonally adjusted]

	1998	1999	1998			1999											
			Oct.	Nov.	Dec.	Jan. ^r	Feb. ^r	Mar. ^r	Apr. ^r	May ^r	June ^r	July ^r	Aug. ^r	Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^p
Exports of goods and services	933,907	958,491	79,617	79,126	78,161	77,738	76,930	76,952	77,967	77,798	78,462	78,721	82,077	81,930	82,240	82,503	85,173
Goods	670,246	683,021	57,193	56,926	56,005	55,168	54,609	54,231	55,174	55,026	55,377	55,796	59,045	58,839	58,833	59,184	61,739
Foods, feeds, and beverages	46,397	45,339	4,018	3,866	3,992	3,627	3,588	3,545	3,727	3,722	3,828	3,799	3,919	4,018	4,025	3,703	3,837
Industrial supplies and materials	148,266	146,957	12,371	12,483	11,832	11,252	11,366	11,413	11,590	11,730	11,704	11,511	12,506	13,110	13,296	13,804	13,675
Capital goods, except automotive	299,612	310,591	26,117	25,696	25,470	25,576	24,852	25,043	24,911	24,799	25,699	27,314	26,681	26,316	26,222	28,320	28,320
Automotive vehicles, engines, and parts	73,157	74,666	6,156	6,341	6,186	6,039	5,958	5,834	6,164	6,076	6,490	6,087	6,681	6,193	6,301	6,240	6,602
Consumer goods (nonfood), except automotive	79,261	80,619	6,620	6,647	6,530	6,562	6,794	6,507	6,727	6,490	6,533	6,643	6,571	6,901	6,738	6,902	7,251
Other goods	35,444	36,837	3,119	3,500	3,181	3,065	3,162	3,112	2,918	3,239	3,224	3,089	2,908	3,085	3,057	2,990	2,988
Adjustments ¹	-11,892	-11,988	-1,208	-1,608	-1,186	-953	-1,113	-1,038	-994	-1,143	-1,202	-1,032	-855	-1,149	-900	-676	-934
Services	263,661	275,470	22,424	22,200	22,156	22,570	22,321	22,721	22,793	22,772	23,085	22,925	23,032	23,091	23,407	23,319	23,434
Travel	71,250	73,685	5,953	5,904	6,081	5,973	6,031	6,134	6,183	6,097	6,157	6,093	6,052	6,177	6,342	6,229	6,217
Passenger fares	19,996	21,041	1,627	1,626	1,590	1,621	1,659	1,715	1,731	1,743	1,766	1,760	1,768	1,804	1,871	1,805	1,798
Other transportation	25,518	27,273	2,253	2,197	2,125	2,128	2,129	2,244	2,239	2,212	2,280	2,252	2,342	2,327	2,368	2,367	2,385
Royalties and license fees	36,808	37,399	3,266	3,314	3,314	3,144	3,105	3,088	3,122	3,123	3,120	3,106	3,104	3,107	3,120	3,124	3,136
Other private services	92,116	98,641	7,821	7,672	7,747	7,879	8,037	8,179	8,159	8,146	8,226	8,247	8,213	8,236	8,344	8,449	8,526
Transfers under U.S. military agency sales contracts ²	17,155	16,568	1,435	1,417	1,229	1,757	1,291	1,292	1,289	1,380	1,430	1,399	1,485	1,373	1,293	1,276	1,303
U.S. Government miscellaneous services	818	863	69	70	70	68	69	69	70	71	106	68	68	67	69	69	69
Imports of goods and services	1,098,189	1,229,802	93,975	93,789	92,402	93,944	95,505	96,323	96,910	99,340	103,240	104,120	106,089	106,142	107,861	109,606	110,722
Goods	917,178	1,030,152	78,183	78,646	77,064	78,577	79,841	79,971	80,568	82,984	86,616	87,277	89,236	89,110	90,707	92,053	93,212
Foods, feeds, and beverages	41,243	43,586	3,432	3,445	3,515	3,525	3,513	3,381	3,546	3,632	3,757	3,671	3,667	3,707	3,634	3,722	3,830
Industrial supplies and materials	200,140	221,567	16,549	16,241	15,289	15,540	15,390	16,040	16,967	17,977	18,202	18,673	19,934	20,254	20,842	20,703	21,044
Capital goods, except automotive	269,557	296,870	22,948	23,132	22,466	23,089	23,652	23,045	23,286	24,205	25,467	25,499	25,141	24,935	25,851	26,274	26,426
Automotive vehicles, engines, and parts	149,054	179,519	13,045	13,377	13,887	13,955	14,271	14,577	13,672	14,553	15,439	15,432	15,693	15,325	15,040	15,515	16,048
Consumer goods (nonfood), except automotive	216,515	239,591	18,402	18,470	18,362	18,901	19,436	18,915	19,341	18,898	19,909	20,193	20,235	20,255	20,919	21,188	21,399
Other goods	35,387	43,899	3,217	3,278	3,278	3,395	3,366	3,786	3,485	3,505	3,565	3,612	4,098	3,771	3,907	3,730	3,679
Adjustments ¹	5,282	5,120	592	522	267	171	213	226	271	213	277	197	468	863	514	922	786
Services	181,011	199,650	15,792	15,325	15,338	15,367	15,664	16,352	16,342	16,356	16,624	16,843	16,853	17,032	17,154	17,553	17,510
Travel	56,105	60,744	4,832	4,602	4,697	4,742	4,890	5,215	5,057	4,951	4,952	5,033	5,028	5,130	5,233	5,291	5,222
Passenger fares	19,797	21,424	1,771	1,695	1,659	1,627	1,678	1,809	1,767	1,758	1,791	1,833	1,801	1,822	1,833	1,867	1,838
Other transportation	30,457	34,557	2,760	2,588	2,501	2,508	2,528	2,690	2,695	2,739	2,928	2,961	3,108	3,033	3,017	3,180	3,170
Royalties and license fees	11,292	12,403	950	974	999	1,040	1,061	1,075	1,077	1,070	1,050	981	968	972	1,012	1,039	1,058
Other private services	47,670	52,659	4,108	4,082	4,086	4,064	4,113	4,158	4,321	4,398	4,446	4,519	4,456	4,477	4,499	4,594	4,614
Direct defense expenditures ²	12,841	14,946	1,120	1,135	1,151	1,157	1,168	1,178	1,186	1,197	1,210	1,265	1,240	1,345	1,309	1,332	1,359
U.S. Government miscellaneous services	2,849	2,917	251	249	245	229	226	227	239	243	247	251	252	253	251	250	249
Memoranda:																	
Balance on goods	-246,932	-347,130	-20,990	-21,539	-21,059	-23,409	-25,232	-25,740	-25,393	-27,958	-31,239	-31,481	-30,191	-30,271	-31,875	-32,869	-31,472
Balance on services	82,650	75,820	6,632	6,875	6,818	7,203	6,657	6,369	6,451	6,416	6,461	6,082	6,179	6,059	6,253	5,766	5,924
Balance on goods and services	-164,282	-271,310	-14,358	-14,664	-14,241	-16,206	-18,575	-19,371	-18,942	-21,542	-24,778	-25,399	-24,012	-24,212	-25,622	-27,103	-25,548

^r Preliminary.

^r Revised.

1. Reflects adjustments necessary to bring the Census Bureau's component data in line with the concepts and definitions used to prepare BEA's international and national accounts.

2. Contains goods that cannot be separately identified.

Source: U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census

Table F.2.—U.S. International Transactions

[Millions of dollars]

Line	(Credits +; debits -) ¹	Not seasonally adjusted						Seasonally adjusted						
		1998			1999			1998			1999			
		II	III	IV	I	II ^r	III ^p	II	III	IV	I	II ^r	III ^p	
Current account														
1	Exports of goods and services and income receipts	1,192,231	299,641	288,254	303,581	293,632	302,257	308,910	298,463	291,493	299,985	295,932	301,369	312,189
2	Exports of goods and services	933,907	232,905	226,261	241,003	229,124	235,175	239,619	231,889	229,284	236,904	231,904	234,512	242,626
3	Goods, balance of payments basis ²	670,246	168,021	157,386	174,468	163,344	168,453	166,436	165,198	164,259	170,124	164,292	165,862	173,578
4	Services ³	263,661	64,884	68,875	66,535	65,780	66,722	73,183	66,691	65,025	66,780	67,612	68,650	69,048
5	Transfers under U.S. military agency sales contracts ⁴	17,155	4,489	3,979	4,081	4,340	4,099	4,257	4,489	3,979	4,081	4,340	4,099	4,257
6	Travel	71,250	18,119	20,354	17,125	15,809	18,271	21,661	18,260	17,149	17,938	18,138	18,437	18,322
7	Passenger fares	19,996	5,000	5,733	4,682	4,651	5,049	6,051	5,185	5,052	4,843	4,995	5,240	5,332
8	Other transportation	25,518	6,261	6,367	6,689	6,362	6,727	6,951	6,268	6,339	6,575	6,501	6,731	6,921
9	Royalties and license fees ⁵	36,808	8,716	8,866	10,571	9,124	9,063	9,189	9,002	9,029	9,894	9,337	9,365	9,317
10	Other private services ⁵	92,116	22,108	23,377	23,178	25,288	23,266	24,871	23,296	23,278	23,240	24,095	24,531	24,686
11	U.S. Government miscellaneous services	818	191	199	209	206	247	203	191	199	209	206	247	203
12	Income receipts	258,324	66,736	61,993	62,578	64,508	67,082	69,291	66,574	62,209	63,081	64,028	66,857	69,563
13	Income receipts on U.S.-owned assets abroad	256,467	66,273	61,528	62,113	64,038	66,611	68,821	66,111	61,744	62,617	63,558	66,386	69,093
14	Direct investment receipts	102,846	27,095	22,779	25,168	27,313	28,890	29,539	26,744	23,124	25,639	26,910	28,486	29,916
15	Other private receipts	150,001	38,412	37,744	36,019	35,700	37,072	38,426	38,412	37,744	36,019	35,700	37,072	38,426
16	U.S. Government receipts	3,620	766	1,005	926	965	649	856	955	876	959	888	828	751
17	Compensation of employees	1,857	463	465	465	470	471	470	463	465	464	470	471	470
18	Imports of goods and services and income payments	-1,368,718	-341,493	-351,539	-351,384	-342,780	-371,764	-397,886	-340,977	-344,182	-348,180	-354,246	-371,066	-390,934
19	Imports of goods and services	-1,098,189	-273,914	-282,050	-283,536	-275,023	-299,857	-323,064	-273,850	-275,008	-280,166	-285,878	-299,597	-316,451
20	Goods, balance of payments basis ²	-917,178	-227,633	-232,395	-239,118	-230,903	-249,336	-268,109	-228,698	-229,228	-233,711	-238,495	-250,274	-265,723
21	Services ³	-181,011	-46,281	-49,655	-44,418	-44,120	-50,521	-54,955	-45,152	-45,780	-46,455	-47,383	-49,323	-50,728
22	Direct defense expenditures	-12,841	-3,061	-3,276	-3,406	-3,503	-3,593	-3,850	-3,061	-3,276	-3,406	-3,503	-3,593	-3,850
23	Travel	-56,105	-15,193	-17,234	-12,016	-12,543	-16,063	-18,636	-14,168	-14,070	-14,131	-14,847	-14,960	-15,191
24	Passenger fares	-19,797	-5,325	-5,722	-4,518	-4,691	-5,711	-6,147	-4,958	-5,085	-5,125	-5,114	-5,316	-5,456
25	Other transportation	-30,457	-7,533	-7,820	-7,957	-7,554	-8,290	-9,230	-7,590	-7,700	-7,849	-7,726	-8,362	-9,102
26	Royalties and license fees ⁵	-11,292	-2,587	-2,685	-3,081	-3,162	-3,073	-2,881	-2,694	-2,721	-2,923	-3,176	-3,197	-2,921
27	Other private services ⁵	-47,670	-11,915	-12,153	-12,695	-11,985	-13,062	-13,455	-12,014	-12,163	-12,276	-12,335	-13,166	-13,452
28	U.S. Government miscellaneous services	-2,849	-667	-765	-745	-756	-729	-756	-667	-765	-745	-682	-729	-756
29	Income payments	-270,529	-67,579	-69,489	-67,848	-67,757	-71,907	-74,822	-67,127	-69,174	-68,014	-68,688	-71,469	-74,483
30	Income payments on foreign-owned assets in the United States	-65,423	-65,898	-67,631	-65,907	-66,024	-70,138	-72,871	-65,376	-67,381	-66,188	-66,504	-69,611	-72,613
31	Direct investment payments	-43,441	-11,889	-11,540	-10,800	-11,596	-15,023	-14,517	-10,567	-11,290	-11,081	-12,076	-14,496	-14,259
32	Other private payments	-128,863	-31,049	-33,314	-32,408	-31,759	-31,960	-34,207	-31,849	-33,314	-32,408	-31,759	-31,960	-34,207
33	U.S. Government payments	-91,119	-22,960	-22,777	-22,699	-22,669	-23,155	-24,147	-22,960	-22,777	-22,699	-22,669	-23,155	-24,147
34	Compensation of employees	-7,106	-1,681	-1,858	-1,941	-1,733	-1,769	-1,951	-1,751	-1,793	-1,826	-1,864	-1,858	-1,870
35	Unilateral current transfers, net	-44,075	-9,494	-10,607	-13,831	-10,420	-10,744	-11,179	-9,886	-10,787	-13,474	-10,340	-11,212	-11,204
36	U.S. Government grants ⁴	-13,057	-2,168	-2,807	-5,742	-2,200	-2,760	-2,700	-2,168	-2,807	-5,742	-2,200	-2,760	-2,700
37	U.S. Government pensions and other transfers	-4,350	-919	-865	-1,541	-893	-857	-997	-1,095	-1,106	-1,071	-1,104	-1,116	-1,107
38	Private remittances and other transfers ⁶	-26,668	-6,407	-6,935	-6,548	-7,327	-7,127	-7,482	-6,623	-6,874	-6,661	-7,036	-7,336	-7,397
Capital and financial account														
Capital account														
39	Capital account transactions, net	617	160	148	166	166	178	166	160	148	166	166	178	166
Financial account														
40	U.S.-owned assets abroad, net (increase/financial outflow (-))	-292,818	-121,852	-63,492	-44,586	-18,746	-156,044	-102,510	-120,517	-62,097	-50,607	-15,148	-154,713	-101,483
41	U.S. official reserve assets, net	-6,784	-1,945	-2,026	-2,369	4,068	1,159	1,950	-1,945	-2,026	-2,369	4,068	1,159	1,950
42	Gold ⁷	-149	72	188	-227	563	-190	-185	72	188	-227	563	-190	-185
43	Special drawing rights	-5,118	-1,031	-2,078	-1,924	3	1,413	2,268	-1,031	-2,078	-1,924	3	1,413	2,268
44	Reserve position in the International Monetary Fund	-1,517	-986	-136	-218	3,502	-64	-133	-986	-136	-218	3,502	-64	-133
45	Foreign currencies	-429	-483	185	-50	119	-392	-673	-429	-483	185	-50	119	-392
46	U.S. Government assets, other than official reserve assets, net	-4,676	-1,156	-1,285	-1,043	-1,304	-2,167	-1,591	-1,156	-1,285	-1,043	-1,304	-2,167	-1,591
47	U.S. credits and other long-term assets	4,102	699	1,332	938	1,545	1,887	1,020	699	1,332	938	1,545	1,887	1,020
48	Repayments on U.S. credits and other long-term assets ⁸	145	-26	138	55	-122	-112	-102	145	-26	138	55	-122	-102
49	U.S. foreign currency holdings and U.S. short-term assets, net	-285,605	-119,424	-61,651	-42,167	-22,933	-156,811	-103,787	-118,089	-60,256	-48,188	-19,335	-155,480	-102,760
50	U.S. investments, net	-132,829	-44,507	-22,981	-24,752	-44,983	-32,897	-45,562	-43,172	-21,586	-30,773	-41,385	-31,566	-44,535
51	Direct investment	-102,817	-32,886	-14,994	-70,809	8,132	-64,579	-26,511	-32,886	-14,994	-70,809	8,132	-64,579	-26,511
52	Foreign securities	-25,041	-14,327	-20,320	16,202	-13,853	-16,816	-32,098	-14,327	-20,320	16,202	-13,853	-16,816	-32,098
53	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	-24,918	-33,344	-33,344	37,192	27,771	-42,519	384	-24,918	-33,344	-33,344	37,192	27,771	-42,519
54	U.S. claims reported by U.S. banks, not included elsewhere	502,637	163,275	94,776	147,893	88,636	275,220	208,177	162,466	93,547	149,805	88,660	274,271	207,153
55	Foreign-owned assets in the United States, net (increase/financial inflow(+))	21,684	-10,551	-46,489	24,352	4,708	-628	12,106	-10,551	-46,489	24,352	4,708	-628	12,106
56	Foreign official assets in the United States, net	-3,625	-20,064	-30,905	33,398	6,793	-916	14,812	-3,625	-20,064	-30,905	33,398	6,793	9,161
57	U.S. Government securities	-9,957	-20,318	-32,811	31,836	800	-6,708	12,880	-9,957	-20,318	-32,811	31,836	800	-6,708
58	U.S. Treasury securities ⁹	6,332	254	1,906	1,562	5,993	5,792	5,993	6,332	254	1,906	1,562	5,993	5,792
59	Other ¹⁰	-3,113	-807	-224	-1,054	-1,594	-647	-1,163	-807	-224	-1,054	-1,594	-647	-1,163
60	Other U.S. Government liabilities ¹¹	-11,469	9,488	-12,866	-7,133	-5,889	1,437	-1,832	9,488	-12,866	-7,133	-5,889	1,437	-1,832
61	U.S. liabilities reported by U.S. banks, not included elsewhere	-3,477	832	-2,494	-859	98	-502	289	-3,477	832	-2,494	-859	98	-502
62	Other foreign official assets ¹²	524,321	173,826	141,265	123,541	83,928	275,848	196,071	173,017	140,036	125,453	84,152	274,899	195,047
63	Direct investment	193,375	21,755	26,135	118,933	22,725	155,322	45,498	20,946	24,906	120,505	22,949	154,373	44,474
64	U.S. Treasury securities	46,155	25,759	-1,438	24,391	-8,781	-5,407	9,713	25,759	-1,438	24,391	-8,781	-5,407	9,713
65	U.S. securities other than U.S. Treasury securities	218,026	71,785	20,103	49,328	61,540	79,067	93,062	71,785	20,103	49,328	61,540	79,067	93,062
66	U.S. currency	16,622	2,349	7,277	6,250	2,440								

Table F.3.—U.S. International Transactions, by Area

[Millions of dollars]

