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AN INTRODUCTION TO NATIONAL ECONOMIC ACCOUNTING

METHODOLOGY PAPERS: U.S. National Income and Product Accounts

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An Introduction to National Economic Accounting

Editor's Note.—

With this article, BEA introduces a major project that has been underway at the Bureau for the past several years. The project involves a documentation of the concepts, sources, and methods of the national income and product accounts. The results of this project will be released through a series of special papers describing the estimates of each national income and product component. The first of the component descriptions will be available in May (see page 1). What follows is one of the papers that supplements the component descriptions.

This introductory paper places national income and product accounting within the larger framework of national economic accounting, and it shows the step-by-step derivation of the national economic accounting system from the conventional accounting statements used by businesses and governments and from similar statements that may be assumed to exist for other transactors. This approach highlights the conceptual relationships between the national economic accounts and business accounts; an understanding of these relationships is valuable because many economic decisions involve the simultaneous use of macroeconomic and microeconomic information. Also, this approach suggests the key role of business accounting in the statistical implementation of the U.S. national economic accounts. Although accounting statements themselves—even when available—are neither sufficiently timely nor sufficiently consistent to be the primary statistical source, the Government surveys and tabulations of administrative records that are used are shaped by the conventions and requirements of business accounting.

In this introduction, the presentation of the national income and product accounts is simplified. The full detail will be presented in a future paper. In the meantime, readers interested in further information on the structure and definitions of the national income and product accounts should consult the "Suggestions for Further Reading," especially the SURVEY *article by Carol S. Carson and George Jaszi.*

Contents

THE purpose of this introduction is twofold. First, it presents the conceptual basis and framework of the U.S. national income and product accounts (NIPA's). Second, using this framework, it relates the NIPA's to the other branches of national economic accounting.

National income and product accounting, capital finance and balance sheet accounting, and input-output accounting are the major branches of national economic accounting in the United States today. Each illuminates some aspects of the structure, workings, and performance of the economy. The NIPA's—the most widely used of the three—display the value and composition of national output and the distribution of incomes generated in its production. The capital finance accounts, better known in the United States as flow of funds accounts, show the role of financial institutions and instruments in transforming saving into investment and the changes in assets and liabilities that result from this transformation; associated balance sheet accounts present assets and liabilities at particular points in time. Input-output accounts trace the flow of goods and services among industries in the production process and show the value added by each industry and the detailed commodity composition of national ouput.

Closely related to these national accounts are international economic accounts—the balance of payments, for example—and regional economic accounts. The international accounts portray the transactions of the residents of the Nation with the residents of the rest of the world, highlighting international trade flows and the international payments mechanism. Regional accounts disaggregate the national economy by geographic subdivision and serve for the various subdivisions the purposes that the national economic accounts serve for the Nation as a whole.

The fundamental aim of national economic accounting is to provide a coherent and comprehensive picture of the Nation's economy. More specifically, national economic accountants

want to answer two questions. First, what is the output of the economy—its size, its composition, and its use? Second, what is the economic process or mechanism by which this output is produced and distributed?

The national output about which these questions are raised is defined, with a few exceptions, to be the production that is reflected in the sales and purchases of the market economy. Although, for some purposes, a broader definition that includes the nonmarket activities associated with household production is useful, it is difficult to take account of many of the activities that take place outside the market in any systematic and nonarbitrary way.

National output can be measured either by the sum of goods and services sold to final users, or by the sum of income payments and other costs; in both cases, business purchases on current account from other businesses are subtracted so that national output is an unduplicated total. National economic accountants take these two equivalent measures of output and construct from them a set of accounts showing production and distribution, consumption and saving.

The national economic accounts are aggregations of the accounts belonging to the individual transactors in the economy, whether or not formal acounting statements exist explicitly for all of them. The basic approach is to distinguish groups of economic transactors; to set up uniform types of accounts for them; and to show in these accounts the broad categories of economic transactions in which they engage. Transactors are aggregated into homogeneous groups, or sectors, the members of which are engaged in the same types of transactions and are affected by, and respond to, economic developments in a similar manner. Four sectors are commonly distinguished: (1) Business, (2) household, (3) government, and (4) foreign; for special purposes, these sectors can be disaggregated or supplemented with other groupings.

Business enterprises give rise to the bulk of national output; therefore, this introduction first derives economic accounts for a business firm from its financial statements and then establishes similar accounts for the business sector and the other sectors. The first section recasts the financial statements of a firm into a production account, an appropriation account, and a saving-investment account, the building blocks for national economic accounts. (This section assumes some familiarity with business accounting as it is presented in accounting textbooks.) The following section, using these three accounts, sets up national economic accounts for the business sector as a whole, for the other major sectors, and for the Nation, the last as a summary of the accounts for the sectors. The final section considers the branches of U.S. national economic accounting—national income and product accounting, capital finance accounting, and input-output accounting—and the relationships among them. The presentation introduces the underlying concepts and structure of the U.S. national economic accounts; it omits some entries and simplifies definitions.

Economic Accounts of a Business Firm

The economic accounts of a business firm—the building blocks for the national economic accounts—can be derived from the three accounting statements in common use for business financial reporting. The first of these is the balance sheet, which provides a picture of the condition of the firm at some particular time, usually the last day of its fiscal year. The second is the statement of income and retained earnings, which shows the firm's operating results—that is, the amount and disposition of the income arising from its activities—over the accounting period between balance sheets. The third is the statement of change in financial position, which shows the contribution of the firm's operating results to the change in its working capital.

Three simplifying assumptions are made in this introduction: (1) All business firms are corporations. (2) Firms value goods withdrawn from inventory in prices of the current accounting period. (3) Plant and equipment prices are stable over time, so that firms' charges for the use of these assets (depreciation) also are valued in prices of the current accounting period. In addition, the presentation in this introduction follows the NIPA convention that only business firms make nonfinancial investments and own fixed assets.

Table 1.—Balance Sheet of a Business Firm

December 31, 19__

Assets	Liabilities and stockholders' equity
Current assets	Current liabilities
Financial assets	Loans
Cash and equivalent	Accounts payable
Accounts receivable	
Inventories	Bonds
Securities	Stockholders' equity
	Capital stock
	Retained earnings
Fixed assets	
Plant and equipment	
Less: Accumulated depreciation	
Land	
Less: Accumulated depletion	
Total assets	Total liabilities and stockholders' equity

Business accounting statements

Balance sheet.—The basic identity underlying the balance sheet is: The value of the firm's assets is equal to the value of the liabilities and equity claims against these assets; that is,

Assets = liabilities + stockholders' equity.

Assets generally are carried at fixed values equivalent to their costs of acquisition; liabilities consist of promises to pay specified amounts of money to creditors. If total assets rise without an offsetting increase in total liabilities, stockholders' equity—the owners' claim on the assets—rises; if liabilities rise without a corresponding increase in assets, stockholders' equity falls.

On the left side of the balance sheet shown in table 1, current assets are resources that can be converted to cash or consumed within the accounting period: Currency, bank deposits, and short-term interest-bearing assets that can be easily converted to cash; short-term credit extended to customers who have received, but not yet paid for, products shipped to them; and inventories, which are stocks of raw materials, partly fabricated items (work in process), and finished goods. Securities are financial assets with maturity dates beyond the accounting period. Fixed assets consist of plant and equipment and of land. Plant and equipment are net of accumulated depreciation, a charge for the using up of these assets over time. Land includes mineral rights; it is shown net of accumulated depletion, a charge for using up exhaustible resources over time.

On the right side of the balance sheet, current liabilities are others' claims on the business firm—loans

Table 2.—Statement of Income and Retained Earnings of a Business Firm

For Year Ended December 31, 19__

Sales, net of discounts
Less: Cost of goods and services sold
Purchased materials
Purchased services
Wages and salaries
Depreciation
Depletion
Indirect business taxes
Beginning inventory
Less: Ending inventory
Equals: Operating income
Plus: Interest and dividends received
Less: Interest paid
Plus: Gains (net of losses) on sales of fixed assets and securities
Equals: Net income before tax
Less: Corporate income tax
Equals: Net income after tax
Less: Dividends paid
Equals: Additions to retained earnings

and payables to suppliers—that are due within the accounting period. Bonds are long-term debts that do not mature until after the accounting period. Stockholders' equity, the residual, consists of two parts: First, the capital contributed by owners in exchange for stock, and second, the cumulative sum of earnings retained in the business rather than paid to owners.

The balance sheet does not convey much information about the scale of the operations, the incomes generated, or indeed whether or not the owners received any payment—other than the enhanced value of their equity as represented by retained earnings—for the use of their capital. Such information can be obtained from the statement of income and retained earnings.

Income and retained earnings.—The basic identity underlying the statement of income and retained earnings is: The value of the firm's net income is equal to its revenues less its costs; that is,

Net income = revenues − costs.

