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THE NATIONAL BALANCE SHEET OF THE UNITED STATES OF AMERICA, 1900–1949

by Raymond W. Goldsmith

'. . . the construction of a respectable national balance sheet does seem to me . . . to be a more possible task than has often been supposed . . . and it is well worth having, if we can get it.'

J. R. Hicks, *The Social Framework*, 2nd Ed. 1952, p. 277.

1. SOCIAL ACCOUNTING'S STEPCHILD: THE NATIONAL BALANCE SHEET

GIVEN the trend – altogether healthy and in the long run irresistible and irreversible, it would seem – towards casting an increasingly broader field of macroeconomics into the mould of social accounting; and the indisputable fact that any complete system of accounts calls for a balance sheet in addition to an income account, it is certainly strange that during two decades of intensive work on the national income account which is now spreading to nearly every country of the globe, very little theoretical and hardly any empirical work has been done on the national balance sheet.[1]

National balance sheets have many uses in economic analysis – quite apart from completing a system of social accounts – uses in which they often cannot be replaced by figures from the national income accounts or by the old-style national wealth statements. The more important uses are listed, though not explained, defended or qualified, below.[2]

[1] While the rest of this paper will be limited to the United States, at least so far as empirical data are concerned, I have noticed, although without an exhaustive search, only one country in which anything like a reasonably detailed national balance sheet tied into a comprehensive system of national accounts exists, the Netherlands (see Derksen, J. B. D., *A System of National Book-keeping* 1946, *Statistische en Econometrishe Onderzockingen*, 1949; and Bray, S. F., 'A. National Balance Sheet' in *Accounting Research*, July 1951. A similar expansion appears to be under way in Norway – cf. Aukrust, O., *Nasjonalregnskap, 1930–1939, 1946–1951, 1952*, p. 609). Even occasional estimates of national balance sheets and wealth statements have become rare, as thumbing through the first two volumes of the *Bibliography on Income and Wealth* will confirm. In the first volume (1937–1947) less than 130 countries out of a total of 1,509 were classified as dealing specifically with wealth. The ratio in the second volume was even lower (approximately sixty out of 814 entries). Moreover very few of the wealth entries dealt specifically and in quantitative terms with national balance sheets and wealth statements.

[2] For some discussion of uses of national balance sheets see *Studies in Income and Wealth*, Volume XII, pp. 73–9.

(*a*) Analysis of composition of tangible assets for entire economy or for sectors.

(*b*) Analysis of structure of assets and liabilities of groups of ultimate and intermediary economic units for the purpose of ascertaining relations between balance sheet structure and economic behaviour, e.g. studying the influence of balance sheet structure on the saving function.

(*c*) Distribution of national wealth among members of the community, using groupings by amount of wealth, income, age, race, occupation, industry, residence and other characteristics.

(*d*) Elucidation of 'layering' of economic units, i.e. the number and character of intermediaries between the actual manager of tangible assets and the ultimate owner of equity in them.

(*e*) Derivation of the ratio between national assets (footing in the combined national balance sheet) and national wealth (footing in the consolidated balance sheet), a ratio which measures the degree of financial interrelations in a community.

(*f*) Derivation of ratio of national wealth to national income and, more importantly, of the ratio of all assets or certain categories of them to income produced in the various sectors of the economy, particularly the various branches of business.

(*g*) Calculation of the velocity of turnover of different types of assets, the ratio between stock and transactions during a given period of time.

(*h*) Derivation of indices of capital density, i.e. the value of tangible assets, and their various forms, per head of the population or per employed person.

(*i*) Comparison between changes in total assets and in net worth between two balance sheet dates and investment and saving during the intervening period, both for the entire economy and, more significantly, for various groups of economic units.

(*j*) Determination of the rate of growth of national wealth, particularly of reproducible tangible wealth. This may occasionally permit the estimation of economic growth when data on national income are unavailable or in question, e.g. in the United States before 1869.

(*k*) Measurement of impact of war expenditures, war

damages, reparations and similar extraordinary inroads on national wealth.[1]

Whatever the reasons, we do not possess a national balance sheet for the United States that is reasonably detailed, compatible with a comprehensive system of social accounts, and available over a sufficient period of time to permit the study of long-term trends or the effects of business cycles. There have, of course, been national wealth statements, as will be explained below (i.e. consolidated national balance sheets) for a few benchmark years between 1880 and 1922, viz. 1880, 1890, 1904, 1912 and 1922;[2] roughly carried forward on an annual basis through the mid-thirties;[3] and for a few isolated recent years.[4] We have, however, lacked a consistent annual set of national wealth statements for a long period of time; and we have been entirely without a combined national balance sheet.[5]

This is the setting of the attempt which is described in this paper to draw up a national balance sheet for the United States, both on a combined and a consolidated basis, for the first half of the twentieth century. This attempt grew, on the one hand, out of the realization of the need for a national balance sheet to fit into a comprehensive system of social accounts for the United States; and on the other, out of the needs of a study of the saving process and the role of financial intermediaries in the American economy since the turn of the century.

While the need for such a balance sheet is patent, the conviction that the materials for fashioning at least a rough tool of this type are now at hand may be in error, and the attempt may ultimately be judged to have been premature. There is no doubt

[1] See Goldsmith, R. W., 'Measuring the Economic Impact of Armament Expenditures' (*Studies in Income and Wealth*, Volume VI), pp. 62–7.

[2] All these statements are based on the national wealth estimates of the Bureau of the Census. (For reference see *Historical Statistics of the United States, 1789–1945*, pp. 1–5, 9–10.) The three most important studies derived from these estimates, but often modifying and expanding them, are King, W. I., *The Wealth and Income of the People of the United States*, 1915; Doane, R. R., *The Measurement of American Wealth*, 1933; and Kuznets, Simon, *National Product Since 1869*, 1946, Part IV.

[3] National Industrial Conference Board, e.g. in *Enterprise and Social Progress*, 1939; Keller, E. A., *A Study of the Physical Assets . . . of the United States 1922–1933*, 1939.

[4] E.g. the statement for 1935 in *The Structure of the American Economy*, Part I, (National Rescources Committee), 1939.

[5] The closest approximation probably is *A Balance Sheet of the Nation's Economy* by Dickinson, F. G. and Eakin, F. (University of Illinois Bulletin, Volume XXXIV, No. 25, 1936), which gives a rather summary balance sheet for the end of 1928 and 1929. Eakin's *Economic Activities of the People of the U.S.*, 1947, includes a similarly simplified balance sheet for the end of 1946.

that the estimates summarized in this paper are at best a first step in the right direction. If the results are presented at this early stage to a group of experts most of whom come from outside the United States, it is not so much because of the hope that even in their present imperfect form the estimates may be of some interest and help to those who want to understand the structure and functioning of the American economy – and to some extent that of all fully developed capitalistic (Western) economies[1] – than because of the conviction that the time has now come, or is approaching, to lift a project such as this from the frail shoulders of individual students and to transfer it to the broad and enduring back of private or governmental research organizations.

It is not possible to discuss in the compass of a short paper like this the theoretical problems involved in the derivation of a national balance sheet, nor to describe, in detail sufficient for real understanding, the methods, sources and limitations of the estimates for the United States on which the substantive sections of this paper are based. All that can be done is to summarize both aspects in disparate condensation and to hope that such a summary will be of some help to readers who are familiar with the subject.

More detailed descriptions of methods and sources together with a limited discussion of the theoretical problems involved will be found in the following publications:

(*a*) 'Measuring National Wealth in a System of Social Accounting' (*Studies in Income and Wealth*, Volume XII, 1950).

(*b*) 'A Perpetual Inventory of National Wealth' (*Studies in Income and Wealth*, Volume XIV, 1951).

(*c*) 'The Growth of Reproducible Wealth of the United States of America from 1850 to 1950' (*Income and Wealth Series II*, 1952).

[1] This does not mean that the basic concepts and procedures exemplified in the national balance sheet of the United States during the first half of the twentieth century are not also applicable to other periods, at least since the industrial revolution, or to countries outside of North America and Western Europe. I simply do not have time or space in this paper to investigate how these basic concepts and procedures should be modified for such countries and times. One statement, however, appears safe to make: Where and when a system of social accounts is applicable, in particular where and when a national income account can be drawn up, there is also room – and need – for a national balance sheet.

(*d*) *A Study of Saving in the United States.* (To be published by Princeton University Press).
(1) Introduction and Chapter VIII of Volume I.
(2) Part I of Volume III.

(*e*) *Financial Intermediaries in the Process of Saving and Investment* (National Bureau of Economic Research manuscript).

II. BASIC CONCEPTS AND PROBLEMS

We may begin with the concept of an 'economic unit' as one of the two elementary types of building blocks in a system of social accounts (the other is the concept of 'transaction'). An economic unit may be regarded as a (natural or juridical) person having assets or liabilities of its own and making its own decisions regarding economic transactions.

There are two main classes of economic units, ultimates and intermediaries. The basic distinction between them is that intermediaries are owned by other economic units, while ultimates have no exogenous owners.

The assignment of concrete economic units to these two groups necessarily varies in time and space depending upon prevailing legal arrangements, and always requires somewhat arbitrary decisions in borderline cases.

For this paper individuals, private non-financial non-profit institutions, and governments have been regarded as ultimate units, while corporations (including government corporations and trust funds), unincorporated business enterprises, and business-type co-operative and mutual organizations (exemplified in the United States by mutual savings banks, savings and loan associations, and credit unions) have been treated as intermediaries.

Both for economic analysis and statistical convenience the many millions of units which constitute the economy of a country like the United States must be arranged into groups or sectors. The sectors should be so chosen that, in addition to separating ultimates from intermediaries, the units they encompass are reasonably homogeneous with respect to the characteristics to be studied, i.e. here with respect to the structure of their balance sheet. Actual grouping will often of necessity be a compromise between the analyst's wishes and the availability of data.

The following sectoring will usually satisfy minimum requirements for a modern Western economy. Obviously the greater the detail available for each of these groups – let us say up to a dozen sub-groups – the better.

I. Ultimates.
- (1) Non-farm households (including unattached individuals).
- (2) Farm households.
- (3) Private non-profit organizations of non-business character.
- (4) Local government.
- (5) Central government.

II. Intermediaries.
- (1) Non-financial business enterprises.[1]
- (2) Banking system.[1]
- (3) Other financial enterprises.[1]

Each economic unit is supposed to possess a full set of accounts, including an income account and a balance sheet. Some types of units do actually keep accounts and possess a balance sheet of some sort. Others do not. For a national balance sheet the balance sheets of the latter units must be 'constructed' from whatever data are available, while those of the former may have to be modified to conform to the principles underlying the national balance sheet.

The scope of the items to be included in each unit's balance sheet, i.e. the definition of assets and to a lesser extent that of liabilities and net worth, presents several problems, some of which permit only rather arbitrary solutions. The main items which give rise to questions are: (*a*) one-sided intangibles such as patents, copyrights and goodwill, characterized by the absence of a corresponding legal obligation on the part of any other economic unit; (*b*) reproducible tangible assets not connected with the economic process, primarily military equipment and facilities specialized for and limited to producing it; (*c*) short-lived reproducible tangible assets; (*d*) non-reproducible tangible assets, which consist primarily of land and subsoil resources, and secondarily what may be called 'collectors' items'; and (*e*) human capital, i.e. brawn and brain power.

[1] Including government-owned units, which may be separated.

Treatment of these items will vary not only according to one's definition of economics and methodological attitude, but also according to the character of the institutional system to which the social accounting mould is applied. If one is dealing, as in this paper, with a Western country after the industrial revolution; and if one wants, as appears desirable, to keep as closely as possible to the principles of modern business accounting, item (*e*) will obviously be excluded – as human capital is not an object of economic transactions; item (*c*) will probably be excluded – being usually expensed rather than capitalized; and item (*d*) will be included. The treatment of item (*a*) varies greatly, but in view of the customary exclusion of one-sided intangibles (or their being carried at nominal values) as well as the extraordinary difficulties in valuation, it is better to omit them from the combined national balance sheet.[1] The principles of business accounting, finally, provide no answer for the treatment of item (*b*). In view of the large proportion of resources devoted to armaments in the twentieth century and the rapid fluctuations in the stock of military equipment and facilities one hesitates to ignore them altogether in drawing up a national balance sheet. Armaments are, on the other hand, so different in their economic significance from almost all other items in the national balance sheet that they should always be kept separate from other tangible assets.

The arrangement of items in the balance sheet should be guided, as the grouping of economic units, by the principle of homogeneity tempered by availability of data. This suggests at the very minimum separation of non-reproducible tangible from reproducible tangible and intangible assets, and of liabilities from net worth. For economic analysis the following further subdivisions are almost indispensable:

Theoretically the creditor-debtor and security holder-issuer relationships in the national balance sheet should be presented in the form of a complete cross-classification. This requires that we show the claims (debts) of every group of units against (to) every other group for every type of claim distinguished, and the holdings by every group of every type of securities issued by every group. Even with a dozen groups only and a dozen types of assets this would lead to a table with more than 1,700 (12^3)

[1] They are automatically eliminated from the national wealth statement except to the extent, usually small, that they affect international economic relations.

Assets	Liabilities and Net Worth
I. Tangible assets 1. Reproducible assets (*a*) Structures (1) Residential (2) Commercial and industrial (3) Public – non-military (4) Military (*b*) Equipment (1) Producers' (2) Consumers' (3) Military (*c*) Business inventories (*d*) Livestock (*e*) Monetary metals 2. Non-reproducible assets (*a*) Land, residential (*b*) Land, agricultural (*c*) Land, other (*d*) Subsoil assets (*e*) Collectors' items II. Intangible assets 1. Currency 2. Claims (*a*) Short-term (*b*) Long-term, mortgages (*c*) Long-term, other 3. Securities (*a*) Bonds, debentures and notes (*b*) Stock 4. Interest in unincorporated business enterprises 5. Accruals 6. Miscellaneous	I. Liabilities 1. Currency 2. Short-term obligations 3. Long-term mortgages 4. Long-term, other unfunded 5. Long-term, funded (bonds and debentures) 6. Accruals 7. Miscellaneous II. Net worth 1. Paid-in capital 2. Capital surplus 3. Earned surplus

cells. Although part of the cells would be empty by definition (there is, e.g. no stock in government or in private non-profit institutions) the information required for full cross-classification of intangibles – parallel in many ways to the rows and columns of the usual input-output table – goes far beyond what is now available in any country.

In the balance sheets discussed in this paper a sufficient number of intangible assets and liabilities has been distinguished to come reasonably close to a cross-classification for at least the quantitatively most important forms of assets and liabilities. For example, segregation of non-farm non-residential mortgages enables us to show each group's mortgage claims against the owners of non-farm non-residential property, but does not go so far as to show separately each group's liability on account of non-farm mortgages to each other group, say to non-farm individuals, unincorporated business enterprises, non-profit organizations and non-financial organizations. Such a complete cross-classification remains the goal. For many assets and liabilities, fortunately, only one class of creditors or debtors needs to be taken into account, so that if they are shown separately no further cross-classification is required. If, for instance, deposits with commercial banks are treated as a separate form of intangible assets, as is done in these statements, there is obviously only one debtor group (commercial banks) to be taken into account; and the national balance sheet in the form shown here provides all the information that a complete cross-classification would furnish. The larger the number of groups which are of significance as creditors (holders) or debtors (issuers) of a given asset, the more serious is the lack of a full cross-classification. From that point of view the treatment in the balance sheets presented here is probably least satisfactory for business accounts receivable and payable and for non-farm mortgages.

