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6 A PROPOSED SYSTEM OF NATIONAL INCOME AND PRODUCT ACCOUNTS

The previous chapters lay the basis for constructing an integrated national economic accounting system. This task is essentially one of fitting the pieces together so that the criteria developed in the discussion can be met. The first step will be to design a system of national income accounts that can serve the same functions as the present US and UN systems, yet also meet many of the objectives of the proposed revision of the UN accounts. These accounts must serve as the nucleus around which other kinds of economic accounting can be developed. At the same time some of the major economic constructs in the national accounts must be substantially altered to make them more comprehensive and more meaningful. Although the proposed revision will be designed primarily to meet the needs of the United States and other similar industrial countries, many of the basic criteria will be equally valid and applicable for less developed countries; in particular, the distinctions between market and nonmarket transactions and the concept of development expenditures will be useful in both the highly developed and less developed countries.

The proposed design of the national income accounts will be illustrated by estimates for the United States for the year 1966. Much of the information required is already available in the present US system. In some cases, however, supplementary information is needed. In these instances, rough estimates of the general magnitudes involved (rounded to the nearest billion) will be shown in the accounts. These estimates are in general conformity with those provided by Kendrick [23].

The proposed accounting structure is that suggested in Chapter 2.

A consolidated income and product account is constructed for the nation as a whole, and income and outlay accounts are provided for each of the three sectors of the economy: enterprises, government, and households. A consolidated external transactions account for the economy completes the system. The list of accounts in the proposed national income accounting system follows.

1. National Income and Product Account
2. Enterprise Sector Accounts
   a. Income and Outlay
   b. Capital Formation
3. Government Sector Accounts
   a. Income and Outlay
   b. Capital Formation
4. Household Sector Accounts
   a. Income and Outlay
   b. Capital Formation
5. External Transactions Account

The full set of these accounts is presented in Appendix C.

The National Income and Product Account

This account is designed to show how the different sectors of the economy are related to the major aggregates of income and product. In concept, this account corresponds quite closely to the national income and product account of the US system and to the domestic product and expenditure account in the revised UN system. It is shown in summary form in Table 9, and in greater detail in Appendix Table C-1.

Although the proposed national income and product account is similar to the US account, there are a number of important differences. On the income side of the account, the primary classification is in terms of income originating in the different sectors of the economy. On the product side of the account, two major components, consumption and gross capital formation, are shown. National income, gross national product at factor cost, gross domestic product at market prices, and gross national product at market prices are all shown explicitly. Sector detail is provided within each major economic construct. Since these constructs have been redefined, however, there is a substantial statistical difference between the data shown in Table 9 and the data provided by the official US national income accounts.

TABLE 9

The Proposed System: National Income and Product Account for the United States, 1966

(billions of dollars)

Income Originating in:		Consumption	590.0
Enterprises	529.0	Households	435.7
Government	92.6	Government	125.1
Households	38.4	Enterprises	29.2
NATIONAL INCOME	660.0	Gross Capital Formation	308.2
		Households	100.2
Capital Consumption	165.5	Government	81.2
Enterprises	71.6	Enterprises	126.8
Government	36.0	Net Exports	.9
Households	57.9	Exports	37.3
		Minus: Imports	36.4
GROSS NATIONAL PRODUCT AT FACTOR COST	825.5	GROSS DOMESTIC PRODUCT AT MARKET PRICES	899.1
Business consumption and transfers	20.7	Net Factor Income From Abroad	4.2
Indirect taxes	65.1	Factor income from abroad	5.7
Minus: Subsidies	5.4	*Minus:* Factor income sent abroad	1.5
Statistical discrepancy	−2.6		
GROSS NATIONAL PRODUCT AT MARKET PRICES	903.3	GROSS NATIONAL PRODUCT AT MARKET PRICES	903.3

The Measurement of Output

Gross national product at market prices as shown in Table 9 exceeds the published figure by $160 billion. This represents a difference of more than 20 per cent. The primary reason for the difference is that the contribution to total output of the stock of durables and past development outlays for both households and government has been included. Second, it has been recognized that businesses customarily write off as current expense both development outlays intended as investment and consumption goods provided free to the public. The reconciliation between the published gross national product for 1966 and the revised figures (in billions of dollars) is shown at the top of page 97.

National income is also influenced by the inclusion of the flow

GROSS NATIONAL PRODUCT, OBE	743.3
Plus: Services of Durables and Past Development Outlays	116.0
Households	64.0
Government	52.0
Plus: Business Outlays Expensed	44.0
Development	26.0
Consumption	18.0
Total Added to Gross National Product	160.0
GROSS NATIONAL PRODUCT, REVISED	903.3

of services yielded by the stock of durable goods and past development outlays by households and government. However, since capital consumption is not a part of national income, the difference between the published national income figures and the revised figure shown in Table 9 is smaller than the difference in gross national product. The increase in national income is estimated at $43 billion for 1966, or approximately 12 per cent. The net income from durables and past development outlays accounted for $30 billion of this difference. The adjustment of profits to reflect the fact that the net expenditures on research and development are capital outlays rather than current costs increased income originating in enterprises by $10 billion more. Finally, it should also be recognized that the surplus of government enterprises, like profits of other enterprises, is a part of the income originating in the enterprise sector. This added the remaining $3.3 billion. The reconciliation for 1966 is shown below, in billions of dollars.

