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CHAPTER 2

Main Features of National Balance Sheets[1]

Uses of National Balance Sheets

THE brief description of the uses of national balance sheets which follows points out only some of their more obvious applications. Detailed consideration of the nature of balance sheet data required for these different uses is beyond the scope of this report. Just as a bookkeeper is not expected to consider all the uses to which his accounts may be put by the owner of the business, lenders, tax authorities, or academic investigators, so the social accountant, in compiling national balance sheets, cannot take account of all the possible uses which economic specialists may make of these statements.

The system of national accounts, like business accounting, consists of two basic statements, one registering flows during a given period of time and the other recording stocks at a given point of time. In business accounting the flows are recorded in the income (profit and loss) account, while stocks are recorded in the balance sheet. In the system of national accounts, the national income, flow of funds, and balance of international payments accounts are in principle restricted to flows. Input-output (interindustry transaction) tables are so far limited to flows, but they will require stock data and stock-flow coefficients when they are used beyond static conditions. The national balance sheet, as well as the national wealth statement which may be regarded as a consolidated national balance sheet, records stocks only.

Basically the national income account and the national balance sheet together constitute a complete system of accounts, parallel to the customary system of business accounting. Flow-of-funds accounts, input-output tables, and balance of international payments accounts are supplementary, more detailed, separate treatments of certain parts of the national income account. Input-output tables, for example, present in detail transactions among sectors and subsectors which are eliminated from the national income account in its usual form by consolidation, since they occur within one sector. Flow-of-funds tabulations add transactions in existing tangible assets and all transactions in financial assets to the national income account, which is limited to current flows of commodities and services.

Some stock magnitudes have always played an important part in eco-

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1 Parts of this chapter have appeared in French, in slightly different form, in *Bulletin d'Information et de Documentation,* Banque Nationale de Belgique, September 1960.

nomic analysis and attempts to estimate them have been made repeatedly, even before a system of national accounts existed. Examples of such magnitudes are the capital stock figures that enter into virtually all production functions—for instance, functions of the Cobb-Douglas type for which quantification has been attempted more often than for any other form. Stocks of tangible capital have also been used for capital-output ratios, particularly in economic growth functions of the Harrod-Domar type. Here again attempts at quantification have been numerous, particularly during the last decade. Among intangible assets the figure most often utilized probably has been the stock of money which, together with the stock of certain other financial assets, is needed in virtually all forms of velocity and liquidity analysis. Stocks of liquid assets variously defined have also been used in models of consumption and saving functions, particularly those allowing for the Pigou effect which postulates an inverse correlation between the real value of consumers' liquid assets and their propensity to save. A mixture of tangible and intangible stocks, finally, is required to derive profit ratios for individual enterprises or for groups of them, which have been used to check the theorems about the equalization of profit rates in a free enterprise economy.

These estimates of stock magnitudes and their use in economic analysis, however, were not coordinated. They applied to different sectors of the economy, covered different types of assets and liabilities, and used different methods of valuation. They were in no way tied into national balance sheets which formed an integral part of a system of national accounts. The need for the systematic construction of balance sheets for broad sectors of the economy and for the nation as a whole arises from quite recent developments in national accounting; in the requirements of economic theory, particularly model building; and in modern monetary and financial analysis.

In national accounting, the demand for systematic, comprehensive national balance sheets, comparable among sectors and over time, stems from three sources. The first is the conviction that no system of national accounts is complete without a national balance sheet—a stock record to complement the flow account developed in the national income and product account.

The second is flow-of-funds analysis. Because of the nature of the data, most estimates of financial flows must be derived from balance sheet entries as of the beginning and end of the period rather than from direct information on acquisitions and dispositions during the period. For instance, the flow of funds from commercial banks into state and local government securities must be calculated from the banks' balance sheets as the difference between their reported holdings at the end and the beginning of the period, since no information is

available on commercial banks' purchase and sale of tax-exempt securities. The Federal Reserve Board's flow-of-funds statistics, therefore, depend, for almost all the types of assets they distinguish, on the statements of claims and liabilities of different sectors, statements which constitute a truncated national balance sheet, tangible assets and equities being omitted on the left-hand side and net worth on the right-hand side. Even where balance sheet entries are not essential to derive flows, they are often valuable as checks.

Input-output (interindustry) analysis is the third source. Early input-output tables, essentially static in nature, could be limited to current flows, but attempts to make them dynamic require, in addition, figures on stocks—structures, equipment, inventory, and working capital—to derive stock-flow coefficients which are as important in dynamic input-output models as the product coefficients are in the static versions of these tables. According to the originator of modern input-output analysis, Wassily Leontief, "The capital matrix, or the somewhat more general stock matrix, of a national economy should, in the study of economic development, be assigned the central position occupied by the flow matrix in static analysis."[2] The stock data needed for interindustry analysis are, however, much more detailed, particularly in the number of industrial sectors to be distinguished, than those necessary for the general social accountant.

So far the demand from economic theorists, particularly model builders, has been mainly for estimates of stocks of certain tangible assets for certain sectors, and hence for national wealth statements rather than for complete national balance sheets. This reflects the aggregative and oversimplified character of virtually all the general economic models that have been proposed. Nevertheless, the most elaborate general model of the American economy that has so far been developed includes, among its dependent or independent time series variables, about a dozen stock-type items, both for tangible assets (private structures, equipment, and inventories) and for financial assets (corporate surplus, member bank reserves, liquid assets of persons and of business, share capital of saving and loan associations).[3] As models of the entire economy are further developed and as they come to approximate reality a little more closely, the number and diversity of stock items included in the models will increase, and many of these items will call for a comprehensive set of national and sectoral balance sheets.

Stock data have probably been used more and played a more impor-

[2] *Input-Output Analysis: An Appraisal*, Studies in Income and Wealth 18, Princeton for NBER, 1955, p. 19.

[3] L. R. Klein and A. S. Goldberger, *An Econometric Model of the United States 1929-1952*, Amsterdam, 1955.

tant role in the limited number of sectoral models that have been developed. Models of the housing sector, for instance, can hardly do without items like the stock of residential structures in monetary or real terms, residential mortgage debt, debt to value ratios, and household liquid assets, all of which ultimately require balance sheets of the housing or the household sectors.[4]

The most powerful—and in the long run perhaps the most decisive—demand for national balance sheets, however, has arisen from modern developments in monetary and financial analysis. There is, first, a tendency to explain the movements of price levels and interest rates, and indeed the whole modus operandi of the money and capital markets, in terms of the liquidity of the different sectors of the economy and of the actual and expected changes in it. This tendency, which obviously must rely for much of its factual verification on national and sectoral balance sheets, is probably most clearly expressed in the Radcliffe Report[5] and in Shaw and Gurley's approach to monetary and financial theory.[6] There is, secondly, on a somewhat more limited but more practical level, a tendency to approach the main problems of finance as management decisions, decisions which include as crucial variables the asset and liability structures of the units involved and therefore call for balance sheet formation.

In view of these varied and important uses of national balance sheets in economic and financial analysis, their scarcity in the United States and other countries is astonishing, particularly since national income accounting and input-output (interindustry) analysis have received considerable attention over the past generation. It is only with the development of the flow-of-funds system as another part of national accounts during the postwar period that the national balance sheet has emerged from academic obscurity. Even in the academic field, the national balance sheet so far has remained incomplete, and has been used more as a means—to derive estimates of flows of claims—than as an end in its own right. Apart from scattered precursors who failed to find followers for a quarter of a century,[7] the first attempt to draw up a com-

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[4] See Leo Grebler and Sherman J. Maisel, "Determinants of Residential Construction: A Review of Present Knowledge," in *Impacts of Monetary Policy,* prepared for Commission on Money and Credit, Englewood Cliffs, 1963.

[5] *Report of the Committee on the Working of the Monetary System,* London, 1959.

[6] J. G. Gurley and E. Shaw, *Money in a Theory of Finance,* Washington, 1960; J. G. Gurley, "Liquidity and Financial Institutions in the Postwar Economy," *Study of Employment, Growth, and Price Levels,* Joint Economic Committee, Study Paper No. 14, Washington, 1960.