Valuation of assets and net worth and, to a much lesser degree, liabilities, is possibly the most disputed and difficult point in drawing up national balance sheets.

Business accounting, though not unanimous, is fairly definite on this question, at least in the Unites States. Valuation at original cost to the unit, subject of course to depreciation where appropriate, is still the rule. Exceptions are of importance only in the case of inventories, which are customarily valued at the

lower of cost or market. Valuation on the last-in-first-out principle is making headway but applies only to a minority of total inventories.[1]

Valuation at original cost to the owning unit is unfortunately a most inconvenient base for a national balance sheet. Its main drawback is its incomparability as between units, a defect which cannot be eliminated by any simple manipulation of balance sheets actually available. Moreover, valuation at original cost to owning unit is practically inapplicable for all those units – primarily households and governments – for which no balance sheets are at hand but for which they must be 'constructed'.

For national balance sheets, for which comparability at one date between units is a prerequisite and comparability between dates a most desirable characteristic, the choice is among the following bases of valuation:

(*a*) National original cost.
(*b*) Current market value.
(*c*) Replacement cost.
(*d*) Base period market price.
(*e*) Base period cost.

National original cost (i.e. original cost to the first unit within the nation owning the asset) must be eliminated because it does not introduce comparability between units. Market value and replacement cost, while theoretically alternatives over a wide field, are in practice complementary. There is obviously no replacement cost for non-reproducible tangible assets, and there is in practice no market price for many types of reproducible assets. For those reproducible tangible assets for which both replacement cost and market values are available the figures show a reasonable degree of agreement over long periods of time though certainly not always in the short and intermediate run.[2] Current values and base period values, finally, are linked by the process of deflation by means of asset price indices. The goal, therefore, should be a system of valuation which, while reasonably consistent from a theoretical point of view, will combine the information available on current values and replacement cost and will permit expression in both current and base period prices.

[1] See, e.g. Butters, J. K., *Inventory Accounting and Policies*, Harvard Graduate School of Business Administration, 1949.
[2] See *Studies in Income and Wealth*, Volume XIV, pp. 49 ff.

The guiding principle in such a system of valuation is that at any one time all assets and liabilities are valued at their market prices, or, where these are unavailable, at the nearest approach to them; and that net worth is measured as the difference between the value of assets and liabilities. Balance sheets for different dates (or different localities) prepared in accordance with this system of valuation can be made more comparable – though by no means perfectly – by reducing both items that are valued in market prices and those which are approximated by replacement cost by means of appropriate price and cost indices.

A word may be added concerning the principle of valuing reproducible tangible assets – by far the largest item in the national wealth statement and one of the most important ones in the balance sheets of most groups of economic units – at replacement cost, an approach which leads to a perpetual inventory of national (reproducible) wealth.[1]

The basic idea underlying this approach is very simple: to estimate replacement cost by reducing original cost in proportion to expected service life (i.e. to multiply original cost by the ratio of the number of years expired since original expenditure and the assumed length of total useful life of the tangible asset in question) and to multiply the remaining original cost by the ratio of a relevant price index in the current year and the year in which the expenditure was made. It would therefore describe the resultant figures more accurately, though more clumsily, to label them 'price-adjusted depreciated original cost'.

Actual calculation proceeds in a slightly different way, partly in order to derive current and base period values simultaneously. This is achieved by reducing each year's expenditure on the different types of reproducible tangible assets to the base period price level by means of an appropriate price index, and to depreciate the deflated expenditure figures on the basis of assumed lengths of useful life. By cumulating deflated expenditures and subtracting depreciation one gets depreciated original cost in base period prices for use in national balance sheets expressed in that unit. To obtain replacement cost in current values, which are needed for the primary (undeflated) national balance sheet, it is then only necessary to multiply the remaining original cost in base period prices by the relevant

[1] *Op. cit.*, particularly pp. 7–28.

price index (base period=1.00) for the date to which the national balance sheet refers.

The balance sheets of any grouping of economic units can be put together in two different ways, they can be combined or they can be consolidated.

The combined balance sheet of a group of economic units is nothing but the arithmetic summation of the balance sheets of each of the constituent units, based as far as possible on a comparable valuation of assets and liabilities. No creditor-debtor or owner-issuer relationships between units are eliminated in this procedure. In the case of corporations, however, the balance sheets used are generally the consolidated statements of affiliated corporations (i.e. parents and subsidiaries) rather than the combined balance sheets of affiliated units. In that case creditor-debtor and owner-issuer relationships among affiliated units are, of course, eliminated.

The combined national balance sheet is simply the sum of group balance sheets. Hence, the combined national balance sheet does not eliminate either inter-group or intra-group creditor-debtor or owner-issuer relationships.[1]

The consolidated balance sheet of a group of economic units differs from the combined balance sheet by the elimination, following the methods in use in modern business accounting, of all transactions between units belonging to the group. This means essentially that claims of one unit against other units in the group are netted against the other units' debts to the first unit; and that one unit's holdings of securities issued by other units in the group are offset against the amounts outstanding in the issuer's balance sheets.

These offsets, obviously, are straightforward only if the offsetting creditor-debtor and holder-issuer relationships are valued consistently in the balance sheets of all units belonging to the group, i.e. if they are carried at the same amount in the balance sheets of the creditor (security-holder) and the debtor (issuer). If carrying values differ rather complicated adjustments

[1] Sometimes the balance sheet for the entire nation is of a hybrid nature – a combination of consolidated sector balance sheets. Such a hybrid approach – from the point of view of the theory of social accounting – also underlies the usual derivation of the national income statement, e.g. the official U.S. version prepared by the Department of Commerce. (A national income account on a strictly consolidated basis would exclude all current [income] transactions among domestic economic units, and hence would show only domestic investment and net foreign balance on the expenditure and saving on the income side.)

are required to ensure that the balance sheets of all units still 'balance' after all intra-group relations are eliminated.[1]

When the balance sheets of all economic units within the nation are consolidated there emerges what may be called the 'national wealth statement'. This statement, which is nothing but a national consolidated balance sheet, shows two items only on the asset side, viz.: (1) tangibles, which may be subdivided into as many components as necessary for the purpose of analysis and as compatible with the data available; and (2) net foreign claims. Only a single item appears on the other side of the balance sheet, consolidated national net worth, which may be broken down into the consolidated net worth of as many groups of ultimate economic units as is statistically possible and economically significant to distinguish. As consolidation on the national level eliminates all debtor-creditor or security-holder-issuer relationships the national balance sheets show no intangible domestic assets or liabilities. Nor does it contain the net worth of intermediaries since this has been offset against the holdings of corporate stock or interest in unincorporated business enterprises by stockholders and proprietors.

Deflation of national balance sheets, i.e. their reduction to a stable unit of measurement, is a very awkward procedure, beset by almost insoluble theoretical and practical difficulties. Yet something must be done about it if comparisons are to be made between the absolute figures in the balance sheets for different dates (or, what does not interest us here, the balance sheets for different countries and possibly even different regions within a country). Even balance sheet ratios, i.e. relationships between the current values of items in the balance sheet of one group for one date, are only superficially unaffected by the problems of deflation. Once the assumption of a proportional movement of all prices is abandoned – a contradiction in a money economy with claims and obligations of fixed face value – such balance sheet ratios cease to be invariant to deflation.

The problems are less forbidding for consolidated than for the combined balance sheets with which this paper deals. Save for the deflation of the net foreign balance, national wealth statements present no difficulties that are different in kind from those raised by price index numbers for tangible assets. The perennial problems of quality change of new commodities, commodities

[1] For a discussion see *Studies in Income and Wealth*, Volume XII, pp. 39–42.

without a market price, and weighting – to mention only a few – plague the deflation of national wealth statements as much, but theoretically no more, than the deflation of national product. The practical difficulties of deflation, however, are undoubtedly considerably greater for national wealth statements than for national product accounts. The main reason is the shortage of current price quotations for most types of tangible assets that figure in the national wealth statement. Indeed in the United States the only categories for which one may expect to collect enough current price data to justify the calculation of asset price indices are homes, farm land, consumer durables, most producer durables, some subsoil assets (oil and lands), business inventories, livestock and monetary metals, and even here it will not be possible always to take account of possible differences between the prices of newly produced and existing assets, i.e. between the prices of new and second-hand articles. For most of the other categories, particularly non-residential real estate, some producer durables and government structures, the best that can be done is to use changes in cost of construction instead of current prices. The situation is even less satisfactory for non-farm land, where price information is so deficient that any deflator is little more than a rough indicator of order of magnitude. The difficulties are only shifted, though on balance somewhat reduced, when the current values of structures and equipment are measured – as in this paper – by the perpetual inventory method, i.e. as depreciated original cost adjusted for changes in cost of construction. The quality of the deflated figures thus rests on the quality and detail of the available indices of construction cost, certainly not a comfortable foundation, but one which is equally involved in the deflation of national product.

Additional and very real difficulties arise when deflation is applied either to the national combined balance sheet, i.e. to intangible assets in addition to the tangible assets of the national wealth statement; or to the sectoral balance sheets of groups of economic units. These difficulties stem from the fact that intangible assets, by their very nature, cannot conceptually be reduced – except by tortuous indirection – to a physical basis such as is evident for commodities and is not too difficult to visualize for services including labour inputs.

There seems to be only one way out of the dilemma, and it is

by no means an entirely satisfactory solution. This is reduction of all items in a national (or group) balance sheet by means of an index of the general price level. Deflation of this type obviously adjusts only for changes in the general purchasing power of money as the unit of measurement. It ignores, necessarily and consciously, differences in the price movements of different types of assets and liabilities. It thus abandons the attempt to link deflated values to physical quantities, unless the index of the general price level is regarded as an indicator of something of tangible nature. It means that the relations between the various items in the national or group balance sheets, as well as the relations among group balance sheets, are the same in deflated and current values.

Even if this solution is accepted there remains the problem of constructing an appropriate index of the general price level or the purchasing power of money. It will be ignored here except for the conclusion that for the deflation of the combined national balance sheet the gross national product deflator, i.e. the ratio between gross national product at current and base period prices, is ordinarily the available index that can be used with the least amount of misgiving.

Once deflation is regarded as an adjustment for changes in the purchasing power of the unit of account rather than as a means of reducing monetary values to physical quantities, it becomes logical to vary deflators not among types of assets but among groups of economic units. This means dividing all the items in the balance sheet of a given group of units by an index of purchasing power of the group, i.e. an index based on the prices of the goods and the services the group buys, possibly allowing for the prices of tangible and intangible assets in which the group's current saving is invested. Practical as well as conceptual difficulties multiply when an attempt is made to implement this idea – in the United States the necessary cost of living data are available at best for middle and low income urban and for farm families, but not for other households, let alone non-individual groups – and nothing has been done in this paper to follow this approach.

III. METHODS, SOURCES AND LIMITATIONS OF THE NATIONAL BALANCE SHEET FOR THE UNITED STATES SINCE 1900

The basic concepts summarized in excessive condensation in the preceding section have guided the preparation of the very rough national balance sheets for the United States for eight benchmark dates between 1900 and 1949 which are the subject of this paper. It hardly needs emphasis that in making the actual estimates many compromises had to be made. This section is intended to draw attention to some of them and, what is more important, to give at least a general idea of the nature of the data from which the balance sheets have been built up and the methods that have been used in this process.

To fulfil their role as complement to the national income account which is customarily drawn up on an annual basis and is now available on that basis in the United States back to 1900, national balance sheets ought to be compiled every year. This indeed remains the goal, certainly for the future. In this first attempt, however, the preparation of national and group balance sheets for each of the fifty years far exceeded available resources.[1] There were, however, three less subjective reasons for limiting this first attempt to a set of benchmark dates. The first is the unavailability of some of the information for more than a limited number of dates, the second, the lack of significance of annual variations in many of the necessarily very rough estimates; the third, the conviction that the balance sheets for the eight dates covered suffice to show most of the trends and structural changes that have taken place during the past fifty years, even though they are naturally not sufficient nor intended to study the influence of the ordinary business cycle on the national balance sheet.

The eight benchmark dates selected (work on the balance sheet for 1952 is not yet completed and is not discussed in this paper) include, first, the three dates for which detailed estimates of national wealth are available – 1900, 1912 and 1922. They also include two of the three dates (the years 1929 and 1939), to which most of the recent empirical work on national wealth refers, particularly the paper in Volume XIV of *Studies in Income and*

[1] A national wealth statement, i.e. the consolidated national balance sheet, will be presented for each year between 1896 and 1949 in *A Study of Saving in the United States*, Volume III, Part I, supplementing and on some points correcting the estimates at quadrennial intervals shown in *Studies in Income and Wealth*, Volume XIV, pp. 18–19.

Wealth. Of the remaining three or four benchmark dates, 1933 has been selected because it presents a picture of the economy at its nadir, the trough of the Great Depression; 1945 as the starting point of the post-World War II period, which is rapidly changing the financial face of the country; and 1949 (or 1952) as the last year for which data were available at different stages of work on the estimates.

Fortunately, however, these dates are also located at or near crucial turning points in the economic and financial development of the United States. The 1900 benchmark is only a few years from the 'watershed of the nineties'[1] which is evident as a break in trend in many basic economic series; 1912 is not too far – in fact only two economically rather uneventful years away – from another turning point marked by America's economic participation in World War I; 1922 follows closely upon the short but sharp depression of 1920–1, the last of comparable severity for a decade, which may be regarded as liquidating the immediate effects of the war; 1929 marks the end of what may be called, possibly with even better justification than the first years of the century, 'the era of frenzied finance'; 1933 and 1939 encompass the New Deal period in so far as it is not dominated by the effects of World War II; and 1945 and 1949 do the same for the post-war recovery period until it came under the influence of rearmament to a substantial extent. In many respects, however, comparisons between 1945 and 1952, when they become available, will give a more adequate picture of the effects of mid-century prosperity on the country's balance sheet.

Separate balance sheets have been prepared for each benchmark date for eleven main groups of economic units:

(*a*) Non-farm households including unattached individuals;
(*b*) Farm households (including farmers' business type assets);
(*c*) Private non-profit institutions (churches, foundations, educational institutions);
(*d*) Unincorporated business enterprises;
(*e*) Non-financial corporations;
(*f*) Financial corporations other than (*g*) and (*h*) (including unincorporated brokers and dealers in securities);
(*g*) Banks;

[1] Commager, H. S., *The American Mind*, 1950, pp. 41 ff.

(*h*) Other private financial intermediaries;
(*i*) Government corporations;
(*j*) State and local governments;
(*k*) Federal government.

