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*Part I*

Problems in the Measurement of Wealth

COMMENT

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# Measuring National Wealth in a System of Social Accounting

Raymond W. Goldsmith

Since I shall be sparing in the text with specific citations it may be well at the outset to refer to one paper that may be regarded as the best summary of the current status of the problems of national wealth measurement: 'On the Measurement of National Wealth' by Simon Kuznets (*Studies in Income and Wealth, Volume Two*, 1938); and to list in chronological order from the mass of literature on national wealth a few general contributions that have been repeatedly consulted. The UN report, *Measurement of National Income and the Construction of Social Accounts*, and Stone's Appendix were not yet available when this paper was written.

- Corrado Gini *L'ammontare e la Composizione della Ricchezza della Nazione* (Italian Book Company, New York, 1914)
- Josiah Stamp *The Wealth and Income of the People of the United States* (Macmillan, 1915)
- W. I. King *Wealth and Taxable Capacity* (London, 1922)
- Federal Trade Commission *National Wealth and Income* (Washington, D. C., 1926)
- Wilhelm Winkler '*Volksvermoegen*', *Handwoerterbuch der Staatswissenschaften VIII* (Jena, 1928, 4th ed.)
- R. R. Doane *The Measurement of American Wealth* (Harper, 1933)
- F. G. Dickinson & Franzy Eakin *A Balance Sheet of the Nation's Economy* (University of Illinois, Bureau of Business Research, Bulletin 54, 1936)
- M. A. Copeland & E. M. Martin 'The Correction of Wealth and Income Estimates for Price Changes', *Studies in Income and Wealth, Vol. Two* (1938)
- J. R. Hicks *The Social Framework* (Oxford University Press, 1942)
- Corrado Gini 'Sur les Fondements des Evaluations de la Richesse Nationale', *Revue de l'Institut International de Statistique*, 1945

## A TWO LEVELS OF SOCIAL ACCOUNTING

### 1 *Functions of Social Accounting*

Social accounting, i.e., a system of accounts for a community, has three main functions: <sup>1</sup> to provide a running, historical record of the community's economic operations; to measure the efficiency with which the community's economy operates; to provide a periodic inventory, i.e., an indication of the economic position of the community.

These three functions of social accounting correspond to those of business accounting. The first function, indeed, is identical: both an individual business enterprise and a community need a systematic, continuous record of economically relevant transactions expressed in a common unit. The second and third functions also are basically the same for an enterprise and a community but they are accomplished by different means. In the case of a business enterprise efficiency is measured by net profit, particularly in comparison with the capital employed and with the volume of transactions. For a community this simple measure is replaced by a concept of economic welfare that can be regarded as equal to or closely related to real net national income.<sup>2</sup> The periodic inventory may have one of two functions: it may be designed to show the amount that can be realized if the business is liquidated or sold or regarded as a statement of unrecovered cost. The first lacks meaning if applied to a community. The economic equipment of a community, particularly one as large as a nation, can neither be sold as a whole nor liquidated piecemeal. To measure the unrecovered cost of a community's physical assets is possible and not without interest, but it is not the primary purpose of

<sup>1</sup> 'Social' seems subject to misunderstanding, as remarks of Professor Bowman and Mr. Burroughs indicate. All the term connotes is the combination of the accounts of several economic units. An even more colorless designation might have avoided the impression that there cannot be a social accounting that is not economic accounting. The significant distinction is between two types of social accounting: national business and national economic accounting.

<sup>2</sup> See A. C. Pigou, *The Economics of Welfare* (London, 1932, 4th ed.), and the literature that has grown up around this treatment, some of which is listed in note 9.

the periodic economic inventory, in business parlance, the balance sheet, of a community. That purpose rather is to determine the total assets and the total net worth of all economic units that make up the community, primarily to the end of analyzing asset composition, wealth distribution, and claim and liability interrelations (see Sec. E).

There is, however, one great difference between social and business accounting. Accounting by business enterprises is conducted exclusively on one level, which is set by the laws and the commercial customs of the time and place.<sup>3</sup> Social accounting, however, can and must be conducted on two levels: the combination and completion of existing accounts in accordance with the prevailing methods of business accounting;<sup>4</sup> and the construction or recasting of accounts to conform with a set of standard rules derived from economic theory. The second level of social accounting is necessary mainly for two reasons: to make possible the measurement of the efficiency of the economic system and intertemporal or interspatial comparisons. This will become clearer in the course of the discussion.

The two levels of social accounting will be designated national business and national economic accounting.<sup>5</sup> They coexist at any given time. The first is based on the accepted (best) accounting practice of the day and place, the second on the corresponding economic theory.<sup>6</sup>

<sup>3</sup> This does not preclude the use of somewhat different accounts for different purposes, such as the satisfaction of the tax collector's demands or the shareholders' curiosity.

<sup>4</sup> At this stage of the discussion the term combination is used for both combination and consolidation, regardless of differences between them from the accountant's point of view.

<sup>5</sup> National is used in this context simply to indicate that the system of accounts covers a group of households, business enterprises, and public or private collectives. The territorial coverage of the system is in no way confined to a country within its political boundaries. National applies equally well to a combination of the accounts of all economic units within a smaller or larger area and to that of the accounts of a group of units bound by some characteristic other than location.

<sup>6</sup> Both national business and national economic accounting principles of a given place and time can be applied to the accounts of a group of economic units of

This paper is concerned only with the third function of social accounting: a periodic economic inventory. The premise is that national wealth is best understood and treated as part of the framework of social accounts: the stock, in contrast to the flow account, or the balance sheet of the economy. The general characteristics of the two levels of social accounting are briefly discussed in the next two sections. The rest of the paper—like the remainder of this volume—is confined to the level of national business accounting, although national economic accounting is brought in occasionally when differences must be clarified in order to understand the problems of national wealth under business accounting.

## 2 *National Business Accounting*

Even on the first level, that of national business accounting, it is necessary to go in two directions beyond the combination of existing balance sheets and income accounts. First, the existing accounts must be standardized in some degree or the result of the combination will be an aggregate (with little meaning) of incomparable basic entries. Secondly, gaps must be filled by constructing accounts for many units that do not keep them, or whose accounts cannot be obtained. For these units the reconstruction is carried out by analogy with the accounts of those available, i.e., generally those of large and medium size business enterprises. The methods of contemporary business accounting thus become the basis for the entire national system of accounts. As far as prevailing methods of business

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a different time and place. But such a procedure loses in significance, and finally becomes meaningless, as the distance, in institutional characteristics rather than in clock time or geometric space, between the community from which the principles are derived and those to which they are applied, increases. We may, for instance, apply current methods of American business accounting to estimating national wealth in the United States in 1920 or 1900, or to estimating today's national wealth in the United Kingdom or Argentina, but it is very doubtful that we could apply them to the United States in 1700 or to present-day China. Whether methods of economic accounting can be developed that are applicable to all times and places is an interesting speculation, but one that need not be taken up here.

accounting differ, the combined national accounts also will differ over time or between countries.

The essential features of business accounting, as it has developed in the Western World during the last two centuries, may be condensed into ten characteristics:

1) Completeness. Modern business accounting covers every aspect of activities considered economically relevant.<sup>7</sup> To give merely one example: business accounting cannot disregard depreciation as many enterprises did only a generation ago.

2) Standardization. Business accounting follows a set of principles that are explicitly laid down and that anybody can apply impersonally, obtaining the same results with only minor deviations reflecting differences of judgment. Business accounting is thus consistent from one period to another.

3) A 'system' of accounts articulated and tied together by the formal rules of double entry bookkeeping and based on verifiable evidence.

4) The expression of all entries in terms of a unit of account that almost always coincides with the legal monetary unit of the domicile of the business.

5) Allocation of payments and receipts to the appropriate periods; i.e., business accounting is on an accrual rather than a cash basis.

6) Allocation of payments and receipts to the appropriate causal factors. Unless this allocation were made, business accounting could not be used for analytical purposes and would be limited to an historical record without much economic significance.

7) Coverage of both stock and flow. There is a systematic tie-in between the balance sheet, the center of stock accounting, and the income account which summarizes the flow. This coexistence of balance sheet and income account, which may

<sup>7</sup> Some aspects of economic activity considered relevant by the economist may be omitted or inadequately treated by business accounting; for instance, expenditures creating buyers' preferences, particularly advertising cost. Only a small part is capitalized, under the title of goodwill, in deference mainly to the principle of conservatism.



seem a matter of course, was not introduced into business accounting until early in the 17th century.

8) Separation of capital and income transactions.

9) Separation of the enterprise accounts from the accounts of the owner.

10) Conservatism—the choice of the lower of alternative valuations in the case of assets and the higher in the case of liabilities, particularly contingent liabilities.<sup>8</sup> Conservatism is well exemplified by the customary valuation of inventories at the lower of cost or market, or by the disregard of unrealized appreciation.

### 3 *National Economic Accounting*

a) On the second level social accounting goes beyond the figures found in the books or the rules of business accounting as far as is demanded by economic theory. In other words, the existing accounts, or those that might be set up in their image, are used only as far as they fit the economic accountant's standards. Hence the results may differ considerably from the combined business accounts of the first level.

National economic accounting, then, is a combination of the technique of double entry accounting with market values of transactions, assets, and liabilities, adjusted to conform to the requirements of economic theory as it is now understood by a large body of professional opinion. The theory of national economic accounting is relatively new, complex, not uncontroversial, and not yet tested in practical application. A full discussion would require more space and time than are available and would have to dig much deeper than is necessary for the purpose of this paper. But economic accounting cannot be disregarded in any analysis of national wealth measurement, even if the work on actual data must still be conducted entirely along the lines of national business accounting. By way of compromise this section is confined to indicating the main problems of national economic accounting and how their solution

<sup>8</sup> Particularly emphasized by Sanders, Hatfield, and Moore in their *Statement of Accounting Principles* (American Institute of Accountants, 1938).

would make the national balance sheet, and the measure of national wealth, drawn up in accordance with the principles of national economic accounting differ from those derived by the methods of business accounting.<sup>9</sup>

From this viewpoint the values entering into the system of national economic accounts must conform as closely as possible to the 'economic principle', the minimization of expenditures on attaining a desired objective. This principle is satisfied—as has been demonstrated repeatedly in verbal or

<sup>9</sup> The approach to national economic accounting used here goes back to concepts developed explicitly by Pigou (particularly in *Economics of Welfare*, Parts I and II) but contained in rudimentary form in Marshall's works and in Sidgwick's *Principles of Political Economy* (London, 1883), Part III. Since the days I utilized this approach more than a dozen years ago—*eheu fugaces . . . labuntur anni*—in *Kapitalpolitik* (Berlin, 1933), Ch. 12, the basic problems of national economic accounting have become the subject of a substantial literature, chiefly in connection with the analysis of economic calculation in the socialist state and the reformulation of welfare economics. Of this literature the following publications are especially pertinent to the problems discussed, all too briefly, in this section:

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|-------------------------------|---|
| R. F. Kahn                    | 'Some Notes on Ideal Output', <i>Economic Journal</i> , March 1935  |
| Abram Bergson                 | 'A Reformulation of Certain Aspects of Welfare Economics', <i>Quarterly Journal of Economics</i> , Feb. 1938                |
| Oscar Lange<br>& F. M. Taylor | <i>On the Economic Theory of Socialism</i> (University of Minnesota Press, 1938)  |
| Harold Hotelling              | 'The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates', <i>Econometrica</i> , July 1938 |
| J. R. Hicks                   | 'The Foundations of Welfare Economics', <i>Economic Journal</i> , Dec. 1939   |
| Nicholas Kaldor               | 'Welfare Propositions in Economics', <i>Economic Journal</i> , Sept. 1939   |
| Oscar Lange                   | 'Foundations of Welfare Economics', <i>Econometrica</i> , July-Oct. 1942  |
| G. J. Stigler                 | 'The New Welfare Economics', <i>American Economic Review</i> , June 1943  |
| Abba Lerner                   | <i>The Economics of Control</i> (Macmillan, 1944)   |
| P. A. Samuelson               | <i>Foundations of Economic Analysis</i> (Harvard University Press, 1947)  |

mathematical argument<sup>10</sup>—if marginal cost equals marginal revenue equals price. Adherence to this principle leads to the optimum distribution of man-made and natural resources, provided the marginal utility of money to each member of the community is regarded as equal, an hypothesis generally introduced because of the impossibility of the interpersonal comparison of psychic factors.

b) Valuation in accordance with the economic principle means, first, the substitution in economic accounting of marginal cost for price, whenever they deviate.