[7] F. G. Dickinson and F. Eakin, *The Balance Sheet of the Nation's Economy* and *The Illinois Segment of the Nation's Economy for 1935: A Bookkeeping Picture,* University of Illinois, Bureau of Business Research, Bulletins 54 and 60, Urbana, 1936 and 1940.

prehensive national balance sheet for the United States was made in *A Study of Saving in the United States*,[8] and it was limited to half a dozen benchmark dates between 1900 and 1949. This report extends the national balance sheets initiated in *Study of Saving* through 1958 and puts them on an annual basis beginning with 1945.[9] This set constitutes the only complete national and sectoral balance sheet for the United States. However, partial annual balance sheets for the period since 1945, limited to claims and liabilities, form part of the Federal Reserve Board's flow-of-funds statistics;[10] similar quarterly statements are available in Federal Reserve worksheets beginning with 1953. Quarterly sectoral balance sheets for 1953-55 have been made available in another report emanating from the Postwar Capital Market Study.[11] Those balance sheets are similar to the ones included here for 1952 through 1955, but there are a number of minor differences which reflect later revisions and changes in the arrangement of the data.

Basic Problems in Compiling National Balance Sheets

A full discussion of the conceptual problems that must be faced whenever a balance sheet is drawn up for a nation or economic sectors would cover in detail such subjects as sectoring, itemization of assets and liabilities, valuation, deflation, etc. This would have taken more time and space than was available and would have seriously impaired the balance of the document. Some of these problems have been dealt with by other authors[12] or by one of the present authors on other occasions.[13]

Here we will describe only briefly the main conceptual problems,

[8] By Raymond W. Goldsmith, Volume III, Part I, Princeton, 1956.

[9] The national balance sheets for 1945 and 1949 included in this report supersede those for the same years in Vol. III of *Study of Saving* (Tables W-15 and W-16). Similarly the national balance sheet for 1955 given here supersedes the preliminary version in the 37th Annual Report of the National Bureau of Economic Research (1957, p. 36).

[10] See, e.g., *Federal Reserve Bulletin*, August 1959, pages 1058-1062.

[11] Morris Mendelson, *The Flow-of-Funds Through the Financial Markets, 1953-1955*, New York, NBER, 1959.

[12] Graeme Dorrance in *International Monetary Fund Staff Papers*, October 1959; Dorrance and Earl Hicks in *International Monetary Fund Staff Papers*, October 1949; Stanley J. Sigel, "An Approach to the Integration of Income and Product and Flow-of-Funds National Accounting Systems: A Progress Report," *The Flow-of-Funds Approach to Social Accounting*, Studies in Income and Wealth 26, Princeton for NBER, 1962.

[13] *The National Economic Accounts of the United States*, New York, NBER, 1958, Chapter XIV; *Studies in Income and Wealth 12*, New York, NBER, 1950, pp. 35-49, 55-79; *Studies in Income and Wealth 14*, New York, NBER, 1951, pp. 14-42; *Income and Wealth Series II*, Cambridge, Eng., 1952, pp. 249, 264, 275-277, 286-289, 296-300; *Income and Wealth Series IV*, London, 1955, pp. 322-347, 363-370; *Study of Saving*, Vol. II, pp. 7-12, 547-557, and Vol. III, pp. 32-37.

statistical difficulties, and shortcomings of the estimates. While not entirely nontechnical, this description still tries to be generally understandable and does not purport to provide new information for those familiar with the subject.

The national balance sheet can be conceived as the combination of the balance sheets of all economic units within a country. The following basic questions must then be answered: (1) What is the scope of the assets and liabilities to be included in the balance sheet? (2) How are the different types of assets and liabilities to be grouped? (3) How are the different assets and liabilities so distinguished to be valued? (4) Is it possible, necessary, or advisable to express all balance sheet valuations in a common stable price level? (5) How should the many millions of independent economic units be grouped into a limited number of sectors? (6) How far should the balance sheets of the individual economic units be consolidated in constructing sectoral and national balance sheets? (7) What are the sources from which the sectoral and national balance sheets are built up? (8) How reliable are the balance sheet estimates now available?

For each of these problems, two solutions must be given: first, the one preferred in social accounting theory,[14] and second, the one actually adopted. Also, the reason for the compromise—mostly unavailability of data or insufficiency of resources—must be given.

Before answering the eight questions raised, we should deal with one problem not specifically mentioned—whether it is feasible to construct a set of sectoral and national balance sheets exclusively from balance sheets prepared by the various economic units included in the different sectors. Such an approach is impossible because in most sectors few, if any, units prepare balance sheets. This is the case with virtually all households, with most government units, and with many smaller business units. The only units for which balance sheets based on their own books are prepared are business corporations, large unincorporated enterprises, and the federal government; even in these cases, the existing balance sheets cannot be used in a system of national accounts without substantial modification because, in accordance with the principles of business accounting, they are based predominantly on original cost of assets. Original cost (or book value), however, is not directly comparable between one enterprise and another because the assets are acquired at different times and hence at different price levels, and because the methods of accounting for capital consumption and other transactions affecting assets and liabilities differ. The existing balance

14 On the principles of social accounting and their differences from those of business accounting, see *Studies in Income and Wealth 12*, pp. 24-79; *Study of Saving*, Vol. II, pp. 5ff.

sheets, therefore, cannot be added together to yield economically meaningful and comparable totals, except for some of the financial assets in which valuation problems are negligible.

1. SCOPE OF NATIONAL BALANCE SHEET

Following the basic tenet of social accounting to extend the system as far as the "measuring rod of money" reaches, the national balance sheet and its sectoral components include all assets and liabilities that have market value that can be expressed in monetary terms. The scope of assets and liabilities is thus limited to items that can be appropriated under the legal system of the day and place; it excludes human beings as well as free natural resources such as sunshine and precipitation. A national balance sheet drawn up according to the principles of social accounting is very similar to a balance sheet prepared according to the rules of modern business accounting. For instance, they both exclude one type of asset which might well be included under strict application of the basic principles, that is, "intangibles" in the narrower sense of patents, copyrights, trademarks, etc., and other less well-defined intangible items such as good will. Whereas in business accounting this exclusion apparently reflects conservatism rather than first principles, in national accounts the consistent exclusion of such assets seems preferable, since it is virtually impossible to take account of them systematically and consistently and since often a corresponding entry might be made on the liability side of other economic units or sectors. For instance, the capitalized value of a patent or a copyright, or of any monopoly profit, on the balance sheet of the owner should be offset by capitalized monopoly tribute in the balance sheet of the buyer. Therefore, the balance sheets used in this study are, in principle, limited to appropriable tangible assets and to those financial assets that reflect a definite creditor-debtor or security owner-issuer relationship. This definition calls for the entry of accruals on either the asset or liability side since they reflect adjustments to recorded creditor-debtor relationships made to take account of discrepancies between payment dates, delivery dates, and balance sheet dates. "Intangibles" are excluded, at least in principle, although some may have slipped into the estimates of miscellaneous assets to a very minor extent.

The national balance sheet also follows business accounting in the omission of claims or obligations arising out of future contractual payments for current services. Under modern conditions, possibly the most important of these payments are rents for reproducible or nonreproducible tangible assets. Hence the tangible assets involved appear in the balance sheet of the lessor, but leave no trace in the balance sheet of the lessee. Consequently national and sectoral balance sheets do not

reflect shifts between owner and tenant operator of any class of tangible assets. Thus sale and lease-back transactions between financial institutions—lessors of the property—and the nonfinancial business enterprises leasing and operating them, which have become very important in the postwar period, are not reflected in any segment of the national balance sheet. Both the lessee's obligations to pay rents for an often protracted future period and the lessor's rights to receive them remain unrecorded.

Certain types of assets and liabilities are regarded as subject to appropriation and evaluation irrespective of the attitudes of owners, creditors, issuers, or debtors. This treatment is in accordance with the principles of comparability and uniformity which require that total national assets or wealth should not be affected by the mere accident of ownership or change of ownership. The scope of the national balance sheet is thus not determined by what the different economic units think should be included in their own balance sheets, but by considerations of social accounting uniformly applied to all economic units. When differences in individual attitudes and uniform principles of social accounting clash, the latter must prevail, as in the case of valuation, as will be argued later.

