represent the best compromise between the needs of the users and the unavoidable financial limitations. In formulating the schedules for the 1958 censuses, consideration should be given to questions which would give information needed for the input-output tabulations. For example, information is needed regarding value added estimates for the trade sector. For manufacturing establishments a more inclusive listing of the various input materials consumed in the production process would be useful, and more detailed information regarding capital equipment would be desirable. It is also recommended that the census provide more information on the sales of specific products from manufacturing industries, using the same method as that developed for the 1954 Census of Manufactures. The cost of gathering specific statistical information (e. g., on advertising, insurance, etc.) may be too high to be included in a complete census tabulation. In this case, consideration should be given to collecting such data periodically on a sample basis as part of the census annual survey of manufactures. This kind of information would fill some of the statistical gaps in constructing a 1958 input-output table.

(c) Experimental work on capital-output coefficients and on regional breakdowns of input-output tables should be encouraged. (See discussion in ch. XIV, sec. c.) As far as possible such exploratory work should be carried outside the Federal Government.

(d) A simplified annual input-output table is included in the integrated system of national economic accounts outlined in chapter V (table A–6).

CHAPTER XIV. NATIONAL BALANCE SHEET

1. THE FUNCTION OF BALANCE SHEETS AND THEIR PRESENT STATUS WITHIN THE SYSTEM OF NATIONAL ACCOUNTS

While the United States has had an official annual estimate of national income for a quarter of a century, no steps have yet been taken toward establishing the national balance sheet as a regular feature of our official national economic accounts. This may come as a surprise to businessmen, and even to laymen only vaguely familiar with accounting, since balance sheets and income accounts are usually regarded as the two primary and complementary parts of a system of accounts. Indeed, in the balance-sheet field there has been definite retrogression in marked contrast to the rapid advances made in the last few decades in the national income and product accounts. Up to the 1920's, long before official or unofficial national income estimates became a regular feature, an estimate of national wealth constituted part of our decennial census. It was prepared for the last time for the year 1922.[89] In this field work even outside of the Federal Government is now so rare that we are limited to 1 continuous and reasonably up-to-date set of national wealth estimates and 1 set of national balance sheets for half a dozen benchmark dates since the turn of the century, and both these attempts have become available only recently.[90]

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[89] National Wealth and Income, Federal Trade Commission, 1926.
[90] R. W. Goldsmith. A Study of Saving in the United States, vol. III, pt. I, Princeton University Press, 1956; see also Thirty-Seventh Annual Report of National Bureau of Economic Research, Inc., pp. 34–36.

The economic statistics available to business, government, and academic users have always included many of the building blocks for a national balance sheet and for balance sheets for economic sectors. The tabulation of balance sheets of corporations in Statistics of Income since 1926 probably represents the outstanding example of data usable without or with only minor adjustments in national and sectoral balance sheets. Other examples are the combined balance sheets for the main types of financial institutions—banks, saving and loan associations, and insurance companies; the data on current assets and liabilities of corporations prepared by the Securities Exchange Commission and the Federal Trade Commission; the statistics on the holdings of Treasury securities by different groups of owners; the estimates of holdings of liquid assets by sectors prepared by the Federal Reserve Board; and the balance sheet of agriculture prepared annually by the Department of Agriculture. Among statistics usable less directly in building up national or sectoral balance sheets, mention may be made of the values of owner-occupied homes reported by the census; estate tax returns, and sample information on selected assets and liabilities collected by the Survey of Consumer Finances.

What we have been missing until recently are the systematic collection of these statistics; the provision of estimates for those items in the national and sectoral balance sheets for which no data are as yet available; and the integration of all this material into a framework consistent with regard to delimitation of sectors, definition of assets and liabilities and valuation. Though one attempt to derive such consistent national and sectoral balance sheets has been made, it had in many cases to use very rough estimates in need of considerable refinement, and is waiting to be put on a current basis.[91]

The neglect of the balance-sheet aspect of national accounting is rather striking in view of the many analytical uses to which the figures can be put and of several significant developments in economic theory—such as the accelerator and the Pigou effect—that call for balance-sheet data for verification and concretization. Among the analytically and practically important uses of national or sectoral balance sheets are:

(a) Capital-output ratios, which in one form or another have become an important factor in the theoretical treatment and the statistical analysis of economic growth.