NATIONAL INCOME, OBE	616.7
Plus: Net Income From Durables and Past Development Outlays	30.0
Households	14.0
Government	16.0
Plus: Net Development Outlays Charged to Current Expense	10.0
Plus: Surplus of Government Enterprises	3.3
Total Additions to National Income	43.3
NATIONAL INCOME, REVISED	660.0

Consumption

Total consumption is not shown directly in the present national income and product account of the United States. However, personal consumption expenditures and government purchases of goods and

services are shown, and together these do constitute an implicit measure of total consumption. For the year 1966, their sum came to approximately $620 billion.

In revising the implicit total consumption concept of the Office of Business Economics, it is first necessary to take out of personal consumption expenditures and government purchases of goods and services those expenditures that in fact represent outlays for development purposes and for durable goods. For the year 1966, these came to about $175 billion, of which $94 billion was by households and $81 billion was by government. In addition, it is necessary to add to consumption the services provided by past outlays on development and on durables. Ideally, the value of these services should be determined on the basis of equivalent rental value. The Office of Business Economics now imputes the value of the services provided by owner-occupied housing by this method. Such an imputation uses the market value of the services, and thus is directly comparable to other valuations of goods and services. Unfortunately, however, market values are not available for the services of many development outlays and durable goods; in these cases it is necessary to build up a valuation based on cost just as is done for the value of goods provided by the government to the public. Thus, the value of the services of durables and development outlays can be estimated as the capital consumption or amortization adjusted to market prices plus an imputed interest charge on the remaining capital value of the asset or development outlay. These two elements combined provide an imputed measure of the cost of providing the services of the past development outlays and durable goods in the current period. For households, this cost for 1966 came to $24 billion, and for government it came to $52 billion.

Finally, it is necessary to add to the total the consumption carried

Personal Consumption Expenditures, OBE	465.9
Government Purchases of Goods and Services, OBE	154.3
IMPLICIT TOTAL CONSUMPTION, OBE	620.2
Minus: Nonconsumption expenditures	175.4
Households	94.2
Government	81.2
Plus: Services of development and durables	116.0
Households	64.0
Government	52.0
Enterprise consumption	29.2
Total Adjustments	−30.2
TOTAL CONSUMPTION, REVISED	590.0

out directly by the enterprise sector. Some of this will merely reflect the fact that the consumption of nonprofit institutions, which was formerly classified as a personal consumption expenditure, has now been excluded from household consumption. In addition, direct business consumption in the form of goods and services provided free to the public (both customers and employees) must be included. For 1966 it is estimated that total enterprise consumption came to approximately $29 billion.

Taking all of these adjustments together, total OBE consumption of $620 billion for 1966 is reduced by approximately $30 billion. These adjustments are shown on the preceding page, in billions of dollars.

Capital Formation

The Office of Business Economics does not attempt to show total capital formation, but rather presents data only for gross private domestic investment. In order to arrive at a total domestic capital formation estimate, it is necessary to add the durable goods purchased by households and government and the development outlays made by all sectors.

Approximately $70 billion of household durables were purchased in 1966, in addition to the $17 billion of owner-occupied housing already included in gross private domestic investment. For government, it is estimated that somewhat over $40 billion of expenditure was made on durable goods, including structures, construction of highways, and other durables, but excluding military hardware and construction. If owner-occupied housing of $17.2 billion is included as a household rather than an enterprise expenditure, the durable goods expenditures of households and government together would amount to $130 billion, in contrast to $100 billion by enterprises.

Development expenditures are considerably more difficult to define than expenditures on durable goods. To be classified as developmental, the value of the services provided by the expenditure must accrue in future periods rather than entirely in the present period. For the government, this suggests that expenditures on space research and technology, education and training, research in health, and improvement of health facilities can all legitimately be considered developmental. Examination of federal, state, and local expenditures on goods and services for 1966 suggests that approximately $40 billion was spent in these areas. For enterprises, development expenditures are made both as a part of research and development programs and on training and education of employees. It is estimated that these came to approximately $26 billion

for 1966. Finally, households contribute to development when they spend their resources on education or on measures for the prevention of sickness such as inoculations. It is estimated that these came to approximately $13 billion in 1966.

As a consequence of these expenditures on durables and development, the total additions to capital formation came to $190 billion, thus making total domestic capital formation $308 billion, in contrast with the OBE estimate of $118 billion for gross private domestic investment. The total flows are shown below, in billions of dollars, for 1966.

GROSS PRIVATE DOMESTIC INVESTMENT, OBE	118.0
Plus: Durables	111.5
Households	70.3
Government	41.2
Plus: Development	78.7
Government	40.0
Enterprises	26.0
Households	12.7
Total Additions	190.2
TOTAL DOMESTIC CAPITAL FORMATION	308.2

Income Originating

On the allocation side of the national income and product account, income originating is shown for the different sectors of the economy: enterprises, government, and households. Within each of these sectors, the account shows how the different factors of production share in the income originating within the sector.

For the enterprise sector, factor shares can be estimated on the basis of the production accounts of establishments engaged in productive activity. In order to explain the measurement of income originating and the derivation of the factor shares for the enterprise sector, it will be useful to examine a hypothetical production account for an individual establishment in the enterprise sector. Such an account is given on the next page. The right-hand side of this account shows the value of product created by this establishment as being composed of sales and the net change in inventories. On the left-hand side, the purchases of goods and services from other producers are shown as intermediate goods and services, and value added or gross product is defined as the total value of product minus the contribution of these intermediate goods and

Compensation of employees	32	Sales	95
Imputed self-employed compensation	3	Change in Inventories	5
Imputed interest on plant and equipment	5		
Net operating surplus (+) or deficit (−)	+17		
Income Originating	57		
Capital consumption	10		
Indirect taxes	8		
Gross Product (value added)	75		
Intermediate Goods and Services	25		
Value of Product	100	Value of Product	100

services. After deducting an allowance for capital consumption (including both depreciation of durables and amortization of past development outlays) and indirect taxes paid to the government, a measure of the net income originating in the establishment is obtained.