2. GROUPING OF ASSETS AND LIABILITIES

Social accounting theory does not provide a clear guiding principle for grouping the numerous items of assets and liabilities that can be distinguished, except for the common-sense rule that the categories shown in the national balance sheet should be internally homogeneous in economic character and in owners' evaluation and clearly distinguishable from other categories. In more technical language, the elasticity of substitution within categories should be higher than that among categories.

This clearly calls for separation of tangible and financial (intangible) assets. The further division within these groups will be mostly determined by the purpose of the balance sheets. If they are to be used primarily for the analysis of financial relationships (probably the most important goal), the degree of liquidity of individual assets and liabilities should provide the most appropriate principle of grouping, although the details remain debatable. The resulting grouping of assets and liabilities certainly will be different at different periods and for different countries. At the minimum, assets that fulfill the functions of money and those that may be regarded as near-money or money substitutes should be shown separately, as should other claims against financial institutions. Within the remaining assets and liabilities, the main line of distinction should be drawn between those that have a fairly

broad market on which they can be sold without inducing a substantial change in price or disrupting the market (e.g., stocks and bonds listed on exchanges or traded in the over-the-counter market, single-family homes, agricultural land, raw material inventories, livestock) and those that are not saleable in this way. Grouping by liquidity thus would often divide assets that are legally or technically of similar character—for instance, corporate stock and residential structures—into different categories, and would combine what for economic analysis are very different assets—for instance, single-family homes, which belong to reproducible tangible assets, and the land underlying them, which is nonreproducible.

The grouping of assets and liabilities used in this study is more conventional. Tangible assets are divided only into six broad categories, mostly on the basis of their function—residential structures, nonresidential structures, land (including subsoil assets), producer durables, consumer durables, and inventories (including livestock). A considerably more detailed breakdown of these categories is available in a companion study,[15] which, among other things, enables users to combine the different types of structures with the land underlying them, thus producing categories closer to those of common financial usage.

Financial assets and liabilities are shown in more detail—twenty categories being distinguished in the former and thirteen in the latter —in order to enable users to make their own combinations into broader groups. One such broader sixfold grouping, which is used repeatedly in the text, distinguishes the following categories: money, other short-term claims against financial institutions, long-term claims against financial institutions, other short-term claims, other long-term claims, and equities. Another reason for the relatively greater detail shown for financial assets and liabilities is to identify both lending and borrowing sectors. When a category of financial assets constitutes the liability only of one sector, e.g., Treasury securities or life insurance reserves, the sectoring of holders immediately identifies both the creditor and the debtor sectors.

No arrangement of assets and liabilities will satisfy all analytical purposes. The main shortcoming of the one adopted here, particularly for liquidity analysis, is its failure to identify long-term loans by banks and to distinguish marketable from nonmarketable corporate securities (see Volume II).[16]

The asset and liability categories shown here are slightly more de-

[15] Raymond W. Goldsmith, *The National Wealth of the United States in the Postwar Period*, Princeton for NBER, 1962.

[16] The material for making some of these breakdowns could be obtained without too much difficulty, but the calculations could not be completed for this study.

tailed than those employed by the Federal Reserve Board in its flow-of-funds statistics, by the Securities and Exchange Commission in its statistics on saving, or by the Internal Revenue Service in its statistics on corporation balance sheets. In most cases, however, the categories used here can be combined to become fairly comparable with those of these three other sources, at least in the scope of the different categories, although often not in valuation.

3. VALUATION

Valuation is the most important but also the most difficult of the conceptual and practical problems that must be settled in constructing national and sectoral balance sheets. On the practical level, there is a choice among seven main bases of valuation: book value, original cost to owner, national original cost, face value, replacement value, market value, and capitalized net income. Theoretical problems of valuation, to some extent, overlap with the practical ones, but most of them can be reduced to the choice between uniformity and variety—among economic units and sectors, and over time—in the valuation of identical (or nearly identical) assets and liabilities.

If the balance sheets of the constituent units are to be combined into sectoral and national balance sheets with economic meaning beyond simple arithmetical aggregation, the principles of social accounting require that identical assets (or liabilities) be entered at identical values, regardless of the valuation which owners put on them in balance sheets prepared for their own use, for their creditors, or for the tax authorities.

Uniformity of valuation will, to some extent, clash with the desire to have the valuation of entries in sectoral and national balance sheets coincide with the valuation of owners. This clash is unavoidable, although its scope should be minimized because, first, the use of units' own book valuations would destroy comparability and make it difficult to interpret aggregated figures; secondly, many units do not actually draw up balance sheets and do not follow systematic procedures in valuing their assets, liabilities, and net worth; and, thirdly, we simply do not know which values motivate owners, although it is surely not the same type of valuation for all owners, or for all categories of assets and liabilities, or at all times.

Since valuation at current market prices, or the closest practicable approximation, appears to be the only method that meets the tests of uniformity among units and sectors and of economic relevance, it has, in principle, been adopted in the estimates of sectoral and national balance sheets presented here. The following pages describe briefly the practical application of the principle for any one balance sheet date, while the problems of valuation that arise in comparing balance sheets

drawn up for different dates are briefly discussed in the following section. The extent to which different assets and liabilities can be valued at market depends on the actual scope of the market for assets, a factor which changes with time and place. In the present-day United States, there are markets which value assets or liabilities currently and on a reasonably broad basis for over half the aggregate value of corporate stocks, a substantial proportion of corporate bonds, most government securities, federally guaranteed mortgages, single-family homes, agricultural land and some other types of land (e.g., oil and forest land), and certain consumer durables, particularly automobiles. Although there is no specific market for several important types of assets, they can be evaluated on the basis of related assets for which a market price exists. This is true particularly for financial assets like conventional home mortgages and directly placed corporate bonds.

Face value is the second possible basis for valuation, but it can be applied only to claims and liabilities. For short-term noninterest-bearing claims '(such as currency, demand deposits, accounts receivable and payable) and claims arising from life insurance policies (which have a distant maturity date but can be redeemed at any time at a fixed value), face (or redemption) value can be regarded as identical with market value. The situation is the same for claims with slightly deferred maturity on which interest is accrued currently, such as time deposits in financial institutions. Even for short-term coupon or discount securities, face value may be treated as equal to market value, possibly after the minor adjustment for accrued interest. The equivalence of face and market value in all of these cases, of course, presupposes that the claims are not past due and that the debtor is regarded as solvent; otherwise substitution of face for market value is theoretically inadmissible. Nonmarketable claims or debts that are due at a distant date but do not currently pay the market rate of interest should not be entered at face value in the balance sheet. They should be discounted in accordance with the interval between the present and the maturity date and the difference between the stipulated rate of interest and the market rate for obligations of similar quality.

Original cost is the basic method of valuation in present-day business accounting, either in the strict sense of cost of acquisition by the present owner or after adjustment for capital consumption or other write-downs (e.g., for expected bad-debt losses) made in the owner's books since acquisition. From the economist's point of view, the main difficulty with the use of original cost is that it disregards all changes in prices, whether specific to the asset in question or reflecting changes in the purchasing power of money. As a result, a sum or difference of assets and liabilities valued at their original cost combines prices of

different periods in the balance sheet of individual economic units as well as in sectoral and national balance sheets. Such a combination is economically heterogeneous and is not adapted to the analysis of economic problems, except in the highly unlikely contingency of stability of the general price level and the prices of individual assets over long periods of time.

A variant of original cost—national original cost—that is of considerable importance in the measurement of saving and investment is hardly applicable in national balance sheets. National original cost is the original cost of an asset to the first unit within the nation that acquires the asset, and thus disregards realized and unrealized changes in value that occur later. It usually differs from original cost to owners if there has been a change of hands among domestic units. It obviously is without motivational significance; nor is it uniform, since the original acquisitions occurred at different times and hence usually at different prices. National original cost, therefore, has not been used in the balance sheets presented in this report, except that the estimates of the value of fixed reproducible assets are based on their national original cost, but only after reduction of these costs to the uniformity of the price level of either the base period or the balance sheet date.