In the statement of income and retained earnings shown in table 2, revenues come from sales, from investment income earned on interest- and dividend-paying securities, and from gains (net of losses) on sales of fixed assets and securities; costs include both costs of goods and services sold and the interest paid on borrowed money. Hence, net income is largely operating income, but also includes income from other sources.

The depreciation and depletion charges included in the cost of goods and services sold represent the period's addition to the cumulative depreciation and depletion appearing in the balance sheet. Indirect business taxes include sales taxes, excise taxes, and property taxes; they do not include taxes levied directly on the net income of the firm, which are shown in table 2 as corporate income tax. Finally, net income less corporate income tax and dividend payments is retained in the business and added to the retained earnings in the balance sheet.

The first six items, listed under cost of goods and services sold (purchased materials, purchased services, wages and salaries, depreciation, depletion, and indirect business taxes) are costs incurred during the current period. To convert this sum of costs incurred to the cost of the goods and services sold during the period, it is necessary (1) to add the costs incurred in previous periods in producing the goods sold and (2) to remove the costs incurred in obtaining or producing goods retained in inventory at the end of the accounting period. These adjustments are accomplished by including in cost of goods and services sold, along with current-period costs, the difference between the value of the beginning and ending inventories. In effect, cost of goods and services sold includes the value of goods withdrawn from the beginning inventory during the period, and excludes the value of goods obtained or produced during the period, but retained in ending inventory.

The statement of income and retained earnings explains the change in retained earnings between successive balance sheets; it does not deal with changes in the other entries in the balance sheet. Such information can be obtained from the statement of change in financial position.

Change in financial position.—The purpose of the statement of change in financial position is to link certain income statement and balance sheet transactions so as to show the effect of the firm's operations on its liquidity. The basic identity underlying the statement is: The change in the firm's working capital is equal to the change in its current assets less the change in its current liabilities; that is,

Table 3.—Statement of Change in Financial Position of a Business Firm

For Year Ended December 31, 19__

Change in working capital
Change in current assets
Cash and equivalent
Accounts receivable
Inventories
Less: Change in current liabilities
Loans
Accounts payable
Equals: Additions to working capital
Provided by operations
Net income after tax
Depreciation
Depletion
Less: Gains (net of losses) on sales of fixed assets and securities
Other sources
Sales of fixed assets
Sales of securities
Issues of bonds
Issues of capital stock
Less: Reductions in working capital
Dividends paid
Purchases of fixed assets
Purchases of securities
Retirements of bonds
Retirements of capital stock

Change in working capital = change in current assets. − change in current liabilities.

In the statement of change in financial position shown in table 3, the change in current assets is the sum of the changes in cash and equivalent, accounts receivable, and inventories; the change in current liabilities is the sum of the changes in loans and accounts payable.

Table 3 accounts for the change in working capital in terms of the additions provided by operations, of sales and purchases of fixed assets and securities, of payment of dividends, and of changes in bonds and capital stock outstanding. The main component of additions provided by operations is net income after tax; the depreciation and depletion charges deducted in deriving it are added, because they are internal to the firm's books and are not cash outlays affecting its financial position. The gains included in net income after tax are subtracted; they are included in the proceeds from the sales of fixed assets and securities entered under other sources elsewhere in the statement.

Derivation of the three basic economic accounts

Rearranged and modified, these accounting statements for the business firm provide the economic accounts—the production account, the appropriation account, and the saving-investment account—that are the starting point for deriving the national

Table 4.—Derivation of the Production Account of a Business Firm

Income Statement	
Uses	**Sources**
Purchased materials Purchased services Wages and salaries Depreciation Depletion Interest paid Indirect business taxes Beginning inventory *Less:* Ending inventory Net income before tax	Sales Interest and dividends received Gains (net of losses) on sales of fixed assets and securities
Charges against revenue	Total revenue
Production Account	
Uses	**Sources**
Wages and salaries Depreciation Interest paid *Less:* Interest received Indirect business taxes Profits Net income before tax *Less:* Dividends received *Less:* Gains (net of losses) on sales of fixed assets and securities *Plus:* Depletion	Gross output Sales Change in work-in-process and finished goods inventories *Less:* Consumption Purchased materials Purchased services *Less:* Change in raw materials inventories
Charges against output	Output

economic accounts. The *production account* is based on the statement of income and retained earnings, and it records the production attributable to the firm in terms of both goods and services produced and the income payments and other costs arising in production. The *appropriation account* is also based on the statement of income and retained earnings; it records the firm's income, payments of that income to the stockholders or to the government, and the income retained within the firm. The *saving-investment account* is based on the statement of change in financial position rearranged as the change in the balance sheet; it records the firm's saving, borrowing, and acquisitions of nonfinancial and financial assets. The derivation of each of these economic accounts is described in two steps: (1) The rearrangement of the business accounting statements into the T-account form and (2) the modification of the T-accounts to obtain economic accounts.

Each T-account contains the firm's sources of funds on the right side and uses of funds on the left side. In general, sources of funds are receipts or borrowings, and uses of funds are current outlays or acquisitions of assets. There are differences in perspective among the accounts, however. For example, net income is a use in the production account because it is a charge against production, but it is a source of the income to be distributed or saved in the appropriation account. Similarly, additions to retained earnings are a use of income in the appropriation account, but a source of funds to finance the acquisition of assets in the saving-investment account. In each account, total sources equal total uses, preserving the accounting identities of tables 1, 2, and 3.

Production account.—The first panel of table 4 shows the items from the income statement in table 2 rearranged in T-account form. The items from the income statement are those that establish net income before tax. The revenue items—sales, interest and dividends received, and gains (net of losses) on sales of fixed assets and securities—are entered as sources of funds on the right side; the cost items, including interest paid and net income before tax, are entered as uses of funds on the left side. The total of the sources is total revenue; the total of the uses is total charges against revenue.

To derive the firm's production account, which is shown in the second panel, the income statement T-account shown in the first panel is modified by (1) ordering the entries to establish the value of the firm's production during the accounting period, and (2) adjusting net income before tax to yield a new entry termed "profits," which is defined to be earnings arising from current production.

The first modification is necessary because total revenue, shown in the first panel, is not equal to the value of the firm's production, for the following reasons. (1) Revenues are not equivalent to sales, because the firm may have nonoperating income. (2) Sales are not equivalent to gross output, because the firm may either make sales from inventories of finished goods produced in previous periods or place current production in work-in-process or finished goods inventories. (3) Gross output is not equivalent to the value of the firm's production, because the firm may incorporate in its output (consume) materials or services purchased from other firms. Such materials may have been purchased either in the current accounting period or in a previous period.

The ordering of the entries in the income statement T-account to establish the value of the firm's production involves four steps. (1) Interest and

Table 5.—Derivation of the Appropriation Account of a Business Firm

Retained Earnings Statement	
Uses	**Sources**
Corporate income tax Dividends paid Additions to retained earnings	Net income before tax
Distribution of net income before tax and saving	Net income before tax
Appropriation Account	
Uses	**Sources**
Corporate income tax Dividends paid *Less:* Dividends received Undistributed profits Additions to retained earnings *Less:* Gains on sales of fixed assets and securities *Plus:* Depletion	Profits Net income before tax *Less:* Dividends received *Less:* Gains (net of losses) on sales of fixed assets and securities *Plus:* Depletion
Distribution of profits and saving	Profits

dividends received and gains (net of losses) on sales of fixed assets and securities are subtracted from both sides of the income statement T-account; as shown in the production account, this subtraction converts the right side to sales, and enters the receipts of interest and of dividends and the gains on sales of fixed assets and securities on the left side as negative values. (2) The inventory entries in the income statement T-account—beginning inventory less ending inventory—are combined to yield the equivalent expression.

Less: Change in inventories.

This expression is decomposed into

Less: Change in raw materials inventories
+change in work-in-process and finished goods inventories.