(b) Debt-equity or debt-asset ratios, helpful in the analysis of financial developments and business cycle.

(c) Liquidity ratios (the proportion of assets of different degrees of liquidity to total assets or to certain types of liabilities), which have come to play a considerable role in monetary analysis.

(d) Velocities of turnover of different types of assets (figures similar to the well-known velocity of circulation of money, useful in monetary and business-cycle studies.

(e) The financial interrelations ratio (the proportion of tangible to intangible assets in the national balance sheet), a measure of the density of financial relations and changes in it, that is of some value as an indicator of balance between the real infrastructure and the financial superstructure of an economy.

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[91] Cf. sec. 3, hereafter.

(*f*) Size distributions of assets and net worth within sectors, particularly household and business, important tools in the analysis of structural changes in the economy and in the evaluation of the social effects of economic growth.

2. CONCEPTS

The concepts of the national balance sheet and the national wealth statement are essentially not more difficult—indeed, they are probably simpler—than those of national income and product. The national balance sheet is the result of adding together the balance sheets of all economic units in the United States—business enterprises, incorporated and unincorporated; households; nonprofit organizations; and governments. Similarly, sectoral balance sheets are the sum of the balance sheets of all units belong to the sector. The national wealth statement and the parallel sectoral wealth statements are best regarded as partial balance sheets limited to tangible assets and, for the Nation, net foreign balance.

The relationship between balance sheets and wealth statements can then be simply expressed in accounting terminology by the statement that the national (or sector) balance sheet is the combined balance sheet of all units in the nation (sector), while the national (sector) wealth statement is their consolidated balance sheet. The difference between the two statements, as is well known, is the treatment of creditor-debtor and stockholder-issuer relationships among units belonging to the same nation (sector). All claims and liabilities arising from these relationships are preserved in the combined national (sector) balance sheet. On the other hand, claims and liabilities, as well as stockholdings and the corresponding figures for stock issued, are eliminated in the consolidated balance sheet, i. e., the wealth statement, because they offset each other and do not represent claims of national (sectoral) units against or liabilities to foreign units. The table following indicates these relationships and lists the main items included in the national (sector) balance sheet and wealth statement.[92]

A. NATIONAL BALANCE SHEET OF UNITED STATES

  I. Tangible assets in United States
      1. Reproducible
      2. Nonreproducible
  II. Claims against United States debtors
  III. Equity securities of United States issuers
  IV. Claims against foreign debtors and equities in foreign properties and enterprises
  V. National assets
  VI. Liabilities to American creditors
  VII. Equities of United States issuers held by American owners
VIII. Foreigners' claims against American debtors; foreign holdings of tangible assets in United States and of equities of American issuers
  IX. National net worth
  X. National liabilities and net worth

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[92] This table is intended to bring out the main accounting relationship underlying a national balance sheet and a national wealth statement. It is not an operational document like table A–14 in appendix A, which shows the main rows and columns in a national and sectoral balance sheet.

B. National Wealth Statement of United States

Virtually all conceptual and statistical problems that arise in connection with national balance sheets and national wealth statements can be attributed to two problems.

First, national (sector) balance sheets or wealth statements, to make economic sense, must be based on balance sheets of the component units which are uniform with respect to scope and classification of assets and liabilities and to their valuation.