While this grouping corresponds roughly to the arrangements set forth on page 327 above, some of the groups and their boundaries are determined more by the form in which the data are available than by theoretical considerations. The compromises, however, do not detract too much from the analytical value of the figures. Much more serious is our inability to subdivide the balance sheets of some of the largest groups, particularly non-farm households and non-financial corporations, in order to obtain statements for more homogeneous subgroups.

In the case of households the gap can be filled to a substantial extent, though generally only for the period after World War II, by using the data from an annual sample of approximately 3,500 households that are collected for the Federal Reserve Board,[1] by the Survey Research Center of the University of Michigan. These surveys, however, do not include all types of individuals' assets and liabilities; the coverage of assets and liabilities varies from year to year; and it is not always easy to reconcile blown-up figures from the survey samples with overall data from other sources used in building up the group balance sheet for individual households.[2] The survey data nevertheless shed very valuable light – as no other source can – on differences in total assets and net worth and in balance sheet structure of households of different wealth, income, age and occupation.[3] Estate tax returns supplement these findings for households in the upper wealth groups.[4]

Corporate balance sheets have been available in great industrial detail since the late twenties in the tabulations of the

[1] Each year's results are described in a series of articles in the *Federal Reserve Bulletin*.

[2] The most detailed survey, that taken early in 1950, has been utilized to construct rough balance sheets of households in the *Study of Saving*, Volume III, Part I. Some of the results will be used in section IV.

[3] Some additional information of similar scope and origin, limited to upper income and wealth groups, will be found in a recent publication by the Harvard School of Business Administration, viz. *Investments by Individuals* by Butters, J. K., Thompson, L E. and Bollinger, L. L., 1953.

[4] See Mendershausen, H. and Goldsmith, R. W., 'Measuring Estate Tax Wealth' (*Studies in Income and Wealth*, Vol. XIV), which is a summary of *The Study of Saving*, Volume III, Part III.

Bureau of Internal Revenue, based on corporate tax returns.[1] The main difficulty in utilizing these data to sub-divide the group balance sheet for non-financial corporations is their use of book values for plant and equipment. This makes the figures not comparable as between firms and industries and, more importantly, is responsible for some large differences between total book value of plant and equipment as shown in tax returns and total current (replacement) value estimated for the national balance sheet.[2] With sufficient patience and ingenuity probably a way may be found to overcome these difficulties.[3]

The separation of the assets and liabilities of business enterprises from those of the proprietors' households must remain to some extent arbitrary. This separation, however, is of considerable importance not only for the arrangement of the national balance sheet but, as will soon be seen, also for the estimate of national assets, since the equity in business is carried as an asset in the balance sheets of their proprietors. Hence national assets are higher, by the amount of the equity, if the recognition of separate business entities is effected on a liberal rather than a restricted scale.

The question whether a separation should be made between business activities and household activities of proprietors arises primarily in the case of farmers, persons in the professions, and owners of unincorporated businesses. The business activities of these three groups are generally on a small scale. In actual life there is often little separation between assets used in business and the household – particularly cash and other liquid assets – and strict accounting separation of the two activities is not at all common, and indeed is probably the exception rather than the rule among farmers and professionals. There are, however, in each of these three groups enterprises of substantial size, the assets and accounts of which are kept strictly separate from those of their proprietors. It is necessary only to think of large investment banking houses with dozens of partners, hundreds of employees and many millions of assets; the large law firms,

[1] They have been supplemented recently for manufacturing and trading corporations by quarterly statistics compiled by the Federal Trade and Security and Exchange Commissions.

[2] See *Studies in Income and Wealth*, Volume XIV, pp 52–7.

[3] Balance sheets for the main types of enterprises included in groups (g), (h) and (i) have been compiled for the same nine benchmark dates and will be shown in *Financial Intermediaries in the Process of Saving and Investment* (National Bureau of Economic Research).

similar in size though not in assets; and large plantations and ranches operated by professional managers, to doubt the wisdom of comingling the activities of all unincorporated enterprises or even all professional offices with the household activities of their proprietors and thus denying them the status of separate economic entities. There are, on the other hand, many small corporations, particularly one-man and family companies, for which the formal separation of business and household assets and accounts is little more than a fiction.

Any treatment which is guided by formal criteria, as it necessarily must be in practice, will thus fail to do justice to a number of individual cases. The best that can be accomplished is to draw the line between the cases in which business and household activities are treated separately and those in which they are comingled in such a way as to minimize these injustices. Since the extent of separation of business from household activities changes over time and varies from country to country, the boundary line should likewise be a movable one. The situation that has prevailed in the United States in the first half of the twentieth century appears to be reflected with the least degree of distortion possible in view of the limited detail of available statistical data, if all corporations and unincorporated business enterprises are treated as entities separate from the household activities of their proprietors while no distinction is made between business and household activities in the case of farmers and professionals. If separate data were available on partnerships and on sole proprietors, it would be preferable to separate household and business activities for the former but to disregard the separation for the latter. Similarly more detailed information about one-man corporations might suggest denying status as independent entities to part of them. Since most of the assets and liabilities of unincorporated business enterprises are attributable to partnerships and since one-man corporations are small, the inability to make these separations – which moreover tend in opposite directions – is not a very serious matter within the national balance sheet as a whole.[1]

[1] Theoretically ownership and operation of urban real estate by individuals should be treated as an unincorporated business activity, even if held directly in owner's name, provided management of properties is more than casual and absorbs a considerable portion of owner's time. Practically such segregation is not feasible and all real property of a given type not owned by corporations must be treated either as business or as a household activity.

National and group balance sheets employ a uniform classification of assets and liabilities distinguishing eight forms of tangible assets, twenty-two forms of intangible assets, and sixteen forms of liabilities and equity, nearly all of which are shown in Table I for completeness-sake rather than because of the intrinsic importance of each item. This classification is similar to the theoretical model on page 329 above.

In fitting the available data into this uniform mould very rough estimates and almost arbitrary allocations must be used in not too rare instances, chiefly in cases where the absolute amounts involved are not very large. Types of assets and liabilities not likely to be present at all in the case of certain groups of holders or presumably of very small size have been omitted altogether.

In drawing up this first set of national balance sheets it proved impossible to include a few types of assets and liabilities, for lack of data or time for exploration of all approaches, or inadvisable for other reasons. Most of them are of small size and their omission should not seriously interfere with the analysis of the figures with respect to long-term trends, structural changes or balance sheet ratios. The more important assets and liabilities omitted are:

(*a*) Holdings of semi-durable and perishable commodities by households. (Similar holdings by business and government are included in their inventories.) These items probably do not exceed between 2 and 4 per cent of individuals' total assets and between 1 and 2 per cent of total national assets.[1]

(*b*) Collectors' items (works of art; stamps; coins; rare books) held partly by individuals, partly by private non-profit institutions and partly by government. These are certain to constitute only a negligible proportion of national assets.[2]

(*c*) Subsoil assets. If valued consistently with other items in the national balance sheet, i.e. at market price at which known (or presumed) but undeveloped mineral deposits are traded, these assets would probably be below 1 per cent of national assets.[3] Higher estimates either include unproven deposits or make insufficient allowance for cost of bringing mineral above ground or for time discount.[4]

(*d*) Loans of U.S. Government to Allies during and im-

[1] See *Studies in Income and Wealth*, Volume XIV, pp. 36–7.
[2] *Op. cit.* p. 38. [3] *Op. cit.* pp. 41–2. [4] *Loc. cit.* footnote 41.

mediately after World War I and part of similar loans (not including Export-Import Bank and British loans) made after World War II. These loans may well be regarded as current expenditure rather than capitalizable assets and hence really do not constitute an 'omission' from the balance sheet of the Federal government or the nation.

(*e*) Loans among non-farm and farm households. This is probably not a negligible item. Omission may be justified only by almost total lack of a basis even for rough estimates.

(*f*) Miscellaneous assets and liabilities of corporations and of unincorporated business enterprises, particularly some accrual items. The amounts involved again are not negligible, but it is likely that they approximately offset each other for all business enterprises together. Their omission should not substantially affect either the net worth of business enterprises or the net balance of claims and liabilities between business enterprises and other economic groups.

To give within short compass even a rough idea of the sources from which the balance sheet of the various sectors have been built up; of the methods by which individual items of assets and liabilities have been estimated; and of the numerous deviations from the basic procedure generally observed is much more difficult than to set forth concepts and basic methods. While a detailed description of sources and methods of estimation is essential to enable users to assess the validity of the figures and to utilize them for their own purposes, and is no more than an investigator owes his colleagues if he wants to see his work used intelligently, and while such information is provided in the three volumes of the *Study of Saving*, even a condensation is likely to bore readers and can hardly be intelligible to people unfamiliar with American financial statistics.

It may suffice, therefore, to recall that the balance sheets of all sectors are 'constructed' in the sense that they do not constitute the result of addition of actually existing balance sheets of members of this group, but that each of the items of assets and liabilities is estimated independently from whatever sources are regarded as most appropriate – and sometimes indeed by catch-as-catch-can methods – net worth being determined as the difference. The main exceptions to this statement are financial institutions for which information on most items was available in combined balance sheets for the various sub-groups making

up this sector (commercial and savings banks; Federal Reserve and the Postal Saving System; savings and loan associations; credit unions; life and property insurance companies; investment companies; land banks; government pension and trust funds), although even for these groups supplementary estimates could not be dispensed with, particularly for the earlier benchmark dates, and the entire balance sheet had to be 'constructed' for some others (personal trust funds administered by banks; private pension funds).[1]

This heavy reliance on 'constructed' figures was necessitated both by the complete absence of comprehensive data based on their own records for some groups; and by the necessity of basing entries uniformly on current values. For some groups and items, however, comprehensive figures derived by other estimators were available. For farmers, e.g. the *Balance Sheet of Agriculture*, compiled by the Department of Agriculture, could be used from 1939 onward for many items. In other cases the results of sample surveys could be utilized, at least as checks, but this possibility was essentially limited to the last benchmark year (1949) and to farm and non-farm households.

Reproducible tangible assets, which represent almost one-half of total national assets, were estimated for all groups by the perpetual inventory method summarized in section II, page 332, and described in more detail in *Studies in Income and Wealth*, Volume XIV, and in *A Study of Saving in the United States*, Volume III, Part I. This had the advantage of uniformity and conceptual clarity, but entailed deviations, sometimes wide ones, from the figures on structures and equipment found in the available balance sheets of corporations, particularly in those submitted to the Bureau of Internal Revenue and published annually since 1926 in *Statistics of Income*.

The figures of business inventories from 1929 onward are those of the Department of Commerce, and for 1922 are based on those of Kuznets, all of which may be regarded as quite reliable and close to valuation at current prices. For the two earlier benchmark dates rough estimates had to be prepared which relied only on fragmentary data.

For farm land the decennial censuses of agriculture provided

[1] The derivation of reasonably standardized balance sheets for the different groups of financial institutions is discussed in *Financial Intermediaries in the Process of Saving and Investment*.

a comprehensive and reliable basis. Other land had to be estimated in the roughest fashion. For land underlying structures, which accounts for the bulk of non-agricultural land, the method generally used was the application of a set of land-to-structure-value ratios based on appraisals, tax assessments or other sources.[1] While these ratios have substantial foundation in empirical data during most of the period for land underlying residential structures, and at least for the two to three most recent benchmark dates for land underlying commercial and industrial structures, they are little more than guesses for the other categories and dates.

In the absence of a comprehensive evaluation of public lands very rough estimates had to be made of the Federal Government's public domain and the less extensive land owned by state and local governments. The problems here obviously are conceptual as well as statistical and no satisfactory solution should be expected from anything short of an extensive special study. The situation is similar with respect to privately owned forest and mineral land.[2]

The greatest variety of sources and methods of estimation is found in connection with intangible assets and liabilities. Probably the most important single source is the published balance sheets of financial institutions, although often only after substantial modifications. These constituted not only the main source of the combined balance sheet for three of the sectors of section II, pages 338–9, but they also provided information on many items required in the construction of the balance sheets of other groups. The figures, e.g. for deposits of governments, business enterprises and households given in or derived from the balance sheets of commercial banks, furnish the data on 'commercial bank deposits' in the balance sheets of the various depositor groups (lines II–2 of Table I). Similarly the entries in holders' balance sheets for the other types of claims against financial institutions, including deposits in savings banks, savings and loan associations and credit unions, and insurance and pension reserves (lines II–3–6), are taken actually from the liabilities side of the balance sheet of the debtor institutions. Finally, the data on loans to business and households in the balance sheets of financial institutions are used at the same time

[1] See *Studies in Income and Wealth*, Volume XII, pp. 30–2.
[2] *Op. cit.* pp. 32–3.

as measures of the corresponding liabilities in the balance sheets of the debtors (lines II–7–8 and III–7).

The largest block of intangible assets – in 1949 nearly one-fourth of national assets, compared to close to one-fifth for claims against financial institutions – is represented by the market value of securities (excluding intercorporate stock-holdings among affiliated corporations). Their estimation raised two main problems, the determination of the total value outstanding of each type of security, e.g. all common stock or all local government bonds; and the distribution of this total among the eleven sectors.

No serious difficulties were encountered in the first step except for corporate stock. The amounts of the different classes of government securities and corporate bonds outstanding are known[1] or can be approximated reasonably closely. Outstandings of preferred and common stock, on the other hand, had to be estimated, and this very roughly since no comprehensive statistics exist and estimates by other investigators are available only for recent dates. The same data, of course, were used for fixed interest-bearing securities on the liabilities side of the balance sheets of the issuers.

The distribution of total outstandings among groups was facilitated by the fact that figures for the most important group of holders, financial institutions (including government firms), were available from their balance sheets, and it could be assumed that the holdings of all types of securities except U.S. Government by most of the other groups were small. Hence most of the difference between the amounts outstanding and the holdings of financial institutions, governments, private non-profit institutions (roughly known from scattered data) and foreigners (available from estimates of balance of payments) could be assigned to non-farm households. In the case of U.S. Government securities, comprehensive data for most groups were available for the three most recent benchmark dates, when such securities are of greatest absolute and relative importance, in *Statistics of Income* or from the Treasury Department.

The situation was similar with respect to mortgage holdings on the asset and mortgage debt on the liabilities side of the

[1] This is due in the case of corporate bonds largely to recent work of the National Bureau of Economic Research (see Hickman, W. B., *The Volume of Bond Financing since 1900*, 1953).

balance sheet of the various sectors. Farm and urban residential mortgage debt outstanding could be determined on the basis of comprehensive statistics, chiefly censuses of agriculture and housing. For mortgage debt on commercial and industrial properties only rough estimates were available, primarily those included in the debt statistics of the Department of Commerce.[1] Sources for holdings of various groups were generally the same as those used for securities.

This leaves, omitting minor items, accounts receivable and payable of business, interest, tax and other accruals; and loans among households. The latter item had to be omitted altogether, while the two others were pieced together as best as they could from fragmentary information, except for corporations since 1929 for which a fairly reliable basis is provided by *Statistics of Income*. These estimates probably constitute the weakest sizeable items in the sectoral and national balance sheets.