The total income originating in the enterprise sector reflects this measurement for all establishments that sell products on the market. The shares of the factors of production are shown in terms of (a) the compensation of employees, (b) self-employed compensation, and (c) imputed interest on the capital (plant and equipment including past development outlays) used by the establishment. When an establishment rents its plant and equipment, the rental payment would of course be included as part of the intermediate goods and services purchased from other producing units, so that neither capital consumption nor imputed interest would be recorded for such equipment in this establishment. In the example shown, the compensation of employees plus the imputed self-employment compensation and the imputed interest do not fully absorb all the income originating, so that a net operating surplus remains. In the case of some nonprofit institutions where the sale of products on the market does not fully reflect their output, it may be necessary to measure income originating from the allocation side of the account, i.e., to add the compensation of employees and the imputed interest on plant, equipment, and past development outlays to arrive at total income originating. This is the same procedure as is followed in estimating the production of general government.

For the enterprise sector as a whole, income originating in 1966 was $529 billion. Of this, $359 billion was paid as compensation to employees. In addition, the number of self-employed proprietors was

such that if their services were valued at what they could earn as wage and salary employees in the same industry, or conversely if the cost of replacing their services by paid employees were estimated, another $40 billion would have been needed. It should be emphasized that this figure does not reflect a careful estimate, but is merely based on the number of self-employed in the various industries and the compensation of employees in these industries.

Finally, an estimate of the imputed interest on plant and equipment must also be made to take into account the use of capital by the different establishments. To make this estimate, it is necessary to know the total market value of such plant and equipment used by producing establishments. However, this information is also required if capital consumption is to be estimated correctly. In the case of capital consumption, furthermore, it is also necessary to know the expected future life of the plant and equipment. To impute interest, all that is needed is the present market value of plant and equipment. If the principle of valuing imputations in terms of opportunity costs is followed, and if the element of risk is relegated to surplus rather than included as a payment to capital, there is a strong argument for using the same interest rate to impute the interest charge on plant and equipment for all establishments in all industries in the economy. Such an imputed interest charge would therefore reflect the pure payment to capital as a factor share, and would leave such elements as the imperfection of capital markets, uncertainty, monopoly, etc., to the residual operating surplus or deficit. From the standpoint of the establishment itself, furthermore, this approach is much more meaningful, since the individual productive unit does not pay interest. The interest paid on plant and equipment will be determined largely by the financial structure of the firm owning the establishment, rather than anything inherent in the establishment itself. This role of the firm relative to the establishment will be considered in some detail in the discussion of the enterprise income and outlay account. The factor share breakdown for enterprises from the establishment viewpoint is shown below, in billions of dollars.

Income Originating in Enterprises	529.1
Employee compensation	359.1
Self-employed compensation	40.0
Imputed interest on plant and equipment and past development outlays	50.0
Net operating surplus	79.9

In the government sector, income originating is considered to arise from the contribution of the factors of production, rather than from the sale of goods and services on the market. As a consequence, the compensation of government employees, representing the contribution of labor, and the imputed income from durables and development, representing the contribution of capital, constitute the income originating in the government.

Income Originating in General Government	92.6
Employee compensation	76.6
Imputed income from development and durables	16.0

Production originating in the household sector consists of two components: nonmarket production of goods and services directly consumed by households, and net imputed income resulting from past outlays by households on development and durable goods. In the United States, nonmarket production of commodities is rather small. The Office of Business Economics estimates that approximately $1 billion of food was produced and consumed on farms in the year 1966. In less developed countries, this type of subsistence production might be very large, and other productive activities such as making cloth or shoes might constitute additional commodity output of the household. The problem of household production of services is considerably more complex. As Kendrick has noted [23], housewives' services, volunteer labor, and even students' school work constitute important productive activities. In the present system of accounts, however, no estimate is included for these activities. In a similar manner, do-it-yourself projects have been omitted, since it is difficult to distinguish whether these are recreation, or whether they are in fact direct substitutes for market commodities. Imputed income from past expenditures on development and durables is based upon imputing an interest return to the market value of the stock of household durables and the unamortized portion of past development outlays. The results of these imputations are shown below, in billions of dollars.

INCOME ORIGINATING IN THE HOUSEHOLD SECTOR, OBE	38.4
Nonmarket Production	.9
Imputed Income From Development and Durables	37.5
Net imputed housing rent	11.0
Imputed interest on housing	12.5
Imputed interest on other durables and development	14.0

Capital Consumption

Capital consumption consists of two major elements: depreciation on durable goods, and amortization of past development outlays. Depreciation on durable goods for enterprises is the same as that shown in the OBE estimate for capital consumption allowances except that the depreciation of owner-occupied housing has been transferred to the household sector. For general government and for households, depreciation on structures and other durables is based on average length of life. With respect to amortization of development outlays, the amount shown represents a rather arbitrary allocation of development outlays over future periods. The composition of capital consumption is shown below, in billions of dollars.