It means, secondly, the interpretation of marginal cost and marginal revenue not necessarily as that charged or accruing under the customary business arrangements of the day and place, but as that chargeable or accruing from the viewpoint of the economic system as a whole. Marginal cost and revenue in the latter sense deviate from the same items as reflected in business accounts by the amount of what may be called uncompensated costs and benefits, i.e., by the costs or benefits that under present legal or customary arrangements are not imputed to the economic activity or unit that causes them.<sup>11</sup> The recognition of uncompensated costs and benefits is thus merely an enlargement of the area of imputation falling within the scope of the economic calculus.<sup>12</sup> That enlargement should

<sup>10</sup> For a mathematical demonstration see, e.g., Enrico Barone, 'Il Ministro della Produzione nello Stato Collettivista', *Giornale degli Economisti*, Sept. 1908; or in a more modern presentation, Lange, 'Foundations of Welfare Economics'.

<sup>11</sup> Examples of costs that at present are not usually imputed to their economic cause are smoke, noise, and similar nuisances. To the extent that the cost is not assessed against the firms that employ workers trained by others or against firms responsible for a specially heavy rate of labor turnover and unemployment, expenditures by business on labor training as well as part of the cost of supporting the unemployed belong in this category. Uncompensated benefits are exemplified by afforestation; stream regulation; many aspects of education, and more generally of the improvement of human capital, because the results cannot usually be appropriated except where slavery or similar systems of unfree labor prevail.

<sup>12</sup> The study of the size of the 'area of imputation', its development over time, and its differences as between economic systems should be a rewarding subject for a legal historian. Unfortunately, this field has been neglected, or I have overlooked significant contributions. In the modern capitalist system the area of imputation has apparently tended to grow.

always go up to the point, but not beyond, where the technical costs entailed by the extension of the area of imputation are equal to the formerly uncompensated costs or benefits. For then the equality between marginal cost and marginal revenue from the viewpoint of the economy as a whole is restored.

A third possible difference between national business and economic accounting consists in the modification of the capitalization factors that are applied in many cases to expected net returns to obtain asset values for use in the national balance sheet.<sup>13</sup> It may take one of two forms: the elimination of excessive allowances for risk or for other imperfections in the market rates of capitalizations or the substitution of the time discount rate appropriate to the economic community for the pure market rate of interest.

It has been argued that the money and capital markets tend to overestimate the risk inherent in all except gilt edged investments and to underestimate the risk inherent in what are usually regarded as particularly safe assets. If they do, the effective yield over a long period, i.e., actual yield adjusted for defaults and capital losses, of assets generally regarded as slightly or very risky would be higher than the yield of assets regarded as very safe. Actual yields thus would not be equalized, providing evidence that the market failed in this important economic function. Unfortunately, no systematic investigation has as yet been undertaken that would permit us definitely to accept, reject, or modify this hypothesis. Scattered evidence, however, justifies doubt about the ability of the market to prevent the development and persistence of systematic errors—not only between more or less risky assets—in the structure of interest rates and capitalization factors.<sup>14</sup>

Still more controversial, as well as further reaching, is the possibility that the pure market rate of interest does not reflect

<sup>13</sup> The first and second types of difference between business and economic accounting, in contrast, affect capitalizable net returns.

<sup>14</sup> For some material see *Kapitalpolitik*, pp. 348 ff. The Corporate Bond Research Project of the National Bureau Financial Research Program is now engaged in the first large scale test of some aspects of the valuation function of the American bond market.

adequately the basic economic relationships involved from the viewpoint of the economic community as a whole. To the degree that the market rate of interest and capitalization represents a time discount it is obviously dependent upon individuals' expectations of future incomes and needs, production coefficients, prices, and interest rates, and is influenced by the average, or more probably the maximum, life span of individuals and the members of their families they wish to provide for. These estimates may well tend to be affected by systematic errors. In particular it has been asserted that there is a tendency toward a systematic overestimation of the time discount rate on the part of most individuals, which would result in a foreshortening of the economic horizon and an understatement of rates of capitalization (abstracting from the risk element).<sup>15</sup> Again, much theoretical work and factual research remains to be done before it will be possible to verify, refute, or modify this hypothesis; but again the hypothesis is plausible enough to deserve serious consideration in the formulation of principles of economic accounting.

The shift from national business to economic accounting means, fourthly, a shift from exclusive reliance on current entries in national currency to the use of an accounting unit of stable purchasing power. Such a shift, or rather the addition of a second set of accounts, is not entirely unknown to business accounting, especially in times of galloping inflation or in countries chronically afflicted with currencies unstable not only in terms of the price level but also in terms of gold or the currencies of the leading mercantile countries. But the keeping of a separate set of books in accounting units of stable purchasing power would have to become general under national business accounting.

This summary of the differences between national business and economic accounting will already have indicated that the national balance sheet and national wealth estimates will differ

<sup>15</sup> See e.g., Pigou, *Economics of Welfare*, Part I, Ch. II; also Makower and Marschak, 'Assets, Prices and Monetary Theory', *Economica* (New Series, V, 1938), pp. 261-88.

in many respects, some important, others of little practical significance. It remains to point up some of the most important differences in the measurement of national wealth under the two systems.<sup>16</sup>

Since net capitalizable returns as well as capitalization factors under economic accounting differ in many instances from the corresponding values under business accounting, it stands to reason that the actual, or constructed, market values entering into the national balance sheet also will differ in many instances. The value of the assets of enterprises and industries in which monopolistic prices and profits play a role may well be lower under economic than under business accounting and constitute a smaller fraction of total national wealth. The same applies to enterprises and industries whose operations involve uncompensated costs to others. On the other hand, enterprises and industries producing uncompensated benefits would be assigned a higher value under economic than under business accounting. These positive and negative differences in asset values, however, do not necessarily cancel. Indeed, the reductions in asset values due to adjustments in capitalizable returns are likely to outweigh increases of the same type, because a downward adjustment in capitalizable returns often finds its counterpart in an increase in personal, noncapitalizable incomes, while the opposite is likely to be rarer.

The result of adjustments due to differences in the size of capitalization factors, on the other hand, would seem to be in

<sup>16</sup> For want of time I forego discussing two further possible differences between national economic and business accounting and their effects upon the measurement of national wealth: the inclusion of human capital in national wealth and an allowance for differences in the supply of what are generally regarded as free goods, particularly elevation, accessibility (geographic configuration), sunshine, and rainfall. The second difference is significant only, or at least mainly, in international comparisons of national wealth. The first, however, would play a role—and a very important one—in international comparisons as well as in the determination of total national wealth and the analysis of its composition and personal distribution. Both items are easily dealt with under national business accounting by being excluded, or rather not admitted, as shown for human capital in Section C 3. But both, and particularly the first, present very difficult problems for national economic accounting—problems which, it seems to me, have not yet been adequately dealt with.

the direction of increasing asset values on balance because as far as the present unsatisfactory state of the evidence indicates, cases in which the market's valuation as reflected in business accounting exaggerates allowances for risk and for time discount are more numerous and more important than those in which the opposite relationship prevails.

The final effect of all these adjustments of asset values on the size of national wealth is difficult to appraise. But it seems likely that the upward adjustments for the understatement of capitalization factors (overstatement of interest rates) and for uncompensated services that are implied in following the methods of business accounting will outweigh the overstatements on account of monopolistic profits and uncompensated costs to others and the elimination of intangibles that reflect excesses of price over marginal costs. These speculations, however, are of limited significance since differences in the structure and distribution of national wealth as shown by economic and business accounting are much more significant than differences in the final total.<sup>17</sup>

Especially pronounced differences between economic and business accounting may be expected when intertemporal and interspatial comparisons are made. These differences, however, are not significant, since national wealth figures derived in accordance with the methods of business accounting, although often used, are not suitable for such comparisons. The differences will usually be the more striking the greater the gap—in time or economic structure—between the national economies compared.

<sup>17</sup> The preceding discussion has disregarded the distinction, to be made in Section B, between the value of assets taken discretely and as parts of going concerns. It is clear, however, that the differences in the valuation of assets between economic and business accounting will affect going concern values much more than discrete values.

## B DERIVATION OF THE NATIONAL BALANCE SHEET

### 1 *Classification of Constituent Accounting Units*

A national balance sheet is the combination of the balance sheets of all economic units domiciled within the national boundaries. Any entity that keeps separate accounts or has revenues and expenditures of its own is, in principle, to be regarded as a unit. For this broadest of definitions, therefore, majority or fully controlled subsidiaries as well as their parents are treated as units; so are government corporations and all types of cooperative organizations; so too are individual consumers, even though they are members of a family, unless there is a pooling of income and expenditures. Doubts may arise in some fringe cases, but they are not important enough to warrant discussion here.

The mass of units whose accounts are combined into the national balance sheet can be divided in many ways. For purposes of measuring national wealth the most important distinction is between ultimate economic units and intermediaries. Ultimate economic units are all those not owned by other units, i.e., those whose equity is not apportioned among other units.

This apportionment is obviously not a legal question (otherwise all corporations, at least all that are not majority owned subsidiaries, would have to be treated as ultimate units) but a matter to be decided on economic considerations within the framework of social accounting. Here the guiding principle should be whether, customarily and in accordance with the principles of business accounting, shares in the equity of a unit are carried as an asset in the actual or constructed balance sheet of other units. Under that test business corporations—as well as nonprofit corporations and organizations such as building and loan associations, mutual savings banks, insurance companies, and cooperatives—are to be treated as intermediaries, since their shares or the other evidences of beneficial interest in their equity are regarded as balance sheet assets of the owners. By the same test public collectives, such as



the federal, state and local governments, and special districts, are treated as ultimate units with an equity of their own. So are private collectives such as churches, hospitals, foundations, educational institutions, and fraternal organizations. As a rule there is no well defined group of persons that could be said to own the equity of such collectives, and when there is, its members individually cannot claim part of the equity and cannot divide it among themselves. But even institutions of this type should be treated as intermediaries and their equity distributed in the national accounts among the owners or beneficiaries, provided shares or other beneficial interests in the equity are transferable and have a money value. Households and individuals are, of course, always treated as ultimate units, except that slaves in households would have to be regarded as intermediaries and their net worth attributed to their owners.

All other units are regarded as intermediaries. The most important are business corporations, partnerships, mutual associations and cooperatives, and government corporations. As a matter of principle, single proprietorships in the widest sense, including the business activities of farmers and professional people, also should be treated as intermediaries. Hence a balance sheet would have to be constructed for them, including assets and liabilities specific to the exercise of their productive function and showing the net worth of the owners in their capacity as operators. Whether this can be done, or business assets and liabilities have to be amalgamated with those of the owner-operator in his capacity as the head of a household, is a matter of statistical convenience, depending upon the status of the basic information. In practice, the absence of sufficiently detailed data and the difficulty of distinguishing neatly between household and business assets and liabilities—though less serious than in the similar case of allocating revenues and expenses to business and household activities—will usually compel the statistician to do without a separate combined balance sheet for sole proprietorships. In that case, however, the combined business-household balance sheet of the owner-operator should, whenever possible, be kept separate from that

of households that have no business assets and liabilities. This will usually be feasible—and actually is in the United States—for the largest single group of owner-operators: farmers.

These considerations lead to the accompanying classification of economic units for the purpose of preparing a national balance sheet. It may be regarded as the least detailed classification sufficient for analytical purposes, especially for the study of the relation between balance sheet structure and economic behavior.