Even after taking considerable risks in matching items reported in available balance sheets or derivable from other sources with the categories of the standardized statement, there remain in virtually all cases residual claims and liabilities which cannot be easily classified. These have been allocated to two catch-all categories called 'other assets' and 'other liabilities'. While the amounts appearing in these two categories are generally quite small compared to total assets and liabilities there are regrettably a few groups in which they are larger than one would wish.

Theoretically, claims of one group of domestic economic units against another group should balance liabilities of the second to the first group if allowance can be made for valuation differences, particularly for bad debt reserves. Actually the figures differ – and often by more than could be attributed to bad debt allowances – in many cases in which independent information is available or can be inferred from the balance sheet of both creditor and debtor. The question then arises whether to force consistency by altering one or both of the reported figures for claims and liabilities, which means altering a number of items, including footings, in the combined reported balance sheet of the groups affected; or to accept the discrepancy, a procedure which will result in the appearance of net receivables or net payables among domestic units in

[1] See e.g., *Survey of Current Business*, October 1950.

consolidated balance sheets which should not include such an item. Of these two alternatives the second has been accepted, chiefly because the discrepancies involved are generally small compared to national balance sheet totals and because any adjustment would be arbitrary.

There is unfortunately no way of estimating the margin of error in the individual items of assets and liabilities and net worth, or in the balance sheet totals.[1] This is due partly to conceptual difficulties, i.e. the difficulty of agreeing what should be regarded as the true figure for a given asset or liability of a group at a given date, even if the basic principle of valuation at current prices is accepted.[2] It also reflects the absence, in almost all cases, of benchmark or alternative estimates. The margin of error obviously is considerably lower for assets like cash, inventories, bonds, farm and residential mortgages, and for the corresponding liabilities, than for items like structures and equipment, land, accounts receivable and payable, common stock and interest in unincorporated business enterprises. The estimates of net worth, being derived as residuals, are of course particularly subject to error, and the more so the smaller the proportion of net worth to total assets and liabilities. Similarly, the figures are as a rule more reliable – for the same class of assets or liabilities – for groups like corporations and agriculture for which comprehensive balance sheets of some types have been available at least for the more recent benchmark dates (in the first case from the balance sheets collected by the Bureau of Internal Revenue and in the second from the estimates of the Bureau of Agricultural Economics), than for non-farm individuals, unincorporated business enterprises and governments for which balance sheets had to be developed practically from the ground up. Finally, the margin of error is undoubtedly smaller – again for the same group and type of asset or liability – for the last three benchmark dates, i.e. 1939, 1945 and 1949,

[1] See *Income and Wealth Series II*, pp. 255–63.

[2] Possibly the preferable (because operational) definition of the 'true' value of items in the national balance sheet is the value they would have under the assumption of universal uniform accounting, i.e. the value that would be shown if each economic unit kept books accurately and in accordance with a standardized comprehensive system of accounts, and these accounts were consistently consolidated into aggregate group balance sheets and finally into a national balance sheet. (This definition is similar to W. E. Deming's *Some Theory of Sampling*, 1950, p. 18, for sampling error as the difference of the observed value from 'what would have been the result of applying the same procedure to every member of the universe'.)

than for earlier dates. This statement, however, must be qualified by the fact that overall national wealth statements, which provide valuable checks, exist for the first three benchmark dates, 1900, 1912 and 1922, but are entirely absent for later ones.

IV. THE NATIONAL BALANCE SHEET OF THE UNITED STATES IN 1949

This section is limited to a few comments on a preliminary and slightly condensed version of the national balance sheet of the United States for the end of 1949 and the balance sheets of the main groups of economic units as they will appear in Volume III of *A Study of Saving in the United States*. This balance sheet, shown in Table I, presents a picture of the distribution of ownership of tangible assets, creditor-debtor relations, and owner-issuer relations at mid-century, sufficiently detailed and reliable notwithstanding all its imperfections for general economic analysis, based in principle on the market prices prevailing at the end of 1949 or, where these are not available, on replacement cost as in the case for most reproducible tangible assets, or on face value as for most claims and fixed interest-bearing securities.[1]

To supplement this picture use will be made also of balance sheets, though not quite complete ones, for samples of individual households collected in the Federal Reserve Board's Survey of Consumer Finances.[2]

At the end of 1949 national assets, i.e. the sum of the assets of all – over 55 million – independent economic units in the United States, were slightly in excess of $2 trillion ($\$2 \times 10^{12}$).[3] The figure depends, as has already been noted, to a minor extent on the number and character of sectors for which separate balance sheets are drawn up and the scope of assets included. If, for instance, personal trust funds administered by banks had been treated as separate economic entities, national assets would be $50 billion higher than they are shown in

[1] Details of Table I do not add to totals due to rounding.

[2] Most of the basic data have been published in the annual reports on the Survey of Consumer Finances in the *Federal Reserve Bulletin*. The blow-up to national totals is described in *A Study of Saving in the United States*, Volume III, Part I.

[3] Readers anxious to have the latest figures should note that the figure already had reached approximately $2¼ trillion by the end of 1952.

TABLE

National Balance Sheet of the

$ bill

	Total	Non-farm House-holds	Farm House-holds
	1	2	3
I. *Tangible Assets*			
1. Residential structures	209.7	186.6	14.6
2. Non-residential structures	198.7	—	11.7
3. Land, residential	38.7	} 42.2	} 54.2
4. Land, non-residential	121.3		
5. Producer durables	104.2	—	15.6
6. Consumer durables	99.3	90.8	8.6
7. Inventories	67.9	—	6.0
8. Livestock	13.2	—	13.2
9. Monetary metals	26.9	—	—
10. TOTAL	879.8	319.6	123.8
II. *Intangible Assets*			
1. Currency	50.5	}	3.4
2. Commercial bank deposits	131.1	} 106.0	10.6
3. Deposits in other financial institutions	53.4		..
4. Life insurance reserves	58.8	54.5	4.4
5. Pension and retirement funds, private	6.8	6.8	..
6. Pension and retirement funds, Government	38.8	37.9	.9
7. Receivables, from business	64.0	.9	..
8. Receivables, from households	26.8	..	..
9. Loans on securities	3.6	—	—
10. Mortgages, non-farm	60.8	17.7	..
11. Mortgages, farm	5.4	1.7	.1
12. Securities, U.S. Government	253.3	54.6	5.2
13. Securities, State and Local	21.9	8.6	..
14. Securities, corporate bonds	39.5	7.0	..
15. Securities, preferred stock	} 158.8	} 114.2	..
16. Securities, common stock			..
17. Equity in unincorporated business	68.8	68.8	..
18. Equity in financial non-profit institutions	5.0	3.2	1.7
19. Equity in government corporations	26.5	—	.3
20. Other intangible assets	62.5	4.0	3.9
21. TOTAL	1,136.2	485.8	30.6
III. *Liabilities*			
1. Currency	49.2	—	—
2. Commercial bank deposits	131.1	—	—
3. Deposits in other financial institutions	53.9	—	—
4. Life insurance reserves	58.8	—	—
5. Pension and retirement funds, private	6.8	—	—
6. Pension and retirement funds, Government	38.8	—	—
7. Payables, financial intermediaries (cols. 8, 9 and 12)	34.8	10.3	5.1
8. Payables, other business	51.1	9.3	1.7
9. Payables, household	.9	..	..
10. Borrowing on securities	3.6	1.9	..
11. Mortgages	66.2	38.9	5.4
12. Bonds and notes	316.1	.2	—
13. Other liabilities (including accruals)	62.7	8.5	1.4
14. TOTAL	874.0	69.3	13.7
IV. *Equity*	1,142.0	736.2	140.8
V. *Total Assets and Liabilities*	2,016.0	805.5	154.4
II—21a. U.S. assets abroad	33.0	3.5	..
III—14a. Foreign investments in U.S.	17.7	.8	..
I—10a. Military assets	65.0	—	—

— Inapplicable or negligible. .. Unknown.

I

United States: end of 1949

ion

Non-profit Institutions	Unincorporated Business	Non-financial Corporations	Financial Corporations excl. 8, 9, 12	Banks	Other Financial Institutions	State and Local Government	Federal Government	Government Corporations
4	5	6	7	8	9	10	11	12
—	—					52.4	14.7	
9.9	21.9							
2.5	5.9	158.9	23.4	1.3	1.5	22.5	7.5	7.1
.5	12.7					.7	1.0	3.5
—	—	—	—	—	—	—	—	—
—	12.8	45.3	0	—	—	.1	—	3.7
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	26.9	—
12.8	53.1	204.1	23.4	1.3	1.5	75.6	50.1	14.4
		1.1		25.8		.2	..	
3.2	15.0	22.5	2.7	11.2	3.5	8.8	3.1	.1
—	—	..	—	16.6	0	—	1.0	0
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	13.3	26.3	4.4	18.3	.1	—	.1	.6
..	2.1	4.7	4.2	10.5	2.9	—	—	2.4
—	—	—	1.0	2.6	—	—	—	—
.2	..	..	.5	17.2	24.0	—	—	1.3
—	.3	—	0	.9	1.2	—	—	1.1
1.7	5.5	13.5	2.5	100.4	62.6	5.2	—	2.2
.3	..	.4	.1	6.6	3.9	1.5	—	.4
1.8	..	..	.1	5.3	25.5	—	—	—
.7	..			..	2.8	—	—	
2.9	..	17.0	12.8	.5	7.6	—	—	.1
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
..	..	6.4	1.1	10.7	.1	—	26.0	—
10.9	36.2	91.9	29.3	226.6	5.0	9.3	14.9	7.1
					139.2	24.9	45.2	15.4
—	—	—	—	23.5	—	—	25.7	—
—	—	—	—	131.1	—	—	—	—
—	—	—	—	40.7	13.2	—	—	—
—	—	—	—	—	58.8	—	—	—
—	—	—	—	—	6.8	—	—	—
—	—	—	—	—	38.8	—	—	—
.3	5.1	9.0	3.3	.1	.5	—	—	1.0
..	11.0	24.8	3.5	—	—	..	.7	..
..	..	..	.9	—	—	..	..	..
—	..	..	1.8	—	..	—	—	—
1.6	4.1	38.2	16.3	—	—	—	—	—
.1	.3			—	.3	21.9	253.3	1.5
..	..	20.1	3.4	18.8	4.6	.4	4.7	.7
1.9	20.5	92.2	29.3	214.2	123.1	22.3	284.4	3.2
21.8	68.8	203.9	23.5	13.7	17.6	78.3	–189.1	26.5
23.7	89.4	296.1	52.8	227.9	140.7	100.6	95.3	29.7
.5	..	11.0		4.5		—	13.5	..
—	..	6.0		7.0		.1	3.8	—
—	—	—	—	—	—	—	65.0	—

Table I.[1] On the other hand, if the assets and liabilities of unincorporated business enterprises (partnerships and sole proprietorships) had been amalgamated with those of their owners, national assets would be $70 billion lower. Again assets would be approximately $65 billion higher if they included military durables like planes, guns, ships, and military installations.

National net worth, i.e. the sum of the net worth of all units, was equal to a little over one-half of national assets, and amounted to nearly $1,150 billion.[2]

The 50-odd million of households are the most important components of the national balance sheet. They own nearly one-half of national assets and their share in national net worth exceeds three-fourths, reflecting their relatively low indebtedness ratio. Business accounts for nearly as large a share of national assets – approximately two-fifths – but for less than one-third of national net worth. Government is a poor third. It owns approximately one-tenth of total national assets if military durables are excluded, and not much over one-seventh if they are included. As a result of the heavy war debts of the Federal Government the net worth of government is negative to the extent of approximately one-tenth of national net worth if military durables are excluded, and is still slightly below zero if they are taken into account.

In view of the fact that individuals directly own one-half of national assets and indirectly control most of the other half as shareholders and proprietors, the distribution of individuals' total assets and net worth is of great economic importance. It is, therefore, significant to find that individuals' assets and net worth are highly concentrated.

The 3 per cent of households with a net worth of more than $60,000 owned almost one-third of total assets of individuals and accounted for approximately the same percentage of net

[1] In Table I the assets of personal trust funds administered by banks and other trustees have been treated as if they were directly owned and administered by the beneficiaries. The alternative treatment would move these assets to column 9 (other financial intermediaries) which would necessitate introduction of a new line (say 18.a) for 'equity in personal trust funds'.

[2] If there were no intermediaries (business enterprises) national net worth would be equal to national wealth, i.e. tangible assets plus net foreign balance. Once intermediaries exist national net worth will exceed national wealth by the value of their equity which in effect appears twice – once as equity of intermediaries and again as part of assets and hence also of equity of ultimates who own corporate shares and interests in unincorporated business enterprises.

worth. At the other end of the scale the 55 per cent of households with a net worth of less than $5,000 held less than one-tenth of all assets owned by individuals and had a share of not much over 5 per cent in net worth.[1]

The main contribution which national and group balance sheets can make lies not so much in the figures for total assets and net worth which they provide, but in the information they contain on debtor-creditor and owner-issuer relations among groups, the structure of assets and liabilities and various balance sheet ratios. There is no opportunity in this paper to deal with the financial interrelationships among groups as they are shown in Table I in the cross-classification of intangible assets by holders (columns) and debtors or issuers (rows), nor to discuss similarities and differences between this square matrix and that familiar from input-output tables.

We shall have to limit the discussion to the relations which characterize balance sheet structure, and even in this narrow field we shall confine ourselves to five ratios, shown in Table II, the share of liquid assets, the share of tangible assets, the share of price-sensitive assets, and the ratios of indebtedness and outside equity to total assets. All these may be expected to have considerable influence on a unit's economic plans and its reactions to changes in its economic environment.

The basic differences in the balance sheet structure of the dozen of main economic groups are clearly evident in the five ratios.

There is, first, the difference in the basic division of total assets between tangibles and intangibles. For farm households as much as four-fifths of total assets consist of tangibles. The proportion is almost as high for state and local governments and not much lower – approximately 70 per cent – for non-financial corporations. Unincorporated business enterprises, non-profit institutions and the Federal Government have ratios of tangible assets of 50 to 60 per cent. Non-farm households, on the other hand, keep only two-fifths of their assets in tangible form, the lowest ratio for any group of ultimate economic units.

[1] The figures for assets and net worth of groups of individuals, derived from the Survey of Consumer Finances in ways that will be explained in Volume III of *A Study of Saving in the United States*, are not entirely comparable with the estimates for all households' assets and net worth as shown in Table I. In particular, they do not include currency or consumer durables other than automobiles.

At the very end of the scale, of course, are financial institutions, most of which have scarcely any tangible assets at all. It is primarily the heavy weight of these institutions which holds the share of tangibles in the national balance down to not much more than two-fifths.