CAPITAL CONSUMPTION	165.5
Depreciation	122.5
Enterprises	55.6
Government	16.0
Households	50.9
Amortization	43.0
Enterprises	16.0
Government	20.0
Households	7.0

Adjustments

The adjustments to gross national product at factor cost to bring it up to gross national product at market prices consist of (1) business consumption and transfers, (2) indirect taxes less subsidies, and (3) the statistical discrepancy. Business consumption and transfers consist of those outlays that business considers current expenses but that at the same time provide a flow of consumption goods to the economy that represents a net addition to the goods business sells to the public. Indirect taxes again represent a difference between the factor payments that are made and the selling prices of the products, and so must be added to arrive at market prices. Subsidies, on the other hand, need to be subtracted since they represent funds that are provided to business and thus are included in factor payments but that do not arise from goods sold at market prices. Finally, because the two sides of the accounts are estimated from different sources of data there will be a statistical discrepancy. The amounts of various adjustments are shown on the following page, in billions of dollars.

Business Consumption and Transfers	20.7
Indirect Taxes Less Subsidies	59.7
Indirect taxes	65.1
Minus: Subsidies	5.4
Statistical Discrepancy	−2.6

Enterprise Sector Accounts

The enterprise sector has been defined as covering the market economy. Its role in the process of production has already been discussed with respect to the national income and product account in terms of income originating in establishments producing goods and services. Production, however, is only a part of the enterprise activity. The income that originates in establishments flows into various types of firms, such as corporations, proprietorships, government enterprises, and nonprofit institutions. These organizations in turn pay money out to individuals, pay taxes, provide enterprise consumption, and retain funds. They also purchase capital goods, which they finance out of their capital consumption allowances, their saving, and their borrowing. The purpose of the enterprise accounts is to record these activities.

Income and Outlay

This account shows the receipts of enterprises on the right-hand side and the disbursements and income retained by enterprises on the left-hand side. It is shown in Table 10, and in more detail in Appendix Table C-2a. Total enterprise income in this account is identical to the income originating in enterprises shown in the production account. However, enterprises do receive funds in addition to the income that they generate. Households make transfers to nonprofit institutions in the form of gifts (e.g., religious contributions). Interest paid by consumers and by government is also considered to be transfer payments in the national income accounts, rather than income that originates in the enterprise sector. Finally, businesses charge off gifts and consumption expenditures as current expenses, so that these amounts are excluded from enterprise income. From the standpoint of the national income accounts, however, since the outlays are considered to be disbursements by enterprises such funds must be included as receipts.

The form used for income originating in enterprises in the enterprise income and outlay account is quite different from that in the national income and product account. In the latter, productive activity

TABLE 10

The Proposed System: Enterprise Income and Outlay Account for the United States, 1966

(billions of dollars)

Enterprise Consumption	29.2	Enterprise Income	529.0
Payments to Households	489.3	Corporate	360.4
Employee compensation	359.1	Employee compensation	275.9
Interest income	40.9	Net interest paid	−2.4
Dividends	20.5	Corporate profits	86.8
Proprietor income	68.8	Imputed interest on net assets	40.0
Direct Taxes and Other Payments to Government	41.8	Corporate net profits	46.8
Corporate profits tax	34.5	Proprietorships	139.2
Surplus of government enterprises	3.3	Employee compensation	59.2
Interest paid to government	4.0	Net interest paid	11.2
Retained Income	35.2	Proprietor income	68.8
Undistributed corporate profits	34.1	Imputed self-employed compensation	40.0
Retained nonprofit income	1.0	Imputed interest on net assets	15.0
		Proprietor net profit	13.8
		Government enterprises	11.3
		Employee compensation	8.0
		Surplus	3.3
		Nonprofit institutions	14.0
		Employee compensation	16.0
		Net interest paid	−2.0
		Rest of the world	4.2
		Corporate profits	3.3
		Net interest paid	.9
		Transfers to Nonprofit Institutions From Households	6.5
		Business Consumption and Transfers Expensed	20.7
		Interest Paid by Consumers	25.3
		Interest Paid by Government	13.9
DISBURSEMENTS AND RETAINED INCOME OF ENTERPRISES	595.4	RECEIPTS OF ENTERPRISES	595.4

was in terms of establishments, whereas the enterprise income and outlay account considers enterprises in terms of firms or companies. In some instances an establishment and a firm may be the same, but often a single firm owns many establishments, and in addition indulges in financial transactions that affect its operations. A hypothetical example of how income originating in its establishments relates to the operation of a firm is shown below.

Allocations		*Sources*	
Business consumption	50	Income originating in establishments	950
Compensation of employees	500	Business consumption charged to current expense	50
Self-employed compensation	50		
Net interest paid	−10		
Interest paid	30		
Minus: Interest received	40		
Operating Profit	410		
Imputed interest on net assets	300		
Net Profit	110		
TOTAL ALLOCATIONS	1,000	TOTAL SOURCES	1,000

The derivation of the interest factor share at the establishment level differs somewhat from its derivation at the enterprise level. If a firm borrows its capital, the interest it must pay for its use will be a business expense, and the firm's profit is the amount that remains after all business expenses have been paid. In the example shown above, the firm receives more interest than it pays, thus reflecting the fact that the financial assets it owns yield more interest than is required for its financial liabilities, so that its financial assets provide a net contribution to profit. In this hypothetical example, therefore, operating profit of the firm exceeds the operating surplus generated by the establishments owned by the firm. If net interest paid were positive, this would indicate that interest payments on the firm's liabilities exceeded interest receipts on its financial assets so that in fact it was borrowing part of its capital, and net operating profit would be smaller than the operating surplus originating in its establishments. Thus, what the firm's operating profit includes is the contribution of the net assets owned by the firm. If a firm had no financial assets or liabilities, net assets would be equal to plant and equipment, and the imputed interest on net assets would

coincide with the imputed interest on plant and equipment for the establishments owned by the enterprise. If a firm borrows heavily, its equity may be considerably less than the value of its plant and equipment, and in this case the imputed interest on its net assets would be considerably lower than that computed for the firm's establishments. Net profit is defined as operating profit minus imputed interest on net assets, and as in the case of the operating surplus it represents a residual over and above the actual and imputed payments to the factors of production.