(3) The change in work-in-process and finished goods inventories is added to both sides of the income statement T-account. This addition converts the right side to gross output—the sum of sales and change in work-in-process and finished goods inventories—and cancels the work-in-process and finished goods component of the inventory entries on the left side. (4) On the left side of the income statement T-account, the sum

Purchased materials *plus* purchased services *less* the change in raw materials inventories

equals the consumption of materials and services by the firm during the accounting period. The consumption of materials and services is subtracted

Table 6.—Derivation of the Saving-Investment Account of a Business Firm

Change in Balance Sheet

Uses	Sources
Change in current assets	Change in current liabilities
Financial assets	Loans
Cash and equivalent	Accounts payable
Accounts receivable	Change in bonds
Inventories	Issues of bonds
Change in securities	*Less:* Retirement of bonds
Purchases of securities	Change in stockholders' equity
Less: Sales of securities	Change in capital stock
Plus: Gains (net of losses) on securities	Issues of capital stock
Change in fixed assets	*Less:* Retirement of capital stock
Change in plant and equipment	Additions to retained earnings
Purchases of plant and equipment	Net income after tax
Less: Sales of plant and equipment	*Less:* Dividends paid
Plus: Gains (net of losses) on sales of plant and equipment	
Less: Depreciation	
Change in land	
Purchases of land	
Less: Sales of land	
Plus: Gains (net of losses) on sales of land	
Less: Depletion	
Change in total assets	Change in total liabilities and in stockholders' equity

Saving-Investment Account

Uses	Sources
Purchases of plant and equipment	Undistributed profits
Less: Sales of plant and equipment	Additions to retained earnings
Purchases of land	*Less:* Gains (net of losses) on sales of fixed assets and securities
Less: Sales of land	*Plus:* Depletion
Change in inventories	Depreciation
Net acquisitions of financial assets	
Change in current financial assets	
Plus: Purchases of securities	
Less: Sales of securities	
Less: Net increase in liabilities	
Change in current liabilities	
Plus: Issues of bonds and capital stock	
Less: Retirement of bonds and capital stock	
Gross investment	Gross saving

from both sides of the income statement T-account. As shown in the production account, this subtraction converts the right side to the value added by the firm and cancels the components of consumption on the left side.

The second modification to the income statement T-account is necessary because net income before tax is not equal to profits, that is, earnings arising from current production. Profits exclude dividends received and gains (net of losses) on the sale of fixed assets and securities. Moreover, they differ from the operating income shown in the income statement because of the treatment of natural resources in the national economic accounts. Natural resource discoveries are not considered to be capital formation in the national economic accounts; consequently, a charge for the using up of these discoveries is not an appropriate charge against production. Therefore, profits include the depletion charges that are deducted in measuring net income before tax. Profits equal net income before tax plus depletion, less dividends received, and less gains (net of losses) on sales of fixed assets and securities.

The resulting production account shows, on the right side, the value of the firm's production in terms of goods and services produced and, on the left, the value added by the firm in terms of income payments and other costs.

For most purposes, it is useful to simplify the presentation of the production account by rearranging terms and dropping some detail, as shown in the first panel of table 7. On the right side, the term "consumption" has disappeared and the change in raw materials inventories has been combined with the change in work-in-process and finished goods inventories. On the left side, the detail under profits has been dropped, and depreciation has been renamed "capital consumption allowances" to introduce the standard terminology of the national economic accounts. (In this introduction, depreciation and capital consumption alowances can be considered equivalent.) The production account of the firm, as shown in table 7, serves as the basis for the production account for the business sector and for the Nation as a whole.

Appropriation account.—The first panel of table 5 shows the items from the statement of retained earnings in table 2 rearranged in T-account form. The item "net income before tax" is entered in the retained earnings T-account of table 5 as a source of funds; the items "corporate income tax," "dividends paid," and "additions to retained earnings" are entered as uses of funds.

To derive the firm's appropriation account, the retained earnings T-account is modified by adjusting net income before tax and its components to conform to profits as defined in the production account. Dividends received and gains (net of losses) on sales of fixed assets and securities are subtracted from both sides of the account, and depletion is added to both sides. The adjustments define a new residual entry "undistributed profits," which includes additions to retained earnings and depletion charges and excludes gains (net of losses) on the sales of fixed assets and securities.

Table 7.—Economic Accounts of a Business Firm

Production Account

Uses	Sources
Wages and salaries	Sales
Capital consumption allowances	Change in inventories
Interest paid	*Less:* Purchased materials and services
Less: Interest received	
Indirect taxes	
Profits	
Charges against output	Output

Appropriation Account

Uses	Sources
Profits taxes	Profits
Dividends paid	
Less: Dividends received	
Undistributed profits	
Distribution of profits and saving	Profits

Saving-Investment Account

Uses	Sources
Plant and equipment purchases	Undistributed profits
Purchases of land	Capital consumption allowances
Less: Sales of plant and equipment	
Less: Sales of land	
Change in business inventories	
Net acquisitions of financial assets	
Less: Net increase in liabilities	
Gross investment	Gross saving

Table 7 shows, in the second panel, a simplified presentation of the appropriation account. On the left side, the detail under undistributed profits has been dropped, and corporate income tax has been renamed "profits taxes" to move toward the terminology of the national economic accounts.

Saving-investment account.—The first panel of table 6 shows the items from the statement of change in financial position (in table 3) rearranged in T-account form to display the change in each entry in the balance sheet (in table 1) over the accounting period. The entries for changes in current assets and in current liabilities are those in the statement of change in financial position. The change in holdings of securities consists of purchases, less sales, and plus gains (net of losses) on sales of securities; similary, the change in bonds outstanding consists of issues less retirements. The change in fixed assets consists of purchases, less sales, less depreciation and depletion charges, and plus gains (net of losses) on sales of fixed assets. Finally, the change in retained earnings consists of net income after tax less dividends.

To derive the firm's saving-investment account, the change in balance sheet T-account is modified so that it shows on the right side the part of the profits that the firm saves, and on the left side, the disposition of that saving in terms of investment. Both saving and investment are defined to be gross of depreciation: Saving includes depreciation as well as undistributed profits; and purchases of fixed assets include replacement of plant and equipment as well as additions.

The modifications necessary to obtain saving from profits and the disposition of that saving are listed below. (1) Depletion is added to both sides of the change in balance sheet T-account and gains (net of losses) on sales of fixed assets and securities are subtracted from both sides; as shown in the saving-investment account, these changes introduce undistributed profits, as defined in the appropriation account, on the right side and cancel the entries on the left side. (2) Depreciation is added to both sides of the change in balance sheet T-account; as shown in the saving-investment account, this addition introduces gross saving on the right side and cancels the entry on the left side. (3) Entries for change in current financial assets and purchases and sales of securities on the left side of the change in balance sheet T-account are regrouped to show, on the left side of the saving-investment account, a new entry "net acquisitions of financial assets," consisting of the change in current financial assets, plus purchases of securities, less sales of securities. (4) On the right side of the change in balance sheet T-account, regrouping yields a new entry "net increase in liabilities," consisting of the change in current liabilities, plus issues of bonds and capital stock, less retirements of bonds and capital stock; subtracting this entry from both sides cancels it on the right side and enters it on the left side of the saving-investment account as a negative value.

The simplified saving-investment account is shown in the third panel of table 7. Detail is suppressed under net acquisitions of financial assets and net increase in liabilities on the left

Table 8.—Sector Accounts

[Billions

BUSINESS				HOUSEHOLD				GOVERN	
Production Account				Production Account				Production	
Uses		Sources		Uses		Sources		Uses	
Wages and salaries	110	Sales		Wages and salaries	5	Sales to consumers	5	Wages and salaries	20
Capital consumption allowances.	10	To consumers	125						
Net interest		To government	25						
Interest paid		To business of plant and equipment	25						
To households	6	To foreigners of goods and nonfactor services	20						
To government	2	*Less:* Purchases from foreigners of goods and nonfactor services	10						
To foreigners	5	Change in inventories	5						
Less: Interest received									
From foreigners	3								
From households	4								
From government	1								
Indirect taxes	10								
Profits	55								
Charges against gross business product.	190	Gross business product	190	Charges against gross household product.	5	Gross household product	5	Charges against gross government product.	20
Appropriation Account				Appropriation Account				Appropriation	
Uses		Sources		Uses		Sources		Uses	
Profits tax	20	Profits	55	Personal taxes	20	Wages and salaries received		Purchases	
Dividends paid				Purchases		From business	110	From business	25
To households	10			From business	125	From households	5	From government	20
To foreigners	5			From households	5	From government	20	Transfer payments	
Less: Dividends received from foreigners	5			Interest paid		Interest received		To persons	10
Undistributed profits	25			To business	4	From business	6	To foreigners	2
				To government	1	From government	4	Interest paid	
				To foreigners	5	From foreigners	5	To business	1
				Saving	15	Dividends received		To households	4
						From business	10	To foreigners	3
						From foreigners	5	Surplus or deficit (−)	−10
						Transfer payments	10		
Distribution of profits and saving.	55	Profits	55	Personal taxes, outlays, and saving.	175	Personal income	175	Government expenditures and surplus or deficit (−).	55
Saving-Investment Account				Saving-Investment Account				Saving-	
Uses		Sources		Uses		Sources		Uses	
Plant and equipment purchases.	25	Undistributed profits	25	Net acquisitions of financial assets.	39	Saving	15	Net acquisitions of financial assets.	5
Change in inventories	5	Capital consumption allowances.	10	*Less:* Net increase in liabilities	24			*Less:* Net increase in liabilities	15
Net acquisitions of financial assets.	105								
Less: Net increase in liabilities	100								
Gross investment	35	Gross saving	35	Gross investment	15	Gross saving	15	Gross investment	−10

side and under undistributed profits on the right side.