Equities (corporate stock and interest in unincorporated business enterprises) and tangible assets together constitute what may be called price-sensitive assets.[1] The main importance of the ratio of these assets in the balance sheet is that they determine together with the debt ratio, the impact of inflation and deflation on the balance sheet and in particular on net worth. In general, and unless offset by low indebtedness ratios, the higher the ratio of price-sensitive assets the greater the benefits of rising and the untoward effects of declining prices. Among the main sectors the ratio is high for agriculture, non-financial corporations and state and local governments, relatively low for non-farm households, unincorporated business and the Federal Government, and naturally lowest by far for most financial institutions. Here, as often, ratios for smaller more homogeneous groups are more illuminating, and will be discussed shortly for wealth, occupational and age groups among households.

The range of the ratio of indebtedness to assets is immense. The Federal Government's debt is over twice as large as its assets and the debt of most financial institutions is only a few per cent lower than their assets, while the indebtedness of non-farm and farm households amounts to less than one-tenth of their assets, that of state and local governments and unincorporated business enterprises is hardly in excess of one-fifth of assets, and even non-financial corporations' debt is below one-third of their assets. The significance of these ratios can be appraised only in conjunction with those characterizing the structure of assets. One way to do this is to calculate a 'leverage ratio', i.e. the percentage increase in net worth which would accompany an increase of one per cent in the prices of price-sensitive assets, given the debt ratio and the ratio of price-sensitive assets. It is then seen (Table II, column 7) that non-farm households as a group have a relatively low leverage ratio,

[1] Equities are of greatest importance – constituting approximately one-fourth of total assets – for non-farm households, and a few relatively small groups of financial institutions.

TABLE II

Selected balance sheet ratios for main economic groups 1949

Per cent of total assets (except col. 7)

	Tangible Assets	Liquid Assets[1]	Equity Securities[2]	Price-sensitive Assets[3]	Indebtedness	Outside Equity	Leverage Ratio[4]
	1	2	3	4	5	6	7
I. *Households*	46	20	19	65	9	—	.71
1. Non-farm households	40	21	23	62	9	—	.68
2. Farm households	80	12	0	80	9	—	.88
3. Non-financial, non-profit institutions	54	22	15	69	8	—	.75
II. *Business Enterprises*	35	36	5	40	59	41	.98
1. Non-financial corporations	69	13	6	75	31	69	1.09
2. Financial enterprises other than 3	44	10	24	69	56	44	1.57
3. Financial intermediaries	1	63	3	4	92	8	.50
(*a*) Banks	1	70	0	1	94	6	.17
(*b*) Other	1	50	7	9	88	12	.75
4. Unincorporated business	59	23	0	59	23	77	.77
III. *Governments*	62	22	0	57	137	—	1.03
1. State and local	75	18	0	75	22	—	.96
2. Federal (including government corporations)[5]	52	27	0	38	229	—	.20
IV. *Total*	44	27	11	55	43	41	.97

[1] Currency (including coin), deposits and government securities.

[2] Includes interest in unincorporated business enterprises.

[3] Tangible assets less monetary metals, corporate stock, and equity in unincorporated business.

[4] Percentage increase in net worth accompanying a one per cent increase in price of price-sensitive assets.

[5] Excluding Treasury's equity in government corporations.

SOURCES: *Columns 1, 3 and 6:* Goldsmith, R. W., *A Study of Saving in the United States*, Vol. III, Part I.
Columns 2, 4 and 5: From Tables X, XII and XIII respectively.

i.e. are in this sense vulnerable to inflation, while farmers, non-financial business enterprises, and state and local governments have relatively high ratios.

The balance sheet ratios just reviewed for the main economic sectors are at least equally significant for narrower groupings within these sectors. We shall limit ourselves to a few groupings of individual households since this is by far the largest major group, and much less has been known about their balance sheets until recently than those of business enterprises for which this type of analysis has long been common.[1]

Liquid assets, if defined narrowly, i.e. restricted to deposits in financial institutions and U.S. Government securities, represent a definitely smaller proportion of total assets of households of very low (less than $50) or very high ($60,000 and more) net worth, than the remaining 86 per cent of households among which the ratio shows only small variations.[2]

Differences in the proportion of liquid assets to total assets are even less pronounced if households are classified by income, although the ratio is again lowest at the two ends of the scale. Households with incomes of more than $7,500 keep, on the average, only one-eighth of their assets in liquid form, while the proportion varies between 15 and 20 per cent for those with incomes between $1,000 and $7,500.

Classification of households by the occupation of the head leads to more marked differences. Entrepreneurs, whether in agriculture or other industries, show a considerably smaller proportion of assets in liquid form than other individuals – approximately one-tenth compared to one-fifth. Among non-entrepreneurial households the differences, however, are small, except for a slightly higher share of liquid assets among households whose head has retired from work.

The picture changes drastically if marketable non-government securities, which consist mostly of corporate stock, are included in liquid assets. In that case the proportion of liquid assets increases with total net worth and income, particularly for

[1] This paragraph and the remainder of this section is taken with minor changes from a preliminary version of *A Study of Saving in the United States*, Volume I, Introduction, Chapter VIII.

[2] These data are taken from the Federal Reserve Board's Surveys of Consumer Finances, though not all of them have been published in the Federal Reserve Bulletin in the form used here; or from estate tax data as manipulated in *A Study of Saving in the United States*, Volume III, Part III.

households with net worth above $60,000 or income above $7,500.

Tangible assets account for approximately one-half of total assets of all households together. The proportion declines with increasing income, particularly for incomes in excess of $7,500. It fails to show a definite trend among households with a net worth of less than $60,000, but is considerably lower – less than 40 per cent – for households above that level than for those below it, for which it averages approximately 60 per cent. The tendency of tangible assets to decline proportionately as total assets increase is known from estate tax statistics to continue to the higher estate classes. It is entirely in line with expectations in as much as all the main forms in which large fortunes are now held, with the exception of real estate other than homes – particularly stocks and bonds – are of an intangible nature.

Differences in the share of tangible assets among occupations are fairly pronounced, but depend to some extent on the treatment of the tangible assets of unincorporated business and closed corporations. If these are attributed to the partners and stockholders, the share of tangible assets is high for farmers and other self-employed individuals with approximately 85 and 75 per cent respectively, but is hardly lower for workmen, managers and clerical and sales personnel for whom it averages between 60 and 70 per cent. It is smaller for professional and retired individuals who on the average keep only approximately one-half of their total assets in tangibles.

Tangible assets, however, consist of two categories of very different nature – tangibles for consumers' use on the one hand (house, car), and income properties on the other (farm, livestock and crops, other real estate, equipment, inventories). The share of the first of these categories increases with income up to $5,000 and then declines rapidly. The decline of the share of tangibles for consumer use with net worth begins at $25,000 and is very profound for higher net worth groups, while the ratio fluctuates rather erratically for lower net worth groups. Business type tangibles, on the other hand, are of very small importance for households with net worth of less than $10,000 – simply because at the present time the value of tangible assets of even a moderate-sized farm or non-farm business is above that level – but increase their shares so rapidly that they exceed 40 per cent for households with a net worth of over $25,000.

Although estate tax data are not classified in an entirely comparable manner, there is reason to assume that the increase in the proportion of business tangibles to total assets ceases soon after the estate tax boundary of $60,000 is crossed and decreases among large estates.

The share of price-sensitive assets increases with total net worth and with income (once it exceeds $3,000), but the connection is more regular and more pronounced for the former. In the case of net worth the relation extends near to the top, in 1944 up to estates of approximately $1 million to judge from estate tax returns.

Differences are less pronounced among occupations and in this case quite similar to those noticed for the share of tangible assets. Farmers and non-farm entrepreneurs show by far the highest average share of price-sensitive assets – almost seven-eighths – while the share of all other groups is close to 70 per cent.

The debt ratios for broad saver groups, as they are calculated from Table I, naturally hide substantial differences in the ratios among sub-groups and still wider variations between individual units. These are of particular interest, from the point of view of an analysis of saving, in so far as they distinguish between households of different economic characteristics. The necessary data are available only for the end of the period, but it may be assumed that the main features of the picture they disclose are applicable to a longer span.

It is only to be expected that the debt ratio should decline with increasing net worth since heavy indebtedness will by itself tend to shift a household into a low net worth class. This tendency is accented, and indeed over-emphasized, for households with small net worth by the omission from the sample data of consumer durables other than cars notwithstanding the inclusion of all consumer debt. The inverse correlation between debt ratio and total net worth is, however, also evident in the upper net worth classes (above, say, $5,000) where this inconsistency is of smaller effect. The correlation does not continue among estates of $60,000 to $1,000,000, if estate tax returns may be trusted. In this group the correlation reappears only among the few estates in the top net worth classes.

There is little relation between debt ratios and income before taxes up to $7,500, as the figures stand. If allowance could be

made for holdings of consumer durables other than cars it is possible, however, that the ratio would rise to incomes of about $5,000, and would then fall, particularly beyond $7,500. Satisfactory analysis requires separation of home owners from renters, which is as yet missing. Even then the debt ratio within the upper income brackets probably would fall with increasing income, but the income level at which the inverse correlation begins may well be considerably higher than the figures now show.

Variations of debt ratios by occupation are considerable. That the debt ratio is shown to be lowest for retired individuals is only to be expected, since the proportion of ownership of cars and other expensive durables is smaller for them than for groups of middle age, while the opportunity for repayment of debt on these durables is greater. These tendencies are reinforced for recent dates by the fact that acquisition of most tangible assets now owned by retired persons antedates the sharp increase in their prices which has taken place since World War II. That age more than any other factor is responsible for the very low debt ratio of retired individuals is confirmed by the similarly low ratios for households with heads aged more than 55 years.

The relatively high debt ratios for workmen, clerks and salesmen is due partly to the exclusion of consumer durables, which probably are more important in relation to included assets for those than for most of the other groups. It also reflects the high share of the home – often financed with the help of a mortgage loan – in total assets. The low ratio for the self-employed, the lowest of all groups except retired individuals, is attributable partly to the relatively high level of income and net worth of this group, both characteristics associated with low debt ratios; but may also be influenced by the classification of some debt as business liabilities not included in these statistics.[1]

The debt ratio is inversely related to age, and markedly so. The apparent exception – a lower ratio for the 18 to 24 than for the 25 to 34 year group – may be due to the relatively high proportion of secondary units in the former group (particularly individuals living with relatives). It is only natural that debts are incurred primarily at the time of marriage and when the first home is purchased. Neither of these two major causes of

[1] This misclassification may well be offset by the listing of some business obligations as personal debt.

debt is likely to occur often after the head of the household is over 35 or at most 40 years of age. From then on the contractual repayments on mortgage debt will almost ensure that the absolute volume of debt decreases, even if the decrease is interrupted when a new home or a new car is acquired or an emergency arises. Since average assets tend to increase with age the fall in the debt ratio will be even more rapid than this decline in the absolute amount of liabilities. At the time the decrease in mean income and in assets sets in – at 40 to 50 and at 60 years respectively – debt has generally been reduced to very low levels, on the average to less than $1,000. Whether debt increases after retirement we cannot say since the data for the entire population provide no breakdown above age 65. Among the estate tax population the debt ratio changes little between 60 and 75 years, but declines markedly thereafter.

V. TRENDS AND STRUCTURAL CHANGES IN THE NATIONAL BALANCE SHEET OF THE UNITED STATES SINCE 1900

The national assets of the people of the Unites States, i.e. the sum of the assets of all independent economic units in the country, has risen from $160 billion at the turn of the century to $2,000 billion in 1949 and to something like $2,500 billion at the end of 1952. This corresponds to an average rate of increase of approximately 5½ per cent a year. This is almost exactly the same rate that appears to have prevailed during the second half of the nineteenth century.

The course of national assets over the past half century was, however, far from smooth. An increase from $160 billion in 1900 to nearly $1,000 billion in 1929 – an average annual rate of growth of 6½ per cent – was followed by a sharp decline during the early nineteen-thirties and it took until approximately 1941 to regain the 1929 level. From then to 1952 national assets increased with extraordinary rapidity, advancing at an average annual rate of over 8 per cent between 1939 and 1952.[1]

In view of the wide fluctuations in the price level, mostly in the upward direction, and the steady though generally decelera-

[1] If the estimates summarized in Table III can be trusted, there were also substantial variations in the rate of expansion of national assets in the second half of the nineteenth century, though no parallel to the twelve-year interruption of 1929–1941. The rate apparently was considerably higher between 1850 and 1880, when it averaged 6 per cent, than in the two decades following, for which it works out at approximately 5 per cent.

TABLE III

The trend of national assets, national wealth and the financial interrelations ratio, 1850–1952

End of Year	Current Values		Deflated Values		Deflated per head Values		Financial Interrelations Ratio
	Combined	Consolidated	Combined	Consolidated	Combined	Consolidated	
	National Balance Sheet						
	National Assets	National Wealth	National Assets	National Wealth	National Assets	National Wealth	
	$ billion		$ billion of 1929		$ of 1929		
	1	2	3	4	5	6	7
1850	10	7	26	18	1,118	774	.43
1880	60	41	103	71	2.049	1,413	.46
1900	159	88	318	176	4,138	2,290	.81
1912	309	165	483	258	5,017	2,680	.87
1922	653	334	653	334	5,883	3,009	.96
1929	982	439	1,002	448	8,185	3,660	1.24
1933	733	330	952	429	7,557	3,405	1.22
1939	877	396	1,044	471	7,943	3,584	1.21
1945	1,558	571	1,227	450	8,740	3,205	1.73
1949	2,016	898[2]	1,344	599	8,924	3,977	1.24
1952[1]	2,500	1,200	1,524	732	9,618	4,620	1.08

[1] Rough preliminary estimates.
[2] Includes standard silver dollars, subsidiary silver and minor coin in circulation which in Table I are included among currency and treated as intangible assets.

SOURCES

Col. 1. 1850, 1880: Very rough estimates based on col. 2 and assets of financial intermediaries.
1900–1949: *A Study of Saving in the United States*, Vol. III, Part I.

Col. 2. 1850: Adjusted Census estimate. (See Goldsmith, R. W., 'The Growth of Reproducible Wealth of the United States of America from 1850 to 1950', *Income and Wealth, Series II*, p. 317.)
1880: Figures for reproducible tangible durable wealth as taken from *Income and Wealth, Series II*, p. 306, plus estimate for land obtained by converting the figures as shown there on p. 310 to current prices by means of the relationship prevailing between current and 1929 prices indicated in pp. 306–07.
1900–1949: Same source as for col. 1.

Cols. 3 and 4. 1900–1949: Cols. 1 and 2 divided by wealth deflator, viz. for 1850 Snyder's general price level (*Historical Statistics*, p. 231); for 1880 to 1922 Kuznets' gross national product deflator (1880 unpublished; 1900–1922 *Income and Wealth, Series II*, p. 324; 1929–1939, 1949–1952 Department of Commerce gross national product deflator from *Survey of*

Current Business, National Income Supplement 1951, p. 146, and the *Economic Report of the President*, Jan. 1953, pp. 165, 166; 1945 Department of Commerce gross national product deflator linked to Kuznets' 1941 figure in order to adjust the Commerce series for the overpricing of certain types of war expenditure (see Kuznets, *Income and Wealth, Series II*, p. 40). In all cases where not explicitly given year-end figures were obtained by averaging current and following year. The 1952 figure, however, refers to the fourth quarter.