In computing corporate net profits by this process, it is first necessary to adjust corporate profits for development outlays that are charged as current expense and for amortization of past development outlays, as well as the adjustment for inventory valuation that is normally made. These adjustments, together with the imputed interest on net corporate assets, are shown below, in billions of dollars.

DOMESTIC CORPORATE PROFITS (BOOK VALUE), OBE	80.4
Plus: Inventory valuation adjustment	−1.6
DOMESTIC CORPORATE PROFITS, OBE ADJUSTED	78.8
Plus: Development outlays charged as current expense	20.0
Minus: Amortization of past development outlays	12.0
Total Adjustments to Corporate Profits	8.0
Adjusted Corporate Profits	86.8
Minus: Imputed interest on corporate net assets	40.0
CORPORATE NET PROFITS	46.8

The calculation of imputed interest on net corporate assets is not too difficult. Reliable balance sheet information for the corporate sector is increasingly available, and as in the case of the interest imputation on the national income and product account the interest rate used for the imputation should be constant throughout the economy.

For proprietor and rental income the same principles apply, but the actual adjustments are somewhat more complex. These are shown on the following page, in billions of dollars. In addition to the adjustments shown for corporate enterprises, proprietor and rental income must be adjusted to reflect the fact that imputed rent on owner-occupied housing and nonmarket production do not arise in the enterprise sector, but rather are to be included as output in the household sector. The imputation of self-employed compensation is identical to that which appears for establishments on the national income and product account. As a consequence of all of these adjustments, proprietor net profit is reduced substantially.

PROPRIETOR AND RENTAL INCOME, OBE	79.1
Minus: Inventory valuation adjustment	0.4
PROPRIETOR AND RENTAL INCOME, OBE ADJUSTED	78.7
Plus: Development outlays charged as current expense	6.0
Minus: Amortization of past development outlays	4.0
Imputed income on owner-occupied housing	11.0
Nonmarket production	0.9
Total Adjustments to Proprietor and Rental Income	−9.9
PROPRIETOR INCOME, ADJUSTED	68.8
Minus: Self-employed compensation	40.0
Imputed interest on proprietor net assets	15.0
PROPRIETOR NET PROFIT	13.8

The treatment of interest in the proprietor sector is shown below, in billions of dollars.

TOTAL NET INTEREST PAID BY BUSINESS, OBE	20.2
Minus: Corporate	−2.4
Nonprofit institutions	−2.0
Rest of world	0.9
Imputed housing	12.5
Total Adjustments	9.0
PROPRIETOR NET INTEREST PAID	11.2

In determining the interest paid to households, similar adjustments must be made. These are shown below, in billions of dollars.

TOTAL NET INTEREST PAID BY BUSINESS, OBE	20.2
Plus: Interest paid by government	13.9
Interest paid by households	25.3
Minus: Imputed housing interest	12.5
Interest received by nonprofit institutions	2.0
Interest received by government	4.0
Total Adjustments	20.7
PERSONAL INTEREST INCOME, ADJUSTED	40.9

It should be noted that the imputed interest appearing in the national income and product account for enterprises as a whole on an establishment basis differs conceptually and statistically from the total imputed interest appearing in the enterprise income and outlay account. If the equity of firms exactly equalled the amount of their plant, equipment, and past development outlays, the imputed interest for establishments and for firms would be equal. However, if firms own additional financial assets in the form of government securities or consumer debt, the imputed interest of firms in the enterprise income and outlay account

will exceed the imputed interest of establishments in the income and product account. Imputed interest both for establishments and for firms should show how much of the return normally considered operating surplus or profit is in fact a return on plant and equipment or net assets.

It should also be noted that the imputation of interest that is carried out to obtain a net operating surplus or profit concept is of an entirely different character from the imputation of interest for banking services. This latter imputation is still made in the accounts, representing an imputed transaction between sectors and included in the interest paid by the enterprise sector to households. For the year 1966, it amounted to almost $9 billion.

Because nonprofit institutions are removed from the household sector and treated as enterprises, it is necessary to show explicitly the transfers that households make to nonprofit institutions. On the basis of information contained in the present national income accounts, the amount of employee compensation paid by nonprofit institutions is estimated at $16 billion, and the net interest they receive at approximately $2.0 billion. In addition, it is estimated that households provide about $6.5 billion in gifts such as religious and charitable contributions.

The consumption of nonprofit institutions and of businesses providing services such as radio, television, support of newspapers, subsidized cafeterias, and travel expenses is estimated at approximately $29 billion for the year 1966, as shown below, in billions of dollars.

ENTERPRISE CONSUMPTION	29.2
Business Consumption	18.7
Mass media support	13.0
Provision of consumption goods	5.7
Nonprofit Consumption	10.5
Religious	5.0
Health, education, welfare	3.5
Other	2.0

These are rough estimates, and probably quite conservative. The extent of business consumption expenditures could be determined by more detailed examination of a sample of enterprise accounts, together with tax information.

Finally, it should be noted that the enterprise income and outlay account includes the surplus of government enterprises, both as a part of income originating and as a payment to government. In the US accounts, the surplus of government enterprises is combined with subsidies, and thus netted out of both income originating and income received by gov-

ernment. The data shown in the accounts refer to state and local enterprises only. The surplus of federal government enterprises (if any) is still combined with federal subsidies.