Replacement cost is used in order to combine the advantages of definiteness and relatively easy ascertainability inherent in original cost valuation with the economic meaningfulness of market valuation. In this approach, each asset is valued at the price at which it could be acquired at the balance sheet date. For those assets which have a market, replacement cost is therefore identical with market value. Replacement cost valuation can, however, also be applied to those types of assets for which no current market exists, and they include such important classes as commercial and industrial structures, governmental structures, and most types of producer and consumer durables.

There are two main ways in which replacement cost can be estimated. Using the first, original cost (new or depreciated) is adjusted for changes in the purchasing power of money only, i.e., original cost is multiplied by an index measuring the change in the general price level between the date on which the asset was acquired and the balance sheet date. In the second approach, original cost is adjusted by a price index for the type of assets in question. For instance, the original cost of construction of a retail store is adjusted by an index of construction cost for commercial buildings, or the most nearly applicable index of construction costs available. In either approach, the resulting estimate of the replacement cost may refer to the asset's original form when new (undepreciated or gross replacement cost), or may make allowance for

the proportion of the useful life of the asset that has expired by the balance sheet date (depreciated or net replacement cost) .[17]

There is obviously no assurance that replacement cost thus determined will be equal to market value, particularly in the short run. Indeed, since the indirect approach through calculated cost of replacement will generally be used only where there is no market for the asset in question, and hence no market value, there is no possibility of checking how close to each other the two valuation bases are in such cases. It is, however, possible to compare market values, or approximations to them, and calculated cost of replacement for some types of assets, if not currently, then occasionally at benchmark dates,[18] and thus to obtain an indication of the relationship between the two types of valuation.

For most types of tangible assets, capitalized earning power is hardly a practicable method of valuation. In the case of intangible assets, where the method is in principle almost always applicable, it is used only if market values are unavailable, since the market's evaluation of future earnings and future capitalization rates may be assumed to be superior to that of the national balance sheet estimator. There are, however, special cases in which this general presumption is not applicable, but in those cases the difficulties of estimating future earnings and future capitalization rates will generally prevent use of the method. Capitalization of earnings, however, is often the only alternative method of valuation where there is no market price for the exact asset in question, but where the asset's future earnings can be estimated with reasonable confidence and market capitalization rates are available for closely similar types of assets. This applies primarily to certain types of fixed-interest-bearing obligations, such as mortgages or directly placed corporate securities.

The valuation of liabilities usually presents only minor difficulties, though face value, which determines the entry in debtors' books, and market value may at times differ significantly. One category of debt, however, is an exception—the liabilities arising out of insurance, pension, and social security arrangements. In the national and sectoral bal-

[17] Under the market value test, the rate and form of depreciation are so selected that an asset of a given age is assigned a depreciated value as close as possible to its market value, given the original cost and age of the asset and the deflator used. This will usually lead to the application of some form of declining balance depreciation. We do not know enough about market values of tangible assets of different ages except for automobiles, houses, and a few other items, to be definite about the form and, what is more important, the length of life implied in the depreciation curve that approximates market values.

[18] Such comparisons will be found in Goldsmith, *National Wealth*, Chapter 6. For a more detailed comparison for nonfarm residential structures, see Leo Grebler, David M. Blank, and Louis Winnick, *Capital Formation in Residential Real Estate: Trends and Prospects*, Princeton for NBER, 1956, Appendix D.

ance sheets utilized here, the beneficiaries—always belonging to the nonfarm and farm household sectors—are credited with the value of the assets accumulated in the funds. This procedure precludes any discrepancy between the claims and the liabilities arising out of the arrangements. It raises no problems as long as the funds are equal to the actuarial value of the liabilities, as is the case in private life insurance and under some pension and social insurance arrangements, but problems arise in the case of plans that are only partially vested or entirely unfunded. These are serious primarily in the case of the federal government's Old-Age and Survivors Insurance, where the fund accumulated is far below any reasonable actuarial evaluation of future liabilities—possibly by fully $300 billion.[19] If the OASI were treated like private insurance or pension plans, or like some other government pension arrangements, the liabilities and hence the negative net worth of the federal government would be higher by the difference between actuarial liabilities and fund assets, and the net worth of the household sector would be larger by the same amount—national net worth, though not national assets and liabilities, being unaffected. These changes would be offset, and the present situation more or less reestablished, if it were accepted that comprehensive national accounting requires capitalization of the future receipts of OASI taxes as assets of the federal government. In a situation as complex and controversial as this, the treatment adopted appears to be the simplest and most realistic—or the least unrealistic—available.[20]

4. ALLOWANCE FOR PRICE CHANGES

Balance sheets drawn up in accordance with market valuation of assets and liabilities, or a close approximation, are subject to two criticisms. The first is that the entries are affected by changes in the prices of assets expressed in terms of the unit of account, i.e., the dollar; and the second is that they make no allowance for changes in the unit of account's purchasing power over goods and services. The critics in both cases obviously want changes in the various asset and liability items in the national balance sheet to reflect only those that are not due to price movements. In the first case, they want to recognize only changes in the quantity of assets and liabilities; in the second, they want to measure changes in the purchasing power of assets and liabilities, i.e., to

[19] *Actuarial Study No. 48,* U.S. Department of Health, Education, and Welfare, Washington, 1958, p. 21.

[20] An additional argument for the treatment adopted here is that capitalization of future OASI taxes and benefits would call for parallel treatment of other taxes, i.e., their capitalization in the balance sheets of the taxpayer and the government— a procedure nobody seriously advocates. The treatment implicitly rejects funding of this contingent liability.

eliminate the influence of changes in the purchasing power of the unit of account.[21] This tendency to abandon current values in comparisons over time or between areas and to deal in "deflated" rather than current values has its parallel in the deflation of gross national product, which is common when the movements of national product, or its components, over time are studied, or when national products in different areas are compared. Such comparisons, of course, raise many well-known difficulties, but they have nevertheless become accepted procedure in the study of economic growth.[22]

Unfortunately, however, the two cases of deflating national product and national assets are not at all parallel. It is possible, although difficult, to envisage measures of gross national product or its components at different points of time or space in which goods and services are valued at common prices, either the prices of one of the two periods (areas) being compared or the common price of any third period (area). This approach is possible to the extent that deflation reduces the monetary values of the flow of goods and services to their physically comparable quantities. Gross national product can then be visualized as a heap of identifiable physical quantities. It is much more difficult to look at net national product in this manner because capital consumption allowances cannot be identified with specific physical goods. It is still more difficult to apply the approach to national income and its components. Here it is necessary to regard input—in terms of hours of labor and of some physical units of other factors of production—as the physical quantities that are the result of deflation.

The method of specific deflation which is used for gross national product can also be applied to the stock of tangible assets, i.e., national wealth. Certain statistical problems, such as allowances for quality changes and availability of price quotations, are more difficult to solve satisfactorily for national wealth than for national product, but the difference is one of degree only. The approach, however, breaks down conceptually in the case of financial (intangible) assets, because these assets by their very nature cannot be visualized as physical quantities. To the extent that financial assets fluctuate in price—the most important example being corporate stock and similar equities—it is, of course, possible to divide the current value of the stock of assets by a price index, and thus obtain a figure operationally equivalent to the

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[21] Whenever we speak of changes in the value of assets and liabilities over time, we may add, or substitute, differences in the value of assets and liabilities between places, particularly between countries.

[22] For a discussion of these problems see Simon Kuznets, *Economic Change: Selected Essays in Business Cycles, National Income and Economic Growth*, New York, 1953; Milton Gilbert and Irving B. Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies*, Paris, 1954.

deflated stock of a certain category of tangible assets, or to a deflated flow of goods and services. The similarity, however, is only superficial, because the resulting quotient of current value and price index of a given category of financial assets cannot be interpreted meaningfully as a physical quantity. What meaning, for instance, can be attached to the deflated value of stockholdings or of corporate equity obtained through a stock price index—a figure which reflects without distinction the effects of economy-wide developments, such as changes in the general level of prices and interest rates, and of developments specific to individual corporations and groups of them, such as their earnings, current and expected, pay-out ratios, liquidity, and many other factors? There is thus no concept of deflated total assets that is parallel to deflated gross national product or deflated national wealth in the sense of a collective of physical flows or stocks valued at a uniform and consistent set of prices, a collection that can be visualized in physical terms.