Line	(Credits +; debits -) ¹	Western Europe			European Union ¹⁴			United Kingdom			European Union (6) ¹⁵		
		2000			2000			2000			2000		
		I	II ^r	III	I	II ^r	III	I	II ^r	III	I	II ^r	III ^p
Current account													
1	Exports of goods and services and income receipts	94,152	92,875	94,140	85,586	83,763	84,729	26,593	26,166	26,796	44,932	43,857	44,674
2	Exports of goods and services	64,445	64,038	63,831	58,946	58,246	57,769	16,267	16,106	16,181	32,458	32,026	31,931
3	Goods, balance of payments basis ²	41,287	40,173	37,697	38,499	36,847	34,446	9,809	9,302	8,967	22,381	21,596	20,106
4	Services ³	23,158	23,865	26,134	20,447	21,399	23,323	6,458	6,804	7,214	10,077	10,430	11,825
5	Transfers under U.S. military agency sales contracts ⁴	1,169	1,025	1,262	589	592	791	118	97	87	169	150	323
6	Travel	4,788	5,784	7,055	4,402	5,306	6,462	1,601	1,975	2,188	2,030	2,424	3,238
7	Passenger fares	1,481	1,748	2,081	1,426	1,693	2,009	493	566	625	734	869	1,098
8	Other transportation	1,784	1,785	1,914	1,540	1,551	1,662	385	391	417	724	744	824
9	Royalties and license fees ⁵	4,615	4,477	4,445	4,366	4,220	4,191	874	837	880	2,578	2,436	2,393
10	Other private services ⁵	9,282	9,001	9,341	8,091	7,997	8,177	2,980	2,929	3,008	3,830	3,791	3,934
11	U.S. Government miscellaneous services	39	45	36	33	40	31	7	9	12	16	15	15
12	Income receipts	29,707	28,837	30,309	26,640	25,517	26,960	10,326	10,060	10,615	12,474	11,831	12,743
13	Income receipts on U.S.-owned assets abroad	29,670	28,800	30,272	26,606	25,483	26,926	10,309	10,042	10,597	12,459	11,817	12,729
14	Direct investment receipts	13,952	12,914	13,212	12,232	11,042	11,531	3,795	3,314	3,276	6,679	6,115	6,743
15	Other private receipts	15,427	15,760	16,838	14,130	14,331	15,217	6,514	6,728	7,321	5,616	5,609	5,884
16	U.S. Government receipts	291	126	222	244	110	178	.....	.....	.....	164	93	102
17	Compensation of employees	37	37	37	34	34	34	17	18	18	15	14	14
18	Imports of goods and services and income payments	-101,041	-110,488	-115,271	-91,871	-100,244	-104,133	-31,919	-34,799	-36,526	-47,166	-51,464	-52,930
19	Imports of goods and services	-66,068	-74,157	-77,538	-60,195	-67,146	-69,384	-14,364	-16,250	-16,765	-35,847	-39,500	-40,379
20	Goods, balance of payments basis ²	-48,566	-52,424	-54,252	-44,717	-47,919	-48,921	-8,823	-9,612	-9,918	-28,096	-29,920	-30,237
21	Services ³	-17,502	-21,733	-23,286	-15,478	-19,227	-20,463	-5,541	-6,638	-6,847	-7,751	-9,580	-10,142
22	Direct defense expenditures	-1,935	-2,070	-2,280	-1,704	-1,775	-1,880	-166	-182	-180	-1,440	-1,490	-1,600
23	Travel	-3,593	-6,192	-7,013	-3,284	-5,568	-6,230	-1,108	-1,601	-1,697	-1,619	-2,861	-3,089
24	Passenger fares	-2,064	-3,154	-3,341	-1,869	-2,831	-3,017	-818	-1,202	-1,246	-762	-1,190	-1,247
25	Other transportation	-2,554	-2,714	-3,104	-2,103	-2,248	-2,592	-555	-581	-714	-1,102	-1,102	-1,235
26	Royalties and license fees ⁵	-2,087	-1,942	-1,747	-1,788	-1,626	-1,452	-601	-477	-337	-963	-897	-899
27	Other private services ⁵	-5,002	-5,373	-5,505	-4,504	-4,931	-5,037	-2,271	-2,571	-2,649	-1,770	-1,877	-1,886
28	U.S. Government miscellaneous services	-267	-288	-296	-226	-248	-255	-22	-24	-24	-177	-163	-186
29	Income payments	-34,973	-36,331	-37,733	-31,676	-33,098	-34,749	-17,555	-18,549	-19,761	-11,319	-11,964	-12,551
30	Income payments on foreign-owned assets in the United States	-34,886	-36,255	-37,661	-31,606	-33,035	-34,689	-17,534	-18,529	-19,741	-11,277	-11,926	-12,516
31	Direct investment payments	-9,059	-10,028	-9,752	-7,950	-9,056	-9,232	-2,312	-2,560	-2,718	-4,644	-5,550	-5,738
32	Other private payments	-15,750	-16,246	-17,179	-14,368	-14,749	-16,051	-10,041	-10,783	-11,693	-3,658	-3,352	-3,688
33	U.S. Government payments	-10,077	-9,981	-10,190	-9,288	-9,230	-9,406	-5,181	-5,186	-5,330	-2,975	-3,024	-3,090
34	Compensation of employees	-87	-76	-72	-70	-63	-60	-21	-20	-20	-42	-38	-35
35	Unilateral current transfers, net	-30	66	-22	296	345	311	387	417	432	141	151	110
36	U.S. Government grants ⁴	-172	-100	-167	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	U.S. Government pensions and other transfers	-328	-329	-340	-293	-297	-299	-51	-50	-48	-161	-162	-171
38	Private remittances and other transfers ⁶	470	495	485	589	642	610	438	467	480	302	313	281
Capital and financial account													
Capital account													
39	Capital account transactions, net	37	37	38	34	34	35	12	12	12	16	16	17
Financial account													
40	U.S.-owned assets abroad, net (increase/financial outflow (-))	-22,065	-143,513	-42,804	-17,814	-119,750	-34,648	6,178	-104,891	-26,888	-16,051	-18,111	-6,444
41	U.S. official reserve assets, net	5,502	348	-103	-1,972	-159	-67	.....	.....	.....	.....	.....	.....
42	Gold ⁷ .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Special drawing rights .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
44	Reserve position in the International Monetary Fund .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	Foreign currencies	5,502	348	-103	-1,972	-159	-67	.....	.....	.....	.....	.....	.....
46	U.S. Government assets, other than official reserve assets, net	206	61	97	139	9	-6	-4	-2	-4	-16	6	1
47	U.S. credits and other long-term assets	-62	-36	-196	-37	-29	-195	.....	.....	.....	.....	.....	.....
48	Repayments on U.S. credits and other long-term assets ⁸	294	91	288	196	35	190	.....	.....	.....	.....	.....	.....
49	U.S. foreign currency holdings and U.S. short-term assets, net	-26	6	5	-20	3	-1	-4	-2	-4	-16	6	1
50	U.S. private assets, net	-27,773	-143,922	-42,798	-15,981	-119,600	-34,575	6,182	-104,889	-26,884	-16,035	-18,117	-6,445
51	Direct investment	-21,262	-8,262	-32,331	-17,296	-8,218	-30,982	-2,679	-9,303	-21,157	-11,464	-1,712	-8,046
52	Foreign securities	21,689	-49,590	-12,110	20,853	-51,891	-14,525	17,912	-46,591	-13,678	3,095	-8,034	-2,520
53	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	-23,909	-7,476	.....	-22,230	-6,161	.....	-14,819	-8,520	.....	-5,018	1,107	.....
54	U.S. claims reported by U.S. banks, not included elsewhere	-4,291	-78,594	1,643	2,692	-53,330	10,932	5,768	-40,475	7,951	-2,648	-12,902	4,121
55	Foreign-owned assets in the United States, net (increase/financial inflow (+))	78,971	191,609	105,732	79,175	167,196	102,937	45,073	113,605	70,224	39,728	61,523	24,526
56	Foreign official assets in the United States, net	-4,419	-9,707	-1,057	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
57	U.S. Government securities	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
58	U.S. Treasury securities ⁹	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
59	Other ¹⁰	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
60	Other U.S. Government liabilities ¹¹	-432	-473	-505	-51	-202	-171	-116	-94	-80	64	49	-99
61	U.S. liabilities reported by U.S. banks, not included elsewhere	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
62	Other foreign official assets ¹²	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
63	Other foreign assets in the United States, net	83,390	201,316	106,789	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
64	Direct investment	21,839	140,447	31,623	20,375	141,856	29,727	1,316	79,370	15,155	16,457	62,635	9,966
65	U.S. Treasury securities	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
66	U.S. securities other than U.S. Treasury securities	48,854	49,525	62,883	45,628	45,850	61,362	30,309	29,020	48,655	12,631	13,210	9,964
67	U.S. currency .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	19,506	18,265	.....	16,341	16,491	.....	21,863	11,765	.....	-4,591	4,911	.....
69	U.S. liabilities reported by U.S. banks, not included elsewhere	(17)	(17)	(17)	-3,118	-36,799	12,019	-8,299	-6,456	6,494	15,167	-19,282	4,695
70	Statistical discrepancy (sum of above items with sign reversed)	-50,024	-30,586	-41,813	-55,406	-31,344	-49,231	-46,324	-510	-34,050	-21,600	-35,972	-9,953
Memoranda:													
71	Balance on goods (lines 3 and 20)	-7,279	-12,251	-16,555	-6,218	-11,072	-14,475	986	-310	-951	-5,715	-8,324	-10,131
72	Balance on services (lines 4 and 21)	5,656	2,132	2,848	4,969	2,172	2,860	917	166	367	2,326	850	1,683
73	Balance on goods and services (lines 2 and 19)	-1,623	-10,119	-13,707	-1,249	-8,900	-11,615	1,903	-144	-584	-3,389	-7,474	-8,448
74	Balance on income (lines 12 and 29)	-5,266	-7,494	-7,424	-5,036	-7,581	-7,789	-7,229	-8,489	-9,146	1,155	-1,333	192
75	Unilateral current transfers, net (line 35)	-30	66	-22	296	345	311	387	417	432	141	151	110
76	Balance on current account (lines 1, 18, and 35 or lines 73, 74, and 75) ¹³	-6,919	-17,547	-21,153	-5,989	-16,136	-19,093	-4,939	-8,216	-9,298	-2,093	-7,456	-8,146

5. Beginning in 1982, these lines are presented on a gross basis. The definition of exports is revised to exclude U.S. parents' payments to foreign affiliates and to include U.S. affiliates' receipts from foreign parents. The definition of imports is revised to include U.S. parents' payments to foreign affiliates and to exclude U.S. affiliates' receipts from foreign parents.

6. Beginning in 1982, the "other transfers" component includes taxes paid by U.S. private residents to foreign governments and taxes paid by private nonresidents to the U.S. Government.

7. At the present time, all U.S. Treasury-owned gold is held in the United States.

8. Includes sales of foreign obligations to foreigners.

Table F.3.—U.S. International Transactions, by Area—Continued

[Millions of dollars]

Line	(Credits +; debits -) ¹	Eastern Europe			Canada			Latin America and Other Western Hemisphere			Japan		
		2000			2000			2000			2000		
		I	II ^r	III	I	II ^r	III	I	II ^r	III	I	II ^r	III ^p
Current account													
1	Exports of goods and services and income receipts	2,653	2,770	3,239	50,011	53,800	50,240	57,854	62,330	65,270	25,346	23,678	25,031
2	Exports of goods and services	2,156	2,273	2,565	45,304	48,257	44,759	43,520	46,284	49,063	22,928	21,152	22,729
3	Goods, balance of payments basis ²	1,213	1,304	1,458	40,070	42,857	39,594	32,125	34,060	35,417	14,432	13,328	13,586
4	Services ³	943	969	1,107	5,234	5,400	5,165	11,395	12,224	13,646	8,496	7,824	9,143
5	Transfers under U.S. military agency sales contracts ⁴	67	81	94	28	34	25	152	135	99	501	173	183
6	Travel	258	319	381	1,674	1,808	1,477	4,347	4,897	5,856	2,358	2,231	2,923
7	Passenger fares	40	44	41	438	363	367	1,255	1,375	1,653	922	872	1,117
8	Other transportation	65	105	112	585	627	625	820	874	910	752	817	840
9	Royalties and license fees ⁵	67	66	70	424	400	434	610	672	672	1,563	1,596	1,689
10	Other private services ⁵	439	344	397	2,064	2,147	2,216	4,170	4,193	4,416	2,383	2,125	2,380
11	U.S. Government miscellaneous services	7	10	12	21	21	21	41	78	40	17	10	11
12	Income receipts	497	497	674	4,707	5,543	5,481	14,334	16,046	16,207	2,418	2,526	2,302
13	Income receipts on U.S.-owned assets abroad	495	495	672	4,687	5,524	5,463	14,297	16,008	16,172	2,415	2,523	2,298
14	Direct investment receipts	-45	13	159	1,909	2,831	2,787	3,979	5,127	4,886	1,003	871	921
15	Other private receipts	484	472	466	2,778	2,693	2,676	10,212	10,754	11,208	1,405	1,667	1,667
16	U.S. Government receipts	56	10	47	.....	.....	.....	106	127	78	7	-15	17
17	Compensation of employees	2	2	2	20	19	18	37	38	35	3	3	4
18	Imports of goods and services and income payments	-3,294	-4,411	-4,346	-52,743	-56,926	-57,328	-58,343	-63,021	-67,952	-42,970	-44,236	-47,341
19	Imports of goods and services	-2,874	-3,998	-3,934	-50,640	-54,264	-54,780	-45,878	-49,579	-53,709	-35,150	-35,203	-37,984
20	Goods, balance of payments basis ²	-2,402	-3,096	-2,856	-47,684	-50,096	-49,408	-37,327	-41,166	-44,660	-31,098	-30,849	-33,435
21	Services ³	-472	-902	-1,078	-2,956	-4,168	-5,372	-8,551	-8,413	-9,049	-4,052	-4,354	-4,549
22	Direct defense expenditures	-50	-47	-80	-14	-16	-20	-94	-76	-79	-328	-378	-380
23	Travel	-151	-458	-573	-875	-1,526	-2,531	-4,028	-3,909	-4,367	-790	-795	-706
24	Passenger fares	-57	-141	-161	-125	-189	-210	-856	-713	-805	-200	-227	-230
25	Other transportation	-42	-71	-80	-727	-822	-817	-605	-620	-656	-1,065	-1,193	-1,405
26	Royalties and license fees ⁵	-1	-3	-3	-114	-114	-119	-67	-64	-68	-627	-687	-686
27	Other private services ⁵	-155	-163	-160	-1,055	-1,447	-1,619	-2,781	-2,899	-2,942	-1,008	-1,039	-1,109
28	U.S. Government miscellaneous services	-16	-19	-21	-46	-54	-56	-120	-132	-132	-34	-35	-33
29	Income payments	-420	-413	-412	-2,103	-2,662	-2,548	-12,465	-13,442	-14,243	-7,820	-9,033	-9,357
30	Income payments on foreign-owned assets in the United States	-401	-397	-397	-2,024	-2,586	-2,474	-11,087	-11,960	-12,555	-7,797	-9,017	-9,343
31	Direct investment payments	-2	-4	-5	-641	-1,239	-984	-282	-492	-484	65	-1,768	-1,606
32	Other private payments	-97	-91	-92	-1,176	-1,099	-1,168	-8,503	-8,941	-9,297	-2,859	-2,118	-2,187
33	U.S. Government payments	-302	-302	-300	-207	-248	-322	-2,302	-2,527	-2,774	-5,003	-5,131	-5,550
34	Compensation of employees	-19	-16	-15	-79	-76	-74	-1,378	-1,482	-1,688	-23	-16	-14
35	Unilateral current transfers, net	-856	-871	-996	-174	-145	-175	-3,379	-3,445	-3,615	-101	-53	-71
36	U.S. Government grants ⁴	-424	-442	-581	.....	.....	.....	380	-421	-493	.....	.....	.....
37	U.S. Government pensions and other transfers	-12	-11	-10	-120	-121	-126	-154	-156	-188	.....	-25	-23
38	Private remittances and other transfers ⁶	-420	-418	-405	-54	-24	-49	-2,845	-2,868	-2,964	-75	-28	-48
Capital and financial account													
Capital account													
39	Capital account transactions, net	6	6	6	28	36	31	62	59	54	6	6	6
Financial account													
40	U.S.-owned assets abroad, net (increase/financial outflow (-))	-1,518	622	-759	2,889	4,023	-706	11,682	-16,356	-38,596	-994	7,605	-15,174
41	U.S. official reserve assets, net .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	-2,000	-412	-30
42	Gold ⁷ .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Special drawing rights .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
44	Reserve position in the International Monetary Fund .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	Foreign currencies .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	-2,000	-412	-30
46	U.S. Government assets, other than official reserve assets, net	-19	-57	-119	.....	.....	.....	170	87	127	12	30	-8
47	U.S. credits and other long-term assets	-164	-1,138	-139	.....	.....	.....	-602	-401	-230	.....	.....	.....
48	Repayments on U.S. credits and other long-term assets ⁸	160	1,086	21	.....	.....	.....	765	497	356	.....	.....	.....
49	U.S. foreign currency holdings and U.S. short-term assets, net	-15	-5	-1	.....	.....	.....	7	-9	1	12	30	-8
50	U.S. private assets, net	-1,499	679	-640	2,889	4,023	-706	11,512	-16,443	-38,723	994	7,987	-15,136
51	Direct investment	-258	-301	-276	-2,644	-6,860	-2,726	-7,013	-9,663	-1,786	-499	-730	-2,170
52	Foreign securities	-120	-118	-7	-980	166	-265	-731	-9,713	-7,941	-10,476	-5,357	-9,648
53	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	72	11	.....	-2,787	1,212	.....	6,346	-8,553	-24,900	6,094	-955	.....
54	U.S. claims reported by U.S. banks, not included elsewhere	-1,193	1,087	-357	9,300	9,505	2,285	12,910	11,486	-4,096	5,875	15,029	-3,318
55	Foreign-owned assets in the United States, net (increase/financial inflow (+))	2,910	-2,632	41	7,951	10,166	7,905	937	57,821	39,267	-21,605	4,855	30,797
56	Foreign official assets in the United States, net	(18)	(18)	(18)	2,904	-598	328	(18)	(18)	(18)	(18)	(18)	(18)
57	U.S. Government securities	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
58	U.S. Treasury securities ⁹	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
59	Other ¹⁰	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
60	Other U.S. Government liabilities ¹¹	59	141	112	8	12	-8	-13	-25	-23	-487	-52	-14
61	U.S. liabilities reported by U.S. banks, not included elsewhere	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
62	Other foreign official assets ¹²	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
63	Other foreign assets in the United States, net	(18)	(18)	(18)	5,047	10,764	7,577	(18)	(18)	(18)	(18)	(18)	(18)
64	Direct investment	-166	50	107	1,825	7,099	3,685	800	1,642	4,650	-2,889	4,827	3,435
65	U.S. Treasury securities	(18)	(18)	(18)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)
66	U.S. securities other than U.S. Treasury securities	15	-140	-97	2,241	-306	224	9,053	22,921	14,377	-1,636	3,508	11,614
67	U.S. currency .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	75	-122	.....	572	413	.....	555	-10,399	3,000	-1,168	-3,094	.....
69	U.S. liabilities reported by U.S. banks, not included elsewhere	2,927	-2,561	-81	(17)	(17)	(17)	-9,458	43,682	17,263	-15,425	-334	15,762
70	Statistical discrepancy (sum of above items with sign reversed)	99	4,516	2,815	-7,962	-10,954	33	-8,813	-37,388	5,572	40,318	8,145	6,752
Memoranda:													
71	Balance on goods (lines 3 and 20)	-1,189	-1,792	-1,398	-7,614	-7,239	-9,814	-5,202	-7,106	-9,243	-16,666	-17,521	-19,849
72	Balance on services (lines 4 and 21)	471	67	29	2,278	1,232	-207	2,844	3,811	4,597	4,444	3,470	4,594
73	Balance on goods and services (lines 2 and 19)	-718	-1,725	-1,369	-5,336	-6,007	-10,021	-2,358	-3,295	-4,646	-12,222	-14,051	-15,255
74	Balance on income (lines 12 and 29)	77	84	262	2,604	2,881	2,933	1,869	2,604	1,964	-5,402	-6,507	-7,055
75	Unilateral current transfers, net (line 35)	-856	-871	-996	-174	-145	-175	-3,379	-3,445	-3,615	-101	-53	-71
76	Balance on current account (lines 1, 18, and 35 or lines 73, 74, and 75) ¹³	-1,497	-2,512	-2,103	-2,906	-3,271	-7,263	-3,868	-4,136	-6,297	-17,725	-20,611	-22,381

13. Conceptually, line 76 is equal to "net foreign investment" in the national income and product accounts (NIPAs). However, the foreign transactions account in the NIPAs (a) includes adjustments to the international transactions accounts for the treatment of gold, (b) includes adjustments for the different geographical treatment of transactions with U.S. territories and Puerto Rico, and (c) includes services furnished without payment by financial

pension plans except life insurance carriers and private noninsured pension plans.

14. The "European Union" includes the "European Union (6)," United Kingdom, Denmark, Ireland, Greece, Spain, and Portugal. Beginning with the first quarter of 1995, the "European Union" also includes Austria, Finland, and Sweden.