Secondly, a choice must be made among the various theoretical possibilities of valuing assets and liabilities. This choice is much more difficult than in the case of national income and product. The reason is that most of national income and product reflects actual transactions which are entered into the accounts at the values unequivocally established at the time the transactions occur. There are, of course, exceptions such as imputations and some questions of valuation such as the choice between factor cost and market price, both problems that have been discussed in chapter V. The proportion of transactions for which these problems are important is however much smaller in the national income and product account than in the national balance sheet or the national wealth statement. Obviously in any 1 year only a small fraction of the total stock of assets changes hands permitting a market value to be unequivocally established. Moreover, certain types of assets, particularly large governmental and private structures, virtually never change hands for a measurable monetary consideration. Hence, the value of the stock of tangible and intangible assets cannot in principle be based on actual transactions occurring close to the point in time for which the balance sheet is drawn up. Valuations in the national balance sheet must of necessity be based on other data.

Of the various possible bases of valuation, original cost to the owner, either undepreciated or depreciated—the latter the prevailing usage in business accounting—cannot be used when the figures are intended for certain important types of economic analysis. As a rule, assets are acquired at different times and prices change over time. Mere summation of original cost values found in the balance sheets of different units would often result in an arithmetic aggregate without economic meaning. Similarly, for reasons mentioned above, it is not possible to value all items in the balance sheets of the different units at market value. This cannot be done even if one is willing to apply the valuation of items actually changing hands by analogy to the total stock for those types of assets and liabilities for which an active

market exists, such as is the case for single-family homes, automobiles, and farmland among tangible assets and for corporate and Government securities among intangibles, because virtually no market prices are available for very important classes of assets such as nonresidential private structures, producer durables, in-process inventories, and many assets owned by the Government.

Statisticians will, therefore, be forced to combine different bases of valuation for different types of assets and liabilities, and to use "constructed" values rather than market values for some types of assets. The most important case calling for such constructed values are reproducible tangible assets. These can be valued, if valuation at current prices is desired in order to combine the figures with current values of nonreproducible tangible and intangible assets, by depreciating original cost to the first purchaser within the Nation and then adjusting for price changes between the date expenditures were incurred and the date for which the balance sheet is drawn up—a procedure which admittedly is not entirely satisfactory for all purposes. The same procedure can be used too obtain values for the stock of reproducible tangible assets in constant (base period) prices. In that case, the original cost of the assets is translated from current to constant prices by the use of appropriate price indexes. This is the so-called perpetual inventory method.[93]

National (or sector) balance sheets or wealth statements can then be built up by combining: (a) The price adjusted depreciated original cost of reproducible tangible assets with (b) the market value of certain types of intangible assets for which an active market exists, and (c) the par or face value of other types of intangible assets and of liabilities, particularly for short-term claims.

This is probably the best that can be done to obtain reasonably consistent estimates for national (sector) balance sheets and wealth statements either in current or base-period prices. The latter, parallel to deflated national-product estimates, are essential for economic analysis, where often the influence of price changes must be eliminated in order to bring out economically relevant movements and relationships.

3. STATUS OF WORK

Up to 1922, a national wealth estimate was prepared in increasing detail as a part of the decennial census. After abandonment of official national wealth estimates 2 attempts were made to continue the figures, 1 extending them on an annual basis with some modifications through 1933,[94] and the other providing estimates of the main components of national wealth, also on the annual basis through 1936.[95]

Between the late 1930's and 1950, no estimates of national wealth emanated from either official or unofficial sources. A new set of estimates, based primarily on the perpetual inventory method, which has been available since that date, now covers the period of 1896 to 1949 on an annual basis, distinguishing about 2 dozen different components

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[93] For a description and discussion of this method, see Studies in Income and Wealth, vol. XIV, pp. 7 ff., and R. W. Goldsmith, A Study of Saving, vol. III, table W-7.
[94] A Study of the Physical Assets Sometimes Called Wealth of the United States, 1922–33, Bureau of Economic Research, University of Notre Dame, Ind.
[95] National Industrial Conference Board, Studies in Enterprise and Social Progress, pt. II, 1939.

of national wealth. Estimates are presented on the basis of current prices as well as of base period (1929) prices.[96] This set of estimates is now being revised from the period 1946 on and extended through 1956. It is expected to become available in the near future in the form of an "occasional paper" of the National Bureau of Economic Research.[97]

While the number of national wealth statements that have been prepared officially or privately in foreign countries in the past is extremely numerous—though most of them antedate World War I—there is at present no country that regularly publishes such a statement. A few countries, notably the Netherlands, have at some time during the postwar period issued estimates of national wealth as part of their work on the national accounts, but these statements are available only for one or at most a few dates. The committee has, however, been informed that some countries, particularly the Scandinavian countries, are considering the addition of national wealth statements to their system of national accounts and have done a considerable amount of preparatory work.