Sector and National Economic Accounts

The three accounts for a business firm shown in table 7—production, appropriation, and saving-investment—form the basis of the national economic accounts. Accounts must now be designed for the major economic groups that are distinguished in a national economic accounting system; these sectors are business, household, government, and foreign.

First, accounts for the business sector will be derived from the corresponding accounts of the single business firm. Then, accounts for the other types of economic transactors will be established; the pattern for these accounts will follow closely the three accounts for the business sector. The *production account* records the production attributable to a sector, in terms of both goods and services and the income payments and other costs arising from production. The *appropriation account* records the sources of the sector's income, its current outlays, and its saving. The *saving-investment account* records the sector's gross saving and gross investment, the latter defined as net acquisitions of assets less the net increase in liabilities. Taken together, these sector accounts constitute a double-entry system in which a use recorded in one account for one sector is also recorded as a source in another of the sector's accounts or as a source in an account for another sector.

In constructing national economic accounts, it is necessary to add together corresponding accounts belonging to two or more transactors and, occasionally, to add together two or more accounts belonging to the same transactor. In the aggregate account, an entry may occur twice, either once on each side of the account, or twice—with opposite signs—on the same side. If such entries are netted out, the aggregate account is a consolidated account; if these cancellations are not made, the aggregate account is a combined account.

and National Summary

of dollars]

MENT		FOREIGN			NATION		
Account		Production Account			Production Account		
Sources		Uses		Sources	Uses		Sources
Sales to government	20	Dividends paid by foreigners		Sales to foreigners of factor services. 20	Wages and salaries	185	Sales to
		To business	5	*Less:* Purchases from foreigners of factor services. 15	Capital consumption allowances.	10	Consumers 130
		To households	5		Net interest	5	Government 45
		Interest paid by foreigners			Interest paid by business		Business of plant and equipment. 25
		To business	3		To households	6	Foreigners of goods and services. 40
		To households	5		To governments	2	*Less:* Purchases from foreigners of goods and services 25
		To government	2		Interest paid by foreigners		Change in business inventories 5
		Less: Dividends received by foreigners from business.	5		To households	5	
		Less: Interest received by foreigners			To government	2	
		From business	5		*Less:* Interest received by business		
		From households	5		From households	4	
					From government	1	
					Less: Interest received by foreigners from households	5	
					Indirect business taxes	10	
					Profits	60	
					Business profits	55	
					Dividends paid by foreigners	10	
					Less: Dividends received by foreigners from business.	5	
Gross government product	20	Charges against gross foreign product.	5	Gross foreign product 5	Charges against gross national product.	220	Gross national product 220
Account		Appropriation Account			Appropriation Account		
Sources		Uses		Sources	Uses		Sources
Indirect business taxes	10	Purchases from business of goods and nonfactor services.	20	Sales to business of goods and nonfactor services. 10	Purchases		Wages and salaries 133
Profits tax	20	Purchases from residents of factor services.	20	Sales to residents of factor services. 15	By consumers	130	Net interest 5
Personal taxes	20	Saving	−10	Transfer payments from government. 2	By government	45	Indirect business taxes 10
Interest received				Interest received from government. 3	By foreigners	40	Profits 60
From business	2				*Less:* Purchases from foreigners.	25	
From households	1				Undistributed profits	25	
From foreigners	2				Personal saving	15	
					Government surplus or deficit (−).	−10	
					Foreign saving	−10	
Government receipts	55	Foreign expenditures and saving.	30	Foreign receipts 30	Consumption and net saving	210	Net national product 210
Investment Account		Saving-Investment Account			Saving-Investment Account		
Sources		Uses		Sources	Uses		Sources
Surplus or deficit (−)	−10	Net acquisitions of financial assets.	3	Saving −10	Plant and equipment purchases.	25	Undistributed profits 25
		Less: Net increase in liabilities	13		Change in business inventories	5	Personal saving 15
					Net acquisitions of financial assets.	152	Government surplus or deficit (−) −10
					Less: Net increase in liabilities	152	Foreign saving −10
							Capital consumption allowances. 10
Gross saving	−10	Gross investment	−10	Gross saving −10	Gross investment	30	Gross saving 30

Business sector

Accounts for the business sector are obtained by adding together for all business firms each type of account shown for the individual firm in table 7. The accounts are prepared on a consolidated basis. The entries for a transaction between two business firms cancel, leaving only transactions between the business sector and other sectors. The business sector accounts, with hypothetical numbers, are shown in the business column of table 8.

Business production account.—On the left side of the production account for the business sector, there are no intrasector transactions for wages and salaries, for capital consumption allowances, and for indirect taxes. Therefore, each entry is the sum of the entries in the individual firms' production accounts.

For interest and profits, there are intrasector payments and receipts that cancel. The interest paid by one firm to another is canceled by the receipt of that payment by the other firm, leaving as a consolidated entry "net interest"—the business sector's interest payments to, less its interest receipts from, the other sectors. Similarly, the consolidated entry for profits represents profits available either to be distributed to other sectors or to be saved by the business sector; the component of profits representing dividends paid by one firm to another is canceled by the corresponding dividend receipt.

On the right side, there are no intrasector transactions for the change in business inventories; the entry is the sum of the entries for the individual firms. For purchased materials and services and for sales, intrasector payments and receipts cancel; the purchase of materials and services by one firm on current account is canceled by the corresponding sale by another firm. The only purchases of materials and services that do not cancel are those from foreigners (imports). The consolidated entry for sales consists of sales to households as consumers, to government, to business (of plant and equipment), and to foreigners (exports).

The totals of the sources and of the uses in the business sector production account are designated "gross business product" and "charges against gross business product," respectively. They are equal to the sum of the values added by the individual business firms.

Business appropriation account.—On the left side of the business appropriation account, dividends paid by one firm to another cancel; the entry thus consists of dividends paid by the business sector to other sectors. Dividends received from foreigners do not cancel, however, and are shown as a negative item. For the remaining entries, there is no cancellation.

On the right side, the profits entry is net of dividends received from foreigners and from other business firms, as it was in the production account.

Business saving-investment account.—Because of the convention that all nonfinancial investment is made by the business sector, all transactions in existing fixed assets are intrasector transactions. Consequently, on the left side of the saving-investment account, purchases of land and of existing plant and equipment by one firm are canceled by the sales of those assets by other firms. The plant and equipment purchases that remain are those of newly produced goods, equal to the sales to business of plant and equipment recorded in the business sector's production account.

Purchases of financial assets by one firm from another cancel; the entry for net acquisition of financial assets represents the business sector's net acquisitions of newly issued assets and assets acquired from other sectors. The business sector's entry for net increase in liabilities represents the difference between new issues and retirements of current liabilities, bonds, and capital stock, summed over all firms. In some presentations of saving-investment accounts, the difference between net acquisitions of financial assets and net increase in liabilities is shown instead of separate entries. Separate entries are shown in table 8, however, to facilitate the presentation of capital finance accounting later.

Household sector

Sector accounts closely resembling those for business can be constructed for the household sector, which consists of households and the nonprofit institutions serving them. Most of the transactions of the household sector appear in the appropriation and saving-investment accounts. The following discussion of these accounts deals immediately with the sector accounts, which are consolidated from accounts that can, in principle, be established for individual households.

Household production account.—The household production account, shown in the household column of table 8, is used to record as production the services rendered by paid household workers and the services rendered by nonprofit institutions serving households. Interest paid on consumer debt is not recorded here because it is not regarded as a payment for a productive service in the U.S. national economic accounts. The illustration in table 8 is limited to the recording of services rendered by paid household workers.

In accounting for the productive services rendered by paid household workers, the wages and salaries paid by employers are entered as a use of funds on the left side of the account, as was done in the business production account. On the right side, the sale of the services by paid household workers to their employers is entered as a source of funds; it represents the value of the services produced, on the assumption that the only costs of production are the wages paid to obtain the services. This entry is analogous to the entry of sales as a source of funds in the business production account, although the procedure appears somewhat artificial because household production lacks the clear distinction between the sales and wage transactions characteristic of business production.

Household appropriation account.—The household appropriation account resembles the corresponding business account in that both show the income of the sector, detail the outlays, and derive the balance that is saved. The two accounts differ substantially, however, in the sources of income and the nature of the outlays. Although business income is derived from the operations of the business system, household income is derived primarily from payments by business and other sectors. The main category of expenditures in the household account is consumer purchases; this item has no counterpart in the business account, in which taxes and dividends are the main categories of expenditures. The household appropriation account also

records the sector's payment and receipt of interest, items recorded in the business sector's production account rather than its appropriation account.

Income received by the household sector is entered on the right side of the household appropriation account. The wages and salaries of paid household workers are entered as a component of household receipts of wages and salaries, an entry that continues the accounting for household production begun in the production account. Income received from the business sector—wages and salaries, interest, and dividends—has already been discussed. The income from other sectors consists of wages and salaries received from government, interest received from government and from foreigners, dividends received from foreigners, and government transfer payments. The last category consists of items such as retirement income and unemployment benefits that do not involve, as quid pro quo, the rendering of productive services by the recipient during the accounting period. The total of the sources—incomes received—is designated "personal income."