Table F.3.—U.S. International Transactions, by Area—Continued

[Millions of dollars]

Line	(Credits +; debits -) ¹	Australia			Other countries in Asia and Africa			International organizations and unallocated ¹⁶		
		2000			2000			2000		
		I	II ^r	III	I	II ^r	III	I	II ^r	III ^p
Current account										
1	Exports of goods and services and income receipts	4,834	5,458	5,593	51,342	53,930	58,028	7,440	7,416	7,369
2	Exports of goods and services	3,734	4,102	4,337	45,919	47,922	51,148	1,118	1,147	1,187
3	Goods, balance of payments basis ²	2,543	2,758	2,938	31,674	33,973	35,746	.....	.....	.....
4	Services ³	1,191	1,344	1,399	14,245	13,949	15,402	1,118	1,147	1,187
5	Transfers under U.S. military agency sales contracts ⁴	51	95	99	2,372	2,556	2,495	.....	.....	.....
6	Travel	342	416	425	2,042	2,816	3,544	.....	.....	.....
7	Passenger fares	123	154	163	392	493	629	.....	.....	.....
8	Other transportation	81	86	91	2,160	2,286	2,294	115	147	165
9	Royalties and license fees ⁵	187	187	199	1,165	1,174	1,181	493	491	499
10	Other private services ⁵	406	405	421	6,034	4,542	5,177	510	509	523
11	U.S. Government miscellaneous services	1	1	1	80	82	82	.....	.....	.....
12	Income receipts	1,100	1,356	1,256	5,423	6,008	6,880	6,322	6,269	6,182
13	Income receipts on U.S.-owned assets abroad	1,098	1,354	1,254	5,406	5,991	6,862	5,970	5,916	5,828
14	Direct investment receipts	365	585	520	2,792	3,367	3,962	3,358	3,182	3,092
15	Other private receipts	733	769	734	2,325	2,414	2,599	2,396	2,543	2,545
16	U.S. Government receipts	.....	.....	.....	289	210	301	216	191	191
17	Compensation of employees	2	2	2	17	17	18	352	353	354
18	Imports of goods and services and income payments	-2,259	-2,475	-2,786	-79,349	-87,337	-99,867	-2,781	-2,870	-2,995
19	Imports of goods and services	-1,888	-2,176	-2,383	-71,961	-79,916	-92,113	-564	-564	-623
20	Goods, balance of payments basis ²	-1,093	-1,372	-1,447	-62,733	-70,333	-82,051	.....	.....	.....
21	Services ³	-795	-804	-936	-9,228	-9,583	-10,062	-564	-564	-623
22	Direct defense expenditures	-18	-8	-8	-1,064	-998	-1,001	.....	.....	.....
23	Travel	-301	-310	-427	-2,805	-2,873	-3,019	.....	.....	.....
24	Passenger fares	-166	-141	-154	-1,223	-1,146	-1,246	.....	.....	.....
25	Other transportation	-46	-47	-52	-2,230	-2,525	-2,766	-285	-298	-350
26	Royalties and license fees ⁵	-7	-10	-10	-74	-73	-75	-185	-180	-173
27	Other private services ⁵	-249	-277	-268	-1,642	-1,778	-1,752	-93	-86	-100
28	U.S. Government miscellaneous services	-8	-11	-15	-190	-190	-203	-1	.....	.....
29	Income payments	-371	-299	-403	-7,388	-7,421	-7,754	-2,217	-2,306	-2,372
30	Income payments on foreign-owned assets in the United States	-369	-297	-401	-7,243	-7,320	-7,668	-2,217	-2,306	-2,372
31	Direct investment payments	-153	-44	-112	-159	-3	-169	-1,365	-1,445	-1,405
32	Other private payments	-145	-172	-206	-2,381	-2,438	-2,580	-848	-855	-958
33	U.S. Government payments	-71	-81	-83	-4,703	-4,879	-4,919	-4	-6	-9
34	Compensation of employees	-2	-2	-2	-145	-101	-86	.....	.....	.....
35	Unilateral current transfers, net	-39	-36	-39	-3,414	-3,569	-3,728	-2,427	-2,691	-2,533
36	U.S. Government grants ⁴	.....	.....	.....	967	-1,423	-1,273	-257	-374	-186
37	U.S. Government pensions and other transfers	-10	-10	-9	-11	-121	-121	-124	-84	-210
38	Private remittances and other transfers ⁶	-29	-26	-30	-2,328	-2,025	-2,334	-2,046	-2,233	-2,137
Capital and financial account										
Capital account										
39	Capital account transactions, net	2	2	2	25	32	29	.....	.....	.....
Financial account										
40	U.S.-owned assets abroad, net (increase/financial outflow (-))	-2,357	-4,709	5,526	-2,448	-2,172	-2,621	-3,935	-1,544	-7,376
41	U.S. official reserve assets, net	.....	.....	.....	.....	.....	.....	566	1,223	2,083
42	Gold ⁷	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Special drawing rights	.....	.....	.....	.....	.....	.....	563	-190	-185
44	Reserve position in the International Monetary Fund	.....	.....	.....	.....	.....	.....	3	1,413	2,268
45	Foreign currencies	.....	.....	.....	.....	.....	.....	.....	.....	.....
46	U.S. Government assets, other than official reserve assets, net	6	-6	-2	11	-218	-520	-267	-289	-248
47	U.S. credits and other long-term assets	.....	.....	.....	-209	-303	-778	-267	-289	-248
48	Repayments on U.S. credits and other long-term assets ⁸	.....	.....	.....	326	213	355	.....	.....	.....
49	U.S. foreign currency holdings and U.S. short-term assets, net	6	-6	-2	-106	-128	-97	.....	.....	.....
50	U.S. private assets, net	-2,363	-4,703	5,528	-2,459	-1,954	-2,101	-4,234	-2,478	-9,211
51	Direct investment	-3,389	-265	-331	-6,725	-3,808	-3,018	-3,193	-3,008	-2,924
52	Foreign securities	-82	-974	-114	-1,217	1,118	3,094	49	-111	480
53	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	430	-43	.....	-92	-1,034	.....	.....	22	-7,198
54	U.S. claims reported by U.S. banks, not included elsewhere	678	-3,421	5,973	5,575	1,770	-2,177	-1,083	619	431
55	Foreign-owned assets in the United States, net (increase/financial inflow (+))	691	3,893	1,000	13,028	3,249	5,839	5,753	6,259	17,596
56	Foreign official assets in the United States, net	(18)	(18)	(18)	(18)	(18)	(18)	.....	.....	.....
57	U.S. Government securities	(18)	(18)	(18)	(18)	(18)	(18)	.....	.....	.....
58	U.S. Treasury securities ⁹	(18)	(18)	(18)	(18)	(18)	(18)	.....	.....	.....
59	Other ¹⁰	(18)	(18)	(18)	(18)	(18)	(18)	.....	.....	.....
60	Other U.S. Government liabilities ¹¹	8	-35	-44	-737	-215	-681	.....	.....	.....
61	U.S. liabilities reported by U.S. banks, not included elsewhere	(18)	(18)	(18)	(18)	(18)	(18)	.....	.....	.....
62	Other foreign official assets ¹²	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
63	Other foreign assets in the United States, net	(18)	(18)	(18)	(18)	(18)	(18)	5,753	6,259	17,596
64	Direct investment	167	425	217	-48	-400	514	1,197	1,232	1,267
65	U.S. Treasury securities	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
66	U.S. securities other than U.S. Treasury securities	42	157	1,155	3,119	3,532	2,413	-148	-130	493
67	U.S. currency	.....	.....	.....	.....	.....	.....	2,440	3,057	4,697
68	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	-175	1,879	.....	805	1,892	.....	18	37	9,136
69	U.S. liabilities reported by U.S. banks, not included elsewhere	649	1,467	-328	9,889	-1,560	3,593	2,246	2,063	2,003
70	Statistical discrepancy (sum of above items with sign reversed)	-872	-2,133	-9,296	20,816	35,867	42,320	-4,050	-6,570	-12,061
Memoranda:										
71	Balance on goods (lines 3 and 20)	1,450	1,386	1,491	-31,059	-36,360	-46,305	.....	.....	.....
72	Balance on services (lines 4 and 21)	396	540	463	5,017	4,366	5,340	554	583	564
73	Balance on goods and services (lines 2 and 19)	1,846	1,926	1,954	-26,042	-31,994	-40,965	554	583	564
74	Balance on income (lines 12 and 29)	729	1,057	853	-1,965	-1,413	-874	4,105	3,963	3,810
75	Unilateral current transfers, net (line 35)	-39	-36	-39	-3,414	-3,569	-3,728	-2,427	-2,691	-2,533
76	Balance on current account (lines 1, 18, and 35 or lines 73, 74, and 75) ¹³	2,536	2,947	2,768	-31,421	-36,976	-45,567	2,232	1,855	1,841

15. The "European Union (6)" includes Belgium, France, Germany (includes the former German Democratic Republic (East Germany) beginning in the fourth quarter of 1990), Italy, Luxembourg, Netherlands, European Atomic Energy Community, European Coal and Steel Community, and European Investment Bank.

16. Includes, as part of international and unallocated, the estimated direct investment in foreign affiliates engaged in international shipping, in operating oil and gas drilling equipment internationally, and in petroleum trading. Also includes taxes withheld; current-cost adjustments associated with U.S. and foreign direct investment; small transactions in business services that are not reported by country; and net U.S. currency flows, for which geographic

source data are not available.

17. Details not shown separately; see totals in lines 56 and 63.

18. Details not shown separately are included in line 69.

NOTE.—The data in tables F.2 and F.3 are from tables 1 and 10 in "U.S. International Transactions, Third Quarter 1999" in the January 2000 SURVEY OF CURRENT BUSINESS, which presents the most recent estimates from the U.S. international transactions accounts.

Table F.4—Private Service Transactions

[Millions of dollars]

Line		1997	1998	Seasonally adjusted					
				1998			1999		
				II	III	IV	I	II ^r	III ^p
1	Exports of private services	240,443	245,688	62,011	60,847	62,490	63,066	64,304	64,588
2	Travel (table F.2, line 6)	73,301	71,250	18,260	17,149	17,938	18,138	18,437	18,322
3	Passenger fares (table F.2, line 7)	20,789	19,996	5,185	5,052	4,843	4,995	5,240	5,332
4	Other transportation (table F.2, line 8)	27,006	25,518	6,268	6,339	6,575	6,501	6,731	6,921
5	Freight	11,789	11,178	2,769	2,684	2,852	2,819	2,848	2,966
6	Port services	15,217	14,340	3,498	3,654	3,722	3,682	3,883	3,955
7	Royalties and license fees (table F.2, line 9)	33,781	36,808	9,002	9,029	9,894	9,337	9,365	9,317
8	Affiliated	25,024	26,761	6,542	6,491	7,223	6,640	6,603	6,493
9	U.S. parents' receipts	23,221	24,712	6,066	6,091	6,591	6,081	6,003	5,971
10	U.S. affiliates' receipts	1,803	2,049	476	400	632	559	600	522
11	Unaffiliated	8,757	10,047	2,460	2,538	2,671	2,697	2,762	2,824
12	Industrial processes ¹	3,552	4,138	1,018	1,053	1,094	1,093	1,097	1,097
13	Other ²	5,205	5,909	1,442	1,485	1,578	1,604	1,665	1,727
14	Other private services (table F.2, line 10)	85,566	92,116	23,296	23,278	23,240	24,095	24,531	24,696
15	Affiliated services	27,272	28,321	7,114	7,184	7,036	7,454	7,086	7,316
16	U.S. parents' receipts	17,271	18,212	4,631	4,411	4,561	4,560	4,402	4,626
17	U.S. affiliates' receipts	10,001	10,109	2,483	2,773	2,475	2,894	2,684	2,690
18	Unaffiliated services	58,294	63,795	16,182	16,094	16,204	16,641	17,445	17,380
19	Education	8,343	8,964	2,251	2,310	2,243	2,312	2,309	2,351
20	Financial services	11,539	13,698	3,778	3,419	3,369	3,419	3,950	3,624
21	Insurance, net	2,485	2,842	696	717	746	794	831	869
22	Premiums received	6,133	6,985	1,722	1,780	1,826	1,860	1,887	1,911
23	Losses paid	3,648	4,143	1,026	1,063	1,080	1,066	1,056	1,042
24	Telecommunications	3,949	3,689	926	900	908	882	872	818
25	Business, professional, and technical services	22,467	24,338	6,017	6,164	6,299	6,544	6,746	6,892
26	Other unaffiliated services ³	9,511	10,264	2,513	2,583	2,640	2,690	2,737	2,826
27	Imports of private services	152,447	165,321	41,424	41,739	42,304	43,198	45,001	46,122
28	Travel (table F.2, line 23)	52,051	56,105	14,168	14,070	14,131	14,847	14,960	15,191
29	Passenger fares (table F.2, line 24)	18,138	19,797	4,958	5,085	5,125	5,114	5,316	5,456
30	Other transportation (table F.2, line 25)	28,959	30,457	7,590	7,700	7,849	7,726	8,362	9,102
31	Freight	17,654	19,412	4,858	4,999	5,006	4,864	5,413	6,031
32	Port services	11,305	11,048	2,732	2,701	2,843	2,862	2,949	3,071
33	Royalties and license fees (table F.2, line 26)	9,390	11,292	2,694	2,721	2,923	3,176	3,197	2,921
34	Affiliated	6,967	8,374	2,050	2,037	2,271	2,514	2,519	2,208
35	U.S. parents' payments	989	1,169	273	298	308	304	310	307
36	U.S. affiliates' payments	5,978	7,205	1,777	1,739	1,963	2,210	2,209	1,901
37	Unaffiliated	2,423	2,918	644	684	652	662	678	713
38	Industrial processes ¹	1,418	1,546	382	392	401	408	414	420
39	Other ²	1,006	1,372	262	292	252	254	264	292
40	Other private services (table F.2, line 27)	43,909	47,670	12,014	12,163	12,276	12,335	13,166	13,452
41	Affiliated services	17,728	19,095	4,856	4,974	4,998	5,033	5,620	5,742
42	U.S. parents' payments	8,927	9,730	2,424	2,453	2,565	2,581	2,744	2,726
43	U.S. affiliates' payments	8,801	9,365	2,432	2,521	2,433	2,452	2,876	3,016
44	Unaffiliated services	26,181	28,575	7,158	7,189	7,278	7,302	7,546	7,710
45	Education	1,395	1,538	380	401	401	404	423	440
46	Financial services	3,563	3,771	1,010	932	902	834	949	1,072
47	Insurance, net	6,002	6,908	1,717	1,736	1,753	1,816	1,878	1,949
48	Premiums paid	15,233	18,581	4,572	4,770	4,910	4,998	5,054	5,095
49	Losses recovered	9,231	11,673	2,855	3,034	3,157	3,183	3,175	3,146
50	Telecommunications	8,351	8,125	2,032	2,014	2,029	2,024	2,011	1,915
51	Business, professional, and technical services	6,358	7,684	1,884	1,968	2,045	2,103	2,160	2,211
52	Other unaffiliated services ³	511	549	135	138	148	121	124	123
	Memoranda:								
53	Balance on goods (table F.2, line 71)	-196,651	-246,932	-63,500	-64,969	-63,587	-74,203	-84,412	-92,145
54	Balance on private services (line 1 minus line 27)	87,996	80,367	20,587	19,108	20,186	19,868	19,303	18,466
55	Balance on goods and private services (lines 53 and 54)	-108,655	-166,565	-42,913	-45,861	-43,401	-54,335	-65,109	-73,679

^p Preliminary.^r Revised.

1. Patented techniques, processes, and formulas and other intangible property rights that are used in goods production.

2. Copyrights, trademarks, franchises, rights to broadcast live events, and other intangible property rights.

3. Other unaffiliated services receipts (exports) include mainly expenditures of foreign governments and international organizations in the United States. Payments (imports) include mainly expenditures of U.S. residents temporarily working abroad and film rentals.

NOTE.—The data in this table are from table 3 in "U.S. International Transactions, Third Quarter 1999" in the January 2000 SURVEY OF CURRENT BUSINESS, which presents the most recent estimates from the U.S. international transactions accounts.

G. Investment Tables

Table G.1.—International Investment Position of the United States at Yearend, 1997 and 1998

[Millions of dollars]

Line	Type of investment	Position, 1997 ^r	Changes in position in 1998 (decrease (-))				Position, 1998 ^r	
			Financial flows	Attributable to:				Total (a+b+c+d)
				Valuation adjustments				
				Price changes	Exchange rate changes ¹	Other changes ²		
(a)	(b)	(c)	(d)	(a+b+c+d)				
1	Net international investment position of the United States:							
2	With direct investment positions at current cost (line 3 less line 24) ...	-968,208	-209,819	-167,585	45,380	61,064	-270,960	-1,239,168
	With direct investment positions at market value (line 4 less line 25) ...	-1,066,262	-209,819	-319,300	56,282	1,633	-471,204	-1,537,466
	U.S.-owned assets abroad:							
3	With direct investment positions at current cost (lines 5+10+15)	4,508,626	292,818	101,041	43,704	-15,293	422,270	4,930,896
4	With direct investment positions at market value (lines 5+10+16)	5,288,892	292,818	315,522	54,584	-3,833	659,091	5,947,983
5	U.S. official reserve assets	134,836	6,784	-628	5,024	-10	11,170	146,006
6	Gold	75,929		³ -628		⁴ -10	-638	75,291
7	Special drawing rights	10,027	149		427		576	10,603
8	Reserve position in the International Monetary Fund	18,071	5,118		922		6,040	24,111
9	Foreign currencies	30,809	1,517		3,675		5,192	36,001
10	U.S. Government assets, other than official reserve assets	81,960	429		-5	-2	422	82,382
11	U.S. credits and other long-term assets ⁵	79,607	574				572	80,179
12	Repayable in dollars	79,273	602			-1	601	79,874
13	Other ⁶	334	-28			-1	-29	305
14	U.S. foreign currency holdings and U.S. short-term assets	2,353	-145		-5		-150	2,203
	U.S. private assets:							
15	With direct investment at current cost (lines 17+19+22+23)	4,291,830	285,605	101,669	38,685	-15,281	410,678	4,702,508
16	With direct investment at market value (lines 18+19+22+23)	5,072,096	285,605	316,150	49,565	-3,821	647,499	5,719,595
	Direct investment abroad:							
17	At current cost	1,004,228	132,829	2,892	1,957	-18,465	119,213	1,123,441
18	At market value	1,784,494	132,829	217,373	12,837	-7,005	356,034	2,140,528
19	Foreign securities	1,739,400	102,817	98,777	27,962		229,556	1,968,956
20	Bonds	538,400	25,064	18,441	-20,079		23,426	561,826
21	Corporate stocks	1,201,000	77,753	80,336	48,041		206,130	1,407,130
22	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	562,396	25,041		5,610	3,175	33,826	596,222
23	U.S. claims reported by U.S. banks, not included elsewhere	985,806	24,918		3,156	9	28,083	1,013,889
	Foreign-owned assets in the United States:							
24	With direct investment at current cost (lines 26+33)	5,476,834	502,637	268,626	-1,676	-76,357	693,230	6,170,064
25	With direct investment at market value (lines 26+34)	6,355,154	502,637	634,822	-1,698	-5,466	1,130,295	7,485,449
26	Foreign official assets in the United States	835,709	-21,684	22,437		-409	344	836,053
27	U.S. Government securities	614,530	-3,625	9,344			5,719	620,249
28	U.S. Treasury securities	589,792	-9,957	9,152			-805	588,987
29	Other	24,738	6,332	192			6,524	31,262
30	Other U.S. Government liabilities ⁷	21,459	-3,113				-3,113	18,346
31	U.S. liabilities reported by U.S. banks, not included elsewhere	135,384	-11,469				-11,469	123,915
32	Other foreign official assets	64,336	-3,477	13,093		-409	9,207	73,543
	Other foreign assets:							
33	With direct investment at current cost (lines 35+37+38+39+42+43)	4,641,125	524,321	246,189	-1,676	-75,948	692,886	5,334,011
34	With direct investment at market value (lines 36+37+38+39+42+43)	5,519,445	524,321	612,385	-1,698	-5,057	1,129,951	6,649,396
	Direct investment in the United States:							
35	At current cost	764,045	193,375	-3,877	22	-74,848	114,672	878,717
36	At market value	1,642,365	193,375	362,319		-3,957	551,737	2,194,102
37	U.S. Treasury securities	662,228	46,155	18,961			65,116	727,344
38	U.S. currency	211,628	16,622				16,622	228,250
39	U.S. securities other than U.S. Treasury securities	1,578,694	218,026	231,105	-6,005		443,126	2,021,820
40	Corporate and other bonds	715,196	170,539	21,049	-6,005		185,553	900,749
41	Corporate stocks	863,498	47,487	210,086			257,573	1,121,071
42	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	453,555	9,412		-1,080	-1,100	7,232	460,787
43	U.S. liabilities reported by U.S. banks, not included elsewhere	970,975	40,731		5,387		46,118	1,017,093

^r Preliminary.

^r Revised.

1. Represents gains or losses on foreign-currency-denominated assets due to their revaluation at current exchange rates.

2. Includes changes in coverage, statistical discrepancies, and other adjustments to the value of assets.

3. Reflects changes in the value of the official gold stock due to fluctuations in the market price of gold.

4. Reflects changes in gold stock from U.S. Treasury sales of gold medallions and commemorative and bullion coins; also reflects replenishment through open market purchases. These demonetizations/monetizations are not included in international transactions capital flows.

5. Also includes paid-in capital subscriptions to international financial institutions and outstanding amounts of miscellaneous claims that have been settled through international agreements to be payable to the U.S. Government over periods in excess of 1 year. Excludes World War I debts that are not being serviced.

6. Includes indebtedness that the borrower may contractually, or at its option, repay with its currency, with a third country's currency, or by delivery of materials or transfer of services.

7. Primarily U.S. Government liabilities associated with military sales contracts and other transactions arranged with or through foreign official agencies.

NOTE.—The data in this table are from table 1 in "International Investment Position of the United States at Yearend 1998" in the July 1999 issue of the SURVEY OF CURRENT BUSINESS.