### I Ultimate units

#### 1 Private units

- a) Consumer households (including unattached individuals and institutional population; excluding b and c)
- b) Farm households
- c) Other owner-operator households
- d) Private collectives

#### 2 Public units

- a) Federal government
- b) State and local governments

### II Intermediaries

#### 1 Business corporations, partnerships, mutuals and cooperatives

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| a) Banking                          | e) Manufacturing and mining          |
| b) Other finance                    | f) Urban real estate                 |
| c) Transportation and communication | g) Trade, service, and miscellaneous |
| d) Electric power and gas           | h) Agriculture                       |

#### 2 Sole proprietorships (a-h as under 1)

#### 3 Government corporations (a-h as under 1)

### III Foreigners

#### 2 Consolidation

Table 1 shows in the upper tier the layout of a combined balance sheet for all ultimate economic units. If this were a con-

Table 1  
Summary of National Balance Sheets at Three Levels

I Ultimate Economic Units (Households and Collectives)	
1 Tangible assets	10 Liabilities to other I
2 Foreign assets	11 Liabilities to II
3 Currency <sup>a</sup>	12 Liabilities to foreigners
4 Claims against other I	13 Accrued items
5 Claims against II	14 Equity
6 Equity securities of II	
7 Accrued items	
8 Other intangible assets	
II Intermediaries (Corporations, Partnerships, Mutuals and Cooperatives)	
1 Tangible assets	10 Liabilities to I
2 Foreign assets	11 Liabilities to other II
3 Currency	12 Liabilities to foreigners <sup>e</sup>
4 Claims against I	13 Accrued items
5 Claims against other II	14 (Book) Equity
6 Equity securities of II <sup>b</sup>	15 Valuation difference on II 6 <sup>c</sup>
7 Accrued items	
8 Other intangible assets	
9 Valuation difference on II 6 <sup>c</sup>	
III Nation	
1 Tangible assets	10 Foreign liabilities <sup>e</sup>
2 Intangible assets	11 National wealth
3 Foreign assets	12 Over-all valuation difference <sup>d</sup>
4 Over-all valuation difference <sup>d</sup>	

<sup>a</sup> Excluding full bodied metallic money, which is part of I.

<sup>b</sup> At market value.

<sup>c</sup> If the market value of II 6 is higher than its book value (based on II 14) the balancing item appears on the right side as II 15; if the market value is lower than the book value it appears on the left as II 9.

<sup>d</sup> III 4 = III 12 = II 14 - (I 6 + II 6); may be positive or negative.

<sup>e</sup> Includes domestic equity securities and tangible assets held by foreigners.

solidated balance sheet, the items, claims against ultimate economic units and liabilities to ultimate economic units, would drop out if a given claim was entered at the same figure in the balance sheets of both creditor and debtor.<sup>18</sup>

These eight types of asset and five types of liability (includ-

<sup>18</sup> In business accounting, balance sheets and income accounts of units are consolidated only if there is common ownership and control. Hence when we apply the principles of consolidation to all economic units in a group or to an entire nation, we tacitly assume that all 'belong to', in the sense of 'are owned or controlled by', some hypothetical entity. Such a fiction may be repugnant to some. Unless we resort to it, however, we must rest content with combining balance sheets, a purely arithmetical process of addition which ignores both the offsetting of claims against liabilities within the group and the elimination of intra-group transactions characteristic of consolidated accounts.

ing equity) are probably the minimum needed for any economic analysis. It is important, however, to realize that the combined balance sheet of all ultimates includes every type of asset or liability that under the rules of present-day business accounting would appear in the balance sheet of any ultimate economic unit.

The combined balance sheets of the ultimate economic units are almost completely 'constructed' rather than taken from their books, for the simple reason that most of these units—households and collectives—do not keep books at all or at least not in the detailed and formal manner larger business enterprises do. The combined balance sheet is thus the result of an hypothesis: that each of these ultimates does keep accounts and keeps them according to the principles applicable to the type of business enterprise most nearly comparable to its own activities. For two reasons this appears not too violent an assumption. First, the legal arrangements regarding ownership, debts, bankruptcy, and the like are quite similar for households, private collectives, and many public collectives to those for business enterprises. Secondly, the process of rationalization, quantification, and monetary evaluation that characterizes modern business and its accounts has become so generally accepted in economic life, at least in North America and Western Europe, that it may fairly be applied also to economic units other than business enterprises.

In principle, in a consolidated balance sheet of intermediaries the claims against and the liabilities to other intermediaries cancel out. So do accrued items—deferred charges and prepaid expenses—on both sides of the balance sheet. If they are calculated consistently, they will always be equal—though, of course, opposite in sign—in the to-be-consolidated balance sheets of the two economic units involved. The earned but uncollected interest on the books of the creditor, e.g., is balanced by the accrued, but not yet paid, interest in the debtor's accounts.

When the balance sheets of all ultimate economic units and intermediaries are consolidated—not merely combined—the

nation's balance sheet shown in the lower tier emerges. Since this consolidation wipes out all claims and liabilities among members of the nation—again abstracting from the possibility that they are valued differently in the books of the creditor and the debtor—there remain only the following items: on the left side—tangible assets, intangible assets (part not offset), and foreign assets; and on the right side—foreign liabilities and the counter-entry to the sum of tangible assets, intangible assets, and net foreign assets, the item for which we shall reserve the term 'national wealth'.

The accounting concept of national wealth has been derived in this way whenever it has been considered.<sup>19</sup> It is apparently assumed, as a matter of course, that the footings on both sides of the balance sheet at all three levels are equal. This derivation and this assumption, however, it would seem, are in need of supplementation, because they overlook what might be called the 'indeterminacy principle' of the national balance sheet, if this designation did not sound too pretentious in comparison with its prototype in physics.

The principle states that we cannot consistently measure at one and the same time the value of the equities of economic units and that of specific physical assets; or, to put it differently, that a consistent combination of individual balance sheets into a national total is impossible, if by consistency is meant a uniform method of valuation and a uniform definition of the assets included.<sup>20</sup>

The reason is the difference between the value of a bundle of assets as (a) the sum of the values of the separate assets and (b) the value of the assets as the whole or part of a going concern. In individual balance sheets the ownership of equity securities

<sup>19</sup> For instance, in Hicks' *Social Framework*, in C. Reinold Noyes' 'A Consolidated Balance-Sheet for a Democracy', *Journal of Accountancy*, Feb. 1947, or in the Dickinson-Eakin *Balance Sheet of the Nation's Economy*.

<sup>20</sup> Noyes (loc. cit., p. 102) is aware of the discrepancy but feels that for the limited purposes of his article it might be ignored; Dickinson and Eakin (*The Illinois Segment of the Nation's Economy for 1935*, University of Illinois, Bureau of Business Research, Bulletin 60, 1940, p. 15) also allude to it, but do not make the corresponding adjustments in their figures.

(or of the equity in unincorporated enterprises) is necessarily valued on a going concern basis, i.e., generally at the market price of the shares held. In the national balance sheet, on the other hand, assets must be valued singly, since it is impossible, as a matter of either principle or fact, to exhaust the total going concern value by apportionment among the individual assets owned by the enterprise—for two reasons. First, a going concern usually has liabilities that cannot be attributed to individual assets. Hence it is impossible to point to specific assets that embody the concern's net worth. Second, part of the going concern value reflects intangible assets, specifically the catch-all 'goodwill', that do not appear in business accounts or at least not with the value that would be required to restore the equivalence between the book and the market value of the enterprise's equity.

The two totals, the aggregate worth of all assets evaluated singly and the net worth of all individuals including their holdings of equities at going concern value, must be reconciled if we want to preserve the formal parallelism of 'assets equal liabilities plus equity' in the combined or consolidated balance sheet of all ultimate economic units and of the nation. If we do, it would seem, however, that we have to introduce an item that reflects the difference between physical assets valued singly and valued as parts of going concerns, unless the value put upon equity securities held by ultimates—hence that placed upon the ultimate's own equity—is to lose connection with reality. This item would be determined as the difference between the sum of the values of all physical assets and the sum of all individuals' equities. It cannot be subdivided by type of asset. Generally, it will be positive, although in certain circumstances it may be negative, namely, when the market appraises going concerns below their liquidation value.

As it stands, the difference includes indistinguishably going concern value so understood and the value of patents and other rights. It is probably preferable to divide the item into two parts, one corresponding to the aggregate value of patents and other rights as they are carried in the balance sheets of ul-

mates and intermediaries and the other representing the pure going concern value, i.e., the difference between the book and the market value of intermediaries' equity minus the book value of patents and other rights.

Under the rules of accounting, the various items in the individual, combined, and consolidated balance sheets at the three levels are connected by certain formal relations (Table 2). These relations hold whatever the method of valuation, except that those pertaining to 'valuation difference' presuppose that the equity securities owned by the ultimates are carried in their balance sheets at the market price rather than at their book value as the latter would be derived from the intermediaries' own balance sheets.

Table 2

## Formal Relations between Items in National Balance Sheet

1) $I 4 = I 10$	11) $III 1 = I 1 + II 1$
2) $I 5 = II 10$	12) $III 2 = I 8 + II 8$
3) $I 6 = II 14 + II 15 - II 6$	13) $III 3 = I 2 + II 2$
4) $I 11 = II 4$	14) $III 4 = I 6 + II 6 - II 14$
5) $I 14 = (I 1 \text{ through } I 8)$ $- (I 10 \text{ through } I 13)$	15) $III 10 = I 12 + II 12$
6) $I 1 \text{ through } I 8$ $= I 10 \text{ through } I 14$	16) $III 11 = III 1 + III 2 + III 3$ $- III 10$
7) $II 5 = II 11$	17) $= I 14 + (I 6 + II 6 - II 14)$
8) $II 9 = D (II 6)$	18) $III 12 = III 4$
9) $II 14 = (II 1 \text{ through } II 8)$ $- (II 10 \text{ through } II 13)$	19) $III 1 + III 2 + III 3 + III 4$ $= III 10 + III 11 + III 12$
10) $II 15 = D (II 6)$	20) $I 14 = III 11 + III 12$

D = market value of equity securities minus book value based on balance sheet of issuer.

### 3 Definition of National Wealth

Within the framework of social accounting, national wealth is defined as the consolidated net worth of all economic units within the territory. To be self-contained, the definition must specify the method of valuation. Hence it cannot be completed until Section D where the basic valuation problems in the measurement of national wealth are discussed.<sup>21</sup>

<sup>21</sup> Following the suggestion of Gardiner Means—but not accepting his entire argument—we might use separate terms for Item III 11 under national business and national economic accounting. 'National wealth' might then be reserved for III 11 in national economic accounting, and national net worth used instead in national business accounting.

As debate about definitions is usually idle, we simply point to what appears to be the main advantage of such an accounting definition—its operational character. It indicates immediately how national wealth is measured, while this problem is left open in the two main alternative types of definition, the materialistic and the hedonistic.<sup>22</sup> As a matter of substance, the accounting definition, not unexpectedly, leads to about the same result as a broad materialistic definition or as a hedonistic definition such as Kuznets'.<sup>23</sup>

This definition of national business accounting is obviously dated, as far as the scope of combined net worth in the national balance sheet, i.e., the range of the national wealth, varies with the legal and economic framework. Acknowledgment of such a variation, however, seems to constitute the only realistic approach. It does not invalidate comparisons as long as we are interested primarily in the picture, as reflected in national accounts, of a situation narrowly circumscribed in place and time, as, for instance, the United States in the first half of the 20th century. It is well to remember, moreover, that virtually the same method is applicable at least wherever the capitalistic

<sup>22</sup> In the materialistic definitions national wealth is said to be made up of all physical assets, or rarely, specific types, usually the physical assets owned by individuals, enterprises, and private collectives; e.g., see Friedrich Wieser, *Theorie der Gesellschaftlichen Wirtschaft* (Tuebingen, 1924), p. 236; M. R. Weyermann, 'National Wealth', *Encyclopedia of the Social Sciences* (1942), XI-XII, 227; and A. A. Young, 'Wealth', *Encyclopedia Britannica* (1942), Vol. 23, p. 448.