In a few countries there are private or semiofficial estimates of national wealth, or at least reproducible wealth, usually on an annual basis. This is the case, for instance, in Great Britain [98] and in Canada.

The International Association for Research in Income Wealth is devoting one of the sessions of its 1957 meeting to the subject of national wealth. It is expected that the papers being prepared in connection with this meeting will include estimates of national wealth, usually along the perpetual inventory method, for about a dozen countries including Canada, the Netherlands, Norway, Western Germany, India, Australia, and Japan. Most of these estimates, however, are expected to refer to only one or a few years during the postwar period.

There never has been an official estimate of the national balance sheet of the United States. Apart from a pioneer attempt referring to the years 1929 and 1936, unofficial estimates are limited to the set published in A Study of Saving, volume III. This set provides rough balance sheets for the years 1900, 1912, 1922, 1929, 1939, 1945, and 1949. It shows figures for 11 sectors and distinguishes 9 types of tangible and 21 of intangible assets and 14 types of liabilities and net worth and is expressed throughout in current values. An extension of these estimates to 1952 and 1955 is in preparation as part of the National Bureau's Postwar Capital Market Study. Preliminary figures for 1955 have just been published and are reproduced in appendix G.

The only official or semiofficial, national balance sheet for a foreign country that has come to attention is a rough estimate for the Netherlands for 1939 and a few postwar years.[99]

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[96] The latest and most detailed published version of these estimates will be found in R. W. Goldsmith, A Study of Saving in the United States, vol. III, pt. I, Princeton University Press, 1956.
[97] For some preliminary results compare 37th Annual Report of the National Bureau of Economic Research, pp. 34–36.
[98] Net Investment in Fixed Assets in the United Kingdom, 1938–53, by Phillip Redfern. Journal of the Royal Statistical Society, vol. 118, pt. 2, 1955.
[99] See J. B. D. Derksen, A System of National Book-Keeping, 1946; Centraal Bureau voor de Statistiek, Statistische en Econometrische Onderzoekingen, IV, 1 (1954).

4. CONNECTION WITH OTHER SEGMENTS OF NATIONAL ACCOUNTS

(a) With national income and product accounts

There is a close connection in business accounting between the income account and the balance sheet by virtue of the fact that saving (undistributed profit), defined as the difference between current income and current expenditure, is equal to the change in earned net worth, and that accumulated saving, capital contributed and realized capital gains and losses are equal to total net worth. This relationship is valid only when, as is generally the case in business accounting, there are no revaluations and no account is taken of unrealized capital gains and losses.

Similarly, in the national balance sheet, national saving is equal to the increase in national net worth, and national accumulated saving is equal to total national net worth at the balance sheet date so long as realized and unrealized capital gains and losses are excluded; i. e., if the balance sheet is drawn up in terms of national original cost. Thus, national net worth in original cost is equal to national saving summed over time.

The same relationships hold—and this is relevant in connection with the treatment of capital consumption allowances discussed in chapter VII, section 1 a—if realized and unrealized capital gains or losses are taken into account. In that case such revaluations must, however, be regarded as constituting part of current income and hence of saving. This calculation, of course, can be carried out only in current monetary values and is not directly available for translation into constant prices, hence the question of shifting from original to replacement cost depreciation does not arise. Under this approach, the following relations obtain:

> Change in current value of assets minus change in current value of liabilities equals—
>> Change in current value of net worth.
>> Change in earned surplus plus net revaluation.
>> Gross income minus original cost depreciation minus dividend payments plus capital contributed plus net revaluation.