On the left side of the household appropriation account, personal taxes—primarily income taxes—are the first category of outlay. Most of household purchases, the next category, are sales by business, which also appear as a source of funds in the business production account; the services rendered by paid household workers are entered as a purchase from households, an entry that completes the accounting for household production. The remaining outlay is household interest payments to business, to government, and to foreigners.

The final entry is saving, which is derived as the difference between personal income and the sum of personal taxes, consumer purchases, and interest payments.

Household saving-investment account.—In the household saving-investment account, net acquisitions of financial assets represent the household sector's net acquisitions of financial assets from other sectors; purchases of assets by one household from another cancel in the consolidation. Net increase in liabilities represents new borrowing less repayment of debt, summed over all households.

Consistent with the convention that business makes all nonfinancial investment, all saving in the household sector is defined to be in financial form; it does not include any investment in nonfinancial assets. Although several types of assets might be considered to be household sector investment, they are defined to be either consumption by the household sector or investment by the business sector. For example, household expenditures on durables—automobiles, refrigerators, and the like—are defined to be consumption; homeowners' investment in residential property is defined to be business investment.

Government sector

Sector accounts for government can be constructed by consolidating the budget statements of the various governmental units in the Nation. As in the household sector, most of the transactions appear in the appropriation and saving-investment accounts; government production is confined to the services rendered by government employees.

Government production account.—The government production account, shown in the government column of table 8, is used to record as production the services rendered by government employees, using an approach similar to that used in the household sector to record the output of paid household workers. On the left side of the government production account, wages and salaries paid by the government to its employees are entered as a use of funds. On the right side, the sale of the services of government employees to the government is entered as a source of funds. These sales to government appear in the government appropriation account, under the heading "purchases from government." The wages have already appeared in the household appropriation account under wages and salaries received.

Government interest payments are not considered to be payments for a productive service; they are, therefore, not recorded in the government production account.

Government appropriation account.—The government appropriation account is used to record the receipts and expenditures of the government. On the right side, the categories of income consist of taxes collected from the business and household sectors and of interest received from business, households, and foreigners. The total of these items is termed "government receipts."

On the left side, the categories of expenditures consist of purchases from business and from government, the latter equal to the wages and salaries paid to government employees; of transfer payments to persons and to foreigners; and of interest paid to business, to households, and to foreigners. The final entry is government surplus (or deficit), which is derived as the difference between government receipts and government expenditures.

Government saving-investment account.—In the government saving-investment account, the entry for net acquisitions of financial assets represents the government sector's net purchases of assets from other sectors; purchases by one unit of government from another cancel. The net increase in liabilities is new issues of debt less retirement of debt, summed over all units of government.

Consistent with the convention that business makes all nonfinancial investment, all government saving is defined to be in financial form. Government acquisitions of nonfinancial assets—plant and equipment purchases and change in inventories—are defined to be consumption and included in government purchases.

Foreign sector

Foreign production account.—The output considered so far is produced within the territory of the Nation. It is usually called the domestic, or geographic, product. However, another measure is featured in the national economic accounts of the United States. It is the national product, a measure of the output on which residents of the Nation have a claim. It includes output produced in the foreign sector as well as in the domestic sectors.

To obtain the national product, the output produced abroad by the Nation's residents must be added to output produced domestically, and the output produced domestically by foreigners must be subtracted. The value of the output produced abroad is measured by the Nation's receipts of factor income from abroad—in this introduction, interest and dividends from abroad. Similarly, the value of the part of domestic output produced

Table 9.—Foreign Production Account Derived From Two Production Accounts

[Billions of Dollars]

Production account for output produced abroad by residents		*Less*	Production account for output produced domestically by foreigners		*Equals*	Foreign production account	
Uses	Sources		Uses	Sources		Uses	Sources
Dividends paid by foreigners 10 Interest paid by foreigners 10	Sales to foreigners of factor services 20		Dividends received by foreigners 5 Interest received by foreigners 10	Purchases from foreigners of factor services 15		Dividends paid by foreigners 10 Interest paid by foreigners 10 *Less:* Dividends received by foreigners 5 *Less:* Interest received by foreigners 10	Sales to foreigners of factor services 20 *Less:* Purchases from foreigners of factor services 10
Charges against gross product 20	Gross product 20		Charges against gross product 15	Gross product 15		Charges against gross foreign product 5	Gross foreign product 5

by foreigners is measured by the Nation's payments of factor income to them. In the terminology of national economic accounting, national product equals domestic product plus the product originating in the foreign sector. The latter, usually called product originating in the rest of the world, is measured by the Nation's receipts of factor income from abroad less its payments of factor income to foreigners.

In table 9, the foreign production account is shown as the difference between two production accounts, one of which records output produced abroad by the Nation's residents, and the other the output produced domestically by foreigners. In the production account for output produced abroad by residents, dividends and interest paid by foreigners are entered, as a use of funds, on the left side; and the sale to foreigners of factor services—that is, the services for which factor income is paid—is entered, as a source of funds, on the right side. In the production account for output produced domestically by foreigners, dividends and interest received by foreigners are entered, as a use of funds, on the left side; and the purchase from foreigners of factor services is entered, as a source of funds, on the right side.

The difference between these two accounts is the foreign production account, shown in the foreign column of table 8; it records the net product originating in the foreign sector. The interest and dividend receipts and payments in the foreign production account have already appeared in the business production and appropriation accounts and in the household and government appropriation accounts; the sales and purchases of factor services are entered in the foreign appropriation account.

Foreign appropriation and saving-investment accounts.—The foreign appropriation account records the receipts and expenditures of foreigners in their dealing with residents of the Nation.

On the right side, receipts consist of sales by foreigners of goods and of factor and nonfactor services to the Nation (imports), of transfer payments, and of interest received from government.

On the left side, expenditures consist of foreigners' purchases of goods and nonfactor services from business and of factor services from residents (exports). Saving, the final entry on the left, is derived, as usual, as the difference between receipts and expenditures.

The design of the foreign saving-investment account follows previously established procedures, with all saving by foreigners defined to be in financial form.

Summary national accounts

The national economic accounting system as presented so far does not provide a summary for the Nation as a whole. One such summary set of accounts, described in this section, is obtained by consolidating, for the four sectors, each of the three accounts. Other configurations that provide national summaries are taken up in the next section.

National production account.—The national production account shown in table 8 is obtained by consolidating the sector production accounts; only two cancellations are involved, both in interest.

On the right side, sales to consumers consist of sales by the business and household sectors; sales to government consist of sales by the business and government sectors; and sales to foreigners consist of sales by the business sector of goods and nonfactor services and sales by residents of factor services. Sales to business of plant and equipment and change in business inventories are carried over directly from the business production account to the national account. Finally, purchases from foreigners consist of purchases by the business sector of goods and nonfactor services and purchases by residents of factor services.

On the left side, wages and salaries consist of those paid by the business, the household, and the government sectors. Capital consumption allowances and indirect business taxes are carried over directly from the business production account. Net interest is defined as interest paid less interest received; it consists of payments of interest to households and government by both business and foreigners less the interest received by business and foreigners from households and government (other than government interest payments to foreigners). In the consolidation, interest paid by business to foreigners is canceled by the negative entry for interest received by foreigners from business; and interest paid by foreigners to business is canceled by the negative entry for interest received by business from foreigners. Profits are the sum of business profits and payments of dividends by foreigners, less the dividends received by foreigners.

The totals of the sources and of the uses are the gross national product (GNP) and the charges against gross national product, respectively. GNP measures the Nation's output in terms of goods and services. The charges against GNP measure the Nation's output in terms of income payments and other costs.

National appropriation account.—The consolidation of the sector appropriation accounts involves several cancellations. Payments of profits taxes in the business sector cancel the receipts in the government sector.

Likewise, personal taxes paid and received cancel in the household and government sectors, and transfer payments paid and received also cancel in the government, household, and foreign sectors.

On the right side of the national appropriation account, the derivation of the entries for wages and salaries and indirect business taxes has already been described. In aggregating the profits transactions, dividends paid by business to households cancel when the accounts for these two sectors are consolidated. After this cancellation, the profits entries that would remain on the left side of the national appropriation account are dividends paid by business to foreigners less dividends paid by foreigners to business; those that would remain on the right side are business profits and dividends paid by foreigners to households. Subtracting the entries on the left from both sides of the national appropriation account leaves, on the right side of table 8, the profits total shown in the national production account. In aggregating the interest transactions, those between the household and government sectors cancel, as do government interest payments to foreigners, leaving in the national account interest payments by the business and foreign sectors to households and government less interest payments by the household and government sectors to business and by the household sector to foreigners—net interest as defined in the national production account. Sources of funds, therefore, consist of wages and salaries, net interest, indirect business taxes, and profits.