Among the hedonistic definitions those of Kuznets and of Gini may be regarded as typical. Kuznets defines national wealth as "the stock of sources of events for which the aggregate of individuals who comprise a nation are willing to make sacrifices" (*Studies in Income and Wealth, Vol. Two*, p. 4). Gini describes national wealth as "an objective index for the members of a group" (*Revue de l'Institut International de Statistique, 1945*, p. 58).

<sup>23</sup> As a curiosity it may be noted that wealth—though not national wealth specifically—probably has the distinction of being the first economic definition rendered into the language of symbolic logic. Senior's definition, "Wealth (w) consists of things transferable (t), limited in supply (s), and either productive of pleasure (p) or prevention of pain (r)", is used by George Boole as an example in his *Laws of Thought* (London, 1854, pp. 59-61) and written in terms of symbolic logic as  $w = st[p + (1 - p)r]$ .



system has prevailed, i.e., for most of Europe and the United States since the 17th century, and for most of the world since the 19th century. Application to other areas and periods, it is true, encounters three main difficulties.

1) The concept and technique of accounting itself, as we now know it, was developed only late in the Middle Ages, and did not spread much beyond western and southern Europe before the 19th century. The balance sheet, even in the capitalistically most advanced countries, came into use only in the 17th century.<sup>24</sup> Some systematic records were, of course, kept before and elsewhere, but we do not know much about the methods used. Consequently, all national accounts, and hence national wealth estimates, have to be entirely constructed for the areas and periods outside the sphere of the capitalist system.

2) For long periods and wide areas where slavery or other forms of servitude prevailed—and not only outside the domain of the capitalistic economy—human capital was transferable and had a market price. Hence its value would appear in individual and consolidated balance sheets and would be counted as part of the national wealth. This would apply not only to the value of persons who actually were slaves but by analogy also to freedmen and free men.

3) For other long periods and large areas there was so little exchange that we cannot speak of money prices or even of collective evaluations. This applies not only to the primitives and to the closed manorial economy, if it ever existed, but also to some types of a fully centralized and directed economy. We do not yet have an example of such an economy; the USSR still, or again, possesses an accounting system quite close to business accounting.<sup>25</sup>

For the present purpose it may suffice to mention these difficulties. They need not detain us since the estimates do not go beyond the United States and the short period 1929-46.

<sup>24</sup> Cf. Werner Sombart, *Der Moderne Kapitalismus* (Munich, 1928), II, 110 ff; 160 ff.

<sup>25</sup> Gregory Bienstock et al, *Management in Russian Industry and Agriculture* (Institute of World Affairs, Studies I, 1944), p. 69.

## C FIVE PROBLEMS IN NATIONAL BUSINESS ACCOUNTING

The integration of the national wealth concept into a system of social accounting, implying the use of the accounting definition of national wealth, combined with the distinction between national business and economic accounting, has one advantage: five problems that seem to have given considerable difficulty in earlier wealth discussions can be disposed of fairly easily, at least at the level of national business accounting—the inclusion or omission of intangible assets, the treatment of government assets and debt, the inclusion or omission of human capital, the relation between national wealth and national income, and the comparability of national wealth estimates.

I *Intangible Assets*

In national business accounting, intangibles (excluding equity securities) disappear from the final consolidated national balance sheet to the extent that they represent claims of one unit in the territory against another. To what extent such cancellation actually occurs depends upon the customary treatment of the different types of intangibles in business accounting, specifically on whether what is entered as a claim in the balance sheet of one unit appears as a liability of the same amount in the balance sheet of another unit.

The answer is simple and positive for most claims and liabilities, such as currency, bank deposits, accounts receivable and payable, mortgage loans. These types of intangibles disappear completely from the consolidated national balance sheet when the principles of business accounting are consistently applied. The process, however, gives rise to some technical problems that may cause the practical statistician a good deal of trouble. He must be sure, e.g., that checks and other transfers between accounts are debited at the same moment as they are credited in order that the 'float' be eliminated; that allowances for bad debts in creditors' books are matched by

equal writedowns in debtors' accounts; and that the equity in insurance contracts is carried at the same amount in the balance sheet of the beneficiary as in that of the insurer. But no basic problems arise here except one already encountered. Bonds, or other evidences of long term debt, are commonly carried in their owners' balance sheets at market value, but at face (or redemption) value in those of the issuer. Hence, a difference, sometimes positive but more commonly negative, which does not disappear in the process of consolidation but becomes part of the over-all item 'valuation difference' in the national balance sheet, will develop.

There also exist, however, intangibles which are carried as assets in the balance sheets of their owners, but do not give rise to any, let alone an equivalent, entry in the books of another economic unit, even if every one adheres to the standard practices of business accounting; for instance, patents, trade marks, copyrights, franchises, rights of way, and goodwill. It is quite common for such intangibles to be carried at unamortized cost, but sometimes they appear in the balance sheet at values that correspond more nearly to the capitalized value of the monopoly profit to which the patent or other right gives rise in our present legal and business framework. Such intangible assets are often an entirely legitimate type of balance sheet item. Offsetting entries do not have to be made in the books of other economic units simply because they would as a rule have to represent the capitalized increase in price over a hypothetical competitive price payable by the buyers or users of the goods and services into which the patent or other right enters. Such entries obviously would not reflect a legal liability or even a calculable cost. Hence they are correctly omitted in business accounting. As the value of intangibles such as patents and similar rights represents a legitimate type of asset and there is no reason or need under the rules of business accounting for offsetting entries, it must appear in the national balance sheet where it will increase the size of the national wealth, made up as it is, aside from net foreign claims, of assets in the balance

sheets of all economic units minus cancelling claims and liabilities between units.<sup>26</sup>

## 2 *Government Assets and Debt*

As a matter of principle there is no doubt about the treatment of the assets and liabilities of public collectives. Both must be included in the balance sheets to be consolidated. Like other claims and liabilities between units domiciled within the territory, government claims against other ultimates and against intermediaries, as well as government liabilities to other ultimates and to intermediaries, disappear in the final consolidation that yields the national balance sheet. For the same reasons, the tangible assets owned by public collectives are retained throughout the consolidation process and appear in the national balance sheet alongside the privately owned tangible assets of the same type.

The argument that the physical assets of government collectives differ from those owned by households, enterprises, and private collectives can apply, as far as their physical character is at stake, as it is here, only to armaments and possibly harbors, post offices, court houses, and a few other minor types. All the other chief types of assets owned by public collectives have their counterparts in identical or similar items owned privately. This is evident for assets such as power stations and rental housing but applies also to the most important types of public assets such as streets, highways, school buildings, and forest and other land. True, for some types of public assets there is no market value. That, however, is a shortcoming shared by some privately owned assets. Moreover, there is practically always the alternative of using depreciated replacement cost.

A more subtle argument for excluding public assets, or at least part of them, from national wealth, is that their value is

<sup>26</sup> When it comes to economic accounting, the situation is quite different. There all intangibles, except net foreign claims, disappear from the national balance sheet and hence do not enter national wealth, except, probably, to the extent that they reflect actual cost to the nation.

reflected in that of privately owned assets, and hence that their inclusion would amount to duplication. The value of streets, for instance, it is claimed, is already reflected in the value of the adjoining buildings. Whatever may be said of this argument from the viewpoint of economic accounting it certainly has no standing in business accounting. It has not yet been suggested that the balance sheet value of Rockefeller Center be reduced because its construction has increased the value of the surrounding real estate.<sup>27</sup>

The appropriate treatment of government debt under national business accounting is likewise clear. Government debt remains in the combined (not, of course, in the consolidated) balance sheet of ultimates and intermediaries, but, to the extent that it is owned domestically, disappears from the consolidated balance sheet, where government securities held by ultimates and intermediaries likewise vanish. To treat government debt as a liability in the national balance sheet without including government securities as an asset—and if both are included we simply do not have a consolidated balance sheet—would no more be justified than to pick out any other type of liability, e.g., that for private pension obligations, to remain in the national balance sheet. How far a domestically held government debt is a burden on the economy may be debatable. But it should not be open to argument that there is no place for it in a consolidated national balance sheet, whether prepared according to the rules of business or of economic accounting.

Here again we have to deal with an apparently more subtle, but not more valid, argument: that government securities serviced by taxes on property incomes be omitted from assets. The reason advanced is that such taxes reduce the earnings and hence the capitalized value of the taxed properties.<sup>28</sup> This

<sup>27</sup> In business accounting many uncompensated costs and benefits pass unrecorded. The fact that the government does not charge beneficiaries, or does not charge them adequately, for the use of streets is just one more example of an uncompensated benefit. In economic accounting, of course, a proper adjustment would have to be made, reducing the capitalizable net income of properties adjoining the street and hence their current value.

<sup>28</sup> See e.g., Ruggles in Dickinson and Eakin, *The Illinois Segment . . .*, p. 126.

argument too has no standing under the rules of business accounting which begins with the values as it finds them in balance sheets. That the value of a house might be higher if there were no government tax on the rent from it, a tax whose proceeds go to pay interest on government debt, is irrelevant—even if the fact were beyond doubt, which it is not.<sup>29</sup> For economic accounting, it is true, there exists here a real problem; but it is a quite different and much more difficult and complex problem than might appear from the simple argument, involving, among other factors, the effect of the tax and its use upon the relevant rates of interest.

### 3 *Human Capital*

Whether national wealth should include an allowance for human capital, i.e., capitalized net earning capacity of the members of the community, is no problem at all from the viewpoint of national business accounting. Since personal earning power is nontransferable under present legal arrangements, it cannot become the object of a purchase or sale or valued for balance sheet purposes. It obviously does not appear in any actual balance sheet, and would not be so entered in any balance sheet, even for nonbusiness units, prepared according to the basic principles of present-day accounting. Hence, neither the balance sheets of ultimates or intermediaries nor, a fortiori, the national balance sheet contain any entry for human capital.<sup>30</sup>

### 4 *National Wealth and National Income*

The fourth problem is the relation, within the framework of national business accounting, between national wealth and national income.<sup>31</sup>

<sup>29</sup> This point has been debated at great, perhaps excessive, length in the literature on the amortization of taxes.

<sup>30</sup> In a few cases what really is human capital may appear as an asset in the balance sheet prepared in conformity with business accounting; for instance, in some corporations organized for the management of artists or professional men. These cases, however, are too unusual to admit of generalization.

<sup>31</sup> The statistical relation between estimates of national wealth and of national income is interesting, but outside the scope of this paper.

Income (flow) accounts and capital (stock) accounts are connected on the accounting level through the fact—one keystone of the formalism of double entry bookkeeping—that for any given period the difference between income on the one hand, and the sum of expenditures and distributions to owners on the other, equals the change in net worth in the balance sheet: net worth increases by the excess of net income over distribution and diminishes by the excess of distribution over net income or the sum of net loss and distribution.

The size of the increase or decrease in net worth is thus dependent upon the scope, i.e., the definition, of income, expenditures, and distributions to owners. All three present very difficult problems in accounting theory which cannot and need not be analyzed here. For purposes of estimating national wealth it is, however, essential to distinguish two sets of inter-related concepts of income, expenditures, and distributions to owners. From their effect on national wealth measurement they may be designated as the total-net-worth and the earned-net-worth set respectively.

In the total-net-worth set income includes realized and unrealized capital gains in addition to current income; expenditures cover realized and unrealized capital losses besides current expenditures (i.e., expenditures on nondurable goods and services) and depreciation; and distributions to owners do not exclude those constituting a return of capital.<sup>32</sup> Under these definitions the difference between income and total expenditures equals the net change in the market value of assets minus that of liabilities, i.e., the change in total net worth.

The earned net worth approach, in contrast, is characterized by sharp segregation of current transactions. Income is confined to that earned or accrued during the period through current operations; all unrealized capital gains (including writeups) and all realized capital gains except those of profes-

<sup>32</sup> Thus the distinction between income and capital has been blurred, but not obliterated since outlay for durable assets is still kept apart from current expenditures, and new capital funds are not treated as income.

sional dealers in capital assets are excluded.<sup>33</sup> Expenditures exclude outlay on durable assets as well as capital losses (including writedowns). Distributions to owners include only those made from current net income.<sup>34</sup> Here the difference between period income and expenditure equals the net change in the original depreciated cost value of assets minus the corresponding value of liabilities, i.e., the change in earned net worth (as distinguished from changes in net worth due to realized or unrealized capital gains and losses).