Capital Formation

This account shows the composition of gross enterprise capital formation and the saving, net borrowing, and lending by the enterprise sector. It is shown in Table 11 and Appendix Table C-2b.

Development expenditures by enterprises are made up of two types of expenditures: research and development, and education and training. Fairly reliable information now exists on research and development expenditures by enterprises. Conceptually, however, it is still diffi-

TABLE 11

The Proposed System: Enterprise Capital Formation Account for the United States, 1966

(billions of dollars)

Development Expenditures	26.0	Enterprise Capital Consumption	71.6
Research and development	18.0	Depreciation	55.6
Education and training	8.0	Corporate	39.0
		Proprietors	15.6
Expenditures on Durables	87.4	Nonprofit institutions	1.0
Structures	35.1		
Other durables	52.3	Amortization	16.0
		Corporate	12.0
Change in Inventories	13.4	Proprietors	4.0
Net Foreign Investment	2.2	Retained Income	35.2
		Corporate	34.2
		Nonprofit institutions	1.0
		Net Borrowing From (+) or Net Lending to (−) Other Sectors	+24.9
		Households	+17.7
		Government	+7.2
		Statistical Discrepancy	−2.6
GROSS ENTERPRISE CAPITAL FORMATION	129.0	GROSS SAVING, NET BORROWING, AND LENDING BY ENTERPRISES	129.0

cult to distinguish those expenditures that should be written off as part of current expense and those which are obviously of a long-term nature. With respect to education and training, formal training and education programs certainly should be included, and to some extent on-the-job training can also be considered developmental. It is quite difficult to estimate the magnitude of these training programs, and they may in fact be much larger than the figure shown. With respect to expenditures on durable goods, the construction of owner-occupied housing has been deducted from enterprise expenditures on structures, since owner-occupied housing is considered to be capital formation by households. The remaining items in gross enterprise capital formation are the same as those in the OBE figure for gross private investment.

On the savings side of the account, depreciation of owner-occupied housing has been deducted, and amortization of development expenditures by corporate and noncorporate enterprises has been added. A small amount of retained income has been shown for nonprofit institutions—this is a transfer from the saving of the household sector. Net borrowing by enterprises from other sectors amounted to about $25 billion, of which $18 billion was borrowing from households and $7 billion borrowing from the government sector, i.e., the enterprise sector reduced its net holdings of government assets during this period by approximately $7 billion.

A problem arises of whether the depreciation allowances charged by enterprises for tax purposes do reflect the actual depreciation that is taking place. There are two major sources of bias in this estimate. First, it is to the interest of enterprises to charge off plant and equipment as rapidly as possible in order to reduce taxes. There is considerable evidence that the length of life used by enterprises for tax purposes is considerably shorter than the actual life over which assets are used. This is especially true with structures, where the structure may be of considerable value even after it has been fully written off. The government's interest in stimulating investment has led to the introduction of accelerated depreciation, which results in depreciation allowances that are purposely larger than actual depreciation. For these reasons there is a substantial tendency to overstate depreciation in the current period.

On the other hand, depreciation allowances are tied to allocating the original cost of the asset over future periods. If the prices of capital goods increase over time the depreciation charged will not reflect replacement cost. Businessmen are keenly aware of this, and have often urged

that replacement cost depreciation be allowed for tax purposes. From an economic standpoint there is some justification for such a valuation of depreciation, although from a tax standpoint it would result in an element of capital gain going untaxed. In any event, it is obvious that the use of original cost rather than replacement value does tend to exert a downward bias on depreciation allowances.

Thus, depreciation allowances are subject to both an upward bias through the acceleration of depreciation allowances and a downward bias through the use of original cost instead of replacement value. Some estimates of the magnitude of these biases are available. In a study done by Helen Stone Tice [29], replacement cost depreciation on the stock of private structures and producer durables was estimated for the period 1900–62. A 1959 depreciation survey by the Treasury Department indicated that the lives actually being used for tax purposes were 20 per cent shorter than the Treasury Department's Bulletin F lives [30]. In computing depreciation, Mrs. Tice used the service lives indicated in Bulletin F and adjusted the value of the capital stock to replacement cost. The net result of this lengthening of service life and adjustment to replacement value, however, was not significant. Mrs. Tice obtained a total estimated depreciation allowance of $49.1 billion for 1962, in contrast with the figure of $50.0 billion reported in the national income accounts. In other words, the two biases tended to offset each other. For individual industries or sectors, however, larger discrepancies might appear.

Government Sector Accounts

The government sector has the same definition in the proposed system as in the current US and UN accounts: it embraces general government activities that are not of an enterprise nature. Although the principle is clear, there are often difficulties in determining whether a specific government organization is in fact acting like an enterprise, or whether, even though it receives some fees or sells some products, it is essentially a government agency.

Income and Outlay

This account is quite similar to the present government account, except for the alteration of some flows to recognize that some government expenditures do constitute capital formation, and that income is

TABLE 12

The Proposed System: Government Income and Outlay Account for the United States, 1966

(billions of dollars)

Consumption	125.1	Indirect Taxes	65.1
Current expenditures	73.1		
Imputed services of development and durables	52.0	Direct Taxes and Other Payments by Enterprises	41.8
		Corporate profits tax	34.5
Subsidies	5.4	Surplus of government enterprises	3.3
Transfers to Households	41.2	Interest paid to government	4.0
Transfers to Abroad	2.3	Tax Payments by Households	113.4
		Transfers From Abroad	*
Current Surplus	48.4		
		Imputed Income From Development and Durables	16.0
		Minus: Government Interest Paid	13.9
GOVERNMENT CURRENT OUTLAYS AND SURPLUS	222.4	GOVERNMENT RECEIPTS	222.4

NOTE: An asterisk denotes less than 0.05.

received from the services of past development outlays and durables. The government income and outlay is shown in Table 12 and Appendix Table C-3a.