Table G.2.—U.S. Direct Investment Abroad: Selected Items, by Country and by Industry of Foreign Affiliate, 1996–98

[Millions of dollars]

	Direct investment position on a historical-cost basis			Capital outflows (inflows (-))			Income		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
All countries, all industries	795,195	865,531	980,565	84,426	99,517	121,644	93,594	103,892	90,242
By country									
Canada	89,592	96,031	103,908	7,181	7,493	10,259	9,258	10,548	8,104
Europe	389,378	420,108	489,539	40,148	51,698	74,538	44,286	48,757	49,308
<i>Of which:</i>									
France	35,200	35,800	39,188	4,463	2,543	2,895	3,224	2,575	2,450
Germany	41,281	38,490	42,853	1,956	1,627	2,025	3,797	3,339	4,787
Netherlands	54,118	64,361	79,386	6,308	14,327	14,996	9,632	12,370	12,594
United Kingdom	134,559	153,108	178,648	16,421	22,411	34,428	12,220	13,126	11,582
Latin America and Other Western Hemisphere	155,925	178,505	196,655	18,138	21,966	18,020	17,762	21,408	16,908
<i>Of which:</i>									
Brazil	29,105	35,091	37,802	4,159	6,514	3,790	4,172	4,675	3,037
Mexico	19,351	24,181	25,877	2,405	5,646	2,533	2,721	3,905	3,177
Africa	8,162	11,157	13,491	1,678	3,371	2,712	1,801	1,954	1,719
Middle East	8,294	8,803	10,599	467	601	2,062	1,412	1,328	757
Asia and Pacific	139,548	146,610	161,797	15,363	13,693	13,471	18,795	19,513	12,623
<i>Of which:</i>									
Australia	30,006	29,910	33,676	3,787	2,393	3,659	2,851	3,598	1,898
Japan	34,578	33,725	38,153	-280	-371	3,844	3,475	3,516	2,179
International	4,295	4,317	4,578	1,451	694	582	278	383	823
By industry									
Petroleum	75,232	82,212	91,113	6,239	9,603	9,780	12,082	11,823	8,059
Manufacturing	270,288	280,332	304,690	24,325	28,097	26,680	34,342	38,283	31,416
Food and kindred products	31,024	32,465	33,871	2,095	3,806	1,670	4,452	4,910	4,262
Chemicals and allied products	74,858	77,112	83,589	5,796	7,210	7,072	9,529	10,050	9,930
Primary and fabricated metals	16,309	15,924	17,098	6,064	444	1,109	1,358	1,406	1,278
Industrial machinery and equipment	30,336	32,293	34,755	2,752	4,381	2,810	4,637	5,669	4,213
Electronic and other electric equipment	31,832	31,624	34,531	3,440	2,992	2,670	4,280	4,700	2,763
Transportation equipment	32,092	34,907	35,615	708	4,419	1,692	3,409	5,048	2,385
Other manufacturing	53,837	56,006	65,231	3,470	4,845	9,658	6,677	6,500	6,586
Wholesale trade	67,125	64,432	75,188	6,498	846	9,130	9,068	9,538	10,794
Depository institutions	36,807	40,169	42,029	2,448	3,036	1,253	3,329	3,374	577
Finance, (except depository institutions), insurance, and real estate	254,739	293,116	337,600	31,601	41,388	44,445	28,938	31,912	30,702
Services	37,850	42,342	52,514	3,511	4,557	10,867	3,627	5,533	4,722
Other industries	53,155	62,925	77,432	9,804	11,990	19,490	2,209	3,429	3,972

NOTES.—In this table, unlike in the international transactions accounts, income and capital outflows are shown without a current-cost adjustment, and income is shown net of withholding taxes. In addition, unlike in the international investment position, the direct investment position is valued at historical cost.

The data in this table are from tables 16 and 17 in "U.S. Direct Investment Abroad: Detail for Historical-Cost Position and Related Capital and Income Flows, 1998" in the September 1999 issue of the SURVEY.

Table G.3.—Selected Financial and Operating Data for Nonbank Foreign Affiliates of U.S. Companies, by Country and by Industry of Foreign Affiliate, 1997

	Number of affiliates	Millions of dollars			Thousands of employees
		Total assets	Sales	Net income	
All countries, all industries	22,871	3,397,262	2,356,416	155,267	8,018.0
By country					
Canada	2,073	294,943	274,205	13,654	941.9
Europe	11,209	1,914,373	1,214,194	77,854	3,333.9
<i>Of which:</i>					
France	1,297	144,057	130,883	3,424	483.7
Germany	1,424	213,029	234,508	7,531	627.4
Italy	783	66,091	74,035	2,311	205.5
Netherlands	1,104	179,751	130,053	17,014	169.4
Switzerland	545	93,348	67,620	9,155	L
United Kingdom	2,532	923,207	337,907	18,020	977.2
Latin America and Other Western Hemisphere	3,583	458,889	268,912	30,849	1,629.2
<i>Of which:</i>					
Brazil	461	79,240	67,380	4,934	340.8
Mexico	874	83,500	88,063	8,488	793.0
Africa	559	40,602	29,150	2,653	186.6
Middle East	355	39,411	24,950	2,603	77.4
Asia and Pacific	4,977	628,118	536,462	26,231	1,835.8
<i>Of which:</i>					
Australia	904	96,250	68,519	3,899	304.2
Japan	990	266,028	205,072	5,925	396.7
International	115	20,926	8,545	1,422	13.2
By industry					
Petroleum	1,622	295,313	360,452	19,778	226.1
Manufacturing	8,528	884,113	1,086,129	61,660	4,592.9
Food and kindred products	789	112,875	127,710	8,810	598.0
Chemicals and allied products	2,065	220,923	207,988	17,900	622.4
Primary and fabricated metals	760	47,209	44,679	2,043	244.7
Industrial machinery and equipment	1,090	123,273	178,257	9,033	634.1
Electronic and other electric equipment	908	84,525	110,625	6,905	774.5
Transportation equipment	530	131,550	244,199	6,198	724.2
Other manufacturing	2,386	163,757	172,671	10,772	995.0
Wholesale trade	5,045	223,451	422,285	15,218	588.0
Finance, (except depository institutions), insurance, and real estate	3,115	1,498,127	135,331	42,922	218.8
Services	2,873	154,234	128,639	6,843	988.9
Other industries	1,688	342,025	223,580	8,846	1,403.3

NOTES.—Size ranges are given in employment cells that are suppressed. The size range is L—50,000–99,999.

The data in this table are from "U.S. Multinational Companies: Operations in 1997" in the July 1999 issue of the SURVEY.

Table G.4.—Foreign Direct Investment in the United States: Selected Items, by Country of Foreign Parent and by Industry of Affiliate, 1996–98

[Millions of dollars]

	Direct investment position on a historical-cost basis			Capital inflows (outflows (-))			Income		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
All countries, all industries	598,021	693,207	811,756	84,455	105,488	188,960	30,407	42,115	38,015
By country									
Canada	54,836	69,866	74,840	8,590	15,399	11,859	3,190	3,361	3,010
Europe	370,843	432,622	539,906	55,989	70,508	167,655	23,724	31,380	27,635
<i>Of which:</i>									
France	43,253	49,503	62,167	7,244	10,993	12,308	2,405	3,183	3,137
Germany	61,096	71,289	95,045	19,616	12,919	42,145	2,509	3,294	4,392
Netherlands	75,349	89,570	96,904	12,262	13,658	7,018	5,271	7,103	5,920
United Kingdom	121,582	131,315	151,335	14,404	11,234	69,968	10,374	11,440	7,815
Latin America and Other Western Hemisphere	28,002	33,546	32,210	1,990	3,993	278	1,383	1,752	1,494
<i>Of which:</i>									
Brazil	697	742	609	-64	64	-132	45	44	82
Mexico	1,641	3,315	4,029	-47	330	864	1	171	270
Africa	994	1,465	884	-101	435	-572	-136	-352	-89
Middle East	5,812	6,593	7,831	496	791	967	118	617	475
Asia and Pacific	137,533	149,115	156,085	17,493	14,361	8,773	2,129	5,356	5,489
<i>Of which:</i>									
Australia	14,968	14,703	14,755	5,321	2,254	2,034	492	214	672
Japan	116,144	125,131	132,569	13,337	9,275	7,101	2,939	5,780	5,187
By industry									
Petroleum	43,483	42,085	53,254	8,852	2,805	57,355	4,160	4,555	1,443
Manufacturing	245,662	273,122	329,346	37,538	36,086	87,454	15,694	18,628	20,696
Food and kindred products	28,088	26,710	18,112	1,981	-903	-5,020	1,819	1,532	1,056
Chemicals and allied products	79,515	88,831	101,351	8,081	13,746	10,325	5,014	5,556	6,190
Primary and fabricated metals	18,576	23,366	22,512	5,397	4,258	1,041	1,024	1,572	1,744
Machinery	39,093	46,636	59,260	2,868	7,573	18,475	1,166	2,805	2,718
Other manufacturing	80,390	87,580	128,112	19,211	11,411	62,632	6,671	7,162	8,988
Wholesale trade	73,506	87,630	96,261	7,974	14,729	11,004	2,256	3,972	5,247
Retail trade	13,765	16,718	18,778	2,708	2,622	1,946	509	487	579
Depository institutions	31,264	38,118	44,785	138	6,800	5,684	2,867	3,930	3,067
Finance, except depository institutions	37,531	43,413	50,858	6,186	7,140	5,812	855	1,979	-718
Insurance	56,124	70,492	80,378	6,747	12,097	6,817	2,382	4,681	4,019
Real estate	35,169	40,060	44,436	2,535	4,675	3,284	-59	789	948
Services	29,391	38,521	50,252	4,214	7,862	10,744	-14	916	1,358
Other industries	32,126	43,049	43,409	7,562	10,673	-1,139	1,757	2,178	1,376

NOTES.—In this table, unlike in the international transactions accounts, income and capital inflows are shown without a current-cost adjustment, and income is shown net of withholding taxes. In addition, unlike in the international investment position, the direct investment position is valued at historical cost.

The data in this table are from tables 16 and 17 in "Foreign Direct Investment in the United States: Detail for Historical-Cost Position and Related Capital and Income Flows, 1998" in the September 1999 issue of the Survey.

Table G.5.—Selected Financial and Operating Data of Nonbank U.S. Affiliates of Foreign Companies by Country of Ultimate Beneficial Owner and by Industry of Affiliate, 1997

	Number of affiliates	Millions of dollars				Thousands of employees	Millions of dollars	
		Total assets	Sales	Net income	Gross product		U.S. exports of goods shipped by affiliates	U.S. imports of goods shipped to affiliates
All countries, all industries	9,474	3,034,404	1,717,240	42,547	384,883	5,164.3	140,924	261,482
By country								
Canada	945	309,080	139,409	3,693	34,464	601.6	7,787	14,356
Europe	4,071	1,809,319	940,672	31,107	245,919	3,213.9	62,392	94,512
<i>Of which:</i>								
France	513	322,270	135,414	2,959	35,863	411.2	14,032	12,936
Germany	1,011	302,740	194,492	5,071	46,171	657.6	13,973	32,032
Netherlands	302	260,034	124,109	5,508	33,750	391.4	4,592	10,191
Switzerland	404	339,896	110,077	2,986	25,637	352.1	6,233	7,127
United Kingdom	929	454,081	258,845	12,119	78,550	983.2	14,543	15,363
Latin America and Other Western Hemisphere	632	59,833	53,469	2,522	13,545	168.1	5,308	9,622
Africa	41	11,969	11,222	326	2,843	22.4	855	634
Middle East	307	28,841	25,246	1,151	7,295	92.7	814	5,534
Asia and Pacific	3,373	687,245	523,479	918	73,667	1,012.6	62,709	135,739
<i>Of which:</i>								
Australia	135	55,514	26,132	-101	5,207	80.1	1,410	1,501
Japan	2,587	582,570	446,422	2,701	62,345	812.4	52,883	120,357
United States	105	128,117	23,742	2,829	7,151	52.9	1,058	1,084
By industry ¹								
Manufacturing	2,846	680,260	667,576	18,826	188,477	2,227.0	70,053	99,304
<i>Of which:</i>								
Food	214	43,894	47,082	183	10,953	152.7	2,620	2,675
Chemicals	339	190,326	141,744	4,280	40,906	389.4	15,259	16,019
Primary and fabricated metals	373	67,516	65,075	1,744	16,510	219.4	5,133	8,329
Machinery	359	47,246	56,680	1,390	16,607	260.8	10,357	8,267
Computers and electronic products	333	53,182	73,413	-257	15,658	239.6	13,092	20,612
Electrical equipment, appliances, and components	104	22,574	26,203	631	7,537	129.5	3,430	3,421
Transportation equipment	260	49,211	72,607	2,060	13,554	207.9	7,631	18,203
Wholesale trade	1,708	293,144	530,141	3,889	51,856	538.5	63,231	155,716
Retail trade	210	49,802	96,624	1,197	25,009	688.7	1,951	3,973
Information	236	144,497	80,845	2,445	27,120	293.4	888	374
Finance (except depository institutions) and insurance	570	1,534,492	175,822	11,220	26,331	219.8	(^D)	(^D)
Real estate and rental and leasing	1,935	116,679	20,813	204	9,084	47.0	(^D)	(^D)
Professional, scientific, and technical services	301	17,299	15,972	-570	5,981	82.6	361	567
Other industries	1,668	198,229	129,448	5,337	51,025	1,067.3	4,332	1,255

^D Suppressed to avoid disclosure of data of individual companies.

1. The industry classification system used to classify the data for U.S. affiliates is based on the North American Industry Classification System. Prior to 1997, the affiliate data were classified

using an industry classification system based on the Standard Industrial Classification system.

NOTE.—The data in this table are from "Foreign Direct Investment in the United States: Preliminary Results from the 1997 Benchmark Survey" in the August 1999 issue of the SURVEY.

H. International Perspectives

Quarterly data in this table are shown in the middle month of the quarter.

Table H.1.—International Perspectives

	1998	1999	1998		1999											
			Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Exchange rates per U.S. dollar (not seasonally adjusted) ¹																
Canada (Can./US\$)	1.4836	1.4858	1.5404	1.5433	1.5194	1.4977	1.5176	1.4881	1.4611	1.4695	1.4890	1.4932	1.4771	1.4776	1.4674	1.4722
European Monetary Union (US\$/Euro) ² .....	.....	1.0653	.....	.....	1.1591	1.1203	1.0886	1.0701	1.0630	1.0377	1.0370	1.0605	1.0497	1.0706	1.0328	1.0110
France (FFr/US\$) ²	5.8995	.....	5.6422	5.5981	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Germany (DM/US\$) ²	1.7597	.....	1.6827	1.6698	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Italy (L/US\$) ²	17.3685	.....	16.6491	16.5323	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan (¥/US\$)	1.3099	1.1373	1.2029	1.1707	1.1329	1.1667	1.1947	1.1977	1.2200	1.2072	1.1933	1.1323	1.0688	1.0597	1.0465	1.0258
Mexico (Peso/US\$)	9.1520	9.5530	9.9680	9.9070	10.1280	10.0060	9.7320	9.4300	9.3950	9.5150	9.3700	9.3980	9.3410	9.5750	9.4160	9.4270
United Kingdom (US\$/£)	1.6573	1.6172	1.6611	1.6708	1.6498	1.6276	1.6213	1.6089	1.6154	1.5950	1.5751	1.6058	1.6247	1.6572	1.6205	1.6132
Addendum: Exchange value of the U.S. dollar ³	116.48	116.87	115.73	114.98	115.16	116.84	118.22	117.57	117.34	117.93	117.97	117.00	116.38	115.88	116.08	116.09
Unemployment rates (percent, monthly data seasonally adjusted)																
Canada	8.3	7.6	8.0	8.1	7.9	7.9	7.9	8.2	7.9	7.5	7.6	7.7	7.4	7.1	6.9	6.8
France	11.8	11.2	11.6	11.5	11.5	11.4	11.4	11.3	11.4	11.3	11.2	11.3	11.1	11.0	10.8	10.6
Germany	11.1	10.5	10.6	10.7	10.6	10.6	10.6	10.6	10.5	10.5	10.5	10.5	10.5	10.5	10.4	10.2
Italy	11.8	11.4	11.8	.....	.....	11.8	.....	.....	11.4	.....	.....	11.5	.....	.....	11.0	.....
Japan	4.1	4.7	4.4	4.4	4.4	4.6	4.8	4.8	4.6	4.9	4.9	4.7	4.6	4.6	4.5	4.6
Mexico	3.2	.....	2.6	2.6	2.8	3.2	2.7	2.7	2.4	2.6	2.3	2.5	2.2	2.5	2.1	.....
United Kingdom	4.7	4.3	4.6	4.6	4.5	4.6	4.5	4.5	4.5	4.4	4.3	4.2	4.2	4.2	4.1	4.0
Addendum: United States	4.5	4.2	4.4	4.4	4.3	4.4	4.2	4.3	4.2	4.3	4.3	4.2	4.2	4.1	4.1	4.1
Consumer prices (monthly data seasonally adjusted, 1995=100)																
Canada	104.25	106.05	104.60	104.31	104.50	104.69	105.08	105.65	105.94	106.04	106.33	106.61	106.90	107.00	106.90	107.00
France	104.01	104.57	103.91	104.02	103.70	104.02	104.43	104.64	104.64	104.64	104.43	104.54	104.74	104.85	104.85	105.37
Germany	104.30	104.91	104.21	104.31	104.11	104.31	104.41	104.81	104.81	104.91	105.41	105.31	105.11	105.01	105.21	105.51
Italy	108.22	110.01	108.80	108.80	108.90	109.10	109.30	109.60	109.80	109.80	110.10	110.20	110.40	110.80	111.00	111.10
Japan	102.50	102.16	103.19	102.79	102.29	101.89	101.99	102.49	102.49	102.19	101.79	102.09	102.39	102.59	101.99	101.69
Mexico	187.91	219.08	198.88	203.73	208.88	211.68	213.65	215.61	216.91	218.33	219.78	221.01	223.15	224.56	226.56	228.83
United Kingdom	109.27	110.97	110.29	110.29	109.62	109.82	110.09	110.83	111.10	111.10	110.76	111.03	111.50	111.70	111.84	112.24
Addendum: United States	106.97	109.31	107.75	107.89	108.02	108.08	108.28	109.07	109.07	109.07	109.40	109.72	110.18	110.38	110.51	110.77
Real gross domestic product (percent change from preceding quarter, quarterly data seasonally adjusted at annual rates)																
Canada	3.1	.....	4.8	.....	.....	4.1	.....	.....	3.1	.....	.....	4.7	.....	.....	.....	.....
France	3.3	.....	3.0	.....	.....	1.8	.....	.....	3.0	.....	.....	3.9	.....	.....	.....	.....
Germany	2.2	.....	-8	.....	.....	2.5	.....	.....	.5	.....	.....	2.9	.....	.....	.....	.....
Italy	1.3	.....	-1.5	.....	.....	.9	.....	.....	1.5	.....	.....	3.8	.....	.....	.....	.....
Japan	-2.5	.....	-2.0	.....	.....	6.3	.....	.....	3.9	.....	.....	-3.9	.....	.....	.....	.....
Mexico	4.8	.....	-4.3	.....	.....	3.6	.....	.....	9.2	.....	.....	10.2	.....	.....	.....	.....
United Kingdom	2.2	.....	.1	.....	.....	1.4	.....	.....	3.0	.....	.....	3.1	.....	.....	.....	.....
Addendum: United States	4.3	4.1	5.9	.....	.....	3.7	.....	.....	1.9	.....	.....	5.7	.....	.....	6.9	.....

See footnotes at the end of the table.