Thus the equivalence between net income minus distributions to owners and changes in net worth is preserved in both cases. But in the total-net-worth approach it is predicated on the valuation of balance sheet assets and liabilities at market value and a very wide concept of income and expenditures, while in the earned-net-worth approach it calls for valuation at depreciated original cost and a narrow concept of income and expenditures. Since in the process of consolidating unit balance sheets into a national balance sheet, net worth becomes equal to tangible assets (with adjustments only for the net foreign balance and certain minor intangibles), there is also equivalence under both methods between changes in net worth and in the value of tangible assets (adjusted as above). However, the equivalence is established on the basis of market values of assets in the total-net-worth approach and on that of original depreciated cost in the earned-net-worth approach.

How far the two approaches differ statistically can be shown for the United States thanks to Simon Kuznets. In the sixty years between 1879 and 1939, accumulated net capital formation at current prices amounted to about \$200 billion.<sup>35</sup> As the value of national wealth at original depreciated cost can hardly

<sup>33</sup> That the distinction is not always neatly made in practice is indicated by the statement about *realized* capital gains and losses in Sanders, Hatfield, and Moore (p. 38): "so called 'capital gains' and 'capital losses' are conspicuous examples of occurrences affecting the asset values of a business enterprise for which accounting practice discloses no generally followed or standard method of accounting".

<sup>34</sup> Practice again varies, but good accounting demands at least separation of distributions from current income, earned surplus, or capital (*ibid.*, p. 52).

<sup>35</sup> *National Product since 1869* (NBER, 1946), Table II 15, p. 118.



have exceeded \$35 billion in 1879,<sup>36</sup> the original depreciated cost value for 1939 should have been about \$235 billion. Estimates, however, put the 1939 figure, at market prices, at nearly \$400 billion.<sup>37</sup> A large part of the difference between original depreciated cost and market values is accounted for by the value of the most important nonreproducible asset: land.<sup>38</sup> For reproducible wealth the market value is only a little—something like \$30 billion, or less than 15 percent—above the depreciated cost, i.e., accumulated current value of net capital formation. By 1946, however, with a depreciated cost of national wealth of about \$250 billion but a market value of over \$700 billion, the difference had risen to the tremendous total of over \$450 billion, of which less than half is accounted for by the value of land.<sup>39</sup> Reproducible wealth in 1948 was worth nearly twice its original depreciated cost, owing to the war and postwar inflation.

### 5 *Comparability of National Wealth Estimates*

National wealth estimates derived from a system of business accounting are comparable only to the extent that the methods are the same, i.e., the method of valuation and the scope of national wealth are identical or practically so. This condition is met by the estimates for the United States for 1929, 1939, and 1946, presented in the rest of this volume.

This formal comparability, however, means merely that the figures refer to the same thing—the consolidated net worth of all economic units in the United States, taken, as will be seen

<sup>36</sup> The value of reproducible wealth in 1880 prices was about \$26 billion (R. R. Doane, *Anatomy of American Wealth*; Harper, 1940; pp. 262-3). From 1862 to 1876 wholesale prices were substantially above the 1880 level.

<sup>37</sup> Doane, *Anatomy* . . . , p. 26 for 1938. An estimate by the National Industrial Conference Board (*Enterprise and Social Progress, 1939*, p. 58) for 1937, however, gives only \$322 billion; one by the National Resources Planning Board (*The Structure of the American Economy, 1939-40*, p. 374), \$365 billion for the mid-thirties.

<sup>38</sup> The value of land in 1938 was estimated by Doane (*Anatomy* . . . , pp. 248-9) to be \$117 billion.

<sup>39</sup> These rough estimates are based upon material in other papers in this volume, supplemented by some still rougher guesses for missing items.

in Section D, at the market value of assets and liabilities. It does not mean that differences between the figures for different years indicate a change of the same proportion, or even in the same direction, in tangible assets—in whatever unit measured—let alone an equivalent change in the utility of the stock of future services incorporated in the assets constituting national wealth. Comparisons of national wealth at different dates or of different countries in such physical or psychic terms require adjustments going far beyond the scope of national business accounting. They make sense only under economic accounting. National wealth, as derived by the methods of business accounting, lends itself to only a small degree to intertemporal or international comparisons. Estimates can, however, be used to compare the structure of national wealth at different points of time or in different countries, i.e., the distribution of total wealth among types of assets and among groups of ultimates and intermediaries.

Even under economic accounting, the comparison of national wealth estimates over time and space is difficult. The difficulties revolve around the degree to which national balance sheets, and hence national wealth estimates, can or must be standardized. In one direction standardization is, of course, complete wherever economic accounting is applied. Since balance sheets, as well as other entries in the national accounts, are based on the same set of economic principles, the methods of valuation and the scope of imputation are the same whatever the area or the period. As far as economic accounting is applicable at all, the methods followed in constructing the national balance sheet and measuring national wealth are therefore identical and the resulting figures comparable. The question when and where the principles of economic accounting become inapplicable may be answered roughly by saying that they are applicable to every society that meets three tests: absence of unfree labor; freedom of consumers' choice; determinability of marginal cost.

But identity of methods of valuation and consolidation still leaves differences in prices, incomes, and rates of capitalization

as obstacles to intertemporal or international comparability of national wealth estimates and national balance sheets. Standardization can be essayed in two ways: by deflating the original figures expressed in terms of national currencies or by constructing indexes of the volume of assets.

The first step on the road to standardization by deflation is implicit in economic accounting. As already stated, an accounting unit of stable purchasing power takes the place of the fluctuating national currencies in which business accounts are traditionally kept. It is only a small further step—and one quite in keeping with the principles of economic accounting—to make this unit of world-wide applicability, i.e., to reduce the original figures not to a base period national price level, but to a base period international level. The practical difficulties are undoubtedly great, but precedents are not wholly lacking.<sup>40</sup> The next step, the standardization for differences in rates of capitalization (other than pure interest), is considerably more difficult and controversial. The two steps can be combined by deflating national wealth estimates by means of an index of physical asset prices, probably the preferable procedure whenever these prices can be ascertained.

Even after these two adjustments, two economies possessing the same tangible assets may show different figures for national wealth—*nota bene*, in international units. Since differences in price levels and capitalization rates have already been eliminated, this can happen only if the net yield (in international units) of identical assets differs. The main reasons would be a difference in the division of the product between wages and profits, which in turn might be due to a difference in the quantity of capital per head and the greater or lesser importance of the rent of land. Apart from the difference, comparisons in terms of national wealth so deflated will approximate relations indicated by an index of assets.

The second approach aims directly at a measure of tangible assets. In principle, the difficulties of constructing an appro-

<sup>40</sup> See, e.g., Colin Clark's use of IU, i.e., a unit of purchasing power of the U.S. dollar during 1925-34 (*Conditions of Economic Progress*, London, 1940).

priate index are the same as those encountered in preparing an index of production. In practice, the obstacles are likely to be greater, chiefly because of the difficulties of ascertaining the age, number, and condition of assets of a given type, and of establishing a satisfactory classification of assets. In most cases it will be necessary to use a simple physical dimension as a rough indicator of quantity; e.g., the cubage of buildings, the horsepower of certain types of machines and transportation equipment, or the surface of soil of a given quality. It will usually be more difficult also to determine the weights to be applied to the different types of tangible assets. Notwithstanding these difficulties we should often be able to derive a measure that could be used as a check on deflated current national wealth estimates. Geer Stuvell, in a paper, 'Development of Stock of Capital Goods in Six Countries since 1870', presented at the 1949 meeting of the International Association for Research in Income and Wealth, made an attempt in this direction. Comparison by means of such an index is possible only as between periods or countries broadly similar in the physical character of their assets. The limitation, though perhaps less immediately evident, applies also to comparisons between deflated current national wealth figures.

Whether intertemporal or interspatial comparisons of national wealth are made by deflating current national wealth figures or by indexes of tangible assets will depend a good deal on the availability of material, particularly the relative quantity and quality of data on prices and on physical stock. Whenever possible, of course, both methods should be used.

#### D VALUATION OF ASSETS, LIABILITIES, AND EQUITY IN THE NATIONAL BALANCE SHEET UNDER BUSINESS ACCOUNTING

##### 1 *The Basic Problem*

In evaluating combined net worth in a system of business accounting, we must likewise follow the practices customary in business and sanctioned by law at the time and the place to which the estimates apply. Here, however, a serious dilemma

arises. Business balance sheets differ according to their purpose, and important items are valued differently. Two types of balance sheet are relevant. The ordinary, general purpose periodic (usually annual) balance sheet and what may be called the liquidating balance sheet, a type applicable also in the case of the organization of a new business, merger, or the sale of an enterprise as a going concern. The main objective of the ordinary balance sheet, as many accounting theorists now contend, is to help in determining profit and loss on current operations.<sup>41</sup> In the liquidating balance sheet, on the other hand, the emphasis is on the correct determination of the status of the enterprise as of a given date without much regard to current operations.<sup>42</sup>

The differences between the two types of balance sheet are especially evident in the methods of valuation, particularly in those for fixed assets and accrued items. The nature of the differences is always the same. The liquidating balance sheet tends toward current market value, while the periodic balance sheet tends toward original cost value, although there has been some tendency, more pronounced in accounting theory than in practice, to substitute replacement cost for original cost.<sup>43</sup>

Which type is proper for the national balance sheet depends to some extent on the purpose. As far as the purpose of the balance sheet is to reflect the situation at one time—and that has hitherto been the primary goal of national wealth measurement—the status balance sheet and its valuations would seem appropriate. This conclusion is reinforced by one important consideration. Only under the valuation appropriate to the

<sup>41</sup> One of the earliest and certainly one of the most consistent and influential proponents of this view is Eugen Schmalenbach (*Grundlagen dynamischer Bilanzlehre*, published in 1919; the last, sixth edition, was published in Leipzig, 1933 under the title *Dynamische Bilanz*).

<sup>42</sup> In the case of banks and many other financial institutions, even periodic balance sheets are strongly influenced or even dominated by considerations of status.

<sup>43</sup> That this discussion has hitherto remained mainly theoretical in this country may be because the United States has not experienced a long drawn out severe inflation since accounting became articulate.

status type balance sheet is it possible to make a meaningful comparison of the assets of different groups of units and their shares in national wealth. The conclusion, therefore, is that generally the unit balance sheets to be consolidated should be of the status type, i.e., all assets, liabilities, and equities are valued at the market price, or the closest possible approximation.<sup>44</sup> What does this mean for individual items of the unit balance sheets and the consolidated national balance sheet?<sup>45</sup>

## 2 *Reproducible Tangible Assets*

Tangible assets are of two main types which differ markedly: reproducible and nonreproducible. This division is one of common sense, not of the strictest verbal logic. Only land (excluding all man-made improvements), subsoil assets, works of art, and collectors' items (such as rare books and stamps) are regarded as nonreproducible, even though some items in the last two categories might technically be duplicated. On the other hand, reproducible assets comprise every other tangible asset, although many if not most can hardly be duplicated in exactly the same form or spot.

Reproducible assets may be subdivided according to their physical nature into as few or as many categories as the specific

<sup>44</sup> Professor Kuznets, in his summing up, proposes in effect to use depreciated original cost adjusted for price changes in preference to market price. In practice the difference between the two should not be large, especially if the original cost of the different types of assets is adjusted by special cost indexes rather than by an index of the general price level. Moreover, dearth of material will compel us in some cases to use adjusted original cost instead of market price, and vice versa. As a practical matter I am therefore not inclined to take strong issue with Professor Kuznets. Theoretically, however, I still prefer current market price, especially since it is the only way to apply consistent principles of valuation to reproducible and nonreproducible assets and the substantive and claims approaches.