The second basic approach to adjustment for price changes, however, is still open: the adjustment of current values for changes in the purchasing power of the unit of account in which all current prices are expressed. This approach requires accepting the relevance of the concept of the purchasing power of money, or the general price level, to assets and liabilities. Following the practice current in income and growth analysis, one could take the gross national product deflator (i.e., the ratio of gross national product in current and base-period prices) as the measure of changes in the purchasing power of the accounting unit. It is easy to divide all current values in the balance sheet by this index. Such a division obviously does not change relationships among the balance sheet items and hence does not affect the balance sheet structure. It can therefore be useful only as a rough scalar adjustment, applicable primarily to long-term comparisons or other cases where changes in the price level are so great that it is better to adjust for them, however roughly, than to disregard them altogether.

These considerations have led to the abandonment in this report of the attempt at specific deflation of financial assets, and hence of total assets, liabilities, and net worth. Where comparisons over long periods of time were required, they have generally been based on total assets in current prices adjusted for changes in the purchasing power of money by a gross national product deflator. In some cases, and primarily for illustrative purposes, tangible assets have been adjusted by specific price indexes, equities by a price index of corporate stock, and claims and liabilities by a gross national product deflator, deflated net worth of course being obtained as the difference between deflated assets and deflated liabilities and thus having no deflator of its own.

The absence of estimates of national assets in constant prices, except

in the substitute form just described, may be regretted, but has to be accepted as unavoidable. The impossibility of constructing meaningful estimates of deflated total national assets—as well as of financial assets, liabilities, and net worth—emphasizes again that the chief role of national and sectoral balance sheets lies in analyzing the balance sheet structure of different groups of economic units at one date, as well as in comparing balance sheet structure between different points of time and between different areas or countries. National balance sheets are not intended as a device to measure economic growth over time, but they are essential to study the relations between the financial super-structure and the real infrastructure, which constitute an important aspect of economic growth.

5. SECTORING

The decision about the number of sectors and their exact delimitations poses at least three sets of problems. The first is rooted in the clash between the aversion to splitting the accounts of any one economic unit, since each unit is regarded as a single decision-making entity, and the desire to keep in one sector all flows and stocks that are economically similar, even if they belong to units in different sectors. This clash, which is usually known as the conflict between institutional and functional sectoring, appears in many guises in social accounting. The second set of problems arises from the need to reconcile the principle of motivational homogeneity, which requires that all units in a sector have a reasonably similar structure of assets and liabilities or react in a reasonably similar way to changes in their balance sheet, with the necessity of keeping sectors sufficiently broad for economic analysis. The third set of problems, more mundane but equally vital, is the lack of data for groups of units that constitute a sector from an institutional as well as a functional point of view. The main result of this insufficiency of data is that the sectors which we have to use are generally less numerous but broader in scope than those that are best fitted for economic analysis.

In the construction of national balance sheets for the United States, the following seven main sectors have been distinguished, which means that separate balance sheets are shown for each of them for every year: nonfarm households, unincorporated nonfarm business enterprises, agriculture, nonfinancial corporations, finance, state and local governments, and federal government.

This choice of sectors is largely dictated by the availability of data and the desire to retain as much comparability as possible between the national and sectoral national balance sheets for the postwar period developed for this report, the national balance sheets for benchmark

dates before 1945 available in *Study of Saving,* and the national income accounts of the Department of Commerce and the flow-of-funds statements of the Federal Reserve Board for the postwar period. A more detailed account of the sectoring, particularly for finance, can be found in the introduction to Volume II.

Nonfarm Households

Two main problems are encountered in the delimitation and subdivision of this sector: first, our inability to limit the sector to units that are homogeneous in that their motivations are predominantly those of consumers; second, the absence of subsectors bringing together those groups of households that are similar in their asset and liability structure.

While ideally the nonfarm household sector should include only consumer units, the character of the data now available forces us, on the one hand, to include units such as nonprofit institutions that do not have a close affinity to consumer households in either their activities or their asset and liability structure, and, on the other hand, to draw an insufficiently clear boundary line between consumer households and units included in the agriculture, unincorporated business, and even corporate business sectors.

The inclusion of nonprofit institutions—educational institutions, churches, hospitals, foundations, labor unions, fraternal organizations, and miscellaneous charitable institutions—is chiefly due to the absence of sufficiently reliable or detailed annual data on their assets and liabilities. There is no doubt that conceptual clarity requires separation of these institutions, which hopefully will become statistically possible in the not too distant future. The order of magnitude of the assets and liabilities thus included in the household sectors is indicated by rough estimates for 1945 and 1949 in Goldsmith's *Study of Saving*[23] and for 1952-55 in Mendelson's *Flow-of-Funds.* The preparation of annual figures did not seem justified since most of the year-to-year fluctuations thus derived would necessarily have been arbitrary and the result of assumptions. The situation is better for colleges and foundations; but several other types of nonprofit institutions, such as churches and labor unions, whose assets and liabilities are not reliably known, are too large and too different from the better-known sectors to blow up the figures available for the latter.

The inclusion of nonprofit institutions with nonfarm households cannot seriously distort the over-all picture since these institutions account for only approximately 3 per cent of the total assets of nonfarm households. For some intangible assets, particularly some types of

[23] Vol. III, pp. 449-455.

securities, the holdings of nonprofit institutions and the changes therein are sufficiently large compared to those of nonfarm households to call for caution in interpreting the figures now attributed to the nonfarm household sector.

These difficulties are essentially limited to financial assets since the value of the structures of nonprofit institutions—by far the most important of their tangible assets—can be estimated by the perpetual inventory method using data on current construction expenditures on structures, which are not substantially inferior to those that have to be accepted for many other sectors.

A similar problem is raised by the inclusion of the assets of personal trust funds among those of nonfarm households. While it is undoubtedly true that most of the beneficiaries of these funds belong to the nonfarm household sector, it may be argued that these funds should be included in the financial sector since they are administered by the trust departments of commercial banks and trust companies and have a separate legal existence. This indeed is the way in which personal trust funds were treated in *Financial Intermediaries*.[24] This treatment has not been used here largely because reliable annual figures are not available. It has therefore seemed preferable to leave personal trust funds in the nonfarm household sector, but to provide separate rough estimates of their size and structure so that users may transfer them from the balance sheet of the nonfarm household sector to that of the finance sector. Consideration might well be given to an extension of this treatment to investment advisory accounts administered by financial institutions, even though these accounts do not have the independent legal status of personal trust funds. Such treatment is at the moment precluded by the almost complete absence of information on the size and structure of these accounts.

The second main shortcoming of the present treatment of the nonfarm household sector is, as mentioned above, the absence of subsectoring. In order to improve homogeneity and to facilitate economic analysis, it would be desirable to divide the more than fifty million units now included in this sector into several groups more homogeneous in their balance sheet structure, their reactions to asset price changes, and other relevant external factors. It is unlikely that any single one-way distribution of nonfarm households would satisfy all, or even the most important, analytical requirements. For closer study, cross-classifications using simultaneously two, three, or even more criteria will probably be required. The most important classifications probably are those by size of total assets or net worth, age or position in the

[24] Raymond W. Goldsmith, *Financial Intermediaries in the American Economy since 1900,* Princeton for NBER, 1958.

life cycle, and the distinction between home-owners and renters. Such classification must in practice be based on samples rather than on aggregative statistics. Unfortunately material of this type was available only for one year during the postwar period (1950), and it was therefore impossible to provide a systematic breakdown for the nonfarm household sector for each year during the period or even for several benchmark years. The available material, however, is utilized in the more detailed study of the ownership and financing of residential real estate.

The most difficult problem in the delimitation of the nonfarm household sector is to separate the operation of farms or unincorporated business enterprises from the household activities of the owners. This difficulty may be less pronounced for assets and liabilities than for current income and expenditures, but it is nevertheless serious. The two alternative consistent treatments are unsatisfactory in many respects if the rule against dividing the activities of any economic unit among sectors is to be observed strictly.