Table H.1.—International Perspectives—Continued

	1998	1999	1998		1999											
			Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Short-term, 3-month, interest rates (percent, not seasonally adjusted)																
Canada	5.04		5.13	4.99	4.99	5.02	5.00	4.71	4.58	4.80	4.77	4.89	4.81	5.00	5.03	
France	3.56		3.59	3.32												
Germany	3.54		3.63	3.38												
Italy	4.99		3.95	3.38												
Japan .....	.72	.25	.63	.62	.69	.58	.20	.19	.08	.07	.08	.07	.12	.28	.34	.26
Mexico	26.11	22.38	34.30	34.35	32.27	28.72	23.86	21.05	21.02	21.35	20.78	21.49	21.34	20.30	18.68	17.65
United Kingdom	7.33	5.45	6.88	6.37	5.79	5.42	5.29	5.23	5.25	5.12	5.07	5.17	5.32	5.94	5.78	5.96
Addendum:																
United States	4.81	4.66	4.44	4.42	4.34	4.45	4.48	4.28	4.51	4.59	4.60	4.76	4.73	4.88	5.07	5.23
Long-term interest rates, government bond yields (percent, not seasonally adjusted)																
Canada	5.45	5.68	5.39	5.07	5.13	5.26	5.34	5.26	5.51	5.70	5.61	5.85	5.88	6.26	6.15	6.22
France	4.82	4.94	4.43	4.41	4.13	4.42	4.39	4.25	4.45	4.94	5.08	5.17	5.35	5.67	5.66	5.81
Germany	4.58	4.50	4.10	3.90	3.70	3.90	4.00	3.90	4.00	4.40	4.68	4.88	5.04	5.29	5.04	5.15
Italy	4.88	4.73	4.38	4.00	3.92	4.05	4.27	4.11	4.28	4.62	4.94	5.13	5.28	5.52	5.25	5.36
Japan	1.54	1.75	.98	1.49	1.91	2.12	1.82	1.56	1.33	1.63	1.70	1.88	1.76	1.69	1.82	1.77
United Kingdom	5.52	5.08	4.91	4.50	4.29	4.45	4.66	4.59	4.91	5.16	5.33	5.38	5.65	5.83	5.28	5.38
Addendum:																
United States	5.26	5.65	4.83	4.65	4.72	5.00	5.23	5.18	5.54	5.90	5.79	5.94	5.92	6.11	6.03	6.28
Share price indices (not seasonally adjusted, 1995=100)																
Canada	152.40	159.20	143.10	146.30	151.80	142.40	148.80	158.20	154.30	158.10	159.70	157.20	156.90	163.70	169.70	189.80
France	192.24	234.63	190.90	193.39	210.44	210.06	211.54	220.92	225.11	230.17	236.08	231.73	242.28	243.01	264.86	289.32
Germany	197.73	204.92	188.86	186.88	199.85	195.26	191.41	200.13	200.70	202.32	209.77	200.77	203.21	202.72	218.10	234.84
Italy	220.53	245.52	213.89	224.00	241.37	236.94	248.62	251.95	247.42	247.42	248.11	234.24	242.54	234.98	241.43	271.26
Japan	85.36	100.35	80.59	80.25	78.31	79.78	87.18	96.31	96.25	99.81	106.74	106.15	108.33	110.01	116.78	118.61
Mexico	191.09	240.25	169.86	178.41	178.34	191.98	222.15	243.96	246.81	262.67	237.02	229.20	227.56	245.58	276.50	321.26
United Kingdom	150.50	168.45	148.92	150.07	157.29	159.40	162.89	169.18	168.18	171.00	173.50	168.92	166.66	164.26	174.97	185.11
Addendum:																
United States	189.00	212.67	193.80	197.85	204.51	202.20	207.35	215.61	218.31	216.22	222.85	213.30	208.78	205.75	217.83	219.34

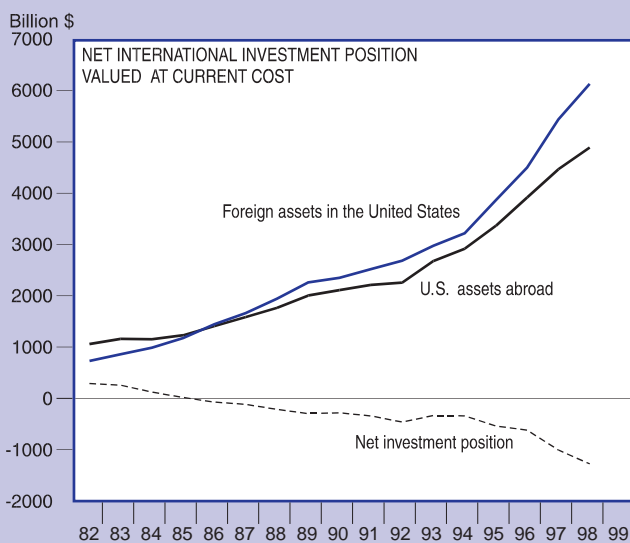
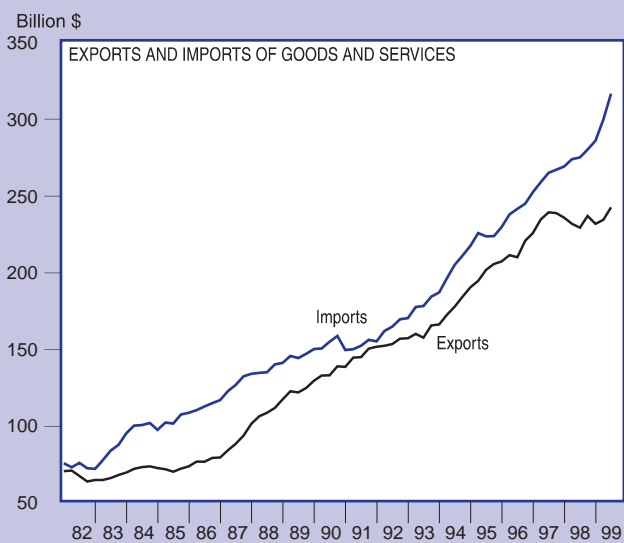
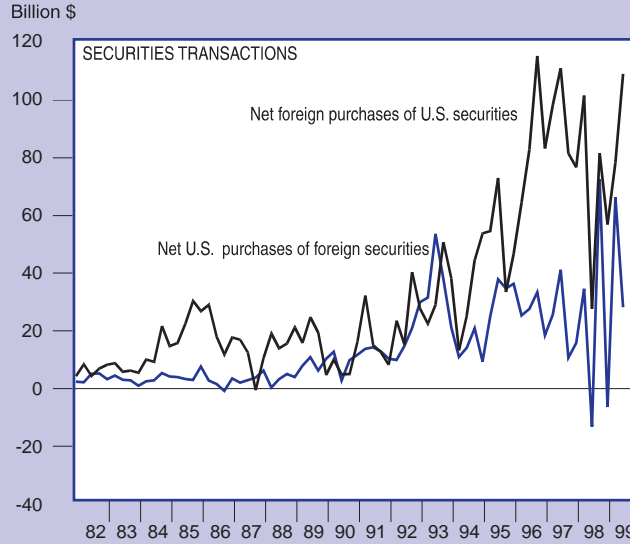
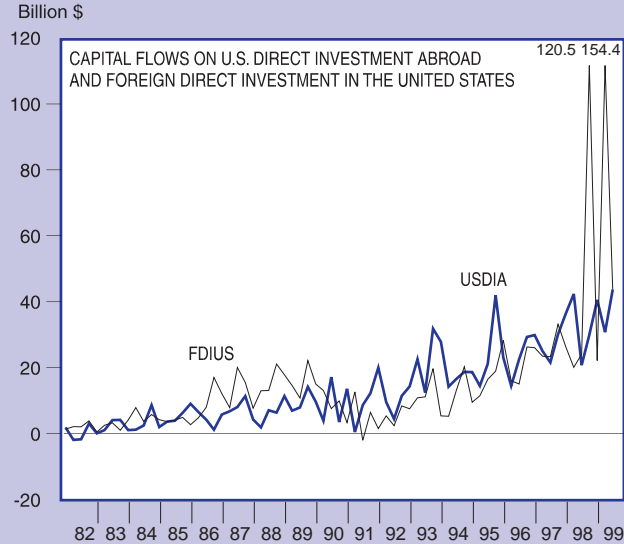
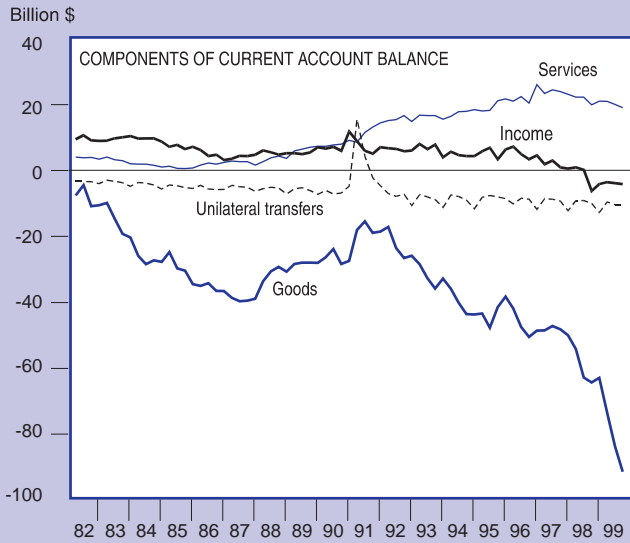
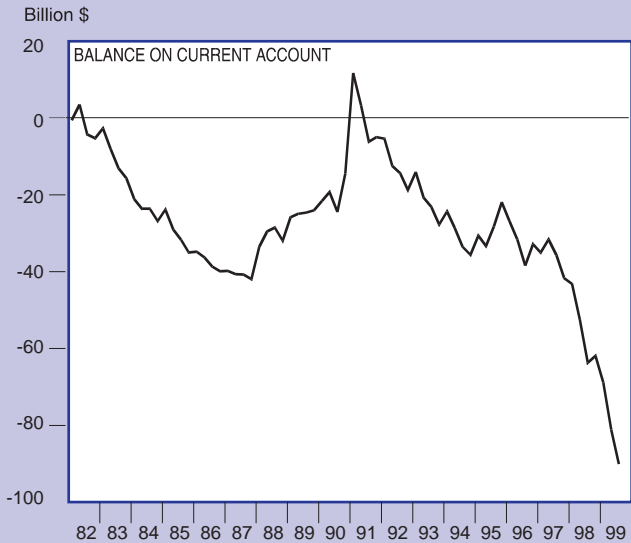
1. All exchange rates are from the Board of Governors of the Federal Reserve System.
2. As of January 1, 1999, the euro is reported in place of the individual euro-area currencies. These currency rates can be derived from the euro rate by using the following conversion rates: 1 euro = 6.55957 French francs, 1.93627 German marks, and 1936.27 Italian lire.
3. The rate shown for the United States is an index of the weighted average of the foreign exchange value of the U.S. dollar against the currencies of a broad group of major U.S. trading partners, January 1997=100 and

reflects revised trade weights. For more information on the exchange rate indexes, see "New Summary Measures of the Foreign Exchange Value of the Dollar," *Federal Reserve Bulletin*, vol. 84 (October 1998), pp. 811-18.

NOTE.—U.S. interest rates, unemployment rates, and GDP growth rates are from the Federal Reserve, the Bureau of Labor Statistics, and BEA, respectively. All other data (including U.S. consumer prices and U.S. share prices, both of which have been rebased to 1995 to facilitate comparison) are © OECD, February 2000, *OECD Main Economic Indicators* and are reproduced with permission of the OECD.

I. Charts

THE U.S. IN THE INTERNATIONAL ECONOMY



Regional Data

J. State and Regional Tables

The tables in this section include the most recent estimates of State personal income and gross state product. The sources of these estimates are noted.

The quarterly and annual State personal income estimates and the gross state product estimates are available on diskettes or CD-ROM. For information on State personal income, E-mail reis.remd@bea.doc.gov; write to the Regional Economic Information System, BE-55, Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC 20230; or call 202-606-5360. For information on gross state product, E-mail gspread@bea.doc.gov; write to the Regional Economic Analysis Division, BE-61, Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC 20230; or call 202-606-5340.

Table J.1.—Quarterly Personal Income by State and Region

Area name	Millions of dollars, seasonally adjusted at annual rates												Percent change ¹			
	1997				1998				1999				1998:III-1998:IV	1998:IV-1999:I	1999:I-1999:II	1999:II-1999:III
	I	II	III	IV	I	II	III	IV	I	II	III					
United States	6,650,207	6,726,629	6,807,506	6,898,259	7,016,041	7,108,060	7,199,440	7,309,162	7,406,673	7,504,566	7,601,815	1.5	1.3	1.3	1.3	
New England	399,830	403,744	408,242	415,615	419,963	426,088	433,011	440,347	443,257	450,901	457,711	1.7	.7	1.7	1.5	
Connecticut	115,126	116,357	117,455	119,755	121,057	122,052	123,950	126,664	127,236	129,428	131,570	2.2	.5	1.7	1.7	
Maine	26,877	27,112	27,267	27,715	27,865	28,406	28,936	29,271	29,236	30,017	30,390	1.2	-1	2.7	1.2	
Massachusetts	167,831	169,367	171,863	174,969	178,075	181,181	184,287	187,393	190,499	193,605	196,711	1.4	1.1	1.7	1.5	
New Hampshire	31,755	32,233	32,759	33,436	34,124	34,937	35,796	36,735	37,757	38,861	39,965	2.5	-6	1.7	1.4	
Rhode Island	24,886	25,223	25,572	26,011	26,450	26,889	27,328	27,767	28,206	28,645	29,084	1.5	.6	.8	1.6	
Vermont	13,354	13,452	13,524	13,664	14,037	14,230	14,394	14,578	14,644	14,965	15,147	1.3	.5	2.2	1.2	
Mideast	1,287,567	1,293,436	1,309,439	1,325,328	1,345,232	1,364,051	1,380,603	1,389,923	1,420,878	1,435,616	1,453,918	.7	2.2	1.0	1.3	
Delaware	20,631	20,639	21,094	21,422	21,892	22,118	22,225	22,796	23,078	23,191	23,541	2.6	1.2	.5	1.5	
District of Columbia	18,760	18,805	19,028	19,085	19,191	19,408	19,687	19,817	20,235	20,450	20,709	.7	2.1	1.1	1.3	
Maryland	143,770	145,016	146,589	148,983	150,778	153,116	155,299	157,464	159,802	161,725	163,589	1.4	1.5	1.2	1.2	
New Jersey	257,066	258,617	261,795	265,466	270,299	273,177	278,572	280,078	288,406	291,133	294,092	.5	3.0	.9	1.0	
New York	543,350	543,675	551,780	556,901	565,642	575,201	581,019	581,208	598,865	603,200	612,924	0	3.1	.7	1.6	
Pennsylvania	303,989	306,686	309,153	313,471	317,430	321,031	323,801	328,561	330,493	335,917	339,062	1.5	.6	1.6	.9	
Great Lakes	1,089,113	1,102,312	1,112,380	1,126,771	1,143,432	1,155,114	1,163,136	1,185,908	1,192,794	1,207,693	1,223,340	2.0	.6	1.2	1.3	
Illinois	325,749	330,416	333,657	338,040	342,467	346,668	350,023	356,961	361,142	366,399	371,323	2.0	1.2	1.5	1.3	
Indiana	133,919	135,408	136,348	138,619	140,635	142,285	143,902	146,627	147,355	148,532	150,129	1.9	.5	.8	1.1	
Michigan	240,467	243,025	245,370	247,430	253,117	254,683	253,375	258,980	259,761	262,359	265,883	2.2	.3	1.0	1.3	
Ohio	266,151	269,084	271,385	275,181	278,627	280,966	283,518	288,569	290,063	293,306	297,072	1.8	.5	1.1	1.3	
Wisconsin	122,827	124,778	125,620	127,501	128,587	130,512	132,318	134,771	134,472	137,098	138,932	1.9	-2	2.0	1.3	
Plains	438,635	444,771	449,351	454,161	460,014	466,078	470,605	482,185	484,446	492,615	496,817	2.5	.5	1.7	.9	
Iowa	64,874	65,808	66,185	67,105	67,104	67,830	68,745	71,199	70,660	71,542	72,266	3.6	-8	1.2	1.0	
Kansas	61,007	62,081	62,782	63,581	64,435	65,385	65,973	67,625	67,566	68,751	69,264	2.5	-1	1.8	.7	
Minnesota	120,365	122,372	123,869	125,434	128,013	129,851	130,696	134,286	135,399	137,966	140,045	2.7	.8	1.9	1.5	
Missouri	126,067	127,093	128,381	129,637	130,680	132,228	133,834	135,080	136,906	138,775	139,964	.9	1.4	1.4	.9	
Nebraska	38,487	39,037	39,412	39,604	40,140	40,820	41,349	42,538	42,435	43,082	43,198	2.9	-2	1.5	-3	
North Dakota	12,646	12,838	12,986	13,072	13,623	13,680	13,758	14,358	14,419	14,906	14,692	4.4	4	3.4	-1.4	
South Dakota	15,190	15,541	15,736	15,729	16,019	16,185	16,250	17,099	17,062	17,594	17,388	5.2	-2	3.1	-1.2	
Southeast	1,458,318	1,472,319	1,488,852	1,509,533	1,535,161	1,557,124	1,580,149	1,601,518	1,620,186	1,638,193	1,657,547	1.4	1.2	1.1	1.2	
Alabama	88,240	88,927	89,599	90,626	91,987	92,976	94,041	95,265	95,780	97,014	98,145	1.3	.5	1.3	1.2	
Arkansas	48,531	49,268	49,629	50,338	51,403	51,403	51,790	52,984	53,182	53,759	53,827	2.3	.4	1.1	.1	
Florida	357,463	361,282	366,450	370,723	377,780	383,881	389,957	395,019	396,747	403,978	411,109	1.3	.4	1.8	1.8	
Georgia	175,822	177,615	179,751	182,310	186,808	189,851	193,919	196,882	201,289	203,893	206,991	1.5	2.2	1.3	1.5	
Kentucky	79,087	80,058	80,819	81,777	83,283	84,440	85,430	86,183	87,280	88,019	89,326	.9	1.3	.8	1.5	
Louisiana	67,638	68,570	69,247	70,011	71,958	73,334	74,822	76,605	76,707	78,555	79,399	.8	.1	.9	.9	
Mississippi	48,597	49,213	49,609	50,330	51,250	51,828	52,660	53,374	53,518	54,094	54,754	1.3	.3	1.1	1.2	
North Carolina	169,449	171,121	172,593	175,453	178,542	180,852	183,188	185,561	188,551	190,432	188,436	1.3	1.6	1.0	-1.0	
South Carolina	76,523	77,139	78,010	79,071	79,995	81,170	82,960	84,033	84,595	86,002	87,303	1.3	.7	1.7	1.5	
Tennessee	120,173	120,999	122,280	124,284	125,583	127,546	129,172	130,676	132,161	133,735	135,935	1.2	1.1	1.2	1.6	
Virginia	173,146	174,227	176,798	179,473	182,448	184,931	187,900	191,467	196,815	195,755	198,751	1.9	2.8	-1.5	1.5	
West Virginia	33,649	33,900	34,066	34,337	34,676	34,911	35,290	35,469	35,562	35,955	36,570	.5	.3	1.1	1.7	
Southwest	643,609	655,242	666,522	676,461	692,740	702,120	713,181	723,371	731,553	743,460	754,190	1.4	1.1	1.6	1.4	
Arizona	97,748	99,234	100,914	102,744	104,765	106,967	109,091	111,522	111,051	115,051	117,435	2.2	-4	3.6	2.1	
New Mexico	32,780	33,202	33,404	33,689	34,239	34,543	34,800	35,431	35,190	36,063	36,471	1.8	-7	2.1	1.1	
Oklahoma	66,453	67,024	67,623	68,676	69,562	70,257	70,847	71,211	71,909	72,927	73,682	.5	1.0	1.4	1.0	
Texas	446,628	455,782	464,580	471,352	484,174	490,352	498,443	505,206	513,403	519,419	526,601	1.4	1.6	1.2	1.4	
Rocky Mountain	194,734	198,098	201,433	204,128	209,209	211,736	214,437	219,191	222,178	227,417	230,648	2.2	1.4	2.4	1.4	
Colorado	101,986	104,199	106,206	108,182	111,925	113,255	114,793	117,623	119,334	122,544	124,766	2.6	1.3	2.8	1.7	
Idaho	24,167	24,524	24,894	25,017	25,422	25,622	26,076	26,480	27,054	27,403	27,660	1.5	2.2	1.3	.9	
Montana	17,007	17,182	17,349	17,565	17,547	17,786	17,728	18,246	18,476	18,964	19,024	2.9	1.3	2.6	.3	
Utah	40,836	41,410	42,087	42,393	43,288	44,070	44,561	45,269	45,727	46,729	47,466	1.6	1.9	1.2	1.6	
Wyoming	10,737	10,783	10,897	10,972	11,023	11,004	11,278	11,372	11,587	11,666	11,732	.8	1.9	.7	.6	
Far West	1,138,401	1,156,706	1,171,286	1,186,262	1,210,289	1,225,749	1,244,320	1,266,721	1,291,380	1,308,673	1,327,645	1.8	1.9	1.3	1.4	
Alaska	14,984	15,237	15,275	15,393	15,805	15,749	15,762	15,978	16,154	16,114	16,236	1.4	1.1	-2	.8	
California	828,154	842,113	853,136	863,952	881,119	892,504	906,175	923,802	941,435	956,059	969,041	1.9	1.9	1.6	1.4	
Hawaii	30,224	30,437	30,727	30,669	31,022	31,192	31,316	31,543	31,649	32,061	32,523	.7	.3	1.3	1.4	
Nevada	43,671															

Table J.2.—Annual Personal Income and Disposable Personal Income for States and Regions