<sup>45</sup> Selection of the status type balance sheet as the medium of national wealth measurement involves the total-net-worth approach to the national balance sheet in connection with the national income account (cf. C 4 above). For purposes of national income measurement and analysis, and particularly for the calculation and analysis of saving, there will be need, in addition, for a national balance sheet of the periodic earned-net-worth type.

purpose of the study requires and the data permit. For a general analysis of national wealth the following classification should as a rule suffice: improvements to land, such as fences and drainage ditches; buildings; other structures, such as dams, roadbeds, and streets; livestock; machinery and other equipment; inventories of raw materials, semifinished, and finished commodities; monetary stocks of precious metals; consumer goods in the hands of households and collectives.

Valuation and other measurement problems peculiar to these different categories of reproducible assets are treated in the papers dealing with specific forms of national wealth. The discussion here is, therefore, confined to the more important problems of valuation under business accounting at market price or the nearest approximation common to all or many categories of reproducible assets. These problems can be subsumed under three headings: (a) the relation of the value of reproducible assets as discrete entities and as parts of a going concern; (b) the representative character of the market prices used as the basis of evaluation; (c) the determination of the nearest approximation when the market price is not to be had.

a) When reproducible assets are valued at their market price it is always their price as discrete entities that is used, since only as a discrete entity can an asset have a definite market price and only as a discrete entity does it usually become the object of an actual market transaction. This market price is determined, at least under perfect competition, by the asset's marginal utility expressed by the lowest bid among the buyers who are needed to clear the market. In all other intramarginal uses the asset may be valued higher, in the sense that people are willing to pay more than the market price rather than do without. But such consumers' or producers' surpluses flowing from intramarginal uses cannot affect the valuation of the asset as a discrete component of national wealth. Consumers' surplus is a psychic income which does not enter into national wealth at all. Producers' surplus, on the other hand, becomes part of monopoly or going concern extra profit. Reflected in

the market price of the asset owner's equity, it becomes part of the valuation difference.<sup>46</sup>

b) The determination of the market price of discrete reproducible assets raises two fundamental technical problems. Can the market price for the limited number of actual transactions in one type of asset be used as a basis of evaluation for the whole stock of that or even of related types? What value shall be used if no market price in the strict sense of the word exists?

For few types of reproducible assets can a continuous nationwide market be said to exist in the sense it does for stock exchange securities or foreign exchange. Standardized raw materials and a few semifinished goods are practically the only commodities to which this applies and their total value comes to only a very few percent of total national wealth.<sup>47</sup> For most types of reproducible assets the individual specimens are usually not equal, and therefore not freely substitutable. For this reason their market is local rather than national, and transactions are intermittent rather than continuous. But in the United States at least, transactions, both in absolute number and in relation to the stock, taking place within a relatively short period, say three months, of the date to which the national wealth estimate applies, are sufficiently numerous for some of the most important categories of reproducible wealth to permit the establishment of a reasonably reliable relation between certain characteristics of the units actually changing hands and of the entire stock, and thus an estimate of the assumed market price of the entire stock. This is the case particularly for residential housing, several types of commercial buildings, trucks, and some of the most important types of

<sup>46</sup> We do not have to worry here to what extent the market price of a lone asset is determined by its capitalized expected net yield. That is a question for valuation under economic accounting where the market price itself, here taken as a datum, may become a problem. Practically speaking, moreover, valuation at capitalized expected net yield is feasible only for entire enterprises as going concerns and for a few types of assets with relatively large unit value and yet of nearly standardized nature and management, particularly rental housing.

<sup>47</sup> In 1939 the value of inventories of raw materials, according to estimates of the Department of Commerce, was about \$4 billion, equivalent to about 1 per cent of national wealth.



durable consumer goods such as automobiles. As an example of such a relation, the market price of one-family houses may be tied to their assessed value by an index derived from a sample of houses changing hands; or to their original cost, due regard being paid to differences in age; or to the current cost of a house of the same cubage and layout, after proper adjustment for accumulated depreciation.

In all these cases where the stock is evaluated on the basis of the market price of a small proportion of the species actually changing hands shortly before or after the date of the national wealth estimate, it is essential that the units changing hands constitute a 'representative sample'. This does not mean that the different varieties of the asset evaluated must be represented in the same proportion among stock and units changing hands. But it does mean that actual market prices must be weighted for different varieties, so that no systematic bias remains, and the sample of units changing hands can be blown up without significant distortion to the universe, i.e., the total stock of this type of asset. Undoubtedly the precautions necessary to obtain an unbiased blow-up have often been neglected, and sometimes the detailed data required for an unbiased blow-up are unavailable. An example of such dangers is afforded by the so-called 'float' in real estate valuation; valuing all units on the basis of those changing hands, which probably are more marketable than the rest, may easily lead to an overvaluation of all real estate in the national balance sheet.<sup>48</sup> It is also evident that the larger the amplitude and the greater the frequency of price fluctuations of an asset, the more serious the difficulty of obtaining a representative sample from the transactions occurring during a relatively short period near the balance sheet date.

This viewpoint should dispose of the argument that national wealth figures are meaningless because they rest on the actual sale of only a very small proportion of the total stock; and because—and this is regarded as an even more telling point—prices would be quite different, presumably lower, if all the

<sup>48</sup> For this argument see H. W. Singer, *Economic Journal*, Sept., 1946, p. 481.

stock were offered for sale at the same time. All valuations in business accounting are made on the assumption that any one unit may take for granted the price structure prevailing at the time the balance sheet is struck. This presupposes that the liquidation of the one unit would not affect the price of any assets it holds taken discretely. National wealth, in a system of business accounting, reflects existing relative values—that of the monetary unit being one—at prevailing velocities of turnover of assets. The application of the actual prices realized on the sale of a small part of the stock to the entire stock is as legitimate as any blow-up of a sample and must be judged by the same criteria.

c) For some important types of reproducible assets no market prices exist, either because the items are too specialized and sales too infrequent or because items of such type are never, or almost never, bought and sold. The first reason applies to many items of machinery and equipment and industrial buildings; the second to all the assets of public or private collectives that are not of a type used by households or business enterprises. In most cases, however, when the market price is unavailable, depreciated replacement cost may be substituted. The main reason this substitution is generally possible is that the accountant regards the life of a business enterprise, as well as that of a private or public collective, as eternal in the same sense as that of a national economy. Hence he assumes that assets will be replaced when worn out, either by physically identical assets or by assets equivalent in terms of value or of productive capacity; and goes so far as to regard the balance sheet value of tangible assets simply retrospectively as unrecovered costs or prospectively as an as yet unused replacement fund.

Depreciated replacement costs can be approximated in two ways. The first leads to two steps—the calculation of the new cost of an identical item, the test being equivalence in use rather than physical similarity; and the reduction of this cost in proportion to the expired part of the useful life of the old asset. The second approach is the correction of the balance sheet value—usually the depreciated original cost—by an ap-

propriate price index, as a rule, an index of construction costs or of the price of the relevant type of equipment, such as automobiles or machine tools. In practice, especially for large aggregates, the second approach must usually be followed; in this case indexes as multipliers fortunately lose some of their danger.

In so correcting balance sheet values care must, of course, be taken that the original values are comparable. This means practically two things: that the age distribution of the existing stock is known or can be approximated so that the appropriate index corrections can be applied; and that the methods of depreciation have been identical or that the necessary adjustments can be made to render the resulting depreciated cost figures comparable. This correction does not involve two of the really difficult problems in the field of depreciation accounting: whether the straight line method still prevailing in business is adequate; and whether the length of useful life assumptions made by business are unduly optimistic or pessimistic, leading to an under- or overstatement of unamortized cost.

The younger the asset the closer the depreciated replacement cost is to what the market price might be expected to be. Hence the substitution of depreciated replacement cost for market price is not very problematical for assets with a useful life of up to about a decade. For very long lived assets, and particularly for those that are not likely to be replaced by similar assets, the substitution is subject to more serious reservations. But such assets represent only a minority of the total wealth of a nation, as they do not include land, most movable equipment and durable consumer goods, and even part of buildings.

From the viewpoint of business accounting, what matters is a reasonably close approximation to the market price. Hence either substitute is acceptable: an engineering estimate of replacement cost adjusted for the elapsed proportion of useful life or depreciated original cost times the ratio of the market price to the depreciated original cost as shown for comparable

assets. These two substitutes are the upper limit for constructive market price. The lower is scrap value. It will be applied—when the market price is unascertainable—if the asset is not in use and not intended to be put in use; or in the case of large items that cannot be operated outside a going concern, if prime costs are continuously not covered.

### 3 *Nonreproducible Tangible Assets*

a) Nonreproducible tangible assets, mostly land, now account for less than one-third of the national wealth in the United States, but in some less industrialized countries probably for most wealth (Table 3). There are few estimates of the proportion of land in total national wealth, as only a minority of all national wealth estimates give separate figures for the value of land excluding improvements. The figures should be taken merely as indicating the order of magnitude. They cover only land; they omit other nonreproducible assets, which, however, are of very minor importance in the over-all picture; they are not always compiled strictly in accordance with the rules of national business accounting; and they are not entirely comparable over time and between countries. Within these limitations they are interesting and significant.

The main fact emerging from Table 3 is that the proportion of land in national wealth has declined ever since our data began. In Great Britain, the only country for which the ratio can be approximated if not measured for more than 250 years, it has fallen from over 50 percent in the late 17th century to about 10 percent at present, most of the decline occurring during the 19th century. In the United States the decline has not yet gone as far, but it has been pronounced and persistent: from about 50 percent in 1870 to about 30 percent in 1938.<sup>48a</sup> In a few eastern states (Connecticut, Rhode Island, Vermont) the proportion is less than 20 percent, while it is still above 40 percent in some of the midwestern, mountain,

<sup>48a</sup> Reexamination of the data makes it likely that the proportion of land in United States national wealth since 1922 is smaller than Table 3 indicates.

and western states.<sup>49</sup> In most other, chiefly European, countries for which data are available, the ratio in the 20th century is about one-third.

<sup>49</sup> Doane, *Anatomy* . . . . The figures refer to 1930.

Table 3  
Percentage Ratio of Value of Land to Total  
National Wealth

COUNTRY	YEAR	%	SOURCE OF BASIC ESTIMATES
United States	1870	50	Bureau of the Census; Kuznets, <i>National Product since 1869</i>
	1890	41	
	1912	37	
	1922	34	
	1928	31	
	1938	30	
Great Britain	1688	55-60	Gregory King, 'Natural and Political Observations and Conclusions upon the State and Condition of England, 1696' (first published as an appendix to George Chalmers, <i>An Estimate of the Comparative Strength of Great Britain</i> , London, 1802)
	1800	43	Beake (cited in Robert Giffen, <i>Growth of Capital</i> ; London, 1889)
	1865	30	Giffen, <i>Growth of Capital</i>
	1885	17	
	1932-34	10	Based on Hicks, <i>Social Framework</i> (1942), p. 103
Germany	1911	23	K. T. Helfferich, <i>Deutschlands Volkswohlstand, 1888-1913</i> (Berlin, 1917, 7th ed.)
France	about 1890	34	Alfred de Foville, 'The Wealth of France and other Countries', <i>Journal of the Royal Statistical Society</i> , LVI, Dec. 1893
Italy	1924	36	Gini (cited in Winkler, 'Volksvermoegen', <i>Handwoerterbuch der Staatswissenschaften</i> , VIII, 1928)
Hungary	1930	32	Friedrich Fellner, <i>Das Volksvermoegen Ungarns</i> (Berlin, 1930)
Argentina	1916	32	A. E. Bunge, <i>Riqueza y Renta de la Argentina</i> (Buenos Aires, 1917)
Australia	1903	38	T. A. Cochlan (cited in A. G. Webb, <i>New Dictionary of Statistics</i> ; London, 1911)
Japan	1905	37	K. Mori, 'Estimate of the National Wealth and Income of Japan Proper', <i>Bulletin de l'Institut International de Statistique</i> , Vol. 25, Part 2
	1924	32	

b) In the valuation of nonreproducible assets we face neither choice nor dilemma. Market price is the only value to be considered, since by definition there is no replacement cost and the original cost to the owner has little meaning in a consolidated status type balance sheet.