Government receipts have been increased by three items. First, the surplus of government enterprises is treated as a receipt instead of being netted against subsidies. In the United States this is important since the government enterprises that yield surpluses are mainly those operated at the state and local levels (e.g., publicly owned utilities), and those receiving subsidies represent different types of activities. Certain government enterprises are purposely run at a deficit as part of their function, for instance subway systems or the Commodity Credit Corporation. In such cases, it might be useful to distinguish these intended deficits and treat them as subsidies, but also to recognize that the deficits of other government enterprises are often no more intentional than those of other nonprofit enterprises. Second, the interest received by the government

is shown as part of the income of the government, rather than netted against interest paid by the government. Finally, the net imputed income that the government receives from past development and durables expenditures minus the interest the government pays should be shown explicitly, and included as part of total receipts. These adjustments are shown below, in billions of dollars.

Government Receipts, OBE	213.0
Plus: Current surplus of government enterprises	3.3
Interest received by government	4.0
Net imputed income	2.1
Total Adjustments	9.4
Government Receipts, Revised	222.4

With respect to government expenditures, those outlays of the government that have their primary impact in future periods should be excluded from current consumption, and the services provided by past development outlays and durables owned by the government should be added to arrive at a total consumption figure. These adjustments are shown below.

GOVERNMENT PURCHASES OF GOODS AND SERVICES, OBE	154.3
Minus: Nonconsumption Expenditures:	81.2
Durables	40.0
Development	41.2
CURRENT CONSUMPTION EXPENDITURES	73.1
Plus: Imputed Services of Development and Durables:	52.0
Imputed interest	16.0
Capital consumption	16.0
Amortization	20.0
GOVERNMENT CONSUMPTION	125.1

Since the government income and outlay account shows government consumption instead of total purchases of goods and services, the surplus in this account becomes $48.4 billion, in contrast with the $3.2 billion surplus in the OBE government receipts and expenditure account.

Capital Formation

This account is shown in Table 13 and Appendix Table C-3b. Development expenditures constitute approximately half of total government gross capital formation in the account. Government expenditures

TABLE 13

The Proposed System: Government Capital Formation Account for the United States, 1966

(billions of dollars)

Development Expenditures	40.0	Capital Consumption	36.0
Research and development	10.0	Depreciation	16.0
Education	20.0	Amortization	20.0
Health	10.0		
		Current Surplus	48.4
Structures Expenditures	24.2	Net Borrowing From (+) or Net Lending to (−) Other Sectors	−3.2
Buildings	8.9	Households	4.0
Highways and streets	8.3	Enterprises	−7.2
Other	7.0		
Other Durables Expenditures	17.0	GROSS SAVING AND NET BORROWING OR LENDING BY GOVERNMENT	81.2
GOVERNMENT GROSS CAPITAL FORMATION	81.2		

on research and development amounted to approximately $10 billion, expenditures on education to another $20 billion, and health expenditures of a developmental nature accounted for the remaining $10 billion. Structures accounted for approximately $24 billion, of which $9 billion were buildings and $8 billion highways and streets. Finally, it is very roughly estimated that other durable goods expenditures by government exclusive of defense came to approximately $17 billion. There is at present no adequate basis for obtaining an estimate of this element of gross capital formation, but it would be possible to develop such an estimate by analyzing the detailed budget information contained in the accounts of the various types of government.

With respect to capital consumption, major conceptual problems arise in determining the proper rates of depreciation and amortization. It is difficult to determine over what period highways, public parks, and other public facilities should be depreciated, or how research and development and health expenditures should be amortized. Nevertheless, the recognition that such expenditures have their primary benefits in the future rather than the present is a significant improvement, and it would be a more serious error if they were written off all at the time of expenditure. Finally, in 1966 the general government had a net surplus on current and capital account. This is reflected in the net lending to the

rest of the economy of $3.2 billion, which is equal to the surplus shown in the OBE government receipts and expenditure account.

Household Sector Accounts

The household sector relates to individuals in their role as households. The activities of nonprofit institutions have been transferred into the enterprise sector. Conversely, owner-occupied housing, which is treated as an imputed enterprise in the US and UN accounts, is here treated as an asset of the household sector that yields imputed income to households.

Income and Outlay

This account for households, shown in Table 14 and Appendix Table C-4a, shows the income and current consumption of households.

TABLE 14

The Proposed System: Household Income and Outlay Account for the United States, 1966

(billions of dollars)

Tax Payments	113.4	Payments by Enterprises	489.3
		Employee compensation	359.1
Disposable Income	506.8	Interest income	40.9
CONSUMPTION	435.7	Dividends	20.5
Current expenditures	339.4	Proprietor income	68.8
Nonmarket production	.9		
Imputed services of development and durables	95.4	Compensation of Government Employees	76.6
Transfers to Nonprofit Institutions	6.5	Transfers From Government	41.2
Transfers to Abroad	.6	Transfers From Abroad	*
Current Saving	64.0	Income Originating in Households	38.4
		Nonmarket production	.9
		Imputed income of development and durables	37.5
		Minus: Consumer Interest Paid	25.3
PERSONAL CURRENT OUTLAY AND SAVING	620.2	PERSONAL INCOME	620.2

NOTE: An asterisk denotes less than 0.05.