Cols. 5 and 6. 1900–1949: Cols. 3 and 4 divided by total population obtained for 1850 and 1939 from *Historical Statistics*, p. 26; for 1945 from *Statistical Abstract* 1949, p. 7; and for 1949 and 1952 from *Survey of Current Business*, June 1950 and May 1953, p. S-10. Data refer to mid-year to 1900; to average of July 1st of current and following year to 1945; and to January 1st of following year thereafter.

Col. 7. 1900–1949: Col. 1 divided by col. 2 minus 1.

ting growth of population, variations in rates of expansion of national assets are better observed in deflated and per head figures than in the basic current value aggregates.

Using the gross national product deflator as the measure of the general price level it appears that national assets rose from nearly $320 billion (in 1929 prices) in 1900, to $1,000 billion in 1929, fluctuated around that level in 1939, but then expanded rapidly to approximately $1,500 billion in 1952. The average annual rates of expansion were approximately 4 per cent from 1900 to 1929 and 2 per cent from 1929 to 1952, though nearly 3 per cent for the last thirteen years alone. There is thus a clear decline in the rates of expansion of deflated national assets since the turn of the century, which continues an apparent trend in force during the preceding fifty years.

This decline is even more pronounced, although only up to World War II, if account is taken of population growth. Compared to an average annual rate of expansion of 2.7 per cent for 1850 to 1900, and one of 2.4 per cent in the first three decades of this century, the rate is .7 per cent for the entire period from 1929 to 1952 and does not exceed 1.5 per cent for the last dozen years.

The question then arises whether the decline in the rate of expansion of deflated national assets is nothing but a reflection of a similar trend in national wealth, or whether it is due to autonomous movements in the ratio of national assets to national wealth.

TABLE IV

Average annual rate of expansion of national assets
Selected periods 1850 to 1952

Per cent

Period	Aggregate current values	Aggregate deflated values	Deflated per head values
1850–1880	6.2	4.7	2.0
1880–1900	5.0	5.8	3.6
1900–1929	6.5	4.0	2.4
1929–1952	4.1	1.8	.7
1850–1952	5.6	4.1	2.1
1900–1952	5.4	3.1	1.6
1929–1939	−1.1	.4	−.3
1939–1952	8.4	3.0	1.5

SOURCE: Derived from Table III.

The ratio between the footings in the combined and consolidated national balance sheets, i.e. between national assets and national wealth, which after a simple algebraic transformation may be called the 'financial interrelations ratio', is connected in a simple way with a few other significant balance sheet items:

(*a*) Financial Interrelations Ratio

$$= \frac{\text{National Assets}}{\text{National Wealth}} - 1$$

(*b*)
$$= \frac{\text{Tangibles}^1 + \text{Intangibles}}{\text{National Wealth}} - 1$$

$$= \frac{\text{Intangibles}}{\text{National Wealth}}$$

(*c*)
$$= \frac{2 \times \text{Assets of Financial Intermediaries}}{\text{National Wealth}} +$$

$$\frac{\text{Intra- and inter-group claims}^2 \text{ of other groups}}{\text{National Wealth}}$$

[1] Tangibles always include net foreign assets (as does national wealth).

[2] Includes ownership of equity securities or interest in unincorporated business.

Only the last of these three relations, often useful as a rough estimating device, needs any explanation. The intangible assets of relation (*b*) are the sum of intangibles of financial intermediaries (banks; insurance companies; social insurance funds; investment and mortgage companies, etc.) and of the intangibles of other economic groups (households; business excluding financial intermediaries; governments). The second summand consists of the other groups' claims against financial intermediaries and of their claims among each other. (The latter claims, in turn, are largely made up of three components, viz.: domestic securities held by households and business; mortgages held by households; and accounts receivable of business). If the difference between financial intermediaries' total and intangible assets is ignored, because it is usually very small compared to the other components, relation (*c*) is obtained.

The crucial question obviously is what determines the size of the two parts of relation (*c*). The first part, the ratio of (twice) the assets of financial intermediaries, is influenced by the extent of layering among financial intermediaries and the rather complicated factors which determine the ratio of the consolidated assets of financial intermediaries to national wealth. Of particular importance among these is the size of the deadweight debt – in practice mostly central government debt – i.e. the debt not accompanied by approximately corresponding assets among national wealth.[1] The second part of relation (*c*) reflects degree of layering among non-financial business enterprises and government, again the size of the deadweight debt and specific factors such as typical net worth-asset ratios and extent of separation of ownership and operation of tangible assets. All these are factors that cannot be explored here. Suffice

[1] The financial interrelations ratio is affected by two other factors which have been absent in the United States, but have been of considerable importance in some European countries. The first is the destruction of tangible assets (including dissipation of net foreign assets) through war. Obviously a sudden reduction of tangible assets, i.e. national wealth, of the order of one-fifth, which has not been exceptional during World War II (cf. estimates by Reparations Conference of 1945 cited in Bulletin d'Information et de Documentation de la Banque Nationale de Belgique, 1946) will increase the financial interrelations ratio from the customary level of, say, 1 to a level of 1.2, even if it does not in addition lead to a rise in intangible assets as it often does in the form of war damage claims against the government. If it does to the full extent of the damage the financial interrelations ratio would further increase to 1.5. The second factor, working in the opposite direction, is the sudden forcible reduction of intangible claims which has accompanied most currency reforms and of course has shifted the financial interrelations ratio to a sharply lower level for a longer or a shorter period.

it to say that the financial interrelations ratio will increase as the degree of layering in the economy grows; as ownership of tangible assets becomes increasingly separated from their operation; as the size of the deadweight debt rises in comparison to national wealth; and as the market value of stock rises above their book value (corporate assets and liabilities, of course, all being valued at current prices).

If there were no financial relations among domestic economic units, i.e. if money and credit were absent and every unit owned all the tangible assets which it uses, the financial interrelations ratio would be zero. The higher the ratio the denser the net of financial interrelations – a term which covers not only monetary but also non-monetary relationships between lenders and borrowers (loans in kind) and between landlords and tenants (share-cropping). In a non-monetary economy, e.g. in which all tangible assets were owned by a landlord class, but operated by a propertyless but legally independent class of tenants, the financial interrelations ratio would be close to 1.[1] In a monetary economy higher financial interrelations ratios can easily be visualized even when most tangible assets are operated by owners, particularly (*a*) if there is layering of financial institutions, i.e. if there are types of financial institutions that draw their funds not from ultimate economic units (households; governments) but from other financial institutions, or that make their funds available to other financial institutions; or (*b*) if there is a substantial deadweight debt. Ratios in excess of, say, 3 are, however, difficult to conceive unless there is a very far-reaching separation of ownership and use of all types of tangible assets, layering among financial and non-financial business enterprises

[1] Under the present-day American legal arrangements real property rented does not appear in the balance sheet of the tenant but only in that of the landlord. The proportion of real property (or movables) rented, therefore, is without influence on the financial interrelations ratio and the national balance sheet tells us nothing about the split between ownership and operation which is usually involved in tenancy, i.e. it is invariant to shifts between owner-operation and tenancy although such a shift is of great economic significance. The discussion in the text is implicitly based on a treatment which appears to be more appropriate and significant within a system of social accounts, viz. entering the value of rented property on both sides of the tenant's balance sheet, as a tangible asset on the left and as a liability of equal size on the right-hand side. If this were done national assets, and the financial interrelations ratio would increase with the spread of tenancy. (The United States ratio for 1949, e.g. would be increased by approximately .05 or only 4 per cent if this treatment of rented real estate were adopted, but the difference would be relatively much more important in feudalistic agricultural countries.)

is common and intricate, and the deadweight debt is heavy.[1]

The financial interrelations ratio of the American economy, as it appears in column 7 of Table III, has shown a definite upward trend, though by no means an unbroken or regular one. Indeed the movements of the ratio suggest a series of steps rather than a smooth curve.

The ratio was undoubtedly low – less than 0.5 indicating that intangible assets had a value of less than one-half of that of tangibles, i.e. national wealth – in 1850 as rough as the estimates may be. This is hardly astonishing. At that time financial institutions and business corporations were still in their infancy; layering among them was almost unknown; and the deadweight debt was almost negligible. It is much more remarkable – and in need of explanation – that the ratio had hardly risen by 1880, although at that time commercial and savings banks had attained substantial size; railroad stocks and bonds were a common investment medium, and the Federal Government's deadweight debt was equal to nearly 5 per cent of national wealth.

In the last two decades of the nineteenth century the financial interrelations ratio moved to a new and considerably higher level of .8 to .9, at which it remained until the early nineteen-twenties. The rapid expansion of financial institutions in the fourth quarter of the century and the sharp rise of security issues and security prices in its closing years together with a slight decline in the price level of tangible assets help to explain this jump in the financial interrelations ratio. While most of the forces raising the volume of intangible assets continued throughout the first two decades of this century their effect on the financial interrelationships ratio was now dampened by the doubling of the price level of tangible assets. This rise apparently was strong enough to neutralize the sharp increase in intangibles and the creation of a deadweight Treasury debt of nearly one-tenth of national wealth during World War I.

The second sharp upward jump which lifted the financial interrelations ratio in a few years from 1.0 to over 1.2 in 1929 is

[1] One might think that hyper-inflation, whether due to high dead-weight government debt or other causes, could or would produce very high financial interrelations ratios. Their emergence, however, is prevented by the fact that open inflation also increases the current value (replacement cost) of tangible assets – and probably more rapidly than intangible assets grow. It is only in the case of large scale suppressed inflation – a combination not likely to endure for long – that extraordinarily high financial interrelations ratios may be expected.

easier to explain. It reflects primarily the 'frenzied finance' of the late nineteen-twenties with its unprecedented rise in the level of stock prices far beyond the current value of the underlying assets of corporations and its sharp increase in the extent of layering among financial institutions and other corporations, all in the face of stability in the general price level.

The absence of movement of the financial interrelations ratio between 1929 and 1939 – even in the depth of the depression in 1933 – again is a little perplexing, but probably is the result of offsetting tendencies. There was, on the side of increasing the ratio, the expansion of financial intermediaries after 1933, partly reflecting an increase in the Federal Government's deadweight debt from approximately 5 to 10 per cent of national wealth; and there was on the opposite side the collapse of the inflated level of stock prices as well as a considerable shrinkage in the volume of private debt. These movements in the volume of intangibles – downward from 1929 to 1933 and upward in the following six years – apparently happened to be just of the same proportions as the decrease and recovery in the value of national wealth which in this period chiefly reflect changes in the price level of commodities.

Between 1939 and 1949 the financial interrelations ratio underwent the sharpest increase and the sharpest decrease of which we have knowledge. The level jump from 1.2 in 1939 to the peak of 1.7 in 1945 is, of course, chiefly a reflection of war inflation which increased the Treasury deadweight debt by $250 billion or 60 per cent of pre-war national wealth, and increased national assets still more since a large part was placed with financial institutions and thus appears two or more times in the national balance sheet. This alone would have lifted the financial interrelations ratio considerably. In addition the rise in the current (replacement) value of tangible assets was held down by price controls and other devices accompanying a semi-suppressed inflation. The decline in the ratio between 1945 and 1949 is to a considerable extent the effect of the belated rise in the general price level which brought it more nearly into equilibrium with the expansion of the supply of money during the preceding period. From 1945 to 1949 the volume of intangible assets expanded by only $150 billion (the deadweight debt actually declined by approximately 3 per cent of national wealth) while the value of national wealth increased by $330

billion, almost one-half of which was the result of a rise in the price level.

The further, though much slower, decline in the financial interrelations ratio indicated for the period between 1949 and 1952, which reduced it to 1 and thus brings it to the lowest level since the mid-twenties, can be regarded probably as the tail end of the movement that started after the end of World War II. The increase in intangible assets of approximately $200 billion was again below the rise in the value of national wealth by $300 billion, but the absolute and relative size of the difference was considerably smaller than in the 1945–1949 period.

The financial interrelations ratio of the United States thus shows three characteristics (more intensive analysis will probably disclose others):

(1) A generally rising trend over the last century;

(2) Movements in sharp steps rather than along a smooth curve; and

(3) A tendency to remain on a level or decline – particularly in comparison to the secular upward trend – while commodity prices rise, and to rise in periods of stable or declining prices. (The main exception, the sharp rise in the ratio during World War II, reflects large scale semi-suppressed inflation.)

These characteristics will be better understood if the financial interrelations ratio is split into its two components, the ratio of (twice) financial intermediaries' assets to national wealth and the ratio to national wealth of the inter- and intra-group intangibles of all other groups. The results are shown in Table V. It should be remembered that the ratio of financial intermediaries' assets to national wealth is less unreliable than the two other ratios, particularly than the ratio of inter- and intra-group intangibles of non-financial business, households and government.

This split discloses the striking fact – which cannot be wholly or even mainly attributed to shortcomings of the figures – that the proportions of financial intermediaries' assets to national wealth has shown a pronounced upward trend since the turn of the century (a trend known to have been present also in the second half of the nineteenth century) whereas the ratio of other intangibles to national wealth has moved erratically – this may

be due partly to shortcomings of the statistics – and, if anything, has tended downward since 1900. In the United States it is thus the growth of financial intermediaries' assets relative to national wealth that has dominated the movement of the financial interrelations ratio.

There is no opportunity here to attempt an explanation of the reasons for the trends and the fluctuations of shorter duration in the two components of the financial interrelations ratio. Such an attempt will be made for the ratio of financial intermediaries' assets to national wealth in a forthcoming monograph dealing with these institutions.[1] The data are probably too scarce and

TABLE V

The two main components of the financial interrelations ratio, 1900–1952

	All Intangible Assets	2×Assets of Financial Intermediaries	Other Intangibles	Share of Financial Intermediaries
	As Multiples of National Wealth			Per cent of Financial Interrelations Ratio
	1	2	3	4
1900	.81	.41	.40	51
1912	.87	.48	.39	55
1922	.96	.56	.40	58
1929	1.24	.70	.54	56
1933	1.22	.81	.41	66
1939	1.21	1.00	.21	83
1945	1.73	1.36	.37	79
1949	1.24	1.00	.24	81
1952	1.08	.91	.17	84

SOURCES

Col. 1: From Table III, col. 7.

Col. 2: Includes assets of the banking system, private and government insurance, saving and loan associations, credit unions, investment companies, personal trust departments, and government lending institutions. Data from *A Study of Saving in the United States*, Vol. III, Part I.

Col. 3: Intangibles held by all groups other than financial intermediaries except claims against or securities of financial intermediaries. (Calculated as residual of cols. 1 and 2; understated by ratio of tangible assets of financial intermediaries to national wealth – i.e. approximately .01 for 1900 to 1912 and in 1949 and 1952; .02 in 1933 and 1939; and .03 in 1945. The level of this ratio (as that of col. 1) is somewhat too low because of the omission of various minor items of intangibles.

Col. 4: Col. 2 divided by col. 1.