On the left side, the entries consist of purchases—consumer purchases, government purchases, and foreign purchases—less purchases from foreigners, and the various types of saving—undistributed business profits, personal saving, government surplus or deficit, and foreign saving; all of these items are carried over directly from the sector accounts.

The total of the sources is the net national product, which represents the Nation's output after allowing for the using up of plant and equipment in the business sector; the total of the uses is consumption and net saving.

National saving-investment account.—In the consolidation of the sector saving-investment accounts, the total of net acquisitions of financial assets for the Nation as a whole must equal the total net increase in liabilities; the entries, equal in size, cancel in summing the uses. The total of the uses is gross investment, which consists of business purchases of plant and equipment and change in business inventories. The total of the sources is gross saving, which consists of the saving of each sector.

Branches of National Economic Accounting

In the United States, the major branches of national economic accounting are national income and product accounting, capital finance accounting, and input-output accounting. Each of these is a specialized configuration of the sector accounts in table 8.

National income and product accounting

Of the three, the national income and product accounting system has gained the widest prominence because it has the greatest general usefulness. Table 10 presents a simplified version of the U.S. national income and product accounts (NIPA's).

The first account in the NIPA system is the national income and product (NIP) account; it is a consolidation of the sector production accounts and the business appropriation account. On the left side, the inclusion of the business appropriation account in the consolidation replaces business profits in the national production account by its components—profits tax, dividends (net of dividends received), and undistributed profits; the total of the uses is not disturbed, and continues to equal charges against GNP. In the NIP account, sales to foreigners are termed "exports" and purchases from foreigners are termed "imports"; imports are subtracted from exports, and the result is entered as net exports. Again the total of the sources measures GNP.

The second account, the personal income and outlay account, is the

Table 10.—National Income and Product Accounts

[Billions of dollars]

I. National Income and Product Account			
Wages and salaries	135	Personal consumption expenditures	130
Profits		Gross private domestic investment	30
Profits tax	20	Fixed investment	25
Dividends paid (net)	15	Change in business inventories	5
Undistributed profits	25	Net exports of goods and services	15
Net interest	5	Exports	40
Indirect business taxes	10	*Less:* Imports	25
Capital consumption allowances	10	Government purchases of goods and services	45
Charges against gross national product	220	Gross national product	220
II. Personal Income and Outlay Account			
Personal tax payments	20	Wages and salaries	135
Personal consumption expenditures	130	Dividends	15
Interest paid	10	Personal interest income	15
Personal saving	15	Transfer payments	10
Personal taxes, outlays, and saving	175	Personal income	175
III. Government Receipts and Expenditures Account			
Purchases of goods and services	45	Personal tax payments	20
Transfer payments		Indirect business taxes	10
To persons	10	Profits tax	20
To foreigners	2		
Net interest paid	3		
Surplus or deficit(−)	−10		
Government expenditures and surplus	50	Government receipts	50
IV. Foreign Transactions Account			
Exports of goods and services	40	Imports of goods and services	25
		Transfer payments	2
		Interest received from government	3
		Net foreign investment	10
Receipts from foreigners	40	Payments to foreigners	40
V. Gross Saving and Investment Account			
Gross private domestic investment	30	Undistributed profits	25
Net foreign investment	10	Personal saving	15
		Government surplus	−10
		Capital consumption allowances	10
Gross investment	40	Gross saving	40

Table 11.—Modified Saving-Investment Accounts of the Business Sector

[Billions of dollars]

Business

Uses		Sources	
Plant and equipment purchases	25	Gross saving	35
Change in business inventories	5	Undistributed profits	25
Net acquisitions of financial assets	105	Capital consumption allowances	10
Deposits	15	Net increase in liabilities	100
Loans	54	Deposits	55
Securities	27	Loans	22
Trade credit	9	Securities	14
		Trade credit	9
Gross investment and funds supplied	135	Gross saving and funds raised	135

Nonfinancial Business

Uses		Sources	
Plant and equipment purchases	25	Gross saving	25
Change in business inventories	5	Undistributed profits	15
Net acquisitions of financial assets	30	Capital consumption allowances	10
Deposits	15	Net increase in liabilities	35
Loans	1	Loans	20
Securities	5	Securities	6
Trade credit	9	Trade credit	9
Gross investment and funds supplied	60	Gross saving and funds raised	60

Financial Institutions

Uses		Sources	
Plant and equipment purchases	0	Gross saving	10
Change in business inventories	0	Undistributed profits	10
Net acquisitions of financial assets	75	Capital consumption allowances	0
Deposits	0	Net increase in liabilities	65
Loans	53	Deposits	55
Securities	22	Loans	2
Trade credit	0	Securities	8
		Trade credit	0
Gross investment and funds supplied	75	Gross saving and funds raised	75

household appropriation account; it is carried over directly from table 8. The third account, the government receipts and expenditures account, is the government appropriation account. In this account, interest receipts are subtracted from both sides so that the interest entry on the left side is net interest paid; therefore, total receipts, as well as total expenditures and surplus, are less than the table 8 totals.

The fourth account—the foreign transactions account—is a consolidation of the foreign appropriation and saving-investment accounts. Some entries are carried over directly from table 8—receipts from foreigners (exports) on the left side and payments to foreigners (imports, transfer payments, and interest paid by government) on the right side; the entries for foreign saving cancel when the foreign appropriation and saving-investment accounts are consolidated. However, the perspective on saving is reversed from that in the foreign saving-investment account in table 8, which highlighted foreigners' acquisition of claims against the United States (net of U.S. claims on foreigners). In the NIPA foreign transactions account, foreigners' net acquisitions of financial assets and the net increase in foreign liabilities are subtracted from both sides; the resulting entry on the right side, termed "net foreign investment," is equal to the net increase in liabilities of foreigners to the United States less foreigners' net acquisition of financial assets that are U.S. liabilities.

The fifth account, the gross saving and investment account, is a consolidation of the saving-investment accounts of the three domestic sectors. On the left side, the entries for undistributed profits, personal saving, government surplus, and capital consumption allowances are carried over directly from the sector accounts. On the right side, gross private domestic investment is the sum of business plant and equipment purchases and the change in business inventories. In the process of consolidation of the financial entries, financial assets that represent claims on other domestic sectors cancel liabilities that represent obligations to other domestic sectors, but claims on foreigners and liabilities to them do not. Therefore, the last item on the left side of the gross saving and investment account is net foreign investment—the Nation's net acquisitions of claims on foreigners less the net increase in its liabilities to them; it is the entry in the foreign transactions account.

This overview of the NIPA system takes numerous shortcuts to simplify the presentation. Most importantly, it has assumed away both the treatment of noncorporate business and the adjustments necessary to convert the historical prices used in business accounting for inventories and depreciation to the desired current-price valuation. It has also omitted the treatment of homeownership, nonprofit institutions, government enterprises, financial institutions, secondhand goods, and the several types of nonmarket transactions that are included in the NIPA's. These topics will be taken up in a future paper.

The origin of the NIPA system's configuration of accounts is pragmatic. The information presented was selected because of its importance for economic analysis. The NIP account preserves the detail of the business appropriation account, but suppresses detail on sector production accounts because production outside the business sector is limited. The household appropriation account and the government appropriation account are shown separately because the behavior of these sectors is important in economic analysis. The first account presents information on the income, expenditures, and saving of consumers; and the second provides a government budget integrated with the rest of the national economic accounts. Because of the interest that attaches to foreign transactions, a separate foreign account is presented, but no important information is lost by the consolidation of the foreign appropriation and saving-investment accounts.

In order to present a simple and easily understood system centered on an unduplicated measure of production, the NIPA's do not show some information that is useful in more specialized analyses. This information can be found in other sets of accounts that complement the NIPA's: The capital finance accounts and the input-output accounts.

Capital finance accounting

The need for more information on saving and investment than that presented in the NIPA system is filled by capital finance accounting.

Capital finance accounts present the information in the sector saving-investment accounts in such a way as to illuminate the process by which financial institutions and financial markets transform the economy's savings into investment. By presenting considerably greater detail on both sectors and types of financial assets and liabilities than that shown in the saving-investment accounts in table 8, these accounts show the funds available to each sector from saving or borrowing, the transfer of funds among sectors by lending and borrowing, and the use of these funds for investment.

Table 11 illustrates the modifications that are made to the saving-investment accounts shown in table 8 in setting up capital finance accounts; these modifications reintroduce the kinds of detail suppressed in deriving the saving-investment account of the business firm in tables 6 and 7. The illustration is based on the business sector account; similar modifications are made in the accounts of other sectors. (1) The change in liabilities is added to each side of the saving-investment account to convert the left side to investment and funds supplied and the right side to saving and funds raised. (2) The entries for net acquisition of financial assets and net increase in liabilities are disaggregated to show four types of financial instruments corresponding to the financial assets and liabilities shown in tables 1 and 3: Deposits, the major constituent of cash positions; loans; securities, including both stocks and bonds, as well as any short-term interest-bearing assets included in business cash positions; and trade credit—accounts receivable and payable. (3) The sector is deconsolidated to show separate accounts for nonfinancial business and for financial institutions.