Land is by far the most important type of nonreproducible asset. Even if narrowly defined—as it must be—to exclude every man-made improvement, the value of bare land probably accounts for well over 90 percent of all nonreproducible assets. Once the main types of land are treated separately (urban, agricultural, forest, and waste land would seem to be the minimum), land is sufficiently homogeneous in economic character and sufficiently regularly bought and sold to permit the determination of fairly reliable market prices.

There is, however, one important technical difficulty. For urban land, and to some extent also for agricultural land, actual transactions comprise both land and improvements, and in the case of urban land the latter generally account for most of the sales price. Hence it is necessary to divide the reported market prices into the two basic components to obtain prices for land proper. Several methods have been developed, greatly aided by the fact that the assessed value of real estate in many cases gives the value of both the improvements and the land.<sup>50</sup>

Land held by public and private collectives would not seem to present a special problem although it does not as a rule reappear on the market once it has passed into collective ownership. There is almost always privately owned land of comparable type and location and the price realized for it can be applied, sometimes only after appropriate adjustments, to the acreage held publicly. Even the land taken up by streets could be evaluated on the basis of the market price of adjoining privately held land.

c) The valuation of subsoil assets, which may be regarded as a special type of land for purposes of national wealth measurement, has bothered economists greatly, and under national

<sup>50</sup> See, e.g., Doane, *Anatomy . . .*, and Kuznets, *National Product since 1869*, pp. 202 ff. Cf. also note 48a.

economic accounting there really are serious problems. They do not arise under national business accounting, where again market price is definitely the appropriate basis of valuation.

For some types of subsoil assets, e.g., oil lands in the United States, the market is active enough to admit of applying current prices directly to total acreage. In most instances, however, the valuation has to be indirect. The value of mining land is determined by subtracting from the market price of the mining enterprise the depreciated replacement cost of the reproducible assets and the net of other assets. Only as a last resort should valuation be based on development costs adjusted for price changes and the proportion of the estimated mineral content already mined.

All these values—except adjusted development cost—are directly or indirectly derived from three main factors: the estimated mineral content of the mine; estimated net profits, i.e., the difference between estimated future prices and the cost of production; and the interest rate, or rather the capitalization factor, used to discount estimated net profits. The fact that the mineral content may last much longer than the period customarily taken into account in business calculations which are strongly influenced by the level of interest rates—the higher the rates the shorter the period after which the present value of any future net profit becomes negligible<sup>51</sup>—is immaterial for business accounting.

d) Other nonreproducible assets—works of art and other collectors' items as well as historical monuments and the like—are generally omitted from calculations of national wealth. Except possibly for historical monuments of a national character, there is no reason for such an omission as a matter of principle. Nor would the practical difficulties of estimating at least the order of magnitude seem insuperable. The market for the most important types of collectors' items is broad and reliable enough and the assessment of relative values fine

<sup>51</sup> At an interest rate, including risk premium, of 5 percent the present value of \$100 falls below \$1 after not more than 95 years; if the rate is 10 percent this level of practical insignificance is reached for returns less than 50 years distant.

enough to permit the use of the prices prevailing in it as the basis for estimating the value of the entire stock, whether privately or publicly owned.<sup>52</sup> The technical difficulties of arriving at an over-all estimate lie, indeed, less in uncertainties about market prices than in lack of information about the size of the stock.

These difficulties preclude any close measurement, but not a rough estimate of the order of magnitude. Even such an estimate would require special study. The guess may, however, be hazarded that the grand total for the United States will be only a few billion dollars and probably less than 1 percent of total national wealth.

#### 4 *Claims and Liabilities*

The valuation of claims and liabilities for the purpose of a consolidated national balance sheet, prepared in accordance with the rules of business accounting, gives rise to fewer problems than that of any other large balance sheet item. The reasons are that both claims and liabilities are as a rule carried at face value, face value is easily determined, and the exceptions are neither numerous nor difficult.

There are, however, two important exceptions to the rule of face valuation, apart from the less important and evident further exception that when balance sheet date and interest payment date do not coincide, periodic balance sheets must contain appropriate allowance among liabilities for accrued but not yet paid interest and among assets for prepaid interest.<sup>53</sup>

The first exception is the reduction of face value—sometimes down to zero—when payment is doubtful. This adjustment is

<sup>52</sup> One might even go so far as to say that the quality of the price quotations for some collectors' items is superior to that for many far more recognized constituents of national wealth. A good part of these prices are established at public auctions and for some types, e.g., stamps, elaborate catalogues give asked, if not market, prices.

<sup>53</sup> These allowances in no way differ from the parallel allowances, appearing on both sides of the balance sheet among accrued items, for prepaid or unpaid rent, taxes, or services.



generally made not by reducing the face value of individual claims but by setting up a so-called reserve which is, of course, deducted from the total face value of claims when it comes to consolidating the balance sheets of individual units. These reserves for doubtful claims—doubtful because of question about the solvency of the debtor or about the validity of the claim in the amount entered in the books—cannot always be disentangled to yield a correct figure for the presumed market value of claims. These shortcomings, however, are not very serious in the case of business enterprises and may easily be remedied by a slight improvement of basic statistics or even a more thorough analysis of existing material. It may be doubted, indeed, that the total of these reserves for bad debt at the end of an average year much exceeds \$1 billion,<sup>54</sup> and the amount unidentified among reserves is naturally smaller still.

The second exception is provided by claims, usually long term, that have a market price, such as bonds and other evidences of indebtedness traded on stock exchanges or in the active over-the-counter market. For other claims face value, after deduction of probable losses, is a sufficiently close approximation to the market price. But these marketable claims must be carried in the combined national balance sheet at the actual market price, even though they appear in the actual balance sheets of some of the most important categories of holders, such as commercial banks and life insurance companies, at original cost, convention values or some other, often hybrid value.

The consolidation of the claims and liabilities of individual units into the national balance sheet, however, raises a problem different from those just discussed. Liabilities are entered in debtors' balance sheets at par, even though the creditor may have written off in his books part or all of the entire corresponding claim. Only when a debtor goes through bankruptcy or similar proceedings is the balance sheet value of his liabilities written down. When that happens, of course, the deductions

<sup>54</sup> Deduction for bad debts taken by corporations averaged about \$0.9 billion for 1927-42 (*Statistics of Income for 1942*, Part 2, p. 324).

made in the creditors' books may turn out to be too small or too large. At any one time, however, the deductions for doubtful debts in creditors' books are not matched by similar allowances in those of debtors. Hence when all balance sheets are consolidated, a residual net liability remains. Such an item is obviously meaningless, and must be eliminated in the consolidated balance sheet. This is a purely formal affair for the national balance sheet. For the combined or consolidated balance sheets of groups of units there is a statistical problem of allocating total allowances for doubtful claims found in the books of the various groups of creditors among the appropriate groups of debtors.

Another technical problem arising in the consolidation of balance sheets deserves mention at least. A prerequisite to a correct consolidation is that the two sides of a creditor-debtor relation be entered in both balance sheets in exactly parallel fashion, particularly that they be entered as of exactly the same point of time. If bank deposits are measured on the basis of bank reports, checks in the mail over the balance sheet date must be added back to drawers' balances if the latter are derived from their own balance sheets, as happens, e.g., when deposits of households are estimated from bank reports and those of business from their balance sheets. Similarly, checks in the mail will already have been written off their balance by the sender, but not yet added to theirs by the recipient even if balance sheets are used as the basis of measurement in both cases. Inversely, invoices in the mail appear among the accounts receivable of the creditor, but not yet among the accounts payable of the debtor. Unless the necessary precautions are taken in adjusting balance sheets before consolidation a meaningless 'float' will appear among either assets or liabilities, and the debtor or creditor position of certain groups of units may be distorted.

Foreign claims and liabilities present only one additional problem—the selection of the appropriate exchange rate. This, however, is a question only when official and free exchange rates differ or—what usually happens at the same time—when

disposition over foreign claims is hampered by transfer restrictions. Such difficulties are ordinarily taken into account in business balance sheets by appropriate deductions from the face value of such claims.

### 5 *Intangibles*

To judge by published balance sheets the quantitative importance of intangibles is small. Among 1,741 corporations registered with the Securities and Exchange Commission—mostly large nonfinancial enterprises—about half showed intangibles of some sort in their 1937 balance sheets, but the total value was only \$1.8 billion before and \$1.1 billion after reserves, or 3 and 2 percent respectively of total assets.<sup>55</sup> These figures may, however, understate the actual importance of intangibles since probably most cases reflect original cost rather than what might be regarded as current market value.

In principle, intangibles should be carried in the national consolidated balance sheet at their market price. It, however, is difficult to determine not only because of the dearth of appropriate data but also because many intangibles—and goodwill in the narrower sense entirely so—are so closely tied to the owning enterprise that they could hardly be sold separately, and hence really do not have a market price as discrete assets. Probably little can be done except take the valuations as they appear in available balance sheets of business firms and extend them to cover all business enterprises.

There still remains the problem of the value to be put on the intangibles owned by households—chiefly copyrights and patents—and the presumably very small amounts of such intangibles that are held by private and public collectives but are not made available free of charge and hence are without monetary value under a system of business accounting. The amounts are probably too small to make the omission, common to all national wealth estimates, of consequence.

<sup>55</sup> *Statistics of Listed American Corporations* (1940), Part 1, p. 202.

## 6 *Equities*

Equities appear twice in the balance sheets of many units, and hence in the early steps of their consolidation into a national balance sheet: once on the left side, particularly of households but also of parent corporations and of certain types of financial institutions such as holding and investment companies; and again on the right side as net worth, often divided into several capital stock and surplus accounts and also including reserve accounts to the extent that these are excessive for their designated purposes.

The valuation of equities on the asset side is clear in principle and as a rule does not encounter serious technical difficulties. Such equities are valued at their market prices, which are determinable with ease and with as much reliability as is possible for any type of asset, except monetary claims, for all stocks actively traded on securities exchanges or in the over-the-counter market. Whether such quotations always accurately reflect the 'intrinsic value' of the shares—a term probably meaning the best long range estimate of the capitalized value of expected net earnings—is beside the point in national business accounting. It is enough that the prices are formed, with occasional exceptions, in as open and broad a market as exists anywhere.<sup>56</sup>

Difficulties arise only in the case of the shares of closely held small and medium size corporations. For these the appropriate price per share can be determined by one of two main methods. In principle, the preferable way is to value such shares by analogy with comparable shares actively traded in. This generally means applying a capitalization factor (derived from price-earning or price-dividend ratios for active stocks, or a more complex relationship that might be obtained by correlation analysis) to the earnings or dividends of the small closed corporations. When there are no comparable enterprises whose

<sup>56</sup> Josiah Stamp, 'The National Capital', *Journal of the Royal Statistical Society*, Part I, 1931, XCIV, 5, 16-7, emphasizes the difference between the value of the equity derived from stock market quotations and that obtainable from the sale of the enterprise as a whole. This difference, however, calls for the introduction of the 'valuation adjustment' discussed in Section B2, not for the abandonment of market prices of stocks in national balance sheets.

stocks are actively traded or it proves impossible to disentangle enterprise profits from the salaries of the owner-operators, resort may be had to the book value of total net worth per share, either in unadjusted form or after the assets of these small enterprises are shifted from the book value basis, i.e., generally original depreciated cost, to the current market price basis. Until fairly detailed studies of the constructed market price of shares of enterprises not actively traded are made, it will probably be necessary to rest content with book values, possibly roughly adjusted for changes in the price level of commodities.

The value, for inclusion in the consolidated national balance sheet under business accounting, of equities in the sense of the total net worth of all ultimate economic units, presents no problems of its own. Once all the assets of the ultimate economic units have been valued at actual or constructed market price and the net balance of foreign assets and liabilities has been determined, the figure for net worth emerges automatically, since in the process of consolidation the equities of all intermediaries will disappear, as well as their assets and liabilities.