[1] *Financial Intermediaries in the Process of Saving and Investment* (National Bureau of Economic Research).

as yet too little explored to do the same for the ratio of other intangibles to national wealth. Suffice it to suggest that the latter ratio is strongly influenced by the price movement of stocks, which constitute the largest intangible asset in which financial intermediaries are not or only little involved (see peak of the ratio in 1929!); by the vagaries of individuals' holdings of deadweight government debt (see the bulge of 1945); and by the apparent downward trend in the relative importance of business accounts receivable. Of the upward trend in the ratio of financial intermediaries' assets to national wealth all that need be said here is that it reflects two tendencies, primarily the substitution of indirect for direct saving and secondarily an increasing layering among financial institutions.

We now turn from the movements of total national assets and wealth to the assets of the nine main sectors which it has been possible to distinguish statistically throughout the first half of this century.

It is hardly to be expected that the assets of all sectors should have gone up and down in step while total national assets increased sixfold between 1900 and 1929, declined by one-fourth during the Great Depression and nearly tripled again from 1933 to 1949. Table VI shows that differences in the rate of expansion of the various groups have been very substantial. Compared to a more than thirteenfold increase in the footings of the national balance sheet between 1900 and 1949, the assets of financial intermediaries and the Federal Government have risen more than 26 times, those of state and local governments 16½ times and those of non-farm individuals 13½ times. On the other hand, in 1949 the assets of non-financial corporations were only 10 times as large as in 1900, and those of unincorporated business and farmers had risen only seven- and sixfold respectively.

Only two sectors increased their assets more rapidly than the national total both before and after 1929, financial intermediaries and state and local governments, and one, non-financial corporations, lagged slightly behind during both periods. Most groups' assets therefore grew more rapidly than national assets during one period and less rapidly in the other. Non-farm individuals grew more rapidly before 1929 and less rapidly during the following twenty years. The opposite pattern – less rapid growth than national assets before 1929, more rapid

TABLE VI

Growth of total assets of main sectors of the American economy, 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
				A. Current Prices				
1. Non-farm individuals	100	197	437	739	514	609	1,045	1,358
2. Farmers	100	205	298	279	185	213	437	605
3. Unincorporated business	100	137	281	351	231	298	523	721
4. Non-financial corporations	100	187	424	592	450	405	645	955
5. Financial corporations excluding 6	100	204	523	1,069	669	652	725	1,100
6. Financial intermediaries	100	215	493	809	689	993	2,131	2,441
7. Private non-profit institutions	100	200	414	576	529	633	810	1,129
8. State and local governments	100	236	520	762	766	889	1,189	1,649
9. Federal Government (including government corporations)[1]	100	158	458	515	735	1,927	4,446	4,808
0. Total[2]	100	194	411	617	461	552	980	1,268
				B. Deflated (1929) Prices				
1. Non-farm individuals	100	154	218	377	334	363	411	453
2. Farmers	100	160	149	143	120	127	172	202
3. Unincorporated business	100	107	140	179	150	177	206	240
4. Non-financial corporations	100	146	212	302	292	241	254	318
5. Financial corporations excluding 6	100	159	261	545	434	389	285	367
6. Financial intermediaries	100	168	247	413	447	591	839	814
7. Private non-profit institutions	100	157	207	293	343	376	319	376
8. State and local governments	100	184	260	389	497	529	468	550
9. Federal Government (including government corporations)[3]	100	123	229	263	477	1,146	1,750	1,602
0. Total[4]	100	152	205	315	299	328	386	423

[1] Including military assets 1939, 2,027; 1945, 6,562; 1949, 7,335.
[2] „ „ „ 1939, 553; 1945, 1,014; 1949, 1,309.
[3] „ „ „ 1939, 1,206; 1945, 2,583; 1949, 2,444.
[4] „ „ „ 1939, 329; 1945, 399; 1949, 436.

SOURCE: *A Study of Saving in the United Sates*, Vol. III, Part I.

growth afterwards – is shown by farmers and, the outstanding case, the Federal Government.

The differences in rate of growth are reflected in the changes in the share of the various groups in total national assets which are shown in Table VII.

Non-farm individuals, the largest single group, have shown remarkable stability in their share, which has averaged slightly over 40 per cent for the eight benchmark dates between 1900 and 1949, has varied only between 37 per cent (1900) and 45 per cent (1929) – the result of the stock market mania – and does not show a long-term trend upwards or downwards. The share of farmers, on the other hand, declined abruptly from 16 per cent in 1900 and 1912 to 7 per cent in 1929, but has since managed to maintain this level. The trend is similar for unincorporated business though the decline is most pronounced between 1900 and 1912. The share of individuals in the widest sense thus has fallen substantially though slowly from more than 60 per cent in 1900 and 1912 to not much over 50 per cent in 1949.

The share of business in total national assets fails to show a marked trend. It stood at 40 per cent in 1900 as well as 1929 and 1949.[1] Within this total, however, marked and significant changes have taken place. The most important of these is the increase in the share of financial intermediaries in national assets from less than 10 per cent in 1900 to 13 per cent in 1929, to a peak of 21 per cent in 1945, and to less than 20 per cent in 1949 and 1952.[2] Non-financial corporations (including financial corporations other than intermediaries, e.g. real estate corporations), on the other hand, have declined from a level of slightly below 25 per cent of total national assets from 1900 to 1933 to below 20 per cent from 1939 to 1949.[3]

Government is the only one of the three main groups whose share in total national assets has increased throughout the period, but mainly since the Great Depression. Its share rose from not much over 5 per cent in 1900 and 6 per cent in 1929 to slightly over 10 per cent in 1939, 1945 and 1949 if military assets are excluded. If they are included the share reaches a peak of

[1] These figures include unincorporated enterprises. Without them the ratios would be 32 per cent in 1900 and 36 per cent in 1929 and 1949.

[2] This ratio and its movements are discussed in Occasional Paper No. 42 of the National Bureau of Economic Research.

[3] The share will be considerably closer to the pre-depression level in 1952.

approximately 15 per cent in 1945, falls back to 14 per cent in 1949, but may reach a new peak in 1952. State and local and Federal Governments, however, show quite different trends. The share of state and local governments, standing below 4 per cent in 1900, reached its peak at fully 6 per cent in the nineteen-thirties, but fell back to 5 per cent after World War II. The Federal Government's share on the other hand was negligible – 1 to 2 per cent of national assets – until 1933,[1] but increased rapidly to 7 per cent in 1945 excluding, and 11 per cent including military durables. By 1949 it had relapsed to 5 and 9 per cent respectively.

The distribution of national net worth among sectors (Table IX) shows substantial differences from the comparable

TABLE VII

Distribution of total national assets among main sectors, 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
1. Non-farm individuals	37.3	37.8	39.7	44.6	41.6	41.2	39.8	40.0
2. Farmers	16.0	16.9	11.6	7.3	6.4	6.2	7.2	7.7
3. Unincorporated business	7.8	5.5	5.3	4.4	3.9	4.2	4.2	4.4
4. Non-financial corporations	19.5	18.8	20.1	18.7	19.0	14.3	12.9	14.7
5. Financial corporations excluding 6	3.0	3.2	3.8	5.2	4.4	3.6	2.2	2.6
6. Financial intermediaries	9.5	10.5	11.4	12.4	14.2	17.1	20.7	18.3
7. Private non-profit institutions	1.3	1.4	1.3	1.2	1.5	1.5	1.1	1.2
8. State and local governments	3.8	4.7	4.8	4.7	6.4	6.2	4.7	5.0
9. Federal Government (including government corporations)*	1.6	1.3	1.8	1.4	2.6	5.7	7.4	6.2
0. Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Loans made by the Treasury to Allied Governments during World War II have been treated as current expenditures and hence excluded from national assets.

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

[1] Excluding military assets; their inclusion would raise share of Federal Government to 6.0 per cent in 1939, 10.6 per cent in 1945, and 9.2 per cent in 1949, and would slightly reduce share of other groups.

distribution of national assets, which reflect differences among the various groups in the debt-asset ratio which will be briefly discussed on pages 382–5 below.

These differences are most pronounced for the Federal Government. In contrast to the upward trend in its share in national assets, the net worth of the Federal Government has generally gone downward, particularly between 1912 and 1922 and between 1929 and 1945, chiefly as the result of war expenditures which were covered by loans. Deadweight borrowing has been on such a scale that in 1949 the over-indebtedness of the Federal Government was equal to one-sixth of national net worth after having reached fully one-fourth in 1945. Even inclusion of military assets would still leave the ratio of Federal over-indebtedness to national net worth at slightly less than one-tenth in 1949.[1]

Non-farm households account continuously for a higher share of national net worth than national assets and, what is more significant, their share in net worth shows an upward trend from approximately one-half in 1900 and 1912 to well over three-fifths in 1939 and 1949. Farmers' share declines, as in the case of national assets, but the decline is less marked, and the recovery begins earlier and is much more marked. As a result farmers' share in national net worth in 1949 was only 7½ percentage points or two-fifths below the level of 1900, while the decline amounted to 8½ points and one-half for their share in national assets. The difference is even more pronounced for unincorporated business. The recovery in its share in national net worth since the thirties was so marked that it was slightly higher in 1949 than at the beginning of the century. In the case of non-financial corporations, the share is remarkably stable at slightly below one-fifth while there is evidence of a slight decline in the share in national assets.

Financial intermediaries provide the second sharp contrast to the picture shown for the share in national assets. Their share in net worth has always been small and, though rising, shows nothing like the massive increase which characterizes their share in national assets. These differences in level and movements of the two shares are explained by the generally low and declining share of equity in total assets of financial institutions.

[1] Small reductions in Federal debt and sharp expansion of national net worth during the last few years should have lowered the ratio considerably by 1952, particularly if military durables are included.

TABLE VIII

Growth of net worth of main sectors of the American economy, 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
				A. Current Prices				
1. Non-farm individuals	100	197	437	714	492	595	1,060	1,348
2. Farmers	100	202	265	254	163	199	465	640
3. Unincorporated business	100	141	352	437	279	414	821	1,092
4. Non-financial corporations	100	161	433	606	418	414	730	1,133
5. Financial corporations excluding 6	100	209	518	986	659	582	732	1,068
6. Financial intermediaries	100	212	369	858	554	623	904	1,204
7. Private non-profit institutions	100	206	450	600	550	688	938	1,362
8. State and local governments,	100	244	520	722	663	839	1,373	1,910
9. Federal Government (including government corporations)	100	300	–3,900	–2,025	–2,525	–5,775	–47,650	–40,650
10. Total	100	192	385	587	404	465	701	1,021
				B. Deflated (1929) Prices				
1. Non-farm individuals	100	154	218	364	319	354	418	449
2. Farmers	100	158	132	129	106	118	183	213
3. Unincorporated business	100	110	176	223	182	247	323	364
4. Non-financial corporations	100	126	216	309	271	247	288	378
5. Financial corporations excluding 6	100	164	259	502	427	345	289	357
6. Financial intermediaries	100	165	185	438	360	371	356	402
7. Private non-profit institutions	100	162	225	306	356	409	369	453
8. State and local governments	100	190	260	368	430	500	540	637
9. Federal Government (including government corporations)	100	238	–1,959	–1,038	–1,638	–3,438	–18,762	–13,550
). Total	100	150	192	300	262	277	276	340

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

TABLE IX

Distribution of national net worth among main sectors 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
1. Non-farm individuals	48.8	50.2	55.4	59.3	59.4	62.4	73.8	64.5
2. Farmers	19.7	20.7	13.5	8.5	7.9	8.4	13.0	12.3
3. Unincorporated business	5.6	4.1	5.2	4.2	3.9	5.0	6.6	6.0
4. Non-financial corporations	16.1	13.5	18.1	16.6	16.6	14.3	16.7	17.9
5. Financial corporations excluding 6	2.0	2.1	2.6	3.3	3.2	2.5	2.1	2.1
6. Financial intermediaries	2.3	2.6	2.2	3.4	3.2	3.1	3.0	2.7
7. Private non-profit institutions	1.4	1.5	1.7	1.5	1.9	2.1	1.9	1.9
8. State and local governments	3.7	4.7	4.9	4.5	6.0	6.6	7.2	6.9
9. Federal Government (including government corporations)[1]	.4	.6	−3.6	−1.2	−2.2	−4.4	−24.3	−14.2
10. Total[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Excluding military assets; their inclusion would raise share of Federal Government to −3.9 per cent in 1939, −16.1 per cent in 1945, and −8.0 per cent in 1949, and would slightly reduce share of other groups.

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

It has already been stressed that the analytical value of national and group balance sheets lies at least as much in what they tell us about the structure of assets and liabilities and thus approximately the uses and sources of funds of the various sectors in the economy, and about the creditor-debtor and owner-issuer relationships among these sectors, as in the information which the balance sheets provide on aggregate assets and net worth, their trends and their distribution among groups. Only a few selected simple topics out of this wide field can be discussed in this paper, more to illustrate possible uses of the material than to cover even the selected subjects thoroughly. The four balance sheet relationships for this purpose are the same as those discussed in section V, pp. 00–00, for 1949, viz.:

(1) The liquid asset ratio;
(2) The ratio of intangible to total assets;
(3) The ratio of price-sensitive to total assets; and
(4) The debt-asset ratio.

Table X shows the liquid asset ratio (currency, deposits and government securities as per cent of total assets) for each of the nine main economic groups for which combined balance sheets are available for the first half of this century at each of the eight benchmark dates between 1900 and 1949.[1]

The main impression one gets from Table X is that of a marked upward trend in the liquid asset ratio for most of the groups. Among non-farm households the liquid asset ratio has risen from only 10 per cent in 1900 to 20 per cent in 1949. The sharpest increases occurred between 1912 and 1922, and between 1939 and 1945. They reflect primarily the extraordinary expansion of both cash and U.S. Government securities which has characterized American war financing. The only substantial reductions in the ratio appear in the two post-war periods (1923 to 1929; 1946 to 1949).

The increase in the liquid asset ratio is also pronounced for farm households – from not much over 3 per cent in 1900 to 12 per cent in 1949 – though the level of the ratio has always been considerably lower than for non-farm households. Here too practically the entire increase occurred during war periods.

The upward movement of the liquid asset ratio among non-financial business enterprises is even more limited as it is confined almost entirely to the years 1942 and 1945, at least for corporations. The movement was, however, so strong during World War II that the liquid asset ratio of non-financial enterprises in 1949 was twice as high as it had been in 1900 and 1929, notwithstanding a sharp decline between 1945 and 1949.

The trend toward higher liquidity ratios has been marked also for state and local governments. Here it has been in force during most of the period, contrary to the experience of other groups. The increase in the ratio from 6 per cent in 1900 to 18 per cent in 1949 occurred mostly before the thirties.

The largest increase in the liquid asset ratio took place in the case of financial institutions, mainly reflecting large-scale acquisition of U.S. Government securities from the Great Depression to the end of World War II.[2]

[1] This and the following paragraphs are taken with minor alterations from a preliminary version of Chapter VIII of Introduction to *A Study of Saving in the United States.*

[2] For a more detailed discussion of changes in the asset structure of financial institutions see Goldsmith, R. W., *Financial Intermediaries in the Process of Saving and Investment* (National Bureau of Economic Research).