Table 12.—Accounts for Financial Instruments

[Billions of dollars]

Deposits

Uses		Sources	
Nonfinancial business	15	Financial institutions	55
Household	35		
Government	3		
Foreign	2		
Funds supplied	55	Funds raised	55

Loans

Uses		Sources	
Nonfinancial business	1	Nonfinancial business	20
Household	0	Household	24
Government	1	Government	0
Foreign	0	Foreign	9
Financial institutions	53	Financial institutions	2
Funds supplied	55	Funds raised	55

Securities

Uses		Sources	
Nonfinancial business	5	Nonfinancial business	6
Household	4	Household	0
Government	1	Government	15
Foreign	1	Foreign	4
Financial institutions	22	Financial institutions	8
Funds supplied	33	Funds raised	33

Trade Credit

Uses		Sources	
Nonfinancial business	9	Nonfinancial business	9
Funds supplied	9	Funds raised	9

In table 12, data from the modified saving-investment accounts for all sectors are arranged to show their transactions in each type of financial instrument. The left side of the account for an instrument records the funds supplied by the lending sectors; the right side records the funds raised in this form by the borrowing sectors. The totals of the funds supplied and raised are equal.

Table 12 shows the nonfinancial sectors acquiring deposit balances—a use of funds for lenders—and financial institutions incurring deposit liabilities—a source of funds for borrowers. For loans and securities, each sector is shown as both lender and borrower, acquiring claims on other sectors by supplying funds—a use—and issuing liabilities to other sectors by raising funds—a source. Trade credit, in this illustration, is confined to the nonfinancial business sector.

The role of financial intermediation is pictured completely only when the accounts in tables 11 and 12 are brought together in a matrix such as

Table 13.—Capital Finance Matrix

[Billions of dollars]

Transaction category \ Sector	Nonfinancial business		Household		Government		Foreign		Financial institutions		All sectors		Domestic sectors	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
Nonfinancial: Gross saving and gross investment	30	25		15		−10		−10		10	30	30	30	40
Gross saving		25		15		−10		−10		10		30		40
Plant and equipment purchases	25										25		25	
Change in business inventories	5										5		5	
Net financial investment:														
Gross saving less gross nonfinancial investment	*−5*		*15*		*−10*		*−10*		*10*		*0*		*10*	
Net acquisition of financial assets less net increase in liabilities	*−5*		*15*		*−10*		*−10*		*10*		*0*		*10*	
Financial: Net acquisition of financial assets and net increase in liabilities	30	35	39	24	5	15	3	13	75	65	152	152	149	139
Deposits	15		35		3		2			55	55	55	53	55
Loans	1	20	0	24	1	0	0	9	53	2	55	55	55	46
Securities	5	6	4	0	1	15	1	4	32	8	33	33	32	29
Trade credit	9	9	0	0	0	0	0	0	0	0	9	9	9	9
Total uses and sources of funds	60	60	39	39	5	5	3	3	75	75	182	182	179	179

that in table 13. This presentation is fashioned after the matrix summary of the flow of funds accounts (FFA's) of the United States, prepared by the Board of Governors of the Federal Reserve System. In table 13, the sector saving-investment accounts are placed side by side. Each of the first five pairs of columns of the matrix constitutes one of the sector saving-investment accounts shown in tables 8 and 11. (The foreign account reflects the perspective of foreigners, as in table 8.) The last pair of columns in table 13 shows the totals of saving and investment for the domestic sectors. It differs from the saving-investment account in the NIPA's in that net acquisitions of financial assets and net increase in liabilities are entered separately on opposite sides of the account.

The rows in the top portion of the matrix record nonfinancial transactions—gross saving, by sector, and the business sector's plant and equipment purchases and change in inventories. The rows in the bottom portion record financial transactions, by sector; each of these rows constitutes an account for one of the financial instruments shown in table 12.

The middle rows of the matrix are in italics to indicate that the entries in them are not included in the totals of the columns. The rows show two ways of measuring net financial investment. One is calculated from the nonfinancial transactions as gross saving less gross nonfinancial investment; that is,

Net financial investment = gross saving
− gross nonfinancial investment.

The other is calculated from the financial transactions as net acquisition of financial assets less net increase in liabilities; that is,

Net financial investment = net acquisition of financial assets
− net increase in liabilities.

Net financial investment measures a sector's excess of lending to other sectors over its borrowing from them.

In this illustration, the household sector is a net lender of $15 billion, with a preference for holding assets in liquid form. The nonfinancial business sector is a net borrower of $5 billion, with a preference for loans as a source of funds. Financial institutions intermediate between them, providing the household sector the assets that it prefers—a deposit liability of financial institutions—and providing the nonfinancial business sector with the type of credit it desires.

Balance sheet accounting is an extension of capital finance accounting. Balance sheet accounts, which are analogous to the balance sheet of the business firm introduced earlier, show the total stocks of assets and liabilities for the sectors and for the Nation. Revaluation accounts are needed to record the capital gains (and losses) in order to reconcile the saving-investment accounts with total changes in the balance sheet accounts over the accounting period, because the saving-investment accounts show only part of the changes in the sectors' assets and liabilities.

The capital finance accounts described in this introduction differ in several respects from the FAA's of the Federal Reserve Board. Some of these differences relate to the precise

Table 14.—Gross Production Accounts for Three Industries and for the Nonbusiness Sectors

[Billions of dollars]

Industry A

Uses		Sources	
Consumption		Sales of commodity A	
Purchased materials and services		To producers	
Commodity A	23	Industry A	23
Commodity B	9	Industry B	35
Commodity C	6	Industry C	17
Noncomparable imports	10	To final users	49
Less: Change in raw materials inventories			
Commodity A	1	Change in work-in-process and finished goods inventories (commodity A)	3
Commodity B	−2	*Less:* Imports of commodity A	0
Commodity C	0		
Noncomparable imports	−1		
Value added	77		
Charges against gross output	127	Gross output	127

Industry B

Uses		Sources	
Consumption		Sales of commodity B	
Purchased materials and services		To producers	
Commodity A	35	Industry A	9
Commodity B	47	Industry B	47
Commodity C	12	Industry C	26
Noncomparable imports	0	To final users	42
Less: Change in raw materials inventories			
Commodity A	−3	Change in work-in-process and finished goods inventories (commodity B)	2
Commodity B	1	*Less:* Imports of commodity B	0
Commodity C	0		
Noncomparable imports	0		
Value added	30		
Charges against gross output	126	Gross output	126

Industry C

Uses		Sources	
Consumption		Sales of commodity C	
Purchased materials and services		To producers	
Commodity A	17	Industry A	6
Commodity B	26	Industry B	12
Commodity C	40	Industry C	40
Noncomparable imports	0	To final users	104
Less: Change in raw materials inventories			
Commodity A	1	Change in work-in-process and finished goods inventories (commodity C)	0
Commodity B	3	*Less:* Imports of commodity C	0
Commodity C	0		
Noncomparable imports	0		
Value added	83		
Charges against gross output	162	Gross output	162

Nonbusiness Sectors

Uses		Sources	
Consumption		Sales	
Purchased materials and services	0	To producers	0
Less: Change in raw materials inventories	0	To final users	45
Value added	30	Change in inventories	0
		Less: Imports	15
Charges against gross output	30	Gross output	30

Table 15.—Input-Output Table

[Billions of dollars]

Distribution of output / Composition of inputs	Producers					Final demand				Gross commodity output
	Industry A	Industry B	Industry C	Nonbusiness sectors	Total intermediate use	Sales to final users	Change in inventories	Imports	Total final demand	
Commodity A	22	38	16	0	76	49	2	0	51	127
Commodity B	11	46	23	0	80	42	4	0	46	126
Commodity C	6	12	40	0	58	104	0	0	104	162
Noncomparable imports	11	0	0	0	11	0	−1	−10	−11	0
Nonbusiness product	0	0	0	0	0	45	0	−15	30	30
Total intermediate inputs	50	96	79	0						
Value added	77	30	83	30						220
Gross industry output	127	126	162	30		240	5	−25	220	

manner of sectoring, classification of transactions, and the netting and grossing of transactions; further, the FAA's do not follow the convention that all nonfinancial investment is made by the business sector. Other topics involved in the construction of the FAA's are combination versus consolidation of accounts, valuation, and timing. These and other topics are covered in the descriptions of the FAA's listed in the "Suggestions for Further Reading."