On general considerations one would assume that the going concern value of the assets of business enterprises would exceed their book value. While comprehensive statistical data are difficult to find, those now available make it doubtful that such a relation obtained in the United States between 1930 and World War II. At the end of 1937 the market value of the stock of the 10 largest American industrial, 10 largest railroad, and 10 largest public utility corporations, i.e., those showing the largest assets according to their books,<sup>57</sup> totalled \$12.7 billion, while the book value of their equity was \$19.9 billion. In only two of the 30 corporations, both industrials, did the market value exceed the book value. For the 30 corporations together

<sup>57</sup> See the *Distribution of Ownership in the 200 Largest Nonfinancial Corporations* (TNEC Monograph 29, 1940), App. III (the Ford Motor Company is excluded as its stock is not traded). Market values are taken from this publication, book values from the balance sheets as published in Moody's manuals,

the market value was only 64 percent of the book value; the ratio was 91 percent for industrials, 20 percent for railroads, and 69 percent for utilities. There is, however, reason to believe that the market price-book value ratio is considerably higher for all corporations and was higher in 1946 than in 1937. First, among all corporations, railroads and public utilities—for which the ratio is especially low—account for only a little over 20 percent of the book value of the equity; in the sample of 30 giant corporations the ratio was 60 percent. Secondly, for medium size and smaller corporations the ratio is probably higher than for very large corporations. Thirdly, since 1937 market values have increased considerably more than book values.<sup>58</sup> Even now, however, the market value of all business enterprises is probably only little above the book value of their equity. There are, of course, important groups of enterprises for which the market value exceeds the book value of the equity, but this difference is apparently almost completely offset by an excess of book over market value in other groups, primarily railroads and public utilities.<sup>59</sup>

#### E FUNCTIONS OF NATIONAL BALANCE SHEETS AND NATIONAL WEALTH ESTIMATES

Having indicated in Section A the functions of social accounting and reviewed in Sections B-D the methods by which national balance sheets and national wealth measurements are derived, it remains to state the use of such figures, i.e., what economic questions they may help to answer. This statement

<sup>58</sup> Common stock prices increased nearly 50 percent between the end of 1937 and the end of 1946. The book value of the equity of all corporations, on the other hand, increased only from \$142 billion in 1937 to \$146 billion in 1945, the last year for which the statistics of the Bureau of Internal Revenue were available.

<sup>59</sup> The excess of the book value of the net worth of large American corporations in 1937 over the stock exchange value of their equity seems to be due primarily to the negative difference between the market value of the assets taken discretely and as going concerns—a reflection of low expected earnings—rather than to a book valuation of the discrete assets in excess of their depreciated replacement cost. Hence the difference would constitute a true negative valuation difference in the national balance sheet.

will be short and more in the form of an enumeration than a substantive discussion. Adequate treatment of the conceptual and statistical problems arising in the use of national balance sheets in the economic analysis of the subjects enumerated, from the viewpoint of both national business and economic accounting, would possibly take as much space as the rest of the paper and would have to include a good deal of discussion fairly far removed from the narrower field of national wealth measurement.<sup>60</sup>

While this answer to the question of the purposes and uses of national balance sheets and national wealth measurements will be considerably more positive than that given by Professor Kuznets ten years ago—possibly due more to differences in temperament than to the accumulation of thought and additional data—there is agreement on one negative conclusion. National wealth estimates are indeed not well adapted, or at least not as well adapted as national income figures, to fulfil demands often made of them: comparison of economic progress over time and the analysis of the burden of debt or taxation.

If these limitations of the discussion are accepted, the likely uses of national balance sheets in general and of national wealth estimates in particular may be arranged under ten headings. All represent functions that could not be performed, or at least not as well, by national income data.

1) Analysis of the composition of physical (tangible) assets, for an entire economy or for certain sectors, is undoubtedly one of the most important uses of national balance sheets. It involves, among other things, comparisons in value terms between the amount and nature of physical assets used by different industries; between assets used for production, comfort, and other purposes; between reproducible and nonreproducible assets; and between assets of different ages and life expectations, particularly between what is often called the fixed and the circulating capital of the community. Much economic theory, especially in the field of capital, interest, and money,

<sup>60</sup> Even Kuznets' discussion, which runs to twenty pages, is in fairly general terms ('On the Measurement of National Wealth', Sec. IV).

needs the factual data provided by such an analysis of the composition of the stock of physical assets. So does the general theory of production, since this analysis answers part of the question concerning the combination of factors of production in actual life.

2) Of at least equal importance is the analysis of the combined and consolidated balance sheets of different groups of ultimate and intermediary economic units and of typical balance sheets of their members, in order to ascertain the relations between asset structure and economic behavior. These balance sheets reflect the selection and management of assets on the part of the owners and in turn exercise considerable influence on the owners' actions in the future. Analysis is, therefore, essential for a realistic understanding of problems such as liquidity preference and saving habits. Further comment may be omitted since motivating relationships in national accounting, and in particular in national balance sheets, are the subject of Professor Hart's paper.

3) The distribution of total national wealth among the members of a community has always been a favorite topic among professional and lay students. It remains among the most important uses of national balance sheets, even though it loses its preeminent status once the measurement of national wealth becomes part of a comprehensive analysis of the national accounts. Figures on the distribution of both total assets and of net worth among the age, occupational, ethnic, local, and other groups of ultimate economic units as well as data on the size distribution of gross and net estates (i.e., total asset holdings and net worth as the difference between assets and liabilities) have wide sociological and economic uses. If properly handled, they can help answer questions concerning the concentration of wealth; tendencies toward or away from property ownership by various classes; and the connections between distributions of income and of property. They can, e.g., put in the right light the naive attempts to prove that all is well by citing the large number or the high proportion of individuals who own certain types of assets, such as bank deposits, government



bonds, life insurance policies, automobiles, and houses, without bothering to state how aggregate or average holdings compare with those of other much less numerous groups of ultimate owners; how much the ownership of these assets contributes to the owners' current income; and how total holdings compare with personal incomes.

4) An often ignored aspect of the distribution of national wealth is automatically brought into focus when the problem is approached from the viewpoint of a system of national accounts: the comparison between the ownership and management of tangible and other assets. From many points of view, especially that of economic policy, it matters much less who the ultimate owner of an asset is, particularly a physical asset, than who controls and manages it directly or indirectly. All physical assets are ultimately owned by households or collectives, but many, and just those most significant in modern economic life, are immediately owned and managed by intermediaries, mainly business corporations. They are thus in fact controlled by a group of persons quite distinct from, and almost always much smaller than, the ultimate owners. The tracing of these relationships through the often quite involved chains of ownership, based on the combination and consolidation of the balance sheets of different layers of intermediaries, is an important function of national wealth analysis. If such analysis were better understood, not only by the general public, we would have been spared the spectacle of specialists trying to construct a contradiction between the figures usually given about the high degree of concentration of wealth and the fact that the use of houses, farms, and durable consumer goods, which together constitute a large proportion of total national wealth, seems to be fairly equally spread over the entire population.<sup>61</sup>

5) Considerable doubt has been expressed about the usefulness of the ratio of national wealth to national income, par-

<sup>61</sup> See Doane, *Anatomy . . .*; and E. A. Keller, *A Study of the Physical Assets, sometimes called Wealth, of the United States, 1922-33* (University of Notre Dame, 1939).

ticularly for an entire country, as a tool of economic analysis.<sup>62</sup> This ratio, indeed, can always be resolved into two others, at least as meaningful in themselves: the share of property income in total national income and the average rate of capitalization. The wealth-income ratio is, nevertheless, neither superfluous nor worthless. As a matter of fact it has a distinct use, especially if calculated for groups of individuals or enterprises and collectives rather than for the economy as a whole. Applied to individuals it indicates the extent to which an individual is independent of the reward of his current supply of personal services.<sup>63</sup> Applied to enterprises it measures, with appropriate variations of the numerator, the yield of total invested capital or of net worth. In economic accounting the ratio for sectors of the economy or all of it can be used also as an index of capital intensity.

6) The velocity of turnover of property, obtained by dividing the turnover of one type or a group of assets during a given period into the average value of the stock of the same assets, is a minor byproduct of national balance sheet calculations. It is of some interest in the analysis of the capital market and in the investigation of the saving and inheritance habits of the community.

7) A more important, but at the same time more controversial, use of national wealth figures is the derivation of indices of capital density, i.e., the amount of capital per head of the population or per employed person. Such figures are important in analyzing intertemporal, interspatial, or interindustrial differences of national income.<sup>64</sup> Because of the often far-reaching methodological differences between unadjusted national wealth figures derived from business accounting, such comparisons should be based exclusively on the adjusted and standardized figures of economic accounting.

8) For the skeptical statistician the chief merit of national

<sup>62</sup> See especially Kuznets, 'On the Measurement of National Wealth', p. 49.

<sup>63</sup> An example of such an application is provided by the Australian census of 1915 (cf. G. H. Knibbs, *The Private Wealth of Australia and its Growth*; Melbourne, 1918; Part IV, Ch. I).

<sup>64</sup> For examples of such comparisons see Colin Clark, Ch. XI.

wealth estimates is probably that, if periodically made on a consistent basis, they are a check against the cumulated figures of saving or capital formation derived from statistics on national income and its components.<sup>65</sup> They can, however, be used for such a check only if both estimates are reduced to a common price basis.

9) The analysis of the rate of growth is probably one of the most interesting and promising uses to which national wealth figures can be put. Its calculation ordinarily entails combining national wealth estimates with data on capital formation taken from national income statistics, although for longer intervals comparison of successive national wealth estimates alone may suffice, provided the estimates are standardized at least with respect to prices and capitalization rates. Such rates of growth are of interest not only if calculated for entire countries but even on the less comprehensive basis of certain industries or regions within a country. Similar calculations for certain groups of individuals or enterprises or collectives within a country are of great sociological interest. Usually they will have to be based exclusively on successive wealth evaluations—in this case at market prices—since cumulated figures for savings, even if they were available in the necessary detail, would not reflect changes in the value of assets which may have a great influence on the differentials in the rate of growth of wealth as between groups.

10) A final use for national wealth figures that has recently acquired some importance is the comparison of war losses, or similar drafts on capital, and national wealth. In this field, unlike those of taxes, debt interest, and current reparations, in-

<sup>65</sup> Kuznets made such a comparison between cumulated capital formation and changes in national wealth in the United States, all in 1929 prices, for 1879-1938 (*National Product since 1869*, pp. 193-9): "the increase in the wealth items falls \$28 billion, or almost 20 percent, short of that indicated by net capital formation data; . . . this shortage is both absolutely and relatively greater for improvements than for durable equipment; . . . most of the shortage in improvements occurs during the decade 1912-22 . . ." In view of the inevitable crudeness of most of the figures such a difference—which is reduced by several adjustments to \$17 billion or about 12 percent—can hardly be regarded as significant or as a sure indication of the direction of the difference.

come figures cannot do the service of wealth figures. The severity of total war damages, or similar losses of tangible assets, can be assessed most straightforwardly by being compared with total national wealth after both have been put on a comparable price level.<sup>66</sup> While the ratio of postwar to prewar national income also indicates the effects of war damages, it is in no way identical with the loss ratio and is influenced, sometimes greatly, by factors such as the effects of war on the labor force and the degree of unemployment after and before the war. For the measurement of the effect of the war on specific types of assets the loss-wealth ratios are, of course, the sole device available. They are of interest not only as a descriptive device but also because they have been used to a considerable degree in international negotiations, particularly the settlement of reparations claims.<sup>67</sup>

<sup>66</sup> On the use of national wealth figures in the measurement of the 'capital impact' of war expenditures see Goldsmith, 'Measuring the Economic Impact of Armament Expenditures', *Studies in Income and Wealth, Volume Six* (1943), pp. 62 ff.

<sup>67</sup> An example is the distribution of German reparations at the Paris Conference of 1945, one of the factors determining the quotas being the extent of war damages and their relation to national wealth. (Some of the pertinent figures used at the conference were published in *Bulletin d'Information et de Documentation*, National Bank of Belgium, March and April 1946.)