TABLE X

Ratio of liquid assets[1] *to total assets of main sectors of the American economy, 1900–1949*

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
I. Households	7.8	8.4	13.1	10.0	14.7	14.5	23.6	19.7
1. Non-farm households	10.1	10.9	15.6	11.0	16.4	15.6	25.0	21.0
2. Farm households	3.1	3.1	5.0	4.9	5.1	7.4	15.9	12.4
3. Non-financial non-profit institutions	0	4.8	6.9	5.8	9.9	13.5	25.3	21.9
II. Business Enterprises	11.4	11.3	13.7	11.2	15.5	29.3	48.5	36.4
1. Non-financial corporations	6.5	6.9	7.0	6.0	6.5	8.2	18.0	12.7
2. Financial enterprises other than 3	4.2	5.1	5.6	5.5	4.7	6.1	12.6	10.0
3. Financial intermediaries	23.8	20.7	27.4	20.5	31.1	54.8	74.3	62.6
(*a*) Banks	27.4	23.6	29.2	24.1	41.1	65.5	80.6	70.5
(*b*) Other	7.4	9.2	20.0	13.1	14.2	34.4	59.5	49.8
4. Unincorporated business	10.5	11.8	15.5	13.6	14.3	17.6	34.7	22.9
III. Governments	20.7	20.0	18.8	17.3	15.6	28.5	33.1	21.8
1. State and local	5.6	10.0	10.9	14.5	18.2	17.9	18.3	17.6
2. Federal (including government corporations)	42.3	48.8	37.0	30.4	26.4	46.1	43.5	26.9
IV. Total	9.9	10.1	13.7	10.9	15.2	22.0	34.7	26.6
V. Total, non-Federal	9.3	9.6	13.3	10.7	14.9	20.5	34.0	26.6

[1] Consists of monetary metals, currency, commercial bank deposits, deposits in other financial institutions, U.S. Government and state and local securities.

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

TABLE XI

Ratio of intangible assets to total assets of main sectors of the American economy, 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
I. Households	37.5	42.3	48.1	56.0	55.4	55.5	60.5	53.5
1. Non-farm households	52.3	59.3	60.0	64.0	62.4	61.7	67.6	60.2
2. Farm households	3.9	4.8	8.4	9.6	13.1	16.0	22.5	19.7
3. Non-financial non-profit institutions	28.6	35.7	39.1	39.7	43.2	48.1	51.8	46.0
II. Business Enterprises	54.7	55.3	56.4	61.4	62.4	61.9	72.4	64.8
1. Non-financial corporations	39.0	36.4	36.5	41.6	42.2	30.0	40.0	31.0
2. Financial enterprises other than 3	52.1	57.1	65.3	72.1	73.5	55.9	51.7	55.5
3. Financial intermediaries	95.4	96.6	97.4	97.1	94.5	96.3	99.3	99.2
(*a*) Banks	96.0	96.5	97.3	96.7	94.9	97.6	99.5	99.4
(*b*) Other	92.6	96.9	98.0	97.8	93.8	94.0	99.0	98.9
4. Unincorporated business	44.4	40.0	37.1	32.0	31.8	36.0	49.5	40.5
III. Governments	18.4	16.2	26.6	28.0	30.5	30.1	45.2	38.0
1. State and local	24.6	20.1	23.3	26.2	21.8	22.5	25.2	24.8
2. Federal (including government corporations)	3.8	2.4	35.3	34.1	51.3	38.4	57.7	48.6
IV. Total	43.3	45.7	50.0	56.5	56.0	55.0	63.4	56.3
V. Total, non-Federal	43.9	46.3	50.3	56.8	56.2	56.0	63.8	56.8

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

The increase in the share of liquid assets is an important but not the only factor in the rise of the share of intangible assets. For all households the ratio of intangible to total assets, as shown in Table XI, increased from nearly 40 per cent in 1900 to approximately 55 per cent in 1929, but stayed at that level until 1949, with the exception only of the bulge in World War II. Since most of the increase in the liquid asset ratio occurred after 1929, this means that the share of non-liquid intangible assets, i.e. primarily corporate securities and mortgages, advanced quite sharply during the first three decades of this century, but declined equally sharply during the last twenty years.

There are some differences in this respect between non-farm and farm households. The most important one is the more regular movement in the share of non-liquid intangibles of farm households, which rises much less from 1900 to 1929 than among non-farm households, but continues to increase during the next two decades in contrast to the decline among non-farm households. This difference is due mainly to the much smaller importance of holdings of equity securities among farmers' assets.

Trends in the ratio of price-sensitive assets are closely connected with the movements of tangibles on the one hand and those of liquid assets on the other, since this category is a combination of tangible assets and intangible equities (corporate stock and interest in unincorporated business).

Within total assets of households, price-sensitive assets have lost in importance steadily though not without interruption, as their share declined according to Table XII from fully three-fourths in 1900 to less than two-thirds in 1949. Most of the decline took place during the two wars and the Great Depression while the two movements which run counter to the long-term trend occurred in the late twenties and after World War II. Thus the share of price-sensitive assets has increased during peace-time periods of inflation in asset prices. It has decreased during peace-time deflations and during wars, when the extraordinary expansion of the claims' structure, combined with commodity price controls in World War II, more than offset the effect of the rise in equity prices. The level of the share of price-sensitive assets has been substantially higher for farm than non-farm households, particularly during the Great Depression.

TABLE XII

Ratio of price-sensitive assets to total assets of major sectors of the American economy, 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
I. Households	81.4	79.8	74.3	75.6	65.1	67.6	61.7	65.4
1. Non-farm households	75.7	73.2	69.5	73.3	61.7	65.2	58.8	62.4
2. Farm households	95.3	94.8	91.4	90.3	86.7	83.8	77.3	80.2
3. Non-financial non-profit institutions	71.4	73.8	69.0	71.9	65.8	65.4	64.1	69.2
II. Business Enterprises	50.2	51.2	51.3	50.6	51.9	45.7	33.2	40.2
1. Non-financial corporations	67.1	72.1	72.5	70.4	75.8	79.5	69.0	74.7
2. Financial enterprises other than 3	64.6	65.3	65.3	62.8	71.0	72.5	72.4	68.9
3. Financial intermediaries	4.6	4.9	3.6	9.5	9.4	7.3	3.3	3.7
(*a*) Banks	3.2	3.9	3.2	4.3	5.4	3.1	.8	.8
(*b*) Other	11.1	9.2	5.3	20.0	16.2	15.3	9.2	8.5
4. Unincorporated business	55.6	59.4	62.6	68.0	68.5	64.0	50.5	59.4
II. Governments	71.3	73.5	66.2	65.8	67.6	53.5	47.4	56.8
1. State and local	77.0	79.9	76.7	73.8	78.4	77.5	74.9	75.1
2. Federal (including government corporations)	57.7	51.2	36.6	37.4	36.4	25.1	27.3	38.1
V. Total	68.3	68.6	64.3	64.8	59.5	57.0	48.1	54.6
V. Total, non-Federal	68.5	68.8	64.9	65.2	60.3	59.1	50.1	55.2

[1] Consists of stocks, tangible assets excluding monetary metals, and equity in unincorporated business.

SOURCE: *A Study of Saving in the United States*, Vol. III, Part I.

The share of price-sensitive assets has also declined for banks and other financial intermediaries, even though it was interrupted during the twenties, as a result of net purchases and price rise of stocks; and in the early thirties on account of the accumulation of foreclosed properties.

In contrast to the decline among households and financial intermediaries, the share of price-sensitive assets in the total assets of non-financial corporations has shown an irregular upward movement. It stood at nearly three-quarters in 1949 compared to a little more than two-thirds in 1900. However, the trend was downward in the twenties and during World War II. The small net increase for the period as a whole has been due entirely to sharp rises in the Great Depression and during the thirties.

The structural changes in the first half of this century have thus reduced the share of price-sensitive assets of households, banks and governments; and have increased the share in the case of business enterprises. This means that, since debt-asset ratios have as a rule decreased substantially during the same period, a change in asset prices of the same proportion has now a relatively smaller effect on the net worth of farm and non-farm households than fifty years ago, but has still the same repercussion on the equity of non-financial business enterprises, and a larger effect on that of certain financial institutions. In other words the real net worth, (i.e. the current net worth divided by an index of the general price level), of individuals is now more susceptible, at least for households in the aggregate, to dilution by inflation than twenty or fifty years ago.

In owners' eyes the proportion of indebtedness to current value of assets is probably the most important single balance sheet ratio, although character and maturity of debt are sometimes as important as the mere amount. The debt ratio possibly loses more than others by aggregation, since it is the ratio for individual households or business enterprises rather than averages for broad groups that is significant for the determination of economic behaviour, low ratios for some members do not offset high ratios for others in their effect on spending, investing and saving decisions. Nevertheless even the group ratios, the only ones available for most of the period, show a number of clear and significant trends, which may be assumed to reflect changes in the typical and not merely average ratios for individual economic units.

TABLE XIII

Debt ratio of main sectors of the American economy 1900–1949

(per cent)

	1900	1912	1922	1929	1933	1939	1945	1949
I. Households	10.1	10.1	11.6	12.7	13.8	11.5	6.9	8.6
1. Non-farm households	8.1	7.6	8.0	11.0	11.9	10.1	6.5	8.6
2. Farm households	13.7	14.8	23.3	21.8	24.2	19.5	8.2	8.9
3. Non-financial non-profit institutions	23.8	21.4	17.2	20.7	20.7	17.3	11.8	8.0
II. Business Enterprises	54.0	59.0	54.4	54.9	60.0	62.2	64.1	59.4
1. Non-financial corporations	41.9	50.0	40.8	40.5	46.1	40.6	34.2	31.1
2. Financial enterprises other than 3	54.2	53.1	54.2	57.5	54.8	59.1	53.7	55.5
3. Financial intermediaries	82.8	83.3	87.0	81.8	86.2	89.2	92.7	91.5
(*a*) Banks	83.1	83.0	88.1	87.1	87.9	91.7	95.2	94.0
(*b*) Other	81.5	84.6	82.7	70.9	83.2	84.5	87.0	87.5
4. Unincorporated business	49.2	47.1	36.2	36.6	38.8	29.3	20.2	22.9
III. Governments	48.3	39.5	86.9	64.0	74.1	89.1	171.2	137.1
1. State and local	32.8	30.6	32.8	36.3	41.8	36.5	22.5	22.2
2. Federal (including government corporations)	84.6	70.7	231.1	159.3	152.3	145.7	264.2	229.2
IV. Total	29.7	30.5	34.1	33.0	38.4	40.6	49.6	43.3
V. Total, non-Federal	28.8	30.0	30.4	31.3	35.3	34.2	32.3	31.0

SOURCE: *A Study of Saving in the United States*, Vol III, Part I.

The main fact which stands out in Table XIII is the decline in the ratio of debt to assets for most groups between the beginning and the middle of this century, most of the decline occurring after 1933. The Federal Government, of course, constitutes the most important exception.

The debt-asset ratio of non-farm households remained slightly above 8 per cent until 1922, but then increased until 1933 when it reached its peak at 12 per cent. The rise in the twenties was due to rapid increase of instalment financing and large-scale borrowing on homes and securities. It continued during the Great Depression, notwithstanding a sharp reduction in the volume of debt, particularly short-term debt, as the value of individuals' total assets shrank even more seriously. The decline of the debt ratio in the decade from the middle thirties to the end of World War II from 12 to 7 per cent is due exclusively to the increase in individuals' total assets since the absolute level of debt increased slightly, though it still remained below the 1929 peak. The situation was entirely reversed after the end of World War II. The increase in debt was so rapid – more than 60 per cent in four years, mostly in home mortgage and instalment loans – that it outran the sharp increase in the value of assets, with the result that the debt-asset ratio increased from 7 to 9 per cent. Even at that level it was lower than at any time since the mid-twenties. It is evident, then, that the debt ratio of individuals is not uniquely related to the level of asset prices or inflation and deflation as they are commonly understood, as the rates increased both when asset prices rose (1913–22; 1923–29; 1946–49) and fell (1930–33) and decreased when asset prices went up (1901–12; 1934–39; 1940–45).

Farm households are similar to non-farm households in the decline in the debt-asset ratio between 1933 and 1945, and in the increase between 1912 and 1922, during the Great Depression, and between 1946 and 1949. They differ, however, by showing a small increase in the ratio between 1900 and 1912 and a small decline between 1922 and 1929. As most of the movements are considerably more pronounced for farm households the decline in the ratio is much greater for the period as a whole or its later part. The reduction from the peak of 24 per cent in 1933 to approximately 8 per cent in 1945 is remarkable and one of the sharpest for any major group.

If attention is centred on the period as a whole the decline

in the debt-asset ratio is most spectacular in the case of non-financial business enterprises as shown in Table XIII. At the turn of the century indebtedness amounted to approximately two-fifths of total assets, i.e. was a little less than the value of equity if assets are valued at market or depreciated replacement cost. By 1949 this ratio had been reduced to nearly 30 per cent of assets. This was the result, first, of the decline in the relative importance of industries in which the debt-asset ratio is customarily high, particularly railroads; and secondly of the decline in the typical debt-asset ratio in manufacturing and trade, which in turn is mainly the result of the rising trend in the prices of tangible assets.

This hypothesis is corroborated by the movements of the ratio between benchmark dates. Most of the decline in the debt-asset ratio took place between 1912 and 1922 and between 1939 and 1949, both periods of rapid rise in the price level. The only substantial increase in the debt ratio for both corporate and unincorporated business occurred between 1929 and 1933 when the price level fell sharply.[1]

The debt-asset ratio of state and local governments has shown an irregular but not very marked downward trend, falling from slightly less than one-third in 1900 to one-fifth in 1949. The decline occurred between 1900 and 1912 and between 1933 and 1949, but was interrupted by a rise from 33 to 42 per cent between 1922 and 1933, reflecting the extraordinary expansion of capital formation and debt during the twenties, as well as the combined effect of emergency borrowing and shrinkage of asset values during the Great Depression.

Two of the groups with rising debt ratios – banks and the Federal Government – constitute special situations. For banks, debts of necessity are equal to total assets. The increase in the ratio from 85 to 90 per cent between 1900 and 1933 to approximately 95 per cent since 1939 reflects the inability of the banking system to increase its equity funds – through the retention of earnings or the sale of additional stock – in step with the expansion of its deposit liabilities.

[1] Non-financial corporations also show a substantial increase in the ratio of debt to assets between 1900 and 1912 although tangible asset prices rose. No sufficiently detailed and reliable data are at hand to explain this apparent anomaly. It may be due to an increase during that period in the share of industries with typically high ratios or to an increase in the typical ratio in all or most industries, which would be in contrast to later experience.

The Federal Government is the only group for which liabilities have exceeded assets during most of the period. (This would be true even if military durables were included among assets). The two sharp increases in the debt ratio – between 1912 and 1922; and between 1939 and 1945 – are the direct result of borrowing for war. The declines between 1922 and 1929 and between 1945 and 1949 mainly reflect debt retirement, assisted after World War II by an increase in asset prices.