Input-output accounting

Information on the flows of goods and services that make up the production relationships among industries is missing from the NIPA system, but is provided by input-output (I–O) accounting. I–O accounting can be viewed as a deconsolidation, along detailed industry lines, of the national production account of table 8, with a separate production account presented for each industry. Both the NIPA's and the I–O accounts present GNP in terms of final product flows (final demand, in I–O terminology) and in terms of charges against GNP (value added, in I–O terminology). The distinctive feature of the I–O accounts is the presentation of detailed information for each industry on the consumption of purchased materials and services that canceled in arriving at an unduplicated measure of production for the business sector in table 8 and in the NIPA's. This detailed information is presented in a matrix—an I–O table.

In the I–O table, each column records the gross output of an industry and the inputs used by that industry in production; that is,

Gross industry output = consumption of purchased materials and services
+ value added.

Each row records the gross output of a good or service (commodity, in I–O terminology), the consumption of the commodity by producing industries, and the final demand for the commodity, where final demand consists of sales of the commodity to final users, the change in inventories of the commodity held by both the producing and consuming industries, less imports of the commodity; that is,

Gross commodity output = consumption by producing industries
+ sales to final users
+ change in inventories
− imports.

To illustrate the derivation of the I–O account, table 14 presents production accounts for the three hypothetical industries—designated A, B, and C—that make up the business sector. Unlike the production accounts derived in table 4, these accounts in table 14 record production on a gross basis; that is, consumption has not been subtracted from both sides. For the three nonbusiness sectors, table 14 presents a single consolidated production account. In this account, sales to final users consist of sales of factor services to consumers, to government, and to foreigners, and imports consist of purchases from foreigners of factor services; charges against gross output consist entirely of value added. In practice, each nonbusiness sector is shown separately in the I–O table.

Several features of the illustration in table 14 should be noted. (1) Each industry produces a single commodity and that commodity is not produced by any other industry; thus, industry A produces commodity A, industry B, commodity B, and so on. (The more complex case of secondary products, where industries produce commodities that are also produced by other industries, is taken up later.) (2) The commodities produced by industries A and B are goods, which are inventoriable; the commodity produced by industry C is a service, which is not inventoried. (3) Firms in each industry purchase inputs from other firms in the same industry. (4) Industry A consumes an imported commodity in addition to domestically produced commodities. The import is designated as noncomparable, signifying that no domestic counterpart exists. The treatment of comparable imports is taken up later.

Table 15 illustrates the construction of the I–O table from the information contained in table 14. The first four columns on the left side of the matrix record the consumption of purchased materials and services, as well as value added, by the producing industries. For each industry, consumption is derived from the left side of the industry's production account in table 14 as the purchase of the commodity less the change in raw material inventory. Value added is also taken from the left side of the industry production account. The nonbusiness sectors have value added as their only input.

Three columns, further to the right, record the components of final demand. Sales to final users are obtained from the right side of the production accounts in table 14. To obtain the inventory entries, it is necessary to rearrange the information

Table 16.—Change in Inventories Wherever Held Derived From Industry Gross Production Accounts

[Billions of dollars]

Commodity \ Industry	Industry A		Industry B		Industry C		Total
	Raw materials	Work in process and finished goods	Raw materials	Work in process and finished goods	Raw materials	Work in process and finished goods	
Commodity A	1	3	−3	0	1	0	2
Commodity B	−2	0	1	2	3	0	4
Noncomparable imports	−1	0	0	0	0	0	−1
Total	−2	3	−2	2	4	0	5

Table 17.—Derivation of GNP Originating by Industry

[Billions of dollars]

	Gross output	Consumption of materials and services	GNP originating (1)—(2)
	(1)	(2)	(3)
Industry A	127	50	77
Industry B	126	96	30
Industry C	162	79	83
Nonbusiness sectors	30	0	30
Total	445	225	220

on inventory change shown in table 14 to show the change in the inventories of each commodity wherever held; this rearrangement is shown in table 16. The entries for the noncomparable import are taken from the production account of industry A; the sum of the entries for consumption and inventory change is offset by the entry in the import column so that the row total—gross commodity output—is zero, appropriately reflecting the fact that the commodity is not part of domestic output. The output of the nonbusiness sectors consists of sales to final users less imports.

The matrix presented in table 15 is called a use table and shows the consumption of each commodity and the composition of the inputs to each industry. If a commodity were produced by two industries, the row totals of gross commodity output and the column totals of gross industry output would no longer correspond. For example, if $5 billion of commodity A were produced by industry B instead of industry A, the gross industry output of industry A would be $122 billion instead of $127 billion and that for B would be $131 billion instead of $126 billion. In this case, a second table, called a make table, is compiled, in which each row shows the commodity composition of an industry's output and each column, the industrial origin of the supply of a commodity.

The treatment of a comparable import in terms of the example is as follows. If, instead of being a noncomparable import, the import used by industry A was comparable to commodity B, industry A's entries in table 14 for the consumption and inventory change of commodity B would include the import, and the entries for noncomparable imports would be zero. Likewise, in table 15, the disposition of the import would be included in the row for commodity B. In effect, the second and fourth rows would be added together.

The U.S. I–O tables are in producer's prices. Trade margins and transportation costs incurred in the distribution of goods are not included in the row entries for these commodities, but are shown as separate inputs to each using industry and as separate sales to final users. The treatment of transportation and trade can be illustrated in table 15 by designating industry C as trade and transportation services. With this designation, the row entries for commodity C represent the trade and transportation costs associated with moving goods from the producer to the purchaser, and the row entries for commodities A, B, and noncomparable imports are valued at producer's prices.

A third way of measuring GNP may be derived from the I–O table. It is termed "GNP originating," or value added, by industry. In this derivation, which is illustrated in table 17, the GNP originating in each industry is established by subtracting consumption of materials and services from gross output and then summing over all industries to obtain total GNP. GNP originating in each industry also may be established by the equivalent procedure of summing income payments and other costs.

This discussion of the I–O accounts has omitted a number of topics involved in the construction of the make and use tables and the derivative I–O tables in which the flows are transformed into the direct requirements and total requirements that each industry places on each other industry in order to produce a unit of output. These topics are covered in the references listed in "Suggestions for Further Reading."

Suggestions for Further Reading

The U.S. national income and product accounts are described in the following: (1) Carol S. Carson and George Jaszi, "The National Income and Product Accounts of the United States: An Overview," SURVEY OF CURRENT BUSINESS 61 (February 1981): 22-34; (2) U.S. Department of Commerce, Office of Business Economics, *National Income, 1954 Edition: a Supplement to the* SURVEY OF CURRENT BUSINESS (Washington, DC: U.S. GPO, 1954), reprinted, along with later supplements and revisions, in U.S. Department of Commerce, Bureau of Economic Analysis, *Readings in Concepts and Methods of National Income Statistics* (Springfield, VA: NTIS, 1976), NTIS Accession No. PB-248-690; (3) Studies in Income and Wealth, vol. 22, *A Critique of the United States Income and Product Accounts* (Princeton, NJ: Princeton University Press for the National Bureau of Economic Research, 1958); (4) John W. Kendrick (Assisted by Carol S. Carson), *Economic Accounts and Their Uses* (New York: McGraw Hill, 1972); (5) Carol S. Carson, "The History of the United States National Income and Product Accounts: Development of an Analytical Tool," *Review of Income and Wealth* 21 (June 1975): 153-181; and (6) Studies in Income and Wealth, vol. 47, *The U.S. National Income and Product Accounts: Selected Topics* (Chicago: University of Chicago Press for the National Bureau of Economic Research, 1983).

The U.S. flow of funds accounts are discussed in Board of Governors of the Federal Reserve System, *Introduction to Flow of Funds* (Washington, DC: Board of Governors of the Federal Reserve System, June 1980) and the references therein.

The U.S. input-output accounts are described in the following: (1) U.S. Department of Commerce, Bureau of Economic Analysis, *Definitions and Conventions of the 1972 Input-Output Study*, BEA Staff Paper SP80-034 by Philip M. Ritz, (July 1980); (2) Interindustry Economics Division, "The Input-Output Structure of the U.S. Economy, 1977," SURVEY OF CURRENT BUSINESS 64 (May 1984): 42-84, and the references therein.

Recent descriptions of alternative sets of national economic accounts are the following: (1) Richard Ruggles and Nancy D. Ruggles, "Integrated Economic Accounts for the United States, 1947-80," SURVEY OF CURRENT BUSINESS 62 (May 1982): 1-53, and "Integrated Economic Accounts: Reply," SURVEY OF CURRENT BUSINESS 62 (November 1982): 36-53; and (2) Robert Eisner, "The Total Incomes System of Accounts," SURVEY OF CURRENT BUSINESS 65 (January 1985): 24-48.

The United Nations System of National Accounts is an international standard for national economic accounting systems. It is specified in Department of Economic and Social Affairs, Statistical Office of the United Nations, Studies in Methods, Series F No. 2, Rev. 3, *A System of National Accounts*, (New York: United Nations, 1968).