Under the first alternative, the household sector would include all the assets and liabilities of any household whose head is the proprietor of, or a partner in, a farm or nonfarm business enterprise that cannot be regarded as an independent unit with its own system of accounts and its own motivations separate from those of the owners. The second alternative would allocate all assets and liabilities of owners and partners in unincorporated farm and nonfarm businesses to these two sectors, including those that have no direct relation to the business. Under either alternative, therefore, it would have to be decided anew in each case whether a given unincorporated or corporate business enterprise was an independent entity or merely an adjunct to the household activities of its owners. Such decisions would be extremely difficult to make even in theory and practically impossible to implement statistically. The compromise solution of including the activities —i.e., the assets and liabilities—of all unincorporated business enterprises, farm and nonfarm, in the household sector and those of all corporations in the business sector is unsatisfactory at both ends. There are numerous cases of partnerships and even sole proprietorships which meet all reasonable tests of independence, while many small corporations would fail to meet such tests if economic rather than legal criteria were applied in separating business and household activities.

The opposite solution of dividing the assets and liabilities of unincorporated business enterprises and their owners among those that belong to the business and those that belong to the household appears to be more realistic and more helpful in economic analysis, even though it violates the rule against the allocation of the activities or assets of one

economic unit to more than one sector. The difficulty with this approach is that, with the present material, the division of assets and liabilities between household and business must be, to some extent, arbitrary. Certain broad types of assets—such as real estate other than nonfarm homes, producer durables, inventories, and accounts receivable and payable—must be allocated entirely to business, and some other assets—primarily demand deposits and bank debt—must be divided among business and household on the basis of rather rough criteria of allocation. This procedure, which has been adopted here, admittedly has two shortcomings. First, substantial statistical errors may be made in the division of demand deposit and bank debt among those attributable to household and to business activities. Secondly, and more seriously, the structure of and changes in the household assets and liabilities of some owners of farms and unincorporated nonfarm business may depend largely on the simultaneous existence of business assets and liabilities. In these cases the division of assets and liabilities among two sectors impedes rather than helps interpretation of the figures.

In view of both the theoretical and practical problems involved, the most meaningful arrangement of the data available was to separate household and business assets and liabilities in the case of owners of nonfarm unincorporated business enterprises and to keep them together in the case of agriculture. The farm sector thus includes all identifiable assets and liabilities of farm operators, but only the agricultural property of absentee landlords. The unincorporated business sector, on the other hand, covers only business assets and liabilities narrowly defined; all other assets and liabilities of owners are included in the nonfarm household sector.

Unincorporated Nonfarm Business Enterprises

Most of the difficulties involved in a consistent delimitation of this sector have been obviated here by including only selected assets and liabilities that may reasonably be assumed to be used exclusively in business: multifamily residential real estate, commercial and industrial structures, producer durables, and inventories not owned by corporations or the government (all determined primarily by allocation of the capital expenditures on different tangible assets); accounts receivable and payable; and a part of the demand deposits and notes payable to banks (these items being allocated on the basis of sample data from banks). Thus certain assets and liabilities used in business are not included and hence are allocated to the nonfarm household sector, which acts as the residual sector in the estimation of most types of assets and liabilities. Examples of such omissions are time deposits, government

securities, other bonds, and stocks, limited amounts of which are probably held by unincorporated businesses that clearly separate their assets and liabilities from those of their owners. It is very unlikely, however, that the amounts thus omitted are large enough to affect substantially the aggregate holdings of these types of intangible assets by nonfarm households or the asset structure of unincorporated business, since the main groups of unincorporated financial enterprises that hold substantial amounts of these assets—such as brokers and dealers in securities—have been included in the financial sector.

Among tangible assets, some one- to four-family rental properties have likewise been omitted since all properties in this category that are not owned by corporations and governments have been allocated to nonfarm households. This was done because it is likely that most of the rented one- to four-family properties constitute only a secondary source of income to their owners, who regard the ownership and rental of these properties as an investment rather than as a business activity. This assumption does not apply to the relatively small number of cases in which one individual, or a partnership, owns and administers a substantial number of one- to four-family rental properties. Conceptually, these properties should have been included in the unincorporated business sector, but it was impossible to make even a rough estimate of the amounts involved.

The assets and liabilities allocated to unincorporated business also include some that do not belong to that sector, for instance, the tools used by households in home workshops and employed in nonprofit activities. The amounts so omitted however are likely to be quite small and not to show significant short-term fluctuations, though probably a marked upward trend.

Agriculture

In agriculture, as in nonfarm unincorporated business, it has not been possible to adhere to one of the two consistent approaches, which would assign to the sector either all assets and liabilities associated with agriculture as an industry or all assets and liabilities of a group of households whose primary activity is farming. Unlike that for unincorporated business, however, the compromise solution in this case is closer to the second alternative.

The balance sheet of agriculture covers all agricultural land, farm structures, farm machinery, livestock, and crop inventories. It thus includes even tangible assets of this type that are owned by nonfarmers, represent only a minor part of the owner's total assets, and are not regarded by them as a business enterprise (gentleman farms), as well as all assets of corporations classified in *Statistics of Income* under agri-

culture. On the other hand, it does not include tangible nonfarm assets of farmers, such as nonfarm real estate, nor several types of financial assets, such as interest in unincorporated business enterprises, nonfarm mortgages, corporate bonds, and stocks, because no way has yet been found to determine the amounts of these holdings regularly or with fair reliability.

The only financial assets and liabilities which are allocated to agriculture are bank deposits, U.S. savings bonds, equity in life insurance, farm mortgage debt, and short-term farm borrowing from banks and other lenders. The statistical basis for this allocation is reasonably firm for farm mortgage debt and farm borrowing from banks and a few other specialized lenders. For the other intangibles, the figures represent nothing more than rough estimates, although a substantial attempt is made to ascertain the figures at least for farmer bank deposits.

Nonfinancial Corporations

This sector includes all corporations except those classified as financial, which are described under that sector, and agricultural corporations.

The main difference between the content of the nonfinancial sector in this report and in the national balance sheets for the period before 1945, published in *Study of Saving*, is that it now includes real estate corporations previously allocated to the finance sector in *Study of Saving*. The present classification is more in conformity with the basic character of the financial and nonfinancial sectors. It impairs comparability of the aggregate figures for nonfinancial corporations only to a limited extent. Moreover, a set of prewar nonfinancial corporation balance sheets, comparable to the postwar ones in their inclusion of real estate corporations, is shown in Volume II, Table III-4b, and a rough balance sheet for real estate corporations themselves covering 1945-58 is given in Table III-4a. It is therefore possible to re-establish comparability almost completely using either definition.

Finance

The delimitation of this sector and the subsectors within it presents a number of difficult problems. Since most of these either have been discussed in *Financial Intermediaries*[25] or in recent literature[26] or are taken up in the introduction to Volume II, they may be treated here very briefly.

From a theoretical point of view, there are good arguments for limiting the financial sector to those institutions whose liabilities the

[25] Chapter III.
[26] Dorrance, *International Monetary Fund Staff Papers,* October 1959, pp. 168-209.

other sectors regard as liquid or nearly liquid assets, and for making a sharp distinction within the financial sector between monetary institutions and other financial institutions, including in the former the monetary activities of the government, even though this violates the principle of not dividing the assets and liabilities of one unit among several sectors. In this report these requirements have not been rigidly observed, partly in order to preserve continuity with the pre-1945 balance sheets of *Study of Saving* and partly because strict observance would have required considerable additional estimation. In particular, the separation of monetary institutions would have required segregation of the checking deposit business from the total assets and liabilities of commercial banks, since only the former can be regarded as performing monetary functions. While such a segregation would not have been difficult on the liability side, it would have raised serious conceptual and statistical problems on the asset side since it would have called for a selection of specific assets to be matched against checking deposits. The financial sector thus includes not only institutions whose liabilities are regarded as money or near money, but all institutions whose assets consist mostly of intangibles (other than securities of subsidiaries and affiliates) and whose primary business is to act as intermediary between ultimate lenders and borrowers. On the basis of this definition, the sector includes, in addition to depositary institutions (banks, saving and loan associations, and credit unions), all insurance organizations, both private and public, investment companies, and finance companies.