Area name	Personal income					Disposable personal income				
	Millions of dollars			Percent change		Millions of dollars			Percent change	
	1996	1997	1998	1996-97	1997-98	1996	1997	1998	1996-97	1997-98
United States	6,408,103	6,770,650	7,158,176	5.7	5.7	5,518,569	5,782,712	6,061,088	4.8	4.8
New England	384,540	406,858	429,852	5.8	5.7	323,239	338,425	353,824	4.7	4.6
Connecticut	110,904	117,173	123,431	5.7	5.3	91,503	95,453	99,259	4.3	4.0
Maine	25,934	27,243	28,620	5.0	5.1	22,772	23,671	24,650	3.9	4.1
Massachusetts	179,998	191,008	202,252	6.1	5.9	149,777	157,389	164,889	5.1	4.8
New Hampshire	30,633	32,546	34,626	6.2	6.4	26,831	28,254	29,849	5.3	5.6
Rhode Island	24,067	25,340	26,614	5.3	5.0	21,022	21,942	22,878	4.4	4.3
Vermont	13,004	13,549	14,309	4.2	5.6	11,333	11,717	12,299	3.4	5.0
Mideast	1,245,254	1,303,943	1,369,952	4.7	5.1	1,057,756	1,096,946	1,140,195	3.7	3.9
Delaware	19,723	20,946	22,258	6.2	6.3	16,796	17,699	18,647	5.4	5.4
District of Columbia	18,463	18,919	19,526	2.5	3.2	15,623	15,851	16,100	1.5	1.6
Maryland	138,068	146,090	154,164	5.8	5.5	117,094	122,434	128,282	4.6	4.8
New Jersey	247,381	260,736	275,531	5.4	5.7	210,191	219,885	229,892	4.6	4.6
New York	526,990	548,927	575,768	4.3	4.9	442,273	456,565	472,647	3.2	3.5
Pennsylvania	295,230	308,325	322,706	4.4	4.7	255,779	264,511	274,626	3.4	3.8
Great Lakes	1,054,547	1,107,644	1,161,898	5.0	4.9	902,103	939,326	977,559	4.1	4.1
Illinois	314,960	331,966	349,029	5.4	5.1	268,434	280,280	292,419	4.4	4.3
Indiana	129,570	136,073	143,362	5.0	5.4	111,656	116,414	121,876	4.3	4.7
Michigan	233,571	244,073	255,039	4.5	4.5	199,607	206,608	214,329	3.5	3.7
Ohio	257,506	270,450	282,920	5.0	4.6	221,394	230,780	239,089	4.2	3.6
Wisconsin	118,940	125,081	131,547	5.2	5.2	101,011	105,244	109,846	4.2	4.4
Plains	425,718	446,730	469,721	4.9	5.1	367,001	381,713	398,925	4.0	4.5
Iowa	62,759	65,993	68,720	5.2	4.1	54,824	57,253	59,222	4.4	3.4
Kansas	58,690	62,363	65,854	6.3	5.6	50,703	53,488	56,057	5.5	4.8
Minnesota	117,293	123,010	130,737	4.9	6.3	97,774	101,468	107,358	3.8	5.8
Missouri	121,265	127,795	132,955	5.4	4.0	105,529	110,307	113,948	4.5	3.3
Nebraska	37,652	39,135	41,212	3.9	5.3	32,903	33,827	35,446	2.8	4.8
North Dakota	12,983	12,885	13,855	-8	7.5	11,620	11,389	12,230	-2.0	7.4
South Dakota	15,076	15,549	16,388	3.1	5.4	13,649	13,982	14,665	2.4	4.9
Southeast	1,401,506	1,482,256	1,568,488	5.8	5.8	1,225,384	1,286,377	1,350,586	5.0	5.0
Alabama	85,128	89,348	93,567	5.0	4.7	75,473	78,809	82,148	4.4	4.2
Arkansas	47,116	49,442	51,763	4.9	4.7	41,791	43,686	45,394	4.5	3.9
Florida	343,806	363,980	386,654	5.9	6.2	298,933	313,790	330,157	5.0	5.2
Georgia	167,956	178,875	191,865	6.5	7.3	145,199	153,506	163,232	5.7	6.3
Kentucky	75,612	80,435	84,834	6.4	5.5	65,938	69,749	73,168	5.8	4.9
Louisiana	85,099	89,067	93,430	4.7	4.9	76,061	78,903	82,179	3.7	4.2
Mississippi	47,150	49,437	52,283	4.9	5.8	42,827	44,697	47,079	4.4	5.3
North Carolina	161,179	172,154	182,036	6.8	5.7	139,842	148,266	155,290	6.0	4.7
South Carolina	73,435	77,686	82,039	5.8	5.6	64,545	67,858	71,340	5.1	5.1
Tennessee	115,697	121,934	128,244	5.4	5.2	102,991	107,789	112,656	4.7	4.5
Virginia	166,351	175,911	186,686	5.7	6.1	142,308	149,103	156,916	4.8	5.2
West Virginia	32,976	33,988	35,087	3.1	3.2	29,476	30,222	31,026	2.5	2.7
Southwest	614,265	660,458	707,853	7.5	7.2	543,363	581,106	618,773	6.9	6.5
Arizona	93,391	100,160	108,087	7.2	7.9	81,041	86,119	92,333	6.3	7.2
New Mexico	31,826	33,269	34,753	4.5	4.5	28,249	29,307	30,524	3.7	4.2
Oklahoma	63,750	67,444	70,469	5.8	4.5	56,059	58,974	61,218	5.2	3.8
Texas	425,298	459,585	494,544	8.1	7.6	378,015	406,707	434,698	7.6	6.9
Rocky Mountain	186,887	199,598	213,643	6.8	7.0	160,565	170,034	180,610	5.9	6.2
Colorado	97,735	105,143	114,449	7.6	8.9	83,250	88,686	95,810	6.5	8.0
Idaho	23,418	24,651	25,901	5.3	5.1	20,420	21,347	22,275	4.5	4.3
Montana	16,546	17,276	17,827	4.4	3.2	14,546	15,064	15,434	3.6	2.5
Utah	38,856	41,681	44,297	7.3	6.3	33,433	35,657	37,627	6.7	5.5
Wyoming	10,333	10,847	11,169	5.0	3.0	8,915	9,281	9,463	4.1	2.0
Far West	1,095,386	1,163,164	1,236,770	6.2	6.3	939,159	988,785	1,040,616	5.3	5.2
Alaska	14,713	15,222	15,823	3.5	3.9	12,567	12,926	13,349	2.9	3.3
California	798,580	846,839	900,900	6.0	6.4	682,968	717,988	755,232	5.1	5.2
Hawaii	29,784	30,514	31,268	2.5	2.5	25,911	26,398	26,843	1.9	1.7
Nevada	41,412	44,510	47,795	7.5	7.4	35,342	37,654	40,107	6.5	6.5
Oregon	73,156	77,579	81,310	6.0	4.8	62,206	65,177	67,866	4.8	4.1
Washington	137,741	148,500	159,674	7.8	7.5	120,166	128,640	137,220	7.1	6.7

NOTE.—The personal income level shown for the United States is derived as the sum of the State estimates. It differs from the national income and product accounts (NIPA's) because of differences in coverage, in the methodologies used to prepare the estimates, and in the timing of the availability of source data. In particular, it differs from the NIPA estimate because, by defini-

tion, it omits the earnings of Federal civilian and military personnel stationed abroad and of U.S. residents employed abroad temporarily by private U.S. firms.

Source: Tables 1 and 2 in "State Personal Income, First Quarter 1999" in the August 1999 issue of the SURVEY.

Table J.3.—Per Capita Personal Income and Per Capita Disposable Personal Income for States and Regions

Area name	Per capita personal income ¹				Per capita disposable personal income ¹			
	Dollars			Rank in U.S.	Dollars			Rank in U.S.
	1996	1997	1998	1998	1996	1997	1998	1998
United States	24,164	25,288	26,482	.....	20,810	21,598	22,424	.....
New England	28,872	30,427	32,007	.....	24,269	25,309	26,346	.....
Connecticut	33,979	35,863	37,700	1	28,035	29,215	30,317	1
Maine	20,948	21,937	23,002	36	18,394	19,061	19,811	35
Massachusetts	29,591	31,239	32,902	3	24,623	25,740	26,824	3
New Hampshire	26,418	27,766	29,219	7	23,140	24,104	25,188	5
Rhode Island	24,356	25,667	26,924	15	21,274	22,225	23,145	11
Vermont	22,179	23,017	24,217	30	19,328	19,905	20,815	28
Mideast	27,978	29,252	30,652	.....	23,765	24,609	25,512	.....
Delaware	27,125	28,493	29,932	6	23,100	24,076	25,077	6
District of Columbia	34,213	35,704	37,325	.....	28,950	29,914	30,776	.....
Maryland	27,298	28,674	30,023	5	23,151	24,031	24,983	7
New Jersey	30,892	32,356	33,953	2	26,248	27,286	28,329	2
New York	29,015	30,250	31,679	4	24,378	25,160	26,005	4
Pennsylvania	24,533	25,670	26,889	16	21,255	22,022	22,883	15
Great Lakes	24,055	25,158	26,290	.....	20,578	21,335	22,119	.....
Illinois	26,393	27,688	28,976	8	22,494	23,377	24,277	8
Indiana	22,234	23,202	24,302	29	19,160	19,849	20,660	32
Michigan	23,996	24,956	25,979	18	20,507	21,126	21,832	20
Ohio	23,054	24,163	25,239	21	19,821	20,618	21,329	23
Wisconsin	22,987	24,048	25,184	22	19,521	20,235	21,029	26
Plains	23,039	24,034	25,126	.....	19,861	20,536	21,339	.....
Iowa	22,032	23,120	24,007	32	19,246	20,058	20,689	30
Kansas	22,707	23,972	25,049	24	19,617	20,561	21,322	24
Minnesota	25,235	26,243	27,667	11	21,035	21,647	22,719	16
Missouri	22,586	23,629	24,447	28	19,656	20,395	20,952	27
Nebraska	22,847	23,818	24,786	26	19,965	20,415	21,318	25
North Dakota	20,197	20,103	21,708	38	18,077	17,768	19,162	38
South Dakota	20,450	21,076	22,201	37	18,513	18,952	19,866	34
Southeast	21,787	22,751	23,793	.....	19,049	19,744	20,488	.....
Alabama	19,838	20,672	21,500	40	17,588	18,234	18,876	39
Arkansas	18,808	19,595	20,393	46	16,682	17,314	17,884	46
Florida	23,834	24,799	25,922	19	20,723	21,379	22,134	18
Georgia	22,900	23,882	25,106	23	19,798	20,495	21,359	22
Kentucky	19,475	20,570	21,551	39	16,983	17,837	18,587	42
Louisiana	19,609	20,458	21,385	42	17,526	18,123	18,810	40
Mississippi	17,398	18,098	18,998	50	15,803	16,363	17,107	50
North Carolina	22,053	23,168	24,122	31	19,134	19,953	20,758	33
South Carolina	19,651	20,508	21,387	41	17,272	17,913	18,598	41
Tennessee	21,800	22,699	23,615	33	19,406	20,066	20,745	29
Virginia	24,950	26,109	27,489	13	21,344	22,130	23,105	13
West Virginia	18,116	18,724	19,373	49	16,193	16,649	17,131	49
Southwest	21,577	22,787	23,985	.....	19,086	20,049	20,967	.....
Arizona	21,071	21,998	23,152	35	18,284	18,914	19,777	36
New Mexico	18,634	19,298	20,008	48	16,540	17,000	17,574	47
Oklahoma	19,342	20,305	21,056	45	17,008	17,755	18,292	43
Texas	22,345	23,707	25,028	25	19,861	20,980	21,999	19
Rocky Mountain	22,304	23,414	24,668	.....	19,163	19,946	20,854	.....
Colorado	25,627	27,015	28,821	9	21,829	22,787	24,128	9
Idaho	19,741	20,392	21,080	44	17,214	17,658	18,129	44
Montana	18,872	19,660	20,247	47	16,591	17,143	17,530	48
Utah	19,214	20,185	21,096	43	16,533	17,267	17,920	45
Wyoming	21,524	22,596	23,225	34	18,570	19,333	19,678	37
Far West	24,969	26,127	27,367	.....	21,408	22,210	23,027	.....
Alaska	24,310	24,969	25,771	20	20,765	21,203	21,741	21
California	25,142	26,314	27,579	12	21,503	22,310	23,119	12
Hawaii	25,086	25,598	26,210	17	21,824	22,145	22,500	17
Nevada	25,877	26,514	27,360	14	22,084	22,431	22,959	14
Oregon	22,894	23,920	24,775	27	19,467	20,096	20,678	31
Washington	24,958	26,451	28,066	10	21,774	22,914	24,119	10

1. Per capita personal income and per capita disposable personal income were computed using midyear population estimates from the Bureau of the Census.

NOTE.—The personal income level shown for the United States is derived as the sum of the State estimates. It differs from the national income and product accounts (NIPA's) because of differences in coverage, in the methodologies used to prepare the estimates, and in the timing

of the availability of source data. In particular, it differs from the NIPA estimate because, by definition, it omits the earnings of Federal civilian and military personnel stationed abroad and of U.S. residents employed abroad temporarily by private U.S. firms.

Source: Tables 1 and 2 in "State Personal Income, First Quarter 1999" in the August 1999 issue of the SURVEY.

Table J.4.—Gross State Product for States and Regions by Industry, 1997

[Millions of dollars]

State and region	Rank of total gross state product	Total gross state product	Agriculture, forestry, and fishing	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Government
United States		8,103,234	131,745	120,515	328,806	1,378,869	676,313	562,755	712,890	1,570,308	1,656,849	964,184
New England		466,857	3,445	310	15,771	76,656	29,998	32,219	38,059	116,542	109,730	44,128
Connecticut	21	134,565	899	36	4,351	22,510	8,011	9,373	9,862	38,988	29,184	11,350
Maine	42	30,156	460	19	1,356	5,153	2,250	1,848	3,459	5,779	5,800	4,033
Massachusetts	11	221,009	1,284	156	7,161	32,394	13,924	16,133	17,510	53,708	58,449	20,291
New Hampshire	39	38,106	263	45	1,282	9,521	2,671	2,410	3,348	8,377	7,004	3,186
Rhode Island	44	27,806	210	15	959	4,347	1,911	1,537	2,385	6,941	6,092	3,410
Vermont	50	15,214	329	39	663	2,731	1,231	918	1,494	2,749	3,202	1,858
Mideast		1,523,401	8,905	2,737	51,564	204,283	122,778	99,738	112,108	392,621	344,626	184,041
Delaware	41	31,585	273	5	1,038	6,108	1,545	1,192	1,842	12,348	4,482	2,753
District of Columbia		52,372	16	13	481	1,308	2,710	588	1,314	9,531	16,969	19,441
Maryland	16	153,797	1,304	116	7,835	13,230	11,457	9,716	13,254	34,137	36,268	26,479
New Jersey	8	294,055	1,502	186	10,414	41,062	28,256	27,283	21,293	68,841	64,380	30,838
New York	2	651,652	2,689	480	18,505	74,446	49,335	40,277	44,440	203,219	148,253	70,007
Pennsylvania	6	339,940	3,121	1,935	13,291	68,129	29,476	20,683	29,965	64,544	74,274	34,523
Great Lakes		1,295,671	17,478	4,860	54,174	316,788	100,547	94,731	115,023	217,559	242,173	132,337
Illinois	4	393,532	5,110	1,268	16,385	71,671	35,807	30,972	31,881	79,466	82,375	38,597
Indiana	15	161,701	2,883	846	7,845	50,155	12,369	10,036	14,807	21,351	25,676	15,732
Michigan	9	272,607	2,698	1,246	11,052	70,234	18,230	20,831	25,735	41,850	51,635	29,095
Ohio	7	320,506	3,947	1,210	12,515	83,850	23,955	23,338	29,669	50,967	57,798	33,256
Wisconsin	19	147,325	2,840	290	6,378	40,878	10,186	9,553	12,930	23,924	24,690	15,657
Plains		538,494	21,360	3,164	23,831	102,629	49,367	42,281	48,237	85,150	99,193	63,280
Iowa	29	80,479	5,612	193	3,287	19,617	6,177	5,701	6,579	11,889	12,327	9,096
Kansas	31	71,737	2,933	1,021	3,040	12,784	7,608	5,822	7,039	9,432	12,298	9,759
Minnesota	18	149,394	3,631	679	6,693	28,271	11,485	12,568	13,004	27,515	29,839	15,710
Missouri	17	152,100	2,855	453	7,146	31,195	15,521	11,564	14,033	22,615	29,825	16,892
Nebraska	36	48,812	3,506	125	2,088	6,681	5,394	3,839	4,148	7,429	8,663	6,939
North Dakota	49	15,786	1,072	451	784	1,389	1,629	1,463	1,523	2,128	2,908	2,438
South Dakota	46	20,186	1,751	241	793	2,692	1,554	1,324	1,911	4,141	3,332	2,447
Southeast		1,763,114	31,716	32,479	76,652	315,895	157,072	121,470	171,379	286,834	333,401	236,216
Alabama	25	103,109	2,145	1,600	4,304	22,115	9,172	6,687	10,535	13,657	17,155	15,738
Arkansas	32	58,479	2,775	606	2,333	14,006	6,129	3,689	6,170	6,929	8,862	6,980
Florida	5	380,607	6,691	1,027	17,876	29,108	33,388	28,533	42,487	83,763	91,196	46,538
Georgia	10	229,473	4,066	1,002	8,910	40,035	25,274	20,947	20,587	37,774	42,441	28,439
Kentucky	26	100,076	2,723	2,659	4,101	27,360	8,087	6,014	9,033	11,646	15,217	13,239
Louisiana	23	124,350	1,292	19,797	5,395	19,566	11,037	7,078	10,232	16,068	20,127	13,758
Mississippi	33	58,314	1,659	540	2,355	13,198	5,865	3,383	5,985	6,898	9,725	8,705
North Carolina	12	218,888	5,118	298	9,643	57,971	16,578	14,328	19,427	33,045	34,351	28,130
South Carolina	28	93,259	1,280	215	4,500	23,289	7,057	5,619	9,955	12,894	14,626	13,824
Tennessee	20	146,999	1,745	480	6,012	31,281	11,759	11,299	16,267	21,233	29,856	17,067
Virginia	13	211,331	1,961	1,102	9,439	31,282	18,056	11,839	17,278	38,537	43,411	38,426
West Virginia	38	38,228	261	3,154	1,785	6,684	4,672	2,053	3,423	4,391	6,434	5,371
Southwest		844,766	13,481	52,354	37,222	133,678	84,895	60,142	76,363	126,830	157,507	102,294
Arizona	24	121,239	1,934	1,300	6,937	17,815	9,047	8,095	12,574	23,531	24,974	15,031
New Mexico	37	45,242	897	3,271	2,046	7,887	3,280	1,981	4,137	6,207	7,791	7,745
Oklahoma	30	76,642	2,085	4,087	2,377	13,015	7,523	4,697	7,664	9,587	13,514	12,090
Texas	3	601,643	8,565	43,695	25,861	94,961	65,044	45,369	51,987	87,505	111,227	67,428
Rocky Mountain		247,372	5,924	11,026	13,354	31,372	25,517	15,282	24,137	39,172	48,933	32,656
Colorado	22	126,084	2,147	2,708	6,910	14,480	13,762	8,223	12,229	21,885	27,850	15,891
Idaho	43	29,149	1,730	273	1,669	5,809	2,492	1,838	2,961	3,644	4,860	3,873
Montana	47	19,160	1,019	880	965	1,486	2,241	1,241	1,956	2,593	3,773	3,005
Utah	35	55,417	612	1,654	3,132	8,601	4,709	3,383	5,791	9,119	10,735	7,682
Wyoming	48	17,561	416	5,512	679	996	2,312	595	1,201	1,930	1,715	2,205
Far West		1,423,561	29,436	13,585	56,236	197,569	106,140	96,892	127,584	305,601	321,285	169,233
Alaska	45	24,494	314	5,169	1,007	1,134	3,822	713	1,673	2,795	3,029	4,838
California	1	1,033,016	21,633	6,381	34,883	146,173	72,301	71,177	91,300	237,282	236,925	114,962
Hawaii	40	38,024	463	26	1,640	1,213	3,904	1,493	4,332	8,503	8,413	8,036
Nevada	34	57,407	427	1,568	4,978	2,608	4,333	2,809	5,553	10,773	18,670	5,688
Oregon	27	98,367	2,473	124	5,173	24,666	6,943	7,727	8,175	14,903	17,030	11,154
Washington	14	172,253	4,127	317	8,555	21,776	14,837	12,974	16,550	31,344	37,219	24,554

NOTE.—Totals shown for the United States differ from the national income and product account estimates of gross domestic product (GDP) because GSP is derived from gross domestic income, which differs from GDP by the statistical discrepancy. In addition, GSP excludes and GDP includes the compensation of Federal civilian and military personnel stationed abroad and government consumption of fixed capital for military structures located abroad and for military equipment except domestically located office equipment. GSP and GDP also have different revision

schedules.

Source: Tables 6 and 7 in "Gross State Product by Industry, 1995-97" in the June 1999 issue of the SURVEY OF CURRENT BUSINESS.

K. Local Area Table

Table K.1.—Personal Income and Per Capita Personal Income by Metropolitan Area, 1995–97

Table with columns for Area name, Personal income (Millions of dollars, Percent change), and Per capita personal income (Dollars, Rank in U.S.). Rows include United States, Metropolitan portion, Nonmetropolitan portion, Consolidated Metropolitan Statistical Areas, and Metropolitan Statistical Areas.