Estimates along these lines, while of substantial interest for studying changes in the distribution of wealth, are probably too unfamiliar and have to rest in part on too speculative calculations to be recommended as part of the official national accounts.

(b) With moneyflow accounts

The moneyflow estimates of both Professor Copeland and of the Federal Reserve Board include partial national and sector balance sheets as they carry information on the amount of claims of different type held by each sector and on the amounts of liabilities owned by them. The moneyflow studies thus lack on the asset side figures for the stock of tangible assets and for holdings of corporate stock, and on the other side data on corporate stock issued and net worth for complete sectoral or national balance sheets.

(c) With input-output statements

The input-output statements for the United States that have been published, i. e., that of Professor Leontief for the years 1919, 1929,

and 1939 and that of Bureau of Labor Statistics for the year 1947,[1] have no specific connection with balance sheets or wealth statements. In all these cases, the square matrixes that constitute the core of the input-output studies, are limited to flows between sectors during one year and make no distinction between current flows and flows on capital account. Hence, while the matrixes indicate the amounts of goods and services that are supplied in the given period by each of the different sectors distinguished to produce each dollar or unit output in every sector, they give no indication of the stocks of durable goods and inventories, or of the amounts of fixed assets acquired during the period, that are associated with each dollar, or unit, of output.

Attempts have recently been made to include in the input-output matrixes the requirements for capital goods and inventories per monetary or physical unit of output of the different sectors.[2] It is too early to say whether these attempts, which involve the introduction of something like capital-output ratios into them, will be successful and will become a regular feature of future matrixes. If this should be the case, a fairly close relation, of course, would be established between input-output studies and balance sheets and wealth statements, and it might be expected that the more detailed work on capital stock and capital expenditures of individual industries that would have to accompany this working out of input-output matrixes would produce information available for a finer industrial breakdown of the estimates of tangible assets in the national balance sheets and wealth statements.

5. RECOMMENDATIONS

At the present time, the main gaps in the information available for national balance sheet estimates may be summarized as follows, assuming that what is desired is a reasonably detailed and reliable statement for the same sectors which are being considered separately for the national income and product accounts.

(*a*) Absence of census-type figures for the value of all residential real estate, or at least for single family homes, that can be used as a check against the perpetual inventory figures. At present such figures are provided by the census of housing only for owner-occupied homes and the figures are available for no later date than 1950.

(*b*) Lack of any benchmark for the current value of nonresidential real estate. A study now underway at the Bureau of the Census, which tries to divide assessed valuations by type of property and attempts to establish from independent data typical relationships between market and assessed values will constitute a first step in this direction.

(*c*) Absence of information on the distribution of ownership of nonresidential real estate among the different sectors, particularly as between corporations, unincorporated business and nonprofit institutions. While such data are not required for a national balance sheet or wealth statement they are essential for sectoral balance sheets.

(*d*) Insufficient information on actual lives of structures and of producer durables. The absence of these data makes the perpetual in-

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[1] These documents have been discussed in some detail in ch. XIII.
[2] See. e. g., R. N. Grosse, The Structure of Capital in Studies in the Structure of the American Economy, Theoretical and Empirical Explorations in Input-Output Analysis, edited by W. Leontief, Oxford University Press, 1953.

ventory estimates which are derived from the cumulation of depreciated original capital expenditures on the basis of assumed lives, usually taken from bulletin F of the Internal Revenue Service, last revised more than a decade ago, rather precarious.

(e) Lack of comprehensive estimates of the current market value of known or presumed subsoil assets and of forest land.

(f) Absence of a benchmark for the value of Government structures and, less serious, producer durables and equipment owned by the Government. An important step to remedy this deficiency is now being taken by the Committee on Government Operations, but the day when comprehensive and consistent valuations of all assets of the Federal Government will be available still seems to be several years off.[3]

(g) Estimate of market value of foreign investments. At the present time only book values are available in the case of direct investments and they necessarily often differ considerably from current valuations.