Personal income is considerably larger than the personal income shown by the Office of Business Economics. Two major elements, social security contributions and net imputed interest on household durables, account for most of the difference. The OBE does not include social security contributions as a part of personal income, but since they are in fact withheld by employers in precisely the same way as are personal income taxes there seems little reason on economic grounds to differentiate between social security contributions and other personal taxes. Adjustments to personal income include the adjustment for interest and dividends paid to nonprofit institutions and the adjustments already discussed with respect to proprietors' income, which becomes income of the household. Finally, business transfers are now excluded from personal income on the ground that they are either business gifts to nonprofit institutions or consumer bad debts, both of which are now treated as giving rise to enterprise consumption. These adjustments are shown below, in billions of dollars.

PERSONAL INCOME, OBE	584.0
Plus: Social security contributions	38.2
Net imputed interest on durables	13.1
Total Additions	51.3
Minus: Adjustments to:	
Interest	1.5
Dividends	1.0
Proprietor income	9.9
Business transfers	2.7
Total Adjustments	−15.1
PERSONAL INCOME, ADJUSTED	620.2

For personal consumption expenditures, another set of adjustments is required to remove the expenditures by households on development and durables, the expenditures by nonprofit institutions and businesses (business transfer payments), and the imputed transactions taking place within households. It will also be necessary to add the nonmarket production and the imputed services provided by household durables and development expenditures. This reconciliation is shown on the following page, in billions of dollars.

Since the consumption of nonprofit institutions has been deducted from consumer expenditures, it will be necessary to show explicitly in the household income and outlay account the transfers that households make to nonprofit institutions. In 1966 these were estimated at $6.5

CONSUMER EXPENDITURES, OBE	465.9
Minus: Development expenditures	12.7
Durables	70.3
Nonprofit institutions	70.3
Nonmarket production	.9
Imputed housing income	31.4
Capital consumption	7.9
Imputed interest	12.5
Net rent	11.0
Business transfer payments	2.7
Total Adjustments	126.5
CONSUMPTION EXPENDITURES	339.4
CONSUMPTION OF SERVICES OF STOCK OF DURABLES AND PAST DEVELOPMENT OUTLAYS:	96.3
Imputed housing income	31.4
Nonmarket production	.9
Imputed services of household development outlays and durables	64.0
Interest	14.0
Capital consumption	50.0
Automobiles	18.0
Durables	25.0
Development	7.0
HOUSEHOLD CONSUMPTION	435.7

billion. As a result of all of these changes, current saving in the revised account is $64 billion, in contrast with personal saving reported by the OBE of $30 billion.

Capital Formation

Gross capital formation by households for 1966 is estimated at approximately $100 billion. This is shown in Table 15 and Appendix Table C-4b. Approximately $13 billion was spent by households on development expenditures, of which $7 billion was education and $5 billion health. The estimate of $5 billion for health expenditures does not reflect total expenditures by households on medical care; for 1966, this amounted to over $31 billion. The estimate of $5 billion has been inserted purely to indicate that some relatively small fraction of total health expenditures reflect measures of a preventive nature.

With respect to expenditures on durables, approximately $17 billion was spent on owner-occupied houses, $30 billion on automobiles, and $40 billion on other durables. As in the case of the government capital formation account, the estimation of capital consumption is difficult. The figure of approximately $8 billion for depreciation on owner-occupied

TABLE 15

The Proposed System: Household Capital Formation Account for the United States, 1966

(billions of dollars)

Development Expenditures	12.7	Capital Consumption	57.9
Health	5.0	Depreciation	50.9
Education	6.7	Owner-occupied housing	7.9
Other	1.0	Automobiles	18.0
		Other	25.0
Durables Expenditures	87.5		
Owner-occupied houses	17.2	Amortization	7.0
Automobiles	29.9	Health	3.5
Other	40.4	Education	3.0
		Other	.5
		Current Saving	64.0
		Net Borrowing From (+) or Lending to (−) Other Sectors	−21.7
		Enterprises	−17.7
		Government	− 4.0
GROSS CAPITAL FORMATION BY HOUSEHOLDS	100.2	GROSS SAVING AND NET BORROWING OR LENDING BY HOUSEHOLDS	100.2

housing is the same as that used by OBE, but the depreciation for automobiles and other durables is based on rough service life assumptions. The estimates of amortization are even rougher, but they are intended to show that the amortization of past development expenditures is substantially lower than the current rate of development expenditures, since these categories are growing in importance.

Finally, households are shown as net lenders, in the amount of approximately $22 billion. The holdings of government securities by the household sector increased approximately $4 billion, and their acquisition of other financial assets (aside from revaluation) amounted to $18 billion.

External Account

The external account shown in Table 16 and Appendix Table C-5 is almost completely identical to the foreign transactions account of the

TABLE 16

The Proposed System: External Transactions Account for the United States, 1966
(billions of dollars)

Exports	37.3	Imports	36.4
Factor income from abroad	5.7	Factor income to abroad	1.5
Transfers to households	*	Transfers from households	.6
Transfers to government	*	Transfers from government	2.3
		Net foreign investment	2.2
RECEIPTS FROM ABROAD	43.0	PAYMENTS TO ABROAD AND NET FOREIGN INVESTMENT	43.0

NOTE: An asterisk denotes less than 0.05.

Office of Business Economics. The total of the account is the same, and the only significant difference is that factor income from abroad and factor income sent abroad are shown explicitly rather than as a net balance.