See footnotes at the end of the table.

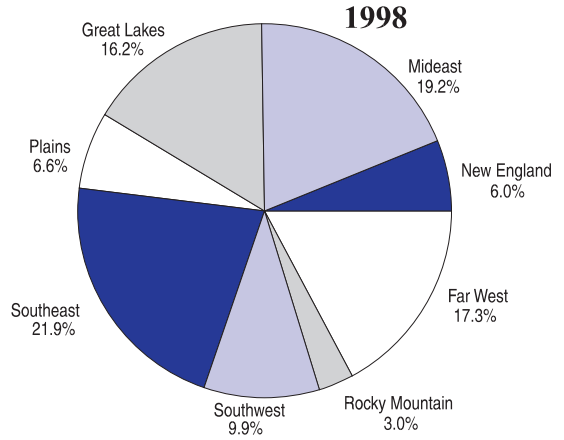
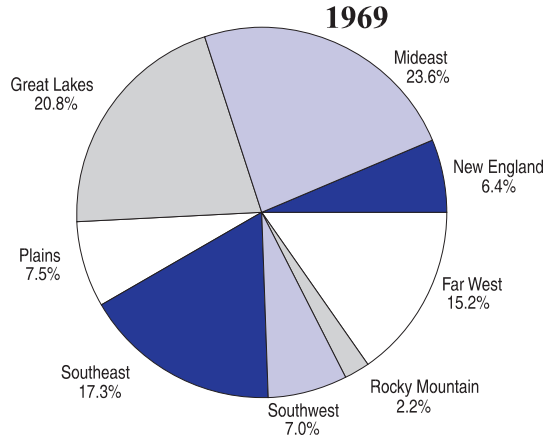
Table K.1.—Personal Income and Per Capita Personal Income by Metropolitan Area, 1995–97—Continued

Area name	Personal income				Per capita personal income ¹				Area name	Personal income				Per capita personal income ¹			
	Millions of dollars			Percent change	Dollars			Rank in U.S.		Millions of dollars			Percent change	Dollars			Rank in U.S.
	1995	1996	1997		1995	1996	1997			1995	1996	1997		1995	1996	1997	
Jonesboro, AR	1,328	1,404	1,487	5.9	17,867	18,581	19,456	283	Raleigh-Durham-Chapel Hill, NC	24,621	26,671	29,107	9.1	24,798	26,301	27,711	42
Joplin, MO	2,717	2,872	3,065	6.7	18,924	19,724	20,817	237	Rapid City, SD	1,720	1,770	1,852	4.6	19,760	20,083	21,270	212
Kalamazoo-Battle Creek, MI	9,639	10,057	10,438	3.8	21,820	22,693	23,481	132	Reading, PA	8,339	8,761	9,220	5.2	23,813	24,893	26,051	69
Kankakee, IL*	2,007	2,124	2,211	4.1	19,823	20,925	21,677	194	Redding, CA	3,095	3,202	3,341	4.3	19,283	19,843	20,539	244
Kansas City, MO-KS	40,847	43,133	45,714	6.0	24,233	25,450	26,627	59	Reno, NV	8,064	8,747	9,262	5.9	27,761	29,284	30,214	24
Kenosha, WI*	2,936	3,073	3,302	7.5	21,082	21,743	23,124	142	Richland-Kennewick-Pasco, WA	3,681	3,780	3,876	2.5	20,650	21,120	21,417	209
Killeen-Temple, TX	4,819	5,074	5,348	5.4	16,563	17,059	17,861	303	Richmond-Petersburg, VA	23,575	24,857	26,312	5.9	25,429	26,553	27,797	40
Knoxville, TN	13,738	14,260	14,888	4.4	21,482	22,004	22,745	154	Riverside-San Bernardino, CA*	54,153	56,769	59,748	5.2	18,335	18,949	19,604	278
Kokomo, IN	2,370	2,336	2,412	3.3	23,780	23,287	24,061	119	Roanoke, VA	5,476	5,730	5,977	4.3	24,003	25,085	26,182	66
La Crosse, WI-MN	2,509	2,643	2,770	4.8	20,812	21,812	22,815	150	Rochester, MN	2,752	2,945	3,119	5.9	24,466	26,044	27,233	51
Lafayette, LA	6,424	6,911	7,453	7.8	17,627	18,783	20,031	261	Rochester, NY	26,383	27,410	28,374	3.5	24,310	25,247	26,170	67
Lafayette, IN	3,291	3,393	3,582	5.6	19,386	19,841	20,800	235	Rockford, IL	7,839	8,165	8,528	4.4	22,432	23,128	24,024	120
Lake Charles, LA	3,359	3,547	3,747	5.6	19,109	19,906	20,901	234	Rocky Mount, NC	2,618	2,809	2,937	4.6	18,414	19,554	20,214	254
Lakeland-Winter Haven, FL	8,133	8,643	9,207	6.5	18,699	19,649	20,625	241	Sacramento, CA*	34,184	35,985	38,101	6.1	23,452	24,236	25,335	85
Lancaster, PA	10,107	10,726	11,205	4.5	22,600	23,816	24,694	102	Saginaw-Bay City-Midland, MI	8,840	9,103	9,485	4.2	21,969	22,604	23,570	129
Lansing-East Lansing, MI	9,541	9,835	10,208	3.2	21,026	21,907	22,691	156	St. Cloud, MN	2,888	3,081	3,164	2.7	18,230	19,285	19,627	277
Laredo, TX	1,993	2,156	2,357	9.8	11,696	12,332	12,999	314	St. Joseph, MO	1,855	1,947	2,035	4.5	19,056	20,059	20,939	230
Las Cruces, NM	2,254	2,370	2,482	4.7	14,194	14,564	14,923	313	St. Louis, MO-IL	63,014	65,847	69,547	5.6	24,785	25,824	27,177	53
Las Vegas, NV-AZ	26,458	29,423	31,876	8.3	23,245	24,575	25,250	86	Salem, OR*	6,055	6,471	6,796	5.0	19,362	20,310	20,927	233
Lawrence, KS	1,603	1,695	1,820	7.4	18,161	18,896	19,976	264	Salinas, CA	8,357	8,631	9,227	6.9	24,394	24,890	25,747	74
Lawton, OK	1,882	1,932	1,993	3.2	16,323	16,801	17,487	304	Salt Lake City-Ogden, UT	24,016	25,953	27,849	7.3	19,802	21,121	22,264	172
Lewiston-Auburn, ME (NECMA)	1,979	2,067	2,120	2.6	19,292	20,329	20,939	230	San Angelo, TX	1,930	2,027	2,146	5.9	19,053	19,898	20,968	228
Lexington, KY	9,650	10,275	11,033	7.4	22,237	23,374	24,838	100	San Antonio, TX	29,796	31,526	33,716	6.9	20,474	21,276	22,379	169
Lima, OH	3,069	3,129	3,248	3.8	19,744	20,142	20,997	227	San Diego, CA	60,432	63,908	67,998	6.4	22,882	23,903	24,965	89
Lincoln, NE	5,058	5,429	5,752	5.9	22,081	23,482	24,602	106	San Francisco, CA*	60,217	64,159	68,671	7.0	36,668	38,813	41,128	1
Little Rock-North Little Rock, AR	11,717	12,446	13,089	5.2	21,629	22,726	23,707	125	San Jose, CA*	50,602	55,607	61,345	10.3	32,289	34,880	37,856	4
Longview-Marshall, TX	3,852	4,105	4,374	6.6	18,941	19,939	21,025	224	San Luis Obispo-Atascadero-Paso Robles, CA	4,575	4,897	5,223	6.7	20,244	21,412	22,568	162
Los Angeles-Long Beach, CA*	213,656	223,742	234,469	4.8	23,662	24,706	25,719	76	Santa Barbara-Santa Maria-Lompoc, CA	9,685	10,197	10,760	5.5	25,401	26,675	27,839	39
Louisville, KY-IN	22,950	24,043	25,353	5.4	23,317	24,307	25,493	80	Santa Cruz-Watsonville, CA*	6,117	6,535	7,010	7.3	26,059	27,733	29,406	30
Lubbock, TX	4,571	4,853	5,085	4.7	19,757	20,980	22,032	181	Santa Fe, NM	3,351	3,495	3,680	5.3	24,765	25,507	26,319	64
Lynchburg, VA	4,087	4,261	4,462	4.8	20,037	20,729	21,543	202	Santa Rosa, CA*	10,632	11,447	12,439	8.7	25,636	27,295	29,188	32
Macon, GA	6,183	6,583	6,884	4.6	20,039	21,114	21,770	190	Sarasota-Bradenton, FL	15,134	16,109	17,020	5.7	23,898	25,060	26,319	16
Madison, WI	10,339	10,958	11,550	5.4	25,254	26,379	27,361	47	Savannah, GA	5,884	6,280	6,544	4.2	21,109	22,363	23,054	143
Mansfield, OH	3,328	3,456	3,619	4.7	18,993	19,719	20,673	240	Scranton-Wilkes-Barre-Hazleton, PA	12,754	13,309	13,770	3.5	20,199	21,228	22,177	176
McAllen-Edinburg-Mission, TX	5,265	5,660	6,018	7.0	11,044	11,548	12,005	316	Seattle-Bellevue-Everett, WA*	63,953	68,967	76,064	10.3	29,088	30,916	33,373	13
Medford-Ashland, OR	3,325	3,553	3,744	5.4	20,109	21,120	21,933	187	Sharon, PA	2,227	2,342	2,435	4.0	18,256	19,162	19,950	265
Melbourne-Titusville-Palm Bay, FL	9,265	9,765	10,342	5.9	20,609	21,531	22,505	164	Sheboygan, WI	2,437	2,539	2,637	3.9	22,456	23,215	24,009	122
Memphis, TN-AR-MS	25,271	26,569	28,043	5.5	23,746	24,725	25,905	71	Sherman-Denison, TX	1,869	2,017	2,135	5.9	19,069	20,144	21,006	226
Merced, CA	2,987	3,269	3,394	3.8	15,546	17,113	17,485	305	Shreveport-Bossier City, LA	7,554	7,782	8,064	3.6	19,953	20,532	21,259	213
Miami, FL*	42,538	44,653	46,174	3.4	20,605	21,207	21,688	193	Sioux City, IA-NE	2,456	2,646	2,760	3.2	20,436	21,905	22,633	160
Middlesex-Somerset-Hunterdon, NJ*	34,966	37,105	39,514	6.5	32,461	34,027	35,734	8	Sioux Falls, SD	3,669	3,955	4,203	6.3	23,417	24,797	26,030	70
Milwaukee-Waukesha, WI*	37,232	39,023	41,131	5.4	25,492	26,695	28,176	37	South Bend, IN	5,697	5,841	6,074	4.0	22,214	22,693	23,537	130
Minneapolis-St. Paul, MN-WI	74,448	79,350	84,193	6.1	27,315	28,739	30,123	26	Spokane, WA	8,219	8,604	9,037	5.0	20,478	21,300	22,293	170
Missoula, MT	1,734	1,831	1,910	4.3	19,850	20,735	21,496	204	Springfield, IL	4,536	4,814	5,031	4.5	22,339	23,616	24,679	103
Mobile, AL	9,498	10,064	10,604	5.4	18,415	19,327	20,119	257	Springfield, MO	6,019	6,328	6,686	5.7	20,481	21,314	22,206	175
Modesto, CA	7,310	7,762	8,238	6.1	17,879	18,768	19,650	276	Springfield, MA (NECMA)	13,307	13,812	14,496	5.0	22,461	23,397	24,576	107
Monmouth-Ocean, NJ*	29,420	31,048	32,680	5.3	28,000	29,148	30,275	23	State College, PA	2,499	2,651	2,793	5.4	19,185	20,070	21,028	223
Monroe, LA	2,706	2,856	2,899	1.5	18,474	19,466	19,723	271	Staubenville-Weirton, OH-WV	2,492	2,561	2,654	1.9	17,887	18,539	19,794	293
Montgomery, AL	6,549	6,872	7,185	4.6	20,867	21,716	22,498	165	Stearns County, MN	9,764	10,252	10,854	5.9	18,646	19,286	20,092	259
Muncie, IN	2,389	2,438	2,527	3.7	20,131	20,635	21,185	203	Sumter, SC	1,624	1,719	1,800	4.7	15,225	16,070	16,883	309
Myrtle Beach, SC	3,056	3,326	3,591	8.0	19,380	20,301	21,185	218	Syracuse, NY	15,978	16,411	16,949	3.3	21,363	22,069	22,952	145
Naples, FL	5,934	6,503	6,969	7.2	32,836	35,001	36,210	7	Tacoma, WA*	13,372	14,130	14,973	6.0	20,658	21,551	22,511	163
Nashville, TN	27,528	28,996	31,057	7.1	25,205	25,995	27,324	48	Tallahassee, FL	5,111	5,419	5,730	5.7	19,902	21,002	22,032	181
Nassau-Suffolk, NY*	84,441	89,022	92,861	4.3	31,890	33,542	34,902	10	Tampa-St. Petersburg-Clearwater, FL	48,799	51,926	55,356	6.6	22,440	23,654	24,879	95
New Haven-Bridgeport-Stamford-Danbury-Waterbury, CT*	58,754	62,869	66,562	5.9	36,233	38,727	40,928	2	Terre Haute, IN	2,771	2,829	2,895	2.3	18,513	19,914	19,988	282
New London-Norwich, CT (NECMA)	6,552	6,840	7,084	3.6	26,270	27,441	28,466	35	Texarkana, TX-Texarkana, AR	2,212	2,336	2,469	5.7	18,035	18,918	19,590	263
New Orleans, LA	27,906	28,837	30,281	5.0	21,293	22,038	23,148	141	Toledo, OH	13,881	14,291	14,850	3.9	22,727	23,422	24,315	113
New York, NY*	268,292	284,422	298,085	4.8	31,189	32,991	34,459	11	Topeka, KS	3,728	3,896	4,027	3.4	22,637	23,852	24,364	112
Newark, NJ	61,710	64,847	68,094	5.0	31,906	33,455	35,038	9	Trenton, NJ*	10,696	11,169	12,070	8.1	32,483	33,893	36,598	6
Newburgh, NY-PA*	7,682	8,028	8,314	3.6	21,446	22,198	22,753	153	Tucson, AZ	16,816	15,627	16,409	5.0	19,375	20,375	21,068	221
Norfolk-Virginia Beach-Newport News, VA-NC	31,034	32,448	33,958	4.7	20,255	21,125	21,983	184	Tulsa, OK	16,334	17,309	18,511	6.9	21,921	22,956	24,206	114
Oakland, CA*	62,115	66,771	71,260	6.7	28,061	29,846	31,338	18	Tuscaloosa, AL	2,992	3,127	3,299	5.5	18,884	19,692	20,514	245
Ocala, FL	4,052	4,358	4,652	6.7	17,986	18,930	19,723	271	Tyler, TX	3,425	3,685	3,943	7.0	21,209	22,432	23,696	126
Odessa-Midland, TX	5,063	5,366	5,687	9.7	21,414	22,488	24,386	111	Ulica-Rome, NY	5,966							

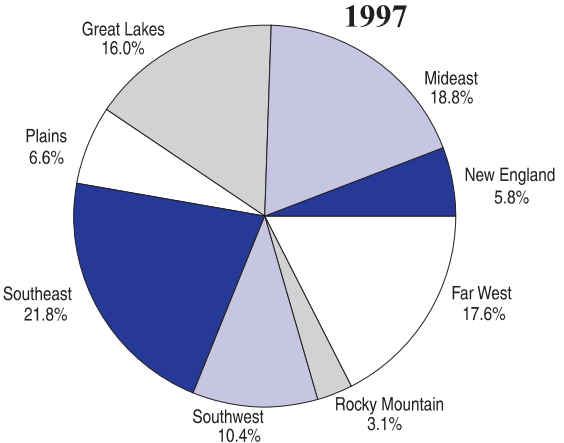
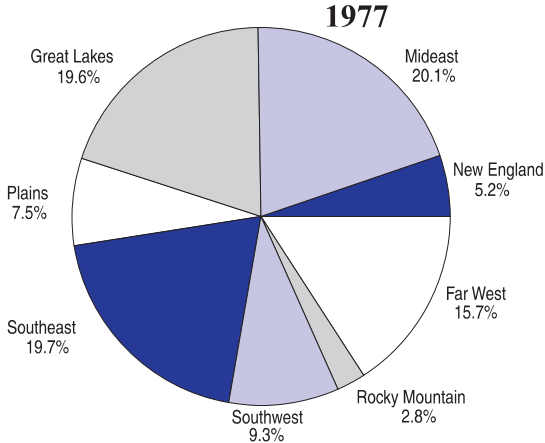
L. Charts

SELECTED REGIONAL ESTIMATES

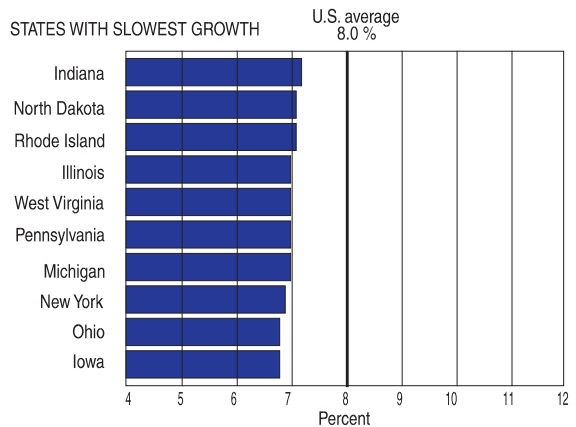
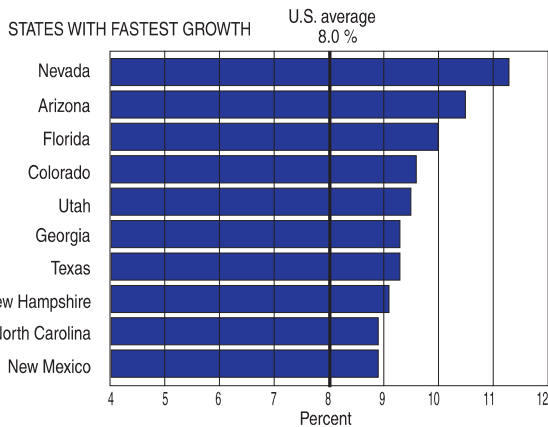
SHARES OF U.S. PERSONAL INCOME BY REGION