(h) Absence of any consistent and comprehensive information on the value of tangible assets of State and local governments.

(i) Lack of a comprehensive and consistent balance sheet for unincorporated business enterprises. At the present time practically the only available data are limited to the tabulations of balance sheets of partnerships submitted with their tax returns which is now being undertaken on a biannual basis by the Internal Revenue Service. The scarcity of reliable information on the different items of assets and liabilities of unincorporated business is probably the most important single factor preventing a considerable improvement in the quality of our national balance sheet.

As practically every item in the rough national wealth statement and balance sheet that is now available is susceptible to improvement and most of the important gaps in information have just been listed, there is not much point in making specific recommendations. What is possibly appropriate is an expression of the committee's views regarding work in this field over the next few years.

The committee feels that as part of a long-range program of improvement and expansion of our system of national accounts the development of comprehensive and consistent national and sectoral balance sheets on a regular periodic (if possible annual) basis should be taken in hand as soon as feasible.

The committee, however, recognizes that there are still so many unresolved conceptual problems in this field and that the estimates are in many cases necessarily still so rough that the next step should not be the immediate attempt by a Government agency to develop balance sheets or even national wealth statements. It seems to the committee that this is the field for a thorough study, exploratory and experimental in part, possibly by one of our private research institutions. Such a study would probably require an intensive effort over several years. It might be expected to result in, first, the development of superior methods of estimation and in improved actual estimates for many types of assets and liabilities; and, secondly, in a concrete plan for the collection of data in fields where only a Government agency is likely to secure the necessary information. After such a preparatory study the time will probably have arrived for one of the statis-

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[3] See discussion in ch. VII, sec. 3.

tical agencies of the Federal Government to take over the prepara-
tion of periodic national and sectoral balance sheets as a regular fea-
ture, integrated, of course, with other parts of the national accounts.

Work on this broader and more intensive project, however, should
not interfere with the development by the National Income Division
of their rough estimates of the value of some components of the stock
of durable reproducible assets, particularly those components that are
necessary for introducing depreciation allowances into the national
accounts (e. g., Government structures and consumer durables) or
providing alternative depreciation allowances on a replacement cost
basis (private structures and producer durables).

CHAPTER XV. THE CHALLENGE OF ELECTRONIC ACCOUNTING

The committee has not made more than a cursory inquiry into the
potentialities that electronic accounting holds for the national accounts
as for many other fields of economic statistics. This neglect does not
mean that in the committee's view the introduction on a large scale of
electronic accounting in business and government, which may be ex-
pected to take place over the next 5 to 10 years, though it may take
decades to be developed fully, does not have very important implica-
tions for national accounting. Quite on the contrary, the challenges
and the promise of electronic accounting for the national accounts are
so great that only a group of experts concentrating their attention on
this field can, the committee believes, do justice to the problem.

The committee, however, feels justified in making two observations.
First, once electronic accounting is adopted by a substantial proportion
of large business and governmental organizations—and by means of
service contracts possibly also by medium-sized business enterprises—
it will become possible to obtain certain types of economic information
crucial for the national accounts, as well as for other purposes, with a
speed and in detail difficult to visualize under present methods. This
applies, in the national accounting field, primarily to data on pur-
chases, sales, inventories, payrolls, capital expenditures, and liquid
assets. The speedup of the data, reducing the lag of their availability
behind the close of the accounting period to not more than a few days,
will be of particular importance for national accounts for quarters and
shorter periods. The availability of additional detail in the form of
classifications of transactions by commodity and by type and location
of buyer and seller, will also be very important in improving the
annual national accounts and in developing regional accounts.

Secondly, many of the potentialities of electronic accounting for the
national accounts will be realized only if thought is given soon to how
best to take advantage of the new data-processing equipment. This
involves matters such as the inclusion in the electronic accounting sys-
tem of items of special interest for the national accounts and uniform-
ity in coding (or at least arrangements under which codes used by