The estimates of the balance sheet of the financial sector are built up from balance sheets for the following thirteen subsectors, some of which are, in turn, the result of a combination of smaller subsectors:

Federal Reserve banks and Treasury monetary funds
Government pension and insurance funds (federal, state, and local)
Commercial banks
Mutual savings banks
Savings and loan associations
Investment companies (open-end, closed-end, and face amount)
Credit unions
Life insurance companies
Fire and casualty insurance
Noninsured pension plans (corporate, nonprofit organization, union-administered and multiemployer)
Other private insurance (including fraternal orders, group health insurance, and savings bank life insurance)
Finance companies (including sales finance, personal finance, industrial loan, commercial finance, and mortgage companies)

Other finance (including brokers and dealers in securities, banks in possessions, agencies of foreign banks, and agricultural credit organizations)

State and Local Governments

This sector, which also covers the District of Columbia, includes, without distinction, state and local government enterprises, particularly in public utilities, as well as state and local governments' own trust funds. It excludes state and local government employee retirement funds and workmen's compensation funds, which form part of the financial sector.

In building up this sectoral balance sheet, separate figures were generally developed for state governments, on the one hand, and for local governments, on the other. However, a consistent separation of all items to obtain completely separate balance sheets for state and for local governments hardly seemed to justify the additional work and the sometimes fairly arbitrary allocations involved.

Federal Government

Most of the problems in the delimitation of this sector involve a decision as to whether it is to include all assets and liabilities that are legally owned by the federal government, or whether it is to be limited to those that are associated with the general governmental functions of the federal government. In the latter case, all other assets would be allocated to the sectors to which they are functionally related. Thus the assets of all federal financial agencies would be incorporated in the financial sector and those of all federal nonfinancial business-type organizations would become part of the nonfinancial business sector. While such a treatment would have some advantages in the analysis of the finance and business sectors, it would run counter to the principle that assets and liabilities under the control of one decision-making unit should be kept together.

The federal government sector, as used in this study, includes the postal savings system, government lending agencies, Federal Land Banks, and Federal Home Loan Banks. These organizations might well have been allocated instead to the financial sector, but were retained in the federal government sector mainly in order to utilize data already available and to preserve comparability with other statements of federal assets and liabilities. The insurance and retirement funds of the federal government, the Treasury monetary funds, and the Federal Reserve banks are included in the financial sector, while the District of Columbia forms part of the state and local government sector. The federal government sector also includes, without distinction, the

business-type activities of the federal government. Some of these, namely, federal lending agencies, are shown separately in Volume II, Tables III-7c and III-7e.

Military assets, i.e., military structures and equipment and the assets of the Atomic Energy Commission, are excluded from the regular balance sheets. Rough estimates of these items are, however, added to the federal civilian totals in Volume II to indicate the relative magnitude of the military and civilian assets of the federal government and to make it possible to present estimates of total national assets including military assets.

6. EXTENT OF CONSOLIDATION

The problem of how far to carry consolidation in sectoral and national balance sheets has two extreme solutions. One is to refrain entirely from consolidation, i.e., to derive sectoral and national balance sheets as the arithmetical sum of the balance sheet entries of all legally independent economic units. The other is complete consolidation on a national basis, eliminating all claims and liabilities among domestic units as well as their holdings of domestic equities and the offsetting net worth entries. This would leave only tangible assets and the net foreign balance on the left-hand side and national net worth on the right-hand side of the national balance sheet—net worth to be allocated to various groupings of households and other units regarded as ultimates.

In practice, the degree of consolidation will depend largely on the purpose for which national balance sheets are drawn up. If they are intended primarily for the study of financial relationships, as they are, there is no advantage in separating the balance sheet of units that are under common control and respond to one set of decisions. Therefore, the balance sheets of subsidiaries are here consolidated with those of parents. However, the consolidation goes no farther than that because an analyst of financial interrelations is interested in preserving all such relations among economically independent units.

In accordance with this approach, the sectoral balance sheets have been derived by a combination of the balance sheets of all units, except that, in the case of parents and subsidiaries, consolidated balance sheets are used. The national balance sheet in turn is simply the sum of sectoral balance sheets. This approach differs from that of the Federal Reserve's flow of funds in which much more consolidation takes place, eliminating most intrasector asset and liability holdings.

The aggregate of national assets, as well as their structure, will thus depend on what is considered an independent economic and social accounting unit. The main problem here is presented by unincorporated

business enterprises, on the one hand, and by nonprofit institutions and personal trust funds, on the other. To the extent that unincorporated business enterprises are regarded as independent economic units so that their net worth is treated as one of the assets of the owners, total national assets (as well as the combined net worth of all sectors) are larger by the net worth of unincorporated business enterprises than they would be if the assets and liabilities of these enterprises were regarded as assets and liabilities of the owner. In this study, nonfarm unincorporated business enterprises have been treated as independent economic units so that their net worth appears among the assets of nonfarm households, their presumed owners. Farm business, on the other hand, has not been separated from the other assets and liabilities of the owners. There is, therefore, no entry in the national balance sheet for the net worth of farm business—which would be included among the assets of farm owners—but only an entry for the net worth of farm households, which is derived as the difference of all the ascertained assets and liabilities of agriculture.

A similar problem arises in the case of personal trust funds and nonprofit institutions. If these are regarded as separate entities, the excess of their assets over liabilities—appearing as the net worth of the new sectors—would have to be transferred to the asset side of the beneficiaries' balance sheet under the title of equity in trust funds and nonprofit institutions, respectively. This would require some arbitrary allocation among nonfarm and farm owners, but would not pose insuperable difficulties. A good case can be made for this treatment, at least for nonprofit institutions, which may well be regarded as independent economic units with decision-making organs separate from the beneficiaries as a group. In the case of personal trust funds, the decision depends, in principle at least, on the degree of independence of the trustee. The greater it is, the stronger is the case for treating these funds as independent units, constituting a subsector of the financial sector, and for regarding the equity in them as an asset of the beneficiaries.

7. SOURCES AND CHARACTER OF ESTIMATES

To enable users to form their own judgment about the character of the data which have been used to construct sectoral and national balance sheets, Volume II shows in detail the derivation of the figures and describes the sources and methods used in fitting the figures into the balance sheet schedule underlying this study. These tables and notes, however, are so voluminous and so complicated that a brief summary may be useful to the casual reader. For the serious student, there is unfortunately no substitute for a careful examination of both

the basic data used and of their processing into the final balance sheet estimates.

In evaluating the character and reliability of the estimates, a distinction must be made among four main groups of assets and liabilities because quite different methods were used to measure them: reproducible tangible assets, nonreproducible tangible assets, intangible (financial) assets and liabilities, and net worth. The summary given below naturally slurs over most of the special difficulties encountered in estimating individual assets and liabilities within the main groups, and likewise ignores most of the difficulties that often arise in measuring the same asset or liability item for different sectors.

Reproducible Tangible Assets

These assets, represented primarily by structures and equipment, have as a rule been estimated by the perpetual inventory method. This method assumes that, in the absence of strict market valuation for most types of reproducible tangible assets, the nearest acceptable approximation to current values is provided by replacement cost in the sense of depreciated original cost adjusted for price changes. Use of this method for all types of tangible assets has the great advantage of comparability of valuation among types of assets, among sectors, and over time.

Thus, for instance, the assumption is made that the replacement cost of all one- to four-family houses built in a given year—i.e., houses of a given vintage—can be adequately measured by depreciating the original cost of construction on the basis of an assumed average useful life of eighty years, straight-line depreciation,[27] and the changes in the construction cost index for such houses between the date of construction and the balance sheet date. The replacement cost of the entire stock of one- to four-family homes at the balance sheet date is then estimated by summing the remaining (depreciated) price-adjusted expenditures on such houses for as many years back from the balance sheet date as corresponds to their assumed useful life, in this case for the entire period from 1879 to 1958.[28]

For short periods the prices at which reproducible assets change hands may, of course, differ, even considerably, from their value calculated by the perpetual inventory method, not only for individual properties that are bought and sold, but also for the average of all assets

[27] Use of other forms of depreciation is entirely compatible with the perpetual inventory method. They have, in fact, been used in the calculation of some types of tangible assets, e.g., automobiles.