SHARES OF U.S. GROSS STATE PRODUCT BY REGION

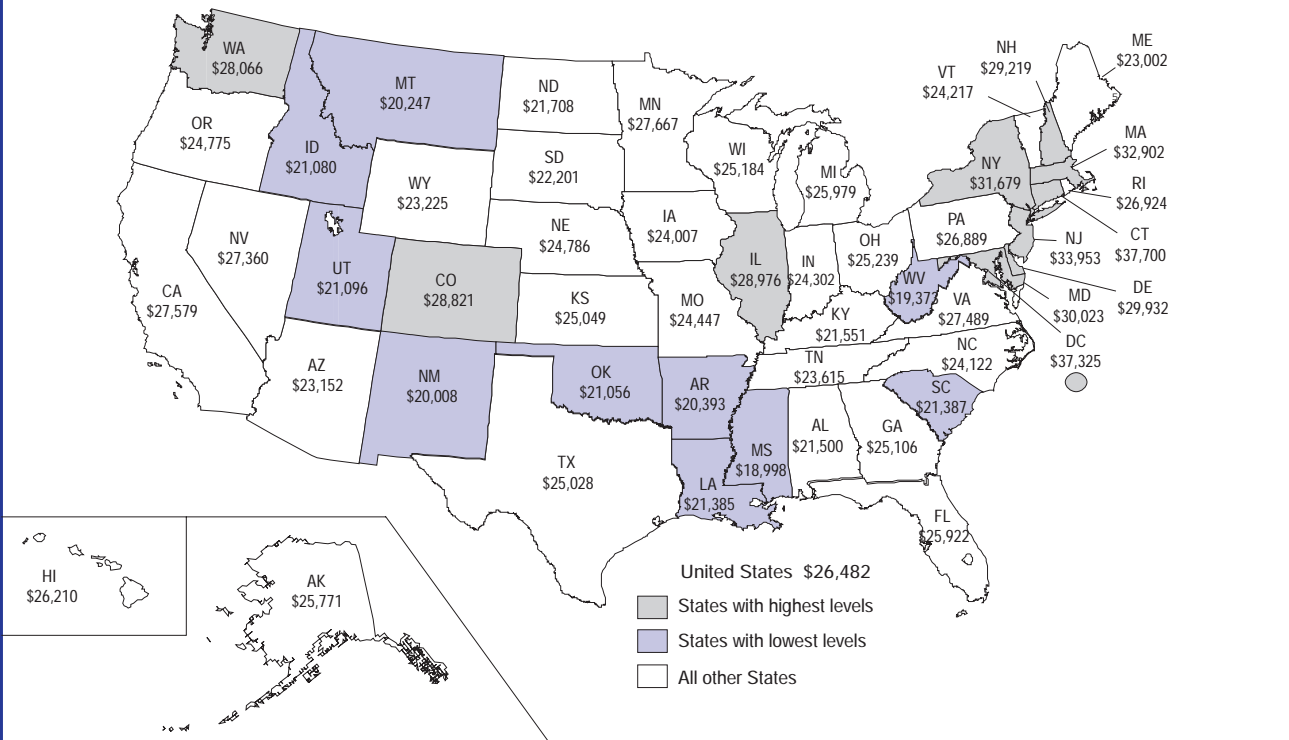


AVERAGE ANNUAL GROWTH RATE OF PERSONAL INCOME, 1969-98

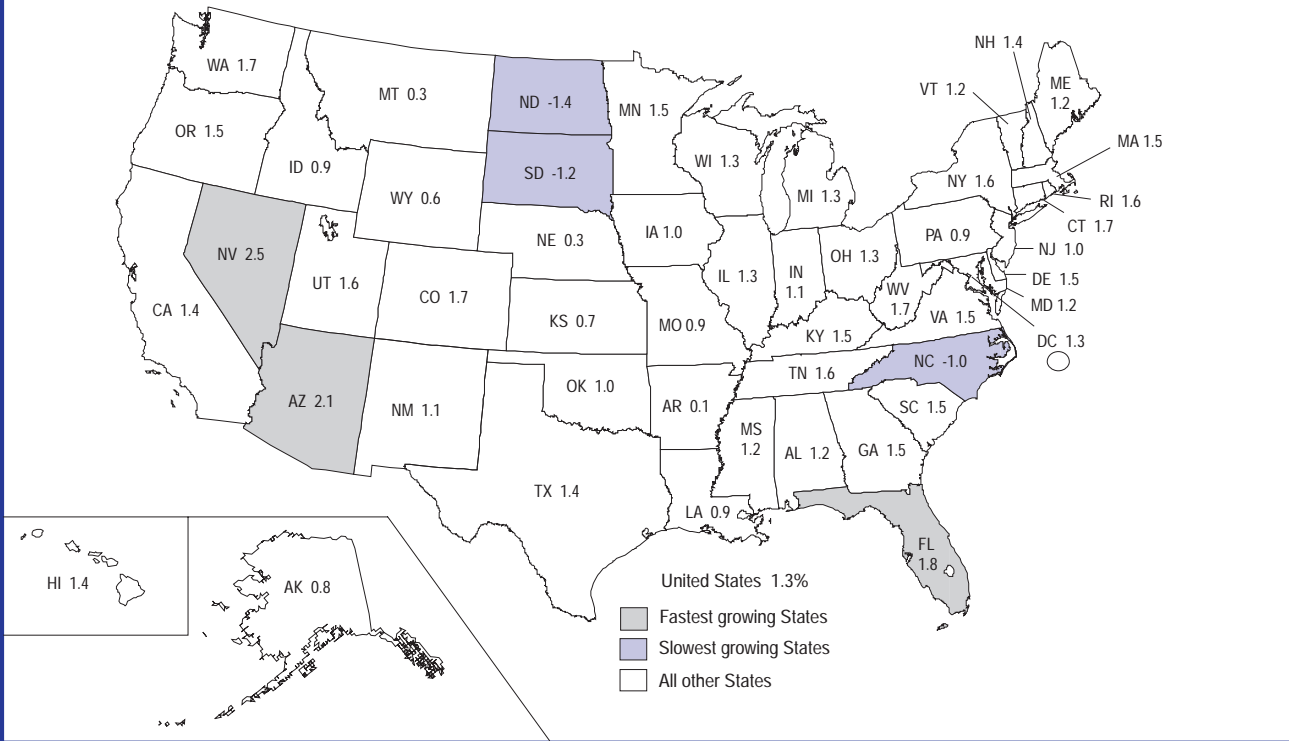


SELECTED REGIONAL ESTIMATES

PER CAPITA PERSONAL INCOME, 1998



PERSONAL INCOME: PERCENT CHANGE, 1999:II-1999:III



Appendix A

Additional Information About the NIPA Estimates

Statistical Conventions

Changes in current-dollar GDP measure changes in the market value of goods and services produced in the economy in a particular period. For many purposes, it is necessary to decompose these changes into quantity and price components. To compute the quantity indexes, changes in the quantities of individual goods and services are weighted by their prices. (Quantity changes for GDP are often referred to as changes in “real GDP.”) For the price indexes, changes in the prices for individual goods and services are weighted by quantities produced. (In practice, the current-dollar value and price indexes for most GDP components are determined largely using data from Federal Government surveys, and the real values of these components are calculated by deflation at the most detailed level for which all the required data are available.)

The annual changes in quantities and prices are calculated using a Fisher formula that incorporates weights from 2 adjacent years. For example, the 1997–98 annual percent change in real GDP uses prices for 1997 and 1998 as weights, and the 1997–98 annual percent change in the GDP price index uses quantities for 1997 and 1998 as weights. Because the Fisher formula allows for the effects of changes in relative prices and in the composition of output over time, the resulting quantity or price changes are not affected by the substitution bias that is associated with changes in quantities and prices calculated using a fixed-weighted formula.¹ These annual changes are “chained” (multiplied) together to form time series of quantity and price; the percent changes that are calculated from these time series are not affected by the choice of reference period.

The quarterly changes in quantities and prices are calculated with weights from two adjacent quarters. As part of an annual or comprehensive revision, the quarterly indexes through the most recent complete year are adjusted to ensure that the average of the quarterly indexes conforms to the corresponding annual index.

In addition, BEA prepares measures of real GDP and its components in a dollar-denominated form, designated “*chained (1996) dollar estimates*.” These estimates are computed by multiplying the 1996 current-dollar value of GDP, or of a GDP component, by the corresponding quantity index number. For example, if a current-dollar GDP component equaled \$100 in 1996 and if real output for this component increased by 10 percent in 1997, then the “chained (1996) dollar” value of this component in 1997 would be \$110 ($\100×1.10).

Note that percentage changes in the chained (1996) dollar estimates and the percentage changes calculated from the quantity indexes are identical, except for small differences due to rounding.

Because of the formula used for calculating real GDP, the chained (1996) dollar estimates for detailed GDP components *do not add* to the chained-dollar value of GDP or to any intermediate aggregates. A “*residual*” line is shown as the difference between GDP and the sum of the most detailed components shown in each table. The residual generally is small close to the base period but tends to become larger as one moves further from it. Accurate measures of component contributions to the percentage changes in real GDP and its major components are shown in NIPA tables 8.2–8.6.

BEA also publishes the “implicit price deflator” (IPD), which is calculated as the ratio of current-dollar value to the corresponding chained-dollar value, multiplied by 100; the values of the IPD and of the corresponding “chain-type” price index are very close.

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

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

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

where r is the percent change at an annual rate;

X_t is the level of activity in the later period;

X_o is the level of activity in the earlier period;

m is the yearly periodicity of the data (for example, 1 for annual data, 4 for quarterly, or 12 for monthly); and

n is the number of periods between the earlier and later periods (that is, $t - o$).

Quarterly and monthly NIPA estimates are seasonally adjusted, if necessary. Seasonal adjustment removes from the time series the average impact of variations that normally occur at about the same time and in about the same magnitude each year—for example, weather, holidays, and tax payment dates. After seasonal adjustment, cyclical and other short-term changes in the economy stand out more clearly.

1. In addition, because the changes in quantities and prices calculated using these weights are symmetric, the product of a quantity index and the corresponding price index is generally equal to the current-dollar index.

Reconciliation Tables

Table 1.—Reconciliation of Changes in BEA-Derived Compensation Per Hour with BLS Average Hourly Earnings

[Percent change from preceding period]

	1998	1999	Seasonally adjusted at annual rates					
			1998		1999			
			III	IV	I	II	III	IV ^P
BEA-derived compensation per hour of all persons in the nonfarm business sector (less housing)¹	5.2	4.8	6.2	4.6	4.2	4.8	4.7	4.3
<i>Less:</i> Contribution of supplements to wages and salaries per hour	-5	-3	-5	-5	0	-2	-3	-2
<i>Plus:</i> Contribution of wages and salaries per hour of persons in housing and in nonprofit institutions	-3	-2	-3	-1	-1	-1	-1	-1
<i>Less:</i> Contribution of wages and salaries per hour of persons in government enterprises, unpaid family workers, and self-employed	-2	-1	-1	-1	-3	.1	-1	.5
Equals: BEA-derived wages and salaries per hour of all employees in the private nonfarm sector	5.6	4.9	6.4	5.0	4.3	4.7	4.9	3.8
<i>Less:</i> Contribution of wages and salaries per hour of nonproduction workers in manufacturing	-1	-1	.4	.4	.4	.4	.4	0
<i>Less:</i> Other differences ²	1.6	1.3	2.3	1.5	0	.7	.8	.6
Equals: BLS average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls	4.1	3.7	3.7	3.2	4.0	3.6	3.7	3.1
Addendum: BLS estimates of compensation per hour in the nonfarm business sector ³	5.2	4.8	6.2	4.6	4.2	4.8	4.7	4.0

^P Preliminary

1. Includes BLS data on compensation and hours of nonfarm proprietors and hours worked of unpaid family workers.

2. Includes BEA use of non-BLS data and differences in detailed weighting. Annual estimates also include differences in BEA and BLS benchmark procedures; quarterly estimates also include differences in seasonal adjustment procedures.

3. These estimates differ from the BEA-derived estimates (first line) because the BLS estimates include compensation and hours of tenant-occupied housing.

BLS Bureau of Labor Statistics

Table 2.—Relation of Net Exports of Goods and Services and Net Receipts of Income in the NIPA's to Balance on Goods, Services, and Income in the ITA's

[Billions of dollars]

	Line	1997	1998	Seasonally adjusted at annual rates					
				1998			1999		
				II	III	IV	I	II	III
Exports of goods, services, and income receipts, ITA's	1	1,197.2	1,192.2	1,193.9	1,166.0	1,199.9	1,183.7	1,205.5	1,248.8
<i>Less:</i> Gold, ITA's	2	5.7	5.5	4.4	5.2	7.1	2.9	3.3	6.0
Statistical differences ¹	3	0	0	0	0	0	0	-1.1	-2.6
Other items	4	.8	.8	.6	.8	1.2	.8	.9	.9
<i>Plus:</i> Adjustment for grossing of parent/affiliate interest payments	5	4.5	5.0	4.9	5.2	5.7	4.3	4.4	4.6
Adjustment for U.S. territories and Puerto Rico	6	38.1	42.3	40.9	41.4	46.4	47.2	48.1	47.3
Services furnished without payment by financial intermediaries except life insurance carriers	7	17.3	18.5	18.4	18.8	18.9	19.2	19.4	19.9
Equals: Exports of goods and services and income receipts, NIPA's	8	1,250.6	1,251.6	1,253.0	1,225.5	1,262.7	1,250.7	1,274.3	1,316.2
Imports of goods, services, and income payments, ITA's	9	1,298.7	1,368.7	1,363.9	1,376.7	1,392.7	1,417.0	1,484.3	1,563.7
<i>Less:</i> Gold, ITA's	10	6.6	6.5	5.5	7.3	6.6	3.2	3.2	7.6
Statistical differences ¹	11	0	0	0	0	0	0	.9	.8
Other items	12	0	0	0	0	0	0	0	0
<i>Plus:</i> Gold, NIPA's	13	-3.6	-3.1	-3.1	-2.9	-2.9	-2.3	-2.4	-2.5
Adjustment for grossing of parent/affiliate interest payments	14	4.5	5.0	4.9	5.2	5.7	4.3	4.4	4.6
Adjustment for U.S. territories and Puerto Rico	15	24.3	28.5	28.3	26.2	33.1	31.7	32.8	32.3
Imputed interest paid to rest of world	16	17.3	18.5	18.4	18.8	18.9	19.2	19.4	19.9
Equals: Imports of goods and services and income payments, NIPA's	17	1,334.7	1,411.1	1,407.0	1,416.8	1,441.0	1,466.7	1,534.4	1,609.8
Balance on goods, services, and income, ITA's (1-9)	18	-101.5	-176.5	-170.0	-210.7	-192.8	-233.3	-278.8	-314.9
<i>Less:</i> Gold (2-10+13)	19	-4.5	-4.1	-4.2	-5.0	-2.4	-2.6	-2.3	-4.1
Statistical differences (3-11) ¹	20	0	0	0	0	0	0	-2.0	-3.4
Other items (4-12)	21	.8	.8	.6	.8	1.2	.8	.9	.9
<i>Plus:</i> Adjustment for U.S. territories and Puerto Rico (6-15)	22	13.8	13.8	12.6	15.2	13.3	15.5	15.3	15.0
Equals: Net exports of goods and services and net receipts of income, NIPA's (8-17)	23	-84.1	-159.5	-154.0	-191.3	-178.3	-216.0	-260.1	-293.6

1. Consists of statistical revisions in the NIPA's that have not yet been incorporated into the ITA's (1999:III) and statistical revisions in the ITA's that have not yet been incorporated into the NIPA's (1999:II-1999:III).

ITA's International transactions accounts
NIPA's National income and product accounts

Appendix B

Suggested Reading

BEA's Mission and Strategic Plan

BEA's mission statement and the latest update to BEA's strategic plan for improving the accuracy, reliability, and relevance of the national, regional, and international accounts are available on BEA's Web site (see the box below). The initial development and implementation of the strategic plan is described in the following articles in the SURVEY OF CURRENT BUSINESS.

["Mid-Decade Strategic Review of BEA's Economic Accounts: Maintaining and Improving Their Performance"](#) (February 1995)

["Mid-Decade Strategic Review of BEA's Economic Accounts: An Update"](#) (April 1995)

["BEA's Mid-Decade Strategic Plan: A Progress Report"](#) (June 1996)

Methodology

BEA has published a wealth of information about the methodology used to prepare its national, regional, and international estimates.

National

National income and product accounts (NIPA's)

NIPA Methodology Papers: This series documents the conceptual framework of the NIPA's and the methodology used to prepare the estimates.

["An Introduction to National Economic Accounting"](#) (NIPA Methodology Paper No. 1, 1985) [Also appeared in the March 1985 issue of the SURVEY]

["Corporate Profits: Profits Before Tax, Profits Tax Liability, and Dividends"](#) (NIPA Methodology Paper No. 2, 1985)

["Foreign Transactions"](#) (NIPA Methodology Paper No. 3, 1987) [Revised version forthcoming]

["GNP: An Overview of Source Data and Estimating Methods"](#) (NIPA Methodology Paper No. 4, 1987) [Largely superseded by ["A Guide to the NIPA's"](#) (March 1998 SURVEY)]

["Government Transactions"](#) (NIPA Methodology Paper No. 5, 1988)

["Personal Consumption Expenditures"](#) (NIPA Methodology Paper No. 6, 1990)

The methodologies described in these papers are subject to periodic improvements that are typically introduced as part of the annual and comprehensive revisions of the NIPA's; these improvements are described in the SURVEY articles that cover these revisions.

The most recent comprehensive revision of the NIPA's is described in the following series of SURVEY articles.

["A Preview of the 1999 Comprehensive Revision of the National Income and Product Accounts"](#):

["Definitional and Classificational Changes"](#) (August 1999)

["New and Redesigned Tables"](#) (September 1999)

["Statistical Changes"](#) (October 1999)

["Improved Estimates of the National Income and Product Accounts for 1959–98: Results of the Comprehensive Revision"](#) (December 1999)

["Annual Revision of the U.S. National Income and Product Accounts"](#): This series of SURVEY articles, the latest of which was published in the August 1998 issue, describes the annual NIPA revisions and the improvements in methodology.

["A Guide to the NIPA's"](#) (March 1998 SURVEY) provides the definitions of the major NIPA aggregates and components; discusses the measures of real output and prices; explains how production is classified and how the NIPA's are presented; describes the statistical conventions that are used; and lists the principal source data and methods used to prepare the estimates of gross domestic product (GDP).

Information on the sources and methods used to prepare the national estimates of personal income, which provide the basis for the State estimates of personal income, can be found in [State Personal Income, 1929–97](#) (1999).

["BEA's Chain Indexes, Time Series, and Measures of Long-Term Economic Growth"](#) (May 1997) is the most recent in a series of SURVEY articles that describe the conceptual basis for the chain-type measures of real output and prices used in the NIPA's.

["Reliability of the Quarterly and Annual Estimates of GDP and Gross Domestic Income"](#) (December 1998 SURVEY) evaluates the reliability of these estimates by examining the record of revisions to them.

Availability

Most of the items listed here are available on BEA's Web site at <www.bea.doc.gov>. In addition, see the *BEA Catalog of Products* for the availability of printed publications. The *Catalog* is available on BEA's Web site; a printed copy can be obtained by writing to the Public Information Office, BE-53, Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC 20230, or by calling 202-606-9900.

Wealth and related estimates

Fixed Reproducible Tangible Wealth in the United States, 1929–94 (1999) discusses the conceptual and statistical considerations underlying the BEA wealth estimates and explains the derivation of the estimates.

Gross product by industry

“Improved Estimates of Gross Product by Industry, 1959–94” (August 1996 SURVEY) describes the most recent comprehensive revision of the estimates of gross product by industry.

“Gross Product by Industry, 1947–96” (November 1997 SURVEY) and “Gross Product by Industry, 1995–97” (November 1998 SURVEY) present the most recent revisions to the estimates of gross product by industry and briefly describe changes in methodology.

Input-output accounts

“Benchmark Input-Output Accounts for the U.S. Economy, 1992” (November 1997 SURVEY) describes the preparation of the 1992 input-output (I-O) accounts and the concepts and methods underlying the U.S. I-O accounts.

“Annual Input-Output Accounts of the U.S. Economy, 1996” (January 2000 SURVEY) presents annual I-O tables for 1996 that update the 1992 benchmark I-O accounts.

Satellite accounts

Satellite accounts that extend the analytical capacity of the national accounts by focusing on a particular aspect of activity are presented in the following SURVEY articles.

“Integrated Economic and Environmental Satellite Accounts” and “Accounting for Mineral Resources: Issues and BEA’s Initial Estimates” (April 1994)

“A Satellite Account for Research and Development” (November 1994)

“U.S. Transportation Satellite Accounts for 1992” (April 1998)

“U.S. Travel and Tourism Satellite Accounts for 1992” (July 1998)

International

International transactions accounts (ITA’s)

The Balance of Payments of the United States: Concepts, Data Sources, and Estimating Procedures (1990) describes the methodologies used in preparing the estimates in the ITA’s and of the international investment position of the United States. These methodologies are subject to periodic improvements that are typically introduced as part of the annual revisions of the ITA’s.

“U.S. International Transactions, Revised Estimates”: This series of SURVEY articles, the latest of which was published in the July 1999 issue, describes

the annual ITA revisions and the improvements in methodology.

Direct investment

International Direct Investment: Studies by the Bureau of Economic Analysis (1999) presents a collection of previously published studies on U.S. direct investment abroad and foreign direct investment in the United States. In addition, it includes the following guides to BEA’s statistics and methodologies used to prepare the estimates.

“Methodology for U.S. Direct Investment Abroad” (*U.S. Direct Investment Abroad: 1994 Benchmark Survey, Final Results* (1998))

“A Guide to BEA Statistics on U.S. Multinational Companies” (March 1995 SURVEY)

“Methodology for Foreign Direct Investment in the United States” (*Foreign Direct Investment in the United States: 1992 Benchmark Survey, Final Results* (1995))

“A Guide to BEA Statistics on Foreign Direct Investment in the United States” (February 1990 SURVEY)

Surveys of international services

U.S. International Transactions in Private Services: A Guide to the Surveys Conducted by the Bureau of Economic Analysis (1998) provides information on the 11 surveys that BEA conducts on these transactions—including classifications, definitions, release schedules, and methods used to prepare the estimates—and samples of the survey forms.

Regional

Personal income

State Personal Income, 1929–97 (1999) includes a description of the methodology used to prepare the estimates of State personal income. [Also available on the CD-ROM *State Personal Income, 1929–97*]

Local Area Personal Income, 1969–92 (1994) includes a description of the methodology used to prepare the estimates of local area personal income. [Also available on the CD-ROM *Regional Economic Information System, 1969–97*]

Gross state product

“Comprehensive Revision of Gross State Product by Industry, 1977–94” (June 1997 SURVEY) summarizes the sources and methods for BEA’s estimates of gross state product.

“Gross State Product by Industry, 1977–96” (June 1998 SURVEY) and “Gross State Product by Industry, 1995–97” (June 1999 SURVEY) present the most recent revisions to the estimates of gross state product by industry and briefly describe changes in methodology. 