[28] This is a simplified picture. For a more detailed description of the procedures employed in deriving estimates by the perpetual inventory method, see, for instance, *Study of Saving*, Vol. III, pp. 30 ff.

of a given type that actually change hands during a given year. In the longer run, however, the valuations of the market, represented for many types of reproducible tangible assets only through occasional transactions, seem to conform reasonably well to their perpetual inventory value. There is evidence that the most important type of reproducible tangible assets for which a reasonably broad and continuous market exists—single-family homes—does behave in this way.[29]

Inventories and livestock, though also regarded as reproducible tangible assets, are not measured by the perpetual inventory method because conceptually preferable and statistically simpler figures are available. Estimates of inventories are now being prepared regularly by the Department of Commerce from direct reports that cover a large proportion of total business inventories.[30] These estimates have been treated as if they reflected current values although there is a short lag between the date of acquisition, on which book values are based, and the balance sheet date; the average length of this lag is increasing as LIFO and similar valuation systems are applied to an increasing percentage of total inventory. The value of livestock is calculated by the Department of Agriculture, essentially by multiplying the number of animals by the approximate average price.

Stocks of monetary metals are quite accurately known from official statistics.

Nonreproducible Tangible Assets

The perpetual inventory method is inapplicable by its very nature to nonreproducible tangible assets, which are represented primarily by land, forests, and subsoil assets. Fairly accurate figures are available for agricultural land in the Department of Agriculture estimates which are based on a combination of census data and indexes of farm real estate prices. For most other categories of land, it has been necessary to resort to an indirect estimate, based on the ratio of the value that land devoted to specific uses bears to the value of the structures that it underlies. The statistical basis for the determination of these ratios is fairly reliable only for residential land, which accounts for a substantial proportion of all nonagricultural land. In the case of land under-

[29] For a comparison of market prices with construction cost indexes (which determine replacement cost estimates) in the case of houses, see Grebler, Blank, and Winnick, *Capital Formation*, Appendix C. The conclusion there is (p. 358) : "With regard to long-term movements, the construction cost index conforms closely to the price index, corrected for depreciation. . . . For long-term analysis the margin of error involved in using the cost index as an approximation of a price index cannot be great." See also *Study of Saving*, Vol. II, pp. 391 ff.

[30] See *Statistics of Business Inventories*, Report of Federal Reserve Board Consultant Committee on Inventory Statistics, Washington, 1955.

lying commercial and industrial structures, forest land, and subsoil assets, very rough estimates are all that can be contrived at the present.

Checks on Tangible Assets

Fortunately some checks are available on the estimates of aggregate land and structure values for most types of privately owned property for at least one benchmark date during the postwar period.[31] The checks are satisfactory, both in quality and results, for residential housing. For commercial and industrial real property and for corporate fixed assets, for which these checks can be made with less confidence, the order of magnitude of the perpetual inventory and other estimates used in the sectoral and national balance sheets is compatible with the benchmark data. Similar checks, which are also available for the civilian and military structures of the federal government, again indicate rough agreement in the order of magnitude with the figures derived in this study primarily by the perpetual inventory method. The main type of tangible assets for which no such checks have been devised so far are consumer durables and the tangible assets of state and local governments.

Financial Assets and Liabilities

Here the situation is basically different for financial institutions, nonfinancial corporations, and state, local, and federal governments, on one hand, and for the nonfarm household, farm, and unincorporated business sectors, on the other. The former publish sufficient statistics to permit the derivation of reasonably reliable annual estimates of the main types of their financial assets and liabilities throughout the postwar period and for a number of benchmark years for the first half of this century. Since no such direct information is available for households and unincorporated farm and nonfarm business enterprises, their financial assets and liabilities must be estimated indirectly either from the balance sheets of the other sectors,[32] from scattered aggregative statistics, or from occasional sample statistics. A particular problem arises in estimating the value of corporate stock and other securities held by households, one of the most important items in their balance sheet. These figures generally have to be derived as residuals. An estimate is first made of the total value of, for example, all corporate stock or all corporate bonds or government securities outstanding

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[31] See Goldsmith, *National Wealth,* Chapter 6.

[32] An example of this indirect method of estimation is the measurement of nonfarm households' holdings of demand deposits from a breakdown of the demand deposits of commercial banks. The estimates of the assets and liabilities of households and unincorporated business enterprises are in many cases much more complicated and indirect than in this example.

in the United States, an estimate which in some cases uses figures from the balance sheet of the issuer and in others independent estimates of the market value of securities traded in organized markets. Estimates of household ownership are then derived by deducting from this total the holdings of other sectors, primarily financial institutions, which are taken from the latter's balance sheets.

Margin of Error

Systematic evaluation of the margin of error in the different categories of assets and liabilities, or in the balance sheets of different sectors, is not yet feasible, partly because of the difficulty, common to social accounting in general, of defining what the "true" value of many entries is.[33] From the description of the sources and methods, it is obvious that reliability must vary greatly among balance sheet categories and among the balance sheets of different sectors. The error is obviously the smallest for the national aggregates of several types of assets and liabilities for which fairly accurate Census-type estimates are available, such as total currency, bank deposits, bank loans, private insurance and pension reserves, government and corporate bonds, and residential and farm mortgages. These categories together amounted in 1958 to over half of all financial assets and more than four-fifths of all liabilities in the national balance sheet. Only a few tangible assets are of similar accuracy—monetary metals, farm land, single-family homes, inventories, and livestock—but they account for about one-third of all tangible assets. Even for these financial and tangible assets (for which the national totals are probably accurate within 10 per cent), errors in the value of sectoral holdings often are substantial for all sectors except finance, nonfinancial corporations, and the government. It is difficult to assess the margin of error in the remaining categories of assets and liabilities, such as nonresidential structures and land, producer and consumer durables, trade credit, and corporate stock.

Net worth—as the difference between the values of assets and of liabilities—is, of course, affected by all errors in the components, but these errors are likely to offset each other. In the case of corporations, the valuation difference may either be absorbed in the net worth estimate or, preferably, shown as a separate item.[34]

[33] For a discussion of the problem, see *Study of Saving*, Vol. II, pp. 129 ff.

[34] This difference arises because net worth as the difference between the market values of assets and of liabilities is never, or only by coincidence, equal to net worth calculated as the market value of the corporate stock outstanding. Both in 1945 and 1958, for instance, the net worth of nonfinancial corporations calculated from assets and liabilities was approximately one-fifth higher than the market value of their stock according to sectoral balance sheet estimates. The difference was over one-half from 1946 through 1953 until the sharp rise in stock prices began to catch up with the rise in the general price level during and after the war.

While exact measurement of margins of error is not possible, the most reliable part of the national and sectoral balance sheets consists of marketable securities and the claims and liabilities in which financial institutions are one of the parties. Next in the scale of accuracy are standardized tangible assets like homes, farm land, and inventories. Among sectors, the balance sheet of financial institutions has the relatively smallest margin of error; nonfarm corporations and agriculture follow, but probably at a substantial distance. The balance sheets of the government sector are fairly reliable in financial assets and liabilities, but affected by a very large margin of error in the tangible assets. Unincorporated business probably has the largest margin of error for most types of assets and liabilities. The balance sheet of households is reasonably reliable in tangible assets, but affected by the residual method of calculation of most financial assets. In proportion to the very large aggregates involved, the errors introduced by the residual method are, even in this case, probably not such as to endanger the usefulness of the figures for analytical purposes.

It is very important to realize that even where the estimates of a given category of assets and liabilities and of the balance sheet of a sector as a whole are sufficient to justify use in analysis, the same may not be true of annual changes between balance sheets for consecutive years. In this report, therefore, only very sparing use has been made of such annual changes, and the emphasis has been put on changes over somewhat longer periods between years which represent cyclically comparable positions, such as the years of business cycle highs or lows, or intervals of at least five years.